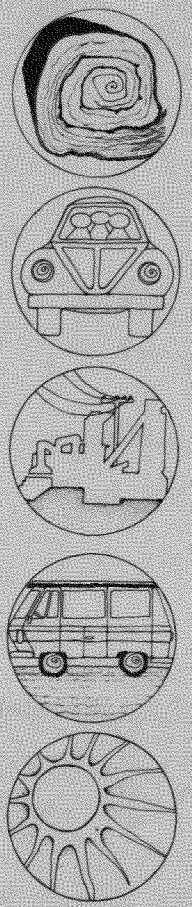
Final Action Plan

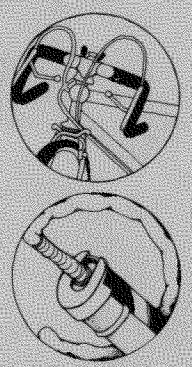
Report of the ENERGY, Ltd. Citizen Committee

March 1981



ENERGY, Ltd.

for a secure energy future



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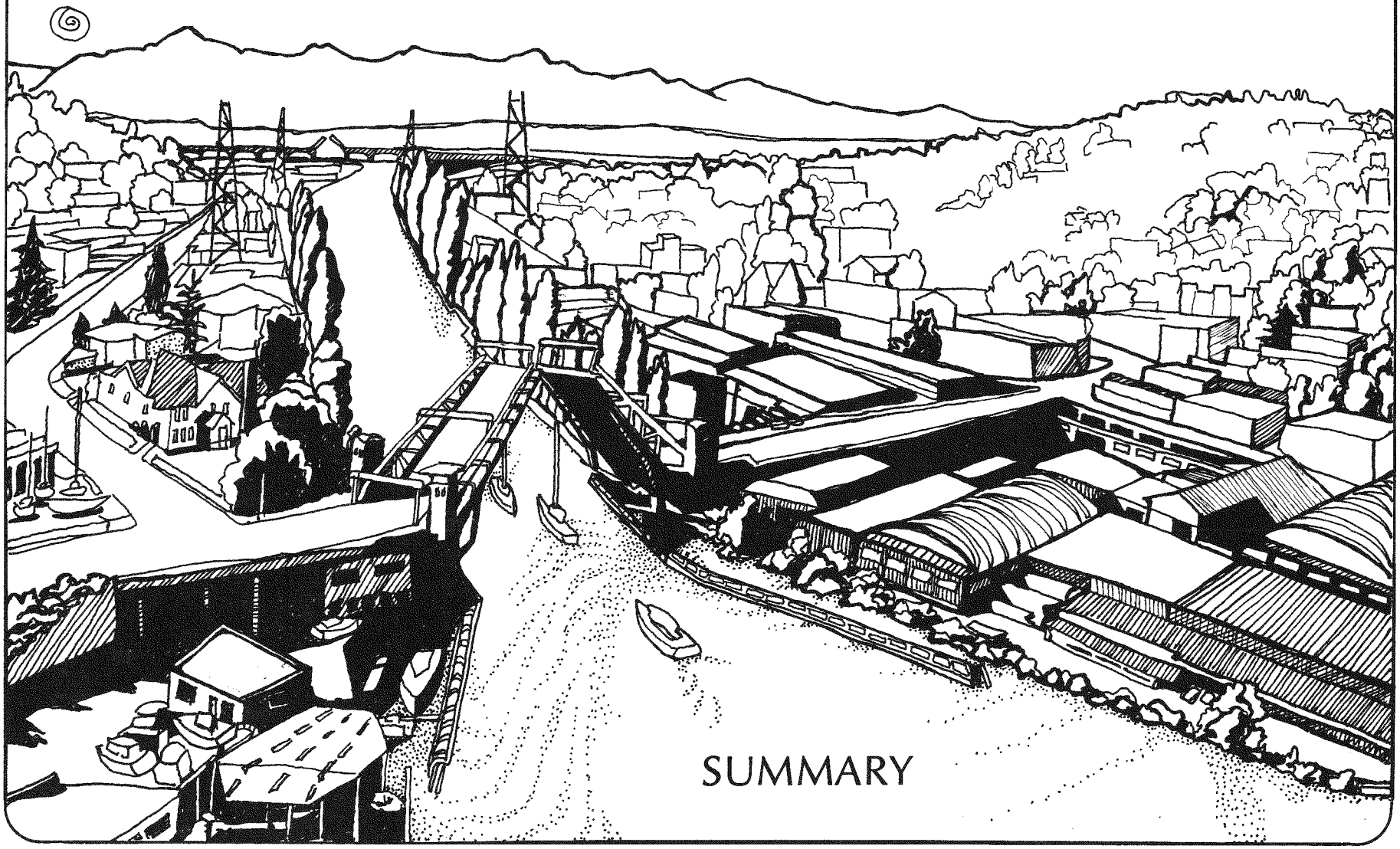
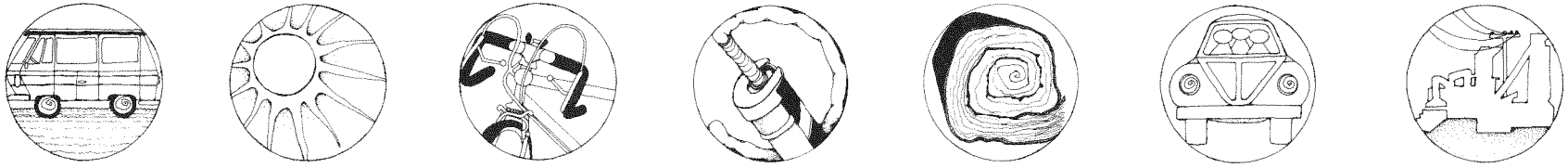
I seem to be faced with insurmountable opportunities . . .

Pogo



SUMMARY



Summary

Suppose we discovered oil and natural gas in Seattle. Suppose that by drilling for it, we could save $395 million a year in building energy costs and reduce or possibly contain our electric load growth. And suppose that in the way we went about drilling for it, we could keep our money at home and boost our local economy.

Suppose all these things, and you're on the track of the kind of thinking the ENERGY, Ltd. Citizen Committee has been doing for the last two years.

The oil and natural gas we've "discovered" is in our buildings. Our current expense for all energy used in buildings is $340 million--and rising fast. If current trends continue, we can expect to be paying, by the year 2010, $866 million (in 1980 dollars) for energy in our buildings. See Figure B.

"Drilling" for these resources in our buildings means looking at our homes and businesses as part of the solution to our energy problems and at conservation as an energy resource.

"Drilling" for these resources, by ENERGY, Ltd. estimates, would bring building energy costs in the year 2010 down to $471 million--a savings of $395 million. Even after adding on the cost of conservation improvements--about $220 million--"drilling" is still a better deal.

Moreover, when we make those savings, the money will stay at home instead of flowing to OPEC to pay for oil or to Canada for natural gas. The $220 million annual investment in conservation will keep our money in our community, provide training and jobs in a growing conservation industry, and release us from dependence on insecure non-local energy supplies. See Figure C.

And finally, by conserving all fuel types, we may keep the price of electricity from skyrocketing. At present, electricity accounts for only 18 percent of heating energy, but by the year 2000, ENERGY, Ltd. estimates that electricity will account for 40 percent of heating energy.

Much of that growth will come from oil and natural gas users converting to electricity because of rising fossil fuel prices. To meet that demand, expensive electricity will have to be generated. "Drilling" for oil and natural gas in our buildings will help fossil fuel users lower their energy costs, thereby slowing the conversion rate and reducing the demand for additional electric energy.

To gain these savings in energy costs, to stimulate our local economy, and to reduce our growing electric demand--in short, to turn an energy problem into an energy resource--the ENERGY, Ltd. Citizen Committee has developed a comprehensive action plan for conserving all types of energy used in Seattle's buildings and industries.

FIGURE A
Conservation Exploration

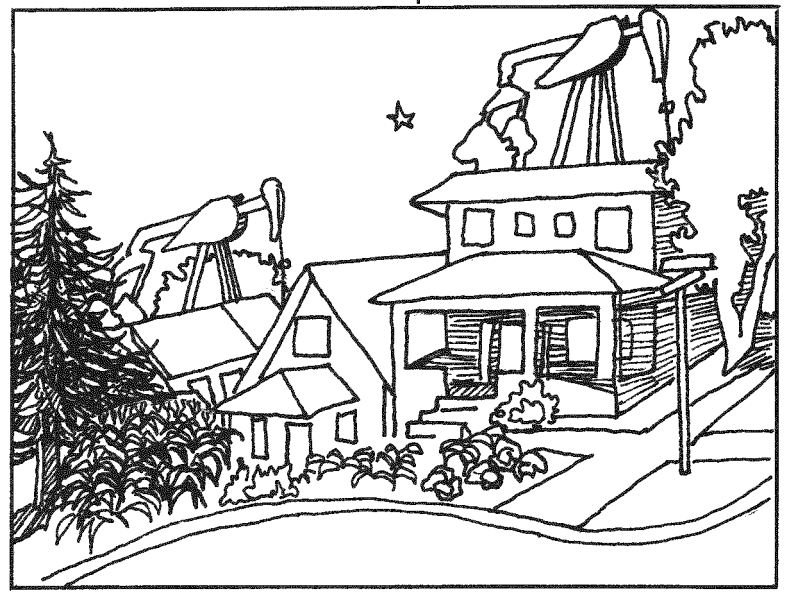


FIGURE B
Cost Comparison by Fuel Type
With and Without Conservation, 1978-2010
(millions of 1980 dollars)

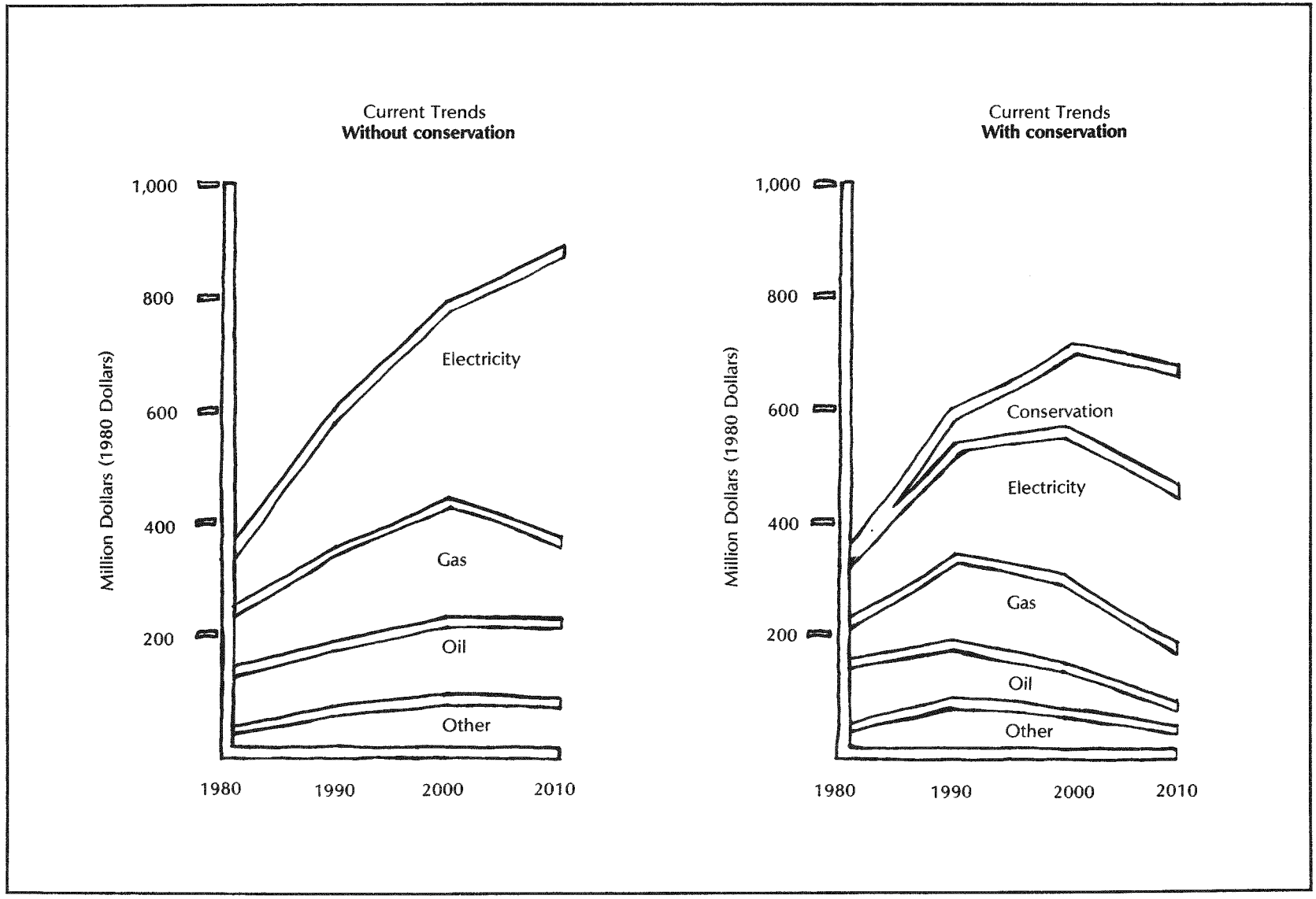


FIGURE C
Seattle's Energy Dollar Flows

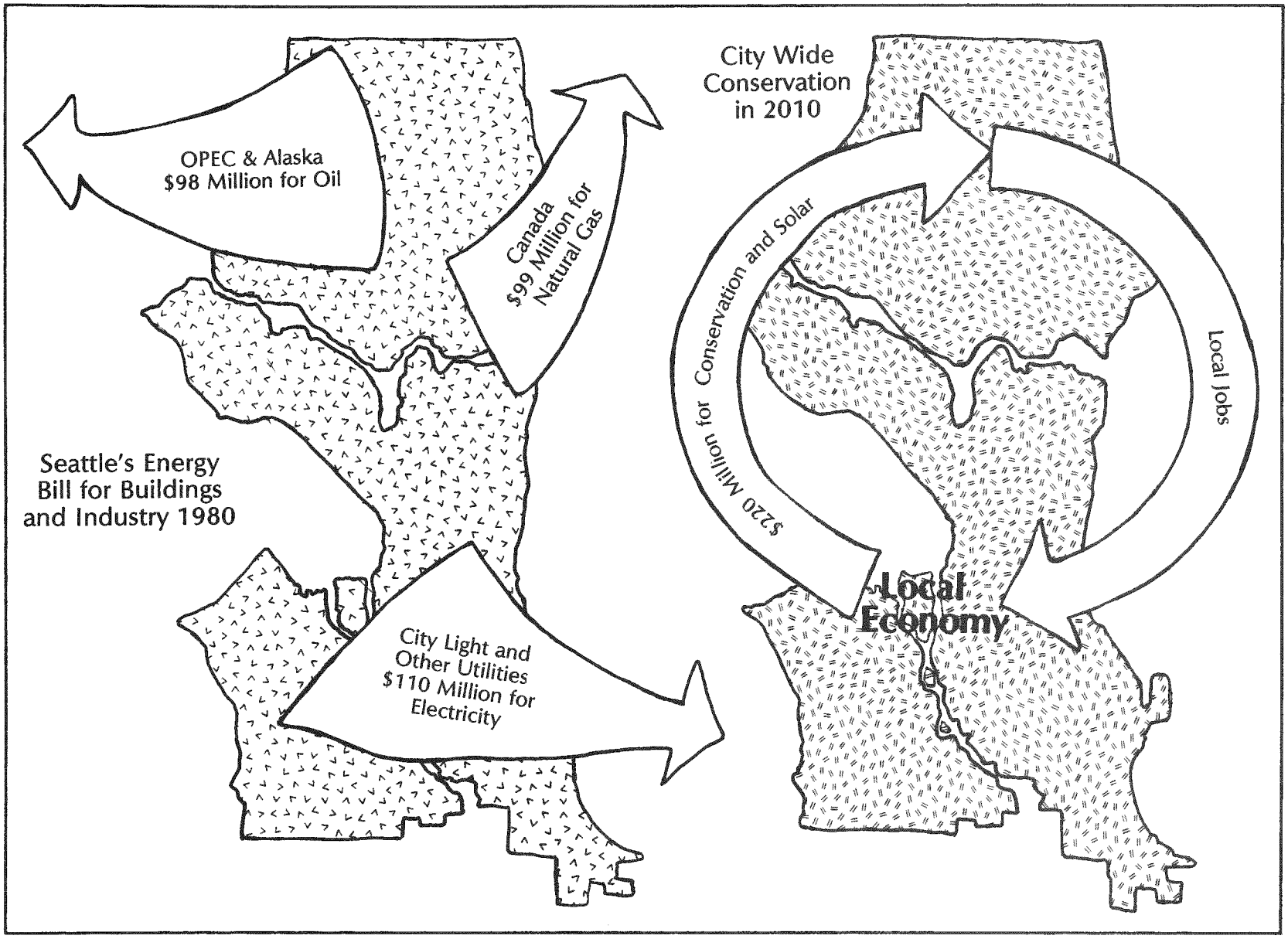
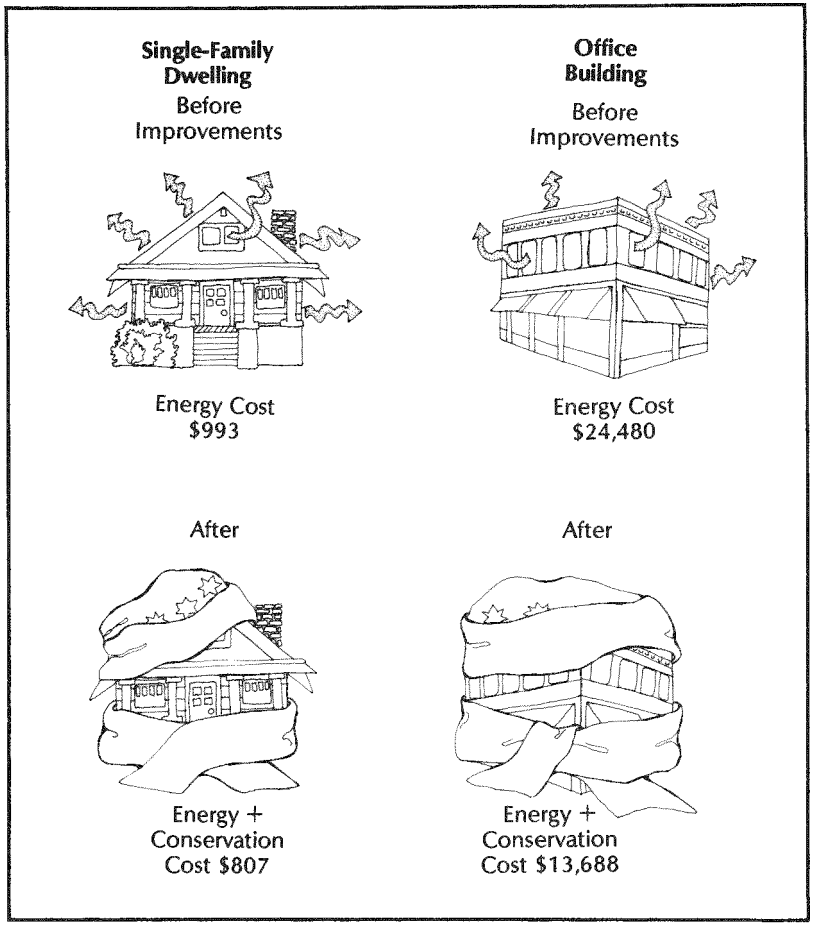


FIGURE D
Comparison of Annual Energy Costs
For Typical Oil-Heated Buildings
Before and After Conservation Improvements

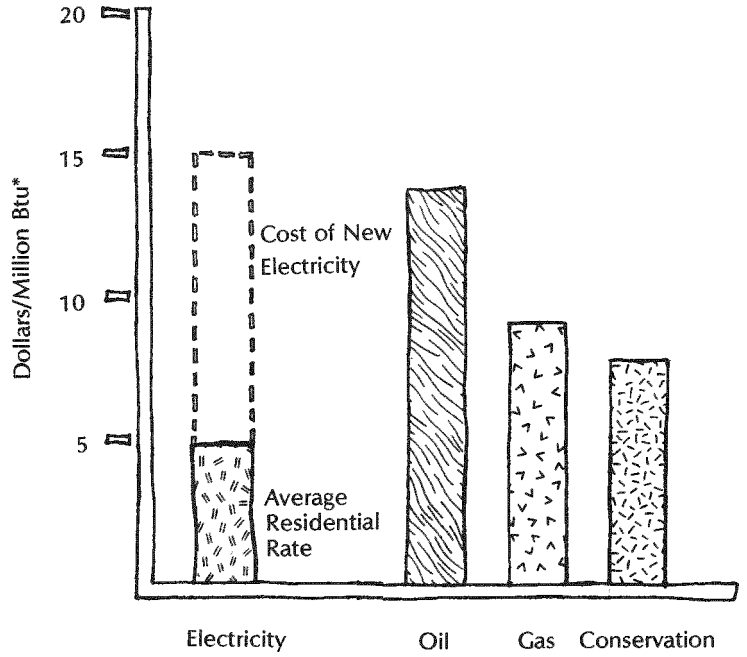


How Good a Deal is Conservation?

Looked at as dollars saved, conservation is a good deal for building owners, especially for those using oil and natural gas.

In an average single family home using oil, for example, the building's energy costs $993 a year without conservation measures and $807 a year with conservation measures. The lower annual cost is made up of both the cost of buying the energy still needed by the building and the yearly cost of conservation improvements. If adequate financing were available for these conservation improvements, the building owner's yearly payments would be $443 over the useful life of those improvements. See Figure D.

FIGURE E
Comparison of Annual Conserved Energy Cost With Annual Energy Cost of Other Fuel Types

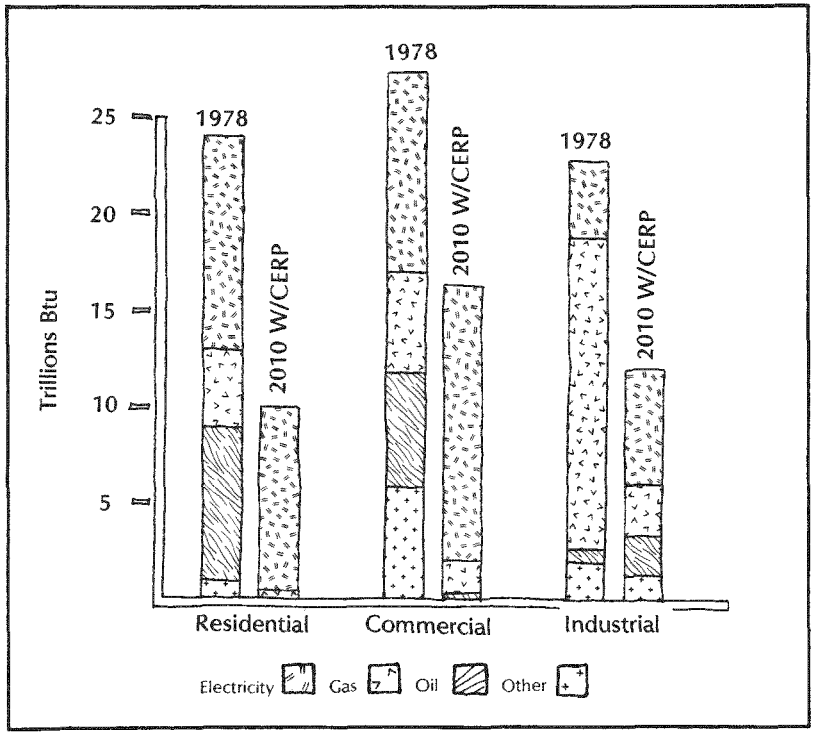


*Price of energy delivered to the end user within the home assuming 55 percent oil furnace efficiency and 60 percent gas furnace efficiency.

The conservation payment is a fixed expense, while energy costs are not. In making a conservation energy payment, the home owner is actually buying an energy supply at a fixed price of $7.88 per million Btu. This fixed price of conserved energy compares favorably with the current price of natural gas at $9.15 per million Btu and with the current price of oil at $13.83 per million Btu.

Electricity at the current price of $4.75 per million Btu is the only fuel option that is cheaper than the conservation option from the home owner's perspective. However, the cost of new thermal-generated electricity as seen from Seattle City Light's perspective is much higher than the cost of conservation. New electricity will cost in the range of $12 to $15 per million Btu. When this supply cost of new thermal-generated electricity is taken into account, the conservation option becomes competitive with all fuels. See Figure E.

FIGURE F
Energy Savings by Sector and Fuel Type by the Year 2010



For the owner of an average oil heated office building, the conservation option has benefits similar to those seen by the home owner. For example, an average office building owner heating with oil will pay $13,688 a year after making conservation improvements, in comparison to having to pay $24,480 a year without conservation improvements.

Energy Savings by the Year 2010

By taking the conservation option, the average oil heated single family home would require 60 percent less energy and reduce its demand for heating energy by 70 percent. An average oil heated office building would require 58 percent less energy and reduce its demand for heating energy by 80 percent.

By the year 2010, if the conservation option were extended to all the buildings and industries in Seattle, it would reduce energy demand by 43 percent. Conservation measures would reduce by 58.5 percent the energy required by the residential sector, by 39.9 percent the energy required by a commercial sector expected to increase substantially in size, and by 25.7 percent the energy required by the industrial sector. See Figure F.

Comprehensive conservation measures in all Seattle buildings by the year 2010 would reduce oil demand by 84 percent, natural gas demand by 74 percent, and would hold the increase in electric demand to 18 percent. The electric demand could be held constant at the expense of somewhat smaller reductions in natural gas demand.

Getting to the Twenty-First Century

The conservation option formulated by the ENERGY, Ltd. Citizen Committee is the Community Energy Redevelopment Plan, a totally voluntary, incentive-based conservation and renewable energy program that would serve all energy consumers in Seattle, regardless of the type of fuel they use.

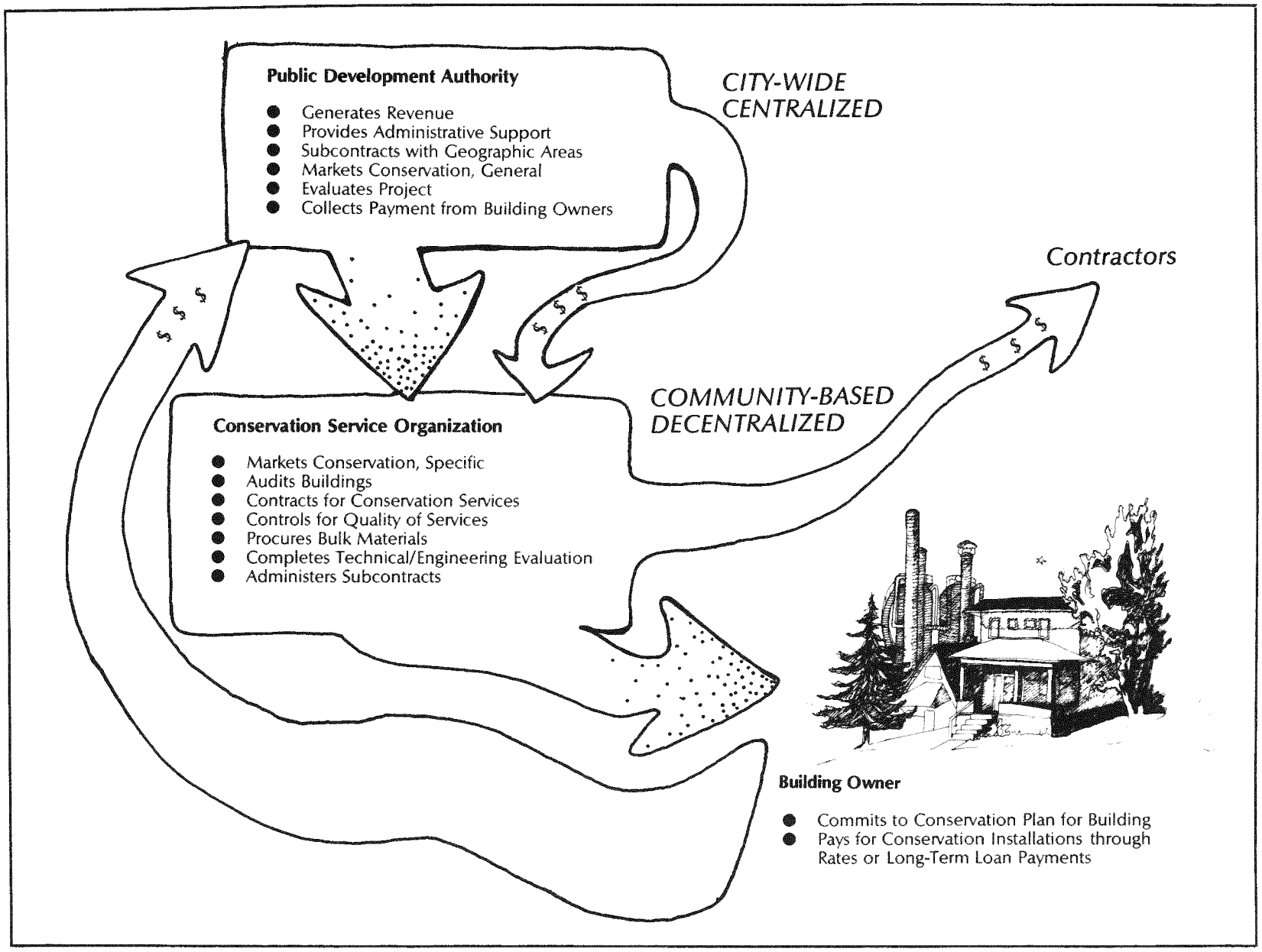
The Plan emphasizes private sector involvement from capitalization to the marketing, designing and installing of conservation and renewable resource improvements. To maximize voluntary public participation, the Community Energy Redevelopment Plan would put conservation investments on an equal footing with investments in traditional energy supplies by providing long-term, low-interest loans to finance conservation improvements.

finite to fail, but in-
finite to venture.

Emily Dickinson

The Plan would be capitalized through the formation of a public agency which would, subject to amendments to State constitutional limitations on the lending of public credit, sell tax-exempt revenue bonds. Private, local

FIGURE G
Community Energy Redevelopment Plan
Organization and Functions



firms, financed through the public agency, would market comprehensive conservation services throughout the city's communities, and private firms (or building owners) would design and install the conservation and renewable energy improvements. Participating building owners would repay the loans for the improvements to their buildings, thereby repaying the bond holders. Thus, no tax dollars would be involved, and the organization would be self-sustaining, much like Seattle City Light. See Figure G.

Total conservation capital of $2.3 billion over 30 years is needed to carry out the Community Energy Redevelopment Plan. However, the total yearly savings in the year 2010 attributable to conservation would be $395 million, which, when looked at in light of the initial investment, would provide a 5.8-year pay back on the investment.

In addition to providing energy savings and local economic development of a conservation and renewable resource industry, the Plan meets the rapidly growing demand for electricity by providing maximum conservation incentives for users of all fuel types in all buildings. These actions, by lowering fossil fuel costs, will slow the rate of conversion from fossil fuels to electricity and will partially fill the forecasted supply-demand gap in our electric resources.

Recommendations of the ENERGY, Ltd. Citizen Committee

Members of the ENERGY, Ltd. Citizen Committee were appointed by the Mayor and confirmed by the City Council. The 28-member group has been meeting about every other week since February , 1979. Additional participants with special energy interests have worked on several sub-committees, bringing to approximately 60 the number of citizens formally involved with ENERGY, Ltd..

The Citizen Committee specifically recommends the following:

- Improving the energy efficiency of **all** Seattle's buildings and industries with any conservation and renewable energy measures which are cheaper than new thermal sources of electricity;
- Directing the City Energy Office to develop by February, 1982, a detailed plan for the first phase of the Community Energy Redevelopment Plan;
- Starting the Community Energy Redevelopment Plan by making conservation improvements to 1,000 buildings in the city through an intensively marketed, attractively financed, voluntary program;
- Developing public financing available to all city energy consumers, regardless of the type of fuel they use, for conservation improvements; and
- Investigating the creation of a Public Development Authority as a city-wide agency responsible for financing, administering and publicizing the Community Energy Redevelopment Plan.
- Investigating the feasibility of Seattle City Light providing a rebate for electric energy savings and a mechanism for passing the rebate on to electric heat customers served by the Community Energy Redevelopment Plan.

What Can City Government Do?

1. The City of Seattle can begin planning for the first phase of the Community Energy Redevelopment Plan. This first phase includes making energy conservation improvements in 1,000 residential, commercial and industrial buildings in two geographically defined Seattle communities and the planning for full implementation of the Community Energy Redevelopment Plan. Beginning in this manner would begin to equalize market conditions and give conservation and solar resources fair access to investment capital.

   You may delay, but time will not.

   Benjamin Franklin

2. The City of Seattle can set an example for its residents through energy management and conservation improvements to its own buildings.

   Specifically, the City can:

   - Reaffirm the role of the Energy Office and an inter-departmental team in developing a municipal energy management program;
   - Develop a five-year energy investment plan and annual energy projects in selected municipal facilities;
   - Include municipal energy investments as an authorized activity in any future municipal bond issue; and
   - Generate revenue for the General Fund to pay for municipal energy improvements through a two-tenths of one percent increase in the Business and Occupation Tax for energy utilities.

3. To ensure that other utilities give conservation and solar resources fair treatment, the ENERGY, Ltd. Citizen Committee recommends that the City actively participate in proceedings of the Washington Utilitites and Transportation Commission. The City's participation, particularly on natural gas utility issues, would be to encourage gas utilities to offer conservation incentives comparable to those available to electric heat customers.

Goals and Policies

In June, 1980, the City Council adopted a set of tentative goals and policies, and energy management tasks. With the **Draft** and this **Final Action Plan**, ENERGY, Ltd. has completed the energy management tasks assigned by the Council. The value of the goals and policies, however, is not ended. The goals and policies should be reaffirmed by the Mayor and City Council.

In keeping with the Councils's intent to recognize general goals that are common to other local governments, particularly King County, the ENERGY, Ltd. Citizen Committee supports the addition of a twelfth goal recommended by the King County Energy Planning Project. The twelve goals are:

1. Assure a sufficient and reliable supply of energy to meet reasonable consumer needs.

2. Assure that all consumers use energy wisely.

3. Reduce local per capita energy consumption while maintaining a desirable living and working environment.

4. Make energy choices which maintain or improve the quality of the environment.

5. Maximize opportunities to make energy choices and decisions at the local level and decrease reliance on energy supplies that are not subject to local controls.

6. Encourage the vigorous development of renewable energy resources and reduce dependence on non-renewable energy supplies.

7. Continue and expand energy conservation efforts and increase use of energy efficient technology.

8. Assure the development of an energy supply system that is resilient and diverse.

9. Make energy choices which match the type and temperature of energy supply to the most appropriate requirements of each end use.

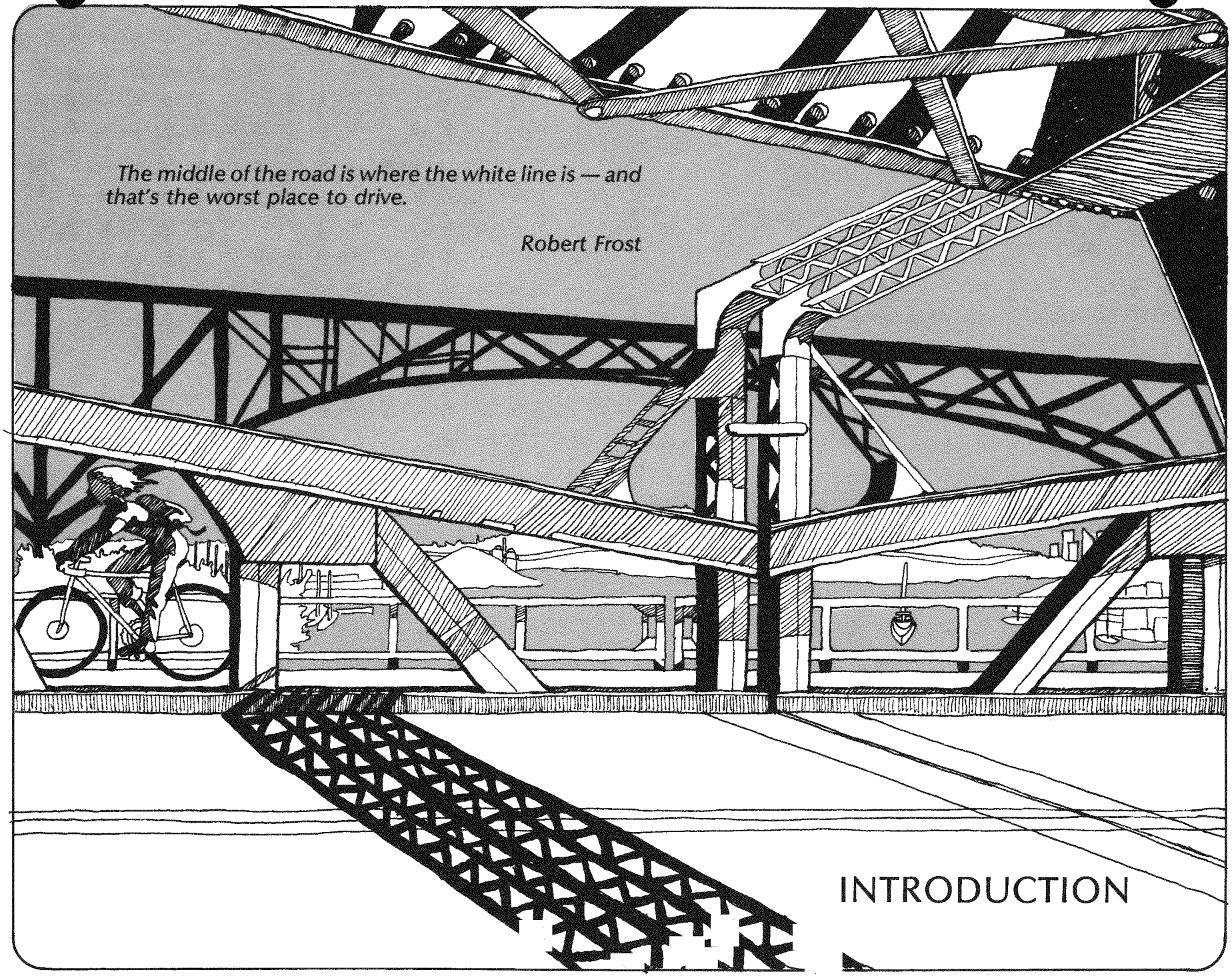
10. Assure energy efficient land use, transportation and economic development plans and policies.

11. Assure energy consumers an equitable and affordable supply of energy.

12. Provide visible and effective public commitment toward, and leadership in, the conservation of energy and use of renewable resources.

If these goals are achieved by the implementation of these ENERGY, Ltd. recommendations, as well as by other city energy programs, then Seattle will have gone a long way towards a secure energy future.

ENERGY, Ltd.
for a secure energy future



INTRODUCTION

Introduction

What is ENERGY, Ltd.?

Background

ENERGY, Ltd. is a federally financed demonstration project undertaken by an active Citizen Committee and the Seattle Energy Office. As one of 16 national demonstration projects, formally called the Comprehensive Community Energy Management Program (CCEMP), it is designed to identify the roles local governments can play in managing energy resources. King County has a project similar to ENERGY, Ltd. and the two have attempted to work closely together. The challenge ENERGY, Ltd. has faced is the development of a comprehensive energy management plan for Seattle.

ENERGY, Ltd. has approximately a two-year life under federal funding. The project has been following a general planning framework consisting of the following tasks:

- Task 1. Project Organization: Appoint Citizen Committee, hire staff and prepare detailed work plan.
- Task 2. Community Energy Audit: Develop a data base that shows how energy is used in Seattle and identifies issues and policy areas to be addressed.
- Task 3. Goals and Objectives: Articulate general city goals and identify specific objectives for further work.
- Task 4. Alternatives and Strategies: Develop program proposals to achieve objectives, and evaluate them. This became the **Draft Action Plan.**
- Task 5. Action Plan: Develop implementation mechanism for presentation to City Council. This report represents the **Final Action Plan.**
- Task 6. Legislative Review.

Members of the ENERGY, Ltd. Citizen Committee were appointed by the Mayor and confirmed by the City Council. The 28-member Citizen Committee has been operating since February 6, 1979, and has been meeting every two or three weeks since then. In addition, the Citizen Committee has formed six standing subcommittees for residential, commercial, industrial, governmental, transportation, and supply energy issues. In all, there have been approximately 60 citizens formally involved in ENERGY, Ltd.

This major commitment of time and personal energy contributed by volunteers represents:

- A recognition that the energy problems facing our nation are real and must be addressed by public policy.
- A belief that citizen volunteers can make a difference in the development of public policies.
- A willingness to work with local government to ensure that energy management plans are sound and that they reflect the thinking of an informed community about the role of local planning in energy managemet.

You'll find in no park
or city
A monument to a
committee.

Victoria Pasternak

Major Accomplishments

Prior to the publication of this report, ENERGY, Ltd. has achieved the following major accomplishments:

- The **Energy Data Base,** a report by ENERGY, Ltd. (published January, 1980) which provides the first comprehensive view of energy supply and demand in the city: how much we use, what kind of energy we use, where it comes from, and how it is used.
- Approximately 30 community meetings to solicit ideas about Seattle's energy goals and the types of programs that should be encouraged (January-March, 1980). These have included meetings with community councils and business representatives as well as general public meetings.
- City Council Resolution 26353, establishing tentative energy goals and policies for the city and a set of energy management tasks identifying efforts to which ENERGY, Ltd. would give priority attention (March-June, 1980).
- The **Draft Action Plan,** a comprehensive set of program recommendations by the Citizen Committee, published in November, 1980.
- Public review of the **Draft Action Plan** in general public meetings and continuing presentations to interested organizations, plus approximately 290,000 questionnaires sent out with Seattle City Light's bills to communicate the recommendations and to solicit response.

A more detailed chronology of all project activities, including interaction

with the City Council and the general public, is shown in Table 1.

TABLE 1
CHRONOLOGY OF ENERGY, LTD. EVENTS

	1978	1979	1980	1981
JAN.			Energy Data Base Report Slide/Tape Show.	
FEB.		Workplan reviewed by city departments and City Council. Approved in Resolution 26013.	10 Community Meetings: Citizen Committee Workshop: Goals and Objectives.	Revise recommendations to Mayor.
MAR.		Citizen Committee appointed.	Goals and objectives submitted to City Council by Mayor.	Mayor's review. Citizen Committee's Final Action Plan. Mayor's recommendations to Council.
APR.	City received Request for Proposal from Argonne National Laboratory.		City Council public hearing on goals.	
MAY		Council confirms Citizen Committee.	City Council review leads to City and County developing identical goals.	Public hearings and City Council review.
JUN.	Proposal approved by City Council Resolution 25829 submitted.	Contingency planning recommendations.	Council Resolution 26353 adopts goals, policies, and energy management tasks.	
JUL.		Staff hired: Citizen Subcommittees formed.		
AUG.			Citizen Committee meets jointly with King County Steering Committee.	Citizen Committee Workshop Program Direction.
SEP.	Contract award announced.		Review of Mandatory Weatherization Standard.	Citizen Committee Workshop: Program Direction
OCT.				
NOV.	Beginning of staff hiring.		Citizen Committee Workshop: Energy Futures	Draft Action Plan.
DEC.				Public review community meetings

What is this Action Plan?

The **Final Action Plan** is the ENERGY, Ltd. response to a range of energy problems that are not likely to go away in the near future. The problems are described in more detail in our **Energy Data Base,** but the salient points are:

- Seattle is heavily dependent -- 75 percent -- on nonrenewable fossil fuels for the energy we use.
- Seattle's energy supply is vulnerable to politically motivated disruptions because much of it comes from foreign sources.
- Seattle's energy supply is vulnerable to system failure, either accidental or intentional, because of centralized production and delivery.
- Consumers are vulnerable to energy prices beyond their control, and the money spent on energy largely does not recirculate in the local economy.
- The significant price differential between fossil fuels and electricity means that large coversions to electric resistance heating for space heating will be likely to occur. Without any public policy to the contrary, this will place a substantial burden on electricity-generating capacities that are already straining to meet demand.

- An alternative is needed to high-cost fossil fuels and to electric resistance heating, particularly if Seattle City Light adopts strict conversion policies.

- Large amounts of energy can be recovered from local renewable energy resources such as solar energy and biomass.

ENERGY, Ltd. believes that any response to these problems and opportunities must be long range and multifaceted. There are no quick fixes and there is no single, simple solution. Our recommendations, therefore, cover a wide spectrum of concerns, and they are action oriented. Some proposals are ready to be implemented by the City Council, and others require City Council approval in concept before further development.

There are several themes that are important to an understanding of the ENERGY, Ltd. recommendations. These include:

- Seattle can achieve a secure and sustainable energy future if an aggressive and comprehensive action plan is followed.

- Cost effectiveness of conservation and renewable energy resources must be measured against the cost of building new central station thermal electric resources. This will result in additional conservation beyond that already planned in Seattle.

- Maximum conservation and renewable resource development in buildings, energy-efficient land use planning, and alternatives to the private auomobile, can bring us close to neighborhood or community self-sufficiency over the long term.

- Government must set an example to citizens and businesses by managing its own use of energy.

- Some government regulation is justified to achieve societal goals, but to achieve maximum conservation, financial incentives must be provided to attract private investment.

- A comprehensive program such as ENERGY, Ltd.'s must address all forms of energy and must reach all classes of energy users. Energy issues are complex and policies affecting electric energy, for example, will have an effect on the use of oil and natural gas.

Perspectives on the Role of Local Government

In analyzing energy problems and developing a comprehensive energy plan, several basic questions have surfaced:

- What is the City's role in the conservation of oil and natural gas?

- To what extent should the City regulate energy use, and to what degree should it rely on voluntary action?

- How can the City encourage the private sector to undertake conservation activities?

To any casual observer, the City's role in electric energy planning is obvious. That role comes with ownership of the electric utility. The City's long involvement in electric energy policymaking sets a standard for energy planning in general.

But does the City have the same level of responsibility to Seattle citizens who use oil and natural gas? There are certainly some equity issues involved. Some of our electric policies -- such as limiting conversions to electric resistance heat -- create impacts on oil and gas users. Is that fair to them? Are we really saying that the City cares only about electricity because we own the electric utility, or are conversion restrictions simply an impact on oil and gas users that we have not yet considered in a broader context of total energy use?

Is the operation of the municipally owned electric utility separate from the City's responsibility to represent all consumers equally? The utility traditionally operates as a business, albeit a nonprofit one. Would the use of our utility to provide nonelectric services to oil and gas users be fair to electric rate payers? Is that our only option in meeting the needs of oil and natural gas consumers?

History repeats itself only if we let it.

Diane DiPrima

No city policy has been established for the management of oil and natural gas supply or demand, except for general statements encouraging conservation. The recommendations in the **Final Action Plan** will, if implemented, help define city policy in this area.

Another role local government can play in energy management is to exercise its police powers to regulate. From a legal perspective, regulation is easier to understand and the powers are more clearly defined than the powers of local government to offer incentives. The disadvantage of regulation is that it restricts freedom and is properly limited by political considerations.

The whole issue of mandatory measures versus voluntary approaches has been given serious, lengthy consideration by the Citizen Committee. The most important idea that emerged from this debate is that all classes of customers must be treated equitably. If conservation is mandated for residences, for example, then comparable actions must be mandated for commercial and industrial consumers. Everyone should have to contribute equally.

A final role for local government that this report suggests is to stimulate the

private sector, small businesses and the community to carry out an aggressive program of energy conservation and renewable resource development.The most powerful stimulus is to provide public financing. Individuals trying to finance conservation must borrow money at 14 to 18 percent interest and pay it back over perhaps 4 to 7 years. On the other hand, public utilities seeking capital to build new generation or transmission facilities can issue tax exempt bonds at 8 to 10 percent interest, and can pay the bonds off over a 20 to 30-year period.

If local government can raise the necessary capital on comparable terms, then conservation can compete on an equal footing with new generation. Once the capital is raised, then local government should use it to stimulate private sector efforts by contracting out the work or by making loans to energy users. As we shall see, this requires removal of significant legal barriers to public sector flexibility.

Perspectives on the ENERGY, Ltd. Recommendations

The ENERGY, Ltd. recommendations cover energy use in buildings of all kinds and in transportation.

Buildings

As the cost of heating oil and natural gas becomes a much bigger part of operating expenses, building owners begin to look for ways to lower heating costs. Electricity, at City Light's **average** price, is an attractive alternative, and thus conversions from oil and gas to electricity are a big part of the utility's growing demand.

But these growing demands are a strain on City Light's capacity to serve, and require new, substantially higher cost resources to be added to the system.

With such conversions to electricity occurring, the City can no longer afford to look only at existing electricity use. Besides, electricity for heating is only a small portion -- 18 percent -- of all the heating energy used in Seattle's buildings. If the City's primary concern is with controlling electric load growth, then conservation of heating oil and natural gas, as well as electricity, makes sense. The consequent reduction in fuel costs, particularly for gas and oil, will reduce the pressure to convert to electricity.

For buildings, the ENERGY, Ltd. Citizen Committee proposes a Community Energy Redevelopment Plan. This plan is a city-wide effort to achieve maximum conservation and use of renewable resources in all of Seattle's buildings, regardless of the type of fuel used. This long range plan is clearly an ambitious undertaking and, in order to carry out the recommendations contained in the plan, major changes will be required in our approach to management.

These changes will be necessary because the City has never organized, as a matter of public policy, to conserve fossil fuels or to develop decentralized renewable resources. Furthermore, the energy problems identified will be with us for at least the next several decades.

This effort to increase the energy efficiency of all 150,000 buildings and 1,400 manufacturing firms in the city will require an investment of more than $2 billion over the next 30 years. Financing that investment will require changes in the State constitution and creation of a public organization to sell revenue bonds.

What Currently Exists?

How is this building strategy different from what the City is already doing? The most recent strategy adopted by the City is the Comprehensive Residential Weatherization Program (CRWP). However, there are several differences between the CRWP and the Community Energy Redevelopment Plan.

- Scope: The CRWP is only for residential structures containing one to four dwelling units. The Community Energy Redevelopment Plan includes apartments, commercial buildings and industrial facilities, as well as all residential structures.

- Financing: The CRWP will provide conservation financing for several groups in its target population of residential structures (Table 2).

    1. U.S. Department of Energy (DOE) weatherization grants for low-income residents heating with oil or gas and earning less than 125 percent of the federal poverty level. (7%)

    2. Seattle City Light weatherization grants for residents heating with electricity and earning less than 90 percent of the Seattle area median income. (15%)

    3. Federally subsidized loans (11 percent, five years) and a 15 percent cash rebate of the loan amount for people heating with oil and gas and who earn more than 125 percent of the federal poverty level but less than 80 percent of the Seattle area median income. (20%)

    4. Zero-interest, deferred payment loans from City Light to any customer whose building is heated by electricity. (21%)

    5. No financing for oil and gas residential customers who earn more than 80 percent of the area median income. (37%)

Of the target population of 120,000 homes, 21 percent are eligible for the (#4) City Light loans; 22 percent are eligible for the (#1 and 2) low-income grants; and 20 percent are eligible for the (#3) subsidized loans to oil and gas heated homes. This leaves 37 percent who are not eligible for financing except for what they can obtain commercially at market rates. Moreover, the Reagan Administration has recommended eliminating the weatherization grants to low-income people (#1), and has recommended that the program providing subsidized loans for lower-middle income people heating with gas and oil (#3) be cut after one year.

The Community Energy Redevelopment Plan, on the other hand, would provide financing to the owners of any residential (including apartments), commercial or industrial structure, regardless of the type of fuel they use.

- Objective: Mandatory requirements such as the Energy Code for new building construction, efficiency standards for conversion to electric heat, and the proposed mandatory standards for existing electrically heated homes, all require **minimum** conservation actions.

The voluntary Community Energy Redevelopment Plan is intended to achieve **maximum** energy savings by providing attractive financing comparabe to the terms at which Seattle City Light would finance a new facility for generating electricity.

In other words, if a building owner has a plan that is **cost-effective,** it would be financed. The Community Energy Redevelopment Plan will finance anything that is cheaper than new thermal generating plants. It might be called a least-cost strategy.

Selected characteristics of other conservation programs are compared to the Community Energy Redevelopment Plan in Table 3.

Transportation

Although one-third of our total energy consumed is used for transportation, it is difficult to find points of real leverage for public policy to encourage conservation in transportation. There are several reasons for this:

- Transportation issues are really regional issues, because travel, and especially commuter travel, occurs across jurisdictional boundaries.
- Mass transit, a popular response to travel demand is already provided by Metro, a public agency which has its own ongoing responsibility for long range planning.
- Seattle is not a large enough market to demand that new vehicles meet our own specifications for fuel efficiency.

However, there are several approaches we can take to reduce the amount of energy used in transportation:

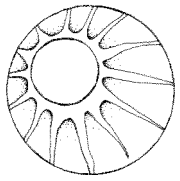
- Increase the fuel efficiency of vehicles. This is mandated by federal standards, but better engine maintenance and vehicle inspections can also increase efficiency.
- Reduce the use of vehicles or the vehicle miles traveled. Ways to do this include mass transit, ridesharing (carpooling and vanpooling), and the use of bicycles and mopeds for utilitarian purposes.
- Provide or stimulate the production of alternative, renewable liquid fuels to power vehicles.

Many of these approaches are being followed already, but we can be more aggressive at the local level if we choose to be. The ENERGY, Ltd. transportation recommendations are intended to encourage that choice.

TABLE 2
CRWP Financing Programs for 120,000
Single Family Through Four-Plex Residences

<table>
<tr><td>21%
City Light
Home Energy
Loan Program</td><td>37%
No Financing Program</td></tr>
<tr><td rowspan="2">City Light Low
Income Electric
Program (Grants)
15%</td><td>20%
Urban Development Action Grant
(11 Percent, 5 Year Loans)</td></tr>
<tr><td>DOE Weatherization Grants
7%</td></tr>
<tr><td>Electrically
Heated</td><td>Oil and Gas
Heated</td></tr>
</table>

TABLE 3
CHARACTERISTICS OF EXISTING AND PLANNED ENERGY MANAGEMENT PROGRAMS*



* = planned

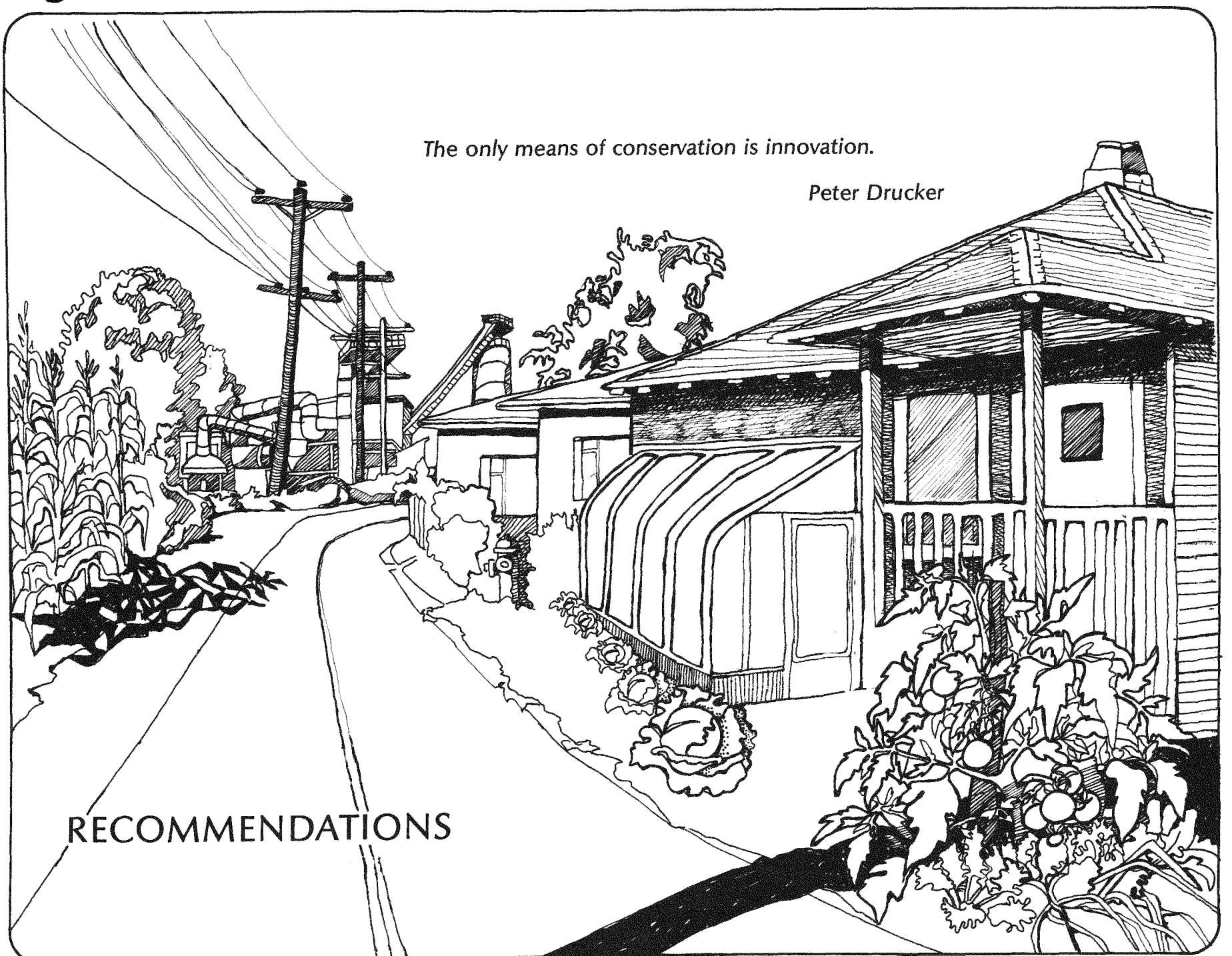
Program Elements	CERP	CRWP	LIEP - Elect.	LIWA - Other	HELP	UDAG	Home Energy Check	RCS	Energy Code	Energy Mgmt. Serv.	Cogeneration	Lighting Incentives	Lighting Survey	Appliance Repair	Solar Energy & Comty. Con.	Energy Info. Center	Education Outreach	Community Outreach	Solar Educ./Adv. Serv.	Commercial/Ind. Outreach	Mini Energy Mgmt.	Energy Resource Ctr.	New Construction Asst.
Type of Program																							
Mandatory		•	•	•					•														
Voluntary/Recommend	•				•	•	•	*		•	•	•	•	•	•	•	•	•	•	•	•	*	•
New Construction									•														
Retrofit/Rehab.	•	•	•	•	•	•			•		•												
Pilot	•					•						•	•										
Info./Education					•		•								•	•	•	•	•	•	•	*	
Financing			•	•	•	•		*															
Rebate												•											
Service Provided																							
Audit/Tech. Asst.	•		•	•	•	•	•	*		•	•												
Info./Workshop/Mgmt. Tech.	•						•		•	•					•		•	•	•	•	•	*	•
Repair				•		•																	•
Installation	•		•	•			•							•									
Purchase/Sell Wz.	•						•							•									
Referral		•			•																		
Contracting Asst.	•		•	•		•																	
Eligibility Criteria																							
Residential		•	•	•	•	•	•	*															
Commercial										•	•	•	•							•	•		
Industrial										•	•									•	•		
Electric		•	•		•					•	•												
Oil/Natural Gas				•		•																	
Low-Income			•	•		•																	
Major Customer										•	•												
Small Customer																					•		•
None	•													•	•	•	•	•	•	•		*	
Type of Funding																							
General Fund						•									•							*	
Light Fund		•	•		•	•	•	*		•		•	•			•	•	•	•	•	•		•
Fees									•														

TABLE 3 continued
CHARACTERISTICS OF EXISTING AND PLANNED ENERGY MANAGEMENT PROGRAMS*

	CERP	CRWP	LIEP - Elect.	LIWA - Other	HELP	UDAG	Home Energy Check	RCS	Energy Code	Energy Mgmt. Serv.	Cogeneration	Lighting Incentives	Lighting Survey	Appliance Repair	Solar Energy & Comty. Con.	Energy Info. Center	Education Outreach	Community Outreach	Solar Educ./Adv. Serv.	Commercial/Ind. Outreach	Mini Energy Mgmt.	Energy Resource Ctr.	New Construction Asst.
Bonds	•																						
Grant				•		•																	
Conservation Measures																							
Infiltration Control	•	•	•	•	•	•		★	•														
Storm/Double Glass	•							★	•														
Ducts	•	•	•	•	•	•		★	•														
Venting	•	•	•	•	•	•		★	•														
Caulk/Weatherstrip	•						•	★	•														
Thermostat	•							★						•									
Vapor Barrier	•	•	•	•	•	•		★	•														
Pipe Wrap	•		•	•	•		•	★	•														
Water Heater Jacket	•	•	•	•	•	•	•	★	•					•									
Water Heater Setback	•	•	•	•	•	•		★															
Heat Pump	•																						
Flow Restrictor	•						•																
Lighting	•						•					•	•										
Waste Heat Recovery	•																						
Thermal Storage	•																						
Flame Retention Burner, etc.	•																						
Solar	•														•				•				
Department/Organization																							
City Light	•	•	•		•		•	★		•	•	•	•	•		•	•	•	•	•	•		•
Energy Office	•	•				•																	
Human Resources			•	•		•																	
Community Development															•							•	
Construction & Land Use		•							•														
PDA	•																						
Community Organization	•																						

Including ENERGY, Ltd. Community Energy Redevelopment Plan

ENERGY, Ltd.
for a secure energy future



The only means of conservation is innovation.

Peter Drucker

RECOMMENDATIONS

I. COMMUNITY ENERGY REDEVELOPMENT PLAN

Toto, I don't think we are in Kansas anymore.

Dorothy in The Wizard of Oz

CHAPTER I
Community Energy Redevelopment Plan

Description

The Community Energy Redevelopment Plan is a totally voluntary, incentive-based, conservation and renewable energy program that would serve all residential, commercial and industrial energy consumers in Seattle, regardless of the type of fuel they use.

It has been formulated to meet the challenge of a growing reliance on electrical energy due to conversions from higher priced fossil fuels to cheaper electricity. Its basic premise is that conservation of all fuel types is a necessary and desirable strategy in Seattle's energy management and that energy "problems" can become energy "resources."

The plan emphasizes private sector involvement. Private investors would provide the capital; private, local firms would market the comprehensive conservation services to communities within the city; and private firms (or building owners) would design and install the conservation and renewable energy improvements.

To maximize voluntary public participation, long-term, low-interest loans would be available to finance conservation improvements, made possible through public financing. A public agency, such as a Public Development Authority, would raise private money through the sale of tax-exempt revenue bonds. Participating building owners would repay these loans for the improvements to their buildings, thereby repaying the bond holders. No tax dollars or General Fund money would be required.

The ENERGY, Ltd. Citizen Committee has established a long-range goal of achieving maximum, cost-effective conservation and use of renewable resources in **all** of Seattle's buildings by the year 2010 through the Community Energy Redevelopment Plan. Specifically, the Citizen Committee recommends the following:

1. Improving the energy efficiency of all of Seattle's buildings with any conservation and renewable energy measures which are cheaper than new sources of thermal electricity. Such measures include, but are not limited to, caulking, weatherstripping, insulation, heat pumps, solar heating and waste heat recovery systems.

2. Starting the Community Energy Redevelopment Plan by making conservation improvements to 1,000 buildings through an intensively marketed, attractively financed, voluntary program. Such a program would allow the City to determine:

   - The level of participation in a voluntary program;
   - The extent of energy savings comprehensive conservation improvements can bring beyond existing conservation programs;
   - The effectiveness of providing conservation services in geographically defined communities through private sector, community-focused organizations; and
   - The reliability of loan payments by participating building owners.

3. Directing the City Energy Office to develop by February, 1982, a detailed plan for the first phase of the Community Energy Redevelopment Plan. The first phase plan should include a description of program administration, a method for selecting two target neighborhoods, and sources of financing.

4. Developing public financing available to all city energy consumers, regardless of the type of fuel they use.

5. Investigating the creation of a Public Development Authority as a city-wide agency responsible for:

   - Issuing revenue bonds to finance conservation and renewable energy investments;
   - Handling centralized administrative functions such as billing, fiscal audits and program management; and
   - Providing publicity and technical support services.

Let us not overlook vital things because of the bulk of trifles confronting us.

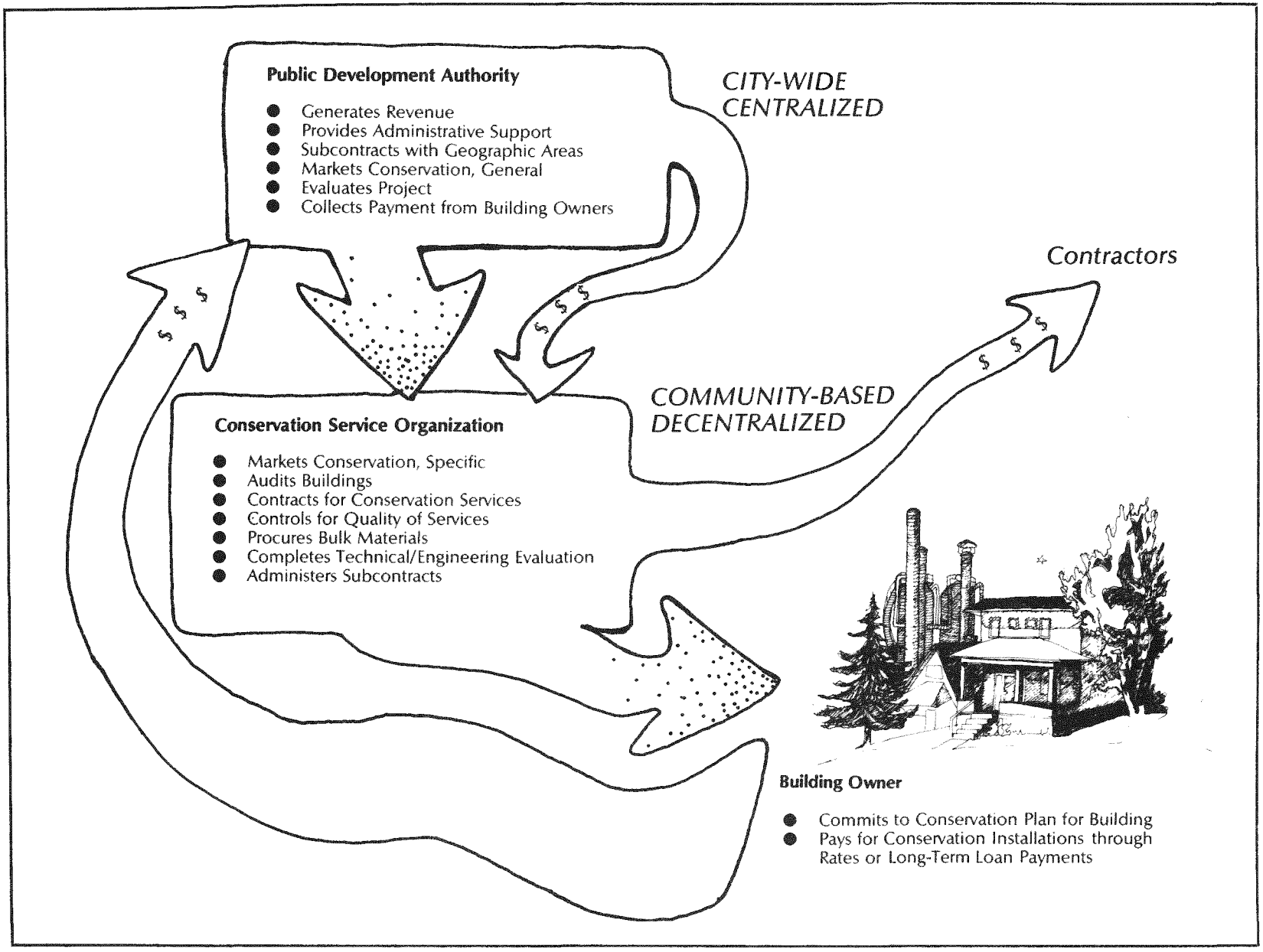
Emma Goldman

Approaching the Twenty-First Century

The Community Energy Redevelopment Plan requires a two-phase effort. The first phase, at an estimated cost of $10 million, would make conservation improvements to 1,000 residential, commercial and industrial buildings in two geogrpahically defined Seattle communities.

These Phase I communities would be selected through a city-wide competitive bidding process. With formal City approval, Phase I would begin in early 1982 and would extend for six years to test the effectiveness

FIGURE I-A
COMMUNITY ENERGY REDEVELOPMENT PLAN
ORGANIZATION AND FUNCTIONS



of the marketing approach and the conservation and renewable energy investments.

During the latter half of 1981, the City would determine the marketability of energy conservation revenue bonds to finance its long-range conservation program. In addition, it would define Phase I financing, develop organizational and administrative requirements to carry out Phase I, and specify a methodology for measuring the effectiveness of conservation improvements and intense marketing done during Phase I.

During Phase I, the City would continue defining the long-range program, design a city-wide agency such as a Public Development Authority, and determine revenue bond requirements.

If conservation and renewable energy investments are demonstrated to be effective in Phase I, Phase II, with an estimated cost of $2.3 billion, would begin in 1988. By this time, an organization will have been designed and chartered to carry out the necessary city-wide financing and administrative functions.

Assuming that the organizational model chosen is a Public Development Authority (PDA), the PDA would be linked with private building owners through several private conservation service organizations. (See Figure I-A.)

In this structure the PDA acts principally as a funding conduit to provide sufficient capital for conservation improvements and to ensure proper fiscal management. The conservation service organizations are the backbone of this structure, aggressively marketing conservation to building owners, getting the work done and ensuring the quality of products and installations. The building owner participates by choosing the conservation options. The success of the conservation service organizations will hinge on their technical capacity, marketing expertise, and access to long-term, low-interest financing through the PDA.

Background

Why Should We Do This?

In 1973, home heating oil in Seattle cost 17 cents per gallon. By the winter of 1979-80, it was selling for one dollar per gallon, an increase in excess of 20 percent per year above the rate of inflation. This price increase, in addition to increases in natural gas prices, has led to personal hardships and to substantial conversions to electricity. The changes in price for three major fuels are shown in Figure I-B.

Seattle is currently spending approximately $340 million a year on energy for its buildings and industry. Two-thirds of this, approximately $230 million, is for fossil fuels, and the remainder, $110 million is for electricity.

Oil and natural gas, the highest cost fossil fuels, are having the biggest impact on consumer pocketbooks and business profit margins. Furthermore, these expenditures are a drain on our local economy, as payments flow outside our community to Canada, OPEC, Alaska and the gas-producing western states.

Planning to meet growing electrical energy demands through new supplies and additional conservation is a responsibility of the City by virtue of our ownership of City Light. However, in light of supply problems and rising costs of fossil fuels over the last few years, it is time the City acknowledge its responsibilities to oil and natural gas consumers as well.

The inescapable fact is that when the City looks only at electric heat users, it is looking at only a small percentage of energy consumers. Electricity accounts for only 27 percent of the heating energy used in homes, 17 percent in commercial buildings, and about 12 percent in industry. (The electrical portion of overall heating energy is shown in Figure I-C.) These consumers are currently paying the least for their energy. The businesses and individuals sustaining the greater hardship are those using oil and natural gas.

Both the Seattle City Light **Forecast 79/80** and the ENERGY, Ltd. **Data Base** indicate a substantial shift in the market share for electricity by the year 2000. By 2000, electricity would account for 63 percent of heating energy used in homes, 32 percent in commercial buildings and 32 percent in industry.

However, actions the City can take to encourage maximum conservation in all buildings will help alleviate hardships, slow the conversion rate, and partially fill the forecasted supply-demand gap in our electric resources.

To this end, the Community Energy Redevelopment Plan can convert this "energy problem" into an energy resource. The Plan calls for all 150,000 residential and commercial buildings and 1,400 industrial facilities in Seattle to have conservation and renewable energy improvements installed by the year 2010. The Plan will reduce Seattle's demand for energy by 43 percent.

The Community Energy Redevelopment Plan will cost, over the next 30 years, $2.3 billion, an enormous expenditure. That expenditure is justified, however, in light of the choice Seattle faces.

If Seattle does not change course, its future destination is clear. Higher fossil fuel prices will have many of Seattle's poor and elderly who live on fixed incomes choosing between warmth and food. Higher prices will have businesses passing higher costs for goods and services on to both those

FIGURE I-B
Average Price of Household Energy
Adjusted for Inflation 1955-1980

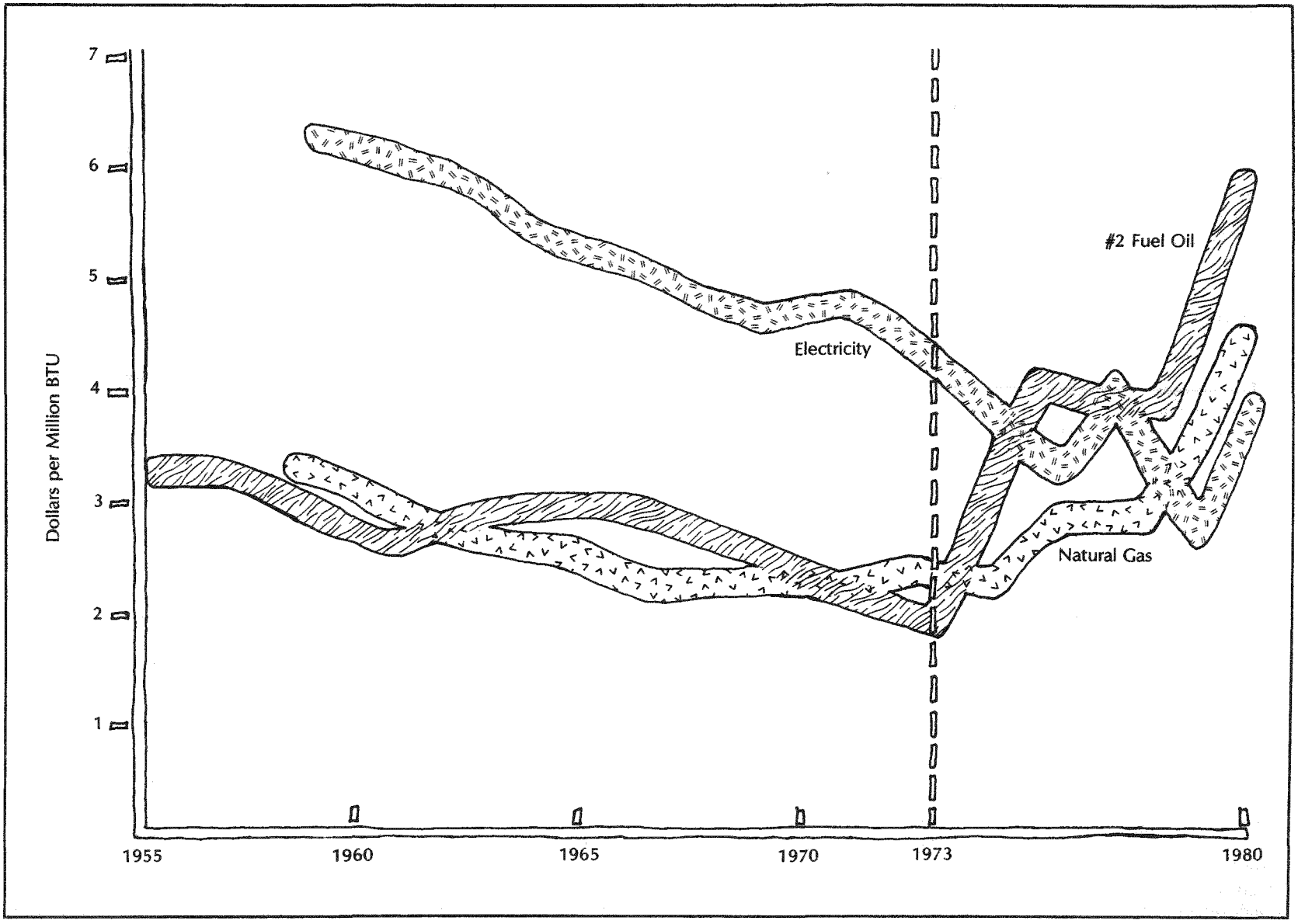
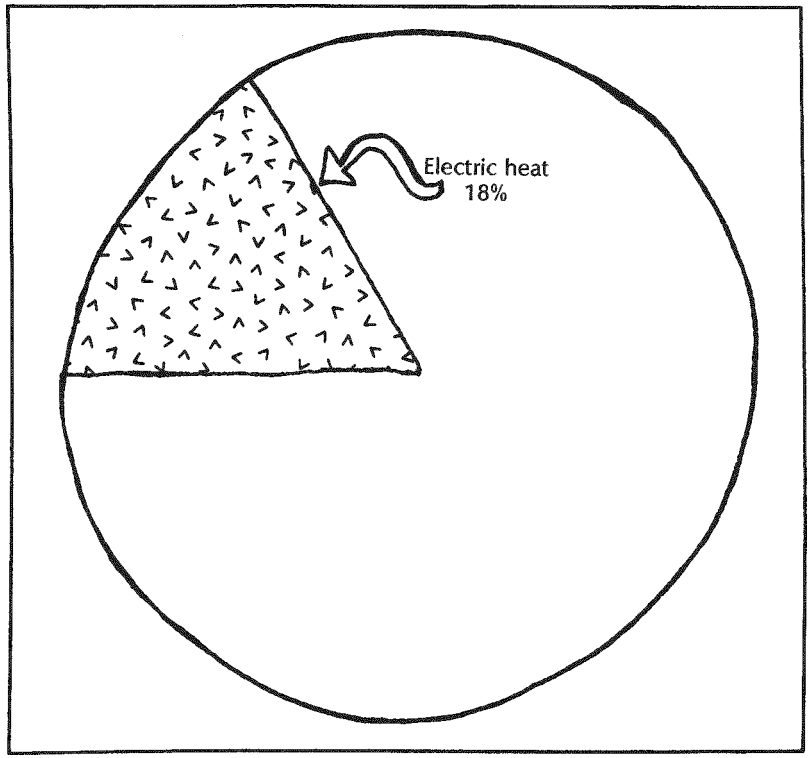


FIGURE I-C
Electric Heat as a Percent
of Total Heating Energy



who can and cannot afford to pay for them. Higher prices will drive the city's energy consumers toward electricity. And that conversion will result in higher electricity prices.

However, another path to the future is possible. It follows what in the past has been a strong commitment and leadership by Seattle in pursuing conservation and renewable energy resources. Seattle led the nation in 1976 by deciding not to invest in two additional nuclear plants and, instead, by setting a goal for recovering 230 megawatts through conservation. Seattle also has one of the most active solar constituencies in the nation. Many hundreds of do-it-yourselfers have remodeled their homes and businesses for greater energy efficiency, and a fledgling conservation and solar industry is struggling to make it in the market place.

It is in the market place that the proposed Community Energy Redevelopment Plan will function. Unless a program is developed which removes the social, economic, legal and institutional barriers to the development of conservation and renewable energy resources, these resources will stay on the fringe and the city will continue down the other path. The barriers are many and pervasive, but the following three stand out as particularly important.

1. **Capital Access**

Raising capital for investment in conservation and renewable energy improvements, with a few exceptions, must be accomplished by building owners dealing directly with local commercial lending institutions. Even if loans were universally available in the amounts required for each building, the terms of repayment at current interest rates constitute a significant disincentive to investment. Current financing places conservation and renewable energy investments on an unequal footing with investments in traditional energy supplies.

If you would know the value of money, go and try to borrow some.

Benjamin Franklin

Seattle City Light, by comparison, investing in any new generating plant, would raise capital by issuing 20 to 30 year revenue bonds and would pay interest rates probably between 8 and 10 percent over the lifetime of the facility.

Any strategy for developing Seattle's conservation and renewable energy resources, such as the Community Energy Redevelopment Plan, must make capital readily available to all building owners and at long-term, low-interest rates comparable to investments in traditional energy supplies.

2. **Serving All Types of Energy Users**

The boldest recent step in the direction of motivating conservation and solar investments was the passage of SJR-120 which allows public utlities like Seattle City Light to make low-interest loans available to **residential electric heat** customers for conservation and renewable energy investments. However, residential demand accounts for only 35 percent of the energy used in Seattle buildings and only 36 percent of all residential units have elecric heating systems. Clearly, any successful conservation and solar strategy will have to deliver sufficient capital resources to **all** energy consumers regardless of the type of fuel they use.

3. **Average Cost Pricing**

When a building owner makes a conservation investment and reduces the building's energy requirements, this is equivalent to a utility developing the same amount of new generating capacity. However, due to the industry practice of average cost pricing, the cost of energy paid for by the building owner, and thus the cost of

energy saved through conservation, is much less than the actual cost of new energy supplies.

In Seattle, for example, electricity costs a residential customer about 1.6 cents per kilowatt-hour. Seattle City Light, however, estimates that the current **marginal** cost of electric energy is in the range of four to five cents per kilowatt-hour. For a building owner deciding whether to invest in a conservation improvement, the real value of the investment is masked by the utility's marketing of new energy to consumer at an **averaged** cost, combining the costs of the new energy with the costs of cheaper, existing supplies.

Overcoming the Barriers

The proposed Community Energy Redevelopment Plan is designed to overcome each of these three major obstacles.

- Tax exempt revenue bonds issued by a city-wide public organization, such as a Public Development Authority, would provide long-term, low-interest rate capital for conservation and renewable energy investments.

Habit is the easiest way to be wrong again.

Laurence J. Peter

- Creation of a city-wide, public organization, such as a Public Development Authority, would be accompanied by amendments to any State constitutional limitations on the lending of public credit. Such amendments would allow the public organization to provide capital to all types of energy users.

- The obstacle of average cost pricing would be overcome in part by marketing **comprehensive** conservation and solar services. By financing as a package the cheapest and the most expensive (but still cost-effective) conservation and solar measures, building owners would see an averaged cost of conservation. This averaged cost of conservation for most buildings will be cheaper than the current price of oil and gas. With relatively small subsidies by Seattle City Light for electrical savings, the average cost of conservation will be attractive compared to the current price of electricity.

Anticipated Results of the Community Energy Redevelopment Plan

The Community Energy Redevelopment Plan, when fully carried out by the year 2010, will substantially reduce the city-wide expenditure for energy used in buildings.

As seen in Figure I-D, current energy expense for buildings in the city is $340 million. If current trends continue, energy expense for buildings in the year 2010 is expected to be $866 million (in 1980 dollars). However, with the Community Energy Redevelopment Plan, energy expense in the year 2010 would be $471 million, for a savings of $395 million per year. Even after adding on the cost of conservation in 2010 -- about $220 million per year -- the total cost is $175 million less than without the Community Energy Redevelopment Plan.

By 2010, $2.3 billion in capital investment is needed to achieve these savings through the Community Energy Redevelopment Plan. However, the total yearly savings in the year 2010 attributable to conservation would be $395 million, which, when looked at in light of the initial investment, provides a 5.8 year pay back on the investment.

Of the $2.3 billion investment, $1.2 billion will be used for residential buildings, $830 million for commercial buildings, and $240 million for industrial facilities. Figure I-E depicts the energy savings these capital investments would bring.

As seen above, the residential sector experiences a dramatic decline in total demand. The demand for all fuel types decreases. The projected energy demand created by new housing units by the year 2010 is far exceeded by conservation savings. Electrical demand even declines, despite a substantial conversion from gas, oil and other fuels to electric heating and despite electric heating in all new housing units.

In the commercial and government sector, where a more vigorous growth is assumed, total demand declines but not as dramatically as in the residential sector. The above projection assumes that the total floor area of commercial space doubles between 1978 and 2010. Electrical demand in this sector goes up due to a combination of conversions and new construction.

The industrial sector experiences a moderate decline in total demand. However, the electrical demand in this sector increases due to conversions to electricity.

Methodology

In formulating the anticipated results of the Community Energy Redevelopment Plan, ENERGY, Ltd. has focused on 21 conservation and solar strategies which can be used to reduce the energy requirements of residential and commercial buildings.

These 21 strategies were tested by using computer simulation techniques on three prototype residential buildings and four prototype commercial buildings.

FIGURE I-D
City-Wide Fuel Expenditure 1980-2010
With and Without the Community Energy
Redevelopment Plan
(millions of 1980 dollars)

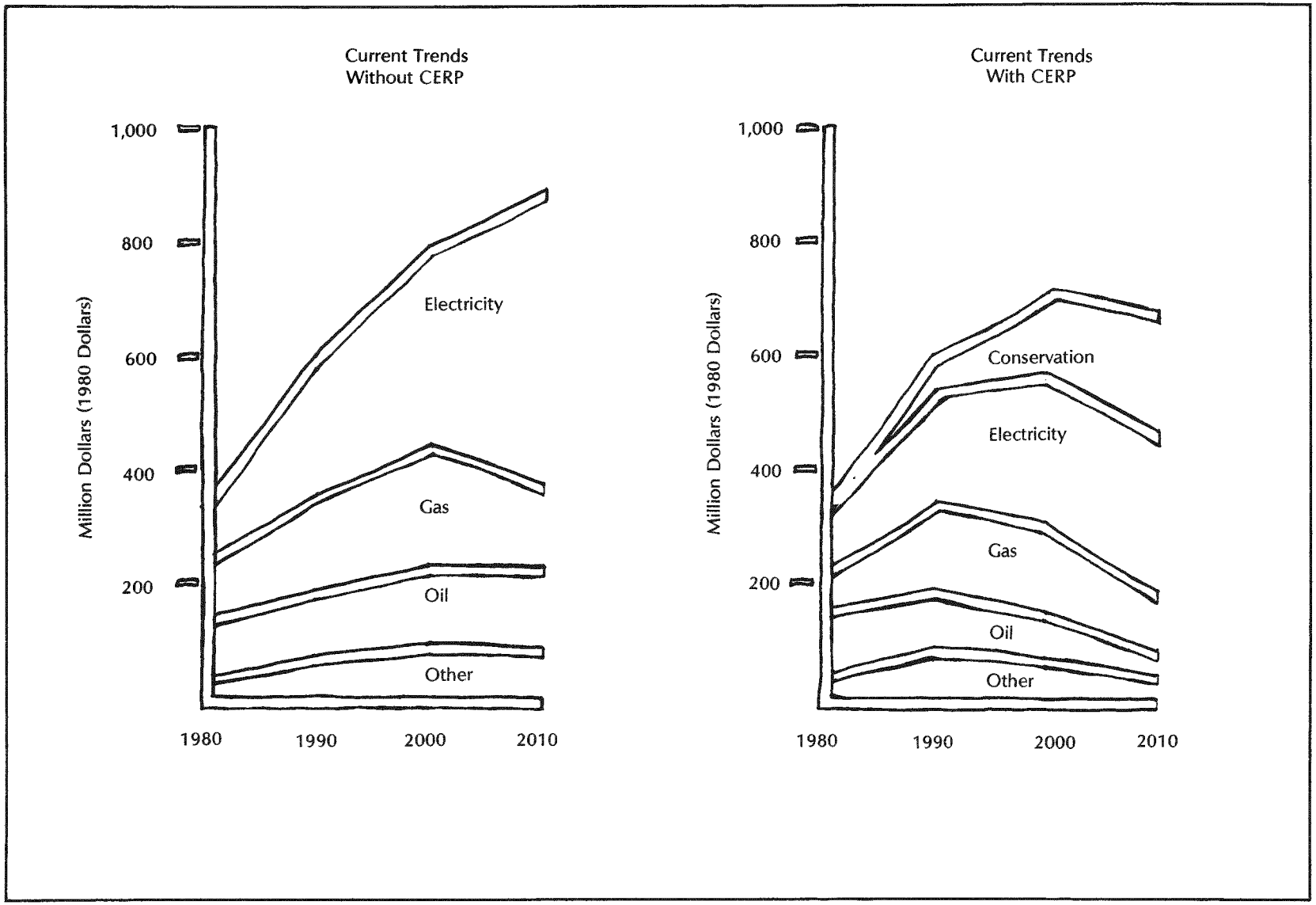
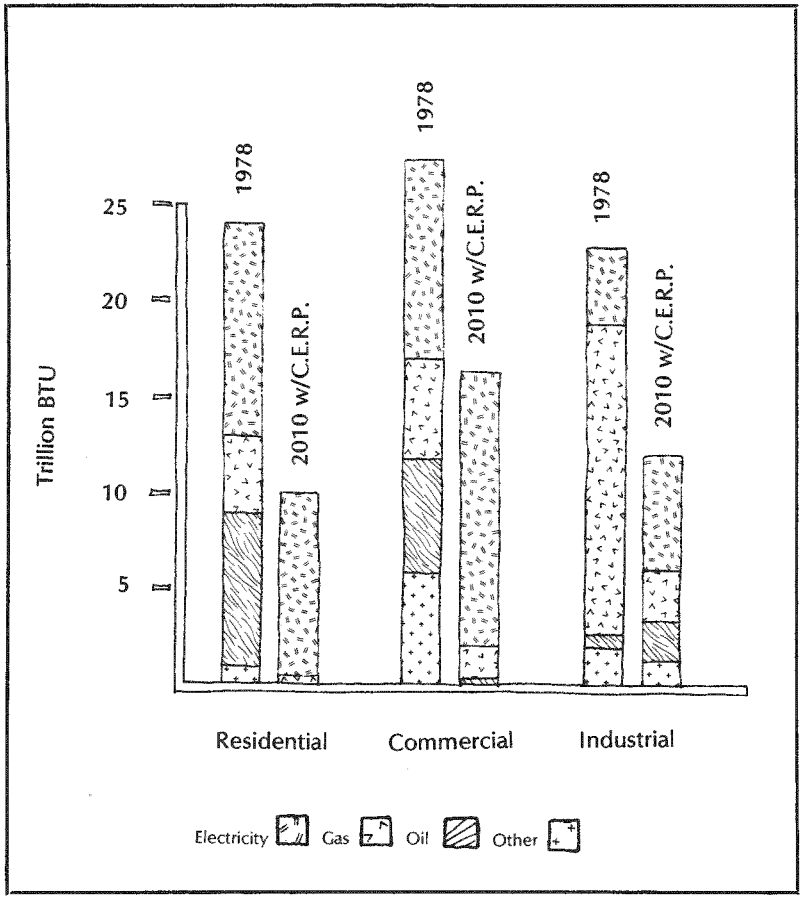


FIGURE I-E
City-Wide Energy Demand Reduction By Sector With The Community Energy Redevelopment Plan (millions of MWh)



These 21 strategies by no means include all the conservation and solar technologies currently available. Among the technologies not included are solar strategies for commercial and industrial buildings, cogeneration strategies in commercial and industrial buildings, and district heating systems.

FIGURE I-F
Conservation and Solar Strategies Utilized in ENERGY, Ltd. Analyses

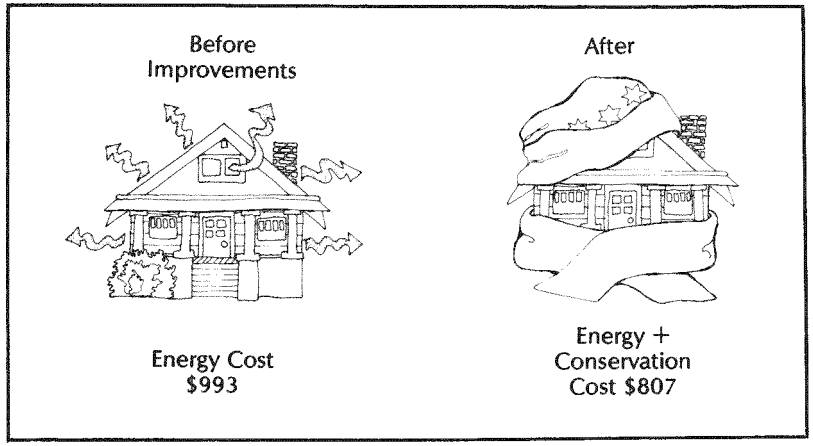
- "House Doctor" aproach to limiting building envelope leaks
- Attic insulation: R-11 through R-38
- Wall insulation: R-11 and R-19
- Floor insulation: R-11 and R-19
- Exterior storm windows
- Insulating shutters R-13
- Hot water pipe insulation
- Hot water tank insulation
- Hot water temperature setback, from 140°F to 120°F
- Hot water heat pumps (coefficient of performance (COP) of 1.8)
- Efficient bulbs, both incandescent and fluorescent
- Delamping
- Thermosiphon solar hot water heater
- Attached sunspace with concrete slab and rock bed storage
- Active solar space and water heaters, both air and liquid
- Ground-source heat pumps with and without solar assist (COP of 3.0)
- Well-source heat pumps (COP of 3.0)
- Flame retention burners
- Automatic flue dampers
- Electronic furnace ignition
- Automatic temperature setback (10°F during various periods depending on building type).

In the Community Energy Redevelopment Plan, it is assumed that all cost-effective conservation and solar techniques would be used. A cost-effective measure, defined from a social perspective, would have a lower "life cycle" cost than new thermal-electric generation. (See Appendix A and B of the **Draft Action Plan** for further analysis of cost-effectiveness.)

Dollar for Dollar, You Can't Beat Conservation

Figure I-G shows how the use of all cost-effective conservation measures would affect the annual cost for energy in an average oil heated home.

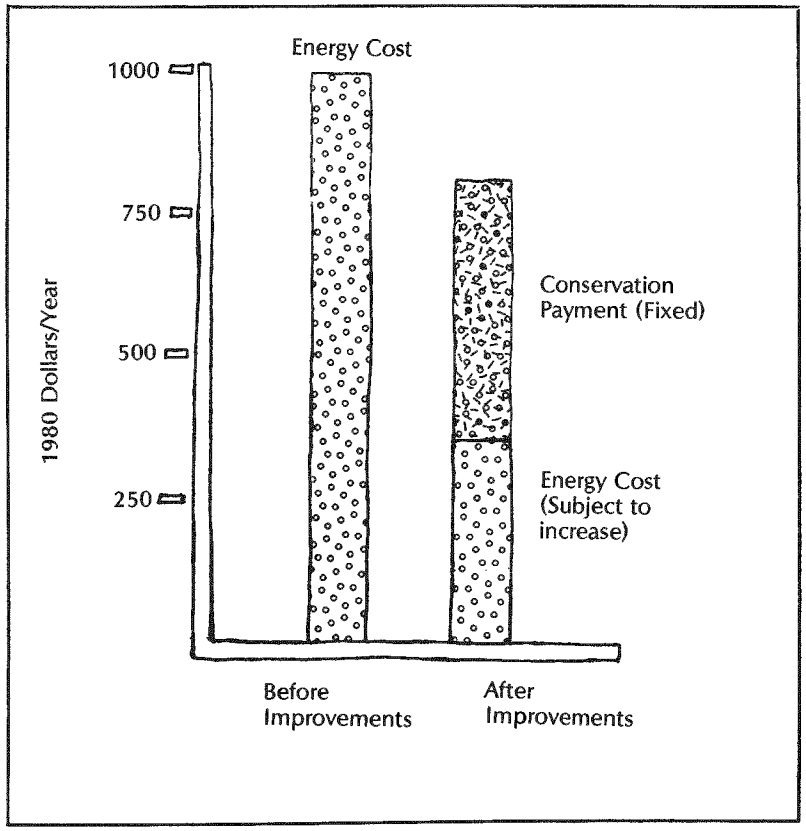
FIGURE I-G
Comparison of Annual Energy Costs
For Typical Single Family Home
(dollars per year)



After having all cost-effective measures installed in the average oil heated home, the building requires 60 percent less energy. In particular, the demand for oil is reduced by 70 percent.

In the case of the single family home using oil (Figure I-H), the comparison shows that it costs $993 a year without conservation measures and $807 a year with conservation measures. The lower annual cost is made up of both the cost of buying the energy still needed by the building **and** the yearly cost of conservation improvements.

FIGURE I-H
Comparison of Annual Energy Costs
For a Typical Oil Heated Home
Before and After Conservation
Improvements
(dollars)



The capital cost of these conservation measures for the average single family home is $4,296 (in 1980 dollars). Under the Community Energy Redevelopment Plan, this investment would be paid for by the home owner over the useful life of the improvements. With a payment period of 15 years for some measures and 30 years for others and interest rates of nine percent, the building owner's yearly payment would be $443.

The conservation payment is a fixed expense, while energy costs are not. Thus, the conservation improvements help protect the building owner from the increasing cost of oil, because the building owner will be buying a much smaller amount of energy after making conservation improvements.

In making a conservation energy payment, the home owner is actually buying an energy supply at a fixed price of $7.88 per million Btu. This fixed price of conserved energy compares favorably with the current price of natural gas at $9.15 per million Btu and with the current price of oil at $13.83 per million Btu, as shown in Figure I-I.

What makes life dreary is the want of motive.

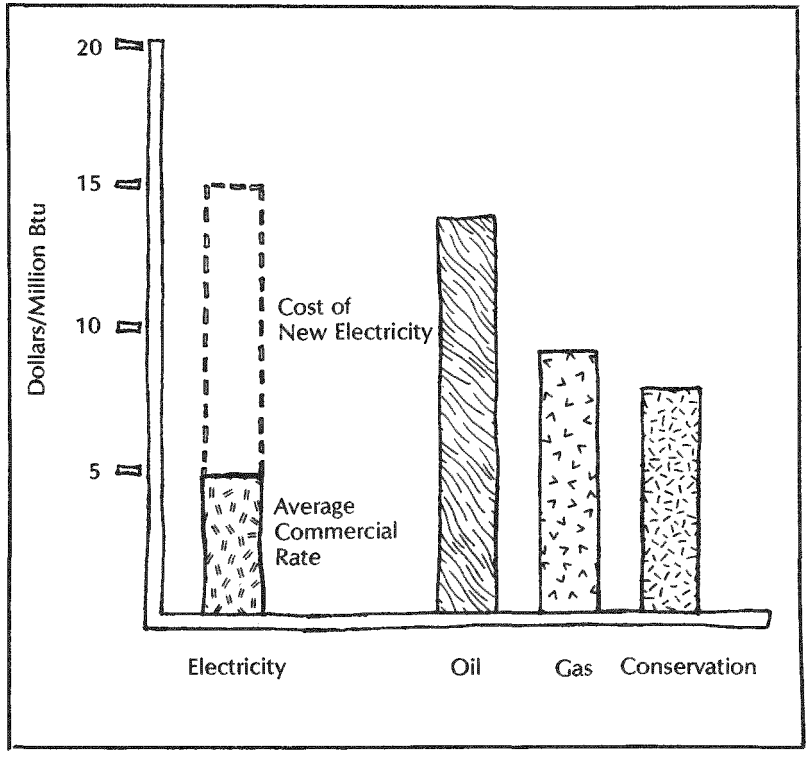
George Eliot

From the home owner's point of view, electricity at the current price of $4.75 per million Btu is the only fuel option that is cheaper than the conservation option. A single family home heated with electricity would pay $402 a year for energy. After installing all conservation improvements, the total cost would be $591 a year, of which $393 pays for the conservation improvements.

However, the cost to Seattle City Light for new thermal-generated electricity is in the range of $12 to $15 per million Btu. In a typical single family home, new thermally generated electricity equal to the amount of energy saved by making conservation improvements would cost $594 a year. This is substantially higher than the $393 a year required to pay for the conservation improvement.

Instead of investing in new thermally generated electricity, Seattle City Light could subsidize the conservation investment of those homes heated with electricity. If City Light rebated $200 per year to the building owner for the investment, conservation would look attractive to homes heated with electricity. Through this subsidy, City Light would be getting a new energy resource for $4.65 per million Btu instead of $12 to $15 per million Btu.

FIGURE I-I
Cost Comparison of All Fuel Types and Conservation Energy in Typical Single Family Homes



Energy Saved is Energy Earned

Depicted in Figure I-J is a comparison of energy costs for the average oil heated office building. From the office building owner's point of view, the conservation option has benefits similar to the home owners.

FIGURE I-J
Comparison of Annual Energy Costs For Typical Office Building

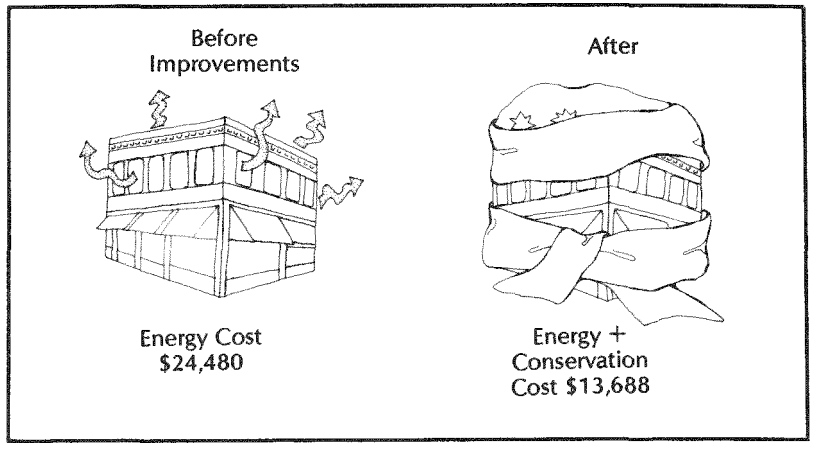
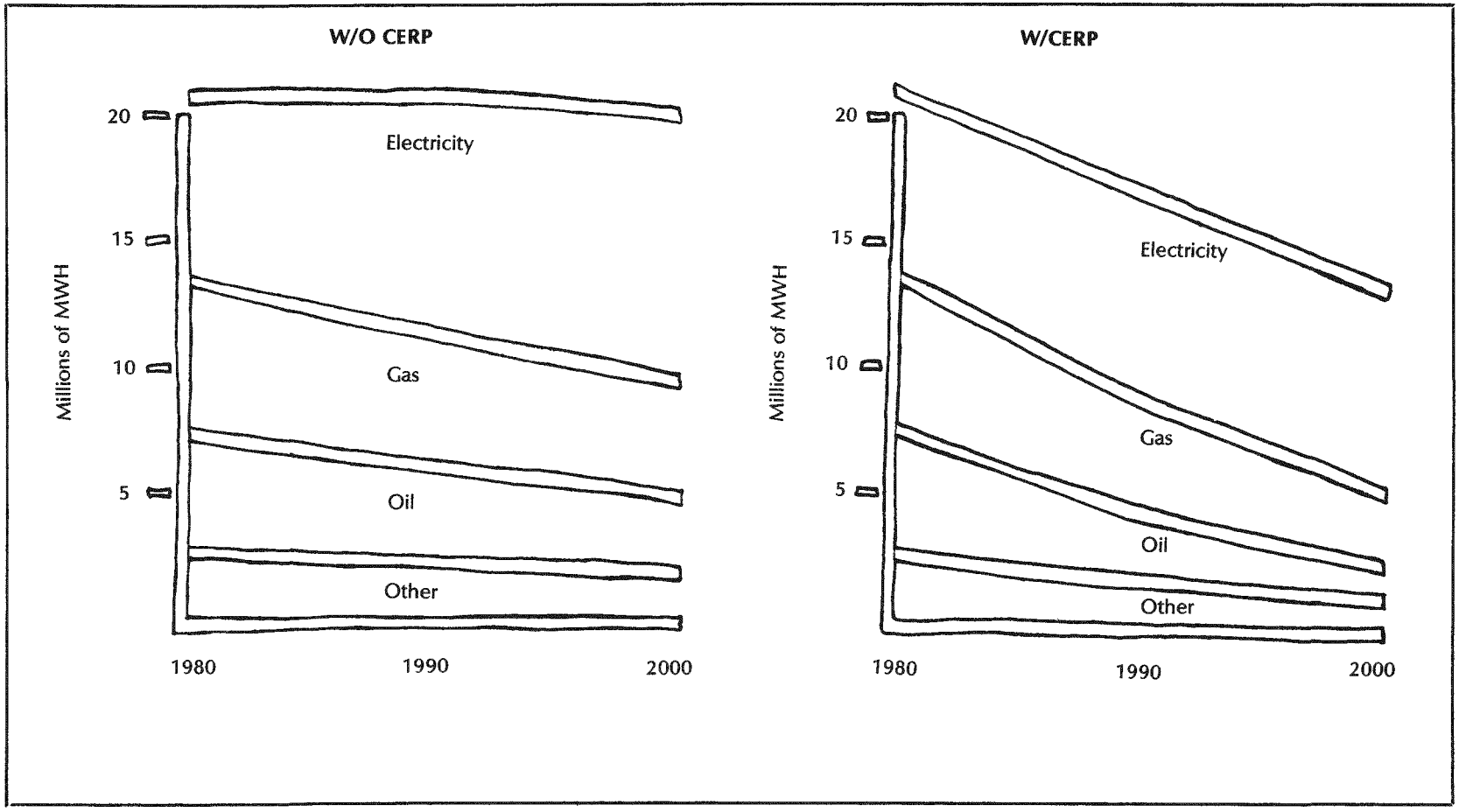


FIGURE I-K
Energy Demand In The Seattle City Light Service Area
With and Without the Community Energy
Redevelopment Plan — 1980-2000
(millions of MWH)



For example, the average office building owner heating with oil will pay $13,688 a year after making conservation improvements, in comparison to having to ay $24,480 a year without conservation improvements.

In office buildings, conservation energy is competitive with the current price of natural gas and oil. The fixed cost of conservation improvements would provide added benefit when compared to the sharply rising cost of natural gas and oil.

As in the case of the electrically heated single family home, the

conservation option is not as desirable to an all-electric office building owner. However, as in the case of the all-electric single family home, City Light could contribute a small amount toward conservation improvements. In so doing, the utility would be developing a new energy resource which is substantially cheaper than new thermally generated electricity.

The Impact on Seattle City Light's Load

Figure I-K shows projected demand for all fuel types within the Seattle City Light service area and compares these demands with and without the Community Energy Redevelopment Plan. The electricity demand projection without the Community Energy Redevelopment Plan includes the effects of conservation programs that are currently in place as they are represented in *Forecast 79/80*.

Both demand projections with and without the Community Energy Redevelopment Plan are driven by the same set of growth assumptions and market shares derived by the *Forecast 79/80* model. The model is price sensitive and estimates the reaction of energy consumers to relative differences in the price of various fuels.

For instance, a commercial building owner faced with a cost of $13.83 per million Btu oil and $4.83 per million Btu electricity may choose to switch to electric heat. The model derives a probability of conversion in each fuure year based on price projections for all fuels. The probability of conversion to electric heating in all sectors through the year 2000 is high, due to the relatively cheap **average** price of electricity. Thus, by the year 2000, the Forecast predicts that electricity's share of the total energy market will grow substantially.

The demand for energy shown in Figure I-K, however, could be further reduced through the use of solar heating technologies. ENERGY, Ltd.'s analysis of solar heating showed that 32 average MW of energy could be provided in the residential sector by using cost-effective attached sunspace and thermosiphon walls. In addition, domestic solar hot water heaters, when they become cost-effective, could offset an additional 13 average MW of energy demand by the year 2000.

It's going to be the sunny side from now on.

Frank O'Hara

Assuming a large demand for low temperature, heating energy in other sectors, the total solar potential may exceed these residential estimates. Although further work is required to confirm this conclusion, the cost-effective solar potential within the City Light service area probably lies in the range of 40 to 90 average MW.

Some Conclusions Regarding Energy Demand In The Service Area

From the ENERGY, Ltd. analysis of data, the following conclusions can be drawn:

- A large portion of the decline in gas, oil and other fuel demand can be attributed to conversions to electric heating and the overwhelming preference of new construction for electric heating.
- These conversions and the subsequent decline in fossil fuel demand, are largely driven by relatively lower electricity costs offered by the average-cost pricing of electricity.
- Given a distribution of future market shares different from that revealed by the City Light forecast, it would be possible to reduce gas, oil and other fuel demand **substantially** and at the same time hold constant electricity demand. For example, a gas decline of 22 percent instead of 51 percent over the next 20 years would allow for a constant level of electrical demand, while still allowing for a 76 percent reduction in oil demand. However, without relieving the pressure to convert to electricity, it is not possible to hold constant electricity demand.
- Further development of Seattle City Light's thermal generation resources, such as coal, over the next 20 years and the use of these added resources to satisfy end uses within the service area will result in the displacement of gas and oil, regardless of how efficiently these fuels are used. Thus, electric resources at a marginal cost of $12 to $15 per million Btu would be traded for gas resources at a marginal cost of $9 to $10 per million Btu.

The energy future represented by the *Forecast 79/80* is, however, only one of many possible futures. If the conversion to electric heating is not desirable, then public policy can be formulated to inhibit such conversion.

The Community Energy Redevelopment Plan may be one possible policy. By providing long-term, low-interest financing, the voluntary conservation option would become attractive to building owners heating with gas and oil. After all cost-effective conservation measures are installed, a building's demand for gas and oil is much smaller. Price increases affect its owner less. Thus, the pressure to convert to electricity is relieved.

Implementation

Carrying out the Community Energy Redevelopment Plan follows a two-phased approach. Phase I includes making energy conservation improvements in 1,000 residential, commercial and industrial buildings in two geographically defined Seattle communities and the planning for full implementation of the Community Energy Redevelopment Plan. Phase II, full implementation, includes establishing a centralized administrative

organization, contracting with private conservation service businesses, and comprehensively making conservation improvements in 150,000 residential and commercial buildings and 1,400 industrial facilities by the year 2010. Figure I-L shows the stages of the Community Energy Redevelopment Plan. Phase II is described first because it is the long range concept.

Management

Community Energy Redevelopment Plan (Phase II)

Phase II of the Community Energy Redevelopment Plan to install conservation improvements in all of Seattle's buildings includes a centralized public financing organization and decentralized private marketing organizations.

Centralized Management

Given the functions of the centralized organization as previously illustrated in Figure I-A, ENERGY, Ltd. suggests the following criteria in selecting an organizational model:

1. Ability to generate sufficient revenue at desirable terms for use as initial investment capital;
2. Ability to collect payments for leased equipment and conservation loan repayments;
3. Public accountability;
4. Ease of implementation;
5. Minimal liability for municipal government;
6. Maximum private sector involvement; and
7. Minimal impact on taxes in Seattle.

ENERGY, Ltd. gave in-depth consideration to six organizational models. Of the six, a Public Development Authority (PDA) is recommended for initial investigation by the City as a centralized organizational model to carry out Phase II of the Community Energy Redevelopment Plan.

The power to establish a PDA is authorized in RCW 35.21.725. Under this authorization, a PDA can administer and execute federal grants and programs. A PDA cannot levy taxes or other such assessments. All liabilities incurred by a PDA must be satisfied exclusively from the assets and credit of the PDA. Therefore, a PDA can issue bonds for achieving a public purpose, but those bonds must be secured by the full faith and credit of the PDA or made payable solely out of certain revenue and receipts. On dissolution, the assets of a PDA revert to the City.

To ensure public accountability, the City is charged with the control and oversight of the PDA's operation and funds. Appointments by the Mayor to the PDA's Board of Directors must be confirmed by the City Council. An annual financial report, containing an audited and certified statement of assets and liabilities, must be filed with the City Comptroller. At any time, subject to adoption of a resolution with appropriate public hearings, the City may intervene and exercise control over the PDA to correct any deficiency or to ensure the accomplishment of public purpose. By resolution, the City may dissolve a PDA.

Advantages of a PDA:

- It will not affect municipal utility rates or taxes.
- It will not pose liability problems for the City.
- It offers both private and public sector involvement.
- It can accumulate assets as a public organization.

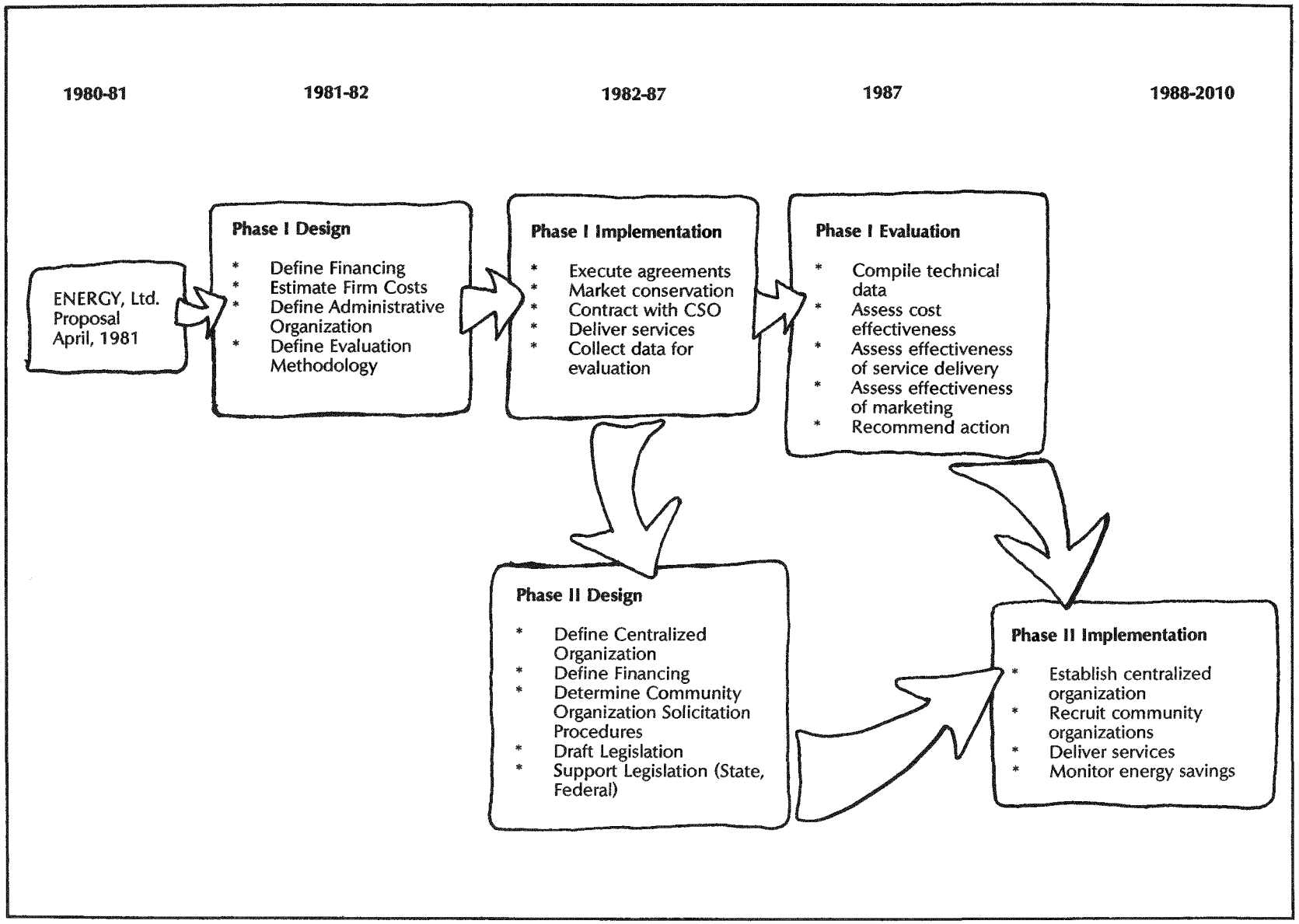
Disadvantages of a PDA:

- As a public organization, a PDA would be limited by the State Constitution prohibition against the lending of public credit. Without amendment to the State Constitution to allow such public lending for energy conservation purposes, a PDA's loans would likely be challenged. Because of this situation, any sale of revenue bonds by a PDA to finance conservation improvements would not be approved unless the State Constitution were amended or a ruling allowing such public lending were issued by the State Supreme Court.
- Under current statutes, a PDA must utilize federal funds as part of its operational plan. This restriction would be a disadvantage if federal funds were not available, but the use of federal funds is a strong and desirable possibility.
- A new PDA lacks assets to back the issuance of revenue bonds. Bond rates and terms for a new organization without assets would not be as favorable as the rates and terms of revenue bonds issued by an existing utility such as Seattle City Light.

  To establish a PDA's assets, ENERGY, Ltd. proposed that a PDA lease removable energy systems to building owners. The PDA would retain title to equipment such as heat pumps and removable solar equipment. Considerable assets may be amassed under such a leasing operation and may improve the organization's bond rating.

ENERGY, Ltd. recommends further investigation into whether the

FIGURE I-L
Planning and Implementation Stages
Community Energy Redevelopment Plan



responsibilities of a PDA in implementing the Community Energy Redevelopment Plan are within the authority of a PDA.

The five other choices for a centralized organization are: a public utility district; a non-profit private corporation with public purposes; Seattle City Light (with expanded responsibilities); a conservation and solar utility; and a conservation and solar department. For a summary of the advantages and disadvantages of these alternatives, refer to pages 52 through 54 of the **Draft Action Plan.**

Decentralized Management

Neighborhood-focused conservation service organizations, referred to in Figure I-A, would install conservation and solar improvements in specific conservation and solar improvements in specific geographical areas under contract with the PDA.

These private sector businesses would be selected competitively by the PDA according to established criteria. While other firms are free to conduct business in any service area, they would not operate under contract with the PDA nor would they have access to public financing.

The functions of the conservation service organizations are noted in Figure I-A. While there are numerous ways in which these functions can be carried out, one option for service delivery is shown in Table I-1.

Table I-1
One Option for Service Delivery Through Conservation Service Organization

Functions	Modes of Delivery	
	In-House	External Contracts
Intensive Marketing of Conservation	X	
Building Energy Audits	X	
Conservation, Renewable Services		X
Quality Control Inspections	X	
Bulk Material Procurement	X	
Technical Performance Evaluation	X	

Advantages of a Conservation Service Organization:

- A one-stop service for conservation improvements will help overcome the psychological barriers home owners face in selecting contractors. In the current market, if a conscientious home owner were to solicit bids from three contractors for installation of insulation, storm windows, solar improvements, and water heater heat pump or furnace improvements, the homeowner would potentially need to talk to as many as 12 contractors. A one-stop and comprehensive conservation service will overcome the problems in contractor selection.

- A Conservation Service Organization will provide quality control of all its installations and would accept liability for contracted work. This liability will be especially helpful in gaining public acceptance for "new" technologies such as solar installations and heat pumps.

- The neighborhood focus of a Conservation Service Organization may be the only way to gain high participation in a voluntary program. *Intensive marketing will be conducted door-to-door, much like the* neighborhood crime prevention Block Watch program. Consumer education classes will be provided as part of the marketing program, and this local focus will stimulate and increase neighborhood participation.

- A Conservation Service Organization will purchase materials and equipment in bulk and benefit from reduced or wholesale prices.

- By sub-contracting several conservation installations with a single contractor, a Conservation Service Organization may reduce the overall cost of installations.

- With a localized approach, a Conservation Service Organization will be able to identify possible micro-scale or neighborhood-scale heating systems. Such energy systems are cost-effective and can reduce energy demand for heating by 20 to 30 percent beyond individual conservation efforts.

Disadvantages of a Conservation Service Organization:

- The administrative costs of a Conservation Service Organization have not yet been determined.

- As proposed, a Conservation Service Organization does not take into consideration building owners who may wish to do their own contractor selection and contracting. Whether and how these individuals can participate in the program has yet to be considered.

Community Energy Redevelopment Plan (Phase I)

Management of Phase I will be determined between July, 1981 and January, 1982. The City Energy Office, with the cooperation of City Light and the Department of Community Development, should be charged with

carrying the Community Energy Redevelopment Plan beyond the concept stage. Major questions to be answered prior to carrying out Phase I include:

1. Under which City agency should the project be operated?
2. How should the project be financed?
3. Who will handle the administration of loans?
4. How should the economic and technical performance evaluation be designed?

Money costs too much.

Ross MacDonald

During the development of the Community Energy Redevelopment Plan concept, several options for managing Phase I were examined but no recommendation was made, pending further analysis. Preliminary discussion, however, established some of the responsibilities that must be assigned for Phase I:

- Assume the title for installed but removable energy conservation systems.
- Collect the payments for lease of equipment and for permanent conservation installations;
- Oversee technical performance evaluation and marketing effectiveness assessment;
- Provide support in the initial intensive marketing of conservation in specific geographic areas; and
- Carry out project administration.

In Phase I, conservation improvements will be made to approximately 1,000 buildings in a manner simulating Phase II financing and organization.

In Phase I, the City will be able to determine whether attractive financing and intensive neighborhood-focused marketing leads to high levels of participation. The City can also verify the extent to which significant energy savings can occur beyond existing conservation programs. The City can also establish a sufficient revenue stream and assets upon which the marketability of revenue bonds for Phase II may be judged.

Financing

Community Energy Redevelopment Plan (Phase II)

Seattle City Light invests in new generating facilities by selling tax-exempt revenue bonds which are amortized over a 20- to 30-year period. To be successful, the Community Energy Redevelopment Plan must be able to put conservation investments on an equal footing with investments in traditional energy supplies.

ENERGY, Ltd. believes that the Community Energy Redevelopment Plan must be able to offer "life cycle" financing of conservation and solar investments, much in the way traditional energy supplies are financed. "Life cycle" financing means being able to pay for the investment over its useful lifetime. Thus, if storm windows last 30 years, building owners should be able to pay for them over a 30-year period.

Currently, however, a building owner who borrows money from a bank for conservation or solar improvements must pay it back over five to seven years. The terms of repayment may sometimes result in prohibitively high monthly payments. An obvious key element in offering sufficient incentive to building owners to make conservation investments is a "life cycle" repayment period.

ENERGY, Ltd. recommends that the City adopt a financing strategy which offers the building owner life cycle repayment terms for conservation investments at low interest rates. To accomplish this, a centralized organization such as a Public Development Authority would issue tax-exempt revenue bonds for phases of the comprehensive conservation program.

The results of Phase I may establish sufficient assets and revenue return to allow for the issuance of such revenue bonds and to provide capital for conservation improvements in an additional neighborhood. As experience in additional energy redevelopment effort grows and depending on the bond market, future bond issues would generate capital at progressively more attractive interest rates.

The bonds would be tax-exempt and would be issued by a public entity. But they would not rely upon City of Seattle bond ratings. The interest rates on the bonds may be higher than those on Seattle municipal bonds, but the City's debt ratio and bond ratings would not be affected.

The bonds would be retired through payments collected by the centralized organizations from building owners participating in the program's conservation improvements. These payments would be either lease payments for removable equipment (the title of which would remain with the centralized organization) or payments for the installation and initial cost of permanent conservation improvements.

Although the bond market mechanism itself emphasizes the private sector role in raising investment capital, further private sector involvement is desirable. Private financial institutions may be induced to lend money to the centralized organization. However, from a policy standpoint, a guarantee of a "life cycle" repayment period is essential when soliciting the

participation of private lending institutions.

It should be clearly noted that state constitutional amendments allowing a public organization such as a PDA to offer loans, rebates or other means of financing to all customer classes using all types of fuel are crucial in pursuing the financing of the Community Energy Redevelopment Plan.

Community Energy Redevelopment Plan (Phase I)

Project costs and financing options for Phase I of the Community Energy Redevelopment Plan have not been determined. Several possibilities or combinations of financing options will be analyzed as part of the design work proposed for the period of July, 1981 to January, 1982.

The options to explore range from generating private investment capital to soliciting private foundation funding. In whatever option recommended, low interest, long term financing of conservation improvements is essential in order to simulate Phase II financing.

At present, one suggestion for financing the approximately $10 million cost of Phase I is to utilize public and/or private grants to leverage commercial bank loans. The grants could be used to guarantee loans, to reduce the loan principal or interest, or to cover portions of the City's and lending institution's administrative costs. This would allow the City to simulate the terms of low interest, long term loans envisioned under the public financing approach. If the grants are not of City or State funds, the constitutional lending of credit prohibition does not apply.

The *Pacific Northwest Electric Power Planning and Conservation Act* contains several provisions for investments in electric conservation. Funding under the bill can be used directly for conservation measures carried out by all electric customer classes. Rebates, credits, loan guarantees and direct funding are all possible mechanisms which can be applied in combination to make investments in electric energy conservation attractive. While limited to electric energy conservation, this financing possibility could also be applied to the long term comprehensive Phase II program.

Scheduling

The scheduling of activities to carry out the Community Energy Redevelopment Plan (Phases I and II) is divided into Design, Implementation and Evaluation stages as outlined below.

The recommendations contained in this Final Plan completes the concept stage for both Phase I and II. The definition/design stage for Phase I is a work program proposed for the period July, 1981 to January, 1982. Phase I, in its entirety, is both a small-scale conservation effort and the definition/design stage for the comprehensive effort of Phase II. See Figure I-L.

The following outline lists a scheduling of activities continuing the proposed plan through its construction phase and into the final evaluation of results.

Schedule of Activities
Community Energy Redevelopment Plan

Phase I Design

July, 1981 - January, 1982

1. Determine financing
   a. Contract private foundations and public agencies for potential grants.
   b. Define options for private investment.
   c. Determine financing conditions that will lend credibility to future revenue bond issues.
2. Define administration
   a. Determine proper agency to administer project.
   b. Outline billing arrangements.
   c. Estimate staffing needs and budget.
3. Establish procedures for selecting Conservation Service Organization and target neighborhoods.
   a. Develop criteria for selection of neighborhoods.
   b. Plan selection strategy.
   c. List criteria for selection of Conservation Service Organizations.
   d. Outline Request for Proposal requirements.
4. Establish evaluation of technologies.
   a. Design procedures to assess the energy savings potential of conservation and solar technologies, with City Light.
   b. Design evaluation for determining cost-effectiveness of "house doctor" audit procedure, with Seattle City Light.

January, 1982

5. Prepare proposal for Phase I Implementation.
   a. Prepare proposal, including administrative recommendations, work program and budget for implementation.
   b. Prepare accompanying legislation.
   c. Outline unresolved issues.

February, 1982

6. Proposal to Council.

Phase I Implementation

April, 1982 - June, 1983
1. Secure full funding for Phase I project.
2. Complete legislative action necessary for funding.
3. Establish interdepartmental agreements for performance of work during Phase I.
4. Solicit from Conservation Service Organizations proposals to provide comprehensive conservation improvements in target neighborhoods.
5. Select a Conservation Service Organization to conduct Phase I.
6. Establish administrative procedures necessary for Phase I operation.
7. Negotiate and execute agreement with contractors.

June, 1983 - June, 1987
8. Begin service:
   a. Intensive marketing.
   b. Begin audit and conservation improvements.
9. Begin evaluation system:
   a. Establish data collection procedure.
10. Continue operation of Phase I:
    a. Conservation services.
    b. Project evaluation.

Phase I Evalution

July, 1987
1. Begin wrap-up of Phase I project and compile evaluation results.

December, 1987
2. Complete report on evaluation results.

Phase II Design

March, 1982
1. Identify issues needing further work in order to establish an energy conservation-focused central financing organization
   a. Legal issues with Law Department.
   b. Financing issues with bond attorney.
   c. Administrative issues with Department of Community Development and existing Public Development Authorities.

May, 1982
2. Prepare resolution defining work program necessary to develop Phase II.

June, 1982
3. Submit resolution to Council.

August, 1982 - January, 1984
4. Carry out work program with cooperation of Energy Office, City Light, Office of Management and Budget, and Office of Policy and Evaluation.

July, 1983
5. Identify issues which require legislative action on state or federal levels.

1984-1985
6. Clearly define work parameters: accountability and management structure of the central financing organization.
7. Draft work program outlining specific tasks necessary to secure long term financing.

1985-1987
8. Draft and introduce enabling legislation leading to the development of a central financing organization.

1986-1987
9. Review progress of Phase I activities. Refine recommendations as necessary.

Phase II Implementation

1988-1989
1. Establish central financing organization.
2. Establish administrative procedures.
3. Prepare solicitation for financing (revenue bonds if Public Development Authority.)

1990
4. Refine selection procedure and solicit proposals for additional Conservation Service Organizations for additional neighborhoods.
5. Select proposal and execute agreement.

1991-2010
6. Continue operations and expand to all city neighborhoods.

Budget

The following budget provides cost estimates for design of Phase I activities. The budget is proposed to cover expenses for the six-month

definition/design stage effort only. Cost estimates for Phase II are more speculative and will be detailed in the definition/design stage for Phase II.

I.	Personal Services		
	Salaries		$94,884
	PC III (8 months)	$24,174	
	PC II (2) (8 months)	36,600	
	Adm. Asst. Sr. (8 months)	19,874	
	Adm. Spec. III (8 months)	14,236	
	Benefits (20%)		18,977
	Total Personal Services		$113,861
II.	Supplies		640
III.	Professional Services (Performance Evaluation Design)	30,000	
IV.	Travel		1,000
V.	Other		
	Printing/Duplicating	2,000	
	Office Equipment Rental	440	
	Communications	2,656	
	Space Rental	7,040	
VI.	Capital Outlay (Shelves)		200
Total			$152,797

ENERGY
for a secure energy future

II. ENERGY IMPROVEMENTS IN MUNICIPAL FACILITIES

Words but direct, example must allure.

Sir William Alexander

Chapter II
Energy Improvements in Municipal Facilities

Description

From 1976 to the present, the City has adopted a slate of energy policies directing increased energy efficiency and use of renewable energy systems in buildings in Seattle. The majority of these policies affect private sector buildings and call for the private sector to make cost-effective improvements in buildings.

However, since 1976, the City itself has made little headway in identifying energy efficient improvements to its own facilities and in investing in these improvements to conserve energy. The recommendations presented in this discussion suggest how the City can invest in these improvements to its physical plant on a scale comparable to that expected in the private sector.

This proposal recommends how the City can routinely identify, analyze and commit resources in cost-effective ways to conserve energy. The approach concentrates on assuring the financing of these cost-effective investments. An interdepartmental approach, under the lead of the City Energy Office, would identify needed improvements, insure that investments would be made in all departments, and determine goals and methodology consistent for all departments.

It is estimated that cost-effective investments would total approximately $3.7 million, a sizeable amount but an amount which the City would save over time in reduced energy costs. Unlike expenditures simply to maintain or upgrade public facilities, this investment in energy efficiency has a direct financial return to the City treasury.

Recommended Actions

The following actions are recommended to start the City on the path toward improving the energy efficiency of its physical plant:

1. Reinforce the City Energy Office's role in development of a muncipal energy management program through a resolution establishing dates for work products. The program, to be developed with an interdepartmental team, should include recommendations on:
   - Improved systems for reporting municipal energy usage and costs;
   - Energy conservation goals for operations; and
   - Accountability for attaining these goals.
2. Through the interdepartmental team, identify significant, cost-effective energy investments for selected municipal facilities. Develop a five year energy investment plan and annual energy investment projects with the Office of Management & Budget and the Office of Policy & Evaluation.
3. Set aside annual General Fund revenues to develop and carry out the energy investment projects.
4. Evaluate annually the cost-effectiveness of the projects through the interdepartmental team. The City Energy Office should report these results annually to the Council. Revenues should be set aside only as long as cost-effective investments are in effect. Comprehensively review the energy investment projects during the third year of operation. The City Energy Office should summarize results and recommend changes to the Mayor and Council as necessary.
5. Include municipal energy investments as an authorized activity under the proposed 1982 municipal bond issue. If approved by voters, generate revenue for the General Fund to pay for conservation projects through a two-tenths of one percent increase in the Business and Occupation Tax for energy utilities.

Background

There are substantial reasons why the City of Seattle should make its facilities as energy efficient as possible.

First, energy costs are skyrocketing. Electric rates for commercial customers, including specific municipal facilities, are scheduled to increase by as much as 50 percent next year. Electricity costs for operation of the Municipal Building alone are expected to increase from $36,000 to $58,000 in 1981. In addition, according to Washington Natural Gas representatives, natural gas prices will increase between 10 to 15 percent annually. Oil prices are hiked upwards at each meeting of OPEC. In light of relatively fixed revenues, the proportion of the City budget designated for

energy costs will increase substantially.

Second, there is municipal policy actively promoting energy conservation. The City is in a position to provide leadership in identifying and carrying out energy conservation improvements. Energy saved by municipal government is minor when compared to the energy that could be saved in the commercial sector as a whole, but the example that can be set is invaluable. Investing in energy conservation and publicizing that investment provides an opportunity to lead, not push, the private sector into making similar investments.

Leadership is action, not position.

Donald H. McCannon

Third, expenditures for energy conservation improvements are investments which provide an econmically identifiable return. Few categories of expenditure in the operating and capital portions of the municipal budget can claim to be investments.

Anticipated Results

At this time, potential municipal energy savings cannot be estimated with precision, because the buildings have not received an energy audit.

However, by setting an energy savings target and accomplishing low-cost and no-cost conservation measures, it is possible to isolate and derive the cost-effectiveness of every additional conservation measure. In this way, the City should set a realistic conservation goal and establish standards of cost-effectiveness.

For example, a targeted energy savings of 35 percent over 1978 consumption would yield the following conserved energy and possible dollar savings (1980 prices):

	1978 Consumption	Energy Savings	Dollar Savings
Heating Oil	14,660 barrels	5,131 barrels	$218,000
Natural Gas	1,927,600 therms	674,660 therms	$398,000
Electricity	98,074,000 kWh	34,326,110 kWh	$421,000
Steam	6,947,000 lbs.	2,431,000 lbs.	$24,000

Implementation

In this proposal, both the executive and line departments share responsibilities for setting objectives, identifying cost-effective measures, designing a practical system of departmental accountability, and putting the conservation improvements in place. The City Energy Office, through its designated responsibilities under Ordinance 106214, should organize the development of the energy management program in its entirety.

With regards to physical improvements, the following outline suggest specific tasks. In these tasks an interdepartmental team should work with the City Energy Office and results should be reviewed by the Energy Cabinet. (The Energy Cabinet is composed of a deputy mayor and selected department heads.) The Energy Cabinet review should commit affected departments to follow an adopted plan.

A. Task Outline

1981: Develop an Energy Management Plan for Municipal Facilities

- Lead responsibility for the development of the plan is assigned to City Energy Office.
- Interdepartmental team is formed to assist in developing the goals, reporting systems, and an accountability process of the plan. The plan will be reviewed and acted on by the Energy Cabinet.

Identify Funds Necessary for Carrying Out Energy Improvements

- Individuals with energy interests are nominated to participate on the Citizen Committee advising the City on 1982 bond issues.
- A general category of projects focusing on municipal energy improvements should be included in the 1982 bond issues.

Identify Significant Energy Improvements for Municipal Facilities

- Interdepartmental team reviews maintenance inventory of municipal facilities as it relates to energy. Energy projects are identified that can be carried out without further physical assessments.
- Interdepartmental team selects facilities with high energy use for walk-through audits.
- City staff, trained by City Light or through the Washington State Energy Office Program, conducts detailed walk-through audits. Matching funds for audits are applied for.

1982: Identify Funds Necessary for Carrying Out Energy Improvements

- Office of Management and Budget begins action to increase

the Business and Occupation tax for energy utilities by two-tenths of one percent.

- An amount equal to an increase of two-tenths of one percent of the Business and Occupation Tax for energy utilities will be annually set aside from the General Fund in a separate sub-fund of the Cumulative Reserve Fund.

- The amount of the annual cost of the municipal energy investment projects will not exceed the amount of the annual set-aside. Legislation for the set-aside and revenue increase will be prepared by the City Energy Office, the Office of Management and Budget, and the Law Department, as appropriate.

- Authority to expend the funds for projects approved as annual municipal energy investments will be legislated as necessary.

Identify Significant Energy Improvements for Municipal Facilities

- Results of walk-through audits are reviewed by the inter-departmental team.

- A maximum of 25 improvements are identified and ranked for detailed technical assistance. Operational and maintenance procedures are incorporated into a plan and scheduled for each City department.

- Projects given priority are acted on by the Energy Cabinet. Federal funds for technical assistance are applied for. Where necessary, set-aside Cumulative Reserve Funds are requested to complete the technical assessment.

1983: Incorporate Improvements into Fiscal Planning and Resource Allocation Process

- Preparation of five-year energy investment plan of projects that are ranked according to their cost-effectiveness. This plan will be the responsibility of the interdepartmental team under the lead of the City Energy Office and the Office of Management and Budget.

- The five year energy investment plan is reviewed and acted on by the Energy Cabinet. The plan is submitted for inclusion in the Capital Improvement Plan.

1984-1990: The plan will be updated annually. New, cost-effective projects will be added to the last year of the investment plan or added to the rankings. The interdepartmental team and the Office of Management and Budget will prepare an annual list of energy investment projects to be completed in the next fiscal year. These projects will be reviewed by the Energy Cabinet prior to their inclusion in the annual budget.

B. Costs

The costs of the energy improvements vary widely depending on the size of the structure and the type of physical improvements. For example, the conservation work completed on the City Light building in 1977 cost approximately $327,000. These improvements entailed changes in the mechanical systems. On the other hand, the City of Portland has scheduled approximately 40 energy-related projects in its facilities at an average cost of $4,500 per project.

In Seattle, analysis of prototypes shows that conservation improvements to small office buildings or warehouses would cost approximately $11,130 and $17,717, respectively. The improvements examined in the analysis included insulation, light bulb replacement, storm windows, heat pumps, automatic night setback and eliminating building envelope leaks.

The maintenance inventory of municipal facilities indicates that approximately $3.7 million would be needed to complete minimal energy-related improvements. The energy-related improvements noted in the maintenance inventory have not been analyzed for energy savings nor have detailed cost estimates been made. Until further technical work is completed, it is impossible to be precise on cost estimates or on which measures would be cost-effective.

Property has its duties as well as its rights.

Thomas Drummond

However, to provide a rough idea of improvements and costs, the following information has been taken from the maintenance inventory. The improvements are categorized, and the buildings surveyed covered all departments.

Types of Improvements	Estimated Cost
Heating, Ventilation and Air Conditioning Deficiencies	$1,200,000
Exterior Finish	995,000
Electrical	819,000
Plumbing	40,000
Roof	680,000
Structural	(no estimate)
Total	$3,734,000

In addition, the cost of the technical analysis to establish firm actual costs and energy savings for the 10 highest energy-consuming facilities would range from $150,000 to $500,000.

C. Budget

This propsal concentrates on financing and carrying out energy-related physical improvements to municipal facilities. The City Energy Office, under the Municipal Energy Management Report, provides estimates of staff and support costs for the municipal energy management program. It is anticipated that the interdepartmental team will identify other staffing needs and other support costs.

ENERGY, Ltd.'s budget estimates are limited to consultant service costs for the technical assessment of facilities with high energy consumption and to costs for actual improvements.

All things are cheap to the saving, dear to the wasteful.

Benjamin Franklin

The budget for this proposal is limited to the following outlined costs:

1982	Consultant services	$ 75,000
	Project costs	100,000
1983	Consultant services	100,000
	Project costs	400,000
1984-90	Project costs	3,000,000
1990	Project costs	200,000
Total		$3,875,000

D. Financing

1. Resolution 26354 established the General Purpose Bond Issue Ciizen Committee to review the capital improvement needs of the City and to recommend both methods of financing and specific projects to be included in a 1982 bond measure. This resolution and the accompanying ordinance emphasized rehabilitating and preserving municipal buildings. Energy conservation was cited as a principal reason for pursuing the bond measure.

   If the bond issue reaches the ballot, it is important that municipal energy conservation projects be included as a category of projects and not as enumerated, specific projects. Because this revenue source is the first priority for funding this proposal's improvements, it is important to pursue it. Hence, representatives with energy interests should be appointed to the Citizen Committee.

2. ENERGY, Ltd. further recommends that the City increase the Business and Occupation Tax for energy utilities by two-tenths of one percent. A related recommendtion is that an amount equal to the revenues generated by this increase be set aside in the Cumulative Reserve Fund as a sub-fund to finance cost-effective energy improvement projects in municipal buildings.

   Assuming that the income of the energy utilities remains at 1980 projected levels, the annual revenue generated by a two-tenths of one percent increase would be approximately $385,000.

   The Cumulative Reserve Fund, as amended through Ordinance 108549, includes a special sub-fund for the repair and renovation of municipal buildings. Among the reasons for establishing the sub-fund is "making an alteration to conserve energy to improve efficiency." Therefore, it is logical to appropriate fund from the General Fund to the Cumulative Reserve Fund as a means of financing the proposal.

III. ENERGY POLICY AND THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

A new world is only a new mind.

William Carlos Williams

Chapter III
Energy Policy and the Washington Utilities and Transportation Commission

Proposal

Consistent with its effort to help non-electric as well as electric energy consumers, the ENERGY, Ltd. Citizen Committee believes that the City should influence non-electric energy policies. To accomplish this, the Citizen Committee recommends that the City actively participate in proceedings of the Washington Utilities and Transportation Commission (WUTC), particularly on natural gas utility issues, and to encourage conservation incentives comparable to those available to electric heat customers.

Background

The City of Seattle, by virtue of its ownership of the electric utility, provides electric ratepayers — particularly electric heat customers — with incentives to conserve electricity. The City Council, which regulates Seattle City Light, has adopted progressive rate structures for residential customers and flat rate schedules for commercial and industrial customers. Instead of paying less per kilowatt-hour as consumption increased, as was formerly the case, consumers now have an economic reason to conserve. Seattle City Light also provides low- and no-interest conservation loans to residential electric heat customers, and provides energy audits for all customers. Thus, energy policies affecting electricity consumers in Seattle are established in Seattle by a regulatory body to which all Seattle citizens have access.

In contrast, the WUTC is a state agency that regulates private utilities. One of these private utilities is the Washington Natural Gas Company which serves Seattle and the surrounding Puget Sound region. Thus, natural gas energy policies set by the WUTC in Olympia directly affect Seattle consumers.

The following is a generalized description of how the WUTC functions:

1. A utility files a proposed rate change with the Commission.
2. The WUTC has 30 days in which to issue an order to suspend the proposed rate change, pending public hearings. (If the WUTC does not act, the proposed rate change automatically takes effect.)
3. The utility presents testimony to the Commission justifying the rate change and may be cross-examined by the Commission, its staff or intervenors.
4. The WUTC staff presents a recommendation to the Commission. Intervenors may also present a recommendation.
5. A public hearing is held at which time anyone may testify on the various recommendations that have been made.
6. The Commission then rules on the proposed rate change.

ENERGY, Ltd. recommends that the City become involved in the public hearings before the Commission, specifically as these hearings affect natural gas customers.

Anticipated Results

As a result of a continuing participation before the WUTC, the City will gain *an in-depth understanding of gas company policies and practices*, including natural gas supply availability and anticipated rates. This understanding would put the City in a better position to formulate an overall fuels policy.

Second, if the City is successful in encouraging conservation services and economic incentives to conserve natural gas, consumer costs for gas heat will rise less rapidly. Bringing gas bills closer in line with electric heat bills should reduce the pressures to convert to electricity, which, at its average price, is currently cheaper.

While ENERGY, Ltd. can only speculate on specific results, conservation incentives that might be looked at closely for natural gas customers could include rate structures that encourage conservation; low-interest loans for conservation improvements; and energy audits for all residential, commercial and industrial gas customers. Greater emphasis on natural gas conservation will extend to gas consumers advantages that are presently only available to electric heat customers, even though the gas consumer is paying more.

My interest is in the future because I am going to spend the rest of my life there.

Charles Kettering

Implementation

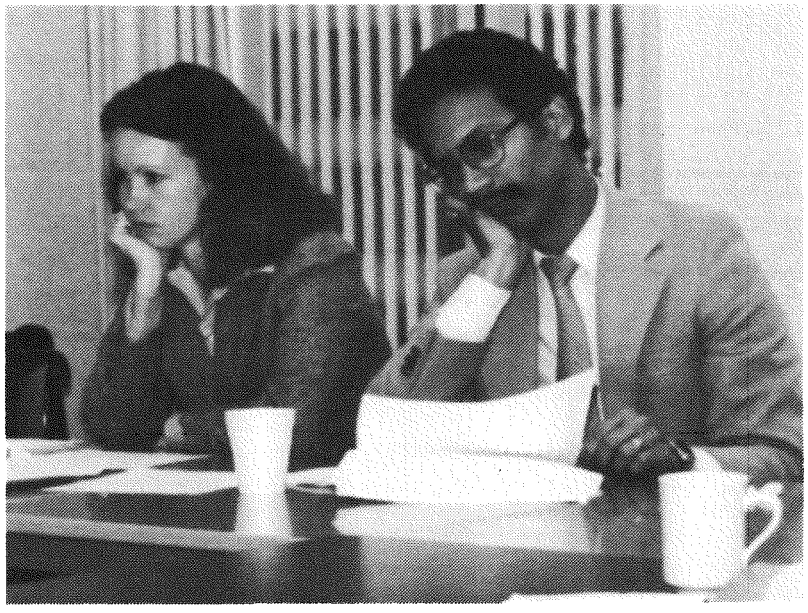
Participation before the WUTC should be carried out by the Seattle Energy Office. One position should be funded in the 1982 General Fund budget to

begin review of recent actions by the WUTC and to prepare for the next natural gas rate proposal.

When proceedings begin, Energy Office staff would prepare specific recommendations and testimony. It is estimated that the staff person, plus temporary clerical support and overhead expenses, would cost approximately $43,000.

Project Budget

Personnel Services:	
Program Coordinator III (12 months)	$31,555
Temporary Clerical (2 months)	6,630
Benefits (21% of permanent salaries)	3,050
Supplies:	
Office Supplies	120
Travel:	
In-State	1,000
Other Services/Charges:	
Duplicating and Printing	400
Capital Outlay	300
TOTAL	$43,055



ENERGY, Ltd.
for a secure energy future

IV. OTHER RECOMMENDATIONS

An era can be said to end when its basic illusions are exhausted.

Arthur Miller

Chapter IV
Other Recommendations

Introduction

The proposals in this chapter were recommended as part of the **Draft Action Plan.** The ENERGY, Ltd. Citizen Committee supports the following proposals but has assigned them lower priority based on an assessment of community reaction to the **Draft Action Plan,** a lower level of interest shown in the proposals, comments by City departments, and the need to bring into focus a very broad, comprehensive program.

Each of these proposals was examined in detail in the **Draft Action Plan.** To direct attention towards the top priority recommendations, they are summarized as follows:

Ridesharing

Ridesharing services were organized in Seattle and King County in 1974 through the Seattle/King County Commuter Pool. The ridesharing concept is simple and has been promoted as a transportation strategy for relieving congestion on roadways. Ridesharing also became a strategy for improving air quality and recently has moved into prominence as a means for conserving energy.

In 1981, Commuter Pool operates some 130 vanpools. By 1990, 1,000 vanpool groups and a full-service rideshare program should be in operation in King County. With an annual cost of approximately $500,000, the program would expand public transportation options for commuters. The rideshare program, as provided through Commuter Pool, would include ride-matching, parking management, rideshare marketing, rideshare incentives, and flex-time marketing.

The expanded vanpool program would have a capital cost of approximately $25 million for purchase of 1,500 vans by 1990. The investment would be repaid through vanpool fares. Financing the purchase of thse vans is the most difficult problem. At present, Metro has included van purchases in its Draft Transition Plan, but how it would work with Commuter Pool has yet to be determined.

Vanpool programs, as part of the ridesharing concept, also operate privately. Major businesses frequently offer vanpool services for employees. Small firms individually cannot provide for the administrative costs of operating a vanpool. These ridesharing programs, particularly vanpooling, contribute to major public goals of air quality improvement, congestion reduction, and energy conservation, and are self-supporting. They are important public transportation options and should be given greater emphasis and visibility.

Low Power Vehicles

By 1990, at least one percent of utilitarian trips in Seattle could be made by low power vehicles such as bicycles, mopeds or other very small vehicles. ENERGY, Ltd. recommends provisions for securing parking, revision of roadway standards, expanded routing and adequate educational programs emphasizing utilitarian travel by low power vehicles.

Restore human legs as a means of travel. Pedestrians rely on food for fuel and need no special parking facilities.

Lewis Mumford

In 1972, the Comprehensive Bikeway Plan was adopted by the City. Focused on bicycle travel, the plan stressed the need for convenient, secure parking in business areas and encouraged safe routing. Unfortunately, many of these capital projects have been delayed and the dollar value of specifically allocated funds has eroded. The Citizen Committee believes these projects should receive more attention.

Adequate, secure parking for bicycles, mopeds and other low power vehicles is a major barrier to travel by these vehicles, and development of parking facilities is a major need. Safe routing for these vehicles raises the issue of separate bike paths, separate lanes, painted lanes, exclusive roadways or other routing options. Combinations of these options are necessary to encourage maximum commuter travel by low power vehicle.

This recommendation emphasizes existing programs carried out in the Seattle Engineering Department. It expands the current bicycle-only program focus to include planning for other low power vehicles which are expected in larger quantities in the near future.

Capital investment for parking facilities and for establishing safe routing is estimated at $85,000. The annual operating costs for planning and program operation is estimated at an annual cost of $70,000. Funding combines state, federal and local transportation related funds.

Fuel Efficiency Through Emission Inspection

Fuel efficiency standards have been established for new cars and new vehicles are required to have fuel efficiency ratings. However, pre-1975 vehicles are either exempt from standards or, because of poor maintenance, have a much lower fuel efficiency. While improving the fuel

efficiency of vehicles in the city is a formidable task, it can result in significant petroleum savings.

These vehicles, with the exception of exempted vehicles over 15 years of age, will be a captive audience when mandatory emission inspections begin in King County in January, 1982. The Washington State Department of Ecology is responsible for carrying out the emission tests and has contracted with a private firm to conduct the tests. When that contract is renewed, ENERGY, Ltd. recommends that a contractor be also required to conduct fuel efficiency tests as well as emission tests.

The modern idea of homes has been well expressed as the place one goes from the garage.

George W. Wickersham

In addition, each driver whose vehicle is being inspected should receive, beginning in 1982, a checklist of maintenance procedures and driving tips to maximum fuel efficiency. The brochures are readily available and only printing costs would be incurred.

Alcohol Fuels Demonstration Program

The largest single user of fossil fuels is in the transportation sector. In Seattle, nearly 32 percent of the total energy used is consumed by cars, trucks and buses using gasoline and diesel fuels.

As an alternative, alcohol fuels are currently being produced in substantial quantities from natural gas and crop feedstocks. The former, however, is not a renewable alternative, and the latter may pose a threat to food prices and supply. In addition, crop feedstocks are not widely available in western Washington.

However, alcohol fuels can also be produced from woody or other cellulose feedstocks, such as mill wastes, forest slash, noncommercial hardwood species and trimmings. Whether or not the production of alcohol from these resources would be economically competitive with their use as more conventional wood products is unknown. The costs of producing alcohol locally from wood resources is also unknown.

This recommendation calls for studying the feasibility of producing alcohol from locally available wood resources and of using pure alcohol in public vehicles. If feasible, an alcohol production facility could be built to meet the fuel demand for King County, City of Seattle and Metro fleets. If all vehicles in the County, City and Metro fleets were converted, nearly 20 million gallons per year of gasoline and diesel fuels would be replaced by renewable fuels.

Apartment Weatherization and Commercial/Industrial Audit Requirements

A top priority recommendation of the Citizen Committee is the voluntary, incentive-based Community Energy Redevelopment Plan described in Chapter I. The Committee believes that the effectiveness and level of participation in a voluntary program should be evaluated, and if the voluntary apprach is not working, then the City should consider minimum energy conservation requirements for **all** residential, commercial and industrial sectors.

The City has already developed minimum standards for single-family homes up through four-plexes, but these standards have not been adopted as law. The Citizen Committee believes that minimum standards could also be developed for apartments, if necessary. Due to the greater complexity and variation in commercial buildings and industrial facilities, the Committee recommends a mandatory energy audit as the basic approach to requiring energy conservation in those sectors.

Energy Impact Assessment in the Environmental Review Process

The ENERGY, Ltd. Citizen Committee is concerned about the use of energy in future development and transportation projects. The Committee is also concerned with the use of energy indirectly dictated in land use policies and decisions. After careful consideration, the Committee has determined that projects and policy decisions with significant energy impacts are subject to compliance with the State Environmental Policy Act (SEPA).

In order to promote energy efficient site planning, land use decisions, policy decisions, and construction methods, ENERGY, Ltd. proposes an amendment to the City of Seattle's SEPA Policy Ordinance (O. 107678). The amendment would specify guidelines for adequate disclosure of energy impacts and would clarify the City's authority to mitigate or prevent unacceptable energy impacts.

The amendment would not open new areas for SEPA compliance. Energy is already a resource of the environment for which impacts or projects or policies must be determined. The amendment would provide guidance on what is expected in the disclosure of such impacts. Analysis might include reductions in energy demand through building orientation and consideration of transit ridesharing and parking management, improvements in energy efficiency through building envelope design and heating, ventilating and air-conditioning alternatives; and consideration of renewable energy resources. A more complete description is included in Appendix G of the **Draft Action Plan.**

Other Incentives

As part of the Community Energy Redevelopment Plan, several incentives

are proposed. The strongest of these is public financing and long-term, low-interest loans.

Another incentive related to the Community Energy Redevelopment Plan is the concept of "purchasing" conservation. Under this concept, energy saved by customers would be paid by a utility through an outright payment, a rebate or a discount of some kind. This program would probably require City and State legislation to state explicitly the rights of utilities to finance conservation.

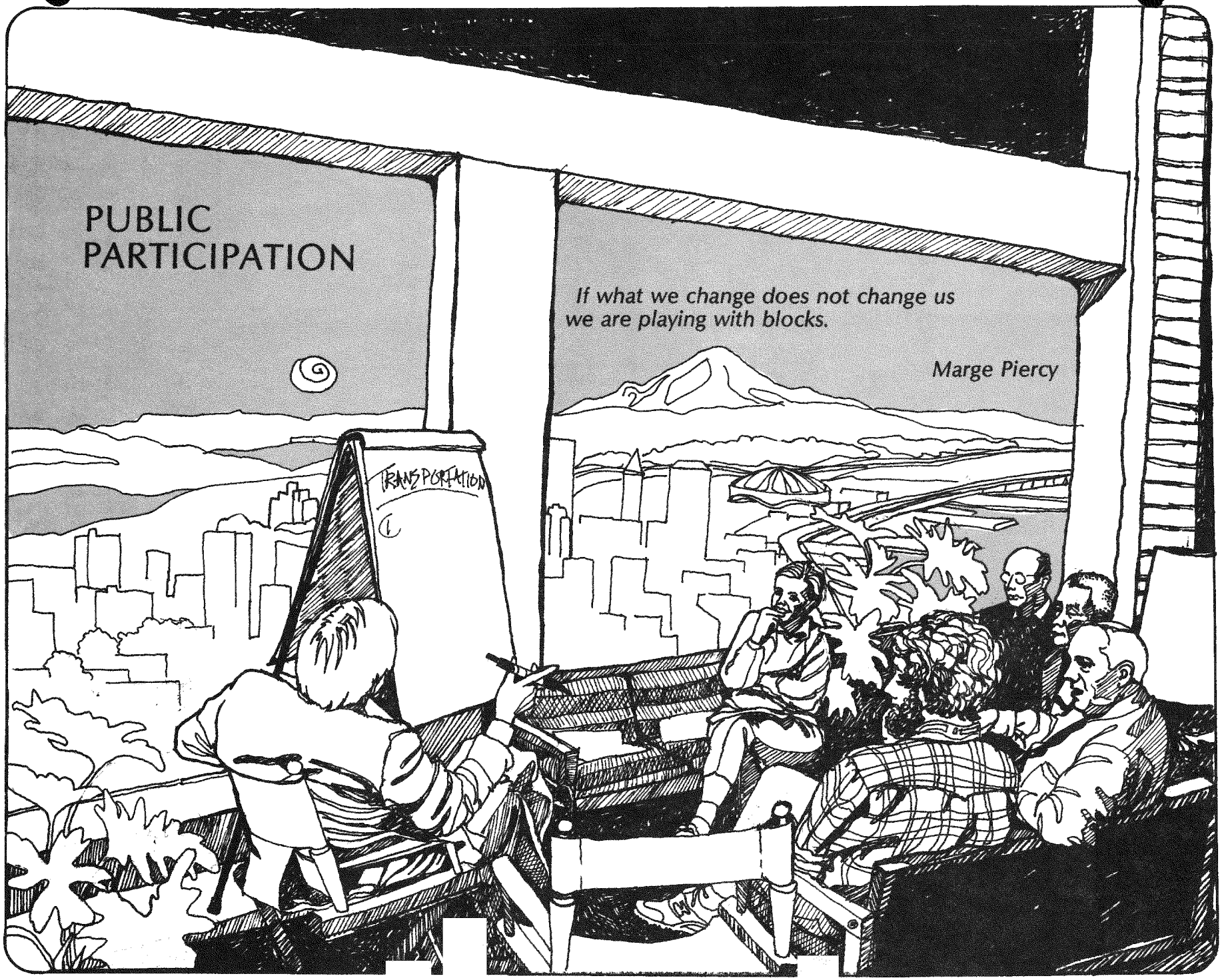
Another incentive related to the Community Energy Redevelopment Plan is the use of the federal Solar Energy and Energy Conservation Bank. This is not really a bank, but rather a subsidy for investments in conservation and solar energy. The subsidy would reduce the interest rates or pay a portion of the principal on a loan from any lending institution, such as a commercial bank or a Public Development Authority.

There are other incentives proposed by the Citizen Committee not directly related to the Community Energy Redevelopment Plan. Locally, the Citizen Committee would like to see City Light's Home Energy Loan Program accelerated to include loans for heat pumps, solar equipment and other conservation measures not presently covered by the program.

Nothing modernizes a home so completely as an ad offering it for sale.

Laurence J. Peter

At the federal level, tax credits to businesses that invest in conservation should be increased from their present level of 15 percent and extended beyond the present cut-off date of 1985. In addition, the Citizen Committee recommends a federal program of shared-cost audits available to all commercial buildings, similar to the current program available to schools and hospitals.


PUBLIC
PARTICIPATION
If what we change does not change us
we are playing with blocks.
Marge Piercy
TRANSPORTATION

PUBLIC PARTICIPATION

In the proposal to join the Comprehensive Community Energy Management Program (CCEMP), the City emphasized active public participation. The 28-member Citizen Committee, initiated in February, 1979, has played a key role in that public participation and has provided guidance to the City in the development of its CCEMP project, known as ENERGY, Ltd.

The Citizen Committee was established for several purposes. The Committee was expected to:

- provide formal, broad-based public participation in the development of a long-range energy management plan for Seattle;
- provide expertise and diverse community perspectives on energy issues;
- provide direction to the project staff in preparation of reports and proposals; and
- assist in the review phase of the proposed energy management plan as it is presented to the Mayor and the City Council.

The following discussion outlines who the Citizen Committee members are, how the members were selected, how the Committee carried out its responsibilities, and what the Committee has produced.

Who the Members are

The Citizen Committee has maintained the active membership of approximately 28 members. The members, appointed by the Mayor and confirmed by the City Council, have operated under the leadership of co-chairpersons Beverly Smith and Paul Demitriades. The chairpersons were selected by the Mayor in his initial appointments.

The Citizen Committee membership is listed below with members identified by organization, area of interest and/or subcommittee membership:

Elizabeth J. Bell is Chairperson of the project's Commercial Subcommittee. Betsy is the Education Coordinator for St. Mark's Episcopal Cathedral and is active with the Northwest Gifted Child Association.

C. Edward Bishop is Executive Director of the Oil Heat Institute and was a member of the King County Energy Planning Project Steering Committee. Ed is a Board Member of the Petroleum Marketing Education Foundation and a member of the Seattle Chamber of Commerce.

Sylvester B. Burch is a member of the Supply Subcommittee. Sylvester is a Board Member of the Central Area Federal Credit Union, the Central Area Alcoholism Center, and the Operational Emergency Center.

Margaret G. Davison is a graduate of Seattle Pacific University in Economics. Peggy joined the Citizen Committee in November, 1979.

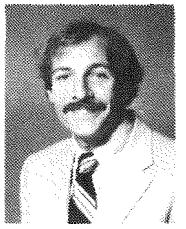
Paul B. Demitriades is Co-Chairperson of the Citizen Committee. Paul is a marketing executive with the Boeing Aerospace Company. In 1978, he was

a loaned executive to Mayor Royer to help establish the City's policy and budget development process. He has managed several Boeing Company energy studies and provided management consultant services to federal energy agencies and utilities. He is active with the Seattle Chamber of Commerce.

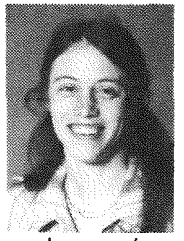
James D. Dwyer is Senior Director of Port Development and Relations for the Port of Seattle. Jim is an active member of Washington Public Port Association and the Washington State and American Bar Associations.

Tom Eckman serves on the Government Subcommittee. He is active with both environmental and energy related organizations. Tom is Chairman of the Washington Environmental Council's Energy Committee and is past Chairman of the Washington State Sierra Club. He has served on numerous energy committees, including City Light's Citizens Rate Advisory Committee and the City Light Forecast Advisory Committee.

Wanda Franklin is a member of the Residential Subcommittee. She joined the Committee in November, 1979. She is active in housing issues and is a Board Member of the South East Effective Development project.



Jarlath Hume - As Executive Director of Metrocenter YMCA, Jarlath is involved in a wide variety of community programs, including the 1980 and 1981 CityFair exhibitions. He has served on the project's Residential Subcommittee. Jarlath has a masters degree in public administration from the University of Washington.



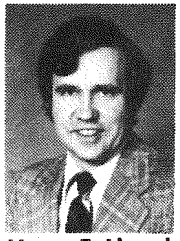
Sally King is a member of the Governmental Subcommittee and a member of the ad hoc Land Use Subcommittee. Sally is a Board Member of the Western Washington Solar Energy Association and was Coordinator of the State Solar Policy Task Group for Citizens for Solar Washington. She is the local government coordinator for the Western Solar Utilization Network (Western SUN).

Charles J. Kippenhan - As Professor in Mechanical Engineering at the University of Washington, Charles has conducted extensive research and has taught courses in energy, science and technology. He joined the Committee in November, 1979.

Edward Lapic is Chairperson of the Residential Subcommittee. Ed is a

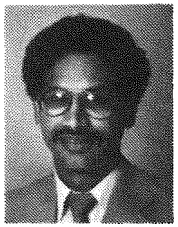
retired federal employee who volunteers with Senior Rights Assistance. He has also been active in City Light's Rate Advisory Committee.

Kim Lim is an independent financial planner associated with Prudential Life Insurance. He specializes in retirement and tax planning for individuals and businesses, including employee group benefit plans. Kim has served on the Commercial Subcommittee. He is active in the Chinatown Chamber of Commerce, the Chinese Community Service Organization, the International Association of Financial Planners and the National Association of Charity and Estate Counselors.



Henry E. Lippek is an attorney in private practice and is Chairperson of the project's Transportation Subcommittee. Henry served for several years in Washington, D.C., as principal staff counsel to the U.S. Senate Committee on Commerce, Science and Transportation.

Margaret Neupert is a Ph.D. candidate in Political Science at the University of Washington, were she is studying public authorities in the United States. Margaret participated on the Industrial Subcommittee and became a member of the Citizens Committee in August, 1980. She is a member of the American Society of Public Administration.



Rodney G. Proctor is the Manager of the Environmental Planning Division at METRO and is the Chairperson of the project's Governmental Subcommittee. He is a member of the American Planning Association and the NAACP and a member of the National Association of Environmental Planners.

Mally Ribe is the Energy Program Chair, League of Women Voters of Washington, and past Chair of the League's Water Study in New Mexico. Mallyis a member of the project's Residential Subcommittee.

Ann Siqueland is Consumer Affairs Advocate for the Federal Trade Commission. She was Desegregation Project Director for the Church Council of Greater Seattle. In 1978 she was named a "Newsmaker of Tomorrow" by the Seattle Chamber of Commerce and was awarded the EdwinT. Pratt Award by the Seattle Urban League. Ann is Chairperson of the Supply Subcommittee.

Beverly M. Smith is Co-Chairperson of the Citizen Committee and is

Executive Director of the Washington State Nurses Association. Bev has an extensive background in community involvement, including membership on the Board of Directors for the Seattle-King County YWCA, chairman of the Board of Directors for Sound Savings and Loan, and former member and President of the Seattle School Board.

Steven Wicks is a member of the New York State Society of Certified Public Accountants and of the American Institute of Certified Public Accountants. Steve is a banking officer with Rainier National Bank, specializing in commercial lending.

Robert Smith is Chairperson of the Industrial Subcommittee. Bob is President of Bouillon, Christofferson & Schairer and is a registered mechanical engineer. He serves as Vice President/Director of the Consulting Engineers Council of Washington and is a member of numerous professional engineering societies including the American Society of Heating, Refrigeration and Air Conditioning Engineers.

Clara J. Williams is a member of the Residential Subcommittee. She has been a Training Coordinator for the Seattle Urban League.

Peg Sparkman is a member of the Transportation Subcommittee and was Transportation Chairperson for the League of Women Voters. Peg was Project Director of the EPA-sponsored Solid Waste Management Project and Editor of the League's Washington Transportation Study in 1973-74.

Judith Wirth is a member of the Transportation Subcommittee and has an interest in energy and transportation issues. Judith recently worked on Seattle City Light's Copper Creek Environmental Assessment. She joined the Committee in November, 1979.

Don J. Vogt is an attorney and was a member of the Board of Trustees, Municipal League. Don is currently Counsel to the Senate Energy and Utilities Committee.

William J. Wortley is Director of Corporate Communications for the

Washington Natural Gas Company. He is an active member of the Pacific Utility Communications Association and the Pacific Coast Gas Association. Bill is a member of the Supply Subcommittee.

Former Citizen Committee Members

Mary E. Buckmaster is a graduate of Seattle University and was, at the time of her activity with the Citizen Committee, an executive with Safeco Insurance Company. Mary was a member of the Committee until the fall of 1979.

Christina Buman was a member of the Citizen Committee until September, 1980. She is experienced in market research, development and promotion work and is Director of Client Services for KOMO-TV. Chris Buman is a member of the League of Women Voters.

Donald U. Hopps is active in community development and urban growth issues, and is Chairperson of the Hunger Task Force, Catholic Archdiocese of Seattle. Don was a member of the Seattle 2000 Commission and was a member of the Citizen Committee until February, 1980.

Robert D. Lamson is an economist and President of Alten Northwest, an alternative energy systems firm. He was a member of the Citizen's Overview Committee for Energy 1990. Bob was a member of the Citizen Committee until April, 1980.

Susan McNab is an executive in the Personnel and Safety Division for the Monsanto Company. She was a Section Chairperson of the King County United Way Campaign in 1977. Sue resigned from the Committee in July, 1980 with a move to Monsanto headquarters in St. Louis.

Joseph E. Rothberg is a Professor in Physics and Adjunct Professor in the Institute of Environmenal Studies at the University of Washington. He was a member of the Citizen's Overview Committee for City Light's Energy 1990 study. He resigned the Committee in August, 1979 when he accepted a temporary position in Geneva, Switzerland.

David G. Sprague was a member of the Citizen Committee until March, 1980. He is active in transportation issues and was Chairman of the Citizens Advisory Transit Committee for METRO.

Barbara C. Thomas is an architect with special interest in environmental design. She is a member of the American Institute of Architects and the National Trust for Historic Preservation. She served on the Committee until June, 1980.

How the Members were Selected

In January, 1979, representatives of major civic organizations met to suggest committee member nominees to the Mayor. On January 7, 1979, Mayor Royer requested statements of interest from nominees wishing to serve. Following nominee interviews with Energy Office staff and review by the Mayor, 27 appointments were sent to the City Council for confirmation. The Citizen Committee began meeting immediately, prior to formal confirmation. Subsequently, three nominees decided they could not commit any time, and 24 appointments were confirmed on June 12, 1979.

Additional solicitation for members took place in late June, 1979, through the media. Over 40 applications for membership were received, screened by staff, and reviewed by an ad hoc selection committee of the Citizen Committee. Prospective nominees were interviewed and four appointments were confirmed by the City Council in the fall of 1979.

Through this process, many applicants became active members of standing subcommittees, and as replacements for members leaving the Citizen Committee were needed, the subcommittee memberships, informal referrals, and the July, 1979 applications were a ready source of recruitment. Replacement members were appointed by the Mayor and confirmed by the City Council.

How the Committee did its work

A citizen committee of 28 members is a decision-making body and not a working group. Therefore, six standing subcommittees were established early in the project to carry out the preliminary work necessary for the development of recommendations. Standing subcommittees were established in the areas of Residential, Commercial, Industrial, Transportation, Government, and Supply.

The standing subcommittees were composed of Citizen Committee members and other interested or expert citizens. Their responsibilities ranged from overseeing data analysis to developing the specific proposals relating to their respective areas. To complete their assigned responsibilities, the Residential Subcommittee met over 30 times, the Commercial Subcommittee 22 times, the Industrial Subcommittee 24 times, and the Transportation, Government, and Supply Subcommittees 19, 17 and 8 times, respectively. More than 2,000 hours were contributed by these ENERGY, Ltd. citizen volunteers.

What does not change is the will to change.

Charles Olson

In addition to the standing committees, the Citizen Committee formed ad hoc committees for specific short-term purposes. In the spring of 1979, a Contingency Planning Subcommittee for gasoline shortages was formed to recommend contingency measures under local control. An ad hoc Land

Use Subcommittee was established in the fall of 1979 to comment on the City's proposed multi-family land use policies. That ad hoc committtee met on other occasions to address other land use issues such as solar access and solar zoning considerations. The ad hoc Selection Committee reviewed applications for membership.

The Citizen Committee was not only responsible for the development of specific proposals but was also responsible for ensuring that the development of proposals involved the community and reflected community values. To accomplish this, the Citizen Committee conducted 28 public meetings in January and February, 1980, to solicit opinions on which energy issues were most critical and which approaches were most desirable to relieve energy problems. Other meetings were held with civic and private organizations. In addition, over 400 responses to questionnaires were received.

Following the release of the **Draft Action Plan** in October, 1980, the Citizen Committee also scheduled six general public meetings in Seattle communities in December, 1980, and January, 1981. Questionnaires soliciting citizen responses to the **Draft Action Plan** were distributed at these meetings and mailed out with City Light bills. Over 5,800 responses to the draft proposals have been tabulated.

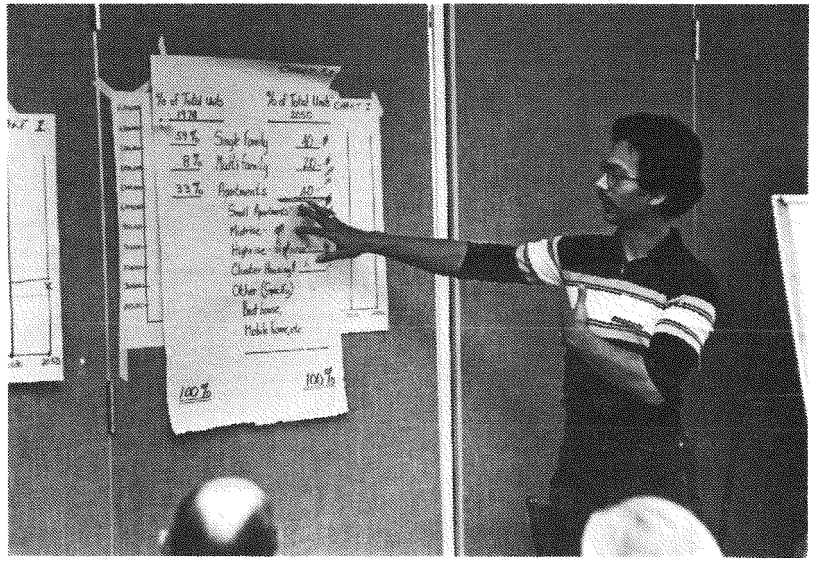
A chronology of the Citizen Committee meetings is shown in Table 1. The outline notes the major business of each meeting. Since the length of regular meetings limited in-depth discussion of certain topics, day-long or half-day workshops were also scheduled throughout the course of the project. The first workshop was the "Futures Workshop" held in November, 1979. Additional workshops were held in February, August and September, 1980, and in January, 1981, to solidify goals, objectives, and proposals as they were developed.

TABLE 1
Chronology of Citizen Committee Meetings

1/4/79	Preliminary meeting: project briefing, roles and responsibilities, member nomination solicitation.
2/15/79	Orientation meeting.
3/14/79	Discussion of role of Committee, subcommittees, staff and chairpersons; formation of ad hoc contingency committee to develop strategy for spot gasoline shortage.
4/12/79	Role and responsibilities of subcommittees; tentative membership on Transportation and Ad Hoc Contingency subcommittees designated.
5/3/79	Seattle City Light presents overview on Energy 1990 study process and review of conservation programs.
5/11/79	Strategy to develop project visibility and public impact potential.
5/22/79	Washington Natural Gas, Western Oil & Gas Association, DOE, Region X presentation on Northwest energy supply of non-electric fuels.
5/30/79	Special meeting regarding Ad Hoc Contingency Subcommittee recommendations on immediate gasoline shortage response.
6/12/79	General Services, Parks and Engineering Departments present municipal conservation activities.
6/12/79	Citizen Committee attend City Council Energy Committee as part of confirmation process.
6/14/79	Co-Chairpersons and staff plan public relations campaign and recruitment of additional committee members.
7/10/79	Ad Hoc Committee formed to review new Citizen Committee applicants.
8/9/79	Staff presentation on energy/land use policy relationship.
8/30/79	Discussion of project progress and necessary Committee action over next four months.

9/20/79	Discussion on base year data in residential and transportation sectors.
9/79	Presentation by Amory Lovins.
10/4/79	Discussion on governmental and industrial sector baseline data; preliminary discussion of all day goals setting workshop with subsequent follow-up community sessions.
10/10/79	Presentation by Portland Energy Policy Steering Committee Chairman Vern Rifer and Portland Energy Advisor, Marion Hemphill on Portland Energy Plan.
10/11/79	Co-Chairpersons meet with Seattle City Light Superintendent to discuss general goals and objectives.
10/18/79	Review of commercial sector baseline data; progress report on future year data for residential sector.
11/1/79	Final planning for "Futures Workshop;" review of governmental, transportation and supply sector data.
11/15/79	Energy Office presentation on Home Conservation Requirement proposal.
11/16/79	"Futures Workshop" held. Discussion focused on scenarios outlining growth projections, transportation modes and energy supply sources for year 2000.
11/29/79	Review of "Futures Workshop" and potential use in planned public meetings to begin in January, 1980.
11/79	Co-Chairpersons, Subcommittee Chairpersons and staff meet with Energy Forum Northwest to plan public participation campaign and upcoming series of community meetings.
12/31/79	Discussion on series of community meetings to be held in January, and presentations by Committee members regarding ENERGY, Ltd. project. Twenty-two public meetings scheduled, including four general forums and 18 meetings with organizations; preparation of comments on Draft Multi-Family Land Use Policies.
1/80	Citizen Committee members conduct 28 community-based meetings.
1/10/80	Ad Hoc Land Use Subcommittee presentation of final draft comments on multi-family residential land use policies; review and critique of slide/sound presentation and questionnaire for community meetings.
1/24/80	Review of completed questionnaire; planning February 2 workshop solidifying goals and objectives.
2/2/80	"Goals and Objectives Workshop" to discuss preliminary subcommittee objectives on a sector-by-sector basis.
2/20/80	Goals and objectives finalized for presentation to the Mayor on February 21.
2/21/80	Co-Chairpersons, Subcommittee Chairpersons and department representatives attend Mayoral briefing.
3/6/80	Discussion of the full text of resolution regarding the project goals and objectives.
3/27/80	Staff presentation of work programs to meet objectives; Seattle City Light presentation of preliminary data base for annual Energy Resources Report.
3/29/80	Committee and Subcommittee Chairpersons, Project Manager and Director of the Energy Office meet to discuss long-range planning for implementation of recommendations and ways to ensure intra-city support of action plan.
4/8/80 & 4/10/80	Working sessions with Councilman Revelle on Seattle and King County energy goals and objectives; basic agreement on context and format of goals and objectives forged; goals adopted as tentative and guiding City goals.
4/16/80	Citizen Committee members meet with Mayor Royer and Charles Duncan, U.S. Secretary of Energy, to discuss energy issues, tehnologies, and capability of local government energy management planning.
4/17/80	Goals and objectives resolution finalized; ongoing work programs for sectors adopted.
5/15/80	Discussion focusing on tangible issues regarding implementation of action plan.
5/16/80	Meeting with Deputy Mayor, Project Manager and Office of Policy and Evaluation to address coordination of OPE's "Energy Policy Project" and ENERGY, Ltd. efforts.
6/29/80	Western SUN presentation on solar applications.
6/30/80	Local solar facilities tour.
7/10/80	Review of Transportation, Residential and Supply Subcommittees' strategy proposals.

7/24/80	Review of Supply and Government Subcommittee's strategy proposals.
8/17/80	Discussion of City Light's proposal to promote large scale conversions to electric heat pumps; discussion of residential efficiency standards proposed by City Light as a condition of service.
8/21/80	Development of format and mode of operation for Citizen Committee workshop; overview of draft action plan.
8/28/80	All-day workshop to review, amend and adopt sub-committees' strategy proposals.
9/4/80	Review and adoption of subcommittees' proposals.
9/18/80	Workshop on subcommittees' proposals; adoption of proposals.
9/25/80	Review and adoption of subcommittees' proposals; discussion of marketing plan of **Draft Action Plan.**
10/2/80	Discussion of marketing plan; discussion of organizational and financing strategies of **Action Plan.**
10/17/80	Discussion on tentative recommendations regarding organizational and financing strategies of **Action Plan.**
10/17/80	Discussion on tentative recommendations regarding organizational and financing strategies of **Action Plan.**
10/17/80	Meeting with Senator Paul Tsongas (D-Mass.) to discuss ENERGY, Ltd. proposals and his interest in energy legislation.
10/23/80	Discussion for 1981 budget and implications to ENERGY, Ltd. project; plans for November-January work.
11/20/80	Discussion of upcoming community meetings; assignment of Committee members to present **Draft Action Plan.**
12/11/80	Review and critique of slide/sound presentation; discussion of work schedule for remainder of project.
12/31/80	Co-Chairpersons and Project Manager meeting with Mayor Royer and Deputy Mayor Royer to discuss support of **Draft Action Plan.**
1/8/81	Discussion of giving priority to certain proposals contained in **Draft Action Plan;** discussion regarding electric-fuel focus of City energy programs, and implications of all-fuel focus of **Draft Action Plan.** Presentation by Deputy Mayor Royer regarding Copper Creek/Creston decisions and their relationship to **Draft Action Plan.** Outlined 13 major energy decisions to be made by Spring 1981.
1/22/81	Workshop to give priority to proposals to be included in **Final Action Plan.**
2/6/81	Meeting with Mayor Royer to discuss his support of priority proposals.
3/5/81	Discussion of strategies to develop political support for **Final Action Plan.**



What the Citizen Committee has accomplished

The Citizen Committee accomplishments are categorized by major products and by major activities. The products and activities are briefly outlined below:

Major Products

1. **Energy Data Base,** January, 1980.

The **Energy Data Base** reports the total energy use for all fuel types in Seattle in the base year 1978 and projects usage for the year 2000. End uses and sector of use are discussed separately. The **Energy Data Base** also includes chapters on energy supplies and rough estimates of the potential energy contribution from renewable resources.

2. **Resolution 26353.** June, 1980.
The goals, objectives and policies proposed by the Citizen Committee are incorporated as tentative goals for the City of Seattle in Resolution 26353 adopted June 2, 1980.

3. **Draft Action Plan.** October 1980.
The Citizen Committee's **Draft Action Plan** includes strategies for the efficient use of energy and increased use of renewable energy sources. The draft includes preliminary estimates of energy savings and offers suggestions for carrying out energy management strategies. The draft plan is a comprehensive plan.

4. **Final Action Plan.** March, 1981
The Citizen Committee's **Final Action Plan** emphasizes top priority recommendations. It is a revision and refinement of the **Draft Action Plan** and omits much of the technical documentation. It represents the Citizen Committee's final report on the direction Seattle should take for a more comprehensive energy management plan, acknowledging the interrelatedness of all fuels.

Major Activities

During the course of the ENERGY, Ltd. project, other departments within the City of Seattle were engaged in work which affected the proposals being considered by the Citizen Committee. Where related to its work, the Citizen Committee commented and testified on the work of these other agencies or departments. Significant comments are outlined below:

Comments and testimony:

1. **Multi-Family Land Use Policies.** The Office of Policy and Evaluation proposed policies for multi-family land use in the fall of 1979. A draft Environmental Impact Statement followed. The Citizen Committee, through the ad hoc Land Use Subcommittee, prepared comments for the Mayor and the Planning Commission on the proposed policies. Comments on the environmental impact statement were submitted to the Planning Commission. Testimony was given before the Urban Development and Housing Committee of the City Council on July 15, 1980.

2. **Contingency Plan/Gasoline Shortage.** The City Energy Office began preparation of a gasoline contingency plan in the spring, 1980. The Citizen Committee established an ad hoc subcommittee to work with the Energy Office in identifying effective local actions to alleviate the problems of shortages. The report was completed by May,1979, and submitted to the Mayor.

3. **Home Conservation Requirement.** In the fall of 1980, the City Energy Office completed work on a proposed Home Conservation Requirement. This program proposed mandatory prescriptive weatherization standards. The Citizen Committee, through the Residential Subcommittee, prepared comments and submitted them to the Energy Office, and later presented testimony to the City Council on the proposal.

Community Outreach

The Citizen Committee carried out with considerable vigor its charge to involve the community in its energy planning. Following the publication of the **Energy Data Base** in January, 1980, the Citizen Committee conducted over 28 community meetings and presentations in one month. A slide/sound show was presented to report the major findings of the **Data Base** and to focus issues.

After discussions with the audience, attendees were asked to fill out a questionnaire on the types of energy activities they would support, from energy supplies to conservation programs, from private sector and federal government actions to local government and community level activities.

There were about 400 respondents to the questionnaire. The results show overwhelming support for solar and conservation energy. Strong support was also voiced for biomass and hydroelectric energy supplies.

Greater emphasis should be placed on energy choices by individuals and community organizations, and also by local government and local

businesses, according to the respondents. Strong support was shown for local actions, as opposed to state and federal actions.

Also, key to the Citizen Committee's **Final Action Plan**, relatively strong support was shown for a non-profit energy development corporation as a means of financing energy improvements, compared to utilities and individuals financing the improvements.

Selected results are shown in the Community Opinion Survey Results.

Community Opinion Survey Results

The following are sources of energy supply which might be developed locally in the next few years. Would you like to see these energy supplies developed?

	Yes	No	Not Sure	No Response
Solar Energy	83%	2%	7%	8%
Wind Power	46%	9%	12%	33%
Hydroelectric Power	71%	5%	9%	15%
Biomass Energy (logging, waste, garbage)	75%	3%	9%	13%
Geothermal Energy (heat from the earth)	61%	4%	18%	17%
Nuclear Power	41%	36%	11%	12%
Coal	44%	23%	18%	15%
Conservation (van pooling, waste heat recovery, cogeneration, heat pumps)	82%	1%	3%	14%

The following are people and organizations that influence energy policy. Which ones would you like to see be more aggressive?

	Less Aggressive	No Change	More Aggressive	No Response
Federal Government	23%	17%	39%	21%
State Government	16%	18%	44%	22%
Local Government	7%	10%	65%	18%
Utilities	13%	19%	47%	21%
Local Business	7%	14%	57%	22%
Community Organizations	2%	7%	75%	16%
Individuals	2%	4%	76%	18%

The following are three ways of financing smaller scale projects. Do you support or oppose them?

	Oppose	No Opinion	Support	No Response
- Utilities and energy suppliers could install and maintain small scale energy systems, such as solar water heaters or heat pumps, in Seattle homes and businesses. These suppliers could then pass the costs of installation and maintenance on to customers in their energy bills.	25%	18%	46%	11%
- We could rely primarily upon individuals to obtain financing for conservation and small-scale energy systems through conventional sources such as banks, finance companies and credit cards. They could then install and maintain their own systems.	23%	19%	45%	13%
- Non-profit energy development corporations could be established. These corporations could offer individuals and businesses low-cost financing for conservation and small-scale energy systems; and develop community-scale energy projects.	8%	11%	66%	15%

The following are actions which could be promoted to conserve energy. Do you support or oppose these actions?

	Oppose	No Opinion	Support	No Response
- Provide information to all energy users concerning installation and maintenance of conservation materials and renewable resource systems designed to meet their needs.	1%	4%	87%	8%
- Provide energy audits to industry would help identify conservation opportunities.	4%	9%	77%	10%
- Convert more downtown parking to car only parking.	33%	19%	38%	10%
- Require that all commercial buildings and industrial plants install renewable energy systems where cost-effective.	12%	15%	61%	12%
- Require that all commercial buildings and apartment buildings be weatherized.	13%	9%	70%	8%
- Expand electric trolley service.	9%	23%	59%	9%
-Lobby for a progressive vehicle tax on the basis of vehicle weight and engine efficiency.	22%	14%	56%	8%
- Amend land use regulations to facilitate conservation and renewable resource development in the community.	7%	20%	61%	12%
- Incorporate energy efficiency considerations into public capital improvements investments.	2%	12%	74%	12%

Following publication of the **Draft Action Plan** in October, 1980, the Citizen Commttee conducted six general community meetings to solicit comments on the specific proposals in the Plan. These meetings were poorly attended. However, the Committee has continued to make presentations to community and business organizations such as the West Seattle Chamber of Commerce, the Rainier Chamber of Commerce, the Magnolia Community Club, the League of Women Voters, the Municipal League, the Mayor's Small Business Task Force, and the Western Washington Solar Energy Association.

Also, from December, 1980 through February, 1981, Seattle City Light included in each of its 280,000 bills an ENERGY, Ltd. brochure/questionnaire soliciting public response to the major proposals in the **Draft Action Plan.** *As an incentive, the Citizen Committee promised to give a* wood stove, donated by the Sutter Home Woodstove Company, to one of the respondents.

Nearly 6,000 questionnaires were returned. On average, 72 percent of the respondents favored the proposals. The statements and the responses are shown in the Questionnaire Summary.

Using radio and television public service announcements, and 350 signs on METRO buses, ENERGY, Ltd. advertised for awareness. For a chance to win a wood stove, people were asked to "Take a whack at Seattle's energy bill" and call for a quesitonnaire.

Questionnaire Summary

		Yes	No
1.	**Community energy action.** Community energy organizations *should be created to provide complete* conservation and solar energy services. The City should undertake a major demonstration project in a Seattle neighborhood to prove that conservation and solar energy can dramatically reduce demand.	68%	32%
2.	**Energy bonds.** A Public Development Authority should sell revenue bonds to provide long-term, low-interest capital to these community energy organizations. Building owners participating in these organizations would pay for conservation and solar energy just like they pay for oil and gas.	58%	42%
3.	**Home energy improvement loans.** Energy efficiency in our homes should be easier to achieve. Local government and utilities should finance home energy improvements.	76%	24%
4.	**Energy efficiency standards for multi-family housing.** The City Council is currently considering energy efficiency standards for single-family houses through four-plexes. Apartments and condos should be required to meet similar standards.	77%	23%

		Yes	No
5.	**Energy audits.** If all residences have to meet energy efficiency standards, then businesses and industry should be required to have an energy audit.	78%	22%
6.	**Utilities should buy conserved energy.** Efficient homes and businesses should be able to "sell" energy savings back to the utilities.	70%	30%
7.	**Low power vehicles.** New facilities should be developed for safe travel by bicycles, mopeds and other low power vehicles for people to commute or shop. Secure parking should also be provided.	79%	21%
8.	**Ridesharing.** Seattle should expand its effort to promote ride matching and vanpools as a public service.	76%	24%
9.	**Motor vehicle efficiency.** The City should distribute fuel efficiency checklists to the general public. Public vehicle fleets should be required to undergo a fuel efficiency test along with air pollution checks.	72%	28%
10.	**Alcohol fuels.** Seattle's public vehicle fleets should take a serious look at developing and using alcohol fuels produced from wood resources.	73%	27%

		Yes	No
11.	**Municipal facilities.** City government should establish a capital investment fund. These funds would be used to finance cost-effective energy efficiency investments in municipality owned facilities.	62%	38%
12.	**Energy impact disclosure.** Envionmental impact statements prepared for new developments should have clear guidelines for disclosing energy impacts.	70%	30%

ENERGY, Ltd.
for a secure energy future

ENERGY, Ltd. Subcommittees

Residential Subcommittee

Jarlath Hume
Ed Lapic
Wanda Franklin
Valerie Batorewicz
Clara Williams
Carolyn Lewis
Len Goodisman
Mally Ribe
Jay Keeton

Commercial Subcommittee

Elizabeth Bell
Arun Jhaveri
Roxanne Park
Frank Tiefe
Kim Lim
Don Pendleton
Jim Hornbuckle
Dan Rees

Industrial Subcommittee

John Stefani
Robert Smith
Bob Gregson
Kimberly Ewing
Chet Richmond
Ted Bair
Dennis Conte
Margaret Neupert
Ben Sebastian
Bill Larson
Paul Evans
Howard Donelson
Gene Sykora
Robert J. Dutton
George Ledbetter

Government Subcommittee

Tom Eckman
Rodney Proctor
Bonnie Saicheck
Jack Sidener
Don Vogt

Transportation Subcommittee

Louis Krug
Henry Lippek
Peg Sparkman
Gayle Fohrell
Judith Wirth
Sean Reid
Jackie Dewey

Supply Subcommittee

Ted Hunter
John Wabel
Sylvester Burch
Ann Siqueland
Frank Marshall
Ed Bishop
Bill Wortley
Greg Pease
Christina Buman
Milan Brace
Meg Delaney
William Diggs

Committees have become so important nowadays that subcommittees have to be appointed to do the work.

Laurence J. Peter