

**CITY OF ANN ARBOR**  
**ENERGY PLAN**  
**A SUMMARY OF FINDINGS**



**ENERGY – ANN ARBOR**  
**PUTTING IT TOGETHER**

**June 1981**



Community Development Office  
100 North Fifth Avenue  
Ann Arbor, Michigan 48104  
313-994-2915



June 1981

Dear Mayor Belcher and Members of City Council:

In fulfillment of the Charge from the Mayor dated May 8, 1980, the Energy Steering Committee is submitting its recommendations to you in the form of an Energy Plan for Ann Arbor. Also included for your review are the reports prepared by the Committee's five Task Forces. The Ann Arbor Energy Plan summarizes the findings of these reports and puts them in a planning framework. The actual Task Force reports should serve as supporting documentation to the proposed policies and programs of the Plan, and a guide for future implementation of energy programs. The Committee's recommendations consider ways to conserve energy and promote the use of renewable resources in Ann Arbor. The recommendations are comprehensive and we believe will lead to significant energy savings when implemented.

After we began operations, five Task Forces were formed made up of Steering Committee members and the general public to consider detailed policies relating to energy use. These task forces are Building Retrofit, Renewable Resources, Transportation and Land Use, New Construction and Site Design, and Promotional. They have been meeting regularly since August 1980 to consider various policies and programs. During the last year, the Task Forces have held over 100 meetings in the process of developing their reports. At one time or another almost 75 people participated in the development of the reports in addition to Steering Committee members. While the Task Forces were meeting, the Steering Committee has continued to meet approximately every three weeks to discuss general energy conservation matters, to review the work of the Task Forces and to develop specific policy recommendations for inclusion in the Energy Plan. These activities have been ably supported by the staff of the Department of Community Development.

The Steering Committee and Task Force meetings were open to the public to encourage the widest community participation possible in the development of the reports and Plan. In addition, many of the Steering Committee meetings were carried by Ann Arbor Cablevision and many activities were covered by the Ann Arbor News. The Steering Committee actively encouraged participation throughout the development of the Plan, which can be seen in the number of meetings and people that were involved.

As the Chairman of the Energy Steering Committee, I encourage you to carefully consider the recommendations made in the Energy Plan and adopt the implementing departments in City Hall to conduct further studies to determine the feasibility of the recommendations as many of them need more in-depth analysis.

It has been a pleasure to serve you and the City of Ann Arbor in this important task. We urge you to continue your energy conservation efforts, as this Plan serves only as a starting point for much more work that is necessary to assist Ann Arbor residents in conservation and use of renewable resources.

Sincerely,  
John A. Clark  
Chairman, Energy Steering Committee

Enclosures: Ann Arbor Energy Plan  
Transportation and Land Use Task Force Report  
Building Retrofit Task Fore Report  
Renewable Resources Task Force Report  
New Construction and Site Design Report  
Promotional Task Force Report

**RESOLUTION OF THE STEERING COMMITTEE TO TRANSMIT THE ANN ARBOR ENERGY PLAN TO THE MAYOR AND CITY COUNCIL**

WHEREAS, the Mayor and City Council created the Energy Steering Committee and charged it with the responsibility to develop a comprehensive Energy Plan for the City of Ann Arbor;

WHEREAS, energy prices continue to increase and the potential for energy shortages is real and affects all residents of Ann Arbor;

WHEREAS, the Energy Steering Committee has spent the past year studying energy problems and developing the policies and programs in the Energy Plan to conserve energy and promote renewable energy resources; and

WHEREAS, five Task Forces to the Energy Steering Committee developed reports in the areas of transportation and land use, building retrofit, renewable resources, new construction and site design and promotion which serve as a guide for future implementation of proposed programs of the Energy Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Energy Steering Committee approves the policies, programs, and directives for the implementation as set forth in the Energy Plan and encourages the City Council to adopt the Energy Plan as a guide for future action.

BE IT FINALLY RESOLVED, that the Energy Steering Committee recommends that the City Council establish an Energy Commission to continue the work of the Steering Committee and consider implementing the programs outlined in the Plan.

APPROVED BY ENERGY STEERING COMMITTEE

By a Vote of 19-0

May 28, 1981

**Ann Arbor Energy Plan  
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## SECTION I: INTRODUCTION

Awareness of rising energy prices, possibilities of shortage, and growing concern about the reliability of oil supply from foreign sources have attracted the attention of many Americans. While opinions vary as to the extent of supplies, the reasons for shortages, and the viability of alternative energy sources, the need is clear for conservation and the development of new energy sources. The need rests on the increasing cost and scarcity of energy and fuel. There is virtually no question about this painful fact.

Ann Arbor has few energy resources of its own. We have no oil or gas wells, coal mines, or sources of geothermal steam. A few Ann Arbor residents are making use of solar or wind energy, and the City is hoping to use the dams on the Huron River to produce some energy if hydroelectric generation proves to be cost-effective. But almost all of the energy used in Ann Arbor is imported. Most of the money Ann Arbor spends on energy leaves the City's economy.

If we had a limitless supply of energy, conservation in its use would not matter. But we have a finite supply, and to allow for its equitable distribution it is necessary to conserve. Further, as the supply of energy is diminished, its cost increases. Accordingly, to keep energy costs from being prohibitive for all it has become necessary to practice conservation and to seek new sources for energy.

There is no doubt that Ann Arbor can, as a community, reduce its rate of consumption of energy by using it more wisely. Energy experts agree on two important points: energy prices will continue to rise, and it costs less to improve conservation measures than to pay for the energy that would otherwise have been consumed.

Recognizing the need for a local energy conservation effort, Mayor Louis Belcher appointed a 23-member Energy Steering Committee in April of 1980 to develop an energy plan for the City and provided them with six guiding principles:

1. The policy must be aggressive and achieve significant results;
2. The social and economic differences between people and firms must be recognized and accommodated;
3. All sectors of the City must be dealt with equitably;
4. All actions must maintain Ann Arbor's attractiveness as a place to live and do business;
5. Conservation measures must be cost-effective; and
6. The City government's role must be to support private activity and not replace it.

In response to the charge, the Energy Steering Committee was organized into five Task Forces, and invited members of the community to assist in developing policy recommendations. The five Task Forces were called:

- Building Retrofit Task Force
- Renewable Resources Task Force
- Transportation and Land Use Task Force
- New Construction and Site Design Task Force
- Promotional Task Force

Each Task Force was chaired by two members of the Energy Steering Committee, met frequently during the year, and prepared a report. A summary of these Task Force findings is given in the final section of this Energy Plan. This Plan is based upon their policy recommendations except in two areas: the role of government and municipal operations. These policies were proposed by

staff of the Community Development Department and have been endorsed by the Energy Steering Committee. The resulting Energy Plan emphasized seven areas:

1. The Role of Government—defines the role of government in promoting and facilitating energy conservation among its citizenry.
2. Transportation and Land Use—assesses the coordination of land use and transportation components of the City to promote energy efficiency.
3. Building Retrofit—evaluates retrofitting Ann Arbor’s existing residential and nonresidential buildings with energy conservation measures.
4. Renewable Resources—explores ways to increase local use of solar, wind, and hydroelectric energy technologies and recycling opportunities.
5. New Construction and Site Design—addresses issues of improved efficiency in buildings, protection of solar access, energy-conscious landscaping, and innovative building design.
6. Promotion and Education—promotes improvement in the quality and availability of energy information, facilitating public input to the Energy Plan, and promotion of energy awareness generally.
7. Municipal Operations—considers energy conservation possibilities in City operations ranging from street lighting and transportation to public building retrofit.

With continued community concern and involvement it is anticipated that this Energy Plan will be effective in realizing energy conservation, fighting rising energy costs, increasing community self-reliance, and making the City a more attractive place to live and work.

## **SECTION II: Goal, Policy Statements, and Policy Objectives**

### **Goal**

To pursue increased energy efficiency in an orderly manner, a course of action must be set. The goals of the Plan, the direction of policy, and the eventual programs and activities must be agreed upon. These policies and programs should reflect an agreed-upon goal. The goal of this plan is:

To increase energy efficiency and use of renewable resources in existing and new construction, transportation, land use, municipal operations, and other applicable operations and facilities through appropriate policies and programs, while maintaining the attractiveness of Ann Arbor as a place to live and do business.

In this section of the Plan, seven major policy statements have been developed to achieve this goal. Each of these statements is followed by more specific policy objectives.

## **Policy Statement: Role of Government**

City government, in conjunction with the City schools, the Ann Arbor Transportation Authority and other government agencies, shall coordinate and/or implement energy related programs and activities, and shall encourage conservation actions in the private sector.

### ***Policy Objectives***

**Energy Commission:** To appoint an Energy Commission to oversee implementation of this Energy Plan. The Energy Commission's tasks will be:

1. To promote input from and support by the largest feasible number of community interests for the Ann Arbor Energy Plan;
2. To promote the policy objectives of the Ann Arbor Energy Plan;
3. To make recommendations to the City Council to implement programs of the Energy Plan;
4. To guide the implementation of the recommended programs of the Ann Arbor Energy Plan;
5. To consider proposals for additions or changes in the Energy Plan; and
6. To evaluate these recommended energy programs periodically.

**Data System:** To develop and maintain reliable data on energy use and costs in the City, by sector through time.

**Energy Curtailment:** To help manage the consequences of any energy supply cutbacks within Ann Arbor by developing a plan to meet the urgent demands which serious energy shortages may place on the community's ability to function.

**Work with Public Agencies:** To work with the Ann Arbor Public Schools to encourage the introduction of energy conservation in school curricula and its consideration in school policy.

To work with the Ann Arbor Transportation Authority to promote energy conservation through more efficient use of the City's transportation system.

To work with other public agencies as appropriate in fulfilling the objectives of the Energy Plan.

**The Role of the City:** To promote energy conservation by using City government as a role model for the community, especially with regard to conservation in the use of public buildings and transportation, by continuing and expanding City energy programs.

**Implementation of Plan:** To ensure that all City policies and programs are consistent with the Energy Plan through a process of continual review, and through recommendations to City Council and Departments by the City Administrator.

To facilitate the timely achievement of the City's conservation policies by establishing and implementing programs to achieve the policy objectives of the Energy Plan, in order to promote energy conservation in all sectors of the community.

To cooperate with regional, state, and federal governments and their agencies in facilitating energy conservation, and in achieving the objectives of this Plan.

To encourage continued cooperation between the University of Michigan and the City's energy programs, and to use the expertise and experience of the University in the implementation of the Energy Plan.

## **Policy Statement: Transportation and Land Use**

The City shall develop land use and transportation policies that improve the efficiency with which the City uses nonrenewable fossil fuels. Such policies shall be designed to:

1. Reduce the number of unnecessary trips;
2. Make necessary trips as efficient as possible; and
3. Take advantage of location and density factors as they influence land use.

Achievement of these goals shall increase the energy efficiency of residences, and shall encourage individuals to choose methods of travel that are most fuel-efficient.

### ***Policy Objectives***

**Land Use:** To define the role of the City with regard to the larger southeastern Michigan area so that it is complementary to its regional setting, and leads to balanced future development.

To work with other governments in the Ann Arbor-Ypsilanti urbanized area to:

1. achieve a balance of residential and economic development;
2. manage urbanization through the phasing of sewer line extensions;
3. encourage the development of a limited number of multi-purpose shopping/community centers; and
4. promote the continued use of prime farmland for agricultural production in adjoining townships.

The City should develop two sets of residential development policies. For existing neighborhoods, the City should identify sites having potential for redevelopment and propose replacement uses that would increase density without consuming large amounts of energy in the conversion. For currently vacant areas, the City should also include high density residential along transit routes in the planning of necessary City infrastructure.

The City should encourage (a) clustering of housing and common wall construction to reduce the amount of energy used for heating and cooling, and (b) concentration and mixtures of land uses to decrease the spatial separation between complementary, interacting land uses.

To encourage the transformation of existing shopping centers into multi-function shopping/community centers, easily accessible from transportation modes other than automobiles. These should include supermarkets, community services, office activities and housing, and their position as nodes on the transit system should be emphasized.

To designate transit corridors on arterial streets planned as future bus routes, and to plan and zone land within the corridors for high-intensity use (especially high-density residential). Accordingly, the City should plan and zone land outside of transit corridors and district centers for uses not requiring a high degree of accessibility via the transit system.

To plan and zone so that major employment centers and housing at a variety of price levels are close to each other, and to evaluate major proposed employment centers in relation to housing availability.

## **Transportation**

### ***Transit***

To provide high-quality linkage between shopping/community/employment centers and residential areas by taking steps to immediately increase the bus ridership in the City.

To provide high-quality linkage between shopping/community/employment centers and residential areas by making three long-range improvements to the public transit system:

1. Develop and implement a downtown transit circulator system;
2. Coordinate transit coverage of the University area between the University of Michigan and the Ann Arbor Transportation Authority (AATA); and
3. Improve public transit along the Huron River Valley corridor with an emphasis on work and school trips to major activity centers.

### ***Bicycle and Pedestrian***

To provide circulation systems so that people are able to travel by bike and foot between any two points in the City with reasonable directness, safety and comfort by:

1. Developing and adopting official bicycle and pedestrian circulation systems;
2. Encouraging commuters to use non-motorized transportation;
3. Increasing City activities that encourage bicycle and pedestrian uses; and
4. Cooperating with the Ann Arbor Public Schools to increase student and faculty awareness of bicycling and walking to schools.

### ***Parking Management***

To improve energy efficiency by managing parking facilities in a way that encourages transit use, bicycling, walking, and ridesharing.

#### **Ridesharing**

To promote ridesharing by continuing and improving the existing ridesharing program.

#### **Traffic Management**

To improve traffic management by making better use of the existing roadway system and encouraging more energy efficient automobile travel.

## **Policy Statement: Building Retrofit**

The overall goal of the Building Retrofit Task Force is to achieve an energy savings of 35 percent in the residential sector and 25 percent in the non-residential sector over the next five years. The primary aim of the policies and programs is to elicit the voluntary weatherization of existing buildings. Various educational, incentive and regulatory measures should be implemented to encourage retrofit activities.

### ***Policy Objectives***

#### ***Residential***

To inform City residents and property owners about energy conservation measures for their residential structures.

To provide financial and administrative incentives to City residents and property owners to encourage the retrofit of residential structures.

To promote residential retrofit through the use of regulatory measures where necessary.

To coordinate energy retrofit activities of the City with those provided by the Residential Conservation Service Program wherever possible.

To encourage higher building utilization patterns in residential structures where appropriate and feasible.

To provide sufficient information to retrofitters on control of indoor air pollution.

### ***Nonresidential***

To inform owners and lease-holders of nonresidential buildings on energy conservation measures for their structures.

To provide financial and administrative incentives to nonresidential building owners to encourage building retrofit.

### ***Municipal***

To develop an energy management program for all municipal buildings.

To provide financing for continued retrofit of municipally-owned buildings.

To provide sufficient information in indoor air pollution and, if necessary, regulation of indoor air quality to protect public health and safety.

## **Policy Statement: Renewable Resources**

The City shall encourage a shift from the consumption of nonrenewable energy resources by residential, commercial and institutional users to the use of renewable resources, including passive, active and hybrid solar systems, low head hydroelectricity, wind electricity, biomass/methane, waste heat recovery systems and waste recycling.

### ***Policy Objectives***

#### **Education**

To promote the use of renewable and alternative energy resources by providing educational, financial and technical assistance to Ann Arbor citizens on their use.

#### **Solar**

To promote use of solar space and hot water heat in residential, commercial, institutional and municipal buildings and facilities.

#### **City Programs**

To review the financial feasibility and to facilitate the development of low head hydroelectric power from the City-owned dams.

To expand private and public involvement in recycling activities.

## **Policy Statement: New Construction and Site Development**

The City shall promote energy efficiency and the use of renewable energy resources to the greatest extent possible in new development, reconstruction and renovation by optimizing the energy efficiency of new construction techniques, using energy-conscious site planning and landscaping practices, and by protecting the solar access of buildings for use of solar collection devices.

### ***Building Codes***

To promote the use of solar collection devices in new and renovated building construction by amending the City's Building Code to reflect a higher standard of energy efficiency and greater use of renewable energy resources.

### ***Solar Access***

To promote the use of solar collection devices in new, as well as existing, construction by protecting solar access in the planning, zoning, subdivision control, and site plan review processes of the City.

To provide incentives for building designs and site plans which allow for optimal placement of structures for solar access.

### ***Landscaping and Site Design***

To provide planning guidelines and incentives that encourage energy-conscious use of landscaping techniques throughout Ann Arbor.

To support the City Forestry Department's planting and landscaping functions which are conducive to energy conservation, such as use of appropriate street plantings and landscaping of municipal streets, parking lots and buildings.

### ***Building Innovation***

To encourage the use of innovative energy-conscious building designs, such as earth-sheltered and super-insulate buildings, by minimizing the regulatory barriers that discourage their construction.

### ***Home Occupations***

To reduce barriers to the establishment of home occupations in order to reduce transportation and space heating costs associated with occupations located outside the home.

### ***Outdoor Lighting***

To increase the energy efficiency of outdoor lighting and to restrict certain types of outdoor lighting when its advertising potential and visibility serve little purpose.

## **Policy Statement: Promotion and Education**

To encourage the participation of Ann Arbor citizens in a citywide energy conservation effort, the City shall promote energy efficiency by its citizens, and educate them on measures and issues related to energy conservation.

### ***Policy Objectives***

**Education**

To inform the community about current patterns and trends in the use and cost of energy in all sectors of the City.

To increase awareness of how individuals, households, businesses, and the entire community can use energy more efficiently and convert to use of renewable resources.

To make energy information more readily available to all those interested in it.

**Promotion**

To publicize the Energy Commission and its work.

To encourage widespread community participation in the further development and implementation of the Energy Plan.

To encourage community support for feasible and cost-effective programs to conserve energy and to utilize renewable resources.

**Policy Statement: Municipal Operations**

City departments shall reduce energy consumption by adopting energy conservation measures, and by changing operational procedures to those most energy and cost-effective.

***Policy Objectives*****General Operations**

To reduce overall City government energy use by abiding with policies and objectives contained in this Energy Plan.

To procure the most energy-efficient goods, equipment, and buildings through full use of life-cycle costing procedures.

To reduce work-related local travel of City employees.

To develop a plan for energy supply curtailments which assures that critical City operations can be maintained during an energy shortage.

To coordinate energy efficiency actions in municipal operations through the City Energy Management Task Force.

To reduce energy consumption in both the public and private sectors by evaluating and revising the City Code where necessary.

**Specific Operations**

To increase the energy efficiency of all City-owned buildings.

To reduce energy use in the solid waste disposal operation.

To reduce energy used for water/sewage treatment.

To reduce City energy consumption and to reduce or stabilize energy costs within the street lighting operation without degrading the quality of the system.

To manage City government energy use more effectively by establishing and maintaining an accounting/monitoring system to record City energy consumption and costs, thus identifying energy conservation opportunities.

To reduce energy consumption in the City vehicle fleet by improving the operating procedures of the City garage, City departments, and City administration with regard to vehicle management and use.

## SECTION III: Suggested Programs & Activities

From the policy statements and objectives presented in the previous section, the City can develop specific actions. These actions may be in the form of City programs or projects, or may involve a redirection of existing activities. What follows are specific program or activity recommendations as they relate to the seven principal policy areas with directives for their implementation. Each proposed program is defined as either a new or existing program. A new program is one where no efforts in the program area have been made. An existing program is where some efforts have been undertaken by the appropriate City department or agency but where continuation or modification of existing effort is suggested.

The broadest possible support of citizens, institutions, businesses, and others is needed to mobilize human and financial resources to implement conservation programs. Therefore, an Energy Commission, established to advise the City Council on the implementation of this Plan, is central to the recommended programs and activities.

### *Role of Government*

**Ann Arbor Energy Commission:** The Energy Commission is a new program proposal, intended to provide participation and support by the largest possible number of community interests. While there are many existing organizations (commissions, boards, committees, etc.) that have an interesting energy conservation and promotion of the use of renewable resources, the Energy Commission is needed to coordinate the activities of these groups, focus on the common goals and objectives, and arrive at effective program recommendations that will achieve the objectives of the Energy Plan.

**Purpose:** The purpose of the Energy Commission is to review the City budget for energy items, guide the implementation of the recommended programs of the Ann Arbor Energy Plan, and to evaluate their results. The Energy Commission will be responsible for reviewing the specific details, funding options and the overall impact of proposed programs, and for making recommendations to City Council to implement those programs which:

1. Are aggressive in achieving significant results in energy conservation and promotion of renewable resources;
2. Are sensitive to the economic and social differences between people;
3. Are equitable in dealing with all sectors of energy conservation;
4. Maintain Ann Arbor's attractiveness as a place to live and do business;
5. Implement conservation measures which are cost-effective; and
6. Encourage government to support private activities, not replace them.

The Energy Commission should use this Plan as the planning framework for promoting and implementing energy programs. It should look to the Task Force Reports for supporting documentation of the policies and programs in the Energy Plan, and as a guide for implementing proposed energy programs.

The structure of the Energy Commission is shown in Figure 2. The Commission would be composed of two officers, an ex-officio member and two standing subcommittees. The chair is to be nominated and appointed by the Mayor with Council consent for a term of three years. The chair would be responsible for guiding the overall work of the Energy Commission, act as its representative, and make periodic reports to the Ann Arbor City Council.

The vice-chair of the Energy Commission should be appointed for a two- to three-year term. He or she will oversee funding for the programs and activities recommended in the Ann Arbor Energy Plan and approved by the Energy Commission and City Council for implementation. In addition to funding from sources external to City government, funding for programs and activities within the City government shall normally include one-half the documented dollar savings from such programs and activities each fiscal year. This funding policy is subject to review by City Council, which of course retains responsibility for the City budget.

The City Administrator will be a permanent member of the Commission in an ex-officio capacity. The City Administrator or his/her designate, will coordinate and direct City government actions in support of the Energy Plan.

The remaining ten members will be nominated and appointed by the Mayor with City Council approval. Nominees should be representative of those who have taken part in the development of the Energy Plan and citizens who have recognized expertise in the field of energy, community affairs, environment, public policy, transportation, financing, social service, and commerce. All nominees should be willing to devote the time required for active involvement in the affairs of the Commission.

The Commission should have two standing subcommittees; one for policy and program development and a second for promotion. The Policy/Program Subcommittee will be composed of seven members. The Subcommittee will establish ad hoc working groups of citizens to work on specific projects and programs. Working groups also may be established to review the progress and monitor the results of implemented programs for the purpose of making reports to the Energy Commission.

The Promotion Subcommittee will consist of three members. This Subcommittee will coordinate ad hoc working groups to draw together information on

1. patterns of energy use and costs in the City by sector through time;
2. methods of energy conservation and of utilizing local and renewable energy resources; and
3. the Energy Plan and the work of the Energy Commission.

The Subcommittee will make such information readily available to all those interested through a variety of means. Finally, the Subcommittee will solicit citizen participation in accordance with the public outreach plan already developed and included in the Energy Plan.

**Directives for Implementation:** A twelve-person Energy Commission should be established by resolution of City Council for a term of five years, after which time its activities will be reviewed by City Council. Individuals should be nominated by the Mayor and confirmed by the Council. The chair of the Commission would be appointed in the same manner.

The Ann Arbor Energy Commission should be directed to publish an annual progress report in September for the Ann Arbor City Council and the community at large. This report should detail the progress made in achieving policy objectives of the Energy Plan. It should also indicate significant developments, new programs, levels of funding for such programs, and estimated energy saved as a result of implementing the Energy Plan.

## *Role of Government*

<b>Programs &amp; Activities</b>	<b>Status/Implementation</b>
<p><b>Energy Curtailment--Community Energy Emergency Contingency Planning:</b> City government must be prepared to meet the urgent demands which serious energy shortages can place on their communities. The City must develop a plan that outlines what the community should do in the case of an energy shortfall, disaster, or drastic price increase. The City should have a rational plan for reacting to a community-wide need to reduce energy consumption. A plan should be developed that looks at use of local information channels, potential areas of vulnerability, a timetable for action, and specific actions that can be taken at home, in neighborhoods, in transportation, and at work.</p>	<p>New Program. The City should direct one of its energy consultants to develop a Community Energy Emergency Contingency Plan.</p>
<p><b>Energy Curtailment--Energy Data System:</b> The City should develop and maintain a reliable database system on energy use and costs in the City. It should work with the Planning Department, the local utilities, state government, and others to acquire energy consumption information and determine energy usage patterns so that the community can know whether consumption is increasing or decreasing, and target the most appropriate conservation opportunities.</p>	<p>New Program. The Energy Commission should direct the City's Information System Manager to develop and maintain an Energy Data System.</p>

## *Transportation and Land Use*

<b>Programs &amp; Activities</b>	<b>Status/Implementation</b>
<p><b>Land Use—Revisions to Planning Policy Documents:</b> The land use policy objectives of this Plan should be studied and then incorporated into the Ann Arbor General Development Plan and the City's development review process. The General Development Plan should be revised to include energy considerations as stated in its policy statements and plan map; for example, energy-sensitive location of proposed land uses, encouraging energy-efficient building types, and reducing transportation needs. Energy considerations should also be incorporated in the development review process. Regulatory barriers should be removed and energy conservation encouraged. This might include solar orientation and reduction of street width in subdivisions; consideration of solar access, location and density of townhouse construction, and home occupations in zoning regulations; provisions for community gardens in all new developments; and solar access and energy-efficient site design in site plans.</p>	<p>New Program. The City Planning Department should develop revisions to planning policy documents.</p> <p>The City Planning Commission should review and enact revisions to planning policy documents.</p>
<p><b>Transit—Bus Use Promotion Program:</b> Transit system publicity should be continued, and expanded and improved where needed. It should be especially aimed at automobile drivers—the largest pool of potential new riders.</p>	<p>Existing Program. The AATA should continue to expand and improve its transit system publicity.</p>
<p><b>Transit—Transit Improvements Program:</b> Several types of transit improvements should be implemented as part of AATA's ongoing improvement efforts, including</p> <ol style="list-style-type: none"> <li>1. The development of clearly marked bus stops with permanently affixed schedules;</li> <li>2. The development of an integrated city-wide map of the AATA bus routes;</li> <li>3. Extension of the AATA hours of operation to include early morning, late evening, and weekends to service shift changes at University Hospital, a major employer;</li> <li>4. Expansions or extensions to the transit service should be based upon sound comprehensive transit planning. Such planning should include analysis of travel/usage patterns,</li> </ol>	<p>Existing Program. The AATA should continue to research efforts and implement these transit improvements.</p>

<p>health and safety needs, and land use patterns in the community;</p> <ol style="list-style-type: none"> <li>5. Implementation of express bus services on more bus routes;</li> <li>6. Program development to encourage employers and businesses to pay bus fares for their patrons/employees;</li> <li>7. Changes to the AATA regulations to allow people to get off and back on the same bus without paying again to encourage people to shop on their way from work (instead of returning to do shopping by car).</li> </ol>	
<p><b>Transit—Transit Research and Planning Program:</b> Ways to reach long-range policy objectives to improve transit should continue to be researched and developed for future implementation. Future programs that should be developed include:</p> <ol style="list-style-type: none"> <li>1. A free fare zone for public transit in the downtown, hospital, and University areas; and</li> <li>2. An energy-efficient downtown bus mall devoted exclusively to the bus system.</li> </ol>	<p>Existing Program. The AATA should research and develop these alternatives for eventual implementation.</p>
<p><b>Bicycle and Pedestrian—Bicycle and Pedestrian Circulation Systems:</b> These two modes need to be officially recognized, encouraged and given equal consideration in transportation efforts. Several ordinances and policies need revision to encourage and facilitate travel by bicycle and walking. Providing for these modes must become a regular, required part of development and improvement in the City.</p>	<p>Existing Program. The City should appoint a Pedestrian Coordinator to the City staff. City ordinances should continue to be revised as they relate to encouraging or discouraging bicycle use. Ordinances still in need of revision relate to developers' requirements for existing properties (retrofit), zoning to allow small neighborhood stores in residential areas, and minimum design standards for facilities. The City Transportation Department should be directed to continue upgrading bike and pedestrian circulation maintenance, improve intersections for biking and walking, and improve traffic flow for biking and walking between intersections.</p>
<p><b>Bicycle and Pedestrian—Employer Bicycle Program:</b> As a major employer within Ann Arbor, the City government should develop and test incentives programs to encourage increased walking and biking to and at work. Knowledge and experience gained in this pilot should later be offered to other employers in the City interested in assisting their employees in reducing their energy consumption.</p>	<p>New Program. The Bicycle Coordinator should be directed to continue and expand efforts to begin a pilot Employer Bicycle Program in City government, and to expand this program to other employers.</p>
<p><b>Bicycle and Pedestrian—Ann Arbor Schools' Bicycling/Walking Awareness Program in the Schools:</b> To increase the awareness and acceptance of bicycling and walking to schools, programs should be developed for school-age children. Bicycle parking facilities and energy conscious driver education classes should also be provided.</p>	<p>Existing Program. The Ann Arbor Board of Education should direct local schools to continue and expand their biking/walking awareness activities.</p>
<p><b>Bicycle and Pedestrian—Bicycle and Pedestrian Programs:</b> The City should continue to expand its programs to encourage not only bicycle but also pedestrian activity within the City. Future program activities could include improved pathways for bicyclists and pedestrians, provision of adequate bicycle racks, and media promotion, among others.</p>	<p>Existing Program. The City Council should direct and support the Bicycle Coordinator in the Transportation Department to continue and expand its City Bicycle Program.</p>
<p><b>Parking System—Parking Management Program for Energy Conservation:</b> The City should continue to encourage energy efficient</p>	<p>New Program. A parking management team should be</p>

<p>use of automobiles, transit and alternative forms of transportation in three major ways:</p> <ol style="list-style-type: none"> <li>1. By providing preferential treatment to people who share rides or commute by bike, moped, motorcycle, etc.;</li> <li>2. By increasing the cost of parking (especially long-term parking and parking of low-occupancy automobiles; and</li> <li>3. By stricter enforcement and administrative practices with regard to parking (limit number of spaces, limit long-term parking, enforce all parking management solutions.</li> </ol> <p>Strategies for using these methods should be researched and implemented.</p>	<p>developed to draft appropriate ordinances, ordinance revisions and guidelines to encourage energy efficient parking practices</p>
<p><b>Ridesharing—Ridesharing Program:</b> The existing Ridesharing Program should be continued and improved, and its benefits should be publicized more widely. Ridesharing should also be incorporated into emergency curtailment plans.</p>	<p>Existing Program. The AATA should continue and improve its ridesharing efforts as appropriate.</p>
<p><b>Traffic Management—Traffic Management Implementation:</b> The following strategies to reduce energy consumption should continue to be considered and researched:</p> <ul style="list-style-type: none"> <li>• traffic signal synchronization;</li> <li>• elimination of unnecessary stop signs;</li> <li>• road and intersection improvements;</li> <li>• use of one-way streets in some situations; use of preferential lanes; and changing the schedules of local businesses to reduce the number of automobile trips made for shopping.</li> </ul> <p>These strategies should be implemented where they are found to save energy and not interfere with other traffic management objectives.</p>	<p>Existing Program. The City Transportation Department should continue to research and implement traffic management techniques where appropriate. The AATA should research and implement traffic management techniques where appropriate.</p>

### ***Building Retrofit***

<b>Programs &amp; Activities</b>	<b>Status/Implementation</b>
<p><b>Residential—Energy Education Workshops/Seminars:</b> The City of Ann Arbor has funded home heating workshops aimed at low-income homeowners to teach ways of saving energy in the home. This effort should be expanded to include workshops targeted at other renters and owners in Ann Arbor where appropriate. It is an effective way to disseminate information.</p>	<p>New Program. The Energy Commission should assess the need for continued workshops on energy retrofit and propose activities where appropriate.</p>
<p><b>Residential—Energy Audits:</b> A federal program under the National Energy Conservation Act called the Residential Conservation Service (RCS) requires major utility companies to provide home energy audits to their customers. Since this program covers many important issues related to home retrofit, the City should develop home audit programs only as needed to supplement RCS efforts.</p>	<p>New Program. The Community Development Department should continue to provide input to the local utility companies on the Residential Conservation Service Program. IF it becomes necessary, the Community Development Department should be directed to develop its own capacity to provide home energy audits.</p>
<p><b>Residential—Booklets on Tenant/Owner Retrofit Information:</b> There is currently a booklet that property owners must distribute to their tenants entitled "Rights and Duties of Tenants." A section on energy conservation should be included in this booklet with information on how to interpret and compare energy consumption data on a rental unit, potential energy saving measures tenants can take (primarily behavioral), and on tenant rights with regard to energy-efficiency requirements of the City. A similar booklet should also be prepared for homeowners.</p>	<p>New Program. The City Attorney, in conjunction with the Building and Community Development Departments, should write booklets providing owner and tenant information on building retrofit. Local tenant, property owner, and neighborhood interests should be</p>

	solicited for input into these booklets.
<b>Residential—RCS Audit Subsidies:</b> Some citizens may not be able to afford the cost of the RCS energy audit. People with limited incomes may feel they have better uses for their resources. The \$10 fee for the audit should, therefore, be subsidized for low-income residents.	New Program. The Community Development Department should be directed to provide the necessary subsidy to low-income residents so that they receive an RCS audit on their home or apartment free of charge through the Block Grant Program.
<b>Residential—Loan Pool:</b> Current high interest rates in the private lending sector discourage the use of loans as a source of investment capital for retrofit activity. A low-interest loan pool should be developed to free up the necessary funds to finance conservation investment. Possible funding for this loan pool should be considered from a variety of sources, including <ul style="list-style-type: none"> <li>• The utility companies</li> <li>• Government programs</li> <li>• Private lending institutions</li> <li>• City and state bonding power, and</li> <li>• Tenant security deposits.</li> </ul>	New Program. The Community Development Department should be directed to continue its loan program for energy retrofit, and to research and pursue all new potential funding options for building retrofit.
<b>Residential—Retrofit Grants:</b> Low-income homeowners should be assisted in retrofitting their homes. In many cases, this may mean providing grant assistance. The City's Community Development Program, through its home repair and home rehabilitation programs, currently provides some energy conservation retrofit. These efforts should be continued and supplemented, if necessary.	Existing Program. The Community Development Department should be directed to continue its grant assistance program for retrofit of homes for low-income homeowners, and to modify it where necessary to meet community need through its home repair and home rehabilitation programs.
<b>Residential—Tax Incentives:</b> Consideration should be given to offering a one-time City property tax credit during one given year equal to a predetermined percentage of the purchase and installation costs of retrofit modifications up to a fixed maximum dollar amount. These credits would be available upon proof of installation of measures as determined by a follow-up inspection provided by RCS or city auditors. The City should research the legal and financial ramifications of such a credit.	New Program. The City Attorney should be directed to research the feasibility of a one-time property tax credit for building retrofit.
<b>Residential—Building Permit Cost Waiver:</b> Where renewable resource technologies and other retrofit construction require a city permit, the fee could be waived to encourage investment in energy conservation measures. This would bring down the costs for the building owner, and thus, would serve as financial incentive.	New Program. The City Attorney in conjunction with the Building Department should draft a resolution exempting building retrofit projects from building permit fees.
<b>Residential—Low-Cost/No-cost Energy Conservation Program:</b> Low-cost energy conservation items, such as caulking, weather-stripping, water flow restrictors, and possible plastic window covers should be distributed and assistance should be provided on installation of low-cost/no-cost energy conservation techniques. Material would be provided to low or moderate income homeowners and tenants, sold at a low cost to other members of the community, and distributed through workshops on building retrofit where the use of the supplies could be demonstrated.	Existing Program. The Community Development Department should continue to expand its efforts to provide residents with low-cost/no-cost energy conservation measures by funding an outside agency to undertake a project to assist low income residents in installing these measures and by continuing the energy retrofit efforts in its home repair program.

<p><b>Residential—Rental Utility Billing System:</b> Rental property owners should be encouraged and assisted in using the Rental Utility Billing System (RUBS), a system where the utility bill in a mass-metered apartment building is given to its tenants in an attempt to give them responsibility over their utility bill, thereby encouraging energy conservation. A fixed base rent and a percentage of the electricity, natural gas, and/or oil bill is also charged to the tenants (but separately from the rent payment).</p>	<p>New Program. The Building Department should be directed to provide guidance to property owners who wish to use the Rental Utility Billing System.</p>
<p><b>Residential—Building Utilization:</b> Current use of residential structures is very low, with less than two persons per unit in the rental stock and only slightly more than two persons per unit in the owner-occupied sector. Programs should be developed and implemented that assist in promoting better usage of the building stock, including:</p> <ol style="list-style-type: none"> <li>1. More flexible home occupation regulations (see New Construction and Site Design Program options);</li> <li>2. Renter/owner match-up services; and</li> <li>3. Programs to make rental of spare rooms in private homes more attractive.</li> </ol>	<p>New Program. The Planning and Community Development Departments should be directed to research and promote program options encouraging greater building utilization.</p>
<p><b>Residential—Mandatory Audits and Consumption Disclosure for Owner-Occupied Housing:</b> Economic incentives for home weatherization will not result in actual retrofit activity unless the homeowner has the proper education and general information about his/her home, and about various retrofit options. Therefore, the City should develop and adopt an ordinance that requires homeowners to obtain an energy audit and disclose energy consumed for the preceding year at the point of sale of a home. This type of requirement would serve to inform the potential buyer of the energy efficiency of the dwelling unit, thus encouraging the purchaser to seek an energy-efficient home or one where retrofit costs can easily be determined.</p>	<p>New Program. The City Attorney in conjunction with the Building Department should be directed to draft an ordinance requiring mandatory audits and consumption disclosure by homeowners at point-of-sale.</p>
<p><b>Residential—Future Mandatory Retrofit for Homeowners:</b> It is difficult to predict whether an aggressive voluntary retrofit program for owner-occupied housing will be adequate. If voluntary residential retrofit fails to meet the proposed 25% energy savings in the owner-occupied sector during a five-year trial period, revisions to the City's Housing Code to require compliance with a minimum energy-efficiency standard at point of sale of a dwelling should be considered.</p>	<p>New Program. The Energy Commission should be responsible for monitoring the success of a voluntary retrofit program for homeowners and for proposing mandates, if found to be necessary.</p>
<p><b>Residential—Mandatory Retrofit for Rental-Occupied Housing:</b> An ordinance whereby property owners are required to audit and then retrofit their rental units should be adopted by the City. This ordinance should allow the property owner a choice between three methods of compliance: cost-effective retrofit, prescriptive standards, or performance standards. Compliance with this requirement should be obtained within one year of the periodic inspection conducted on all rental units by the City Building Department. Those property owners currently due for a periodic inspection would be given one year to comply. Should a property owner fail to comply with these standards, the Certificate of Occupancy for a given dwelling unit would be revoked.</p>	<p>New Program: The City Attorney in conjunction with the Building Department should draft an ordinance requiring mandatory retrofit for rental-occupied housing.</p>
<p><b>Residential—Individual Metering of Apartment Buildings:</b> An ordinance should be drafted and adopted requiring individual utility meters for all residential units in cases where single-family dwelling units are being converted to multi-family units and where such a conversion would not impose an unreasonable burden on the property owner. If given the responsibility for regulating energy consumption, tenants of individual dwelling units are encouraged to conserve.</p>	<p>New Program. The City Attorney in conjunction with the Building Department should draft an ordinance requiring individual metering of residential units when converted from single to multi-family dwellings.</p>
<p><b>Nonresidential—Energy Management Program:</b> An Energy Management Program should be designed to assist the private nonresidential sector in obtaining audits, implementing energy cost</p>	<p>New Program. The Engineering and Building Departments should work jointly to develop an Energy</p>

avoidance measures, and in coordinating information on retrofit.	Management Program for private nonresidential buildings.
<b>Nonresidential—Financial Assistance for Nonresidential Building Retrofit:</b> Because the cost of installing energy conservation measures in nonresidential buildings can be very high, it may be beneficial to assist the business and commercial interests of the city in assuring one or more of the following financial arrangements are available: low-interest loans (through use of the Ann Arbor Economic Development Corporation); tax credits and abatements; building permit cost waivers; and local bank loans for retrofit.	New Program. The Energy Commission should be directed to research financing options for nonresidential building retrofit.
<b>Municipal—Municipal Building Retrofit Program:</b> Current retrofit efforts of the city in government and school buildings should be continued and funding should be obtained to implement additional needed retrofit. In addition, an energy management program for all municipal buildings should be developed. As many options as possible should be considered and pursued to provide funding for retrofit of public buildings.	Existing Program. The Engineering Department should be directed to continue its efforts to audit and retrofit City-owned buildings and to propose financing options for them.

## *Renewable Resources*

<b>Programs &amp; Activities</b>	<b>Status/Implementation</b>
<b>Education—Energy Information Bank:</b> The currently increasing demand for energy information suggests a need for a highly visible, convenient and centrally located site for citizens to obtain energy materials. An Energy Information Bank should, therefore, be formally established at the Ann Arbor Public Library to foster and encourage better dissemination of energy information to the Ann Arbor Community.	New Program. The Energy Commission and the Ann Arbor Public Library should each designate a member to act as a liaison in improving and promoting the continued dissemination of energy information at the Public Library.
<b>Education—Ann Arbor Energy Center:</b> While the Energy Information Bank provides a short-range solution to the problem of providing energy information and technical assistance to the community, a permanent Energy Center should be established. The Ann Arbor Energy Center should be a City-owned demonstration house using renewable resources (i.e., wind, solar), available for all community energy-related activities. It would house energy-related projects, meetings, workshops, and an energy library. One year for site selection and an additional year to get the Energy Center in operation are recommended.	New Program. The Energy Commission should oversee the planning and implementation periods for the Center.
<b>Municipal Solar—Solar Applications at City Parks:</b> An active solar array should be installed and monitored at Fuller Park to heat pool water and preheat shower and space heating water. The effectiveness of a solar pool cover should also be tested at either Buhr or Veterans Park. This program would serve to: (1) Increase community awareness of solar potential in Ann Arbor; and (2) provide interested residents with information on the reliability and cost-effectiveness of solar technology.	New Program. The Engineering and Parks and Recreation Departments should be directed to install an active solar system for water and space heating at Fuller Park, and pool covers for passive solar heating at either Veterans or Buhr Park to monitor its success.
<b>Municipal Solar—Renewable Resources Financial Incentives Program:</b> In order to assist in an effort to promote and support increased utilization of renewable energy systems and technologies, all “qualified” building renovations, retrofits, additions, and new buildings that utilize renewable energy systems and technologies should be exempt from normally required City building permit fees. Under this program, application for a plan examination and building permit and all inspections would still be required to satisfy City building permit requirements, and all inspections would still be required to satisfy City	New Project. The City Attorney in conjunction with the Building Department should draft a resolution exempting qualified building projects using renewable resources from building permit fees.

<p>building standards. Only the building permit fees would be made exempt from payment. Qualified building projects would be defined identically to those renewable projects approvable for the Michigan Solar Tax Credit.</p>	
<p><b>City Programs—Hydroelectricity Reactivation:</b> The City should support reactivation of two or more of the four dam sites for hydroelectric power generation where justified. In doing so, the City should:</p> <ol style="list-style-type: none"> <li>1. Initiate investigations as soon as possible to determine actual costs;</li> <li>2. Advocate the purchase of American-made equipment for dam reactivation;</li> <li>3. Use run-of-the-river principles in redevelopment;</li> <li>4. Consider City operation of the dams;</li> <li>5. Promptly seek needed legal advice;</li> <li>6. Immediately seek necessary license exemptions;</li> <li>7. Establish viable markets for the power generated;</li> <li>8. Further explore the City bonding option for financing;</li> <li>9. Explore other grant and loan options for financing redevelopment; and, finally</li> <li>10. Seek group purchase of equipment to reduce costs.</li> </ol>	<p>New Project. The City Engineering Department is currently completing research on financial and legal questions with regard to dam redevelopment. The conclusion of this research should be followed by favorable consideration of such redevelopment where justified.</p>
<p><b>City Programs—Recycling Program:</b> At present, Recycle Ann Arbor, a non-profit agency, is providing pick-up of multiple recyclable materials (paper, glass, cardboard, metal, etc.) for about 20% of the households in the City. The City should support expansion of the Recycle Ann Arbor program until it is a city-wide operation. In order to achieve this, the following steps should be taken:</p> <ol style="list-style-type: none"> <li>1. A registration ordinance should be enacted to prevent curbside pick-up programs from problems with scavenging;</li> <li>2. The provision written in the present City Code of allowing no more than three twenty-five gallon containers of refuse per week to be collected should be enforced;</li> <li>3. The City should provide an additional vehicle for pick-up of curbside recyclable materials and a structure to house a paper baler on City-owned property at the recycling station site;</li> <li>4. After the city-wide program is in place, an additional subsidy should be provided to participating non-profit groups who recycle multiple materials on a year-round basis;</li> <li>5. Finally, a Curbside Source Separator Recycling Ordinance should be placed before the voters after a trial period with a city-wide recycling program.</li> </ol>	<p>Existing Program. The City Attorney in conjunction with Recycle Ann Arbor and the Energy Commission should draft proper resolutions and ordinances, and support an expanded recycling program.</p>

### ***New Construction and Site Design***

<b>Programs &amp; Activities</b>	<b>Status/Implementation</b>
<p><b>Building Code—Building Code Revisions:</b> Research should be undertaken to determine what the City must do to strengthen energy conservation standards in its Building Code. This should include research into model energy standards written by professional organizations and other units of government, and related legal implications. If an adequate model for stronger building codes does not exist, the City should develop its own standard. An interim document should also be drafted that would be provided to builders, contractors, and other construction professionals between now and the time building code modifications are enacted, which would outline conservation measures that could be undertaken in new construction and their potential for energy savings.</p>	<p>Existing program. The Building Department should continue to enforce the ASHRAE energy code, as required by the state, and to review possible revisions to the City's Building Code.</p> <p>The City Attorney should research legal issues regarding energy code revisions. The City Engineering and Building Departments should work jointly to determine the most appropriate Building Code revisions for the City, either by</p>

	finding an adequate model, or by drafting one. They should also be responsible for the development of an interim document outlining conservation measures.
<b>Building Code—Building Professionals Training Program:</b> Officials and staff involved in Building Code enforcement should continue to be trained to understand the entirety of the Michigan Energy Code applications for new construction, and for any Code modifications adopted locally so that adequate enforcement of energy conservation standards is assured. For instance, conferences such as the “Solar Specialist Program for Codes Enforcement Personnel” recently sponsored by the Council of American Building Officials, should be attended by appropriate Ann Arbor Building Personnel.	Existing Program. The Building Department should continue to secure proper training for its officials and staff regarding Building Code enforcement and energy conservation.
<b>Solar Access—Policy and Guideline Development to Protect Solar Access:</b> Planning, zoning, subdivision control, site plan review, and other related regulations should be carefully reviewed to determine what barriers and opportunities they contain concerning solar access for both existing and new sites of development. Revisions to these policy documents and guidelines should be drafted, and adequate measures to evaluate compliance with new regulations developed.	New Program. Planning Department staff should review zoning, subdivision control, site plan review, and other related regulations for barriers to and opportunities for solar access. Ordinances should be revised, amended or deleted as necessary to protect solar access.
<b>Solar Access—Solar Access Incentives Program:</b> Assessing the need for solar access and attaining the necessary legal agreements with neighbors to protect it can be complex, time consuming, and costly. As an incentive to encourage home and property owners and developers to use and protect solar access the City should offer two main services: (1) Offer guidelines and assistance to developers, remodelers, and new purchasers of property in determining the proper orientation for solar collection devices, buildings and vegetation to achieve adequate solar access; and (2) Provide assistance to property owners and developers who wish to negotiate covenants and easements with neighbors to protect solar access so that such agreements contain all necessary legal language to hold up under challenge.	New Program. Assistance should be offered by staffs of the Planning and Building Departments on proper solar orientation and related legal issues. The City Attorney should draft model covenant and easement agreements and assist local citizens in negotiating them.
<b>Landscaping and Site Design—Energy Conscious Landscaping and Vegetation Use:</b> Barriers to the application of passive energy conservation techniques should be eliminated. Codes and ordinances pertaining to landscaping and vegetation should be reviewed and revised, and guidelines for energy conscious landscaping should be developed for the site plan review process. Landscape guidelines could also be offered as an educational tool to developers and other property owners to assist them in choosing species of vegetation and planting methods that provide passive energy conservation.	New Program. The Building Department, with the advice and assistance of the City Attorney, should review and revise the City’s Landscape Ordinance and other regulations affecting the use of vegetation and landscaping. They should also develop guidelines for the site plan review process and for education of the public on energy conscious use of vegetation and landscaping.
<b>Landscaping and Site Design—City Planting and Landscaping: Guidelines for Energy Conservation:</b> Guidelines and policies should be developed to carry out City planting and landscaping duties in an energy conscious and environmentally sensitive manner. These guidelines should address both protection of solar access on the one hand and maintenance of street plantings and landscaping of parking lots (including ground cover and shading requirements) on the other.	New Program. The City Forester should be directed to develop guidelines and plans for a City planting and landscaping program which protects solar access while maximizing energy conservation through appropriate use of vegetation and

	landscaping.
<p><b>Building Innovation—Incentives for Innovative Energy Conscious Building Designs:</b> Innovative building designs that maximize energy efficiency, such as earth-sheltered and super-insulated building designs, should be encouraged by reviewing City codes and ordinances for barriers to their use. As an additional incentive, energy-efficiency ratings should be developed for new buildings so that the energy conservation benefits of innovative designs are highlighted for buyers and the building community. Finally, the lending industry should be educated on the benefits of innovative buildings to expedite their acceptance as viable building alternatives.</p>	<p>New Program. The Planning and Building Departments should be directed to revise zoning and building codes to minimize barriers to innovative building designs.</p> <p>The Building and/or Engineering Department should be directed to develop an energy-efficiency rating system for new building construction.</p> <p>The Energy Commission should be directed to provide information about innovative buildings to the local lending institutions to improve their acceptance.</p>
<p><b>Home Occupations—Ordinance Revisions to Encourage Home Occupations:</b> Allowing residents to carry on profit-making employment within their homes reduces the need to travel to another location for employment, and thus saves energy. The existing zoning ordinance should be researched to identify barriers to and opportunities for home occupations. Appropriate revisions should not allow developments which would threaten the public health, environment, or character of the neighborhood.</p>	<p>New Program. The City Attorney and the Planning Department should make recommendations for appropriate revisions to the home occupations section of the City's zoning ordinance to encourage their establishment.</p>
<p><b>Outdoor Lighting—Outdoor Lighting Reductions:</b> Chapter 61 of the Ann Arbor City Code, "Signs and Outdoor Advertising," should be modified to reduce the use of outdoor lighting within the City, especially in the late evening and when the establishments being advertised are closed. For instance, the amendment could require lighting of signs only until 10:30 pm unless the business or establishment is open. Monitoring of such a revised regulation should also be determined.</p>	<p>New Program. The City Attorney should be directed to revise the "Signs and Outdoor Advertising" chapter of the City Code.</p> <p>The Building Department should develop a plan for properly monitoring compliance with a stricter outdoor lighting ordinance.</p>

### *Promotion and Education*

Programs & Activities	Status/Implementation
<p><b>Promotion—Energy Conservation Promotion Program:</b> Radio, television, cable television, and a host of other media should continue to be used by the City to keep energy conservation related information before the public. Special weeks devoted to promotion of energy conservation could be sponsored; door-to-door campaigns to get energy conservation materials to homeowners and other promotional techniques can also be used. Such information should be targeted at the groups it will most benefit; for instance, property owners, renters, senior citizens, homeowners, car drivers, etc.</p>	<p>Existing Program. The Energy Commission in conjunction with the City staff should be directed to coordinate the continuation of promotional activities related to energy conservation.</p>
<p><b>Education—Energy Conservation Workshops:</b> As suggested in the Retrofit section of this Plan (p. 20), workshops and seminars should be provided on a wide variety of energy topics.</p>	<p>New Program. The City should continue to support workshops on topics related to energy conservation where found to be needed and appropriate.</p>
<p><b>Education--Energy Programs in School Curricula:</b> The City should work with local elementary, middle, and high schools and colleges to</p>	<p>Existing Program. The Ann Arbor Board of Education should</p>

<p>provide curricula on energy conservation topics, such as building retrofit, and use of renewable resources.</p>	<p>continue to assure that energy curricula are available at all grade levels. Local colleges and the University of Michigan should also be encouraged to continue providing classes related to energy conservation.</p>
<p><b>Education—Energy Center/Energy Information Bank:</b> As discussed in the Renewable Resources section of this Plan (p.24), two information centers are suggested; one as a short-range and the other as a long-range solution to providing energy information to the community until the Center is operational.</p>	<p>Existing Program. The Energy Commission should oversee the planning and implementation periods for the Energy Center and the Energy Information Bank.</p>
<p><b>Education—Feedback for Energy Consumers:</b> Feedback through monthly utility bills is a practical and cost-effective means of reducing unnecessary energy consumption and costs in the City, and would also promote energy awareness. Local utility bills should be redesigned for feedback purposes. Decreases or increases in the customer's energy usage and cost should be provided on the utility bills regularly.</p>	<p>Existing Program. The City Council should continue to support the concept of feedback for energy consumers and encourage the Michigan Public Service Commission to require such information dissemination from utilities to their customers. The Energy Commission should consider monitoring the efforts of the utilities to provide consumption feedback.</p>
<p><b>Education—Community Energy Report:</b> The question of how much energy consumption is "too much" is important, yet difficult to answer. The current Community Energy Report plays a distinctive and useful role in efforts to conserve energy by generating publicity and promoting energy awareness. It asks a sample of people what their energy consumption is so that people in the community have a benchmark against which to compare their own energy usage. This information should continue to be collected and published regularly.</p>	<p>Existing Program. The Energy Commission should consider continuing to issue the Community Energy Report.</p>
<p><b>Education—Public Outreach Program:</b> Procedures which provide for the selection and review of program options outlined in this plan are important to assure that the plan is implemented. As the program options become sufficiently well developed (research completed, ordinances written, final recommendations made), and ready for proposed implementation, the Energy Steering Committee has used the public outreach program to offer the program for public review. To continue this effort, a subgroup of the Energy Commission should prepare media releases and disseminate information about an individual program option to people within the community who are expected to be most interested in it. Public meetings would be arranged when necessary, and the pattern of responses in the review of the program would be monitored and documented. After this process has taken place, the program option would be proposed to the appropriate decision-making body (City Council, Planning Commission) for approval.</p>	<p>Existing Program. The Energy Commission should appoint a subcommittee to continue implementation of the Public Outreach Program.</p>
<p><b>Education—Energy Conservation Information Program:</b> The results of energy conservation activity can be informative to the community by showing how much more energy efficient it has become. Through the use of energy monitoring and other data collection techniques, the energy savings of the community and of city government operations should be measured. This information should be publicized throughout Ann Arbor.</p>	<p>Existing Program. The Energy Commission in conjunction with the City Energy Management Task Force should continue to put an energy monitoring mechanism in place to assure that such information is collected and disseminated.</p>

## *Municipal Operations*

Programs & Activities	Status/Implementation
<p><b>General Operations—City Energy Management Task Force:</b> A City Energy Management Task Force, consisting of department heads who are responsible for major energy consuming functions, was developed in summer of 1980. This task fore should continue to provide a top level forum for making recommendations to the City Administrator and City Council on energy issues affecting municipal operations.</p>	<p>Existing Program. The City Administration should continue to use the City Energy Management Task Force to make decisions regarding energy conservation in municipal operations.</p>
<p><b>General Operations—Contingency Plan Development for Fuel Emergencies:</b> Studies have begun in the development of a contingency plan to deal with potential future energy shortages and disruptions. Since cities bear the brunt of maintaining essential services such as fire and police protection, such a plan is essential. A committee of the City Energy Management Task Force ahs been formed and an energy consultant hired to continue work in this area. They should complete and gain approval of the plan.</p>	<p>Existing Program. The City should direct consultants and staff to continue to develop and complete an Energy Contingency Plan for municipal operations.</p>
<p><b>General Operations—Energy Efficient Procurement:</b> The City should develop a procurement policy where the life cycle of all purchases is considered.</p>	<p>Existing Program. The City Purchasing Department should be directed to continue developing energy efficient procurement policies.</p>
<p><b>General Operations—Water Conservation Program:</b> The City Utilities Department should promote and encourage water conservation through the use of flow restrictors. Public awareness and other methods for encouraging this type of energy conservation should be developed and implemented. City Administration should back such efforts despite the potential for reduced water usage resulting in lower City revenue.</p>	<p>Existing Program. The City Administration should direct the Utilities Department to continue and expand its water conservation promotion efforts.</p>
<p><b>General Operations—Carpool and Bike Programs:</b> The City should continue and expand its efforts to encourage employees to carpool, use bicycles, or walk to and from work.</p>	<p>Existing Program. The City Bicycle Coordinator should be directed to continue his efforts in encouraging both carpool and bicycle usage by City employees.</p>
<p><b>Specific Department Operations—Building Monitoring for Energy Conservation:</b> A City Building Energy Management Program is in the formative stages, with necessary data currently being collected manually. As conservation goals are set for energy consumption in City buildings, a feedback system providing information on energy usage will be essential. Research and reports on options available to automate the monitoring of buildings are underway.</p>	<p>Existing Program. The Engineering Department in conjunction with the Data Processing Department should continue development of an automated building monitoring system.</p>
<p><b>Specific Department Operations—Energy Conservation in the Solid Waste Operation:</b> An analysis of the municipal solid waste stream brought to the Ann Arbor Landfill for disposal was undertaken by the Solid Waste Department to determine the amount and type of refuse available for material and energy recovery. This information should be used to determine energy conservation measures in the solid waste operation.</p>	<p>Existing Program. The Solid Waste Department in conjunction with the Engineering Department should continue to research specific measures that can be taken to increase the energy efficiency of its operation.</p>
<p><b>Specific Department Operations—Alternative Fuels Project:</b> Federal grant money has been awarded for a feasibility study directed at the production of energy from the combustion of solid waste provided by the City of Ann Arbor through the processing of municipal refuse. This project should be completed, and steps taken to implement as many recommendations from the study as found feasible.</p>	<p>Existing Program. The Engineering Department in cooperation with the University of Michigan should, upon completion of the Alternative Fuels Project, assess its feasibility and pursue appropriate actions.</p>

<p><b>Specific Department Operations—Street Lighting Replacement Program:</b> An energy management plan for street lighting is currently being prepared for converting to a more energy and cost efficient lighting system. This plan should be completed and implemented.</p>	<p>Existing Program. The City should continue to direct its hired consultant to complete an energy management plan for street lighting.</p> <p>The City should direct the Transportation Department to work with Detroit Edison in implementing the energy management plan for street lighting.</p>
<p><b>Specific Department Operations—Vehicle Fleet Management Program:</b> The City recently approved the purchase of a Vehicle Fleet Management Information System. This system should be installed and proper administrative policies should be put in place, in order to increase the energy efficiency of the City vehicle operation.</p>	<p>Existing Program. The City Garage in conjunction with vehicle operating departments and City administration should continue to work jointly to use the Vehicle Fleet Management Information System to conserve energy.</p>

## SECTION IV: Summary of Task Force Findings

The Task Force reports provide a much greater degree of detail than this summary document with regard to proposed policies and programs. They should be consulted frequently to understand the full intent of this Plan. These reports are briefly summarized below.

### *Transportation and Land Use*

The amount of energy used to move people and goods is determined by patterns of development and the spatial separation between land uses. Energy conservation strategies should, therefore, be an important aspect of the transportation and land use policies and programs of the City of Ann Arbor. Motorized travel is the single largest consumer of petroleum. To improve energy efficiency, trip-making could be altered in three ways:

1. reduce the number of trips;
2. reduce average trip lengths; and
3. shift trips from automobile to buses, walking, and bicycling.

Two basic planning strategies which could change trip-making are to (1) locate complementary, interacting uses contiguous to each other; and (2) locate concentrations of economic activity and residential population along the transit and pathway networks. These strategies can be discussed in terms of three components of a total land use pattern and four components of a total transportation system:

1. Higher density residential area;
2. The Central Business District and shopping/community centers;
3. Major employment centers; and
4. Transit circulation;
5. Bicycle and pedestrian circulation;
6. Parking management; and
7. Automobile circulation.

Energy conservation through alteration of travel patterns can be accomplished in one of two main ways: through direct contact of land use components or through high-quality transportation linkage. Direct contact can be accomplished by either the melding of two or more uses within the same site (e.g. building a high-rise apartment over part of a shopping center parking lot) or the placing of higher-density residential use immediately adjacent to a shopping/community center (in which case the internal pedestrian and bicycle circulation systems of two abutting developments would be required to interconnect).

To adequately perform the function of intermediary, a transportation system must provide high-quality linkage throughout the trip. For instance, a pathway segment which traverses a higher-density residential area, but ends at the outer edge of a shopping center parking lot, does not provide adequate linkage. The four transportation system components are discussed below with regard to how they can provide high-quality transportation linkage.

*Transit:* The City's bus system can reduce energy consumption by providing high-quality linkage between shopping/community/employment centers and residential areas. Both immediate and long-term steps should be taken immediately to increase bus ridership in Ann Arbor as a replacement for personal vehicle use.

*Bicycle and Pedestrian Circulation:* Walking and biking as transportation modes can significantly reduce energy consumption because every trip diverted to non-motorized transport reduces the consumption of nonrenewable fuel to zero. In order to facilitate this shift in mode, official bicycle and pedestrian circulation systems need to be developed in conjunction with programs in work places and schools and strengthened government support.

*Parking Management:* Parking Management can encourage energy conservation by either reducing automobile travel in a selected area or making the operation of the road system more efficient.

*Ridesharing:* The use of ridesharing, which includes carpooling and vanpooling, has been shown to be an effective method of reducing energy consumption. Energy is saved by shifting riders from low-occupancy vehicles to those with a higher level of occupancy, thus reducing the fuel units consumed per passenger mile of travel.

*Traffic Management:* Many transportation system management techniques conserve energy. They can improve the flow of vehicles by allowing for a more even speed for traveling vehicles and by reducing the number of stops vehicles must make. Strategies that can reduce energy consumption include: traffic signal synchronization, elimination of unnecessary stop signs, road and intersection improvements, and use of one-way streets in some situations.

## ***Building Retrofit***

Building retrofit is a key component in Ann Arbor's energy conservation effort because existing buildings account for the greatest portion of the City's energy consumption. The majority of these buildings were constructed in an era when energy was cheap and plentiful, and as a result, energy-saving building designs and construction techniques were not incorporated.

The City can foster building retrofit activity by designing a conservation/weatherization program for the residential and nonresidential building sectors of the City, consisting of a mixture of educational, incentive, and regulatory efforts to promote physical modifications of buildings, changes in human behavior patterns of energy use and use of energy management techniques.

**Residential Retrofit:** In the residential sector, the largest energy consuming sector of the City, the primary energy use is space heating. Therefore, a residential retrofit program should target weatherization efforts at the heating needs of homeowners and tenants.

In meeting the need for an aggressive retrofit program, the City should promote and supplement the Residential Conservation Service (RCS). This program requires major utility companies to provide home energy audits, referral services for financing and local construction services, direct loans, and follow-up inspections of energy conservation work through technical assistance workshops, public seminars, promotional campaigns, and other information services.

Financing is the greatest single barrier to building retrofit. The City should provide incentives which assist buildings owners in raising the initial investment capital that retrofit activity requires. The City should look into several financing options: a loan pool for energy conservation investment, a one-time property tax credit for energy conservation investment, and building permit cost waivers for retrofit work. Financing options should be widely publicized when they are available. Other incentives that involve the provision of technical assistance to people should also be considered.

Despite the increasing economic incentive for weatherization posed by rising fuel costs, a rigorous voluntary retrofit program may not be sufficient to secure energy conservation goals. Therefore, the City is to require an energy audit and energy consumption data disclosure upon the sale of a dwelling. This requirement would serve to inform the potential buyer of the energy efficiency of the unit, encouraging the buyer to seek an energy-efficient home. If the energy consumption of the owner-occupied residential sector is not reduced by 25% over five years, City Council should consider regulatory action to require energy retrofit.

Another regulatory action should be to require rental property owners to retrofit their rental units within a year of the periodic inspection conducted on rental units by the Building Department. This may be necessary since rental property owners may not believe there is an economic incentive to retrofit when heating costs can be passed on to tenants. Individual metering of residential units where single-family dwelling units are converted to multi-family units should also be required in order to give tenants responsibility for conserving.

**Nonresidential Retrofit:** An important way the City can assist in nonresidential retrofit is to develop and implement an energy management program for the private sector. This is a systematic, ongoing strategy for controlling a building's fuel consumption pattern to reduce the waste of energy dollars to the minimum permitted by the climate, condition of the building, its use and occupancy schedule, and other factors.

The City should provide guidance to building owners on gathering energy consumption data and information on energy cost avoidance measures, and should act as a clearinghouse for general information about nonresidential retrofit. In addition, the City should consider providing financial incentives for nonresidential building owners for physical changes to their structures which result in energy conservation. Areas to consider include: Economic Development Corporation bonds, tax credits/abatements, building permit cost waivers, and local bank loans.

The City should also develop an energy management program for all municipal buildings, and find as many options as possible for funding these retrofit activities.

### ***Renewable Resources***

With the diminishing supply of fossil fuels, renewable energy resources are becoming increasingly important. Communities which develop their potential to tap these resources will be better off both in assuring themselves an energy supply and in helping to control their energy costs. Use of renewable resources can include passive, active, and hybrid solar, low head hydroelectricity, wind electricity, biomass/methane, waste heat recovery systems, and waste recycling photovoltaic cells and geothermal heat. From this wide range of options for residential, commercial, and institutional users, six projects are recommended for increasing public awareness and use of renewable resource potential. They have been chosen on the basis of their potential for public education, municipal solar applications, and coordination with current City programs.

**The Energy Information Bank:** Use of the Ann Arbor Public Library as an Energy Information Bank is recommended to collect energy information of interest to citizens in one convenient, centrally-located place. As energy prices continue to rise, citizen demand for energy information and interest in local energy matters can be expected to grow and expand throughout the community, increasing the importance of an Energy Information Bank. The City Public Library presents the best location for the Energy Information Bank because of its convenient location, daily service hours, high usage, and information handling expertise.

**Ann Arbor Energy Center:** A City Energy Center is recommended to consolidate relevant energy information in one place while giving citizens “hands on” experience in the construction and use of renewable resource systems and energy efficient products. The Ann Arbor Energy Center is to be a City-owned demonstration house using renewable resource (wind, solar), which would be available for all community energy-related activities. The Center could present a variety of citizen-oriented programs, including: solar greenhouse workshops, year-round vegetable growing instruction, and quarterly updates on new federal, state and local grants, loans, tax incentives and other financial assistance options promoting renewable resources.

**Solar Applications at Parks:** The City should take steps toward installing and monitoring an active solar array at Fuller Park to heat pool water and preheat showers and space heating water; and testing the effectiveness of a pool cover at Buhr or Veterans Park. The purpose of the program is not only to heat the pool water but also to increase community awareness of solar potential in Ann Arbor and to provide interested residents with information on the reliability and cost-effectiveness of solar energy. City Parks were chosen as the appropriate sites for a solar demonstration project because of their high visibility, public use and unobstructed solar access.

**Renewable Resource Financial Incentive Program:** The City should provide designers, builders, and property owners a financial incentive by exempting “qualified” building projects that use renewable energy systems and technologies from the required building permit fees. Under the proposed exemption program, the building permit fee required for all building renovations, retrofits, additions, and new buildings would be waived if the improvements bring the building up to the City’s upgraded Basic Energy Conservation Code (BOCA) and contain a “qualified” renewable energy system or technology as defined by the final rules for the Michigan Solar, Wind, Water and Wood Energy Personal income Tax Credit qualifications.

**Hydroelectric Reactivation:** The City owns four inactive hydroelectric dams located on the Huron River and contracted an outside consultant to assess the economic viability of reactivating them. The second phase of the study was recently completed. In evaluating the reactivation project, it is recommended that the City develop those small-scale hydro projects which are justifiable.

**Recycling:** The City should support the expansion of the current efforts of Recycle Ann Arbor in providing curbside pickup of multiple recyclable materials (paper, glass, cardboard, etc.). The aim should be to make the recycling program a city-wide monthly effort. A suitable trial period of 1 to 2 years should follow, after which the City should submit to the electorate a proposed ordinance for mandatory curbside recycling.

## ***New Construction and Site Design***

Attention to energy conservation in new construction and site design can result in significant future energy savings. This section of the summary identifies measures and policies to:

1. Optimize the energy efficiency of new construction;
2. Conserve energy through site planning and design; and
3. Conserve energy through legal, economic, and institutional measures.

These objectives have been applied to several topics: building energy efficiency, building orientation and street layout, solar access protection, vegetation and landscaping, and innovative building design.

**Building Energy Efficiency:** An estimated 50 percent of the current national energy requirement for new residential and commercial buildings could be saved using currently available technology. Additional energy savings might be achieved through technological innovations in building design and increased research on performance of mechanical and electrical systems, thermal comfort and lighting standards. The City is urged to express a firm commitment to energy conservation by enforcing yet stricter standards than the State Energy Code (ASHRAE requirements) for local use. A wide range of energy conservation measures and uses of renewable resources should be examined in determining these standards, and many existing model standards should be assessed.

**Solar Access:** Use of solar energy to provide heating, cooling and power of buildings requires that solar energy collectors or specific parts of passive solar designs receive direct sunlight. Access to this sunlight can be obstructed by many objects (trees, buildings, etc.), reducing the effectiveness of solar equipment or design employed. Buildings, therefore, should be sited and vegetation planted to minimize shading of solar equipment or design employed.

While solar access needs differ depending on the particular type of solar equipment or design employed, it is recommended that south-wall solar access be protected in most cases. This protects active roof systems and many low-cost effective passive solar options as well.

Several areas of legal and institutional regulation should be modified to protect solar access. These include the zoning, subdivision control and site plan review processes of the City, and the negotiation of easements and covenants between neighbors. Modifications to these regulations and guidelines are recommended to protect solar access.

**Site Design and Landscaping:** Consumption of energy can be greatly reduced by the application of passive design methods to new construction and site design. These methods use the natural climatic effects of sun, wind, and water to increase the energy efficiency of buildings. They include the type and location of plant materials, the size and materials use in paved surfaces, and the use of berms and water features in landscaping. City codes and ordinances should be revised to encourage the use of passive design methods.

**Innovative Building Design:** New and innovative approaches to energy conscious building design are being developed in response to rising energy costs. Two of these with possible application to Ann Arbor are earth-sheltered and super-insulated construction. Earth-sheltered construction entails the use of earth on one or more sides of the building as a barrier or moderator against temperature extremes. These buildings show reductions of 50 to 70 percent of the heating/cooling loads over conventional above-ground housing. Super-insulated construction limits heat losses to the extent that space heating needs can be supplied by heat generated in side structure by people, lighting, and appliances. They can be built for as little as 1 to 5 percent more than conventional homes, and can greatly reduce the energy consumed for space heating.

**City Ordinance/Policy Revision:** Two other areas where energy conservation can be promoted through changes in City ordinances and policy include:

1. Home Occupations—providing for the elimination of some need for commuting to work by removing barriers and providing opportunities for work in the home; and
2. Outdoor Lighting—eliminating some types of outdoor lighting when its advertising potential and visibility are serving little purpose.

## ***Promotion and Education***

Promotion and outreach efforts should be concentrated on making energy information available to the community. The following projects are either in progress or completed as a result of the efforts of the Promotional Task Force.

**Energy Logo and Slogan:** A logo and slogan for the City energy program were developed to help attract and maintain public awareness of energy issues. A contest was organized and logo/slogan entries were solicited from schools, agencies, and graphic artists. The winning logo/slogan is shown here:



*Winning design of the Energy Logo Contest by John Odam.*

**Community Energy Report:** The concept of a Community Energy Report is currently being used as an educational tool in Ann Arbor. The Community Energy Report provides information on household energy consumption levels in Ann Arbor and encourages households to consider whether they are using “too much” energy relative to other members of the community.

**Energy Monitoring System:** The Promotional Task Force recommends that the City modify its Energy Monitoring system. Energy monitoring is a management tool, designed to indicate consumption patterns that can be used to identify potential sources of energy waste and inefficiency. Use of a new Energy Payment Voucher by the Data Processing Department would allow for automation of the system through use of computers, a system far superior to a manual operation for monitoring energy consumption. This data should be the basis of three reports: A City department level report, an engineering report and a report for the City Council and general public. Each would provide information at a different level of detail concerning energy usage in City buildings.

**Feedback for Energy Consumers:** In both controlled experiments and practical applications, simple monthly feedback has been shown to be a feasible, inexpensive, and effective means of inducing energy consumers to reduce their unnecessary energy use. A redesign of utility bills is recommended to facilitate the feedback process.

**Public Outreach Plan:** The Promotional Task Force developed a Public Outreach Plan which proposed a method of promoting the work of the Energy Steering Committee. It proposed that the Steering Committee focus on individual policy options rather than on the Task Force Reports or the Energy Plan as whole documents. These documents were conceived as working documents from which individual policy options could be selected for public review. The separate and sequential review of policy options would proceed in parallel with further work on Task Force reports and the Energy Plan. When policy options were sufficiently developed and documented, a Task Force could recommend the option for public review to the Steering Committee. The Energy Steering Committee would clear the option for public review or refer it back for further work, and public review would be organized by disseminating it to those people/groups expected to be most interested in the option. This could also include arranging public meetings. When it is believed that adequate review has been obtained, the Steering

Committee would approve of the option as a recommendation to City Council or some other appropriate decision making body.

**Media Activities:** Many media-related activities were undertaken by the Promotional Task Force to foster energy awareness in the community and should be continued. These activities include:

- New releases—New releases on the City’s energy program have led to a number of stories in the Ann Arbor News, the Ann Arbor Observer, and the Michigan Daily.
- Media relations—Periodic contact has been made with local newspapers to encourage their cooperation.
- Radio—Members of the Promotional Task Force and the Energy Steering Committee have appeared on WPAG’s call-in program, “Community Comment.”
- Television—An energy-related television program has been brought to the attention of local schools.
- Cable Television—The Task Force has arranged for live coverage of all Ann Arbor Energy Steering Committee meetings and has assisted the Public Access Television Office in expanding its energy programming.
- Home and Leisure Show—This year’s Ann Arbor Home and Leisure Show included a section on energy-related displays at the request of the Promotional Task Force.

**Additional Promotional Activities:** Activities that should be considered in the future include: continued and expanded home weatherization workshops; solar/renewables workshops; dissemination of public information materials such as articles, videotapes, conservation brochures, and pamphlets; and an inter0city energy conservation competition.

## GLOSSARY

**BTU**—British thermal unit. The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at or near 39.2 degrees F.

**Cost-Effective**—Conservation measures which are found to be an “effective” purchase, based upon criteria as defined by the purchaser.

**Energy Audit**—Used in this report to mean a comprehensive analysis of the energy consumption of a building recommendation to reduce that consumption, and a payback analysis that identifies the most cost-effective actions.

**Energy Conservation Measures**—Include any action which reduced the amount of nonrenewable fuel consumed. Both the state and federal governments identify specific retrofit measures which qualify for income tax credit for energy conservation. For the purpose of this policy the definition has been expanded to include such items as load management equipment, solar and alternative energy equipment, industrial process modifications, turning down room and water temperatures or driving less (behavioral modifications), and purchasing energy efficient appliances, vehicles and equipment.

**Low Head Hydro**—A system for obtaining power from the flow of water at a head at or below 60 feet. A head is the height of the impoundment, that is, the actual length the water falls over the dam.

**Renewable/Nonrenewable**—Nonrenewable fuels use up a finite supply, such as gas, oil or coal. Renewables never run out; solar is the main example of renewable fuel.

**Renewable Resource Technologies**—Systems which use renewable resources or recover the waste energy of other processes to be used again, thus decreasing consumption of non-renewable resources.

**Retrofit**—Any energy conserving measures applied to an existing building or process, i.e. to furnish with parts, equipment or materials not installed at the time of manufacture or construction.

**Transportation System Management**—Traffic management techniques which provide for the short-range needs of cities by making efficient use of existing transportation resources, and by providing for the movement of people in an efficient manner.

**Weatherization**—Actions which increase the energy efficiency of a building by reducing the amount of heat lost (or heat gained in summer months) through building walls, air leaks, etc. Actions include insulating walls, floors, ceilings, water heaters and ducts; sealing space around windows and doors; and double-glazing windows.

## References

City of Davis, California, *General Plan* (revisions for energy conservation).

City of Portland, Oregon, Ordinance Number 148251, an ordinance adopting an *Energy Conservation Policy* for Portland, Oregon; and the *Portland Energy Conservation Project*.

City of Saint Paul, Minnesota, St. Paul Energy Office and Committee of 100, *Final Report*.

City of Seattle, Washington, Resolutions 25258, 25259, 25260, and 25271.