



CITY OF ANN ARBOR
ENERGY PLAN
UPDATE (1981 – 1993)



**ENERGY – ANN ARBOR
PUTTING IT TOGETHER**

January 1994

This document produced by:

ANN ARBOR ENERGY COMMISSION

January - 1994

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This report was produced by the Ann Arbor Energy Commission and the Ann Arbor Energy Office. Questions on programs or policy, or requests for additional copies of the Ann Arbor Energy Policy, should be directed to the Energy Office, (734) 996-3150.

Project Name : Mayor's Energy Advisory Board
Project Number : I-A-1
Researched by : Dave Konkle
Responsible Agency : Mayor's Office/City Administrator
Contact Person : David Konkle, Energy Coordinator
Phone Number : 996-3150
Date of Last Contact : 9-93

Project Description : Form an Energy Advisory Board to consider issues, and tasks as referred by City Council, and to develop and implement an annual work plan subject to approval by Council.

Funding & Source : None

Project Status : The Mayors Advisory Board was dissolved in 1985 and the Ann Arbor Energy Commission was formed. The
(Completed - Ongoing) Commission, consisting of 11 citizens appointed by the Mayor along with two Council-persons, was charged to:

- a) Address City policies regarding energy efficiency,
- b) Make periodic public reports and recommendations on means of improving municipal and community energy efficiency,
- c) Prepare, adopt, amend, and transmit to City Council plans identifying municipal and community-based energy production and energy efficiency projects.

The Energy Commission is still active today, meeting the second Thursday of every month.

Recommendation : As evidenced by this report, the City, and the Energy Commission, have been active in achieving the goals set forth in the City's energy plan. The City of Ann Arbor received the State of Michigan - Energy Efficiency Achievement Award in 1989, and has received national recognition for its energy program. Current activities include exploring the capture of methane from the City's landfill to be used as an energy source, and establishing an energy efficiency incentive program for City facilities. The Energy Commission performs a valuable service for the City at no cost and its efforts should be encouraged.

Project Name : Community Energy Emergency Contingency Planning
 Old Project Number : I-A-2
 Researched by : David Konkle
 Responsible Agency : Police Emergency Planning
 Contact Person : Kathy Rich, Disaster Preparedness
 Phone Number : (313) 761-2425
 Date of Last Contact : 12-16-92

Project Description : Develop a plan to identify potential areas of vulnerability and local information channels and recommend measures to reduce energy vulnerability. Set a timetable for action including specific strategies for homes, neighborhoods, in transportation, and at work to deal with an energy emergency in the Ann Arbor community.

Funding and Source : An original \$1,600 was allocated for this plan, with hopes to receive another \$30,000 - \$50,000.

Project Status : The plan was begun but never finished due to lack of funding.
 (Incomplete - Inactive) The Ann Arbor Emergency Action Plan does not contain a specific section on energy, but does refer to prioritizing resource needs and implementing control and rationing of essential supplies.

Recommendation : It would be advisable for the City to plan for an emergency situation where electricity or natural gas is in short supply, but it is low on the priority list.

Project Name : Energy Data System & Reporting
Old Project Number : I-A-3
Researched by : Ken Saulter
Responsible Agency : Information Services Department
Phone Number : (313) 994-8373
Date of Last Contact : 12-16-92

Project Description : The city worked with MichCon and Detroit Edison to obtain customer energy use records for the year 1981 or 1982. Data such as square-footage and dwelling type was correlated with energy use for 52 neighborhoods of the city to compile energy-use statistics for Ann Arbor. These included BTUs per square foot per heating degree day for 7 different types of dwellings from single-family detached to group-metered apartment buildings. In 1983, a complete energy audit report was prepared by the Mayor's Energy Advisory Board and contained a sector breakdown of energy consumption and energy expenditures for the city. Residential and transportation accounted for 57% of consumption and U of M 19%. Dwelling data was later used to establish a baseline for an Energy Voluntary Improvement Program (VIP) run by the Ann Arbor Energy Office from 1985-1988. The program included awards for energy conservation performance.

Funding and Source : Estimated to cost about \$5,000 (probably low) by Information Services Department. No outside funding was involved. In-kind city staff time was used.

Project Status : Essentially, the project was completed with the VIP program and the 1983 energy profile. The data files for
 (Completed) this project were stored on computer tape whose could be up-dated location is in question.

Recommendation : The energy data collected provides a useful historic point of reference that, if updated, could be used to measure progress to date. It could also serve as a benchmark for assessing the Energy Commission's goal of increasing energy efficiency by ten percent by 2002.

Action Item : We recommend that the City approach Detroit Edison and Michigan Consolidated Gas with a proposal for a project that would update the early data and provide a valuable baseline for their own energy conservation programs. Outside funding may be available to assist such a project.

Project Name : Transit Promotion Program
Old Project Number : II-A-1
Researched by : Marc Ross
Responsible Agency : Ann Arbor Transportation Authority
Contact Person : Chris White, Service Development Manager
Phone Number : 973-6500
Date of Last Contact : 2/93

Project Description : Transit system publicity would be expanded and improved. Advertising would be aimed specifically at automobile drivers, the largest pool of potential transit riders.

Funding and Source : Operating Budget

Project Status : AATA's efforts at promotion are difficult to measure but seem to have resulted in a positive image for the Authority and its service.
(Ongoing) More direct mail promotion is being done.

Recommendation : The Energy Commission should develop and maintain methods of input to transportation planning/goals to assure that energy issues are considered. As part of a comprehensive transportation plan update, transit promotion can increase in scope and effectiveness.

Project Name : Transit System Improvements Program
Old Project Number : II-A-2
Researched by : Marc Ross
Responsible Agency : Ann Arbor Transportation Authority
Contact Person : Chris White, Service Development Manager
Phone Number : 973-6500
Date of Last Contact : 2/93

Project Description : Several transit improvements would be implemented, including developing clearly marked bus stops, a City-wide map of bus routes, extension of AATA hours (where appropriate), implementation of express bus routes, employer incentive programs, and changes in the fee structure to encourage transit use.

Funding and Source : Operating Budget

Project Status : AATA has successfully completed all of the goals set forth ten years ago in the energy plan. The
(Completed) infrastructure of routes and stops is well developed providing for a safe and high quality service accessible to all residents of Ann Arbor. Other objectives were also accomplished. Some Direct Bus Routes (referred to as express buses in the last energy plan) are currently in place. Riders are able to transfer from bus to bus without additional charges. Efforts are underway to better coordinate AATA's bus system with the bus system of the University of Michigan.

Recommendation : The AATA transit system is monitored and evaluated for further improvements as recommended in the original energy plan. One recent energy related improvement was switching to aviation fuel (a more refined form of diesel fuel) for the bus fleet. Although there are increased costs for the fuel, there are maintenance savings and environmental benefits.

Project Name : Transit System Research and Planning Program
Old Project Number : II-A-3
Researched by : Marc Ross
Responsible Agency : Ann Arbor Transportation Authority
Contact Person : Chris White, Service Development Manager
Phone Number : 973-6500
Date of Last Contact : 2/93

Project Description : Research to develop energy conservation programs over the long-range time frame (5-10 years) would be continued, and should include development of a downtown bus mall and free fare zone.

Funding and Source : Operating Budget

Project Status : AATA's planning activities has reached a level of sophistication higher than that envisioned in 1982.
(Completed) Ann Arbor has a downtown facility serving as central node for the bus system which was built in 1990. The City has a 20 year transportation plan which was created in 1990 (to replace the previous 1977 effort) with the coordination of the AATA and the University of Michigan. A primary goal of this plan is reducing traffic congestion through means other than building new roads. This path has definite energy advantages. The plan also lays out needs for changes for intersections, signaling, and computer aided controls. AATA has been designated as the lead agency in this effort.

Recommendation : There is a need to build on the work of AATA to satisfy the transportation needs of the City of Ann Arbor. In the future, it will require reasoned planning to integrate energy conserving and environmentally friendly alternatives to the oil burning private automobile. Additional planning activities can take place as opportunities arise. For instance, designing and planning for the use of vehicles powered by electricity, natural gas, or hydrogen.

- Project Name : Bicycle and Pedestrian Transportation System (cont.)
- Recommendation : Biking currently suffers from lack of funding to maintain and further develop Ann Arbor's extensive bike path system. Funding for education and other programs to promote the use of biking and walking is inadequate. Lack of implementation of an Ann Arbor Area Transportation Plan is a barrier to expansion of biking as an transportation option.
- Action Item : The UAT's Plan recommendations should be used to support the development of biking as alternative transportation in Ann Arbor.

Project Name : Traffic Management Implementation
Old Project Number : II-C-2
Researched by : Steve Bean & Bob Tinker
Responsible Agency : Transportation Division
Contact Person : Nancy Gibson, Traffic Engineer
Phone Number : 994-2818
Date of Last Contact : 11/93

Project Description : Transportation System Management (TSM) solutions/strategies for reducing energy consumption for transportation should be researched and considered.

Funding and Source : State of Michigan--Amoco oil overcharge money
ISTEA Funds

Project Status : The Transportation Division has had a sophisticated
(Ongoing) Transportation Computer Control System in use at 97 locations (up from 15 in 1981) which assists in implementing TSM solutions, including 32 actuated signals. With funds from Amoco oil overcharges received by the State, the Transportation Division has been given funds to obtain 78 traffic controllers (@ \$6500 each) over the course of the next 3 years. These controllers will replace outdated controllers on existing signals on major corridors such as Washtenaw, Stadium, and Packard and have the capability of making the signals actuated when the sensors are installed under the pavement. These sensors will also be installed on Fuller Road during the Veterans Administration construction project. The division also received 4 MARC master controllers for free, which can run up to 32 intersections each (timed lights). These can be networked into a system which will eventually replace the old central computer system. The current use of dedicated phone lines for each intersection is gradually being replaced with City-owned data cables which are buried along the roadways.

The Plymouth Road Corridor currently has all of these controls in place. The Traffic Engineer has been gathering information on driver comments and complaints. More learning time is needed before this corridor is fully optimized. Changes in the control of these traffic lights can be made in real time; this

Project Name : Traffic Management Implementation (continued)

capability can be enhanced with instant feedback from portable cameras at intersections under study.

The Transportation Division has been pursuing ISTEA (Intermodal Surface Transportation Efficiency Act) funds from the State for a MONARC computer and software to take on the role of controlling the downtown area street grid. The division will be receiving \$1 million over the next two years for this project. The Transportation Division will be hiring a new second traffic engineer. This event will allow the staff time necessary to perfect this new technology as it comes on line.

Recommendation

The City needs to continue to work to implement traffic patterns to maximize energy efficiency. As this occurs, positive publicity about the smoother, quicker, routes through the City and the associated energy savings should be generated.

Project Name : Ridesharing
Old Project Number : II-C-3
Researched by : Bob Tinker
Responsible Agency : Ann Arbor Transportation Authority
Contact Person : Elizabeth Nowland-Margolis, Comm. Relations Manager
Phone Number : 313-973-6500
Date of Last Contact : 2/93

Project Description : The existing Ridesharing Program would be continued and improved, and its benefits would be publicized more widely. Ridesharing would also be incorporated into emergency curtailment plans.

Funding and Source : Currently State Funding - Future Federal Funds

Project Status : A Ridesharing program has existed since 1978 and has somewhat expanded as envisioned in the first energy
(Ongoing) plan. The Ridesharing program assists individuals and corporations to establish and operate carpools and vanpools.

Recommendation : As part of a comprehensive transportation plan, ridesharing should continue to be encouraged as one of the alternatives to single-passenger vehicles.

Project Name : Energy Retrofit Loans/Grants
 Old Project Number : III-A-1
 Researched by : Don Siekmeier
 Responsible Agency : Community Development Department
 Contact Person : Larry Friedman, Housing Services Manager
 Phone Number : (313) 994-2912
 Date of Last Contact : 3/93

Project Description : A low-interest revolving loan/grant fund would be developed to assist in financing energy conservation improvements to the housing stock. Low-and moderate-income homeowners and tenants would be assisted directly and residential rental property owners would be provided with incentives to finance energy retrofits.

Funding and Source : Approx. \$350,000 per year from HUD for Community Development Block Grant programs for housing, rehabilitation development, and human services.

Project Status : Currently, a Housing Rehabilitation Program makes loans to low- and moderate-income homeowners.
 (Ongoing) Three components are considered when making these loans; (1) code violations, (2) energy use, and (3) general improvements and safety items. Approximately 25-30 housing units are completed each year. The maximum cost per unit was \$22,000 with the average being \$16,000. Word of mouth is the primary means to advertise this program. The work is approved by a City of Ann Arbor rehabilitation inspector.

Recommendation : Although these funds do not have energy efficiency as the primary goal, it is a worthwhile program filling an important need. The Energy Commission should make an annual inquiry to review what energy saving options are being used and keep staff informed on incentives and/or technologies available.

Project Name : Low-Cost/No-Cost Home Energy Conservation Program
Project Number : III-A-4
Researched by : Bob Tinker
Responsible Agency : Community Development / Ecology Center
Contact Person : Larry Friedman, Housing Services Manager
Phone Number : 994-2912
Date of Last Contact : 1/14/93

Project Description : The Community Development Department has provided funding to the Ecology Center of Ann Arbor to conduct free home energy visits since 1981. The visits use hands-on education as well as written material to explain no-cost behavioral measures to reduce energy use and assist clients with the installation of energy conserving materials like weatherstripping and water heater wraps.

Funding and Source : Funding has all come from Community Development block grants. Funding levels have gradually diminished.

Project Status : This program operated for over ten years, and reached its target clients of low-income and elderly in Ann Arbor. Funding was discontinued in 1993.
 (Completed)

Recommendation : This program has been adopted by the utilities. Both Michigan Consolidated Gas Company and Detroit Edison offer Energy Fitness Audits free of charge to low income households. City funding is no longer required.

Project Name : An Appropriate Solarization/Conservation Technology
Old Project Number : III-A-5
Researched by : Don Siekmeier
Responsible Agency : Community Development Department
Contact Person : Larry Friedman, Housing Services Manager
Phone Number : (313) 994-2912
Date of Last Contact : 3/93

Project Description : The main goal of this project was to produce a method for evaluating the solar and conservation potential of the homes of low and moderate income residents. A range of model passive solar applications, and four demonstration projects would be studied.

Funding and Source : \$50,000 - U.S. Dept. of Energy
\$25,000 - Community Development

Project Status : Professor Oberdick (now deceased) of the University of Michigan School of Architecture was instrumental
(Completed) (through the work of students in his classes) in overseeing the technical aspects of this project. Detailed audits on 29 homes were completed and solar/conservation designs and analyses were developed using computer simulation and modeling. Ten homes were chosen from the City's rehabilitation program file as models for detailed passive solar designs. Eventually 5 homes were selected for conservation/solar retrofit. These were all installed. We were unable to locate a copy of the final report which was sent to the DOE. One home on Champaign still has a working passive solar system intact.

Recommendation : This project was completed, but no results are available. Passive solar design is now an accepted practice in many architectural and design firms. No further demonstration should be necessary.

Project Name : Solar Applications at City Parks
Old Project Number : IV-A-1
Researched by : David Konkle
Responsible Agency : Ann Arbor Energy Office
Contact Person : David Konkle, Energy Coordinator
Phone Number : 313-996-3150
Date of Last Contact : Oct. 6, 1992

Project Description : An active solar array would be installed and monitored at Fuller Park to heat the pool.

Funding and Source : \$100,000 From Energy Efficiency Bond - Solar heating systems for Fuller, Buhr, and Veteran's Parks Pools
 \$ 5,000+ from Community Block Grant, & private donations for Energy Exhibit at Leslie Science Center

Project Status : Solar pool heating systems were installed at Veteran's, Buhr, and Fuller Pools in 1988 and have been operating
 (Completed) every summer since. The systems have been simple to operate and maintain. They proved their worth in 1991 when two of the pool's back-up heaters were inoperative and the solar energy was the only heat source. The pool managers, who were initially skeptical of the solar heaters, are now supporters of this project. Estimated savings from each system is \$1,000 - \$2,000 yearly.

The Leslie Science Center Energy Exhibit was constructed in 1986 and consists of hands-on demonstrations of a variety of solar technologies such as air and water heating, solar cooking, and photovoltaics (solar electricity). Solar energy is used in the exhibit to power an electric train and a TV/VCR, and to provide heat and hot water.

Recommendation : Plans are being developed which may include enlarging the Energy Exhibit at Leslie Science Center. This should be supported.

Action Item : Get the word out (including posters at the pools) on the existence and success of the solar pool heating systems and the exhibit at Leslie Science Center.

Project Name : Hydroelectricity Reactivation
Old Project Number : IV-B-1
Researched by : Steve Bean
Responsible Agency : Public Works Department
Contact Person : William Wheeler, Director of Public Works
Frank Porta, Utilities Dept. Director
Phone Number : 994-2744 / 994-2666
Date of Last Contact : 11/19/92

Project Description : The City would reactivate as many of its four dams at sites on the Huron River as found feasible.

Funding and Source : Bond sales and operating revenues from electricity sales.

Project Status : Two dams have been reactivated, Barton and Superior. No plans for reactivating Geddes or Argo. The Federal Energy Regulatory Commission is requiring additional engineering studies on both dams. There is a possibility that they will require upgrades at Superior, which would require an additional bond issue.
(Completed)

Revenues from energy sales in excess of operating expenses are being put into a capital reserve account which has a current balance of approx. \$400,000.

Recommendation : During some recent repairs on the reactivated dams, negative articles appeared in the Ann Arbor press. Although the Commission is convinced of the appropriateness of the two dam reactivations, it is unclear what the real economic impact of this project has been and will be for the City. The Energy Commission should call for an economic analysis of the dam projects and publicize the results.

Action Item : The Utilities Department should undertake an evaluation of the dams reactivation project with special attention given to the economic performance of each dam site. Recommendations for future action should be identified.

Project Name : Recycling Programs
Old Project Number : IV-C-1
Researched by : Bob Tinker
Responsible Agency : Solid Waste Department
Contact Person : Bryan Weinert, Manager of Resource Recovery
Phone Number : 313-994-2807
Date of Last Contact : 10/93

Project Description : The City should encourage the expansion of current recycling efforts within Ann Arbor.

Funding and Source : Grew from \$80,000 in 1981 to over \$1,000,000 in 1993. Current source of funding is the Solid Waste Millage.

Project Status : Recycling has been one of Ann Arbor's most successful conservation efforts over the last decade. Below is a synopsis, provided by the City's Solid Waste Department, of the recycling programs and services in Ann Arbor from 1981 to 1993.

(Ongoing)

1981-Present: Recycling drop-off station serves residents and small businesses with drop-off services on Industrial Highway, often accepting materials not included with curbside collection (office paper, #1 plastics, phone books, scrap metal, etc.).

1981-1984: Monthly curbside recycling services expand from serving approximately 10% of Ann Arbor's single-family housing stock to roughly 70% by 1984.

1985: Monthly curbside recycling goes city-wide, incorporating all single family households within the City.

1986: The Ann Arbor Energy Commission establishes the Solid Waste Task Force, a subcommittee, to focus awareness on the need for long range solid waste planning.

1989: The strategy report from the Solid Waste Task Force is adopted by City Council and the Solid Waste Commission is established.

1990: Environmental Bond approved by City voters, providing roughly \$8 million for various waste recovery capital acquisitions, including recycling and yard waste collection trucks, curbside tote containers, multi-family recycling curbcarts, a compost processing facility, and comprehensive materials recovery facility.

1991: Weekly curbside recycling begins; comprehensive weekly multi-family recycling begins; individual household storage totes/buckets are distributed.

1992: City's compost processing facility expansion opens.

Project Name: Recycling Programs (continued)

1993: RecyclePlus commercial recycling program launched; City awards contract for design, construction, and operation of a materials recovery facility and waste transfer station on the Ann Arbor Landfill property. 36% of the City's waste stream is being recovered through recycling and composting.

Below is a table showing the approximate tonnage recycled over this time period (by material) and the equivalent energy conserved (over creating virgin materials) in kilowatt hours (KWH).

<u>Material</u>	<u>Tonnage</u>	<u>KWH conserved</u>
Newspaper	32,500	61 million
Cardboard	5,000	9 million
HDPE Plastic	500	3 million
Glass	8,500	2 million
Aluminum	500	12 million
Tin Cans	<u>3,000</u>	<u>5 million</u>
Totals	50,000	92 million

92 million KWH of electricity is enough to supply 15,000 Ann Arbor households for an entire year.

Recommendation : Keep on recycling Ann Arbor!

Project Name : Building Code Revisions
Old Project Number : V-A-1
Researched by : Bob Tinker
Responsible Agency : Building & Safety Department
Contact Person : Jack Donaldson, Building Department Director
Phone Number : 994-2713
Date of Last Contact : 2/9/93

Project Description : Research would be undertaken to determine what the City must do to its Building Code to strengthen its energy conservation standards. Existing model codes should be assessed when available, and revisions should be considered.

Funding and Source : Operating Budget

Project Status : At the time of the 1981 plan, The Building and Safety Department inspectors were trained to enforce the State Energy Code based on ASHRAE 90-75. Since then the City's Building Code (BOCA) has incorporated the same ASHRAE code updated in 1980.

(Ongoing)

During the early 1980's the City adopted a Weatherization Ordinance which requires landlords to have minimal levels of insulation and good weatherstripping for their rental units. These are the most important factors affecting the cost of energy for those renters who must pay for their own heating costs.

The National Energy Policy Act of 1992 requires the adoption of the CABO Model Energy Code-1992 for residential construction (or equivalent) and the ASHRAE Standard 90.1-1989 for commercial construction (or equivalent) by the State governments by 1995. Contact with the State of Michigan indicated that quick adoption of these standards is likely, thereby setting policy for the City of Ann Arbor.

Recommendation : The Energy Commission should interview the Building Department staff to measure the degree of enforcement. The City should expand the Weatherization Ordinance to cover all renters and all energy types.

Project Name : Building Professionals Training
 Old Project Number : V-A-2
 Researched by : Bob Tinker
 Responsible Agency : Building & Safety Department
 Contact Person : Jack Donaldson, Building Department Director
 Phone Number : 994-2674
 Date of Last Contact : 2/9/93

Project Description : Officials and staff involved in the building code enforcement should be trained to understand the entirety of the Michigan Energy Code applications for new construction and any Code modifications adopted by the City.

Funding \$ and Source : Operating Budget

Project Status : In house training is provided to City Inspectors to keep up with ever changing energy technology. State registration for Code Enforcement Officials requires continued education courses some of which are provided at the State level. The quality of regional and national educational conferences on energy in buildings is high. City Inspectors are familiar with the intent and effect of the Weatherization Ordinance.

(Ongoing)

Recommendation : The Energy Office can help keep the Building and Safety Department informed of educational opportunities in the expanding energy field. When the State of Michigan adopts the CABO Model Energy Code - 1992 & the ASHRAE Standard 90.1-1989, the State will offer training to City Code Enforcement Officials.

Project Name : City Planting and Landscaping Guidelines
 Old Project Number : V-B-1
 Researched by : Bob Tinker
 Responsible Agency : Parks and Recreation Department
 Contact Person : Bill Lawrence, City Forester
 Phone Number : 994-2768
 Date of Last Contact : 11/19/92

Project Description : The Guidelines and policies should be developed to carry out City planting and landscaping duties in an energy conscious and environmentally sensitive manner.

Funding and Source : None

Project Status : Ann Arbor is known for its Trees. Trees provide the people of Ann Arbor with a wealth of benefits, one of which is the creation of and modification of microclimates which directly effect our use of and need for energy. The City Forester deals mostly with street Trees and park Trees. Some common practices of the City Forester can serve energy conservation goals, for example; judicious use of wood chips reduces the amount of lawn maintenance equipment use. The Park Planners use trees as screening from residential areas; these may act as wind breaks and provide shade and other positive microclimate effects.

(Ongoing)

Further research in this area will begin in the near future. A grant, part of the Urban Forest Project, has been awarded to gather data on the effect of trees and vegetation on energy costs in residential structures in Ann Arbor.

Recommendation : The Energy Commission should monitor the results of this study and disseminate useful information to businesses and homeowners.

Project Name : Energy Conservation Promotion
Old Project Number : VI-A-1
Researched by : Dave Konkle
Responsible Agency : Energy Office
Contact Person : David Konkle, Energy Coordinator
Phone Number : 313-996-3150
Date of Last Contact : 10-6-92

Project Description : Promote energy conservation through media articles or programs, give hands-on workshops, develop speakers network, hold public information campaigns.

Funding Source : No specific funds available. Energy Office can provide some of these services with limited staff.

Project Status : This project should never be completed because the dissemination of energy information is an ongoing process as energy use and technology changes.
(Ongoing)

Recommendation : The Energy Office should continue to collect or develop energy information and distribute it to the public. The Energy Commission should be an active participant in this process utilizing already existing forums such as the Earth Day celebrations and the "For the People" section in the Observer.

Also, the Energy Commission should help inform the citizens of Ann Arbor as new utility energy conservation incentives become available.

Project Name : Energy Conservation Workshops
Old Project Number : VI-B-2
Researched by : Bob Tinker
Responsible Agency : Community Development / Ecology Center
Contact Person : Larry Friedman, Housing Services Manager
Phone Number : 313-994-2912
Date of Last Contact : 10-93

Project Description : Community Development provided funding to the Ecology Center of Ann Arbor to conduct Energy Conservation Workshops in the early 1980's. The Center was able to expand this service with grants from Wayne County and also from the Oakland Livingston Human Service Agency (OLHSA). The Workshops used hands-on education as well as written material to explain no-cost behavioral measures to reduce energy use and assisted attendees with the installation of energy conserving materials like weatherstripping and water heater wraps.

Funding Source : Original funding came from Community Development Block Grants. Funding also came from Wayne County and OLHSA.

Project Status : This program was successful in getting other agencies to fund their own locally operated programs. By now
(Completed) those programs have probably ceased.

The group approach to energy conservation instruction is no longer used. Individual training on home energy use and material installation is available to Ann Arbor households through Michigan Consolidated Gas Company and may be available soon through Detroit Edison also.

Recommendation : The Utilities should take over providing this kind of training as part of their customer service. Private businesses or government staff may present information in special situations.

Project Name : Energy Education Programs
Old Project Number : VI-B-3
Researched by : Bob Tinker
Responsible Agency : Ann Arbor Public Schools
Contact Person : 1) Janet Kahan, Science Curriculum
2) Earl Shaffer, Occupational Training
Phone Number : 994-2315
Date of Last Contact : 11-93

Project Description : The City, in coordination with local schools, colleges, and universities, would provide curricula on energy conservation topics, such as building retrofit and use of renewable resources. Classes, workshops, and seminars would be provided to inform the public on a wide variety of conservation measures and issues.
(Ongoing)

Funding Source : None

Project Status : Some energy-related curricula are being provided in the Ann Arbor Schools. In 5th grade students are introduced to magnetism, electricity, and how electricity is produced along with the advantages and disadvantages of different ways to produce electricity. Lesson include energy conservation and the energy connection to acid rain. In 6th grade, students visit Barton Dam, a City-owned, working hydroelectric plant. In the 8th grade, students study heat transfer and insulation. Another unit covers nuclear and coal power plants. Visits to Detroit Edison's Fermi II nuclear power plant and its Monroe coal-burning plant are part of this class.
(Ongoing)

The Home Building Project, offers high school students the opportunity to participate in the design and construction of a new single-family residence. Through this effort, not only is a new home built and sold, but it helps to pay for 8 college scholarships. Innovative energy technology was used in the Winston House, which had 2600 square feet of floor space and cost under \$300 per year to heat. Local builders have found that many home owners are not willing to pay for the extras which will save them energy and dollars in the future.

Project Name : Energy Education Programs (continued)
Recommendation : Energy education in the schools is vital to our children's ability to understand the energy issues which they will face in the future. The Ann Arbor Schools have a structured approach for introducing energy issues to our children which somewhat limited. Additional educational opportunities should be developed. Sites like the Leslie Science Center could be utilized. The existing solar energy exhibit could be used as a catalyst to expand the presentation of energy issues and information for students.

Project Name : Energy Information Bank/Center
Old Project Number : VI-B-4
Researched by : Robert Black
Responsible Agency : Ann Arbor Public Library
Contact Person : Ruth Haldeman, Reference Librarian
Phone Number : 994-2333
Date of Last Contact : 3/92

Project Description : A "bank" of information on energy-related topics would be established in order to collect in one convenient and centrally located place, energy information of interest to the citizens of Ann Arbor. Through the Public Library, this Bank would be formally established. But 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 would eventually be developed. It would be a City-owned demonstration of the use of renewable resources and would be available for all community energy-related activities.

Funding Source : None

Project Status : A search of the archives at the Public Library found a few folders with outdated energy information inside.
(Unimplemeted) Keeping track of the explosion of information on energy since the drafting of the initial Ann Arbor Energy Plan would have been difficult even if staff and funding had been available. Lack of funding and/or a steward has resulted in nothing being accomplished.

Recommendation : The idea of a central repository for energy information is worthwhile. However, enormous quantities of energy information are printed yearly, much of which is soon outdated. Given today's computer technology, perhaps a database could be established which is accessible by modem from any computer. This database could offer a basic reading list for various topic areas, as well as access to specific technical issues. Funding for such a project is a must.

Project Name : City Energy Management Task Force
Old Project Number : VII-A-1
Researched by : David Konkle
Responsible Agency : City Administration
Contact Person : David Konkle, Energy Coordinator
Phone Number : 313-996-3150
Date of Last Contact : 10-6-92

Project Description : A City Energy Management Task Force consisting of department heads who are responsible for major energy consuming municipal operations and facilities was developed in the summer of 1980 to identify and implement energy saving projects.

Funding Source : No specific funds available. Project money to be included in fiscal year Departmental Budgets.

Project Status : The Energy Management Task Force worked mainly towards the implementation of the \$1.4 million Energy Efficiency Bond Project. Upon completion of that project the Task Force ceased functioning.
(Completed)

Recommendation : Although the Energy Efficiency Bond Project has been completed, it is still advisable that department heads be kept aware of energy improvements possible at their facilities. With the implementation of a full time Energy Office, this has become a prime duty of the Energy Coordinator. It is recommended that the Energy Coordinator continue to provide information to department heads on energy use in their facilities and opportunities for improvement.

Project Name : Contingency Plan Development for Fuel Emergencies
 Old Project Number : VII-A-2
 Researched by : Bob Tinker
 Responsible Agency : City Administration
 Contact Person : Rob Bauman, Asst. City Administrator
 Phone Number : 994-2650
 Date of Last Contact : 11-93

Project Description : A contingency plan would be developed to deal with potential future energy shortages and disruptions, to assure a rational plan for maintaining essential services such as fire and police protection during an energy shortage.

Funding Source : \$40,000 allocated from the City General Fund in FY 1981-82
 None currently

Project Status : It is believed that an Energy Curtailment Plan for municipal operations was completed. Some of this
 (Completed) work may still be part of the existing local emergency preparedness planning. As the memory of fuel shortages at the beginning of the 1980's has dimmed, the urgency in planning for such an emergency has faded.

Recommendation : Given the fact that the United States imports a greater percentage of its oil supplies now than it did during the energy shocks in the 1970's, complacency on this issue is not warranted. The original report should be located, examined, and updated if necessary. The Energy Curtailment Plan should be included in overall emergency planning.

Project Name : Energy Efficient Procurement
Old Project Number : VII-A-3
Researched by : Bob Tinker
Responsible Agency : Administrative Services Department
Contact Person : James Amin, Administrative Services Director
Phone Number : 994-2717
Date of Last Contact : 1/14/93

Project Description : The City should develop a procurement policy where the life cycle costs of purchases are considered.

Funding Source : None

Project Status : Life-cycle costing is currently considered for the purchase of energy using equipment. The quality of the data available is important to the impact that energy efficiency will have on decision making. In some cases, other factors take precedence. For instance, gas mileage is factored into the decision for purchasing vehicles for the City's fleet, but considerations for safety features have historically had higher priority. A model spreadsheet for life-cycle costing was recently developed for the purchase of the City Hall gas chiller system. This model uses a net-present-cost technique which includes operational and maintenance costs and useful equipment life to determine the best of several equipment options.

(Ongoing)

Since 1991, the Energy Office has been part of the Administrative Services Department which is also responsible for City purchasing. This has had a positive impact on increasing the consideration of life-cycle costing in the procurement of major energy using equipment.

Recommendation : The City should continue to use life cycle costing techniques for the purchase of major energy using equipment and perhaps consider making this policy instead of practice.

Project Name : Water Conservation Program
Old Project Number : VII-B-1
Researched by : Steve Bean
Responsible Agency : Utilities Department
Contact Person : Elizabeth Fanta, Dir. Customer Services
Phone Number : 994-2666
Date of Last Contact : 11/19/92

Project Description : The City Utilities Department would promote and encourage water conservation through the use of flow restrictors and other conservation measures.

Funding Source : Operations budget

Project Status : The Utilities Department continues to sell flow restrictors to water customers, but discontinued its
(Ongoing) practice of putting educational messages about water conservation on water bills in the early 1980's. A brochure of water saving tips has not yet been developed.

Future Plans:

- 1) Hire a summer intern in 1993 to do educational projects;
- 2) develop conservation plan and educational programs; and
- 3) encourage conservation actively through billing changes that would provide economic incentives to conserve water.

Recommendation : The plan to develop conservation and educational programs should be supported.

Action Item : The City Utilities Department should offer information about water conservation technology to the residents and businesses of Ann Arbor.

Project Name : Municipal Building Retrofit
 Old Project Number : VII-B-2
 Researched by : David Konkle
 Responsible Agency : Energy Office
 Contact Person : David Konkle, Energy Coordinator
 Phone Number : 996-3150
 Date of Last Contact : 9-93

Project Description : Continue retrofit efforts to improve the energy efficiency of City owned facilities.

Funding Source : Variable - from a low of zero most years to \$1.4 million in 1988-89. A variety of sources including facility budgets, utility rebates, State and Federal grants, and the \$1.4 million Energy Bond.

Project Status : The Energy Bond money has all been spent on improvements to 30 separate facilities. Lighting, (Ongoing) insulation, windows, and HVAC equipment and controls were some of the improvement areas. The Energy Office continues to work with facility managers to identify opportunities for energy saving retrofits. This is an ongoing effort. Major efforts at the Water and Wastewater Treatment Plants are among the latest projects.

Recommendation : An "Energy Bank", under the direction of the Energy Office for use by City facilities would be very helpful in encouraging energy efficiency improvements. Initial moneys could be generated by designating a portion of utility rebates or a percentage of energy savings to an "Energy Bank". This money would be used to pay the incremental difference between "regular" and "energy-efficient" equipment or in some way assist in the purchase of energy efficient equipment.

Project Name : Public Housing Retrofit/Rehab
Old Project Number : VII-B-3
Researched by : Don Siekmeier
Responsible Agency : Community Development/Housing Commission
Contact Person : David Seebolt, Interim Housing Director
Phone Number : (313) 994-2828
Date of Last Contact : 12-93

Project Description : In 1980, this project was busy with the rehab and repair of four separate sites. These projects included performing energy audits and installing new energy efficient furnaces and appliances.

Funding Source : The cost for the two current projects listed below is \$2,258,000, which will be covered by federal HUD grant funds. It is anticipated that the future funding levels will be about \$600,000 per year.

Project Status : The Ann Arbor Housing Commission now has a total of 13 sites with a total of 342 units. This project has the responsibility of modernization and capital renovation of all units. Most rehab work is done to minimize energy cost by upgrading the heating systems, reducing heat loss by adding insulation and installing better windows and doors, and by installing more efficient lighting. Two major projects are now underway. One is to install a 6-stage boiler system and better sliding glass doors to Miller Manor. The other is to insulate and install more efficient furnaces and appliances in the White, State, and Henry sites which comprise 28 units.

(Ongoing)

Energy audits have been performed on some properties and a data base is being established to track energy costs.

Recommendation : The Energy Office should contact the Housing Commission to inform them of energy monitoring techniques available. Also, if staff time is available, offer assistance in evaluating projects.

Project Name : Building Audit Program - Technical Assistance Audits
Old Project Number : VII-B-4
Researched by : David Konkle
Responsible Agency : Energy Office
Contact Person : David Konkle, Energy Coordinator
Phone Number : 996-3150
Date of Last Contact : 9-93

Project Description : Energy audits of City owned buildings to be funded 50% by the Department of Energy through the Technical Assistance Program and 50% City funds.

Funding Source : \$131,868 - 50% DOE, 50% City

Project Status : Audits for most facilities were completed by 1984. Another set of audits for 30 facilities was completed in
 (Completed) connection with the Energy Conservation Bond in 1987.

Recommendation : As technology changes and buildings age, update audits are recommended. Utility energy conservation programs and other sources periodically offer free audits. These should be utilized when available.

Project Name : Energy Retrofit of School Facilities
Old Project Number : VII-B-5
Researched by : Steve Bean
Responsible Agency : Ann Arbor Schools
Contact Person : Robert Pierce, Capital Planning Director
Phone Number : 994-2277
Date of Last Contact : 11/19/92

Project Description : The Public Schools would audit and retrofit their buildings and facilities with energy conservation measures.

Funding \$ Source : State of Michigan--Amoco oil overcharge money

Project Status : The Ann Arbor School Systems has been successful on many fronts. In the early 1980's all of the school buildings were audited through TSEP (Total School Energy Program), a project of the Michigan Assoc. of School Business Officials. Hundreds of thousands of dollars have been invested over the last decade based on the recommended energy efficiency measures identified in those audits. Windows have been replaced with insulating glass in 17 buildings; 4 other buildings are scheduled for next summer. Lighting and HVAC control improvements have been implemented through a guaranteed savings contract with Johnson Controls. Security and fire safety are included in a centralized system of monitoring and control of HVAC equipment and boilers. Other projects include abandoning gas-fired incinerators, improving roof insulation when possible, and the future installation of an ice storage system at Pioneer High, the first school in the State of Michigan to invest in such technology.

Recommendation : The Ann Arbor School system should continue to explore and take advantage of energy efficiency programs which are offered by the State of Michigan, Detroit Edison, and Michigan Consolidated Gas Company.

Project Name : Building Monitoring
Old Project Number : VII-B-6
Researched by : David Konkle
Responsible Agency : Energy Office
Contact Person : David Konkle, Energy Coordinator
Phone Number : 996-3150
Date of Last Contact : 9-93

Project Description : Set up a computer program to monitor energy consumption in City-owned facilities from utility bill data and provide reports to facilities.

Funding Source : \$1,500 - \$3,000 from the General Fund

Project Status : The original project involved developing a program for the mainframe computer which would track energy costs and produce reports. With the advent of the personal computers, the City purchased FASER - Energy Accounting software. This was installed in the Energy Office in 1986, and data for all facilities is available from 1985 through the present. Negotiations are ongoing with the utilities to provide data on a computer disk or some other form that can be read directly into the computer. Ann Arbor has the best facility energy use data of any city in Michigan. Energy Reports on all City facilities are produced once a year.

(Ongoing)

Recommendation : The Energy Office should continue to monitor energy use in City-owned facilities.

Project Name : Resource Recovery Project
Old Project Number : VII-B-7
Researched by : Bob Tinker
Responsible Agency : Solid Waste Department
Contact Person : Bryan Weinert, Mgr of Resource Recovery
Phone Number : 313-994-2807
Date of Last Contact : 10/93

Project Description : Four studies were undertaken since 1981 to assess the potential for resource recovery from the solid waste stream for use in conserving or producing energy. An update is provided for each study below.

Funding Source : None currently

Project Status :

(Ongoing)

1) SOLID WASTE STREAM ANALYSIS

A 1981 study analyzed the waste stream brought to the Ann Arbor Landfill to determine the amount and type of refuse available for material recovery and to determine its BTU content (for paper and plastics). This information was useful in the expansion of Ann Arbor's recycling efforts. A second waste stream analysis was completed in 1988 which has been helpful in targeting and monitoring waste recovery efforts.

2) THE ALTERNATIVE FUELS PROJECT

A feasibility study of a refuse derived fuel plant for the North Campus area of Ann Arbor was completed in 1983. No action was taken on this study.

Two major reports have been issued since 1981 relating to energy recovery from solid waste. They are:

A 1987 Waste-to-Energy feasibility study undertaken by the Falls Church, Virginia based consultant; Gershner, Brickner, & Bratten, Inc. on behalf of Washtenaw County, with participation by the City of Ann Arbor. The report concluded that, "Although energy recovery will have a higher cost than landfilling, recovery should be given serious consideration as a long-term disposal option that will minimize reliance on landfills for waste disposal." No action was taken by the County or City as a result of this report.

Project Name : Resource Recovery Project (cont.)

The City's approved 1988 Integrated Solid Waste Management Strategy for the Ann Arbor Area included the following recommendations relating to the Resource Recovery Project:

- a) "To move away from a dependence on landfills, and to avoid or minimize incineration as a predominant waste management option;" and
- b) "If development of a waste to energy facility option is required, a refuse derived fuel (RDF) processing system is proposed instead of a mass burn system. RDF is a cleaner fuel and can usually be burned in standard equipment, often in existing coal burning boilers." No action has been taken by the City on incineration to date as a result of this report.

The City's Integrated Solid Waste Management Strategy is currently being updated, and the potential exists for a clarification of the City's policy toward incineration in the upcoming five year period.

3) WASHTENAW COUNTY SOLID WASTE PLANNING COMMITTEE

In 1981 this committee was overseeing the development of a County Solid Waste Plan. Since that time the committee was reconfigured and has been successful in designing and adopting a five year plan and a twenty year plan for handling the County's waste stream.

4) METHANE PRODUCTION RESEARCH

In 1981 the Solid Waste Department researched the possibility of allowing a private firm to produce methane gas from the Ann Arbor Landfill. Subsequently, there were two studies undertaken to determine the amount of the methane resource which might be available for capture. Use of the methane to generate electricity appears to be the most cost effective and practical method of utilizing this resource. The City has released bids for having a private company invest in the necessary equipment and modifications to the landfill and to share in the proceeds of the sale of electricity to Detroit Edison. Contract negotiations are currently in progress.

Recommendation : Direct waste-to-energy options at the landfill do not appear to be needed or popular at this time. However, the capture of methane from the landfill and conversion to electricity is a very beneficial project which should go forward. This resource diminishes as time goes on.

Project Name : Vehicle Fleet Management
Old Project Number : VII-B-9
Researched by : Bob Tinker
Responsible Agency : Municipal Garage
Contact Person : Jack Gould, Fleet Services Manager
Phone Number : 994-2815
Date of Last Contact : 11-93

Project Description : A Vehicle Fleet Management Program would consist primarily of developing and using a vehicle fleet management information system. This involves the use of a computer software package to organize important data about the City's vehicles so that it is of use to City management in making decisions about use, maintenance, and replacement of the vehicle fleet. It provides necessary information on gas mileage and maintenance and can be used to improve the energy efficiency of the fleet. The program would also include:

- 1) a vehicle fleet fuel economy management program to be sure information is used adequately,
- 2) an energy conservation awareness training program for City employees,
- 3) performance reporting, and
- 4) research into the use of alternative fuels for City vehicles.

Funding Source : None currently

Project Status : The City Garage has been using an automated Fuel Dispensing System, which provides mileage information
(Ongoing) on vehicles, since 1981. This system was updated in 1992. The Vehicle Fleet Management System, from Public Technology, Inc., has also been in operation since 1981 and is still running on the City's mainframe computer. The City Garage has been awaiting networking capabilities on the City's computer systems before updating this software. A new software package has now been purchased, Mainsaver, which will run on a desktop computer. Staff are in the process of working bugs out of this program. The information from the new system will eventually be merged with that of the old system.

The City Garage has switched all city trucks to diesel fuel during the 1980's. This is believed to have produced substantial savings in energy costs. Also, waste oil from maintaining these vehicles is burned on site to provide space heating for the garage.

Project Name : Vehicle Fleet Management (cont.)

The City Garage staff see the benefits of the vehicle fleet management system and have been updating as needed. They have also undertaken additional energy related projects to save on vehicle fleet operating expenses.

Recommendation : New regulations may require the City to utilize a percentage of "alternate fuel vehicles" in the City fleet. Staff should be prepared for this if required, perhaps by working with the utilities to implement an early "pilot" program.