

# MAINE STATE LEGISLATURE

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AUGUSTA, MAINE

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN

C

PREPARED BY:

THE  
MAINE OFFICE OF ENERGY RESOURCES

GARY R. LINTON  
DEPUTY DIRECTOR

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.U53  
M339  
1977

001778



STATE OF MAINE  
AUGUST 1980

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN

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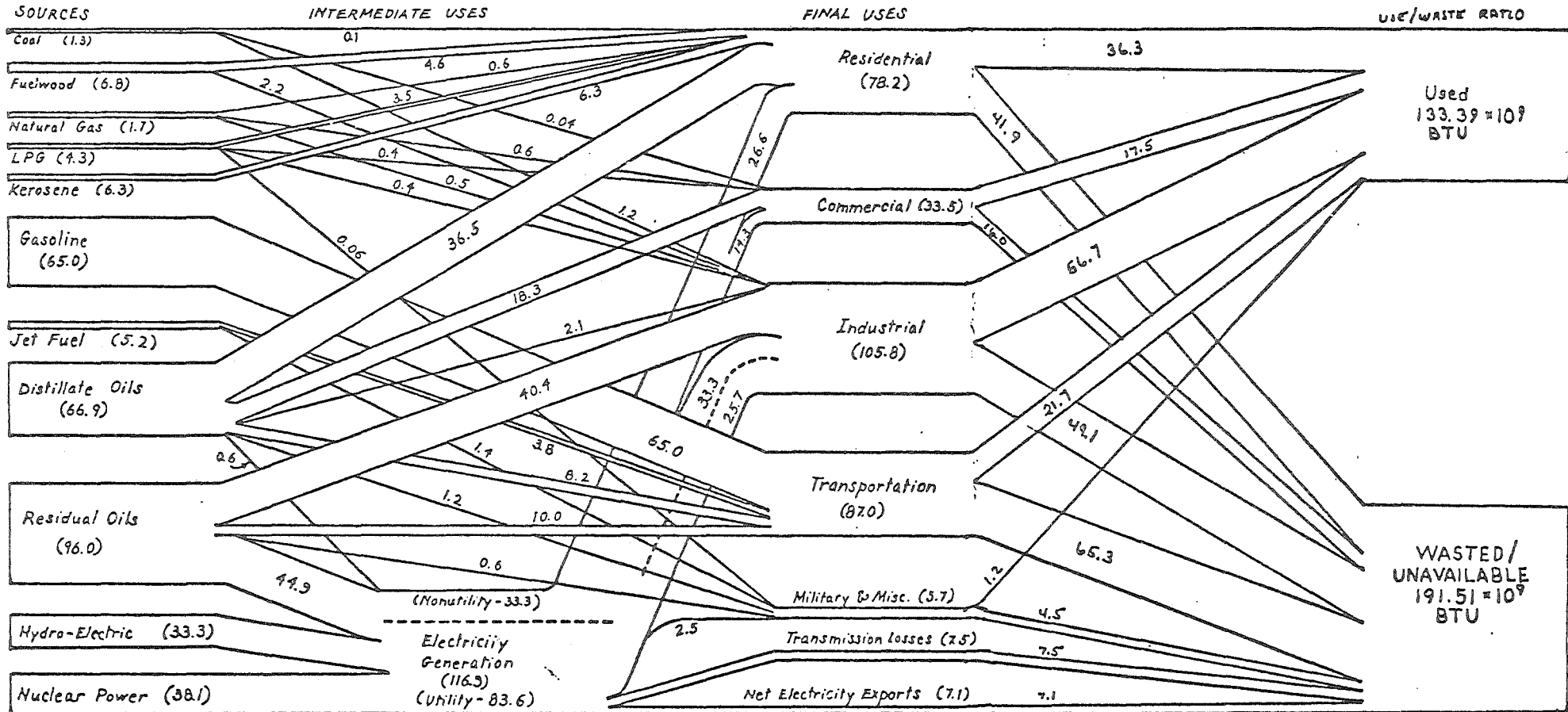


STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN

SECTION IV  
PROGRAM NARRATIVE



Figure 1  
ENERGY FLOWS IN MAINE, 1974



Note: All data in trillion BTU's; Approx. Scale: 1 vertical inch = 100 trillion BTU's

## PLAN INTENT AND OVERVIEW

Purpose:

The Chart on the previous page shows graphically that we, in Maine, waste over half of the energy consumed in the State. We could, conceivably, cut out energy demand in half without lowering our present socio-economic standard of living. Realistically, we cannot hope to achieve this level of conservation through actions of Maine citizens. Many of the events which cause energy waste in Maine are beyond the control of this State's government or the individuals living in Maine. We can, however, take actions, collectively and as individuals, to reduce the waste of energy in our State. It is the purpose of this plan to outline program options which can be implemented to achieve the goal of energy conservation.

Background:

On December 22, 1975, President Ford signed into law, the Energy Policy and Conservation Act of 1975 (PL 94-163). Title III of that Act authorized funding for states to develop and implement energy conservation plans. These plans were required, as a minimum, to contain elements addressing the following subjects:

- (1) Minimum thermal efficient standards for new and substantially renovated buildings.
- (2) Minimum lighting efficiency standards for public buildings.
- (3) Carpool/vanpool/public transit incentive programs.
- (4) Traffic regulations allowing motorists to turn right after stopping for a red light.
- (5) Procurement standards for public purchases which improve energy efficiency.

Along with these mandatory elements, the Act encouraged the development of other programs which would bring about conservation of energy.

In the Energy Conservation and Production Act of 1976, Congress expanded the State Energy Conservation Plan program by authorizing additional funding and requiring three additional program elements.

- (1) Public education programs regarding conservation and the use of renewable-resource energy measures.
- (2) Procedures to coordinate state, local and federal conservation programs.
- (3) Procedures to carry out energy audits for buildings to identify energy and cost savings resulting from conservation or renewable resource measures.

This Supplemental Program also encouraged the states to include additional energy conservation programs in their plans.

These two Federal Acts form the basis of the plan contained herein. We have included several additional programs which we feel can have a significant energy conservation potential. The program elements contained in this document are by no means the only measures which will bring about energy conservation in Maine. They are, in our estimation those which can be implemented and to produce tangible benefits within reasonable amounts of time. As these programs are implemented, their effectiveness will be monitored and changes will be made if necessary. Similarly, if new programs are brought to our attention we will incorporate them into the overall plan. Thus, it is our sincere intent that this plan will provide a flexible framework for an energy conservation program in the State of Maine. We hope that it will not be put on the shelf as many other plans have been but rather that it will be used, critically analyzed, and improved as the energy situation in Maine requires.

Issues:

The following discussion answers some of the common questions asked about energy conservation.

(1) What is Energy Conservation?

We use the term Energy Conservation to mean a reduction of energy waste. Whether this reduction is brought about by installing insulation in a home to help retain heat or by co-locating industrial facilities so that one process may reclaim waste heat from another is immaterial. What we want to do is reduce the amount of energy consumed by our daily activities without economic or social upheaval. We do not want Maine's people, industry and commerce to give up their useful consumption of energy. We just want them to stop wasting a large fraction of that which they now consume.

(2) Why should Maine's citizens conserve energy?

There are basically three answers to this question:

- (a) To reduce our dependence on petroleum and thereby reduce our dependence on imported energy.
- (b) To "buy time" until other clean "safe", "infinite" energy sources can be brought on line. And
- (c) To save money.

(3) What are the economic considerations surrounding energy conservation?

Many people equate energy conservation with economic recession. This need not be the case. On an individual level, a \$1,000 investment in insulation or other home improvements could easily result in a \$150 reduction in

energy costs over one heating season. Assuming a person borrows \$1,000 at 10% interest, the savings would pay back the investment in 11 1/2 years. On a larger level, national estimates show that investments in conservation create more local jobs and therefore stimulate local economies better than investments in "new" energy development.

If we look at energy for what it is, namely the ability to do work, economics should dictate that we will find the most economical way to get the work done. If the work is heating a building and economics dictate that insulation is cheaper than heating oil, we should buy the insulation. Thus, we substitute a non-energy solution to our problem. It becomes clear that the energy we save is equivalent to energy which might otherwise have to be produced from conventional sources.

- (4) How can you say that energy conservation is a substitute for supply? (The "Conservation never created a barrel of oil" argument)

This is true. But Shell, Exxon or Mobil never created a barrel of oil either. There is a finite amount of oil on the face of the earth. Oil companies may "produce" oil by altering it chemically and transporting it from place to place, thereby making it easier for us to utilize the energy contained in that oil

Energy can neither be created nor destroyed, only changed in form. If we look at oil as a source of energy, we see a potential energy stored in the chemicals which make up the oil. We can convert this stored energy into useful heat by burning the oil, giving a certain amount of heat which can be measured in BTU's. We can then use this heat to do work, which is our purpose for burning the oil in the first place.

The amount of work contained in a barrel of oil depends on the efficiency of the machine we use to do that work. A machine which produces one-half of a barrel equivalent work for every barrel of oil we put into it would be 50% efficient. If it does work at the rate of 12 barrels per day, we must put energy into it at the rate of 24 barrels per day. If we increased the efficiency of the machine to 75%, to get our 12 barrels of work we only have to put in 16 barrels of oil. Thus, we have saved 8 barrels of oil per day.

In terms of energy, this is no different than if we had gone out and recovered eight "new" barrels of oil. Actually, we have done even better than that. At the old efficiency of 50%, our eight barrels of new oil would have done 4 barrels worth of work. Now, at 75% efficiency, the 8 barrels gives us 6 barrels worth of work. Therefore, by implementing a conservation measure and improving our efficiency of converting energy to work, we have "produced" the equivalent

energy of a new oil source. Clearly, conservation can be considered as a substitute for supply.

(5) How do we make conservation happen?

Basically, there are three ways to implement any programs:

- (1) By appealing to an individual's personal motivation ("if it feels good, do it!")
- (2) By providing an economic incentive or penalty.
- (3) Through the enforcement of punitive laws or regulations.

We have tried to show that energy conservation is "the right thing to do" for society. We have also demonstrated that energy conservation has economic benefits. There are, however, some areas where legal sanctions must be placed on certain activities to insure that those activities are accomplished in an energy conservative manner. It is our belief that the fewer regulations the better. Any regulations imposed on the people of Maine should be well thought out and tailored to the State's unique situation.

As alternatives are developed for energy conservation programs in Maine, the three levels of personal stimulus mentioned above will be kept well in mind. We will try to put together programs which promote conservation for its social and economic benefits. Only when there appears to be no alternate way to bring about conservation will regulatory programs be considered.

Section A-2

GOAL

It is the overall goal of this plan:

"To reduce the amount of energy consumed in the State of Maine by five per-cent by 1980 by reducing the quantity of energy wasted in the State while maintaining or raising the socio-economic quality of life of Maine's people. "

As stated before, it is the intent of this plan to outline specific programs which will lead to a reduction in the amount of energy wasted in the State. The plan must also meet established Federal Guidelines in order for the State to be eligible for funds to implement the plan. To meet these objectives, a target figure of 5% has been established as the amount of energy reduction which will be achieved by 1980.

The Federal Energy Administration estimates that Maine will use 370,917,000,000 BTU's of energy in 1980. To reach the target of a 5% reduction, Maine must achieve a savings of 18,545,850,000 BTU's. This is about equivalent to half of the home heating oil burned in the State in 1974

or about one-third of the gasoline use in Maine in that year. Obviously, this plan cannot require (nor even suggest) that one-half of the homes in Maine go without heat or that a third of the drivers in the State leave their automobiles permanently parked. This plan does, however, propose energy conservation measures for all consuming sectors. In this way, each sector will contribute to the overall effort and no undue hardship will be placed on any single individual, group, or business in the State. Collectively, the measures outlined in this plan will ensure that Maine achieves the goal of reducing the energy consumption of the State by 5% by 1980.



	Estimated 1980 Energy Savings in 10 <sup>12</sup> BTU	EPCA 1977	NON EPCA 1977	TOTAL 1977	1978	1979	1980	
E-0100 Thermal Standards	1.457	6070.00	15,000.00	21,070.00	50,000.00	50,000.00	15,000.00	
E-0200 Lighting Standards	0.792							
E-0300 Procurement	NA	7,235.00	3,360.00	10,595.00	20,000.00	20,000.00	20,000.00	
E-0400 Transportation	0.117	47,805.00	0.00	47,805.00	50,000.00	50,000.00	50,000.00	
E-0500 Right-Turn-On-Red	0.0112	10,000.00	0.00	10,000.00	---	---	---	
E-0600 Building Audits	8.249	61,890.00	90,000.00	151,890.00	100,000.00	20,000.00	20,000.00	
E-0700 Business/Industry	8.36	3,305.00	0.00	3,305.00	5,000.00	10,000.00	10,000.00	
E-0800 Auto Performance	0.504	2,795.00	0.00	2,795.00	5,000.00	10,000.00	10,000.00	
E-0900 Education Programs	NA	11,380.00	0.00	11,380.00	20,000.00	20,000.00	20,000.00	
E-1000 Local Energy Mgmt.	NA	28,805.00	0.00	28,805.00	30,000.00	30,000.00	30,000.00	
E-1100 Load Management	0.151	0.00	333,075.00	333,075.00	70,000.00	0.00	0.00	
E-1200 Intergovernmental	NA	---	---	---	---	---	---	
TOTALS	19.64**	*179,285.00	441,435.00	620,072.00	350,000.00	190,000.00	155,000.00	

\*Note: Does not include 2.5629% Indirect Costs charged to all grants.

\*\*Note: This figure represents 5.3% of the total energy use projected by FEA for Maine for 1980.



PART IV.C. - Summary of Costs for Selected Measures

	Personnel	Fringe	Travel	Equipment	Supplies	Contractual	Other	TOTAL
0100 Thermal Standards	3,380.00	440.00	250.00	0.00	0.00	0.00	2,000.00	6,070.00
0200 Lighting Standards	Included Above							
0300 Procurement Standards	3,720.00	265.00	250.00	0.00	0.00	3,000.00	0.00	7,235.00
0400 Transportation Programs	2,040.00	265.00	500.00	0.00	0.00	45,000.00	0.00	47,805.00
0500 Right-Turn-On-Red	0.00	0.00	0.00	0.00	0.00	10,000.00	0.00	10,000.00
0600 Building Audits	15,780.00	1,830.00	500.00	0.00	500.00	2,500.00	40,780.00	61,890.00
0700 Business & Industry Program	2,040.00	265.00	250.00	0.00	500.00	0.00	250.00	3,305.00
0800 Automobile Performance Program	1,370.00	175.00	250.00	0.00	250.00	0.00	750.00	2,795.00
0900 Education Program	4,070.00	310.00	500.00	0.00	2,500.00	0.00	4,000.00	11,380.00
1000 Local Energy Management	2,040.00	265.00	500.00	0.00	0.00	26,000.00	0.00	28,805.00
1100 Load Management Study	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200 Intergovernmental Coordination	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	34,440.00	3,815.00	3,000.00	0.00	3,750.00	86,500.00	47,780.00	179,285.00*

\*Note: This figure does not include \$ 4,715.00 which represents an indirect cost rate of 2.5649%  
The total amount of the Grant is therefore;

\$ 179,285.00  
+ \$ 4,715.00  

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\$ 184,000.00

Minimum Thermal Efficiency Standards for  
New and Substantially Renovated Buildings

E - 0110 Overview:

Maine does not presently have a statewide building code or standard which governs all buildings built in the State. Thus, there is no statewide standard which requires minimum energy efficiency in new or renovated buildings. There are approximately 156 municipalities in Maine which have some kind of building code or regulation. However, no city or town is known to have energy related standards incorporated into a building code.

Maine does have existing standards which affect some of the new buildings being built in the State. The "Minimum Property Standard" of the U.S. Department of Housing and Urban Development (HUD-MPS) controls those homes and multi-family dwellings erected under Federal subsidy or loan guarantee. It is estimated that up to one-half of the dwelling units erected in Maine are governed by these standards.

Maine's Industrial Building Code contains a performance standard which specifies that factory built homes must consume no more than 34.1 BTU per square foot at design temperature. This Code regulates modular and other factory built homes manufactured or sold in Maine. The Code does not cover mobile homes which come under the jurisdiction of the Department of Housing and Urban Development.

Public Buildings, that is those built with public funds, must now meet the requirements of the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) Standard 90-75. This requirement was established by the Maine Bureau of Public Improvements (BPI) as a result of a joint effort on the part of the staffs of the Office, Bureau of Public Improvements, Department of Education and Cultural Services, and a group of Architects and Engineers. The ASHRAE standards were administratively implemented by BPI in January of 1977.\*

Because Maine has no existing structure within which an energy conservation standard could be administered, legislative action will be required to put a standard in place. In reviewing the history of previous attempts to introduce legislation which would create a statewide building code, it was found that each attempt has received a great deal of opposition. It was felt, therefore, that a Commission should be created, either by Legislative action or Executive Order to address the questions of energy conservation standards and implementation methods by which those standards could be enforced. The Commission would report to the Governor and Legislature and recommend appropriate action. Legislation has been introduced to create such a Commission.\*\*

Should the legislation fail to pass, the Governor will be requested to establish a similar Commission by Executive Order. However the Commission is created, its mandate will be generally as follows;

- (1) To investigate possible energy conservation building codes or standards which could be implemented in Maine,
- (2) To investigate possible implementation methods by which the code or standard could be enforced, and
- (3) To make recommendations to the Governor and Legislature on these matters.

The staff of the Office of Energy Resources will assist the Commission by providing technical assistance, expertise, and, if necessary, funding for

assistance from outside consultants.

Because the Legislation regarding the Building Standards Commission requires the Commission to report to the first session of the 109th Maine Legislature, the earliest date by which a standard could be implemented would be July 1, 1979. Thus, Maine formally requests that the Federal Energy Administration allow an extension of time for the State to meet the requirements of 10 CFR section 420.35(d)(1) as allowed by section 420.41(b). The energy savings methodology attached reflects the extension until 1979.

The following chart shows milestones for the program for the last three calendar quarters of 1977 and the four calendar quarters of 1978. The second chart outlines programmatic milestones for 1979 and 1980.

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\*Note: See Attached Memorandum

\*\*Note: LD 954 "An Act to Create a Commission on Energy Efficiency Building Performance Standards." Attached.

It is the intent of the State of Maine to establish a thermal efficiency standard for new buildings in the State. It is also the intent to establish a similar standard for renovated buildings. The criteria for implementation of the renovation will be determined by the Commission as will the actual standard and implementation methods. Although the standard adopted may be a performance standard rather than a prescriptive standard, (such as the HUD-MPS) the standards will be no less effective than ASHRAE 90-75.

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ONE HUNDRED AND EIGHTH LEGISLATURE

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Legislative Document

No. 954

H. P. 749 House of Representatives, March 10, 1977  
Referred to Committee on Energy. Sent up for concurrence and 1,800  
ordered printed.

EDWIN H. PERT, Clerk

Presented by Mr. Palmer of Nobleboro.  
Cosponsor: Mrs. Huber of Falmouth.

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STATE OF MAINE

IN THE YEAR OF OUR LORD NINETEEN HUNDRED  
SEVENTY-SEVEN

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AN ACT to Create a Commission on Energy Efficiency Building Performance  
Standards.

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Be it enacted by the People of the State of Maine, as follows:

Sec. 1. Commission; duties. A special commission shall be constituted and appointed to prepare proposed energy efficiency building performance standards for the State of Maine, which shall be presented to the Legislative Council prior to the convening of the first regular session of the 109th Legislature, together with final draft copies of any proposed legislation. These standards shall contain minimum energy efficiency performance standards for residential, commercial, industrial and governmental buildings. In preparing these standards, the commission shall investigate the experience and energy efficiency performance standards of the United State Government, of other states, of foreign countries and of professional organizations, including the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. Standards for Energy Conservation in New Building Design. The commission shall also recommend methods of implementing these energy efficiency performance standards, which may include energy efficiency requirements for new construction and financial incentives for increasing the energy efficiency of already existing construction. The commission is further empowered to hold not more than 5 public hearings in various parts of the State in order to receive testimony concerning both proposed standards and proposed methods of implementing those standards. It is the purpose and intent of this Act to provide the commission with sufficient authority and funds to enable it to present to the Maine Legislature a complete, practical and efficient proposed code of energy efficiency building performance standards for construction.

The commission is authorized to apply for, receive and use funds from any source, including federal, foundation and private sources of funding.

Sec. 2. Membership. The membership of the commission shall consist of 11 persons. The President of the Senate shall appoint 2 members of the Senate and the Speaker of the House shall appoint 2 members of the House. The Governor shall appoint one member who is a registered professional architect, one member who is a registered professional engineer, one member who is a practicing contractor, one member who is a practicing building inspector, one member who represents the banking industry and 2 members, each of whom is an elected official of a county or municipality. Members shall serve for the lifetime of the commission. Any vacancies in commission membership occurring after the initial appointment shall be filled in the manner used to appoint the initial member whose seat is vacant.

Sec. 3. Meetings. The commission shall be appointed promptly upon the enactment of this Act and the Governor shall notify all members of the time and place of the first meeting. At that time the commission shall organize, elect a chairman, vice-chairman and secretary-treasurer and adopt rules as to the administration of the commission and its affairs. The commission shall maintain minutes of its meetings and such financial records as may be required by the State Auditor and shall report periodically its progress to the Governor and to the Legislative Council.

Sec. 4. Support services. The Office of Energy Resources shall provide all necessary staff assistance, research aid, secretarial help and material support. That office shall provide meeting space and shall coordinate the activities of the commission. In addition, that office shall be responsible for the drafting, in final form, of any proposed legislative acts and of any proposed executive regulations which result from the findings of the commission.

Sec. 5. Reimbursement of expenses. The members of the commission shall serve without compensation, but may be reimbursed for their reasonable expense in attending meetings, procuring supplies, correspondence and other related and necessary expenditures.

Sec. 6. Funds. The commissioner is authorized to apply for, receive and use funding from any source, including the Federal Government and private foundations, to further the study authorized by this Act.

Sec. 7. Appropriation. There is appropriated from the General Fund the sum of \$5,000 for the fiscal year ending June 30, 1977, to carry out the purposes of this Act. Any unexpended balance shall not lapse but shall remain a continuing carrying account until June 30, 1978.

STATEMENT OF FACT

The costs of heating and lighting buildings in Maine is increasing dramatically. A large part of the problem is inadequate building design and construction. This bill would establish a commission to recommend building performance standards for energy and to consider the most feasible methods of implementing those standards, both in new and old buildings. The recommendations will be presented to the First Regular Session of the 109th Legislature.

MEMORANDUM

TO: Superintendents of Schools and Designers

FROM: Richard Bachelder, Bureau of Public Improvements and  
Joel Leroy Nisbett, Department of Educational & Cultural Services

SUBJECT: Energy Conservation Policies on New Construction

Following is a joint administrative policy statement by the Bureau of Public Improvements and the Division of School Facilities, Department of Educational and Cultural Services.

1. The design of new State funded buildings shall conform to Energy Conservation standards of ASHRAE 90-75 and the BOCA Design Code.

2. To assist in an energy evaluation of a proposed facility, the schematic submission shall include data as outlined on the attached sheet. The maximum allowable configuration (x) and building energy (z) factors for the various sized buildings are as follows:

<u>Total Square Feet</u>	<u>Maximum X-Factor</u>	<u>Maximum Z-Factor</u>
15,000 and under	1.50	18.0
15,000 to 50,000	1.30	14.0
50,000 to 80,000	1.25	13.0
Over 80,000	1.00	12.0

The above figures shall not be exceeded except in extremely unusual circumstances and approved in advance.

ENERGY CONSERVATION  
BUILDING ENERGY EVALUATION

1. Purpose

The attached form is designed for an evaluation and comparison of energy losses through the proposed building envelope during the early (schematic) design phases of the project.

2. Definitions

a. Exposed Building Element - This shall include all areas of the building envelope projecting above grade - generally, the insulation area (separating warm side from cold side).

Floors, walls, and roof types - provide for several different constructions.

Overhang floor areas - represent overhanging areas with insulated floor.

b. U-Value shall be in accordance with ASHRAE Guide.

c. T.D. - Design temperature difference between occupied space and outside.

d. BTU/hr. Heat Loss shall represent transmission losses only. Infiltration losses and energy to heat ventilation air are not a part of this preliminary evaluation.

e. Total Floor Area ② shall be total building floor area as defined by AIA.

3. If not accompanied by Drawings, the form shall be accompanied by a brief description of the facility including numbers of stories, any unusual features, etc.

ENERGY CONSERVATION

BUILDING ENERGY EVALUATION FORM

The design of new State funded buildings should conform to Energy Conservation Standards of

ASHRAE 90-75

To assist in an energy evaluation of a proposed facility, the schematic submission shall include the following data for evaluation:

EXPOSED BUILDING ELEMENT (Above Grade)	AREA	U-VALUE	TD	BTU/Hr. HEAT LOSS (Transmission)
Walls - Type 1				
Type 2				
Glass -				
Sub-Total Walls & Glass		_____	_____	
Roof - Type 1				
Type 2				
Sub-Total Roof		_____	_____	
Overhang Floor				
Type 1				
Type 2				
Sub-Total Floor		_____	_____	
① Total Above Grade Envelope Area		_____	_____	③

② Total Floor Area
--------------------

X Building Configuration Factor =  $\frac{\text{Total Envelope Area } ①}{\text{Total Floor Area } ②}$

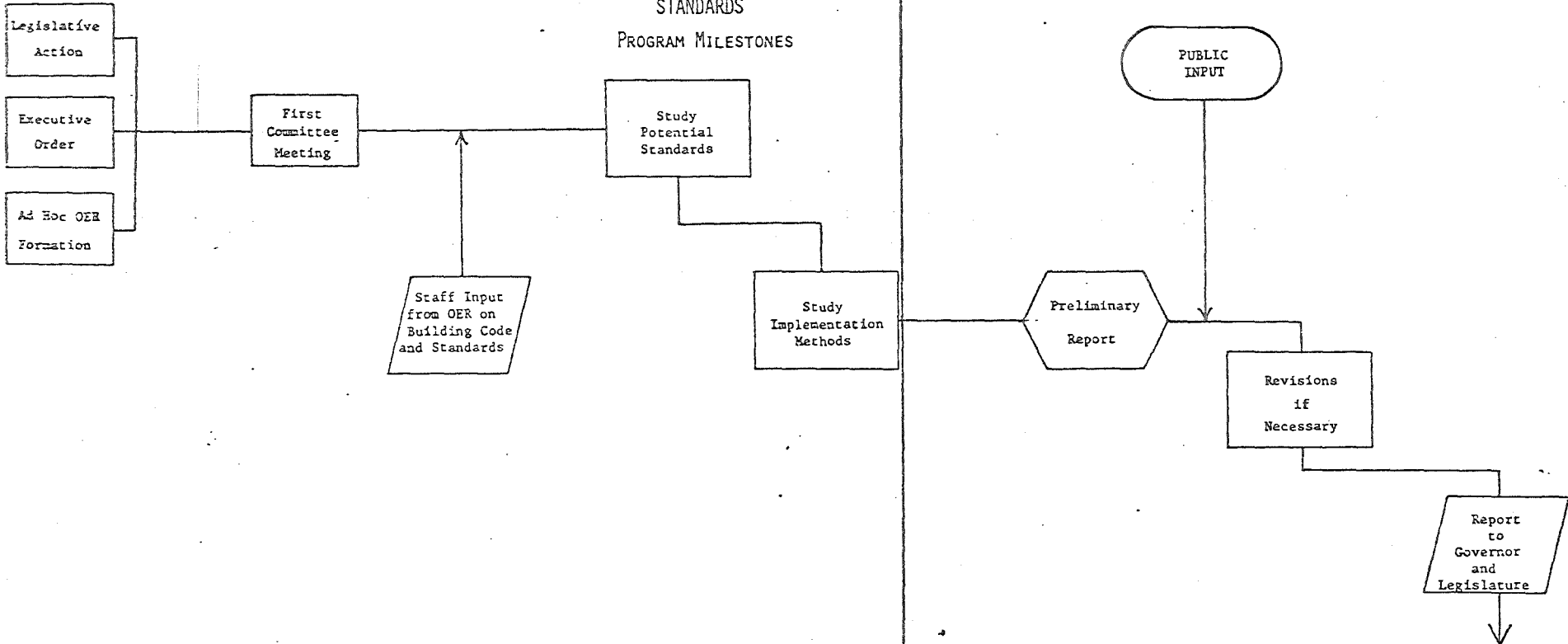
Y Building Envelope Factor =  $\frac{\text{Total Heat Loss } ③}{\text{Total Envelope Area } ①}$

Z Building Energy Factor = X x Y =  $\frac{\text{Total Heat Loss } ③}{\text{Total Floor Area } ②}$

THERMAL EFFICIENCY  
AND  
LIGHTING EFFICIENCY  
STANDARDS  
PROGRAM MILESTONES

1977

1978



APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
<p>The Building Standards Commission will be established by one of the three shown methods. Depending on the actual passage of the Act, the Commission could begin its operations as early as May. At the latest, the Commission will most likely have its first meeting by July 1, 1977.</p> <p>The Staff of the Office of Energy Resources will prepare a background document for the members of the Commission before the first meeting.</p>			<p>The Commission will study the Thermal Efficiency and Lighting Standards promulgated by other states and by National Code Organizations. Where possible, the effectiveness of standards now being implemented in other areas will be ascertained.</p> <p>The Staff of the OER will coordinate with the Commission to provide assistance and to solicit help from other State agencies which would be affected by the enactment of an energy efficiency standard.</p>			<p>The Commission will study the possible ways in which building standards for energy efficiency might be implemented and enforced in Maine. The implementation alternatives studied will include; voluntary implementation, financial incentive, legal enforcement through a code system, or other methods.</p> <p>The OER Staff will again give assistance to the Commission and provide necessary technical assistance and coordination with other State agencies.</p>			<p>A preliminary Report will be drafted for public review and comment. The report will include proposals for alternative standards and implementation methods.</p> <p>The OER Staff will provide the necessary clerical and writing assistance as requested by the Commission.</p>			<p>Up to five public hearings will be held to allow the citizens of the State a chance to comment on the Draft report. Upon completion of the hearings, the Commission, with help from the OER staff will make the necessary revisions to the report.</p>			<p>Upon completion, the final report will be submitted to the Governor and the Legislative Council for consideration. Should the Governor or Council request any changes or amendments, the report would be passed back to the Commission.</p>			<p>The final report, containing the recommendations of the Commission for any needed legislation, will be submitted to the 109th Maine Legislature.</p>		



STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
1979 -- 1980  
PROGRAM MILESTONES

1979-

The recommendations of the Commission will be considered by the 109th Maine Legislature. Depending on the decision of the Legislature as to standards and implementation methods which would be adopted for the State, the OER will institute the necessary steps to begin the implementation process. This will include:

- (1) Educational Programs for Builders, Architects, Engineers and Code Enforcement Officials.
- (2) Preparation and distribution of literature and other materials, including model codes, standards, and handbooks.
- (3) Establishing a system for monitoring the effectiveness of the Standard. (Note: The Maine State Planning Office has proposed the establishment of a system to help obtain and maintain information on new construction in the State. If this system is developed, OER will coordinate its monitoring efforts through the system.)

After the standards are in place, OER will monitor the process to determine the effectiveness of the standards and to determine any changes which should be made in the standards. OER will issue quarterly reports on the implementation of the program and hold semi-annual hearings to allow public comment on the standards.

1980-

The Office of Energy Resources will continue to monitor the effectiveness of the program. The OER will continue to offer technical assistance and education programs to help those in the building trades and related fields. OER will also make recommendations, based on the input received from the aforementioned hearings, for amendments and revisions to the standards.

E - 0133 Data Documentation

The methodologies used herein utilized data supplied by FEA except for the following:

Worksheet #7 Step 1(c) The data shown in this space was supplied by the Maine Department of Education and Cultural Services. The figure represents the average increase in total square footage of new school construction for the period 1970 through 1975.

E - 0134 Savings Assessment

The Office of Energy Resources will compile all available data on new buildings constructed in Maine. The State Planning Office has proposed the establishment of a system for gathering and managing information about building construction in the State. If this system is established, the OER will coordinate with the SPO to utilize the system for monitoring the effects of the implementation of this program. The OER will also maintain information on the fuel flows in the state as a cross-check of the data obtained from the SPO system.

E - 0130 1980 Energy Savings  
Forecast

State Name MAINE  
Target Year 1980

Summary Sheet for Accumulating Energy Savings for Mandatory  
Thermal Efficiency Standards and Insulation Requirements  
for New and Renovated Buildings

Building Types	Energy Savings in Billion Btu's	
	Space Heating (E <sub>h</sub> ) (from worksheet, line 4d)	Air Conditioning (E <sub>c</sub> )
<u>Residential Buildings:</u>		
1. Single family - one unit detached	170.734 (x 10 <sup>9</sup> )	5.664 (x 10 <sup>9</sup> )
2. Low density - one unit attached and 2-4 unit structures	79.621 (x 10 <sup>9</sup> )	2.930 (x 10 <sup>9</sup> )
3. Low rise - structures with 5 or more units and 3 stories or less	105.869 (x 10 <sup>9</sup> )	1.625 (x 10 <sup>9</sup> )
4. High rise - structures with 5 or more units and 4 or more stories	74.939 (x 10 <sup>9</sup> )	1.196 (x 10 <sup>9</sup> )
<u>Non-residential Buildings</u>		
5. Office buildings	146.267 (x 10 <sup>9</sup> )	7.690 (x 10 <sup>9</sup> )
6. Retail stores and other mercantile buildings	116.884 (x 10 <sup>9</sup> )	4.552 (x 10 <sup>9</sup> )
7. Educational buildings	162.421 (x 10 <sup>9</sup> )	— (x 10 <sup>9</sup> )
8. Hospitals and other institutional buildings	44.417 (x 10 <sup>9</sup> )	2.48 (x 10 <sup>9</sup> )
10. Other	90.095 (x 10 <sup>9</sup> )	4.182 (x 10 <sup>9</sup> )
Subtotals:	991.247 (x 10 <sup>9</sup> )	30.319 (x 10 <sup>9</sup> )
	x	x
	F <sub>h</sub> State Heating factor: 1.44 (Table IV.G)	F <sub>c</sub> State Cooling factor: .73 (Table IV.G)
	=	=
	1427.396 (x 10 <sup>9</sup> )	22.433 (x 10 <sup>9</sup> )
	+	=
		1,449.53 (x 10 <sup>9</sup> )
		x 10 <sup>-12</sup>
	Total Energy Savings =	
		1.450 (x 10 <sup>12</sup> )
		Btu's

E - 0131 Methodologies and Documentation:

FEA Methodologies and data used throughout except where noted.

E - 0140 PROGRAM IMPLEMENTATION COSTSComputation of Costs by Category

a. Personnel Costs	3,380.00
b. Fringe Benefits	440.00
c. Travel	250.00
d. Equipment	0.00
e. Supplies	0.00
f. Contractual	0.00
h. Other	2,000.00
Total	6,070.00

Explanatory Comments:

a. Personnel Costs:	10% Conservation Engineer @ 13,400	1,340.00
	10% Clerk-Typist II @ 7,000	<u>700.00</u>

h. Other:	Items included in this category:	
	Publications	500.00
	Copying and Printing	1,000.00
	Mailing and Phone	<u>500.00</u>
		2,000.00

The implementation of Building Standards in Maine is calculated to decrease energy consumption by 1.457 Trillion BTU in 1980. Based on historical data, on energy consumption for various supply sectors, the following calculations are made:

Residential Energy Consumption for Space Heating and Cooling

Distillate Oil	94.5%	
Electricity	4.3%	Total Energy Saved in the
Natural Gas	1.1%	Residential Sector:
Coal	0.1%	.629 Trillion BTU

Non-Residential Energy Consumption for Space Heating and Cooling

Distillate Oil	94.0%	
Electricity	3.1%	Total Energy Saved in the
Natural Gas	2.7%	Non-Residential Sector:
Coal	0.2%	.820 Trillion BTU

Total Energy Savings by Fuel Type

Residential		Non-Residential	
Distillate Oil	0.594	Distillate Oil	0.771
Electricity	0.027	Electricity	0.025
Natural Gas	0.007	Natural Gas	0.022
Coal	0.000	Coal	0.002

All Figures are in Trillions of BTU's

These data are transferred to the Environmental Assessment Section of this Plan (Section D).

## Lighting Efficiency Standards for Public Buildings

## E-0210 Overview:

At the present time, the State of Maine has no standards governing the efficiency of lighting in public buildings other than those owned and operated by the State. Since January 27, 1976, existing state buildings have operated under illumination standards established in the "Maine State Agency Energy Conservation Plan" ( Appendix A ). These standards set maximum lighting levels for "task areas". Also set forth in the plan were suggestions regarding the type of lighting fixtures to be used and how these fixtures should be operated. As of January 1, 1977, all state-owned buildings will be designed according to ASHRAE 90-75 Standard which mandates minimum lighting efficiency.

As noted in the previous section, legislation has been introduced in the Maine Legislature to create a commission to study Energy Conservation Building Standards. This commission will study both thermal and lighting standards and recommend legislation to implement such standards. Such standards would only be applicable to new public buildings or substantially renovated buildings. For existing buildings, an education program will be devised workshops will be held throughout the State to teach owners and operators of existing public buildings about lighting efficiency and technique they can employ to improve lighting efficiency in their facilities.

The workshops on lighting efficiency will be contained within two programs delineated elsewhere. These are (1) the Local Energy Management Program (Section E-1000) and the Business and Industry Program (Section E-0700).

Because the pending legislation regarding a Building Standards Commission mandates that Commission to report to the 109th Maine Legislature the earliest date for implementation of lighting efficiency standards would be July 1, 1979. The State of Maine therefore, formally requests an extension of the implementation date given in 10 CFR 420.35 (a) (1) as allowed by 10 CFR 420.4166) the energy savings from this program element as calculated are the attached worksheet reflects the extension as requested.

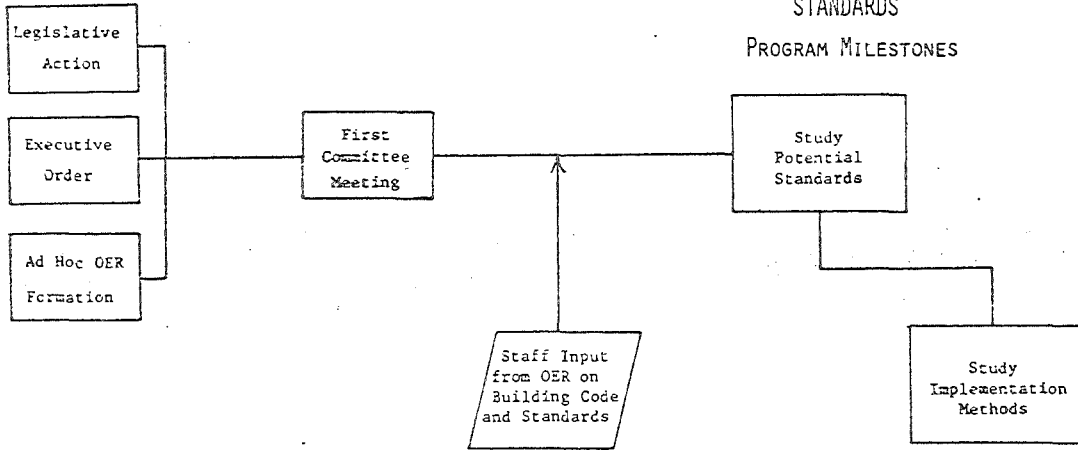
The State of Maine intends to comply with the requirements of 10 CFR 420.4166 by establishing standards for lighting efficiency in public buildings. The State will begin a program of education and technical assistance aimed at the owners and operators of existing public buildings. This program will be coordinated through other segments of this plan as noted above.

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN

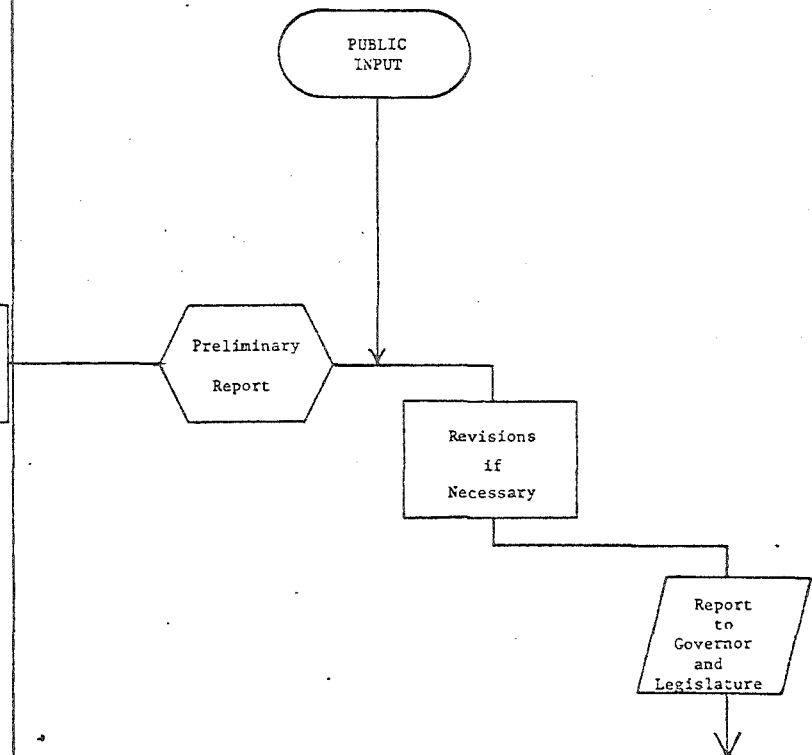
1977

THERMAL EFFICIENCY  
AND  
LIGHTING EFFICIENCY  
STANDARDS

PROGRAM MILESTONES



1978



CH	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
	2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
	<p>The Building Standards Commission will be established by one of the three shown methods. Depending on the actual passage of the Act, the Commission could begin its operations as early as May. At the latest, the Commission will most likely have its first meeting by July 1, 1977.</p> <p>The Staff of the Office of Energy Resources will prepare a background document for the members of the Commission before the first meeting.</p>			<p>The Commission will study the Thermal Efficiency and Lighting Standards promulgated by other states and by National Code Organizations. Where possible, the effectiveness of standards now being implemented in other areas will be ascertained.</p> <p>The Staff of the OER will coordinate with the Commission to provide assistance and to solicit help from other State agencies which would be affected by the enactment of an energy efficiency standard.</p>			<p>The Commission will study the possible ways in which building standards for energy efficiency might be implemented and enforced in Maine. The implementation alternatives studied will include; voluntary implementation, financial incentive, legal enforcement through a code system, or other methods.</p> <p>The OER Staff will again give assistance to the Commission and provide necessary technical assistance and coordination with other State agencies.</p>			<p>A preliminary Report will be drafted for public review and comment. The report will include proposals for alternative standards and implementation methods.</p> <p>The OER Staff will provide the necessary clerical and writing assistance as requested by the Commission.</p>			<p>Up to five public hearings will be held to allow the citizens of the State a chance to comment on the Draft report. Upon completion of the hearings, the Commission, with help from the OER staff will make the necessary revisions to the report.</p>			<p>Upon completion, the final report will be submitted to the Governor and the Legislative Council for consideration. Should the Governor or Council request any changes or amendments, the report would be passed back to the Commission.</p>			<p>The final report, containing the recommendations of the Commission for any needed legislation, will be submitted to the 109th Maine Legislature.</p>		

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN

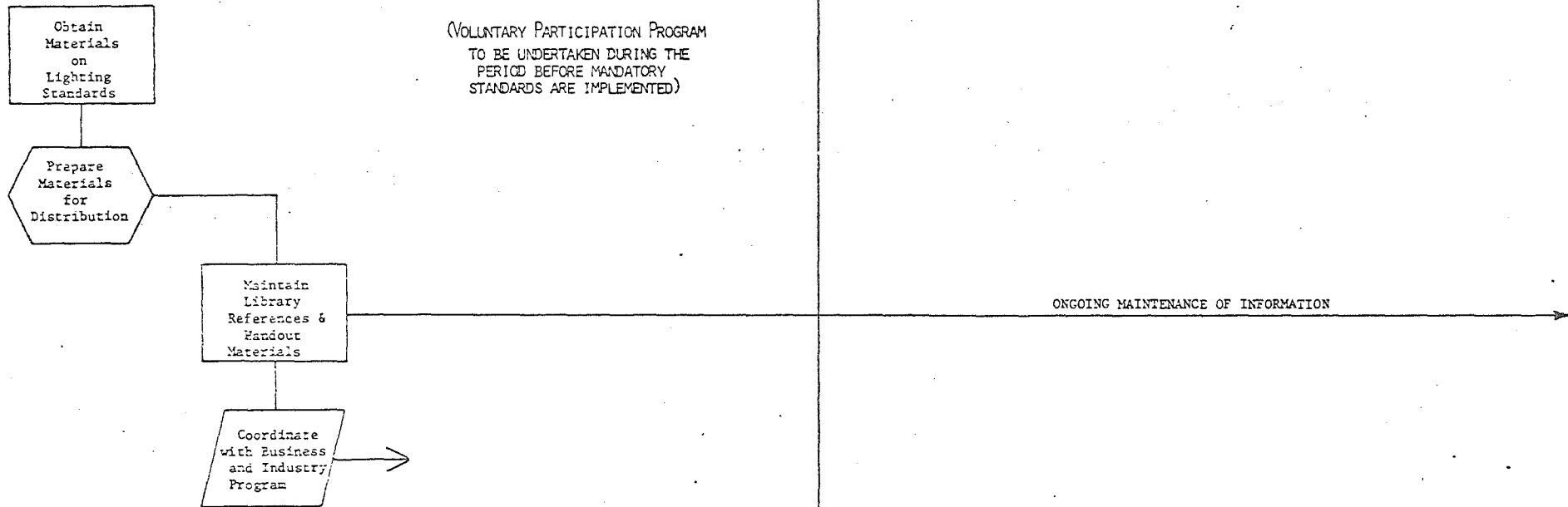
1977

LIGHTING EFFICIENCY  
STANDARDS

PROGRAM MILESTONES

(VOLUNTARY PARTICIPATION PROGRAM  
TO BE UNDERTAKEN DURING THE  
PERIOD BEFORE MANDATORY  
STANDARDS ARE IMPLEMENTED)

1978



CH	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
	2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
	<p>The Office of Energy Resources will obtain all relevant literature and materials discussing the implementation of lighting standards in existing structures. The OER will use this material to prepare a series of pamphlets and handbooks for distribution to various public building owners and operators in the state. The OER booklets will be aimed at the types of buildings found in Maine rather than at general public buildings which may not be of a type found in the State.</p>			<p>The OER will maintain a library of reference material and will make handouts and booklets available on request. The Materials developed in this program will also be used in the Business and Industry Program outlined in Section E-0700.</p>			<p>Library Materials and documents will be obtained and updated on an ongoing basis. New information will be incorporated into ongoing programs where desirable.</p>			<p>The OER will update its reference library as new materials become available and, using the OER newsletter, keep the Business and Industry communities informed as to the availability of this material.</p>			<p>*Note: The calendar milestones of 1979 and 1980 will be essentially the same as those for 1978. Any change will be noted in future amendments to this Plan</p>								



STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
1979 -- 1980  
PROGRAM MILESTONES

1979-

The recommendations of the Commission will be considered by the 109th Maine Legislature. Depending on the decision of the Legislature as to standards and implementation methods which would be adopted for the State, the OER will institute the necessary steps to begin the implementation process. This will include:

- (1) Educational Programs for Builders, Architects, Engineers and Code Enforcement Officials.
- (2) Preparation and distribution of literature and other materials, including model codes, standards, and handbooks.
- (3) Establishing a system for monitoring the effectiveness of the Standard. (Note: The Maine State Planning Office has proposed the establishment of a system to help obtain and maintain information on new construction in the State. If this system is developed, OER will coordinate its monitoring efforts through the system.)

After the standards are in place, OER will monitor the process to determine the effectiveness of the standards and to determine any changes which should be made in the standards. OER will issue quarterly reports on the implementation of the program and hold semi-annual hearings to allow public comment on the standards.

1980-

The Office of Energy Resources will continue to monitor the effectiveness of the program. The OER will continue to offer technical assistance and education programs to help those in the building trades and related fields. OER will also make recommendations, based on the input received from the aforementioned hearings, for amendments and revisions to the standards.

E - 0230 1980 Energy Savings  
Forecast

State Name MAINE  
Target Year 1980

Summary Sheet for Accumulating Total Energy Savings  
for Mandatory Lighting Efficiency Standards for Public  
Buildings

Electricity Savings in trillion Btu's  
(from Worksheets, line 4a)

Office Buildings:	0.033	(x10 <sup>12</sup> )	
Retail Stores:	0.045	(x10 <sup>12</sup> )	
Schools:	0.070	(x10 <sup>12</sup> )	
Hospitals:	0.034	(x10 <sup>12</sup> )	
Other:	0.056	(x10 <sup>12</sup> )	
SubTotal	0.238	(x10 <sup>12</sup> )	$\Sigma L_s$

Calculate total energy savings  
in terms of source fuel, by  
multiplying the subtotal by 3.33,  
(the factor to correct for gen-  
erating efficiency).

X 3.33

Total =  $\boxed{0.792 \text{ (x10}^{12}\text{)}} E_s$   
Btu's

E - 0231 Methodologies and Documentation:

FEA Methodologies Used Throughout

E-0233 Data Documentation

All data utilized in this section was supplied in the FEA State Energy Conservation Plan Handbook, Volume II.

E-0234 Savings Assessment

See Section E-0134

E-0240 Program Implementation Costs

Included in Section E-0140

E-0250 Environmental Residuals

The total energy savings calculated for this program are 0.729 Trillion BTU. The total savings for this program will be in the electric generation supply sector. According to the Electric Council of New England\*, Maine's Electric Generation is broken down into the following categories:

Hydroelectric	23.2%
Conventional Steam	29.0%
Nuclear	47.3%
Gas Turbine	0.2%
Internal Combustion	0.3%

Note: All Conventional Steam and Gas Turbine Generation in Maine is Oil Fired.

The total savings from this program applied to the percentages shown above yields the following:

Hydroelectric	0.1837
Conventional Steam	0.2297
Nuclear	0.3746
Gas Turbine	0.0016
Internal Combustion	0.0027

All data in trillions of BTU's

These data are transferred to the Environmental Assessment Section of this Plan (section D).

## PROCUREMENT STANDARDS

-28-

## E - 0310 Overview:

Purchasing for state government is done through the Department of Finance and Administration, Bureau of Purchasing. Under MRSA\* Title 5, Section 1804 the State Purchasing Agent controls all large purchases made by the State. The statute allows the State Purchasing Agent to adopt standards which "govern the procurement of goods or services."

Four minor civil divisions in the State (the cities of Auburn, Lewiston, Portland and Bangor) also have purchasing agents. In most other municipalities there is no formal purchasing office and procurement is handled by municipal officers or officials. Implementing purchasing standards in municipalities will be difficult for two reasons

1. Of the 440 municipalities in the State of Maine over three-quarters have populations of less than 2500. Almost two-thirds have less than 1000 people. Such small towns do not purchase in large quantities nor can they afford purchasing personnel to oversee these procurement activities.
2. State Government has no statutory authority to control municipal purchasing. Thus, the state purchasing agent cannot promulgate standards which would mandate energy efficient purchasing procedures for cities and towns.

Since January 27, 1976, the state has had in place a state agencies Energy Conservation Plan which has several sections dealing with procurement. These sections include specifications for automobile and truck purchases, life cycle costing, and the suggestion that all applicable state bid requests contain a paragraph requiring energy efficiency information to be included in bid submitted.

The Office of Energy Resources has secured the services of an intern who will be working on the preparation and implementation of this program. The intern will coordinate between the OER and Bureau of Purchases to determine how best to incorporate energy conservation considerations into the State purchasing standards. In order to implement these standards, it is foreseen that a new position will be required within the Bureau of Purchases. The person in this position will oversee the energy aspects of procurement for State Government and will investigate implementation strategies such as Life Cycle Costing where applicable.

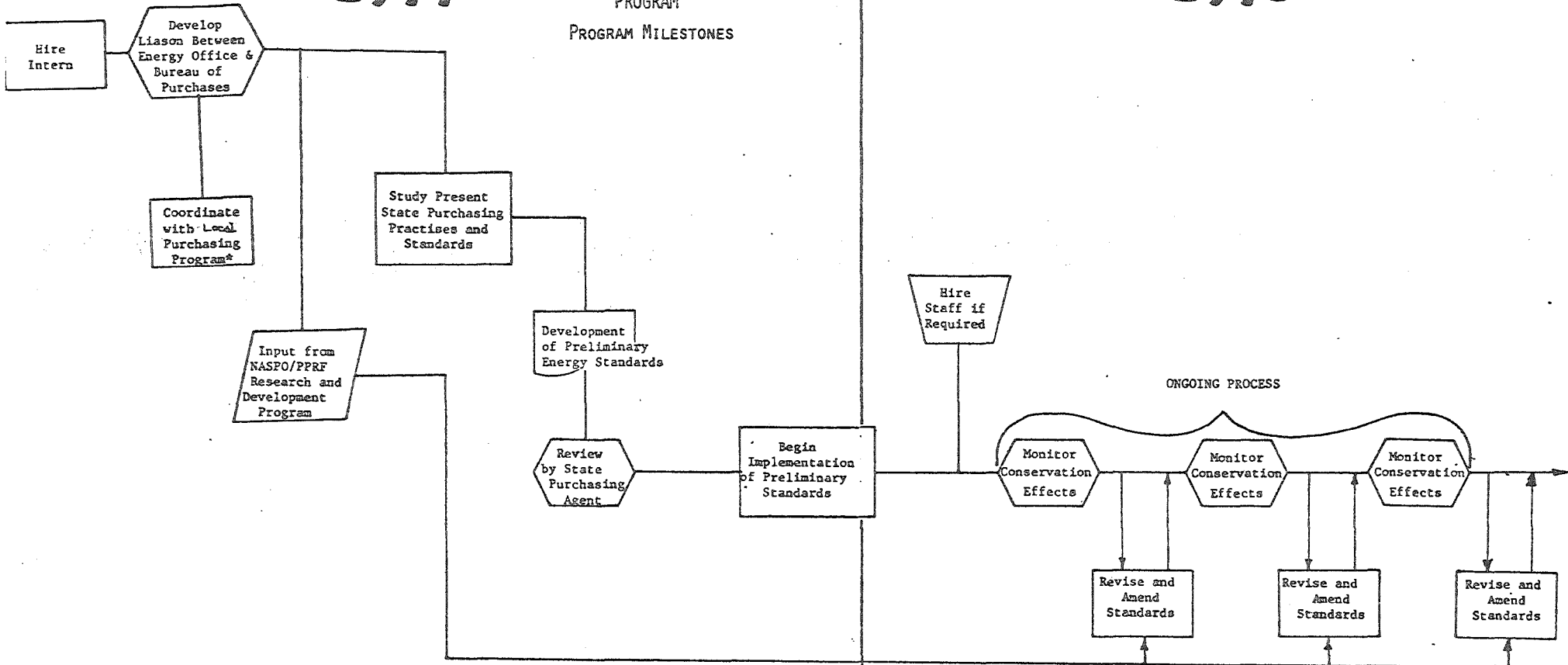
As noted previously, implementation of purchasing standards at the local level in Maine will be difficult. The Office of Energy Resources is currently investigating methods by which energy efficiency standards can be implemented in as many cities and towns in the State as possible. In the Local Energy Management Program, purchasing will be included as part of the educational package. The OER is also investigating the potential of working through the County Government level to create a purchasing program. Another alternative being looked at is interlocal agreements as allowed by Maine Revised Statute Title 30 Section 1951-1958, the Interlocal Cooperation Act. This could allow two or more municipalities to purchase cooperatively and thus, make it easier for both to implement energy efficiency standards.

\* Maine Revised Statutes Annotated

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
STATE PROCUREMENT  
PROGRAM  
PROGRAM MILESTONES

1977

1978



APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
<p>The Office of Energy Resources will contract with the Massachusetts Audubon Society Environmental Intern Program to provide an intern for six months. The intern will work with the OER and the State Purchasing Agent to study the State's present purchasing regulations and standards and to develop, with the assistance of both agencies, a plan for implementing purchasing standards which will promote energy conservation. The intern will also coordinate with the local purchasing program as outlined on the following page.</p>			<p>The OER will participate in a contractual arrangement between the NASPO Public Procurement Research Foundation and the states to acquire information on energy related purchasing standards. The intern will study the NASPO/PPRF standards and, with the help of the OER and Bureau of Purchases staffs, determine those standards which could be applied in Maine.</p>			<p>Subsequent to the study of the State's purchasing methods and the NASPO/PPRF material, the intern will prepare a set of recommendations as to the best way to implement energy conserving procurement standards for the State. These recommendations will be reviewed by the State Purchasing Agent and other concerned parties. Upon review and revision, those applicable standards will be implemented and become part of the ongoing procurement procedures.</p>			<p>If necessary, one or more staff members will be added to the Bureau of Purchases to implement the standards developed as part of this program.</p>			<p>Periodically, the standards will be examined and amended if necessary. The NASPO/PPRF materials will be utilized as resource materials for this process.</p>								

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
1979 -- 1980  
PROGRAM MILESTONES

1979-

The Office of Energy Resources and the Bureau of Purchases will maintain an ongoing process of implementing energy conservation standards for State purchases. The two agencies, working with information provided by NASPO and other national and regional organizations, will periodically update and revise the energy conservation standards. This information will be passed to the local and county purchasing officials to aid the implementation of the program at the local level.

The OER and Bureau of Purchases will monitor the purchases made by State Government to determine the effectiveness of the purchasing standards. Through the State Agencies Energy Conservation Plan, OER will monitor the energy consumption of all state agencies and thus provide a cross-check of the purchases monitoring effort.

1980-

OER and the Bureau of Purchases will continue to use and update the purchasing standards promulgated through the program. The State will continue to coordinate with national organizations such as NASPO and PPRF to obtain energy efficiency data on goods and materials purchased by government. OER will continue to monitor the energy use of State Agencies to determine the overall effectiveness of the program.

E - 0330 - 0333 1980 Energy Savings Forecast, Methodology, and Documentation

No energy savings are being claimed for the implementation of the program.

E - 0334 Energy Savings Assessment

As procurement standards are implemented, the OER and Bureau of Purchases will monitor the goods and services procured by the State to ascertain the energy savings which is resulting. OER will also, through the State Agencies Energy Conservation Plan, monitor the energy use of State Government to determine the overall effect of energy conservation efforts at the State level.

E - 0350 Environmental Residuals

Since no energy savings are being claimed for this program, no environmental residual estimates can be made.

E - 0340 PROGRAM IMPLEMENTATION COSTSComputation of Costs by Category

a. Personnel Costs	3,720.00
b. Fringe Benefits	265.00
c. Travel	250.00
d. Equipment	0.00
e. Supplies	0.00
f. Contractual	3,000.00
h. Other	0.00
Total	7,235.00

Explanatory Comments:

a. Personnel Costs:	Summer Student Intern for 3 Months	1,680.00
	10% Conservation Engineer @ 13,400	1,340.00
	10% Clerk-Typist II	700.00
		<u>3,720.00</u>
f. Contractual:		
	1. Contract with Public Procurement Research Foundation for energy efficiency information	3,000.00





## TRANSPORTATION MEASURES

-33-

## E - -410 Overview:

Maine has two Standard Metropolitan Statistical Areas (SMSA), Portland and Lewiston-Auburn. Each area has an areawide metropolitan Transportation Planning Group: the Portland Area Comprehensive Transportation study (PACTS) and the Lewiston-Auburn Comprehensive Transportation Study (LACTS). The office of Energy Resources contracted with both agencies to prepare segments of the transportation Element of this plan. The actual documents prepared by LACTS and PACTS are attached in Appendix B. The following is a summary of each segment.

## A. The Lewiston-Auburn Comprehensive Transportation Study Plan

The Lewiston-Auburn study area is comprised of four municipalities, the cities of Lewiston-Auburn and the towns of Lisbon and Sabatus. The area had a 1970 population of 74,155. The area is characterized by a relatively small urban core area surrounded by low density residential development and rural areas.

Census data from 1970 indicates that over 75% of the workers in the area travel to and from their place of employment by automobile. A surprisingly large percentage of the population walked to work with a few utilizing the only available mass transit, the local bus system.

Hudson Bus Company presently operates ninebusses which run on regular routes through the urban and suburban areas of Lewiston and Auburn.

Historical information on bus ridership in the area showed a steady decrease until the winter of 1973 when the combination of the oil embargo, a restructuring of the transit routes, and a renewed interest on the part of the city government officials in both municipalities, resulted in an upswing in ridership figures. This trend has continued partly as a result of programs undertaken to promote use of the system and by restructure the system to better meet the needs of local people.

The Androscoggin Valley Regional Planning Commission which is an affiliate of LACTS, had undertaken a carpool matching program under a grant from the Federal Highway Administration. The program was conducted in the fall and winter of 1974 and 1975 with rather poor results. Carpool matching programs conducted at the same time in other areas of the state suffered a similar fate.

The plan developed by LACTS for the Lewiston-Auburn areas stresses incentives for the use of the existing mass transit system with some emphasis on carpool/vanpool programs for individual employers. As an adjunct to the latter, the plan includes a delineation of several potential park and ride lots for carpools who are traveling out of the area to their places of employment.

B. The Portland Area Comprehensive Transportation Study Plan

The Portland Study Area encompasses ten(10) municipalities including the cities of Portland, South Portland, and Westbrook and the towns of Cape Elizabeth, Cumberland, Falmouth, Yarmouth, Gorham, and Windham. The 1970 population of the area was 148,212 with an estimate of 158,397 for the 1975 population. The area is characterized by a fairly densely populated urban core area with medium density suburban and sparsely settled rural areas surrounding the core.

The Greater Portland Transit District (METRO) operates bus service in four of the larger municipalities in the study area (Portland, South Portland, Westbrook, and Cape Elizabeth. The population of this area is estimated at 111,000. Metro carries on average of 10,500 passengers per day over 15 scheduled routes. It is estimated that 65% of the peak period trips are work related. Trends in total ridership show definite increases in each year since the 1973 oil embargo. These changes are partially related to gasoline prices and partially to an upgrading of service, revision of routes and advertising.

Some carpool efforts have been undertaken in the Portland area through the Greater Portland Chamber of Commerce. However, the results were less than promising. The PACTS report states that carpooling is not felt to be a viable program selected large employers.

The plan developed by PACTS for the Portland area stresses the greater use of the existing public transit systems as the best way to conserve energy resources in the transportation sector. The plan stresses the need for better advertising and public information efforts to acquaint the people of the Portland area with the services offered by METRO.

Summary of the conclusions and Recommendations of the Metropolitan Planning Organizations.

(1) LACTS

(a) Park and Ride Lots.

The major element of the program is promotion of the lot including Publicization and delineation. Publicization of the program will be through local newspapers, public service radio announcement and a distribution of flyers to major employers. Delineation of the lots will be accomplished by signs. Agreements will be negotiated for maintenance (snow removal) where necessary.

(b) Preferential Parking

This program would be coordinated through the major

employers of the area. The major thrust of the program would be promotion, including distribution of flyers and delineation of preferential parking areas. Technical assistance would be provided to employers as needed.

C. Improvements in transit level of service

The major emphasis of this program would be the promotion, through advertising, and special programs, of existing transit services. The program would include advertising, special Saturday services, and other similiar promotions.

(2) PACTS

All the programs proposed in the PACTS plan are intended to educate, inform and attract new riders. These programs fall into the category of improving transit level of service. The Programs proposed include:

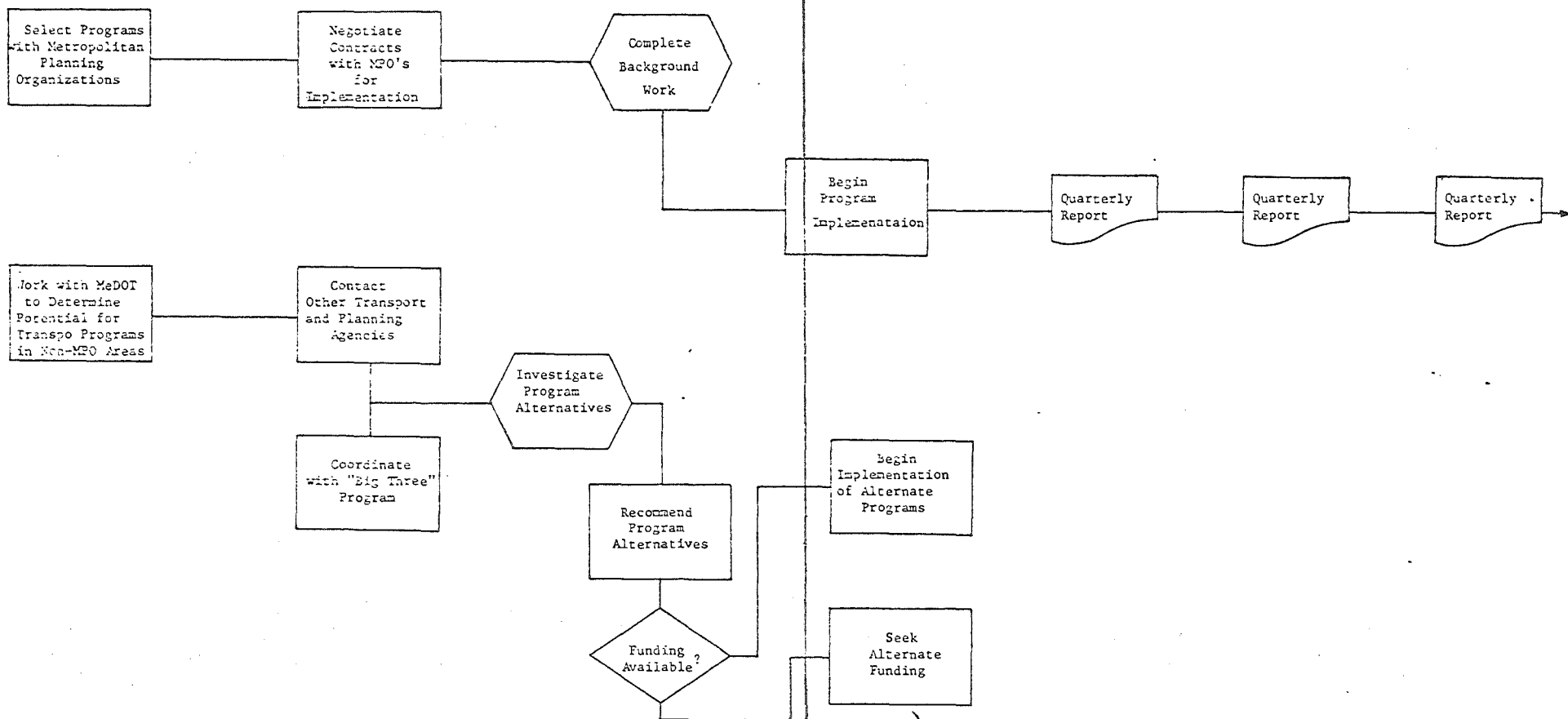
- (a) Distribution of Schedules and Posting of on street information about existing METRO service.
- (b) Radio and TV advertising
- (c) Special Promotions
- (d) A Public Education program including a Public information display, METRO Slide Show and Metro Information Booth
- (e) Signing of the Downtown Area Short Hop (DASH) zones.

The following charts delineate milestones for the two area programs.

1977

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
TRANSPORTATION MEASURES  
PROGRAM MILESTONES

1978



APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
<p>The Office of Energy Resources will coordinate with the two Metropolitan Planning Organizations in Maine to implement transportation programs in the Urban areas of the State. The programs will be selected from those proposed by the MPO's in the planning phase.</p> <p>The OER will also work with the Maine Department of Transportation to determine the potential for implementing transportation programs in the areas of the State not covered by the MPO's.</p>			<p>The OER staff will negotiate contracts with the MPO's for implementing the Transportation measures in the Urban areas. The MPO contracts will require that the MPO's implement the selected programs and continue a planning and monitoring effort to determine the effectiveness of the chosen programs and to determine possible additional programs for the MPO areas.</p> <p>Other agencies having interest in transportation planning or in providing transportation service will be contacted to determine the potential for implementing trans-</p>			<p>The MPO's will make final preparations to implement the chosen elements in their planning areas.</p> <p>In the Non-MPO areas, other transportation programs will be evaluated for inclusion in the implementation program for 1978. If funding is available, these programs will be included in the 1978 plan amendments.</p>			<p>The MPO's will begin implementing the programs in the urban areas. If funding is available for the non-metropolitan areas, programs will be instituted there. If not, other funding sources will be sought,</p>			<p>Quarterly reports will be prepared by the MPO's delineating the effectiveness of the programs in effect and determine if alternate programs could be included in future years.</p>								

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN

1979 -- 1980  
PROGRAM MILESTONES

1979-

The Office of Energy Resources will work with the Metropolitan Transportation Planning Organizations to determine the effectiveness of the implementation of the programs scheduled for the previous year. The MPO's will also determine any new programs which should be implemented to improve carpooling/vanpooling/mass transit usage. OER will include applicable revisions in updates of this Plan.

The OER will also work with the Maine Department of Transportation (MeDOT) and local and regional governmental agencies to determine the potential for implementing carpool/vanpool/mas transit programs in the non-metropolitan areas of the State. OER will consult with MeDOT to determine the feasibility of funding transportation programs which cannot use EPCA funds through some other Federal Program under FhWA or UMPTA.

1980-

The OER will continue to monitor the effectiveness of the implemented transportation programs in both the metropolitan and non-metropolitan areas of the state. Where additional programs are deemed feasible, funding from public and private sources will be sought.

E - 0430 1980 Energy Savings  
Forecasts

STATE NAME MAINE

TARGET YEAR 1980

Summary Sheet for Accumulating Total Energy Savings for  
Carpools, Vanpools, and Public Transit

A. Carpools  
(from Worksheet II, line 2g)

B. Vanpools  
(from Worksheet III, line 2h)

City Population

Under 250,000	_____	_____
250,000-500,000	_____	_____
500,000-1 million	_____	_____
1-2 million	_____	_____
2-3 million	_____	_____
Over 3 million	_____	_____

Carpool Total   $G_s$  (CP)  
Gallons/day

Vanpool Total   $G_s$  (VP)  
Gallons/day

C. Public Transit  
(from Worksheet IV, line 2c)

City Name	Public Transit Mode	Gasoline Savings Per day
Portland Area	Diesel Bus	3465
Lewiston-Auburn Area	Diesel Bus	325

Public Transit Total   $G_s$  (T)

Grand Total  
(A+B+C)

Gallons/day  $\times 3.1 \times 10^{-5} =$    $(\times 10^{12}) E_s$   
Btu's  
(multiply by factor to convert gallons/day to trillion Btu's/year)

E - 0431 Methodologies and Documentation:

FEA Methodologies used throughout.

E - 0440 PROGRAM IMPLEMENTATION COSTSComputation of Costs by Category

a. Personnel Costs	2,040.00
b. Fringe Benefits	265.00
c. Travel	500.00
d. Equipment	0.00
e. Supplies	0.00
f. Contractual	45,000.00
h. Other	0.00
Total	47,805.00

Explanatory Comments:

a. Personnel Costs:	10% Conservation Engineer @ 13,400	1,340.00
	10% Clerk-Typist II @ 7,000	700.00
		<u>2,040.00</u>
f. Contractual	1. Contract with Portland Area Comprehensive Transportation Study for Implementation	22,500
	2. Contract with Lewiston/Auburn Comprehensive Transportation Study for Implementation	<u>22,500</u>
	TOTAL	45,000



E - 0433 Data Documentation

The data used to calculate the energy savings shown herein was supplied by the Metropolitan Planning Organizations. The reports which contain this data are appended to this plan in appendix B.

E - 0434 Savings Assessment

The Metropolitan Planning Organizations will be required to submit annual reports on the effectiveness of the program. This report will include information on the use of public transit, increases in the use of carpools and vanpools, and any other relevant data. The OER will monitor gasoline consumption in the metropolitan areas to determine if any significant trends in reduced gasoline usage are evident.

E - 0450 Environmental Residuals

The savings resulting from implementation of this program are calculated to be 0.117 Trillion BTU. All of these savings will be from the gasoline supply sector.

The data from this section is transferred to the Environmental Assessment Section of this report (Section D).

TRAFFIC REGULATIONS ALLOWING DRIVERS  
TO MAKE A RIGHT TURN AT A RED TURN  
AT ALL SIGNALIZED INTERSECTIONS

-41-

E - 0510 Overview:

Right-Turn-On-Red (RTOR) is now allowed in Maine only at intersections which have been signed to permit RTOR. Legislation has been introduced to amend present regulations and allow RTOR at all signalized intersections unless it is determined that safety regulations promulgated by the Federal Highway Administration (FHWA) cannot be met. The Maine Department of Transportation (MeDOT) has been and is continuing to monitor the signalized intersections in the State to determine those which would have to be signed to prohibit RTOR. A copy of Maine Legislative Document L.D. 60, "An Act to Permit Vehicular Traffic to Turn Right at a Red Light" is attached.

Should L.D. 60 fail to pass, the Office of Energy Resources will work with the MeDOT and local governments to encourage the signing of those intersections where RTOR would be possible. Local municipalities could, under authority of MRSA Title 29 Section 497(3)(c), allow RTOR by erecting signs at intersections where safety considerations allow. Thus, if the "generally permissive" RTOR Act fails to pass, the OER can effect implementation of RTOR for most of the affected intersections through existing legislation.

Whichever implementation method is chosen, OER will work with the MeDOT and the Motor Vehicles Division of the Office of the Secretary of State to undertake a vigorous public awareness campaign aimed at drivers and pedestrians. This campaign will include media announcements, posters which will be put up at major intersections and in schools, and announcements included with all materials sent to new and prospective drivers in Maine.

A copy of a memorandum from the Department of Transportation discussing the implementation of RTOR is attached.

# STATE OF MAINE

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## Inter-Departmental Memorandum Date March 17, 1977

To Abbie C. Page, Director

Dept. Office of Energy Resources

From John Hodgkins, Engineer of Traffic

Dept. Transportation

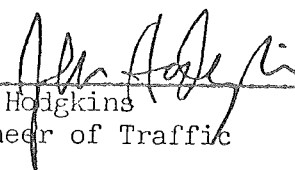
Subject Agreement

In accordance with a Memorandum of Understanding between this Department and the Office of Energy Resources dated January 25, 1977, the following information is furnished regarding signalized intersections and proposed Right Turn on Red After Stop regulations in Maine.

1. There are three hundred and nine signalized intersections in Maine.
2. Of the three hundred and nine signalized intersections, one hundred would appear after an initial analysis to meet all of the criteria set forth by the Federal Highway Administration for RTORAS on at least one of the approaches to the intersection. Many of those remaining may also meet criteria that will be established by the Department if the proposed RTORAS regulations are adopted.
3. It is estimated to cost \$15,000.00 to fabricate and install signs prohibiting Right Turn on Red at intersection approaches throughout the state where warrants for RTORAS do not presently exist.
4. It has been estimated, using methodology furnished by the Standard Research Institute, that approximately 89,665 gallons of fuel per year would be saved by implementation of RTORAS regulation in Maine at intersections presently meeting all the established criteria.

It should be noted that, should the proposed Right Turn on Red After Stop regulation be approved, this Department could be expected to conduct a review of all intersections not presently meeting established criteria for RTORAS to determine if modifications could reasonably be made to permit such a movement.

If additional information is required, please do not hesitate to call.

  
\_\_\_\_\_  
John Hodgkins  
Engineer of Traffic

JH:slm

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ONE HUNDRED AND EIGHTH LEGISLATURE

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Legislative Document

No. 60

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H. P. 43 House of Representatives, January 11, 1977  
Referred to the Committee on Transportation. Sent up for concurrence  
and ordered printed.

EDWIN H. PERT, Clerk

Presented by Mr. McMahon of Kennebunk.

Cosponsors: Mr. Truman of Biddeford, Mr. Lizotte of Biddeford, and  
Mr. Jensen of Portland.

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STATE OF MAINE

IN THE YEAR OF OUR LORD NINETEEN HUNDRED  
SEVENTY-SEVEN

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AN ACT to Permit Vehicular Traffic to Turn Right at a Red Light.

---

Be it enacted by the People of the State of Maine, as follows:

29 MRSA § 947, sub-§ 3, ¶ C, as enacted by PL 1971, c. 557, is amended to  
read:

C. All vehicular traffic facing a steady circular red signal at an inter-  
section where a traffic sign permits turning onto the intersecting traffic  
lane may cautiously enter the intersection to make the a right turn indi-  
cated and permitted by the traffic sign after stopping as required by  
paragraph A, unless such a turn is prohibited by an appropriate sign such  
as "NO RIGHT TURN ON RED." All vehicular traffic executing such  
a turn permitted at an intersection shall yield the right of way to pedes-  
trians upon a crosswalk adjacent to the intersection and to all traffic  
moving on the lanes having the green or "Go" signal at the intersection.

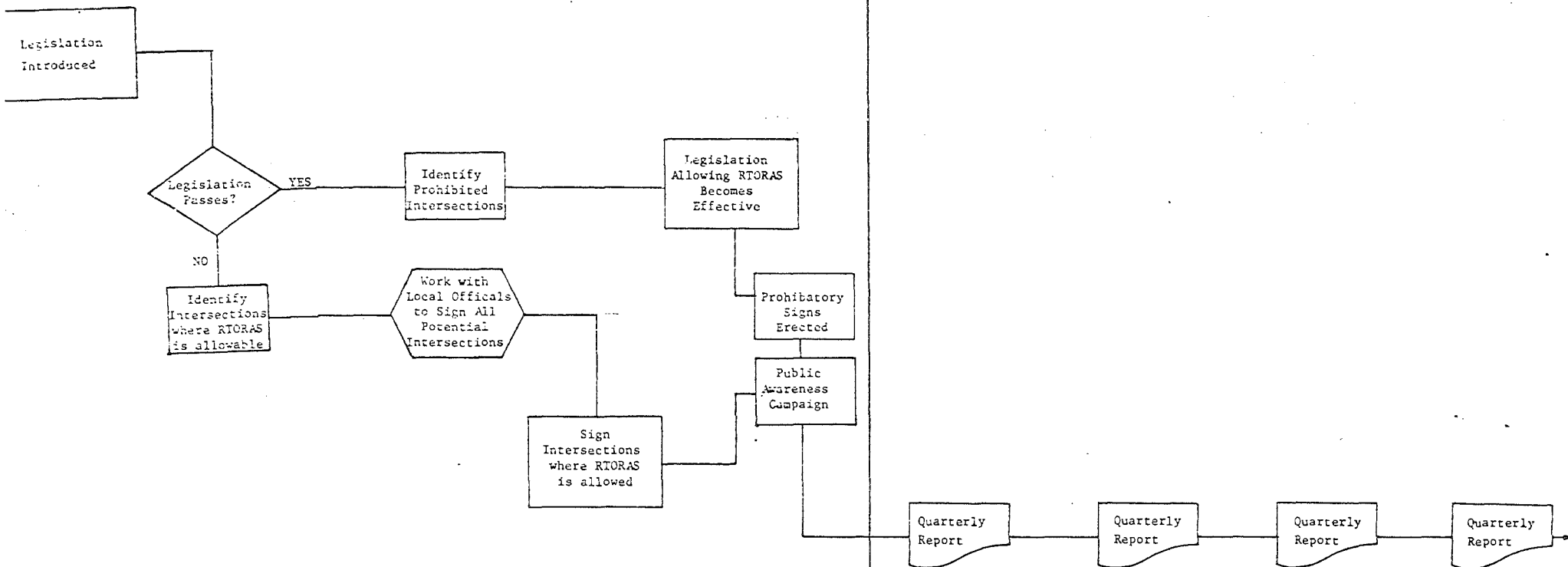
STATEMENT OF FACT

The purpose of this bill is to permit vehicular traffic to make a right turn  
at a red light at all times unless such a turn is expressly forbidden.

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
RIGHT-TURN-ON-RED  
PROGRAM MILESTONES

1977

1978



	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
	2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
	<p>Legislation allowing RTORAS has been introduced in the present session of the Maine Legislature. If the bill passes, generally permissive RTOR will become standard in Maine. If the bill fails to pass, Maine's existing law allowing RTOR at posted intersections will be used to implement this segment of the plan. The first step in this process will be the work with the Maine DOT to identify the intersections in the State which could be posted to allow RTOR.</p>			<p>Having identified the intersections where RTOR could be allowed, the OER staff and the MeDOT staff will work with local officials to promote implementation of RTOR at all potential locations.</p> <p>If the legislation allowing RTOR as a general rule passes, the OER and MeDOT will work to establish a listing of those intersections where RTOR cannot be allowed and where signs must be posted to that effect.</p>			<p>If, and when the legislation allowing RTOR becomes effective, signs will be erected at all intersections where RTOR will be prohibited. Regardless of the implementation method utilized, the OER with the cooperation of the MeDOT and the Motor Vehicle Division of the Secretary of State's Office will carry out a public awareness campaign to educate the drivers and pedestrians of the State about RTOR and the implementation of it in the State.</p>			<p>OER will work with the MeDOT and other State and Local agencies to monitor the effects of RTOR in Maine. Each calendar quarter, a report will be drafted outlining the effectiveness of the program.</p>			<p>Note: 1979 and 1980 Milestones not applicable for this program element.</p>								

PROGRAM IMPLEMENTATION COSTS

## Computation of Costs by Category

a. Personnel Costs	0.00
b. Fringe Benefits	0.00
c. Travel	0.00
d. Equipment	0.00
e. Supplies	0.00
f. Contractual	10,000.00
h. Other	0.00
Total	10,000.00

Explanatory Comments:

In the narrative section of this program segment, it is noted that the implementation costs for this program will be approximately \$ 15,000. This includes the cost of identifying and signing those intersections where RTOR would not be allowed. Because Federal Guidelines specifically exclude the purchase of equipment other than office equipment from this grant, OER will only fund that portion of the implementation costs eligible under EPCA. This is estimated to be \$ 10,000 of the total \$ 15,000 cost. This amount will be transferred to the Maine Department of Transportation for the implementation phase.

E - 0530 1980 Forecast of Energy Savings, Methodologies, and Documentation.

The Maine Department of Transportation, using the methodologies supplied to FEA by the Stanford Research Institute and data collected by on-site survey at intersections in Maine, has calculated the potential energy savings for the implementation of right-turn-on-red traffic regulations in Maine. The annual savings calculated by this method is projected to be 89,655 gallons of gasoline per year. Using a conversion figure of 125,000 BTU per gallon of gasoline, the yearly savings in BTU's will be 0.0112 Trillion BTU.

The computation of savings using the methodology supplied by FEA in the SECP Handbook, Vol. II yields a savings of .0225 trillion BTU if all 309 intersections in the state were affected by the program. The Office of Energy Resources will use the figure submitted by the Department of Transportation for submittal with this plan. It is felt that this savings estimate more nearly reflects the actual situation which will occur in Maine.

The actual computations done by the MeDOT staff are not included herein but are available for inspection, if necessary.

E - 0531 - 0533 Worksheets and Data Documentation

This material has been omitted from this Plan. It is available if the FEA determines that inspection of the data or computations is necessary.

E - 0534 Energy Savings Assessment

It will be difficult, if not impossible to determine the actual effect of implementing RTOR in Maine. OER will coordinate with the Maine Dept. of Transportation to assess the possibility of monitoring selected intersections before and after the implementation of RTOR to ascertain the time savings accrued because of the implementation of the program. Gasoline savings could then be estimated from this data.

E - 0550 Environmental Residuals

It is estimated that 0.0112 Trillion BTU will be saved annually through implementation of this program. The entire savings will be from the gasoline supply sector.

These data are transferred to the Environmental Assessment Section of this Plan (Section D).

## E - 0610 Overview:

The Office of Energy Resources will sponsor a three tier energy audit program. The targets for the program will be residential structures, public buildings including schools, and commercial structures. The aim of the program will be to provide building owners with an assessment of the potential energy savings which can be achieved through implementation of retro-fit techniques.

## Residential Energy Conservation Program

A number of parties are working on the development of computerized algorithms to calculate the heat loss and potential energy savings from retro-fit projects in residential structures. These include: the University of Maine at Orono Agricultural Engineering Department, the University of Maine at Farmington Physics Department, The Maine Office of Energy Resources, and the New England Management Information System Project.

Several home retro-fit packages including; FEA Project Conserve, FEA Home Energy Savers Workbook, Project Retro-Tech, and In the Bank or Up the Chimney will be analyzed. This will lead to the preparation of a simplified questionnaire for the homeowner which, when analyzed, will allow calculation of energy savings and cost/benefit ratios for potential retro-fit projects.

The program will be tested on several selected housing units to determine the accuracy of the program output. During this phase, a generalized output format will be developed to allow the homeowner to quickly and easily understand the analysis performed by the computer program.

The questionnaire will be designed for easy data entry by the Homeowner and ease of transfer of data to machine readable form. A sample run of 500 questionnaires will be printed for a pilot of the program.

The Maine Office of Energy Resources, State Planning Office, University of Maine, Maine Municipal Association and Municipal Officers of the Towns on Mount Desert Island will participate in the pilot project. The Mount Desert Island area was chosen for the project because of its unique geographical situation and because of an expressed desire on the part of the residents to participate in such a project.

Dissemination of the questionnaire will be accomplished by a VISTA volunteer working in the Mount Desert Island area. The VISTA person will help the local residents with any questions or problems they might have with the questionnaire format.

The returned questionnaires will be processed by the Office of Energy Resources using computer services available through State Government. Output from the analysis will be sent to the Mount Desert Island Residents. Follow-up sampling will be undertaken to determine any changes which should be made in the questionnaire or output format.

The parties involved in the project will be asked to critique the pilot and suggest possible improvements. Any changes found necessary will be made before the program is expanded to a statewide basis.



Electric utilities of the State will be asked to utilize their monthly billing mailers for distribution on the questionnaires statewide. Alternatives to this approach will be distribution through existing agencies, inclusion of the questionnaire in newspaper advertisements, and distribution with the payrolls of large employers in the State. This part of the program will be coordinated with the electric utilities or, if this fails, with agencies, newspapers and/or large employers.

Having selected a method for distributing the questionnaires, the Office of Energy Resources will begin the implementation of the program. It is estimated that the implementation phase will extend for a period of about three months. Depending on the success of the initial effort, a follow-up program may be run in the same period in 1978.

#### Energy Audit Program for Business and Industry Structures

The Office of Energy Resources will co-ordinate with business and Industry groups to determine the type of materials and instructions which would be most useful to the business community in regard to energy audits. The OER will prepare the necessary materials and provide instruction in a series of workshops. Among the materials which will probably be use are the handbook "Total Energy Management" and the "Energy Conservation Program Guide for Industry and Commerce". The OER will also contact the utilities in the state to determine the availability of trained personnel who could assist commercial and industrial consumers to perform audits.

The initial emphasis of this program will be to provide business and industry personnel with the tools and skills necessary to perform energy audits of their physical plants. The implementation of this program will be coordinated with the commerce and industry programs outlined elsewhere in this plan depending on the response to this program and the need, if any, expressed for additional assistance. The OER will investigate the possibility of using the aforementioned computer audits for non-public buildings.

## Energy Audit Program for Schools and Public Buildings

The Office of Energy Resources will work with the Maine Bureau of Public Improvements to establish an Energy Audit Program for public buildings in Maine. The program will be built around two energy efficiency models available through the New England Energy Management Information System. The two models are:

1. A computerized version of the methodology outlined in the FEA publication "Guideline for Saving Energy in Existing Buildings (ECM1 and ECM 2).
2. The thermal load analysis and Systems Simulation Program developed by the Construction Engineering Research Laboratory (CERL)

The ECM model will be used for the majority of buildings CERL will be utilized only for those buildings having sophisticated HVAC Systems. It is estimated that approximately 1450 buildings will be audited using ECM and about 50 buildings with CERL.

The audits will be conducted in the following manner.

1. Teams of two technically trained individuals will visit the buildings and fill out questionnaires describing the building characteristics.
2. The questionnaire will be analyzed by computer and the analysis checked by a staff engineer to determine the validity of the data.
3. Having validated the original input data, the engineer will use the computer model to calculate the energy savings available from various retrofit techniques.
4. A report will be generated for each building outlining the potential retrofit techniques for each building and a cost benefit analysis of those techniques.

The attached flow chart shows the process for performing the audits.

During the time the public building program is being run, the OER staff will investigate the possibility of utilizing the ECM model for audit and analysis of privately owned buildings. To accomplish this, the model would have to be transferred to a computer in Maine and a fee would probably be charged for use of the program.

The OER staff will consult with the business community to determine the desirability of extending this service. The experience gained through the public buildings audit program will also influence the decision to extend the program.

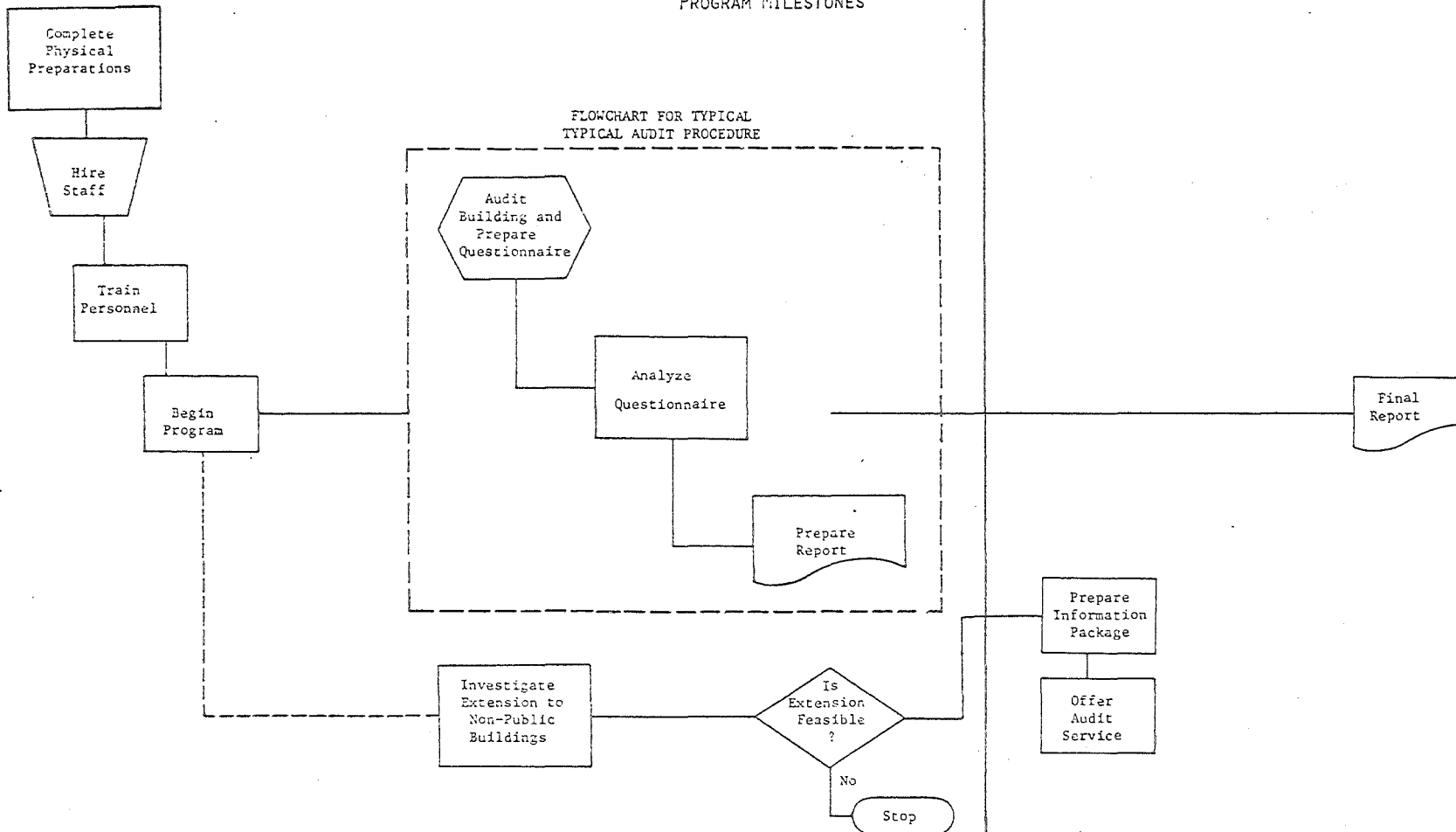
STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN

1977

PUBLIC BUILDINGS AUDIT  
PROGRAM

1978

PROGRAM MILESTONES



H	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
	2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		

The staff of the Office of Energy Resources with the staff of the Bureau of Public Improvements will initiate a program to audit public schools and other public buildings for energy efficiency. The program will utilize two energy efficiency models available through the New England Energy Management Information System. The program will be conducted over a one year period for about 1500 public buildings.

Once the program for public buildings is underway, the OER staff will assess the possibility of extending the program to non-public buildings. This could be done on a fee for service basis or, if arrangements can be made, through existing agencies such as CAP agencies or CES Offices.

If it is determined that the computerized audit program can be offered for non-public buildings, the OER staff will undertake the necessary preparations to facilitate the extension. If it appears that the audit program cannot be extended, the OER will look to private engineering and architecture firms to ascertain the potential for establishing an ongoing program for non-public buildings using the services of these consultant firms.

If it is decided to extend the program to the private sector, an information package will be prepared to give private building owners information on the concept and purpose of the audit program. The OER will offer the audit service on demand and follow-up the audit to determine the effectiveness of any conservation measures taken as a result

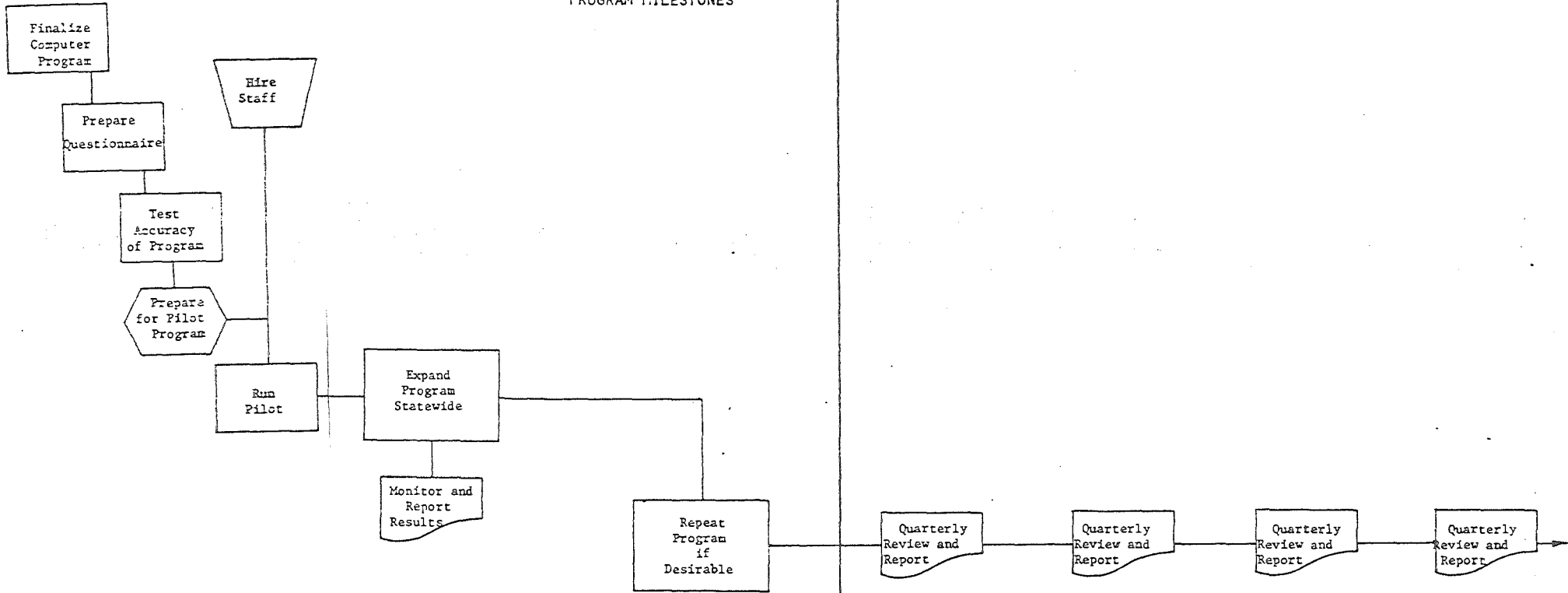
Upon completion of the public buildings audit program, a final report will be prepared detailing the amount of energy expected to be conserved as a result of the audit program. As a part of the audit program, the OER will try to establish an ongoing consumption monitoring program to help keep track of the amount of energy being consumed by public buildings

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
RESIDENTIAL BUILDINGS AUDIT  
PROGRAM

1977

1978

PROGRAM MILESTONES



APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
<p>The Office of Energy Resources will work with and outside contractor to finalize the computer program and questionnaire for the program. The computer analysis will be tested on several known buildings to determine the accuracy of the algorithms. Once the computer program is proven, the OER will begin preparations for the pilot program.</p>			<p>Necessary staff including a Data Entry Specialist and an intern will be hired. The pilot program will be run with the cooperation of the Maine Municipal Assn. and the Mt. Desert Island VISTA Volunteer. If the test program proves successful, the program will be expanded statewide. The statewide program will be monitored and a report of the program will be prepared.</p>			<p>If the program proves successful, the OER will offer it on an ongoing basis. OER will also run an update program to solicit information from the program participants regarding how many actually undertook some retro-fit project as a result of the program.</p>			<p>On a quarterly basis, the OER will assess the results of the program and issue a report.</p>			<p>Note: The 1979 and 1980 Milestones for this program will be the same as the 1977 and 1978 Milestones. Any changes will be noted in later amendments to the Plan.</p>								

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
1979 -- 1980  
PROGRAM MILESTONES

## 1979-

The Office of Energy Resources will continue the Residential Energy Audits Program by making the questionnaires available on an "on-demand" basis. OER will also continue to provide assistance to non-residential building owners and operators regarding audit methods. If funding becomes available, the OER may contract with consultant engineers and architects to perform more rigorous audits for schools and other public buildings. Such audits would be performed on those buildings which were found, by the computer audit program, to be the most needing of retrofit projects.

The OER will also continue to update and extend the Consumption Monitoring System for public buildings. This will allow better monitoring of fuel usage in these buildings and better assessment of the effectiveness of the retrofit programs.

## 1980-

The OER will continue to service homeowners on-demand. If the public buildings audit program proves successful, the program may be extended to non-state public buildings such as municipal halls and county buildings.

## E - 0630 1980 Energy Savings Forecasts

The total energy savings expected from implementation of this program are delineated below:

Residential Audits Program	5.694 X 10 <sup>12</sup> BTU
Public Buildings Audit Program	0.87 X 10 <sup>12</sup> BTU
Commercial Buildings Audit Program	1.685 X 10 <sup>12</sup> BTU
Total Energy Savings	8.249 X 10 <sup>12</sup> BTU

## E - 0631 Methodologies

FEA supplied methodologies are used to compute the energy savings expected from the residential and commercial building audit programs. The methodology used to calculate savings in the public buildings program was developed by the Office of Energy Resources Staff using empirical data gathered by the Office during the last four years.

Energy Savings Methodology  
Building Audits Program for Public Buildings

1. Total area of public buildings(schools) in Maine	21,085,600 sq. ft.
2. Average heating energy use per square foot	154,000 BTU
3. Total Energy Use ( 1 X 2 )	3.24 X 10 <sup>12</sup> BTU
4. Average Energy Conservation Potential	40%
5. Compliance by 1980 (State Estimate)	67%
Total Energy Savings	0.87 X 10 <sup>12</sup> BTU

Note: The audit program will be run for all state owned buildings including schools. OER was able to obtain data for only the schools in the state, thus the savings estimate shown here includes only school buildings. The audit program will probably result in greater energy savings than shown when all public buildings in the State have been audited.

## Data Documentation:

1. Maine Department of Education and Cultural Services, Data from a study of school facilities done in school year 1974-1975.
2. Average data for 165 schools surveyed by the Maine Fuel Allocation Office and the Maine Chapter of ASHRAE, for school year 1973-1974.
4. Average conservation potential calculated for thirteen schools audited by professional architects and engineers under contract with the OER, December 1976.

E - 0640 PROGRAM IMPLEMENTATION COSTSComputation of Costs by Category

a. Personnel Costs	16,780.00
b. Fringe Benefits	1,830.00
c. Travel	500.00
d. Equipment	0.00
e. Supplies	500.00
f. Contractual	2,500.00
h. Other	40,780.00
Total	61,890.00

Explanatory Comments:

a. Personnel Costs:	Summer Student Intern for 3 months	1,680.00
	25% Conservation Engineer @ 13,400	3,350.00
	100% Data Entry Specialist II	9,000.00
	25% Clerk-Typist II	1,750.00
		<u>16,780.00</u>
f. Contractual:	1. Contract for development of Residential Audit questionnaire and computer algorithms	2,500.00
g. Other:	Items in this category include:	
	Rental of Computer Terminal	2,160.00
	Mailing costs	10,000.00
	Telephone Costs (WATS Line)	16,800.00
	Telephone Costs (In-State)	1,720.00
	Printing, Photocopying, Utilities etc.	10,100.00
		<u>40,780.00</u>

The Office of Energy Resources will monitor fuel flows in the State to determine the amount of energy being saved from this program. Specifically, the OER will poll the respondents to the residential energy audit program to ascertain the actions taken by the respondents to reduce their energy use and what savings have been achieved. OER will use the Consumption Monitoring System to monitor fuel flows in the public buildings audited under this program. Commercial building owners who participate in the program will also be polled to determine the extent of retro-fit action taken and the results of that action.

The OER will also keep records of total fuel sales in the various end use sectors of the State to cross-check the information obtained through the methods noted above.

## E - 0650 Environmental Residuals

The total energy savings from this program are estimated to be 8,249 trillion BTU. The savings can be categorized into the following supply sectors.

	Residential		Non-Residential	
	% of Total	Savings*	% of Total	Savings**
Distillate Oil	94.5	5.381	94.0	2.402
Electricity	4.3	0.245	3.1	0.079
Natural Gas	1.1	0.063	2.7	0.069
Coal	0.1	0.006	0.2	0.005

\*Note: Savings shown are in  $10^{12}$  BTU based on a total savings of  $5.694 \times 10^{12}$  BTU.

\*\*Note: Savings shown are in  $10^{12}$  BTU based on a total savings of  $2.555 \times 10^{12}$  BTU.

These data are transferred to the Environmental Assessment Section of this Plan (Section D).





## BUSINESS AND INDUSTRY PROGRAM

## E 0710 Overview:

An intergral part of the State of Maine Energy Conservation Plan (SECP) will be to coordinate and participate in the Federal Energy Administration's program entitled "Managing the Energy Dilemma". The program is designed to promote energy conservation by increasing the potential to conserve through good management principles. Methods to cut energy consumption will be introduced in the areas of manufacturing, vanpooling, building improvement, and Preventive Maintenance.

The Office of Energy Resources will be responsible for coordinating two of the aforementioned seminars - Energy Consumption in Manufacturing to include maintenance program and the Vanpooling Program. The vanpool effort will focus on the advantages and disadvantages of vanpooling, including but not limited to, legal implications, insurance costs, liabilities, company costs; and the central theme will be "How to Start a Company Vanpool Program." This seminar is primarily directed at companies who have a relatively large labor force and could possibly implement such a program.

The industrial seminar will concentrate on energy efficiency in manufacturing. The workshop hopefully will be located at a Maine industrial site. The energy used vital to production will be examined to determine what, if anything, can be done to maintain or increase production levels at reduced energy consumption rates.

After completion of the FEA sponsored workshops, the Office of Energy Resources will asses the results of the workshops and determine the potential for holding similar workshops for smaller industries and businesses throughout the State. Is it anticipated that a program for small industries and businesses will be put together and presented in the winter of 1977-1978. The program will be based on materials used by FEA in the Nation Program and supplemented with materials available from the Department of Commerce, non - governmental associations, and private firms. The Office of Energy Resources will also solicit the assistance of resource personnel from business and industry to help present the seminars. The aim of the seminars will be toward the smaller industries and businesses which were not targeted by the FEA program.

## Small Business Program

The commercial sector in Maine consumed about 33.5 trillion Btu's of energy, or 10.3% of the State's total energy demand. Commercial sector demand is projected to grow to between 40 trillion and 53 trillion Btu's by 1980, and 46 to 67 trillion Btu's in 1985, without implementation of conservation measures. Estimates by the Office of Energy Resources indicate that up to 14.3% of the total sectoral demand ("base case" projection) can be saved by 1980, and 28.5% by 1985. These figures would result in savings of between 5.7 trillion and 7.6 trillion Btu's in 1980, and between 13.1 trillion and 19.1 trillion in 1985. Most of these projected savings would be achieved by implementing lighting standards and operational changes.

Efforts at conservation in the small business community would be aimed at improving building insulation levels, lowered thermostats, recovery of waste heat (such as from recirculation of vented air from kitchens, refrigeration devices, drying ovens, and the like), and conducting energy audits to identify sources of energy losses so that corrective actions can be taken. All of these actions would be initiated by conducting a series of seminars around the State for small businessmen to discuss energy conservation techniques. High among these techniques will be the basic information and calculations required to determine the cost effectiveness of energy conservation. Also to be included is an analysis of all the economic factors to be considered when selecting alternative fuels, heating and cooling systems etc.

Small businessmen will also be encouraged to exchange information between themselves and utilize parent companies or national organizations for energy conservation assistance. Employers with a sufficient number of employees will be encouraged to attend the carpool/vanpool workshops being planned. The Office of Energy Resources will provide a periodic forum for information exchange by holding conferences and workshops at regular intervals throughout the State.

The OER staff will establish contact with key groups including:

1. Chambers of Commerce (COC)
2. Department of Commerce (DOC)
3. Small Business Administration (SBA)
4. State Development Office (SDO)
5. Maine Innkeepers Assn.
6. Maine Assn. of Restaurants
7. Maine Hospital Assn.
8. Others

A committee or task force will be formed to develop a detailed program for presentation to businesses, to consider appropriate legislative recommendations, to review existing available programs, to implement program measures, and to manage the program when established.

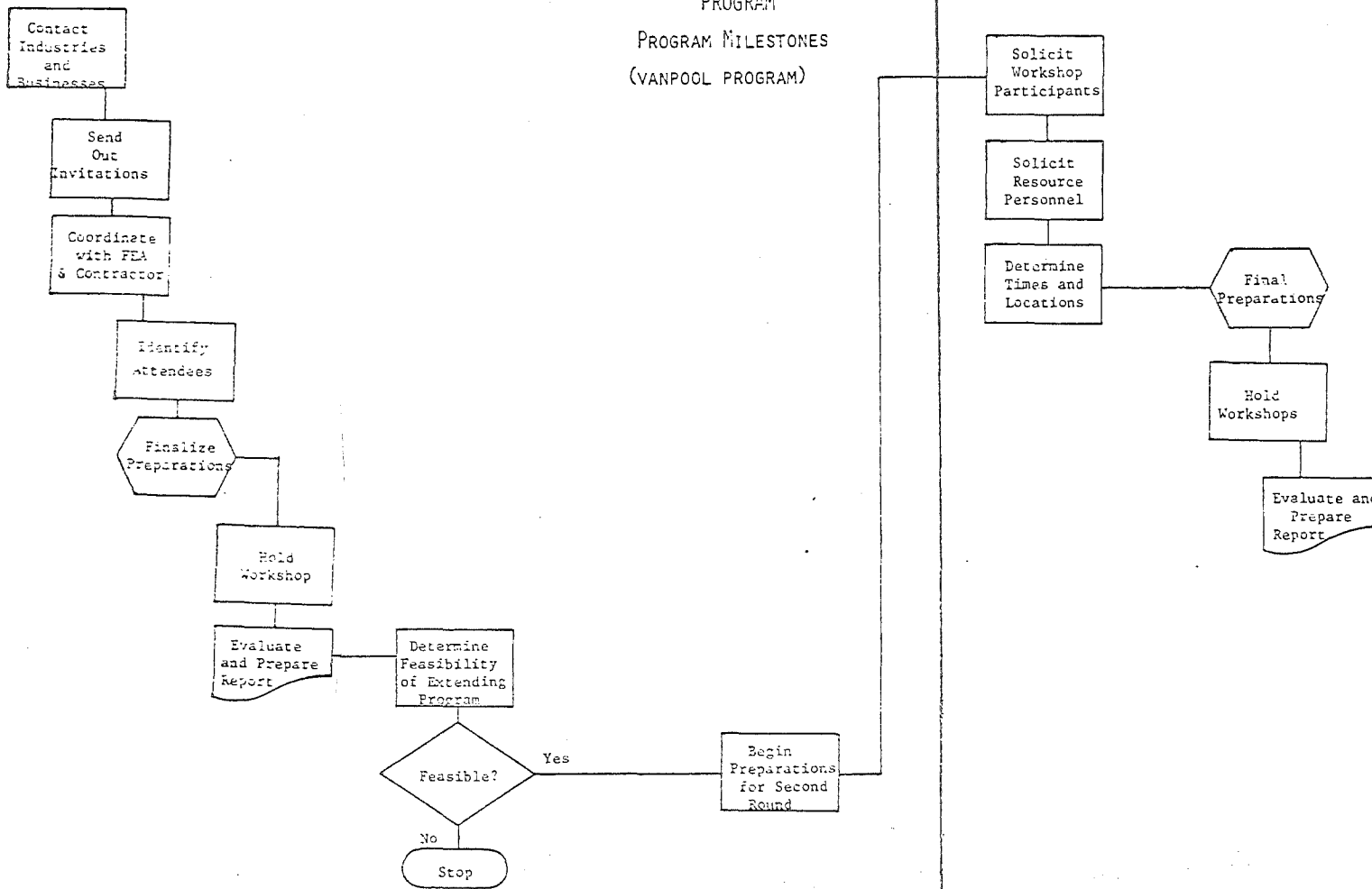
1977

STATE OF MAINE  
STATE ENERGY CONSERVATION PROGRAM

BUSINESS AND INDUSTRY  
PROGRAM

PROGRAM MILESTONES  
(VANPOOL PROGRAM)

1978



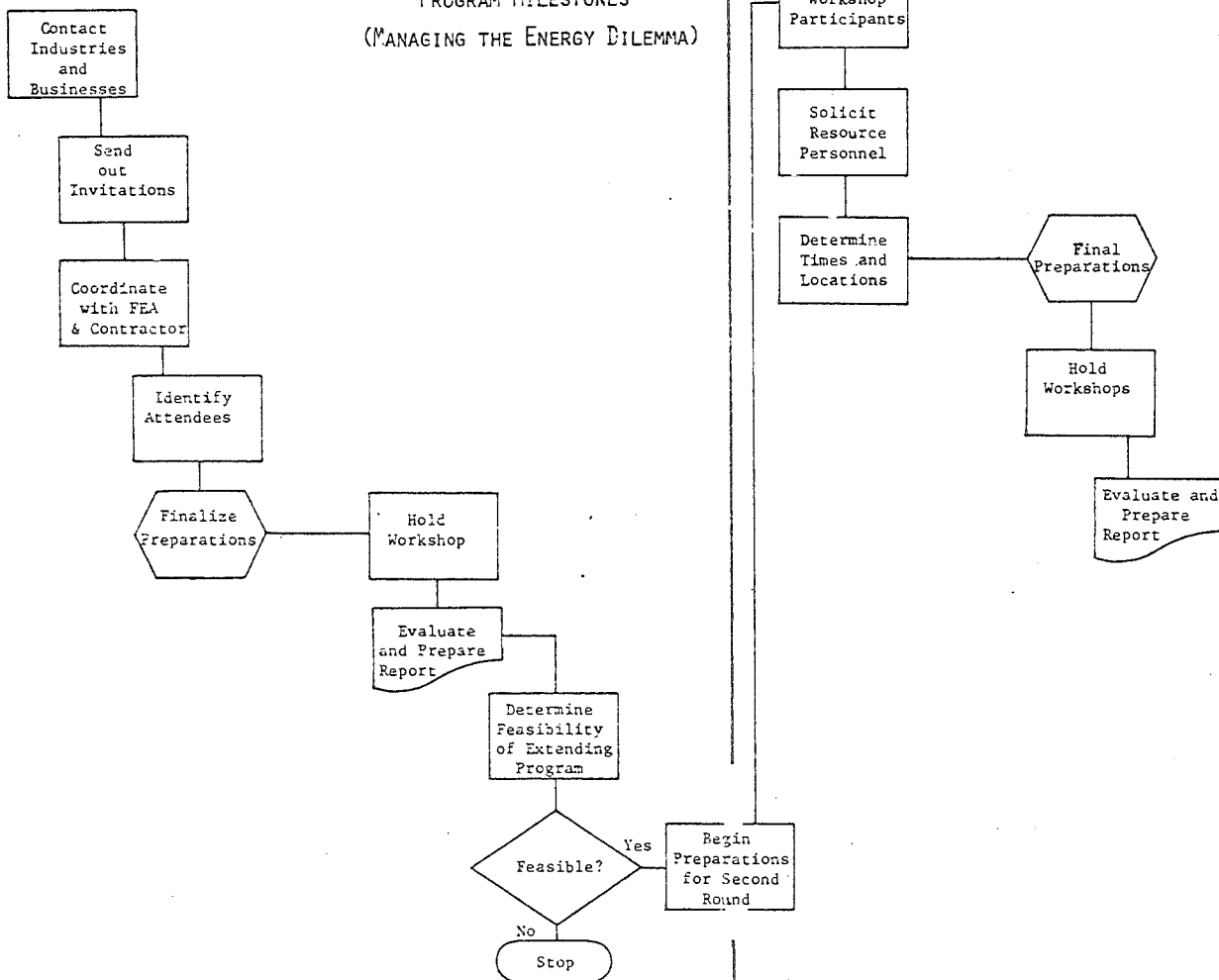
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2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
<p>The Office of Energy Resources will coordinate the program being presented by FEA called "Managing the Energy Dilemma". The vanpool seminar being scheduled for Maine will be held in June of 1977. OER will contact businesses and industries in the State who might start vanpools or carpool programs. OER will also contact interested State and local agencies which might be interested in the program. When the participants for the program have been identified, OER will coordinate the necessary final arrangements and participate in the workshop itself.</p>			<p>After completing the workshop, the OER will evaluate the effectiveness of the program and determine the possibility of extending the program for other businesses and areas.</p>			<p>If it is determined that the concept of this program should be extended, the OER staff will work with applicable State and local agencies to prepare for the program. OER will use literature and materials developed in the FEA program as well as materials which may be more applicable for smaller industries and businesses.</p>			<p>If it is decided to extend the program, the OER staff will solicit participants and resource people to participate in the program. Depending on the response, the OER staff will schedule one or more workshops for the program.</p>			<p>The workshops will be held and evaluated as the FEA sponsored session. The OER will monitor the effectiveness of the program through consultation with the participants.</p>								

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
BUSINESS AND INDUSTRY  
PROGRAM

1977

1978

PROGRAM MILESTONES  
(MANAGING THE ENERGY DILEMMA)



APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
			<p>The Office of Energy Resources will coordinate the FEA program "Managing the Energy Dilemma" in Maine. The OER will contact industries in the State and solicit their participation in the program. OER will coordinate with the FEA Region Office and the FEA contractor who will be conducting the actual workshop. OER will use its existing mailing lists and contacts with industrial organizations to select the list of participants for the session.</p>			<p>After the Seminar is completed the OER staff will participate in an evaluation of the workshop. At this time, OER staff will also determine the potential for repeating the program for smaller industries within the State. If it is determined that such an extension of the program is both feasible and worthwhile, the OER staff will begin working with FEA and other groups within the state to put together a workshop program.</p>			<p>If the decision is made to extend the industrial workshops to smaller industries, the OER staff will solicit participation of firms and of individuals who can help conduct the workshops. Having determined the participation and resource people available, the number of workshops and schedules for the sessions will be developed.</p>			<p>The OER will make all final preparations for the workshops including scheduling, reproduction of materials and follow-up phone calls. The workshop(s) will be followed-up by a series of evaluation sessions to ascertain the effectiveness of the sessions.</p>								

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
1979 -- 1980  
PROGRAM MILESTONES

1979-

The Office of Energy Resources will continue to coordinate with business and industry groups to determine the types of energy conservation programs will best serve the needs of Maine's commerce and industry. The OER will provide information and materials to business and industry addressing these issues. OER will also design and conduct workshops and seminars to help inform business and industry leaders about new advances in energy conservation technology.

The OER will also solicit the cooperation of business and industry in monitoring energy use in those sectors. This will enable OER to better understand the needs of these sectors and assess the effectiveness of programs already presented.

1980-

The OER will continue to offer programs, workshops and seminars as long as it is felt that businesses and industries are benefiting from the program. OER will also continue to monitor the energy conservation efforts of industry and commerce to check the effectiveness of past programs.

It is projected that at least twenty five of the largest industrial corporations in the State will participate in the industrial seminars entitled "Managing the Energy Dilemma". The majority of companies participating in the workshops fall into three categories:

- (1) Paper and Allied Products
- (2) Metal Fabrication
- (3) Stone Clay and Glass Production.

Data available from the Maine Paper Industry Information Office indicates that the major paper companies of the State use approximately 76.1 trillion BTU's of energy. This is about 72% of the total industrial energy consumption for the State.

The methodology used to calculate the savings resulting from this program is based on the following assumptions:

- (1) Based on Historical Consumption data, industry in Maine consumes 32.2% of the total state energy consumption. Using FEA projections, this will mean that industry will consume 119.4 Trillion BTU in 1980.
- (2) The largest 25 industries in the State consume at least 70% of the energy used by all industry in Maine.
- (3) Through conservation efforts taken as a result of this program, industries in the State can conserve 10% of the energy used per unit of product output by 1980. This is about a 3.2% per annum reduction in energy use which is a conservative estimate when compared with the results achieved in the Federal Energy Management Program, for example. FEA Publications on conservation in the industrial sector delineate case histories of industries where conservation efforts have achieved as much as 15 to 20 percent reduction in energy consumption in a single year.\* Thus, it is felt that the goal of a 10% reduction in the industrial energy consumption of those firms participating in the program is not wholly unrealistic.

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Notes: (1) Based on historical trends as delineated in the "Maine Comprehensive Energy Plan, 1976 Edition, Vol I".

(2) This data is substantiated by information provided by the Maine Paper Industry Information Office (attached)

(3) \*Federal Energy Administration Conservation Paper Number 1A and Conservation Paper Number 1B, both entitled "Energy Management Case Histories".

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Using the above assumptions, the energy savings for the program can be estimated.

(1) Total Energy Use in the Industrial Sector in 1980	<u>119.4 X 10<sup>12</sup> BTU</u>
(2) Percentage of total energy use attributable to the 25 largest industries in the State,	<u>70%</u>
(3) Energy use by 25 largest industries	<u>83.6 X 10<sup>12</sup> BTU</u>
(4) Percent energy reduction attainable as a result of the program	<u>10%</u>
(5) Total energy savings	8.36 X 10 <sup>12</sup> BTU

\*Note: Savings attributed to this program are only calculated for the industrial sector. Savings from the commercial sector, although affected by this program, are shown in other sections of this plan, specifically, sections E-0200 and E-0600.

#### E - 0734 Savings Assessment

The Office of Energy Resources will work through business and industry organizations to solicit the cooperation of firms in the State in monitoring the energy reduction achieved through the program. OER will also ask the assistance of national industry organizations to help monitor the energy use in the Maine industrial sector and to provide information which will allow the OER to compare the energy use/unit of product output for Maine industries against industries in other sections of the country.

OER will also monitor the overall energy use in the industrial sector of the State and compare this information with aggregated economic data to determine the overall energy use to production data for all industries in the State.

#### E - 0750 Environmental Residuals

The total energy reduction expected from implementation of this program is 8.36 trillion BTU. The energy consumption and fuel savings for the program can be categorized by fuel type as follows:

<u>Fuel Type</u>	<u>% of total Consumption</u>	<u>Savings in 10<sup>12</sup> BTU</u>
Residual Oil	56.99	4.76
Distillate Oil	2.49	0.21
Coal	1.11	0.09
Natural Gas	0.48	0.04
Electricity	36.89	3.08
Wood	2.09	0.17

These data are transferred to the Environmental Assessment Section of this Plan (Section D).



E - 0740

PROGRAM IMPLEMENTATION COSTSComputation of Costs by Category

a. Personnel Costs	2,040.00
b. Fringe Benefits	265.00
c. Travel	250.00
d. Equipment	0.00
e. Supplies	500.00
f. Contractual	0.00
h. Other	250.00
Total	3,305.00

Explanatory Comments:

a. Personnel Costs:	10% Conservation Engineer @ 13,400	1,340.00
	10% Clerk-Typist II @ 7,000	700.00
		<u>2,040.00</u>
h. Other	General Overhead	250.00
		250.00

## Motor Vehicle Efficiency

## E - 0810 Overview:

Maine's present motor vehicle inspection mechanism does not address the problem of insuring that automobiles are operating at acceptable efficiency levels. An exhaust gas analysis program could lead to lower energy consumption levels by identifying improperly tuned automobile engines. The lack of such a program thus leads to the problem of increased out-of-pocket expenditures by Maine consumers for gasoline.

The fact that our state does not require emission checks also runs counter to Environmental efforts specifically, the untuned automobile generates pollutants that threatens air quality levels, especially in congested areas

The Office of Energy Resources considers a program aimed at ensuring that all motor vehicles in the State, both automobiles and trucks, are properly tuned, to be an important part of our overall conservation program. This program will complement our efforts in other transportation areas such as Right-Turn-on-Red and lower speed limits. Implementation of this program will help ensure that the autos and trucks on Maine highways are operating at the peak level of efficiency. This can dramatically reduce the amount of gasoline which is wasted and thus, help reduce the auto and truck owners operating costs.

The goal of the Office of Energy Resources is to implement a program that would require periodic checks of motor vehicle efficiency through an analysis of exhaust gases.

There exists several options for achieving this goal. Probably the easiest method is to incorporate into the existing inspection guidelines new regulations addressing this issue. This option is not without its problems, however.

Presently, many inspection stations do not have the required gas analysis equipment. The purchasing of this equipment would result in higher inspection costs for the inspection station owner and the consumers because of both increased capital investment and labor costs. Any increase in charge for automobile inspection must be approved by the legislature. Historical efforts to raise inspection rates have met with considerable opposition.

Another alternative is to provide the Maine State Police with exhaust gas analyzers for the purpose of spot checking motor vehicles for engine efficiency. Some states utilize this method, but there are some reservations about the effectiveness of such a program for Maine.

Maine is sparsely populated with few population centers. For the State Police to administer this program on a statewide basis in Maine they would need additional officers and related equipment (vehicles uniforms etc.). However, even after increasing the manpower of the force, chances are that many vehicles would be missed, especially in the more rural areas.

A third option is to have the Department of Environmental Protection

administor the program. This could be done in many ways, the most likely of which is the use of sites located strategically throughout the State. Motor vehicles would have to be taken to one of these sites to have engines checked and if necessary be directed to have their engines tuned to meet emission standards.

Regardless of the system or agency used to check emission standards considerable opposition may be expected. Each option is going to cost money either coming directly from the consumer or from the citizen as a taxpayer. Since either option will require Legislative approval, Legislators sensitive to the wishes of their constituents may be apprehensive about passing any of the options.

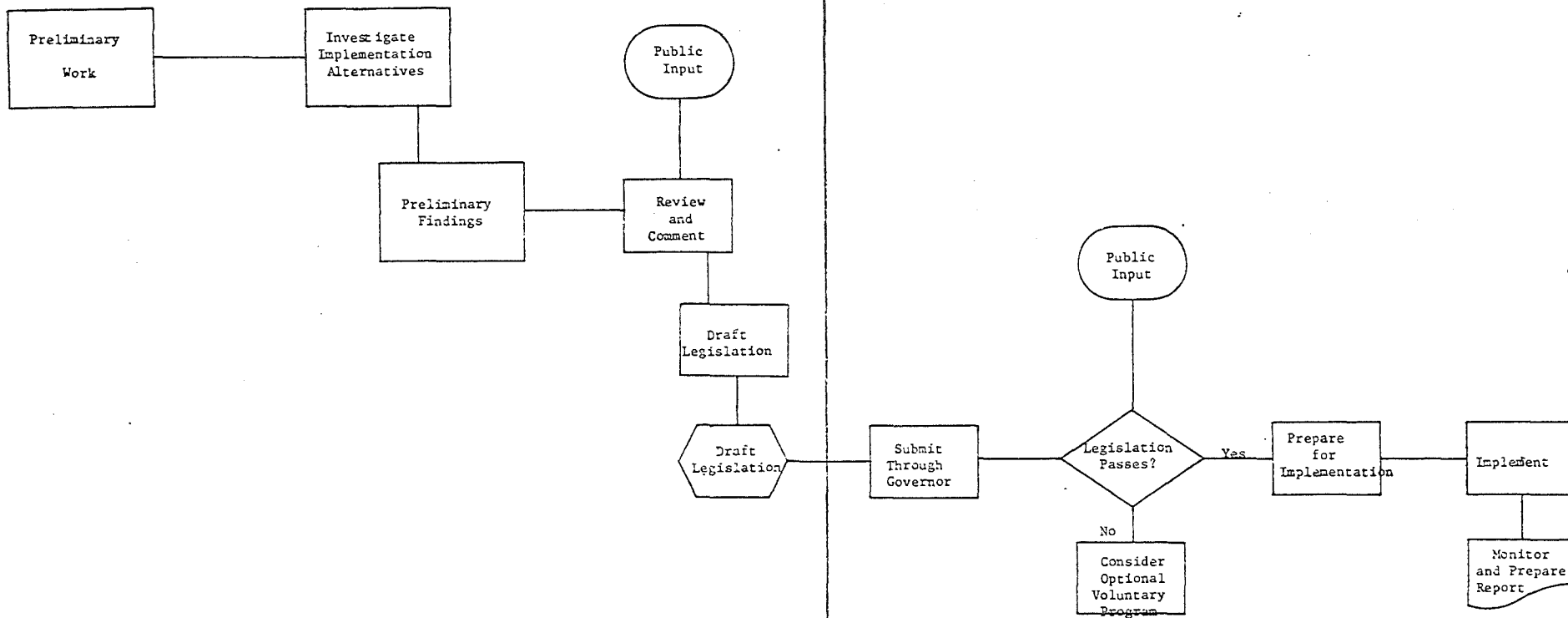
STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN

AUTOMOBILE PERFORMANCE  
PROGRAM

PROGRAM MILESTONES

1977

1978



APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
<p>The staff of the Office of Energy Resources will work with personnel from the State Police and representatives of the Service Station Owners to determine the feasibility of using the existing State Inspection System as a vehicle for improving the awareness of the public regarding the state of tune of their automobile engines.</p>			<p>The aforementioned group will investigate possible methods for inclusion of a technique for determining the state of tune of auto engines. These may include exhaust gas analysis, actual measurement of critical engine parameters, or other techniques. The group will issue a report of their preliminary findings for public review.</p>			<p>After an opportunity has been given for public input, the OER will revise the alternatives presented and work with the group to draft possible legislation for introduction in the next session of the Legislature.</p>			<p>The draft legislation will be submitted through the Governor's Office to the Legislature. The OER and the other participants in formulation of the program will prepare testimony for the legislature.</p>			<p>If the Legislation fails to pass, the OER will work to establish a voluntary program to encourage drivers to have the tune of their cars checked when the inspection is done.</p>			<p>If the legislation passes, the OER will assist where possible to prepare for the implementation of the program through the inspection system.</p>			<p>As the program is implemented, the OER will work with the inspection stations and the State Police to ascertain the effectiveness of the program.</p>		

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
1979 -- 1980  
PROGRAM MILESTONES

1979-

The Office of Energy Resources will continue to work with the State Police, the Motor Vehicles Division of the Office of the Secretary of State, and the inspection station owners to implement the vehicle performance inspection program. If legislation is passed requiring vehicle performance as a part of the semi-annual inspection program, OER will assist, where possible, those state agencies charged with the implementation of the law. If it is decided that the program will be implemented in a voluntary manner, OER will work through the service station owners to devise a public awareness program designed to convince auto owners to have their vehicle performance checked as part of the normal inspection routine.

The OER will solicit the cooperation of the inspection station owners and auto dealers to help monitor the effectiveness of the program. This will probably be done through a random sampling of the auto inspection records.

1980-

The OER will continue to work with the State agencies and private groups involved with this program. Revisions to the program will be discussed as well as the effectiveness of the program. Revisions and amendments will be made as necessary.

E - 0830 1980 Energy Savings  
Forecast

STATE NAME MAINE

TARGET YEAR 1980

State Energy Conservation Program

Summary Sheet for Accumulating Energy Savings from Vehicle  
Performance Inspection and Maintenance

(Optional: for use only if this program measure incorporates  
several projects with varying levels of effectiveness, thus  
requiring more than one worksheet)

- A. Identify each project and enter its energy savings (from  
worksheet line 2a) below:

<u>Project</u>	<u>Energy Savings (10<sup>12</sup>Btu)</u>
Inspection of vehicles for efficiency	0.504

E - 0834 Savings Assessment

The Office of Energy Resources will work with the State Police and the  
Inspection Station Owners to establish a system for monitoring the effectiyeness  
of the program. This system may include spot checks of inspected automobiles,  
overall monitoring of the gas consumption of randomly selected automobiles, and  
monitoring of the overall gasoline sales in the State.

E - 0850 Environmental Residuals

The total energy savings expected from the implementation of this program  
are 0.504 Trillion BTU. All of these savings are attributed to the gasoline  
supply sector. These data are transferred to the Environmental Assessment  
Section of this Plan (Section D).

E - 0840 PROGRAM IMPLEMENTATION COSTSComputation of Costs by Category

a. Personnel Costs	1,370.00
b. Fringe Benefits	175.00
c. Travel	250.00
d. Equipment	0.00
e. Supplies	250.00
f. Contractual	0.00
h. Other	750.00
Total	2,795.00

Explanatory Comments:

a. Personnel Costs:	5% Conservation Engineer	@ 13,400	670.00
	10% Clerk-Typist II	@ 7,000	<u>700.00</u>
		Total	1,370.00
h. Other:	Telephone	250.00	
	Mailing	250.00	
	Copying and		
	Printing	<u>250.00</u>	
		750.00	

## ENERGY CONSERVATION EDUCATION

E - 0910.

An integral part of any voluntary energy conservation program is the educational effort that must accompany it. In short the public must be convinced of the need to conserve energy and the ways in which they as individual citizens can do so.

The Office of Energy Resources seeks to employ various means in order to accomplish the objectives of energy conservation education.

## ENERGY CONSERVATION MONTH

The most comprehensive approach to energy conservation education will be Energy Conservation Month, scheduled for October, 1977. During Energy Conservation month, a number of activities will be planned to heighten public awareness of the need to conserve energy. This educational process will also point to ways that the individual energy user can conserve energy and save money as well.

The format for Energy Conservation month that we plan to employ has been used successfully in many states, including Maine where our first Energy Conservation Month was held during Nov. 10 - Dec. 10, 1976.

The administration of Energy Conservation Month will be undertaken by the staff of the Office of Energy Resources. The Education and Consumer Affairs Specialist of the Office will be coordinating this involvement and will need assistance from a project employee who will be employed for the five month period encompassing the planning, implementation and evaluation of Energy Conservation Month.

Participation of persons outside of the Office of Energy Resources will also be a large part of Energy Conservation Month. A number of committees, consisting of professionals in fields such as transportation, electric utilities, agriculture, building, financial institutions and education, will be established to conduct activities within their respective areas. It is anticipated that upwards of one hundred (100) persons will be involved in this effort.

Activities during Energy Conservation Month will be very diverse as it will provide a focal point for various approaches to the problem of public education in the area of energy. A few typical activities will include the following:

1. Development of an Audio-Visual kit consisting of slides, a cassette tape, and information materials, This kit could be made available to service groups, business organizations and schools throughout the State.
2. Development of a public service announcement package to consist of radio and television spots, and newspaper announcements. To assist in this effort it may become necessary to hire outside expertise.



3. Energy Conservation contests in schools. Successful poster and essay contests have been sponsored by the Office of Energy Resources. It is felt that Energy Conservation Month would be an appropriate time to offer additional contests of this sort.

#### ENERGY CONSERVATION WORKSHOP SEMINARS

Another significant effort in the Office of Energy Resources Conservation Education Program would concentrate on workshop /seminars for the general public. Such workshop/seminars could be conducted in cooperation with groups such as county Cooperative Extension Services and Community Action Programs.

The objective of these seminars would be to provide educational opportunities for a public that is extremely interested in the conservation of energy and the accompanying saving of fuel dollars. A recent seminar along these lines held in Augusta attracted over 900 persons. This type of interest should be met.

If at all possible, seminars would be conducted on a regional basis with four seminars scheduled for the time period July 1, 1977 July 1, 1978. Although seminar locations are yet to be determined it would be safe to assume that seminars should be held in Southern Maine, Central Maine, Western Maine, and Northern Maine. With a schedule of four seminars, no additional personnel would be needed. However, if the workshop/seminar concept were to be expanded to cover Maine's sixteen (16) counties, an additional staff member would have to be employed by the Office of Energy Resources.

Available resource persons would be utilized for the workshop/ seminars. These persons would be sought from professional groups such as oil dealers the electric utilities, and from the State's colleges and universities and adjunct organizations such as the State's Cooperative Extension Service.

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN

1977

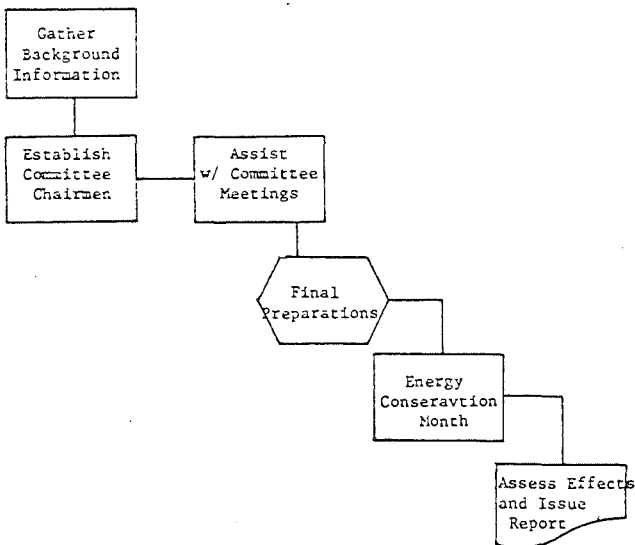
EDUCATION  
PROGRAM

PROGRAM MILESTONES

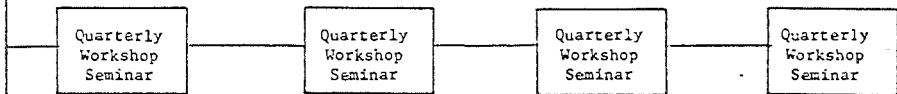
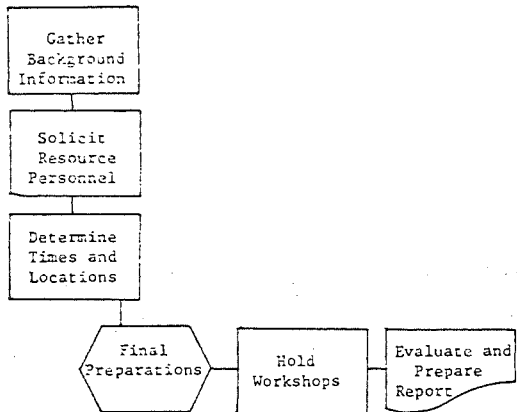
1978

Energy  
Conservation  
Month  
1978

ENERGY CONSERVATION  
MONTH



ENERGY CONSERVATION  
SEMINAR SERIES



MO	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
	2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		
	The Office of Energy Resources will co-sponsor four seminar/workshops during the period July 1, 1977 to July 1, 1978. The workshops will be conducted in regional locations to help facilitate reaching as many people as possible. Resource personnel will be sought from private industry, professional groups, and government agencies. OER will provide materials and coordinate the seminar/workshop series.			The Office will run a month-long public awareness and information campaign called "Energy Conservation Month". ECM will involve a large number of people from the private sector in committees which will set out the activities for the month. The planning for the month will be scheduled for the 3rd calendar quarter of 1977 with ECM being held in October. One of the aforementioned workshops will probably be run as part of Energy Conservation Month.			A second Workshop/Seminar will be run during the 4th calendar quarter.			Scheduling for the energy conservation workshop/seminars will be the same as shown for 1977.			Scheduling for "Energy Conservation Month" will be the same as for 1977.								

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
1979 -- 1980  
PROGRAM MILESTONES

1979-1980--

The Office of Energy Resources will continue to sponsor Energy Conservation Month and energy conservation workshops throughout the State. The OER will also use the workshops and seminars as a vehicle for obtaining information from the public regarding the types of information and assistance most needed by the people of the State. The OER will gear its workshops and other public information activities toward meeting those identified needs.

E - 0930-0934 1980 Forecast of Energy Savings, Methodology, Data Documentation, and Savings Assessment

The amount of energy conserved as a direct result of education and public awareness campaigns is difficult, if not impossible to quantify. It is foreseen, however, that the education programs will be of great importance in making the public aware of other programs, such as Project Conserve, Right turn on Red, and the small commerce conservation program. Thus, the energy savings computed for the voluntary programs outlined in this plan reflect the expected effects of the public awareness and education programs delineated in this section

It will also be impossible to determine the actual amount of energy conservation which comes about as a direct result of this program. Thus, no savings assessment methodology can be delineated.

E - 0950 Environmental Residuals

Since no energy savings have been estimated for this program, no assessment can be made of the environmental impact of the program.

E - 0940 PROGRAM IMPLEMENTATION COSTSComputation of Costs by Category

a. Personnel Costs	4,070.00
b. Fringe Benefits	310.00
c. Travel	500.00
d. Equipment	0.00
e. Supplies	2,500.00
f. Contractual	0.00
h. Other	4,000.00
Total	11,380.00

Explanatory Comments:

a. Personnel Costs:	10%	Summer Student Intern for 3 months	1,680.00
		Conservation Engineer @ 13,400	1,340.00
	15%	Clerk-Typist II @ 7,000	<u>1,050.00</u>
			4,070.00

h. Other:	Telephone Expenses	250.00	
	Copying and Printing	1,750.00	
	Mailing Costs	500.00	
	General Overhead	<u>1,500.00</u>	
		4,000.00	4,000.00



## Local Energy Management Program

-75-

## E - 1010 Overview;

The purpose of the Local Energy Management Program is to provide local governmental units the ability to monitor the energy use in municipal buildings, determine cost effective measures to increase energy efficiency, and provide information on energy efficiency as an input to local decision making processes. The overall program can be divided into two operating segments.

1. Services; which include consumption monitoring and building audits
2. Education; which includes workshops on energy conservation in the operations of buildings and equipment, and general governmental operations.

The term consumption monitoring refers to a system now used in state government whereby the amount of energy used by government can be monitored. This allows determination of the overall effects of conservation measures. The Office of Energy Resources plans to make use of this system available to all municipal and county governments and quasi-governmental agencies. It is the intent of this program to give local officials a method of accurate accounting of their energy consumption patterns. This will give them a much better basis for planning an energy management strategy

As noted elsewhere in this plan, the Office of Energy Resources and the Bureau of Public Improvements will be conducting computerized audits of schools and state owned buildings in Maine. This audit process could easily be extended to municipal buildings. OER will determine the need and opportunity for extending the audit program to local buildings. OER will also determine if the audits can be conducted using local personnel or whether state employees will be used. It is foreseen that many of the larger municipalities may be able to conduct their own audit program using the computer methods.

The education elements of the LEMP will be coordinated through the Maine Municipal Association. The program will involve a series of workshops held throughout the State. These workshops will focus on all energy related aspects of governmental operations. Specifically, the program will include segments on the operation and maintenance of buildings and equipment, carpool, vanpool and mass transit incentives, purchasing with an emphasis on Life Cycle Costing, and standards for new buildings. Much of the material used in the workshops will be taken from FEA's publication "A Guide to Reducing Energy Use and Budget Costs."

The Local Energy Management Program will be primarily conducted through a contractual arrangement between the Office of Energy Resources and the Maine Municipal Association. The program will be developed in its final form by a committee of local officials and representatives from OER. The development and implementation of the program will also be coordinated with the following groups.

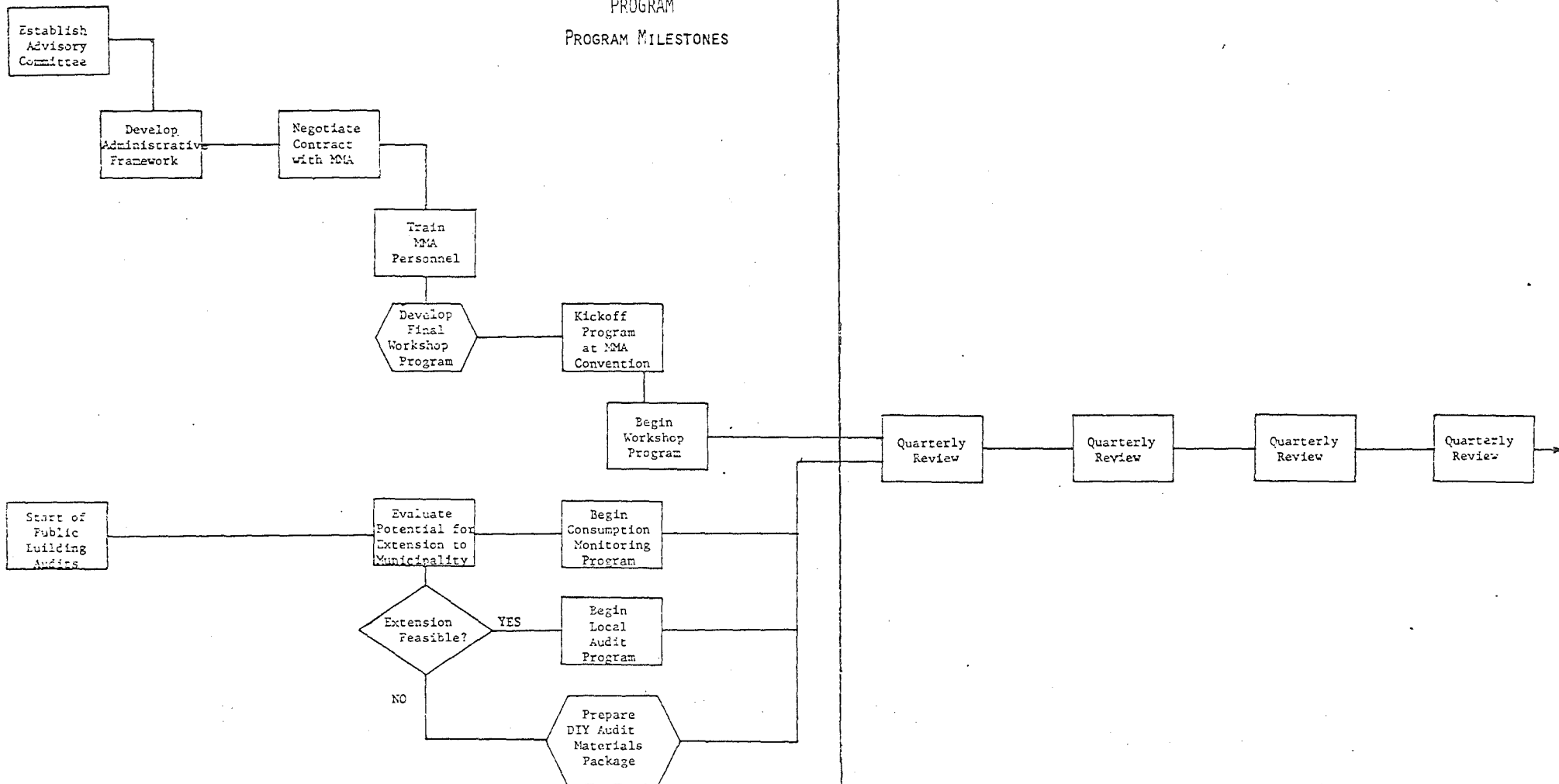
Maine County Commissioners Association  
 Maine Town and City Management Association  
 Maine Association of Conservation Commissions  
 Regional Planning Commissions  
 University of Maine Bureau of Public Administration

The contract for the Local Energy Management Workshops will involve the preparation of materials and programmatic elements. The Maine Municipal Association has done similar work in the past and, because the association represents most of the organized municipalities in the State, MMA has a great deal of credibility with local government officials. The staff of the OER will supervise the preparation of the workshop elements to ensure the consistency of the program with the other elements of the Conservation Plan

1977

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
LOCAL ENERGY MANAGEMENT  
PROGRAM  
PROGRAM MILESTONES

1978



APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		

Working with the Office of Energy Resources, the Maine Municipal Association will establish an advisory committee to outline the contents of the energy conservation workshops. The first duty of the committee will be to establish an administrative framework for the program. The committee will also decide the necessity of contracting with an outside firm or agency to help prepare the materials for the workshops.

Upon receipt of the EPCA implementation grant, the OER will negotiate a contract with the MMA for the preparation of materials for the LEMP workshops and for training of the personnel who will conduct the workshops. Working with the advisory committee and representatives from other governmental and quasi-governmental agencies, the MMA staff will develop the final workshop format and materials. The committee will also look at the possibility and desirability of extending the school and state buildings audit program to local municipal buildings.

The LEMP will be kicked-off at the annual MMA Convention in October. Following this, the first workshops will be held. Depending on the scheduling constraints, the workshops will be held throughout the 4th quarter and probably into the first quarter of 1978. During this quarter, the consumption monitoring system will be offered to the municipalities. Also, the decision will be made whether or not to extend the building audits program. If the decision is positive, the OER will set up a program to train local officials to run the audits. If not, a do-it-yourself audit process will

The Advisory Committee will meet quarterly to review the progress of the LEMP and to make recommendations for revisions and improvements in the program. If and when new program segments are desired, they will be included in the program if funds allow.



STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
1979 -- 1980  
PROGRAM MILESTONES

1979-1980-

The Office of Energy Resources will work through the committee established with the Maine Municipal Association to ascertain the effectiveness of the LEMP program. The committee will also assess the potential for additional programs which could aid the local governmental units to conserve energy and save money. The OER will implement those programs suggested by the committee if funding and manpower permit.

The OER will continue to offer the Consumption Monitoring System to the municipalities and other local units of government to aid them in monitoring energy use. This will also give the OER a tool to help monitor the energy savings resulting from the program.

E - 1030-1034      1980 Energy Savings Forecast, Methodology, Data Documentation  
and Savings Assessment

No energy savings have been estimated for the Local Energy Management Program at this time. However, it is foreseen that some energy savings will result from implementation of the program. Thus, the OER will work with the participating municipalities and the MMA to establish and maintain the Consumption Monitoring System in as many cities and towns in the State as possible. This will allow both the municipalities and the OER to monitor the energy savings resulting from this program.

E - 1050      Environmental Residuals

Since no energy savings have been estimated for this program, the potential environmental impact cannot be assessed at this time.

E - 1040 PROGRAM IMPLEMENTATION COSTSComputation of Costs by Category

a. Personnel Costs	2,040.00
b. Fringe Benefits	265.00
c. Travel	500.00
d. Equipment	0.00
e. Supplies	0.00
f. Contractual	26,000.00
h. Other	0.00
Total	28,805.00

Explanatory Comments:

a. Personnel Costs:	10% Conservation Engineer @ 13,400	1,340.00
	10% Clerk-Typist II @ 7,000	700.00
		<u>2,040.00</u>
f. Contractual	1. Contract with Maine Municipal Association to plan, establish, conduct, and assess a series of Local Energy Management Workshops	26,000.00



## E-1110 Overview

Pursuant to the Federal Energy Administration's request for proposal FEA CA-16-1 the Maine Office of Energy Resources, along with the Maine Public Utilities commission and Central Maine Power Company submitted a proposal to conduct a joint load management study. The proposal was submitted to FEA in April, 1976 but was not funded at that time. The proposal is currently being revised for resubmitted pursuant to Title II of the Energy Conservation and Production Act of 1976 (PL 94-385).

The program outlined in the proposal would endeavour to demonstrate the viability of load management and alternate pricing techniques for reducing electric peak demand and thereby conserving energy. The program is designed to run for two years. A copy of the original proposal is attached.

## E-1120 Milestones:

It is anticipated that the Federal Energy Administration will be soliciting load management proposals under PL 94-385 during the 2nd or 3rd calendar quarter of 1977. The attached proposals includes a charts and narrative (pp. 14 & 15) which delineate milestones for the program.

## E-1130 Savings Forecasts:

Using methodologies supplied by FEA, the Energy Saving Potential for the load management program was calculated to be:

$$0.151 \times \text{BTU}$$

The following page shows the calculations used to obtain this figure.

## E-1134 Savings Assessment:

The savings obtained through this program will be closely assessed by monitoring the electric usage in the state under the various load management techniques and rate structures. Utilities in the State have good historical records and ongoing monitoring capabilities. Thus assessment of these savings should be relatively easy.

## E-1140 Budget:

No funds available under the Energy Conservation and Production Act will be used for this program. It is anticipated that funding will be provided under Title II of PL 94-385. The attached proposal delineate a budget for the program (pp. 33 & 34).

## E-1150 Environmental Residuals:

The savings from this program are calculated to be  $0.151 \times 10^{12}$  Btu. The electric generation capacity in the State is divided into the following categories

	% of total	total Btu savings
Hydroelectric	23.2	$0.035 \times 10^{12}$
*Conventional Steam	29.0	$0.044 \times 10^{12}$

Nuclear	47.3 %	0.071 x 10 <sup>12</sup>
*Gas Turbine	0.2 %	Neg.
Internal Combustion	0.3 %	Neg.

\* Note: All Conventional Steam and Gas Turbine generation stations in  
in Maine are Oil fired these date are transfered to the  
Environmental Assessments Section of this Plan (Section D).

STATE NAME MAINE

TARGET YEAR 1980

State Energy Conservation Plan  
Worksheet for Estimating Energy Savings from Load Leveling  
in Electric Power Generation.

Step 1: Calculate energy savings from that fraction of peaking power within the State shifted to intermediate plants.

- a. Enter the fraction of peaking power shifted to intermediate generator plants (State estimate). 0.37
- b. Enter the energy savings if all peaking power were shifted to intermediate plants (Table VIII-A). .1  $10^{12}$  BTU
- c. Calculate energy savings (line 1a X 1b). 0.037  $10^{12}$  BTU

Step 2: Calculate energy savings from that fraction of peaking power within the State shifted to base load plants.

- a. Enter the fraction of peaking power shifted to base load plants (State estimate). 0.63
- b. Enter the energy savings if all peaking power were shifted to base load plants (Table VIII-A). 0.17  $10^{12}$  BTU
- c. Calculate energy savings (line 2a X 2b). 0.11  $10^{12}$  BTU

Step 3: Calculate the total energy saved by reducing peaking power demand.

- a. Enter the fractional reduction in consumer peaking power demand (State estimate). 0.08
- b. Enter the annual peaking power generated, trillion Btu's (Table VIII-A) 0.05  $10^{12}$  BTU
- c. Calculate the total energy saved by reducing consumer demand during peaking hours (line 3a X 3b) 0.004  $10^{12}$  BTU

Step 4: Calculate total savings.

- a. Add line 1c + 2c + 3e 0.151  $10^{12}$  BTU

PROPOSAL

for a

DEMONSTRATION PROGRAM

on

ALTERNATE RATE FORMS

and

LOAD MANAGEMENT

Submitted to  
FEDERAL ENERGY ADMINISTRATION  
OFFICE OF CONSERVATION AND ENVIRONMENT  
RFP FEA-CA-76-1

by  
MAINE OFFICE OF ENERGY RESOURCES  
MAINE PUBLIC UTILITIES COMMISSION  
CENTRAL MAINE POWER COMPANY

April 23, 1976

## 1. INTRODUCTION

This proposal is submitted to the Federal Energy Administration (FEA) in response to Request For Proposal FEA CA-76-1, as a joint effort by the Maine Office of Energy Resources (OER), the Maine Public Utilities Commission (MPUC) and Central Maine Power Company (CMP). Its purpose is the execution of a series of demonstration projects in the areas of electric utility rate reform, load management, and end-use conservation. This effort is part of a comprehensive national program by FEA to identify, demonstrate, and implement activities to improve efficiency in the production, distribution and use of electricity.

Maine has been more fortunate than other New England states with an abundance of rivers suitable for hydro-electric development. This has just about come to an end as lower cost hydro sites have been developed. Future peaking generation in the CMP service area will have to come from either the higher cost peaking hydro sites or from oil-fired gas turbines. The parties to this proposal are seeking ways to encourage the more efficient use of electricity and to reduce the requirement for future peaking facilities by transferring some of the demand for electrical energy from peak periods to off-peak periods where it could be supplied by more efficient base load fossil fired and nuclear units. The rates introduced in this proposal will be designed to accomplish this in two ways. One, by "shaving the peak", thereby reducing the requirement for additional peaking facilities and supplying the demand with more efficient facilities. Second, by "filling the valley" in the daily load curve with loads which otherwise may have occurred during peak periods. The results of these two efforts would



be a flatter daily load curve with a corresponding higher load factor and the potential for a greater percentage of the load being supplied by base-load facilities. As a complement to this transfer of load, the resulting cost reductions would benefit the consumers of Maine.

## 2. ABSTRACT

The Maine Office of Energy Resources and the Maine Public Utilities Commission, in cooperation with Central Maine Power Company propose to conduct a series of peak load pricing tests and a load management education program within the CMP service territory. The tests will endeavor to demonstrate the viability of peak load pricing as a mechanism for improving system load factor and reducing the future demand for peaking facilities.

The rates will take the form of off-peak rates where service is provided during low load periods, and interruptable rates, where the load is disconnected from the utility system during peak periods. Each of the above types of rates would be tested in both residential and industrial customer classes. The load management education program will provide the information needed by the commercial customer to effectively manage his load and improve his end use efficiency. It will involve a series of seminars and personal contacts with customers throughout the CMP system.

The program is expected to run two years but could be extended by mutual agreement of the parties.

### 3. PLAN OF WORK

Our overall objective is the development and demonstration of techniques to encourage the more efficient use of electricity and the cost effective elimination of energy waste. Specifically, our goals in this project are:

- To develop alternate rates which will improve system load factor and shift loads away from the system peak.
- To develop the tools and techniques to evaluate cost-of-service on a peak/off-peak basis.
- To improve the efficiency of energy consumption in the commercial/industrial sector.

To accomplish the above, we propose a two part project of alternate rate form demonstrations and a load management education program. The project is designed to address the areas of greatest load management potential in each of the three major customer classes (residential, commercial, and industrial).

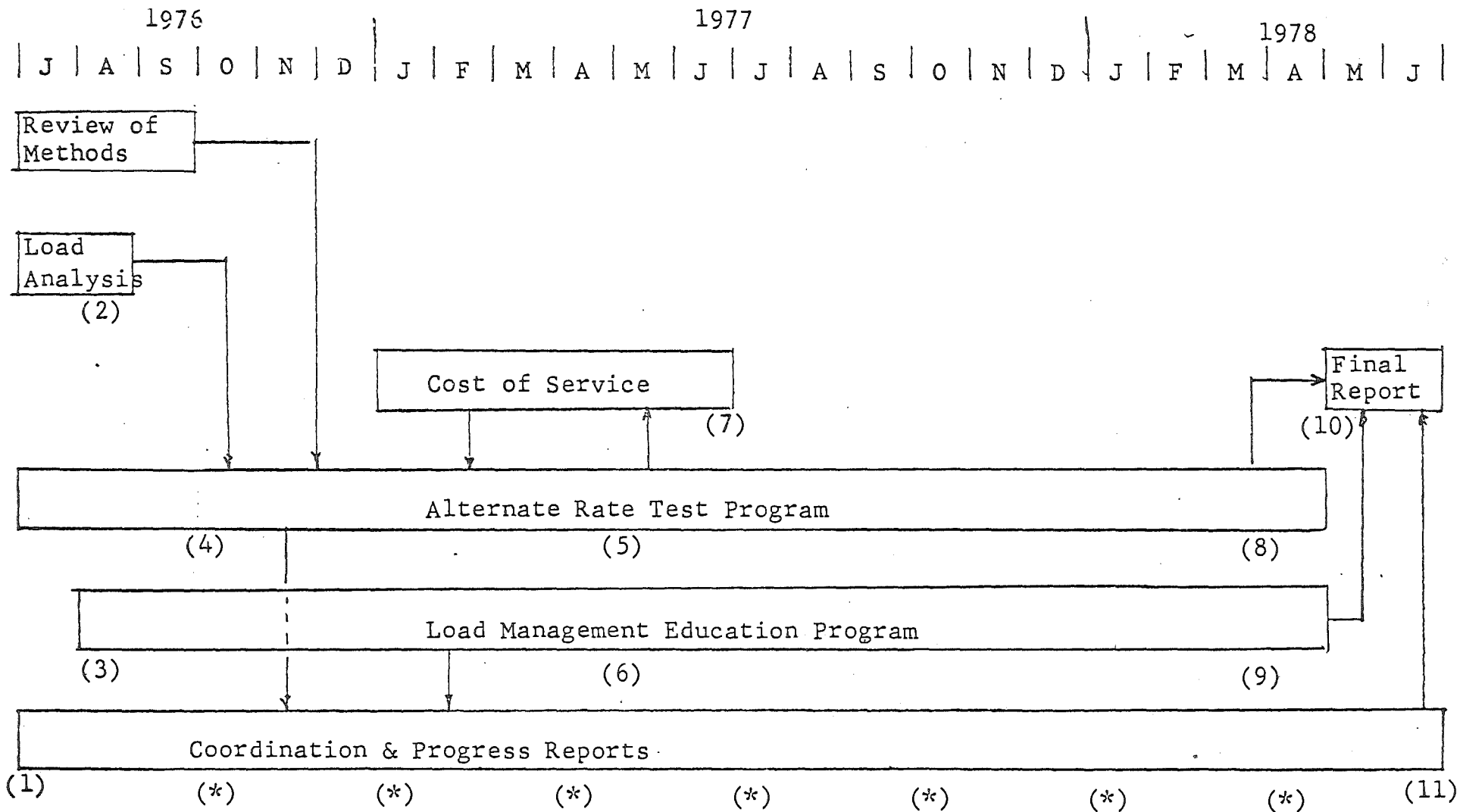
We propose to develop and demonstrate four alternate rate forms, two for the residential sector and two for the industrial sector. In each case the purposes of the two rates will be different. One will be an off-peak or "valley-filling" rate, designed to encourage the shifting of load to the low load hours at night. The other would be a "peak shaving" interruptable rate designed to permit the control and reduction of the utility's annual system peak. Both types of rates are designed to improve system load factor and shift loads away from the system peak. A more detailed description of the rates and their specific purpose is contained later in this section.

All of the above rates must be cost related. CMP does not at present have the capability to evaluate cost-of-service on a peak/off-peak basis. Part of our goal is therefore to develop this capability and apply it to the design of alternate rates.

The load management education program is targeted at the commercial/industrial customers, particularly those too small to develop their own load management expertise. Many of Maine's businesses are relatively small concerns, striving to stay afloat under the combined weights of inflation and recession. They realize that they can reduce costs by better management of their energy consumption, but they don't have the technical knowledge to do so and can't afford to develop the capability on their own. We therefore propose to use a series of seminars and personal interviews to teach load management techniques and energy conservation. While we realize that we cannot cover every aspect of the subject for every type of business we will cover the main areas common to most businesses, provide them with information on where they can get further help, and act as a catalyst for their own ideas and a forum for exchange of ideas between businessmen. Equipped with the knowledge we will provide the commercial/industrial customer should be able to effect marked improvements in his end use efficiency and save himself some money.

The project has been divided into seven major tasks, as outlined below.

FLOW CHART  
FEA LOAD MANAGEMENT PROJECT



6.0 COST ESTIMATE\*

6.1 Cost Estimate - Summary by Task

<u>Task or Activity</u>	<u>OER/MPUC</u>	<u>Requested FEA Funds</u>	<u>CMP</u>
1. Review Methods		3325/0	
2. Load Analysis		3500/0	
3. Cost of Service			100,000/0
4. Alternate Rate Structure	7500/0	146,250/12,925	15,000/0
5. Load Management Education Program		34,000/26,000	
6. Project Coordination/Progress Reports	12,500/11,000	11,000/11,000	
7. Final Report	0/ 4,000	0/ 4,050	
Subtotals:	\$20,000/15,000	\$198,075/53,975	\$115,000/0
Total Costs:			\$333,075/68,975

\* 1st year/2nd year

6.2 Cost Estimate - Summary by Cost Element\*

<u>Cost Category</u>	<u>OER/MPUC</u>	<u>FEA</u>	<u>CMP</u>
1. Personnel			
a. Professional	16,000/12,000	8,000/8,000	
b. Clerical		100/ 100	
c. Fringe Benefits			
2. Other Direct Costs			
a. Consultants			
b. Subcontracts		187,075/42,975	115,000/0
c. Travel		800/ 800	
d. Supplies		75/ 75	
e. Other (specify)			
TOTAL DIRECT COSTS	\$16,000/12,000	\$196,050/51,950	\$115,000
3. Indirect Costs	4,000/ 3,000	2,025/ 2,025	
TOTAL COST	\$20,000/15,000	\$198,075/53,975	\$115,000
TOTAL PROJECT COST			\$333,075/68,975

\* 1st year/2nd year

6.3 Consultant/Subcontract Detail Sheet\*

Subcontractor: Central Maine Power Company

Cost Category

1. Personnel

a. Professional	146,860/21,800
b. Clerical	/ 300
c. Fringe Benefits	

2. Other Direct Costs

a. Consultants	8,000/ 0
b. Subcontracts	
c. Travel	0/ 2,000
d. Equipment (specify)	104,500/ 0
e. Supplies	6,000/13,350
f. Other (specify)	

TOTAL DIRECT COSTS \$265,360/37,450

3. Indirect Costs \$ 36,715/ 5,525

4. Fee \$

TOTAL COST \$302,075/42,975

2d. Metering & Control equipment

\*1st year/2nd year

## Intergovernmental Coordination

-92-

## E - 1210 Overview:

The Office of Energy Resources recognizes the need for a mechanism through which the energy-related activities of all governmental organizations can be coordinated. To this end, the OER has taken the first steps to create such a vehicle within State Government.

The 1977 Work Plan, as prepared by the OER Director and staff, was mailed to the head of each State agency. A cover memo attached to the Work Plan asked each agency to review the Plan and submit any comments to the office. It further requested each agency to name a person to serve on a task force committee. This committee will form the basis for the Intergovernmental Coordination Effort.

Once the inter-agency task force has been formally established and is in operation, the OER will seek out other, non-state governmental agency participation. Specifically, the OER will contact the following:

Regional Planning Commissions

Councils of Government

Maine County Commissioners (and through them)  
County Governments

Maine Association of Conservation Commissions (and  
through them)  
Municipal Conservation Commissions

Quasi-Governmental Agencies

It is felt that most of the local governmental bodies in the State will be represented by one or more of these organizations.

The task force will meet quarterly with a set written agenda distributed before each meeting. Topics of discussion will not be restricted to this agenda only, but such a format will provide the task force participants with advance notice of the main purpose for the meetings.

Another purpose for the task force is to provide the OER with a contact person in each governmental unit. Thus, if the OER is undertaking a project which would impact another unit of government, or vice versa; information can be easily exchanged. Also, in the case of State agencies, the OER can use the contact person when monitoring the implementation of the State Agency Energy Conservation Plan.

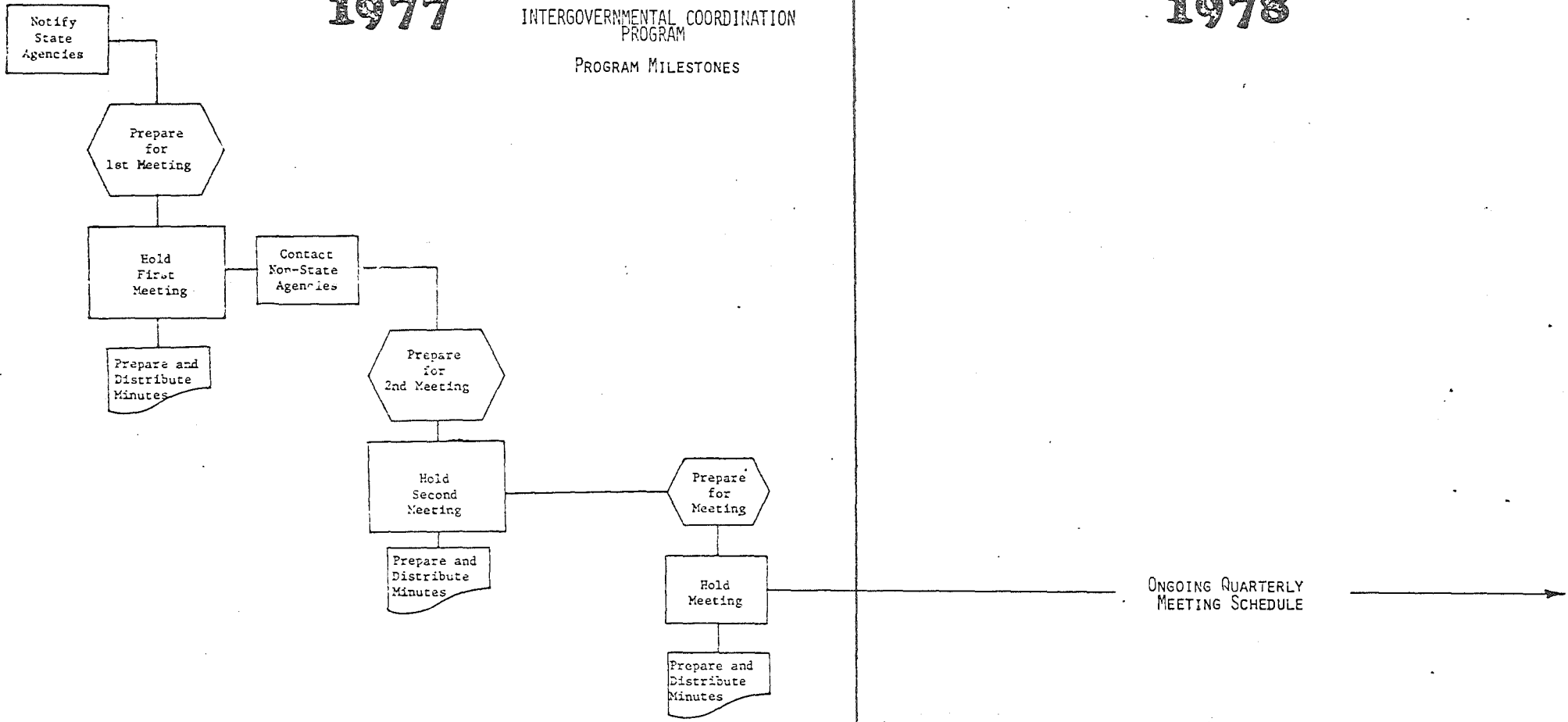
Contacts with non-state governmental and quasi-governmental agencies will help the OER to assess the energy conservation efforts being undertaken at the municipal level. These contacts will also supply valuable information regarding energy programs which could be started or revised to better serve local governmental units.



1977

STATE OF MAINE  
STATE ENERGY CONSERVATION PLAN  
INTERGOVERNMENTAL COORDINATION  
PROGRAM  
PROGRAM MILESTONES

1978



	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
	2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter			1st Calendar Quarter			2nd Calendar Quarter			3rd Calendar Quarter			4th Calendar Quarter		

The Office of Energy Resources has taken the first steps to establish an Inter-Governmental Task Force on Energy within State Government. This Task Force will hold its first meeting sometime in the 2nd quarter of 1977. At this meeting, the potential for including non-state agencies will be discussed. Non-state agencies will be contacted and their participation solicited for the second and subsequent meetings.

Having secured the participation of as many governmental bodies as possible, the OER will begin to hold regular quarterly meetings of the Task Force. The meetings will follow the format shown above. It is anticipated that the meetings of the Task Force will be on a quarterly basis.

Quarterly meetings will be held on a regular schedule.

Note: The Program Milestones for 1979 and 1980 will be the same as shown for the second half of 1977. Any change will be noted in later amendments to this Plan.

E - 1230 - 1234 Energy Savings; Methodology, Documentation and Assessment.

No energy savings are attributed to the program element.

E - 1240 Program Implementation Costs

No funds provided by the Energy Conservation and Production Act will be used in this program element.

E - 1250 Environmental Residuals

Since no energy savings have been attributed to this program, no environmental benefit or degradation can be assessed.



ENVIRONMENTAL ASSESSMENT

The Environmental Impact of the implementation of the State Energy Conservation Plan in Maine will be favorable for all program elements. The enclosed tables summarize the environmental benefits which will accrue from the program. The methods used to estimate the environmental impact was supplied by the Federal Energy Administration.

To estimate the potential environmental impact of the plan, the energy savings for each fuel type expected from each program element must be summarized. The environmental residual reduction is then calculated from this saving figure.

Program Designation

E-0100 Thermal Efficiency Standards

Energy Reduction By Fuel Type (Residential Sector)

Distillate Oil	0.594 x 10 <sup>12</sup> BTU
Electricity	0.027 x 10 <sup>12</sup> BTU
Natural Gas	0.007 x 10 <sup>12</sup> BTU
Coal	_____ Negligable

Energy Reduction By Fuel Type (Commercial Sector)

Distillate Oil	0.771 x 10 <sup>12</sup> BTU
Electricity	0.025 x 10 <sup>12</sup> BTU
Natural Gas	0.022 x 10 <sup>12</sup> BTU
Coal	0.002 x 10 <sup>12</sup> BTU

Calculatin the electricity savings by generation type gives the following:

Hydroelectric	0.012 x 10 <sup>12</sup> BTU
*Conventional Steam	0.015 x 10 <sup>12</sup> BTU
Nuclear	0.025 x 10 <sup>12</sup> BTU
*Gas Turbine	_____
Internal Combustion	_____

E-0200 Lighting Efficiency Standards

All energy reduction will be in electric generation

Hydroeletic	0.1837 x 10 <sup>12</sup> Btu
Conventional Steam	0.2297 x 10 <sup>12</sup> BTU
Nuclear	0.3746 x 10 <sup>12</sup> BTU
Gas Turbine	_____
Internal Combustion	_____

\*Note: All Conventional Steam and Gas Turbine Cenerators in Maine are fired by petroleum.

E-0400                      Transportation measures

All energy savings will be in gasoline

Gasoline                      0.117 x 10<sup>12</sup> BTU

E 0500                      Right Turn on Red

All energy savings will be in gasoline

Gasoline                      0.0112 x 10<sup>12</sup> Btu

E 0600                      Energy Audits

Energy Reduction by Fuel Type (Residential Sector)

Distillate Oil	5.381 x 10 <sup>12</sup> BTU
Electricity	0.245
Natural Gas	0.063
Coal	Negligable

Energy savings by Fuel Type (Non-Residential)

Distillate Oil	2.402 x 10 <sup>12</sup> BTU
Electricity	0.079
Natural Gas	0.069
Coal	

Calculating the Electricity savings by generation type gives the following:

Hydroelectric	0.075 x 10 <sup>12</sup> BTU
Conventional Steam	0.094
Nuclear	0.153
Gas Turbine	negligable
Internal Combustion	negligable

E 0700                      Business and Industry Program

Energy savings by Fuel type

Residual Oil	4.76 x 10 <sup>12</sup> BTU
Distillate Oil	0.21
Coal	0.09
Natural Gas	0.04
Electricity	3.08
Wood	0.17

Calculating the electrcity savings by generation type gives:

Hydroelectric	0.715 x 10 <sup>12</sup> BTU
Conventional Steam	0.893
Nuclear	1.457
Gas Turbine	negligable
Internal Combustion	negligable

E 0800 Automobile Performance Analysis

All savings will be in gasoline

Gasoline 0.504 x 10<sup>12</sup> BTU

E 1100 Electricity Utility Management

All reductions will be in electric generation

Hydroelectric	0.35 x 10 <sup>12</sup> BTU
Conventional	0.044 " "
Nuclear	0.011 " "
Gas Turbine	Negligable
Internal Combustion	Negligable

Summary of Energy Savings by Fuel Type

Gasoline	0.632 x 10 <sup>12</sup> BTU
Commercial Gas	0.091 " "
Commercial Distillate Oil	3.173 " "
Commercial Coal	0.006 " "
Residential Gas	0.063 " "
Residential Distillate Oil	5.975 " "
Electric Generation Oil	1.276 " "
Industrial Residual Oil	4.76 " "
Industrial Distillate Oil	0.21 " "
Industrial Natural Gas	6.04 " "
Industrial Coal	0.09 " "

TALLY SHEET  
OF REDUCTIONS IN EMISSIONS, ETC.

WATER-BORNE RESIDUALS	Acids	Bases	Dissolved Solids	Suspended Solids	Non-Degradable Organics	BOD	COD
1 TOTAL		0.09	5.76	11.254	33.995	10.731	65.791
2 GASOLINE, VEHICULAR							
3 DIESEL BUS							
4 REFINERY, PETROLEUM							
5 COMMERCIAL, GAS					0.002		
6 COMMERCIAL, DIST. OIL			1.269	2.412	7.615	2.412	14.786
7 COMMERCIAL, RESID. OIL							
8 COMMERCIAL, COAL		0.006	0.161	0.035			
9 RESIDENTIAL, DIST. OIL			2.39	4.541	14.400	4.541	27.844
10 RESIDENTIAL, GAS					0.001		
11 ELECTRIC GEN., GAS T.							
12 ELECTRIC GEN., STEAM, OIL							
13 ELECTRIC GEN., STEAM, COAL							
14 INDUSTRIAL, D. OIL			0.084	0.160	0.504	0.160	0.979
15 INDUSTRIAL, R. OIL			1.856	3.618	11.472	3.618	22.182
16 INDUSTRIAL, GAS					0.001		
17 INDUSTRIAL, COAL		0.084	2.256	0.488			

TALLY SHEET  
OF REDUCTIONS IN EMISSIONS, ETC.

AIR RESIDUALS	Particulates	Oxides of Nitrogen	Sulphur Dioxide	Hydro-Carbons	Carbon Monoxide	Carbon Dioxide	Aldehydes
1 TOTAL	938.126	3031.314	4641.702	695.678	2642.686	1,377,287	152.838
2 GASOLINE, VEHICULAR	39.197	188.336	9.48	127.032	1339.84	47,084	
3 DIESEL BUS N/A							
4 REFINERY, PETROLEUM N/A							
5 COMMERCIAL, GAS	0.842	13.838	0.024	0.36	0.885	5,551	0.446
6 COMMERCIAL, DIST. OIL	181.686	770.976	436.129	117.940	237.975	269,705	36.172
7 COMMERCIAL, RESID. OIL N/A							
8 COMMERCIAL, COAL	2.668	0.756	4.540	0.290	1.236	667.066	0.008
9 RESIDENTIAL, DIST. OIL	223.981	413.351	815.289	222.090	124.28	507,875	67.757
10 RESIDENTIAL, GAS	0.585	8.078	0.02	0.251	0.613	3,876.96	0.498
11 ELECTRIC GEN., GAS T. N/A							
12 ELECTRIC GEN., STEAM, OIL	38.790	488.708	710.732	42.363	3.7	108,460	9.57
13 ELECTRIC GEN., STEAM, COAL							
14 INDUSTRIAL, D. OIL	12.025	51.026	28.865	7.857	15.75	17,850	2.394
15 INDUSTRIAL, R. OIL	381.086	1080.044	2572.78	173.264	16.517	404,600	35.7
16 INDUSTRIAL, GAS	0.341	5.611	0.012	0.146	0.359	2,251	0.181
17 INDUSTRIAL, COAL	37.510	10.630	63.831	4.085	17.416	9,379	0.112



TALLY SHEET  
OF REDUCTIONS IN EMISSIONS, ETC.

OTHER ENVIRONMENTAL RESIDUALS	Thermal Rejection	Occupational Death	Occupational Injury	Occupational Man-Days Lost	Solid Waste	
1 TOTAL	1.306	0.056	0.956	62.117	1576.1	
2 GASOLINE VEHICULAR						
3 DIESEL BUS						
4 REFINERY, PETROLEUM						
5 COMMERCIAL, GAS	0.081	$1.82 \times 10^{-5}$	0.003	8.445		
6 COMMERCIAL, DIST. OIL		0.002	0.159	7.933	152.3	
7 COMMERCIAL, RESID. OIL						
8 COMMERCIAL, COAL		0.0004	0.007	0.554	52.26	
9 RESIDENTIAL, DIST. OIL		0.042	0.2988	14.938	286.8	
10 RESIDENTIAL, GAS	0.056	$1.267 \times 10^{-5}$	0.002	0.057		
11 ELECTRIC GEN., GAS T.						
12 ELECTRIC GEN., STEAM, OIL	1.136	0.002	0.139	6.455	61.25	
13 ELECTRIC GEN., STEAM, COAL						
14 INDUSTRIAL, D. OIL		0.001	0.0105	0.525	10.08	
15 INDUSTRIAL, R. OIL		0.003	0.233	11.995	228.6	
16 INDUSTRIAL, GAS	0.033	$7.38 \times 10^{-6}$	0.001	3.424		
17 INDUSTRIAL, COAL		0.006	0.103	7.791	734.8	

Approved by GAO  
B-181254 (R0356)

Part V. Assurances

The Applicant hereby assures and certifies that they will comply with the regulations, policies, guidelines, and requirements including OMB Circular No. A-95 and Federal Management Circulars Nos. 74-4, (Cost Principles Applicable to Grants and Contracts with State and local governments) and 74-7, (Uniform Administrative Requirements for Grants-in-Aid to State and local governments), as they relate to the application, acceptance and use of Federal funds for this Federally assisted project. Also the Applicant assures and certifies with respect to the project that:

1. It possesses legal authority to apply for the grant; that a resolution, motion or similar action has been duly adopted or passed as an official act of the applicant's governing body, if necessary, authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the applicant to act in connection with the application and to provide such additional information as may be required.
2. It will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352) and in accordance with Title VI of that Act, no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the applicant receives Federal financial assistance and will immediately take any measures necessary to effectuate this agreement.
3. It will comply with Title VI of the Civil Rights Act of 1964 (42 USC 2000d) prohibiting employment discrimination where (1) the primary purpose of a grant is to provide employment or (2) discriminatory employment practices will result in unequal treatment of persons who are or should be benefiting from the grant-aided activity.
4. It will comply with requirements of the provisions of the Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (P.L. 91-646) which provides for fair and equitable treatment of persons displaced as a result of Federal and federally assisted programs.

5. It will comply with the provisions of the Hatch Act which limit the political activity of employees.
6. It will comply with minimum wage and maximum hours provisions of the Federal Fair Labor Standards Act, as they apply to hospital and educational institution employees of State and local governments.
7. It will establish safeguards to prohibit employees from using their positions for a purpose that is or gives the appearance of being motivated by a desire for private gain for themselves or others, particularly those with whom they have family, business, or other ties.
8. It will give the grantor agency and the Comptroller General through any authorized representative the access to and the right to examine all records, books, papers, or documents related to the grant.
9. It will comply with all requirements imposed by the Federal grantor agency concerning special requirements of law, program requirements, and other administrative requirements approved in accordance with Federal Management Circular 74-7.
10. The Governor's signature in Part I - General Information, Section II number 22a (indicating authorization and compliance with the assurances), will also indicate a proposal, by the State making application, to develop a State energy conservation plan. The plan shall include programs required by Public Law 94-163, Part C, to achieve in the State by 1980 an overall reduction of at least 5 percent of the baseline energy consumption forecasts in the year 1980. In addition, all funds being applied for and granted will be used for the development of the State Energy Conservation Plan.

APPENDIX A

STATE AGENCIES  
ENERGY CONSERVATION  
PLAN

(The contents of the appendices  
has not been reproduced herein.  
Copies of the appendices will be  
made available upon request.)



APPENDIX B

PORTLAND AREA COMPREHENSIVE  
TRANSPORTATION STUDY REPORT

LEWISTON-AUBURN COMPREHENSIVE  
TRANSPORTATION STUDY REPORT  
(PREPARED BY THE ANDROSCOGGIN VALLEY  
REGIONAL PLANNING COMMISSION)

