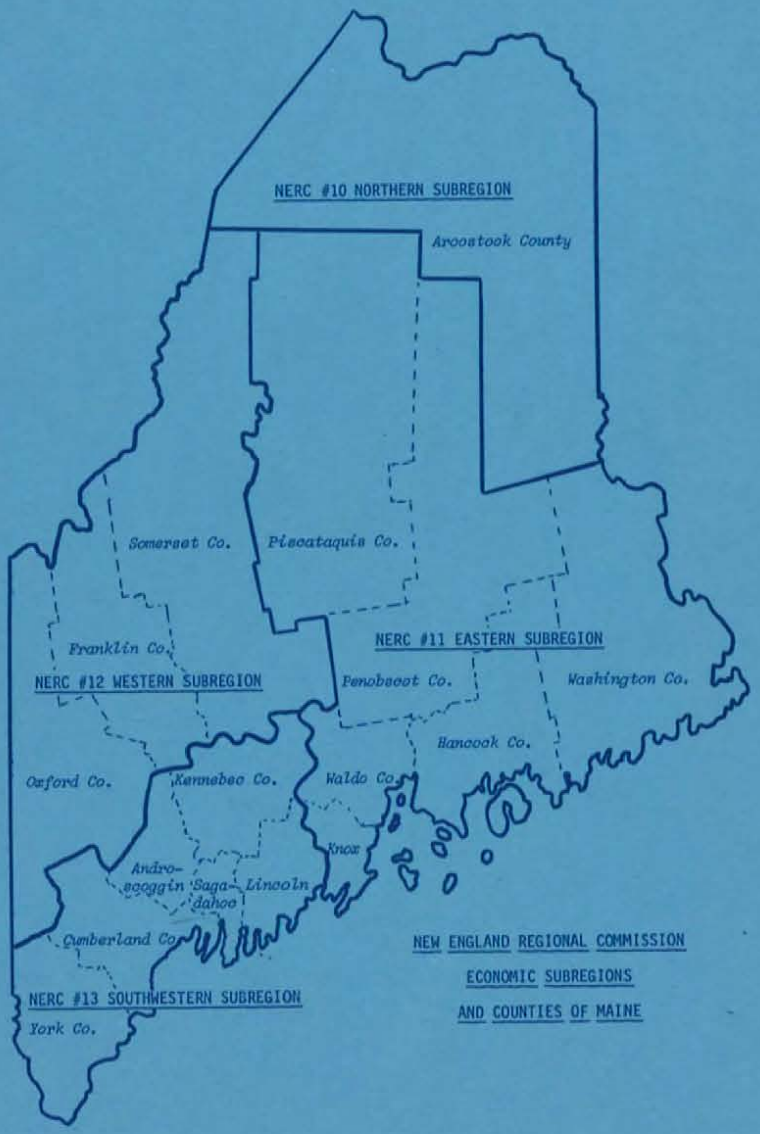
SIGNIFICANT PUBLIC INVESTMENT NEEDS

for the State of Maine for the 1970-1975 Period



Submitted to the State Planning Office by ESCO Research, Inc.
Portland, Maine — September 1969

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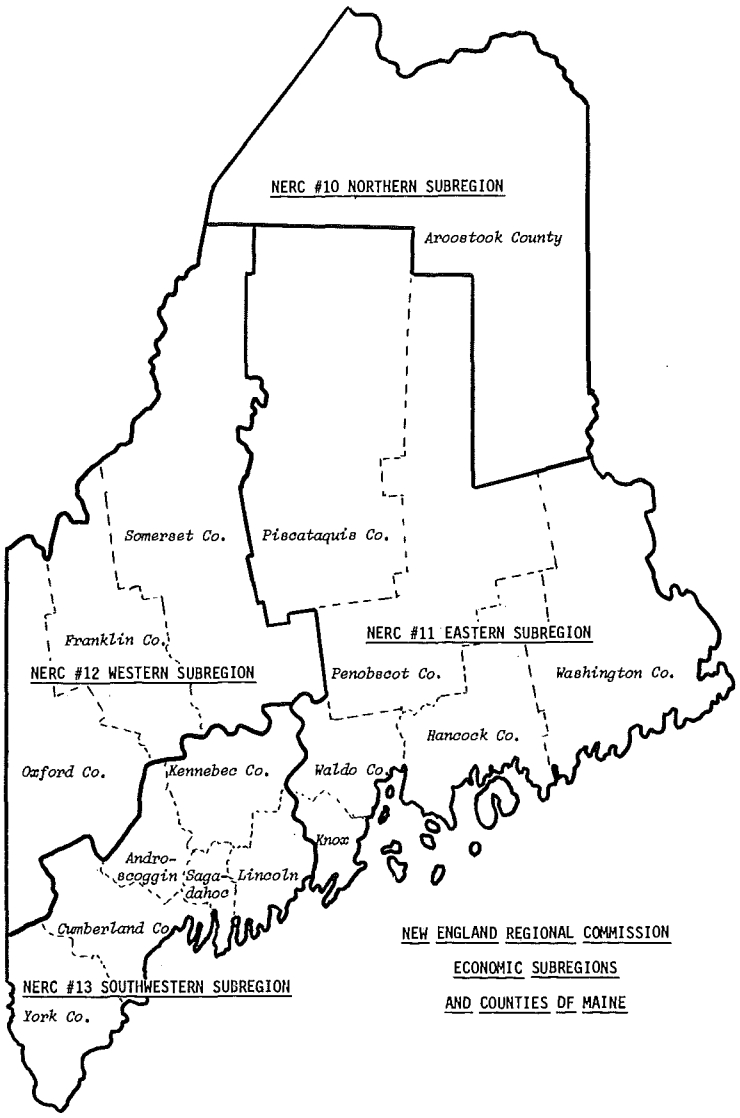

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The preparation of this report was financially aided by the State Planning Office, Executive Department, State of Maine, and through a Federal Grant from the New England Regional Commission.

State of Maine
Executive Department
State Planning Office
189 State Street, Augusta, Maine 04330

KENNETH M. CURTIS
GOVERNOR

PHILIP M. SAVAGE
STATE PLANNING DIRECTOR

TEL. (207) 289-3261

September 12, 1969

Honorable Kenneth M. Curtis
Governor of Maine
State House
Augusta, Maine 04330

Dear Sir:

I am pleased to transmit to you this Public Investment Plan for the State of Maine. This Plan, as prepared by Esco Research, Inc., of Portland, Maine, in close cooperation with the State Planning Office, is the third Public Investment Plan prepared for the state. As such, it represents a refinement of the information, statistics, goals and objectives presented in the previous reports so that it is part of a continuing and comprehensive planning process for State of Maine investment strategy.

Special emphasis was placed on obtaining the personal and professional involvement of state department and agency heads, members of the State Planning Council and selected civic and industrial leaders. Two workshop sessions were held with these people, and preliminary drafts of this report were reviewed, discussed and evaluated with the heads of relevant state agencies and departments. As a result of this involvement on the part of state officials, it is anticipated that this report will be used as a significant guide and input in the formulation of future agency budgets. It is also designed to bring to the attention of state officials the vital public investment and economic development aspects of their respective budget requests.

The findings and recommendations of this study will also mesh with and reinforce other current state programs, projects and planning activities including major efforts in government reorganization, environmental control and manpower development.

Copies of this plan will be forwarded to the New England Regional Commission in fulfillment of our contract with this agency.

Sincerely,

Philip M. Savage

Philip M. Savage, Director

PMS:s
Enclosure

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A nonprofit corporation undertaking research projects of direct or indirect benefit in the economic, social, or cultural fields.

September 8, 1969

Mr. Philip Savage, Director
State Planning Office
State House
Augusta, Maine

Dear Mr. Savage:

ESCO Research, Inc., was pleased to be given the assignment of conducting the Third Cycle of the Public Investment Plan for Maine, entitled "Significant Public Investment Needs for the State of Maine for the 1970-1975 Period," for the State Planning Office.

In accordance with your request and our proposal of April 22, 1969, ESCO is submitting these findings and recommendations to assist you and the members of the Executive Department in planning and budgeting for the next year and to help crystalize a state investment policy at least through 1975.

ESCO Research staff members have met with many State officials during the past four months in an effort to identify the needs for state services and public investment. In addition to conducting personal interviews, the staff carefully reviewed a number of recent departmental studies and reports of outside consultants. In many cases, portions of these studies were used in the body of this report, and in other cases they are identified in the bibliography at the end of each chapter.

Since this study was intended to be undertaken with the help of State department heads, ESCO Research, Inc., conducted two workshops last June on the Colby Campus for State officials. Whenever possible, contributions by the cooperating State officials were included.

ESCO now submits its report to the State Planning Office. In doing so, we wish to compliment all members of the State Planning Office for their assistance and understanding during the course of the study.

Respectfully submitted,
ESCO Research, Inc.
Harry J. Waters
Harry J. Waters, Ph.D.
Executive Director

HJW:mc

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PREFACE

Phase III of the Public Investment Study for the State of Maine points out many important areas of need throughout the State that require the expenditure of more local, State, and federal funds than have been available in the past. A recurring dilemma faces the Governor, the Legislature, and the people of Maine. This dilemma is how to select, from the many needs that require public financing, those that can be met with the limited funds available at the local or state level.

Maine's need for additional public funds for its government stems in part from the growth of the United States as a whole, not from the small and slow increase in population of Maine itself. For example, there is the need of the summer or winter visitor for highways and scenic areas and recreation equal to or better than those available in his home community or in other vacation areas. Another is the need to provide favorable environment for industries that desire to establish branch plants or to migrate to Maine.

Both the State Government and its county and local subdivisions were developed to meet Nineteenth Century needs of citizens using boats, horses, and trains. Reorganization to meet Twentieth Century needs may lead to reduced costs for some activities. However, this study does not and cannot assume that government reorganization will have achieved significant economies by 1975. Obtaining more and better government activities with fewer dollars must be a long-range rather than a short-range objective.

Increased federal grants will be necessary to meet State needs. It follows that the problem of expanding needs for public funds, as they are outlined and as far as possible rated in order of importance in this study, requires the assumption that the additional funds will come primarily from the Federal Government. This assumption is certainly compatible with the forecast that Maine's own growth will be below the national average during the years up to 1975. Maine must have federal grants in order to meet its new public needs of highest priority. Then it must receive federal assistance for the next in priority, and so on.

It is important for all citizens to realize that there is an upper limit to the amount of additional revenue that can be raised by the State and its local subdivisions from a population which has barely increased in the recent past and which will probably grow very slowly in the decade ahead. While this limit has not yet been reached, it is realistic to assume that it exists. It is the assumption of this report that a large portion of the additional funds that are needed for the enlarged programs described in this study will be received from the Federal Government, hopefully in the form of "bloc" or general purpose grants. If Maine receives added funds from the Federal Government, it must be further assumed that the apportionment will recognize the needs of added population in the states that are increasing their population. This may reduce Maine's portion or share, widening the gap between Maine's income and its unfilled needs as developed in this study.

Maine's population is much smaller than that of Greater Boston. Its average income level is below that of New England and the rest of the Nation. This suggests that Maine, through its State Planning Office, may have to develop a system of priorities to provide guidance in allocating the limited funds. The New England Regional Commission and the State Planning Office can help the decision makers in the State of Maine by focusing their attention on comprehensive State planning. Ultimately there should develop an interagency budgeting procedure that would, in effect, determine priorities for the expenditure of public funds.

Careful review of the many recommendations presented to the research team, most of which have been reproduced in this study, shows that because of a lack of sufficient revenue, not all of these important proposals can be implemented immediately. An increase in federal support could be an answer to the dilemma.

National standards and goals will play a major part in determining the priorities for the projects reviewed in this study. The following is suggestive of nationally-inspired priorities:

1. In addition to providing more facilities for technical and other post-secondary education, Maine should provide increased support for higher education, so that the graduates of Maine's colleges and universities will be even better fitted for their careers inside or outside of Maine.
2. Extension of national parks, national forests, and national monuments may in the future include entire sections of Maine's coast or of Maine's forest and lake areas. These federal acquisitions will provide vacation and conservation areas, protected against all kinds of pollution, whether human, industrial, or commercial.
3. Increased federal responsibility for all forms of transportation may be expected. In matters of public transportation this may ultimately include federal ownership with federal operation, federal ownership with state operation, and federal subsidy with regulatory control. For example, interstate railroads may be either subsidized or nationalized. Urban transit systems, including school bus service, "dial-a-bus" for low mobility needs and for medicare, and rush-hour bus service, may be given federal grants for capital needs and operating subsidies. All highways and streets having through-route characteristics may become entitled to liberal federal construction grants and perhaps also to federal assumption of part of the cost of annual repair and maintenance. Federal ownership and operation of all airports used by commercial or military jet aircraft, and also of all major ocean ports, may take place.
4. In the welfare and medical field, the Federal Government already is a major contributor. Its responsibility may be expected to increase both as manager and as provider of money. Medicare and Old Age Pension payments from federal sources will supply most or all of the financial needs of many hospitals and nursing homes, and perhaps also much of the support for medical and dental educational institutions.

Obviously there is no way to forecast whether the possible changes in federal funds distribution will change the overall distribution in 1975 of all funds available for these state and local purposes. It may be assumed that the distribution will remain much the same as at present for the following reasons:

1. Any funds saved by reduction in local costs for transportation, university support, recreation, or welfare will probably be needed to provide more adequate urban services, including fire prevention, police and the related traffic control signal systems, courts and juvenile delinquency agencies, and the provision of the cultural amenities of life, such as usable parks.
2. Any funds saved by reduction in the costs of higher education now paid out of state budgets will be needed to provide additional funds for the SAD's and for the vocational training schools needed at the secondary and post-secondary levels, and also for the establishment of more effective educational and preventive efforts for mentally retarded or delinquent children.
3. Although the Federal Government will assume some of the cost and responsibility for pollution control and pollution abatement, there will still be large costs for the State and local governments to finance, including sewage treatment, solid waste disposal, and aid in pollution reduction for established Maine industries.

Human resources are Maine's greatest asset. We recommend that increased investment in the development of the State's human resources should be given first claim on new federal, State, or local revenues. This is evident throughout the entire study. Implicit in this study is the goal of developing every citizen to his maximum potential regardless of his current economic, physical, or social condition. Human resource development must include people at all levels of formal education, people within our mental and penal institutions, and people living on the fringes of society, such as the mentally retarded, the technically obsolete, the hard-core unemployed, and the alcoholic.

In the area of formal education the greatest need is for coordination of technical training, particularly at the post-secondary level. All too many of our younger citizens lack the opportunity to develop to their maximum potential because appropriate types of education and training are not available to them at either the secondary or post-secondary level, or because they cannot qualify, for many reasons, for admission to the four year colleges.

It is recommended that a system of community colleges be developed. Scarcity of funds may require that this be accomplished by using the facilities of existing schools, wherever possible. Educational opportunities at this junior college level will result in multiple benefits to the State. The shortage of skilled technical people throughout the State in the para-medical and dental fields, as well as in other technical fields, can be

met by graduates of these types of manpower development programs. Finally, industry might be attracted to a State that has a ready pool of workers with some college training. Maine's traditional belief in the high school or private secondary-level academy as the terminal school for all but a few should be upgraded.

In the development of human resources one of the great needs in Maine is to provide educational facilities and manpower for the development of the skills and talents of all the disadvantaged to their highest level. The trend in Maine, as in the nation also, is towards rehabilitation by education in addition to or in place of custodial care of the inmates of the mental and penal institutions. In Maine, new investments in diagnostic and treatment centers within the Bureau of Corrections and in additional community-oriented mental health clinics within the Bureau of Mental Health are two important first steps in conforming to the national trend. These activities deserve a high priority.

Other disadvantaged should not be neglected because they are less vocal. The Head Start programs, aimed at avoiding or reducing mental retardation of disadvantaged children, should likewise be given high priority, particularly as a Model Cities activity. Another example is education adapted to those with physical rather than mental dexterity, teaching the skilled use of tools rather than the abstract theory of books. A word of caution is that we urge the avoidance of duplicate programs under different auspices.

Maine must have balanced growth. This study found that Maine is confronted with a number of environmental control problems which deserve public attention and high priority in allocation of public funds. In this environmental area, existing problems and predictable new ones have created "battle lines" beween the conservationists and the proponents of economic development. The rational view is that Maine must achieve balanced growth, preserving its environmental resources and at the same time developing economic resources. This demand for public funds probably means that Maine cannot accomplish all that is desirable in the area of environmental control. Only the highest priorities of corrective projects can be funded. This makes of vital importance the imposition of some form of state zoning and of controls that will prevent or at least slow down further damage, such as excessive stream pollution, or further spoilation of coastal areas where shellfish were formerly plentiful and edible.

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CONCLUSIONS AND RECOMMENDATIONS

CHAPTER I

CONCLUSIONS AND RECOMMENDATIONS: MAJOR PUBLIC INVESTMENT NEEDS FOR THE STATE OF MAINE FOR THE 1970-1975 PERIOD

Outline

Maine Needs Post-Secondary Educational Opportunities Below the Bachelor Degree Level.

Recommendation 1: Establish a system of community colleges in the State.

Currently 50 percent of all Maine jobs are in the trade, technical, and distributive fields, and only seven percent of all jobs in Maine are held by college graduates. Despite this industry need, only about 10 percent of the students pursuing post-high school education are in vocationally oriented or technically oriented non-degree or associate degree programs.

Furthermore only 16 percent of the qualified high school graduates applying for two year technical programs can get into the Maine Vocational Technical Institutes.

In addition to the industrial needs for trained personnel, Maine government agencies, social agencies, and medical units have great difficulty in filling certain types of positions held by such technicians as the following: dental hygienists, para-medical technicians, social workers, technicians in air and water pollution control, marine biology, oceanography, and public administration.

This lack of educational opportunity for many of Maine's youth and the shortage of trained people for industry, government, health and welfare fields make it necessary for Maine to support a system of public community colleges.

Recommendation 2: Increase public investment as needed in post-secondary technical training and general education.

With or without a Community College system in the State of Maine, financial support is needed in post-secondary technical training and general education to fill current needs developed throughout this study and to prepare young people for the future needs of the State. Trained personnel and educational opportunities are major factors in attracting industry to the State.

Recommendation 3: Encourage further expansion of programs of functional benefit to the State at the University of Maine.

The University of Maine should be encouraged to further expand programs of functional benefit to the State. In addition to performing basic research, it should be engaged in well organized and coordinated applied research of potential public benefit. It must continue to expand its offerings of informal educational programs and more formalized university courses, especially technically oriented courses, at convenient locations through both day and evening classes.

Recommendation 4: Determine actual needs for the various types and levels of dental, medical, and allied personnel, establish where the shortage exists, and develop programs to train and educate those needed.

All the New England Regional Commission Subregions of the State, except NERC Subregion 13, have a critical shortage of medical, dental and mental health professionals and supportive personnel. The needs must be identified, and educational programs must be developed to fill this need, either through the University of Maine and private colleges, or through subsidy programs encouraging the education of more Maine doctors and dentists in out-of-state institutions.

Recommendation 5: Develop educational programs in various aspects of public administration throughout the State.

Between now and 1975 Maine will need a 20 percent increase in public service personnel (over 6,000 jobs) plus replacement of retirees and normal attrition. Most of these jobs are at the mid-management level. Present in-service training should be reinforced by a formal program of training with emphasis on managerial techniques. A program offered both day and evening, similar to the two-year business program in Portland, could be developed within the framework of the University system.

Maine Needs More Medical, Dental, and Mental Health Services Throughout Most of the State.

Recommendation 6: Establish community-oriented mental health treatment centers throughout the State for out-patient treatment.

Establishing mental health care centers at the community level for diagnostic and counseling services on an out-patient basis, instead of providing custodial care in state hospitals, is a national trend in the mental health field. Maine has started the development of some community centers. Increased and immediate state investment could reduce total costs by reducing the resident population in the state institutions.

Recommendation 7: Establish a Diagnostic and Reception Center within the Bureau of Corrections.

The establishment and financing of a Diagnostic and Reception Center for the Bureau of Corrections would represent the key to dramatic progress in the correction system in Maine. Such a center, constructed largely by federal funds, would provide the Bureau of Corrections with a facility necessary to achieve its goal of effective rehabilitation, rather than merely providing custody and/or punishment. This major priority of the Bureau has an estimated operating cost of $500,000 per biennium.

Recommendation 8: Find ways and means to stimulate the settlement of dentists in Maine to relieve the already critical shortage.

Maine has a decreasing number of dentists and they are concentrating in urban areas. It is estimated that by 1975 the State will need an additional 181 dentists. The problem facing the State is to find ways and means of attracting dentists. While some suggestions are made in the study, overcoming this shortage is a complex problem that must be solved.

Recommendation 9: Find ways to stimulate the settlement of physicians in Maine.

The State of Maine will need at least 296 new physicians by 1975 and many of the physicians will be needed for rural areas. Since currently trained doctors are hospital oriented and often specialists, the recruiting of additional physicians becomes even more difficult. Again, some suggestions are advanced in this study but no adequate solution is presented.

Recommendation 10: Relieve the critical shortage of nurses and other para-medical people which now exists in many areas of Maine.

In 1975 the critical shortage of nurses will be in Aroostook and York counties, and plans should be made in anticipation of this need.

Another pressing problem in personnel is that of the dental hygienist. It is estimated that "a dental hygienist can release about a fourth of the dentist's chairside time for more complicated procedures." At present, there is only one school in Maine which offers a program in this vital field. Not only does the demand for this type of personnel exist with the dentists themselves, but also in the local and state dental programs. There are present dental hygiene positions available, but they are unfilled because of lack of qualified applicants. This is true of the Division of Dental Health at the State level.

"Modern health services are no longer sustained alone by doctors and nurses in appropriate numbers. They involve many more professions, teamwork skills, modern facilities, and continuous education of all professional personnel." Little work has been done in Maine in the determination of personnel and education-needs for allied medical service personnel, such as X-ray technicians, laboratory technicians, pharmacists, physical therapists, hospital administrators, nursing aids, licensed practical nurses, medical records librarians, and many others who support the physician and registered nurse in the administration of health care.

Needs within these areas exist, and probably in greater numbers than in the categories of physicians and registered nurses, but little has been done to determine this need. The first step toward adequate planning in this area is an inventory of present personnel. Trained workers in these allied fields can be employed in specified areas to allow physicians and nurses more time for patient care, thereby making possible a higher level of patient care.

Recommendation 11: Develop an adequate number of long-term care facilities and other needed lower-level medical care facilities.

Medical treatment and care for the elderly in Maine have been typically performed by the acute hospital facility until such time as the patient could be discharged to his own home environment, or space could be found in an extended-care or nursing-home facility. Many times the patient stayed longer than necessary at the acute facility, as there was no outside facility which could care for him, or his home environment was lacking proper care services. The advent of Medicare has increased the pressures of this problem, not only on the acute facilities, but also on the external services available once a patient is removed from the confiines of the general hospital.

The goal of planning in this area of medical facilities and services should be the provision of adequate numbers of beds, personnel, and services to care for the chronically ill or convalescent in light of the patient's actual needs and capabilities. The patient's needs and capabilities must be stressed and emphasized. It is possible and probable that some patients are presently receiving services actually above their needs and that many are not receiving any services even though they have needs.

Maine Needs Expanded and Improved Transportation Facilities and Services.

Recommendation 12: Consider developing specialized docking and unloading facilities at a suitable location at the head of Penobscot Bay in order that increasing quantities of jet fuel might be shipped to the Bangor International Airport by way of the existing pipeline.

The airport will need greatly increasing quantities of fuel for air carriers as the number of jet planes which stop to refuel at the Bangor International Airport increases. Serious consideration should be given to developing docking and unloading facilities near the head of Penobscot Bay so that tankers might discharge jet fuel into the existing pipeline, or an enlarged line, for transmission to the air field.

Recommendation 13: Provide funds to the Maine Port Authority for technological research so that Maine ports will be able to compete for the water shipments of tomorrow.

Such technical research should include participation in studies of handling containerized cargo or utilizing other methods which might arise. Another possibility to be evaluated is whether Maine might feasibly participate in the land-bridge concept of international freight movements. This is a new concept of intermodal shipping, utilizing a combination of land and ocean carriers.

Recommendation 14: Encourage and provide financial assistance to bring about a substantial increase in the numbers of marinas along the Maine Coast.

Very important to the State's development is adequate support of facilities to encourage recreational boating. Although marinas are now found at scattered locations along the coast, there appears to be a need for more frequent facilities and better developed facilities. If recreational boating is to be developed to its full potential, conveniently spaced marinas with adequate docking facilities, boat services, boatels, and restaurants must be provided. Low-cost State loans or partial subsidies might encourage the construction of a sufficient number of such facilities, but it is possible that there might be a need for a series of State-owned and leased facilities along the shoreline to attract summer boaters to Maine, much as they are now attracted to the Florida waters during the winter.

Recommendation 15: Help Southwestern Maine, NERC No. 13, capitalize on the new Nova Scotia to Portland ferry scheduled to begin operations in July 1970.

A new ferry service between Portland and Nova Scotia is scheduled to begin in July 1970. This service will require substantial public investment for terminal and dock facilities, and also for land acquisition for parking and related needs.

Recommendation 16: Continue rail service to rail-using industries located on branch lines by investing in branch line tracks and rights of way. The present Vermont plan or some modification of the plan should be considered.

During the next decade, companies operating trains on branch lines in the remote areas of the State can be expected to petition to discontinue service on these lines. Public investment is needed to allow the State of Maine to purchase the branch line tracks and rights of way in order to maintain the rail service to rail-using industries located on these branch lines. The present Vermont plan or some modification of the plan should be considered.

Recommendation 17: Make State funds available to local communities for the building of access roads to all new major recreational areas. The present New Hampshire plan or some modification of the plan should be considered.

The State should make funds available to local communities for the building of roads to all new major recreational areas being developed in the State. Since the success of these recreational facilities depends on good access during all seasons of the year, it is necessary that good roads be provided to such areas.

Recommendation 18: Subsidize urban bus systems that include school buses, and at least experimental cross-town routes, for use by Medicare patients and other people of limited mobility.

State assistance in the form of subsidy is needed for intracity bus systems. Such systems should include school buses and, at least experimentally, cross-town routes for people of limited mobility, including most Medicare patients. This subsidy might be supplemented by federal funds.

Maine Needs Study and Action for Effective Environmental Control.

Recommendation 19: Build an administrative organization for coordinating and exchanging information about environmental control activities.

Various aspects of the management of Maine's natural resources currently fall under the responsibility of

a variety of State, County, and local officials. Some form of coordination is needed. The State Planning Office could serve as the State coordinator for all data concerning studies, planning, and activities in the field of environmental control by establishing a data bank for all the agencies.

Recommendation 20: Establish zoning standards at the State level for urban and rural areas of Maine.

Efforts must be made to guard against further unplanned development of urban congested areas or crowded summer-cottage areas through reasonable zoning requirements, reasonable requirements for domestic water supply, sanitary disposal, and location of buildings a reasonable distance from lot lines.

Recommendation 21: Acquire land for public use at reasonably frequent intervals along the coast and at points on the shores of lakes near major highways or urban areas.

Public investment should also be provided for many more picnic spots at scenic places, often in connection with public park areas providing opportunities for swimming and boating. There will be need for land acquisition at reasonably frequent intervals along the coast and at points on the shore of lakes near major highways or urban areas. Urbanized development is constantly increasing through much of this area, making a greater need for public "open spaces" and making the development of such "open spaces" more expensive as each year passes.

Recommendation 22: Stimulate the construction of domestic water and sanitary treatment facilities.

Since Maine's population is concentrating in a few urbanized centers in the State, many environmental problems are becoming acute. There are problems of providing disposal facilities for solid wastes, and meeting the sanitary problems presented by large volumes of liquid sewage which may be in excess of the capacity of private septic tanks and leaching beds as the urban and suburban centers grow.

Recommendation 23: Establish a high priority for the proposed coastal development study currently being considered by the State Planning Office.

This proposal which is being advanced is part of a plan and action program for the entire New England coastal zone, to be coordinated by the New England River Basin Commission. It is an important proposal because it is part of a larger study which will include New Hampshire, Massachusetts, Rhode Island, Connecticut and the Long Island area of New York. The New England River Basin Commission is expected to coordinate the efforts among the states, develop regional inputs, and draw national considerations from appropriate federal agencies.

Maine Needs to Foster Housing and Economic Development

Recommendation 24: Encourage and foster housing development and rehabilitation in areas where immediate promise of economic development potential exists, such as Bath and Machiasport, so that the presently inadequate housing conditions will not become an obstacle to economic development.

Adequate housing must be present in areas where there is anticipation of economic growth, particularly where such development will cause a sudden influx of employees. Present housing conditions in many parts of Maine are such that further economic development could be jeopardized by the serious lack of housing and the substandard conditions of much existing housing. Because of the inadequacy of present housing in the Bath-Brunswick area, serious questions are raised as to the ability of that area to absorb an additional 5,000 to 6,000 workers, should the DX contract be awarded to the Bath Iron Works. An immediate undertaking of the State Housing Authority, in conjunction with local housing authorities, must be the development of programs for an implementation of housing for those areas where large-scale economic development is proposed, lest housing conditions become a major stumbling block to further economic development.

CHAPTER II

ECONOMIC PROFILE OF THE STATE OF MAINE

Prepared by
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CHAPTER II

ECONOMIC PROFILE OF THE STATE OF MAINE

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CHAPTER II

ECONOMIC PROFILE OF THE STATE OF MAINE

Introduction

The Third Cycle of the Public Investment Plan for Maine, entitled *Significant Public Needs for the State of Maine for the 1970-1975 Period,* has been prepared by ESCO Research, Inc., of Portland, Maine, for the State Planning Office. It is a continuation of the second phase of the investment plan completed in December, 1968, by the Public Affairs Research Center (PARC) of Bowdoin College, Brunswick, Maine, under the title, *A Public Investment Plan for the State of Maine.*

It is the intention of ESCO Research to accomplish the following steps in this chapter:

(1) To update the economic data presented in Phase II, where more current data may be available.

(2) To include new economic material which might be helpful to State and federal officials in their planning activities.

(3) To point out the interrelationships between economic trends and public needs for the 1970-1975 period.

The economic Subregions of Maine, established by the New England Regional Commission, will be briefly discussed in this chapter. More detailed discussion of the Subregions will be found in Chapter III, "Economic Profiles of the NERC Subregions of Maine."

Chapter II is therefore organized to update the PARC report and include additional discussion concerning significant aspects of population trends including general population changes of Maine as compared to New England and the United States, comparative population changes in the individual Subregions, the extent of seasonal population increases, the extent of and reasons for out-migration from the State and its Subregions, comparative birth rates, marriage rates, and death rates, population concentration patterns, age distribution of population, and several employment, wage, and income comparisons.

Why Only Four Subregions?

On August 26, 1968, Arthur D. Little, Inc., submitted a final report entitled *The New England Economy Today and Tomorrow,* pursuant to a contract with the New England Regional Commission and a contract with the U. S. Department of Commerce. This report established four subregions for Maine, with the following explanation:[1]

> Maine has eight Regional Planning Commissions, but they cover very small areas, in most cases from eight to ten towns. We did not, therefore, attempt to use approximations of these planning regions, but rather used the areas proposed by the Public Affairs Research Council, which it believes to be the most logical divisions of the state and which follow county lines.

Subregion	Counties
Maine 10	Aroostook
Maine 11	Knox, Hancock, Penobscot, Piscataquis, Waldo, Washington
Maine 12	Franklin, Oxford, Somerset
Maine 13	Androscoggin, Cumberland, Kennebec, Lincoln, Sagadahoc, York

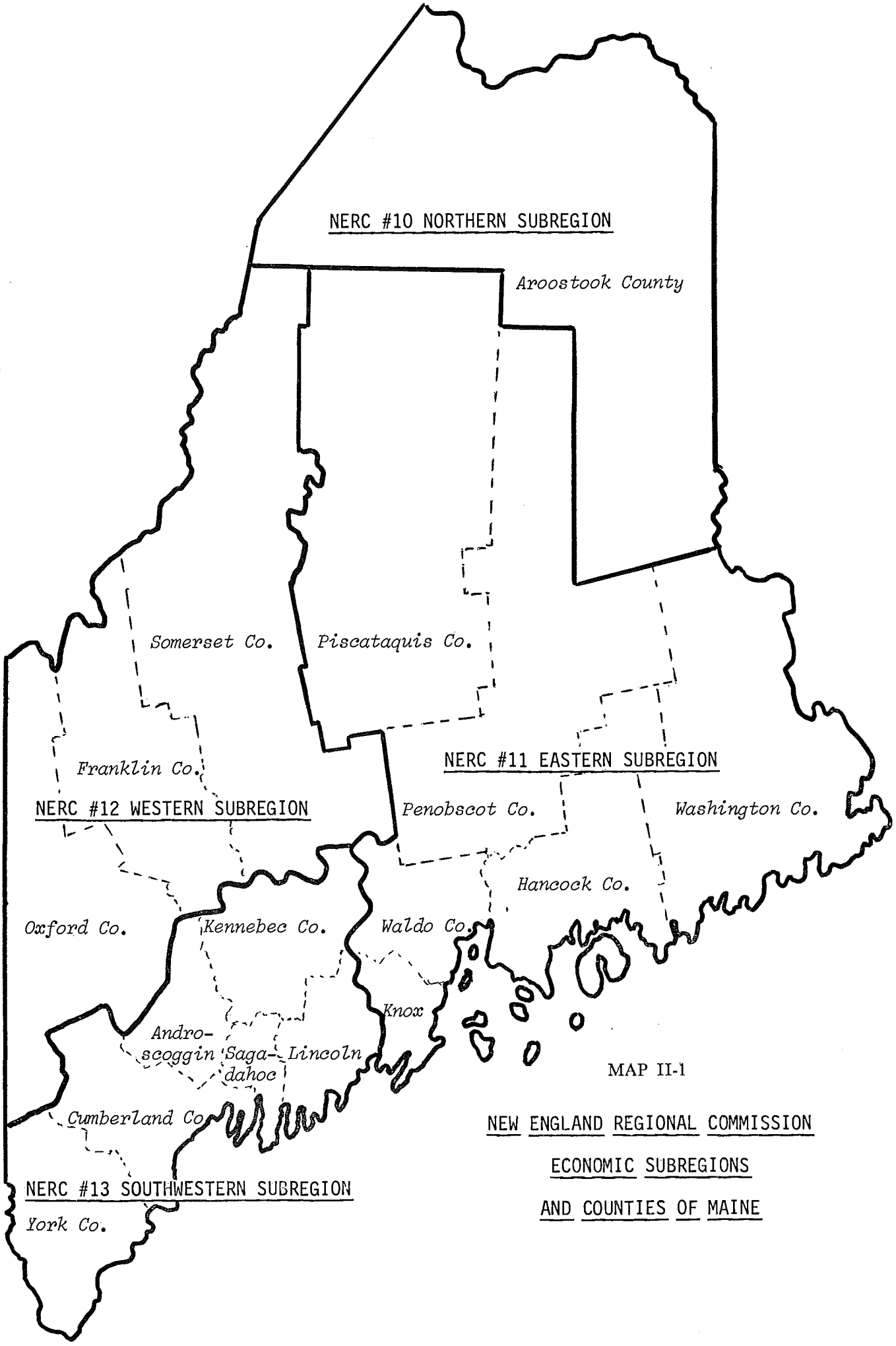
The New England Regional Commission Subregions, referred to in the text of this and following chapters as NERC No. 10, NERC No. 11, NERC No. 12, and NERC No. 13 respectively, are pictured on Map 1 on the next page. In addition to their being used in the Arthur D. Little study, they were used in the Phase II study submitted in December 1968 by the Public Affairs Research Center of Bowdoin College. It therefore seemed consistent to continue their use in this Phase III study.

The Maine Department of Economic Development (DED), however, has completed its independent study of economic regions within Maine, and it has defined eight sub-areas for its data collection and its reporting. The reasoning used by DED was, in part, as follows:[2]

> . . . it would seem desirable for each district to contain a population of close to 100,000 or more. Where this is not the case, there should

[1]Arthur D. Little, Inc., *The New England Economy Today and Tomorrow,* August, 1968, p. 64.

[2]Maine Department of Economic Development, *Maine's Eight Economic Districts,* July 1969, p. 2.



MAP II-1

NEW ENGLAND REGIONAL COMMISSION

ECONOMIC SUBREGIONS

AND COUNTIES OF MAINE

be other substantial reasons for the existence of the District. Each District should include a central city, whose influence is felt throughout the area, and probably some sub-centers.

On the basis of these premises the DED study undoubtedly arranges the available county data in as nearly perfect fashion as possible. DED considered one major deviation from county-line boundaries necessary in order to make Brunswick the "central city" for its fourth district. This is very logical, but it raises another practical problem. Adherence to county line boundaries, as DED points out,

> . . . leaves nineteen areas containing 36,937 persons, or 3.8% of the population, which would be "displaced" from the districts in which they properly belong.[3]

And the accompanying discussion also states:

> But the statistics which must be lived with now and in the future—the U. S. Census and other economic and marketing information—are available in real depth only on a county basis.[4]

For these practical reasons, it appears that the eight DED Districts are no better adapted to the needs of a public investment study than the four NERC Subregions. The NERC Subregions are groupings of counties, making possible the use of U. S. Census and other data, and providing uniform geographic treatment in this study, in the Phase II study, and in the Arthur D. Little, Inc., study.

Another point which should be stressed is that any attempt to divide Maine into Districts or Subregions smaller than the NERC Subregions will combine a relatively small area of urbanized or highly developed agricultural territory with a much larger area of sparsely inhabited territory, primarily timberland spotted with occasional recreational developments or small communities for vacation living. The public investment problems of Maine's extensive forested areas are very different from the needs of the more urbanized or agriculturally developed areas, which make up only about 12 percent of the total area of Maine.

The strongest argument for the use of the four NERC Subregions in this Phase III study is, of course, the value of comparability. One study should be easily compared with another, especially in the case of a continuing sequence of annual studies. The use of the eight DED districts at this point would destroy comparability, and lead to attempts to identify recommendations too closely with specific locations. This Phase III study avoids this latter difficulty by showing Subregional estimates chiefly as per capita needs, classified by major type or significant problem.

Population

The Population of Maine Is Growing Comparatively Slowly.

As shown in Table II-2 on the following page, the population of Maine increased only about one percent in the eight years after 1960, a period during which the population of the United States as a whole increased 11.4 percent. The July 1, 1969, U. S. Census Bureau estimates indicate a 0.9 percent increase in the population of Maine since the 1960 census, while New England and the United States have increased by 9.5 percent and 12.6 percent respectively.[5]

[3]Maine Department of Economic Development, *Maine's Eight Economic Districts,* July 1969, p. 3.
[4]*Ibid., loc. cit.*
[5]*New York Times,* September 4, 1969.

TABLE II-1

POPULATION CHANGES IN SELECTED AREAS: 1940-1975
(Population in Thousands)

	Actual Population			Estimated Population	
	1940[a]	1950[a]	1960[a]	1968[b]	1975[c]
United States	132,165	151,326	179,323	199,861	222,805
New England	8,437	9,314	10,509	11,411	12,491
Maine	847	914	969	979	1,044

Sources: [a]U.S. Bureau of Census.
[b]Public Affairs Research Center of Bowdoin College. *The Public Investment Plan for the State of Maine.*
[c]*U.S. Statistical Abstract, 1967.* Series II B.

TABLE II-2

ANNUAL PERCENTAGE OF POPULATION INCREASE IN SELECTED AREAS: 1940-1975

	Actual Average Annual Percentage of Increase		Estimated Average Annual Percentage of Increase	
	1940-1950	1950-1960	1960-1968	1968-1975
United States	1.45	1.85	1.43	1.64
New England	1.04	1.28	1.08	1.36
Maine	0.79	0.61	0.12	0.94

Source: Derived from Table II-1.

From 1968 to 1975 Maine's rate of growth will still lag behind that of New England as a whole. As the data presented in subsequent tables in this chapter will indicate, Maine suffers from a pattern of out-migration, particularly of young adults. There are no clear indicators of change in the economy of Maine that might reverse this trend in the next decade. In fact, it is probable that growth in southeastern New Hampshire will encourage migration from Maine to New Hampshire. This is one of the most recent factors adding its effect to the traditional pull of the large industrialized centers of southern New England and the Middle Atlantic States.

Projections of Maine's 1975 population vary. The PARC Phase II report listed three projections made in 1968, all assuming larger populations for Maine in 1975 than the population of 1,044,000 used in Table II-1.[6] The PARC projection was 1,051,000; the NERC estimate was 1,059,000; and the University of Maryland estimate was 1,101,000. The Phase II report also listed three 1967 projections, two made by PARC and one by the National Planning Association, all of which were slightly higher than the University of Maryland estimate. Four projections made in 1966, U. S. Bureau of Census I-D, II-D, I-B, and II-B, ranged from 1,048,000 to 1,102,000. As the PARC discussion pointed out, the range of the projections is relatively small, about 5 percent, in spite of many different implicit assumptions.[7]

There are many variables which might affect the size of the population of Maine between now and 1975. For example, it is possible that deep-water terminals for "supertankers" may be developed at two or more places on the Maine coast. Should this happen, it is equally possible that oil refineries and other petrochemical plants might follow. Another reasonable possibility would be expansion of the Bath Iron Works as the result of a major naval construction contract. Possibilities like these might be followed by enough subsidiary activity to increase Maine's population significantly faster than previous estimates. Since such industrial developments appear to be possibilities rather than "high possibilities," projections used in this and the following chapters of this Phase III report use conservative estimates and do not take such drastic changes into consideration.

Subregional Population Projections

Projected growth in NERC No. 10, NERC No. 11, and NERC No. 12 will lag behind the Maine average rate. During the ten years from 1950 to 1960 the population of Aroostook County, NERC No. 10 Northern Subregion, increased at a rate averaging slightly more than one percent per year. Since 1960, however, the population increase has slowed tremendously to a rate varying from approximately one-tenth of one percent to two-tenths of one percent per year. The economy of the county is primarily agricultural, and the increased employment in food processing plants has apparently not been sufficient to compensate for the increased mechanization of farming, which has resulted in a lessened demand for farm labor and an increase in the out-migration of young adults, many of whom appear to be either moving into NERC No. 13 Southwestern Subregion or leaving the state.

NERC No. 11 Eastern Subregion also appears to be slowing in rate of population growth. During the 1950-1960 period it grew at the rate of about two-thirds of one percent per year, with maximum growth in the Bangor area. For the period between 1960 and 1975 it appears that the rate of population growth will drop to less than one-third of one percent per year.

[6]The Public Affairs Research Center of Bowdoin College. *A Public Investment Plan for the State of Maine,* Brunswick, Maine, 1968, pp. 2, 27.

[7]*Ibid.,* p. 2.

NERC No. 12 Western Subregion appears hardly to be holding its own, insofar as permanent population is concerned. The only growth is in the extreme southern edge of the Subregion, just north of the border of NERC No. 13. Its most rapidly growing municipality, Fairfield, is actually a suburb of Waterville, a city in NERC No. 13.

The projected growth rate of NERC No. 13 will be substantially greater than the Maine average. As Table II-4 indicates, NERC No. 13 Southwestern Subregion has been gaining population at a rate of nearly two-thirds of one percent per year during the 1950-1960 period, and the growth is apparently continuing at a somewhat higher rate until at least 1975.

There has been an historic tendency for NERC No. 13 Southwestern Subregion to grow more rapidly than the other Subregions in Maine. A comparison of 1880 census figures in Table II-5 with those of 1960 reveals only one marked deviation from the current pattern, that being the rapid growth of NERC No. 10 Northern Subregion during its expansion into a "potato empire." During that period the population of Aroostook County shot up 154 percent, even more markedly than Cumberland County, in NERC No. 13, which gained almost 111 percent during the same period. But the growth of population in Aroostook County was occasioned by rapid agricultural expansion, which has now leveled off, while the growth in NERC No. 13 was primarily urban and industrial, and is still continuing.

As can be seen from Table II-5, four of the six counties in NERC No. 11 Eastern Subregion lost substantial population during the 80 years prior to 1960. The only county in this Subregion to show a respectable gain was Penobscot, where the urban center of Bangor continued to grow. It is probable that the Bangor area will continue to grow during the years to come, but it is also probable that there will tend to be a movement of population away from other parts of the Subregion toward Bangor. Major industrial development, such as the construction of a petro-chemical complex on the coast of Washington County, might check this trend. Unless such a development occurs, it appears probable that the population will shrink in almost all parts of the Subregion exept the section near Bangor.

During the 80 years prior to 1960, NERC No. 12 Western Subregion experienced a slow rate of growth. As mentioned previously, the only recent growth in this Subregion has been close to the border of NERC No. 13, and it is probable that this trend will continue. Seasonal population may increase, but permanent population in most parts of NERC No. 12 will probably drop slightly except in the urbanized sections near the boundary of NERC No. 13.

TABLE II-3

POPULATION OF MAINE SUBREGIONS: 1950-1975

Subregion	1950[a]	1960[a]	1966	1975[a]
Northern Subregion NERC No. 10	96,039	106,064	111,873	114,000
Eastern Subregion NERC No. 11	243,915	260,133	265,054	272,000
Western Subregion NERC No. 12	104,688	104,163	108,559	107,000
Southwestern Subregion NERC No. 13	469,132	498,905	526,049	558,000
TOTAL	913,774	969,265	1,011,535	1,051,000

Source: State of Maine Department of Health and Welfare. *Population Estimates of Minor Civil Divisions, Maine 1963 and 1966,* Augusta, Maine, 1968, pp. 3-19.

[a]U.S. Bureau of the Census. *Statistical Abstract of the United States: 1967,* (88th Ed.) Washington D.C., 1967. (Series 11-B).

TABLE II-4

AVERAGE ANNUAL PERCENTAGE OF CHANGE IN POPULATION OF MAINE SUBREGIONS: 1950-1975

Subregion	Actual Average Annual Percentage of Change 1950-1960	Estimated Average Annual Percentage of Change 1960-1966	1966-1975
Northern Subregion NERC No. 10	1.04	0.09	0.21
Eastern Subregion NERC No. 11	0.66	0.32	0.29
Western Subregion NERC No. 12	—0.05	0.70	—0.16
Southwestern Subregion NERC No. 13	0.63	0.90	0.67
Composite Average	0.61	0.73	0.43

Source: Derived from Table II-3.

TABLE II-5

MAINE POPULATION CHANGES, BY SUBREGIONS AND COUNTY: 1880-1960

	1880	1960	Increase (Decrease)	% Change
NERC 10 Northern Subregion	41,700	106,064	64,364	154%
Aroostook	41,700	106,064	64,364	154%
NERC 11 Eastern Subregion	233,289	260,133	26,844	11.3%
Hancock	38,131	32,293	(5,838)	—15.3%
Knox	32,862	28,575	(4,287)	—13.0%
Penobscot	70,478	126,346	55,868	79.5%
Piscataquis	14,873	17,379	2,506	16.9%
Waldo	32,468	22,632	(9,836)	—30.3%
Washington	44,477	32,908	(11,569)	—26.0%
NERC 12 Western Subregion	83,141	104,163	21,022	25.3%
Franklin	18,177	20,069	1,892	10.4%
Oxford	32,625	44,345	11,720	35.9%
Somerset	32,339	39,749	7,410	22.9%
NERC 13 Southwestern Subregion	290,715	498,905	208,190	71.6%
Androscoggin	45,004	86,312	41,308	91.5%
Cumberland	86,300	182,751	96,451	110.5%
Kennebec	53,061	89,150	36,089	66.9%
Lincoln	24,809	18,497	(6,312)	—25.4%
Sagadahoc	19,276	22,793	3,517	18.3%
York	62,265	99,402	37,137	59.5%
TOTAL	648,845	969,265	320,420	49.5%

Source: *The Maine Handbook—A Statistical Abstract,* 1968.

Growth in the urbanized sections of NERC No. 13 Southwestern Subregion is following its historic trend. The rate of growth has been most marked in Cumberland County, where Portland, South Portland, and Westbrook are now almost fused into one metropolitan center, in spite of their individual municipal governments. The outlying towns are now all suburban "bedroom" communities in the neighborhood of these cities. Brunswick-Bath forms another urban center with rapidly gaining population and developing suburban towns outside the municipal limits of the urban center. Lewiston-Auburn, a short distance up the Androscoggin River from Brunswick, is the second largest urban district in Maine. Between Brunswick and Gardiner on the Kennebec River is a rural section which may become more urbanized with the development of U. S. 95 during the early 1970's. From Gardiner north along the Kennebec to the northern border of NERC No. 13 there is increasing urban development, especially in the vicinity of Augusta. Other urbanized centers of growth are the Saco-Biddeford area and the Sanford-Berwick area of York County, close to the rapidly growing industrial section of New Hampshire centering about Dover, Somersworth, and Rochester.

These are the sections of Maine toward which the population appears to be moving in increasing numbers. There are other small urbanized centers not mentioned, but the chief growth in permanent population appears to be taking place in the enumerated urbanized areas of NERC No. 13 and in the vicinity of Bangor in NERC No. 11.

Seasonal Residents Increase Maine's Population by One-Third During the Summer.

In addition to the transient tourists who visit Maine by the thousands for comparatively brief periods, it is estimated, as indicated by Table II-6, that almost 334,000 persons who reside in other states during the colder months come to Maine for protracted residency during the summer. Many own cottages or other summer homes, and they accordingly make a substantial contribution to the property tax income of many Maine municipalities. They also contribute substantially to the gasoline tax income and the sales tax income of the State, support many seasonal business enterprises, and have a generally beneficial effect upon the State's economy.

More than half the estimated seasonal population is in NERC No. 13. It is notable that NERC No. 13, the most heavily populated and urbanized of the Subregions of Maine, also provides summer accommodations, according to Table II-6, for 190,605 of Maine's 333,998 seasonal population, comprising 57 percent of the total. Only a few miles of the coast on either side of the City of Portland are occupied by year-round suburban homes. The remainder of the coastline of NERC No. 13 is almost entirely occupied by summer cottages, resorts, and other seasonal housing. The northwestern part of NERC No. 13 is also a vacation area with its many lakes, most of which are fringed with summer cottages and summer camps for boys and girls. Since NERC No. 13 Southwestern Subregion is the nearest Subregion to Boston, New York, and other congested cities, it is not surprising that many seasonal residents flock to this Subregion during the summer.

The wide-spread enthusiasm for skiing and the tendency of skiers to take winter vacations as well as summer vacations will probably give Maine a supplementary seasonal population during the midwinter period. This vacation trend is affecting NERC No. 12 Western Subregion already. Many winterized cottages, frequently of the A-frame and the chalet types, are being constructed, particularly in the southern sections of Oxford and Franklin Counties, where a number of ski resorts have been established. Scattered skiing developments are found in all four Subregions, but the largest, most popular, and most highly developed are in southern Franklin County and near the New Hampshire border in Oxford County. The continuation of this type of development may distribute Maine's seasonal population over a greater part of the year. In the past the seasonal increase has been confined mostly to the ten weeks of summer, but it now appears that a second seasonal increase during January and February, particularly in the NERC No. 12 Western Subregion, will benefit the state's economy.

Scattered communities throughout Maine triple their population during the summer months. Map II-2 on page 29 provides a graphic display of the impact of the seasonal population increase. The darkest code indicates at least a tripling of population during the summer, and the next lighter shade indicates at least a doubling. Even Aroostook County (NERC No. 10 Northern Subregion), not normally considered a resort area, has eight or more townships in this category. Nearly all the municipalities with shore frontage on salt water show a substantial increase in summer population, the chief exceptions, save at the eastern end of Washington County, being industrial centers and their suburbs. Kittery is the site of the Portsmouth Naval Shipyard, Biddeford is an industrial city, the metropolitan Portland area has little room for seasonal in-

TABLE II-6

PERMANENT AND SEASONAL POPULATION BY NERC SUBREGIONS: 1966

Subregion	Estimated Permanent Pop.[a]	Estimated Seasonal Pop.[b]	Seasonal Pop. as % of Permanent Pop.
Northern Subregion NERC No. 10	102,200	13,003	12.7%
Eastern Subregion NERC No. 11	260,200	89,445	34.3%
Western Subregion NERC No. 12	105,900	40,945	38.6%
Southwestern Subregion NERC No. 13	514,700	190,605	37.1%
TOTAL	983,000	333,998	33.9%

Source: [a]Maine Department of Economic Development, *The Maine Handbook—A Statistical Abstract, 1968,* Augusta, Maine, 1968, p. 19.
[b]Public Affairs Research Center, Bowdoin College, as reported by the Maine Department of Economic Development, "Population—1960 and 1966," (mimeographed), Augusta, Maine, 1968, *passim.*

habitants except on the Casco Bay Islands, and Brunswick-Bath makes up a smaller metropolitan area, as do Waldoboro-Warren-Thomaston-Rockland and Belfast-Northport. These latter communities have a relatively small population in comparison to Greater Portland, but they are sufficiently industrialized to be affected less by the seasonal increase in population than most other points along the coast.

Inland communities tinted gray on the map usually are lakeside resort areas. Several of those in NERC No. 12 Western Subregion are also ski resort areas. Of course, many of these municipalities possess a very small permanent population, and the map reveals just the proportionate increase through seasonal population. Table II-6 gives a better idea of the numbers of persons involved. Only 40,945 of the almost 334,000 seasonal population is represented by the 38.6 percent seasonal increase in NERC No. 12 Western Subregion, whereas 89,445 of the seasonal residents are required to make a 34.3 percent increase in the population of NERC No. 11 Eastern Subregion during the summer months, and 190,605 of the seasonal population are needed to account for the 37.1 percent seasonal increase in NERC No. 13 Southwestern Subregion.

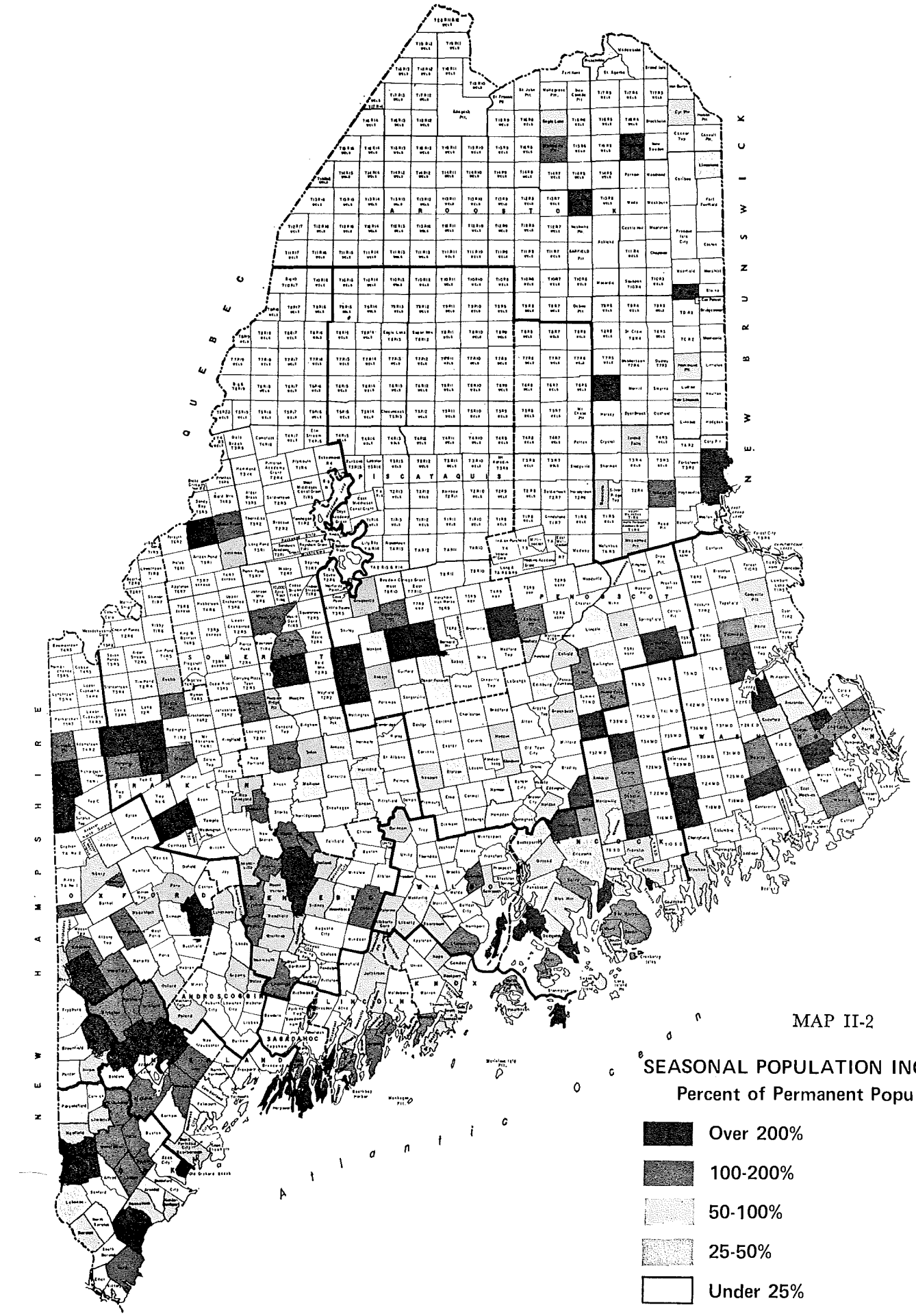
Out-Migration Is a Chief Factor in Maine's Slow Population Growth.

According to the PARC Phase II study of 1968, there was a net out-migration of almost 66,000 Maine residents between 1950 and 1960, followed by a further net outflow of 60,000 persons between 1960 and 1966.[8] This would indicate that Maine residents were leaving the State at an average rate of about three-quarters of one percent per year during the 1950-1960 decade, and that the rate has increased to approximately one percent per year since 1960. Although the excess of births over deaths is greater than the number of persons out-migrating, the total effect has resulted in a very slow increase in the population as a whole.

Although the net out-migration rate has apparently risen, as shown in Table II-7, the rate appears to have increased only slightly in NERC No. 13 Southwestern Subregion. In NERC No. 12 the rate of out-migration has actually been reduced markedly, though it is still higher than in NERC No. 13. The substantial increase in net out-migration, therefore, has taken place in NERC No. 10 Northern Subregion and NERC No. 11 Eastern Subregion, both of which have been affected by the phasing out of military installations. The closing of Dow Field at Bangor, in Penobscot County, is largely responsible for the very high rate of out-migration noted for the 1960-1968 period, as indicated by Table II-7.

Many of Maine's young people seek economic opportunity elsewhere. The continuing out-migration of thousands of young adults between the ages of 20 and

[8]The Public Affairs Research Center of Bowdoin College, *A Public Investment Plan for the State of Maine,* Brunswick, Maine, 1968, p. 3.



MAP II-2

SEASONAL POPULATION INCREASE

Percent of Permanent Population

- Over 200%
- 100-200%
- 50-100%
- 25-50%
- Under 25%

Source: Public Affairs Research Center, Bowdoin College

34 has severely limited the expansion of the population of Maine. The State of Maine lost approximately 15 percent of its young people in this age group between 1950 and 1960, as shown in Table II-8. It is assumed by some state officials that the out-migration in this age group has not significantly changed since 1960.

In a study published by the Maine Department of Economic Development in July 1969, under the title, *Maine's Eight Economic Districts,* the following brief analysis was made:[9]

> . . . of those persons leaving the state, the overwhelming majority list employment opportunities as the determining factor in their decision. Since 1965 about 6,000 new jobs have become available annually in Maine, however, there are some 12-13,000 potential new entrants to the labor force each year (high school and college graduates). The net result is an annual out-migration of about 6,500, and about 38% of this group fall into the 20-29 age group.

A graph, presented on the same page as the preceding quotation, indicated the relative frequency of the most common responses given by seniors at the Orono campus of the University of Maine when asked to give reasons for planning to leave the state. Each individual cited more than one important factor, but only two factors were cited by more than 50 percent of the individuals: more than 75 percent of the students responded that the move was necessary to find a job, and more than 50 percent felt that the move was necessary to get good pay.

[9]Maine Department of Economic Development, *Maine's Eight Economic Districts,* Augusta, Maine, July 1969, p. 6.

TABLE II-7

NET OUT-MIGRATION BY SUBREGION AND COUNTY: 1950-1968

Subregion	Net Migration From Area 1950-1960[a]	Net Migration From Area 1960-1968[b]	Percent of Area's Population 1950-1960[a]	Percent of Area's Population 1960-1968[b]
Northern Subregion				
NERC No. 10	13,387	12,914	12.1	12.9
Aroostook	13,387	12,914	12.1	12.9
Eastern Subregion				
NERC No. 11	13,395	25,219	7.4	9.9
Hancock	2,381	1,919	6.7	5.9
Knox	1,233	2,404	4.2	8.4
Penobscot	374	13,979	0.5	11.0
Piscataquis	3,098	1,414	15.2	8.1
Waldo	1,241	1,978	5.1	8.7
Washington	5,068	3,525	12.8	10.8
Western Subregion				
NERC No. 12	13,321	6,723	11.7	6.3
Franklin	3,158	1,290	13.6	6.4
Oxford	5,514	4,815	11.0	10.9
Somerset	4,649	618	10.4	1.6
Southwestern Subregion				
NERC No. 13	25,252	26,412	4.3	5.2
Androscoggin	7,192	4,937	7.5	5.7
Cumberland	6,550	10,157	3.5	5.5
Kennebec	5,307	5,218	5.5	5.9
Lincoln	652	1,233	3.3	6.7
Sagadahoc	280	652	0.9	2.9
York	5,271	4,215	4.8	4.2
Composite for Maine	65,355	71,268	6.4	7.1

Source: [a]ARCO Inc., *The Maine Economy and Its Revenue Resources,* Augusta, Maine, January, 1967, p. 52.
[b]Maine Department of Health and Welfare, unpublished data.

TABLE II-8

NET OUT-MIGRATION, BY AGE GROUP: 1950-1960

Age Groups	Number of Persons	% of Age Groups Involved
0-19	17,781	4.7
20-34	30,708	14.9
35-44	7,310	5.7
45-64	6,341	3.0
65 and over	3,752	3.0
ALL AGES	65,881	6.4

Source: The Public Affairs Research Center of Bowdoin College, *A Public Investment Plan for the State of Maine,* Brunswick, Maine, 1968, p. 4.

Another reason for the exodus of young people from the State of Maine may be attributed to the energetic recruiting carried on in Maine by out-of-state firms actively seeking management trainees and skilled labor.

More technical training programs might help counter the out-migration trend. Public investment is needed to provide technical training for more young people, to provide a labor pool which will attract high-wage industry, and to encourage the development of new firms which will be of economic benefit. As the discussion in Chapter IV of this study indicates, there may be a direct relationship between the out-migration of Maine's youth and the lack of sufficient secondary and post-secondary vocational and technical facilities in the state. Perhaps if the state were able to provide a larger proportion of its youth with the technical training and operative skills needed by certain high-wage industries, more young people would find it profitable to remain in the state. Further, unless public investment creates a labor force with the technical training required by high-wage industries, it will be difficult to attract such industries to Maine. And finally, unless young businessmen find economic potential for themselves and their small businesses within the state, such firms will be attracted by New Hampshire or other states.

Mergers of Maine firms into larger interstate firms may improve local opportunities for graduates of Maine colleges who become management trainees. Merger often results in removal of the headquarters of a Maine industry into another state. At present this appears to be a negative factor, as it encourages out-migration of young college graduates for one or more years since executive trainees are customarily assigned to the home office for their initial period of training. But it is also true that this merger trend often results in the eventual return of many of these young people, now trained executives, to take positions in branch offices established in various cities in Maine. As the trend for Maine firms to merge into larger interstate firms continues, the in-migration of able young executives will increase and thus help to offset the out-migration of college graduates.

Maine Tends to Have Higher Marriage, Birth, and Death Rates than New England as a Whole.

As indicated by Table II-9, Maine tends to have a slightly higher marriage rate than the New England average, a fact that may seem surprising when the high incidence of out-migration of the 20-34 age group is considered.

Maine also has a higher birth rate than the New England average, as indicated by Table II-10. Partly compensating for this trend, which increases the population, is Maine's death rate, which also is greater than that of New England as a whole. Statistics are lacking to indicate to what extent the death rate is affected by persons who retire from employment in other states and live out their declining years in Maine. It is probable that this may be a factor in making Maine's death rate somewhat higher than the New England average.

Births have been declining during the 1960's but are expected to rise again in the 1970's. The marriage rate is increasing sharply as the "post-war baby boom" comes of age. Since the increase in the marriage rate is greater than the decrease in the birth rate, it is expected that Maine is about to experience its next major expansion in population in the next few years. In the meantime, the declining birth rates of the 1960's may remove the immediate cause of pressure for construction of elementary schools, except in the growing suburban areas near major cities, but this relief will probably be only temporary.

TABLE II-9

NUMBER AND RATE OF MARRIAGES IN MAINE AND NEW ENGLAND IN SELECTED YEARS

	Number			Rate per Thousand		
	1950	1960	1966	1950	1960	1966
New England	88,503	76,206	89,382	9.5	7.3	8.0
Maine	8,617	7,860	8,913	9.4	8.1	9.1

Source: *Statistical Abstract of the United States, 1967.*

TABLE II-10

BIRTHS AND DEATHS IN MAINE AND NEW ENGLAND: 1950-1966

	1950[a]	1960[a]	1964[b]	1965[c]	1966[a]
Births					
New England	195,200	236,758	223,250	213,130	205,218
Maine	21,257	23,218	21,264	19,754	18,556
Birth Rate per 1,000					
New England	21.0	22.5	20.2	19.1	18.3
Maine	23.3	24.0	21.5	19.9	18.9
Deaths					
New England	96,946	111,593	107,883	116,969	115,790
Maine	9,886	10,761	10,892	10,822	10,875
Death Rate per 1,000					
New England	10.4	10.6	9.7	10.5	10.3
Maine	10.8	11.1	11.0	10.9	11.1

Sources: [a]*Statistical Abstract of the United States, 1968.*
[b]*Statistical Abstract of the United States, 1966.*
[c]*Statistical Abstract of the United States, 1967.*

TABLE II-11

AGE DISTRIBUTION IN SELECTED AREAS AS PERCENT OF TOTAL POPULATION: 1967

Area	Total Population	Under 18 years	18-64 Years	65 years and older
United States	100.00	35.8	54.7	9.5
New England	100.00	34.5	54.9	10.6
Maine	100.00	36.0	52.6	11.4

Source: U.S. Bureau of the Census, *Statistical Abstract of the United States: 1948,* (89th edition), Washington, D.C., 1968.

Maine has a slightly higher proportion of young people of school age and of older persons of retirement age than the average for New England. As Table II-11 indicates, the proportion of Maine's population under 18 years of age is slightly higher than that of the United States as a whole and appreciably higher than the average for New England. Possibly the easiest way to express the practical difference between the 34.4 percent proportion for New England as a whole and the 36.0 percent proportion for Maine would be to point out that for every one hundred classroom seats that would be required in the public school system of a

town typical of the New England age distribution, approximately 104 seats would have to be provided in Maine.

Somewhat more significant is the proportion of persons of retirement age in Maine. Another way of interpreting the percentages in the right-hand column of Table II-11 would be to point out that for every 100 persons of retirement age in a typical U. S. town, there would be approximately 111 such persons in a typical town of the same size in New England, and 120 in a typical town of the same size in Maine.

Though no statistical analysis of the situation has been made, it is commonly assumed that many out-of-state residents who purchase summer residences in Maine use them as permanent homes when they have passed retirement age. On the basis of past experience, as well as this assumption, it is assumed that the part of Maine' population over 65 years of age will continue to increase. Public Investment should assure the elderly the services which they are most apt to need, such as a dependable ambulance service in rural areas, nursing homes providing various levels of care, gerontological clinical services, increased services by visiting nurses, and essential transportation for those too elderly or infirm to drive their own automobiles.

TABLE II-12

URBAN AND RURAL POPULATIONS BY SUBREGION: SELECTED YEARS, 1940-1966

	1940	1950	1960	1966
NERC No. 10				
Northern Subregion				
Urban Population	46,610	51,809	67,564	73,798
Rural Population	47,826	44,230	38,500	38,075
Total Population	94,436	96,039	106,064	111,873
NERC No. 11				
Eastern Subregion				
Urban Population	117,746	126,192	140,336	145,471
Rural Population	116,364	117,723	119,797	119,583
Total Population	234,110	243,915	260,133	265,054
NERC No. 12				
Western Subregion				
Urban Population	51,851	54,900	55,339	59,487
Rural Population	48,952	49,788	48,824	49,072
Total Population	100,803	104,688	104,163	108,559
NERC No. 13				
Southwestern Subregion				
Urban Population	337,774	380,828	404,951	421,657
Rural Population	86,687	88,304	93,954	100,388
Total Population	424,461	469,132	498,905	522,045
Totals for the State of Maine				
Urban Population	553,981	613,729	668,190	700,413
Rural Population	299,829	300,045	301,075	307,118
Total Population	853,810	913,774	969,265	1,007,531

Derived from: Division of Planning Research and Program Assistance. *The Maine Handbook—A Statistical Abstract, 1968,* Augusta, Maine, 1968; 2nd *National Survey, Maine Population Data Sheets with County Maps,* and material supplied by Department of Health and Welfare Division of Research and Statistics (see text).

TABLE II-13

PERCENTAGES OF URBAN AND RURAL POPULATIONS BY SUBREGION: SELECTED YEARS, 1940-1966

	1940	1950	1960	1966
NERC No. 10 Northern Subregion				
Percentage Urban Population	49.5	54.0	63.7	66.0
Percentage Rural Population	50.5	46.0	36.3	34.0
NERC No. 11 Eastern Subregion				
Percentage Urban Population	50.3	51.8	54.0	54.9
Percentage Rural Population	49.7	48.2	46.0	45.1
NERC No. 12 Western Subregion				
Percentage Urban Population	51.4	42.4	53.0	54.7
Percentage Rural Population	48.6	47.6	47.0	45.3
NERC No. 13 Southwestern Subregion				
Percentage Urban Population	79.5	81.5	81.2	80.7
Percentage Rural Population	20.5	18.5	18.8	19.3
State of Maine as a				
Percentage Urban Population	64.9	67.1	68.9	69.5
Percentage Rural Population	35.1	32.9	31.1	30.5

Source: Derived from Table II-12.

Maine's Population Concentrations Follow National Trends from Rural to More Urbanized Centers.

As Table II-12 and 13 indicate, an increasing proportion of Maine's population is moving from rural to relatively urbanized communities. Although the continuation of this trend may not be apparent in Maine's most highly urbanized area, NERC No. 13 Southwestern Subregion, it must be remembered that a municipality of fewer than 2,500 permanent inhabitants is officially classified as "rural," even though the farming population has been replaced by a commuting suburban population. The trend to suburban living is particularly noticeable in the vicinity of Portland, where the towns of Falmouth, Cumberland, Yarmouth, Windham, Gorham, and Scarborough had become completely suburbanized prior to the 1960 census. The suburban movement is now reaching out toward the next ring of towns, such as Raymond and Standish on the shores of Lake Sebago, where many summer cottages are being converted into suburban residences. The permanent population of Standish, for example, was only 2,095 according to the 1960 census, but is now unofficially estimated to have passed the 2,600 mark. The permanent population of Raymond was 732 in 1960, but is now estimated to be close to 1,100. The suburban movement into towns such as these shows that the apparent halt of urbanization in NERC No. 13 Southwestern Subregion is due to statistical classification rather than the actual situation.

A word of explanation would be in order concerning the derivation of data presented in Table II-12, "Urban and Rural Population by Subregion: 1940-1966." U. S. Census Bureau figures for 1940, 1950, and 1960 as printed in *The Maine Handbook—A Statistical Abstract, 1968* were utilized for those census years. All municipalities with a population of 2,500 or more were considered urban. These municipalities were grouped into the four NERC Subregions, and totals of urban and rural population established. The 1966 figures for the NERC No. 13 Southwestern Subregion reflect the unpublished, revised 1966 population estimates of the Department of Health and Welfare for York County. All other 1966 figures are taken from the unrevised *Population Estimates for Minor Civil Divisions for 1966.*

The majority of the population in each of the four Subregions is now classified urban, and almost 70 percent of Maine's population is now urban. The most rural Subregions of Maine are now NERC No. 12 Western Subregion and NERC No. 11 Eastern Subregion, each with an urban population slightly less than 55 percent of the total resident population. NERC No.

10 Northern Subregion has shifted, since 1940, from a slight rural majority to a population that is two-thirds urban, in spite of the agricultural importance of this Subregion. NERC No. 13 Southwestern Subregion has been primarily urban since before World War II, approximately 80 percent of its population now falling into that category. As has been said before, a strong tendency toward suburban living has developed in the Southwestern Subregion. This suburban movement is particularly noticeable in the vicinity of Portland, but it also is apparent in communities surrounding other major centers of population in the Southwestern Subregion.

Maps 3—6 (pp. 37-40) portray this tendency and suggest the future trend. Of particular interest is the way the population density of 50 or more persons per square mile has already filled a number of gaps in the 1950 map to create a ribbon of relatively densely populated towns and cities, stretching through NERC No. 13 Southwestern Subregion from Kittery on the New Hampshire border through the Portland area, to Bath along the coast, and to the twin cities of Lewiston-Auburn on the Androscoggin River. In 1966 there still was a gap of one sparsely inhabited town separating the northeastern end of this more densely populated strip from the southern end of the central Kennebec valley towns and cities, ranging north from Richmond to Waterville, and then across the border of NERC No. 12 Western Subregion to Fairfield and Skowhegan. The 1990 map indicates that this one-town gap will be filled in, that a number of municipalities with a current population density of from 50 to 100 per square mile will increase their population until their density is greater than 100 per square mile, and that a narrow ribbon of towns of moderately high population density will stretch east from Bath and across Lincoln County to the eastern boundary of NERC No. 13.

By 1990 only a few sparsely settled towns will separate the eastern and northeastern extremities of the heavily urbanized sections of NERC No. 13 from the urbanized section stretching south and west from the Bangor suburban complex in NERC No. 12 Eastern Subregion. There will also be an area of reasonably dense population connecting a ribbon of towns to the northeast of the Bangor area in 1990, according to the projection portrayed by Map 6. This is a strip of several towns close to the New Brunswick border in NERC No. 10 Northern Subregion. The central block of nine contiguous towns will be separated from several others, both to the north and to the south, by short gaps of sparse settlement.

It is projected that in 1990 the population of Maine will be concentrated largely in NERC No. 13 Southwestern Subregion, while most of the population of NERC No. 11 Eastern Subregion will be concentrated in the section surrounding the Bangor area and reaching southwest toward NERC No. 13. The chief population concentration in NERC No. 12 Western Maine will be close to the Androscoggin River, stretching southerly toward the northern boundary of NERC No. 13. With the exception of the isolated urban strip in the northern part of NERC No. 10 Northern Subregion, together with a few scattered pockets, usually near major paper mills, the rest of the State will remain sparsely settled.

Planning for public invesment should anticipate tomorrow's urban and suburban needs. Implicit in this continuing movement of Maine's population from rural areas to urbanized and suburban areas is the need for public investment to meet demands generated by urban-suburban problems, including housing developments with adequate playgrounds and parks, transportation, control of air and water pollution, safe and adequate water supplies, sewage treatment facilities, and sanitary solid waste disposal. Proper planning and controls to avoid the creation of urbanized slums and to promote healthful and pleasant living conditions for the new urban citizens will require extensive land-use planning and regional governmental coordination and cooperation. A complicating factor in the increasingly urbanized areas of Maine is the overlapping of residential areas for the permanent population and summer cottage areas for the seasonal population. This is particularly true in NERC No. 13 Southwestern Subregion, but it is also true in many places in NERC No. 12 Western Subregion and NERC No. 11 Eastern Subregion. This added concentration of seasonal residents indicates the need for public investment in zoning, air and water pollution controls, and acquisition of private lands for development of public recreational areas.

One of the most important areas of public investment planning is planning for and ultimate development of regional government agencies to provide all the services needed for modern urban life. Greater Miami and Greater Winnipeg are examples that point the way. Public investment dollars are best spent for an entire urban-suburban area, such as Greater Portland, for such functions as police and fire protection, water supply, sewage treatment and disposal, school bus and other urban bus service, a coordinated school system including Head Start programs and second-

level vocational-technical schools with locally pertinent curricula, and other regional services, including trash collection and sanitary disposal. An urbanized region should include the core city or cities, the surrounding suburbs, and a wide surrounding area controlled by plans and zoning so that urbanization of the outer area will develop only after adequate provision of infrastructure has been made.

Comparative Educational Levels

Maine's Population Has a Lower Proportion of Persons with Post-High School Education than either the National or New England Average.

As Table II-14 indicates, Maine ranks slightly above New England and substantially above the United States in the percent of its population completing high school, but it falls substantially below both the United States and New England in the proportion of its population having some form of higher education beyond the high school level.

Public Investment in Maine Should Encourage More Post-Secondary and Technical Education.

The very low proportion of the Maine adult population with any post-secondary education places the State at a disadvantage in efforts to attract the newer types of technically oriented and relatively high-paying industries. Maine ranks 51st among all other states and the District of Columbia, according to the U. S. Office of Education's 1964 report, in percentage of young people going on to higher education. There appears to be a serious need for strategically located community colleges for commuting students, offering one-year and two-year technical programs as well as the first two years of a conventional four-year college curriculum.

TABLE II-14

EDUCATIONAL LEVELS ACHIEVED BY PERSONS OVER AGE 25 IN SELECTED AREAS: 1960

(Population numbers in thousands)

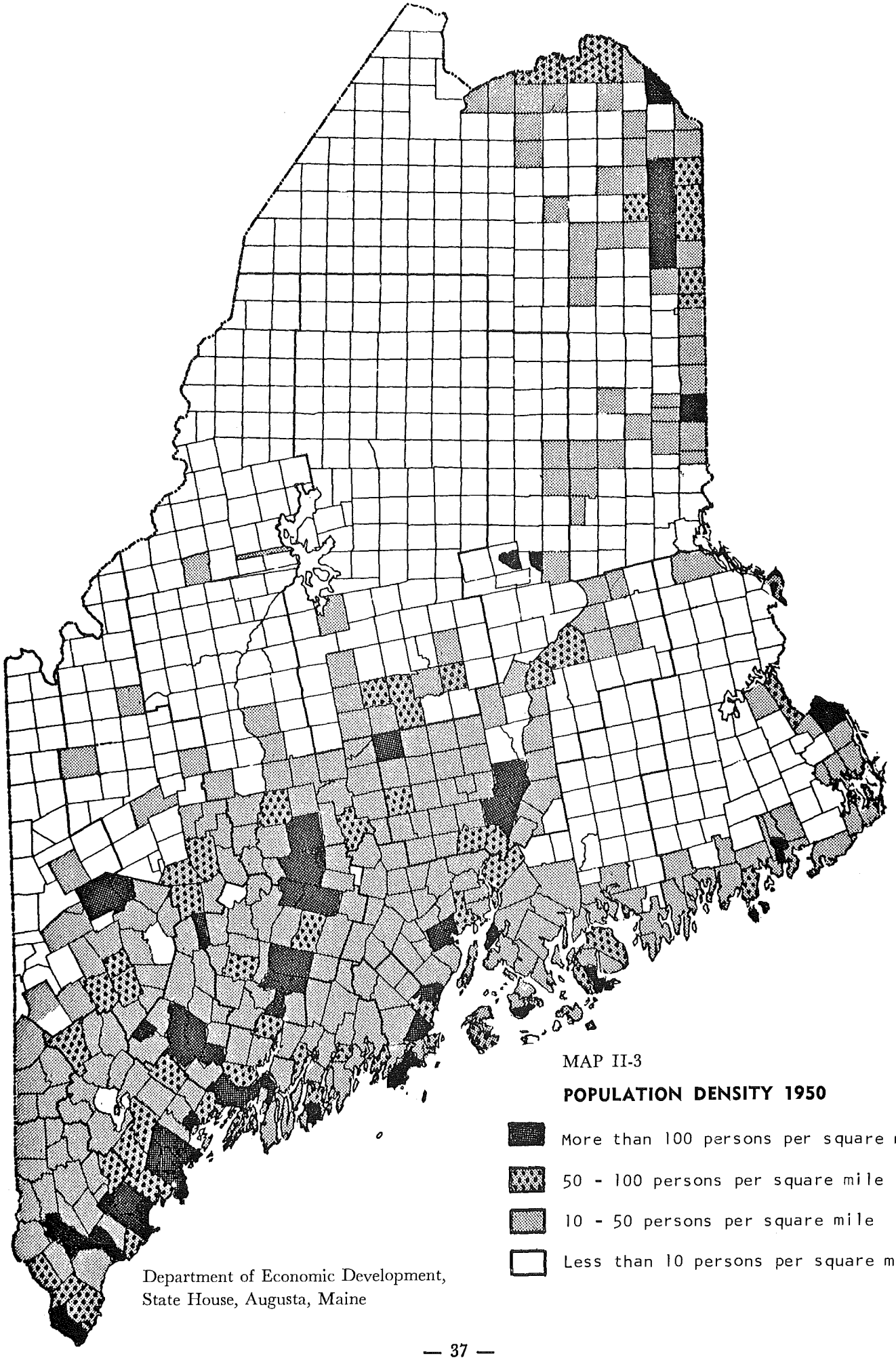
	Population Aged 25 or Older	Median Grade Achieved	Completed High School		Some Higher Education	
			Number	Percent	Number	Percent
U.S.	99,438	10.6	24,455	24.5	16,367	16.4
N.E.	6,083	11.2	1,659	27.3	1,051	17.4
Maine	534	11.0	156	29.1	75	14.1

Sources: Dept. of Commerce, Bureau of Census, *U.S. Census of Population: 1960,* Vol. I, Ch. C; and 1950, Vol. II, Part I; *Current Population Reports,* Series P-20, No. 145; and unpublished data.

There also appears to be a great need for expansion of facilities and added faculty at the existing Vocational-Technical Institutes. In addition to expanded programs offered by the Vocational-Technical Institutes, the various campuses of the University of Maine should be encouraged to offer more two-year technical programs, both through day classes and through evening courses of the Continuing Education Division. Public investment is needed for more scholarship funds to help needy, but otherwise qualified students to meet the expenses of either full-time education or part-time evening courses.

According to the U.S. census, 15.7 percent of Maine residents aged 25 or older do not have even an eighth grade level of education, while another 41.0 percent have completed eight grades but have dropped out before completing high school.

The establishment of School Administrative Districts, with free bus transportation for all students in the district who live beyond walking distance of the central schools, and with a diversity of technical and vocational courses to supplement the traditional courses, is apparently improving the situation. Public investment is needed to extend the advantages of SAD systems to many parts of Maine which do not yet participate in this type of modern school program.



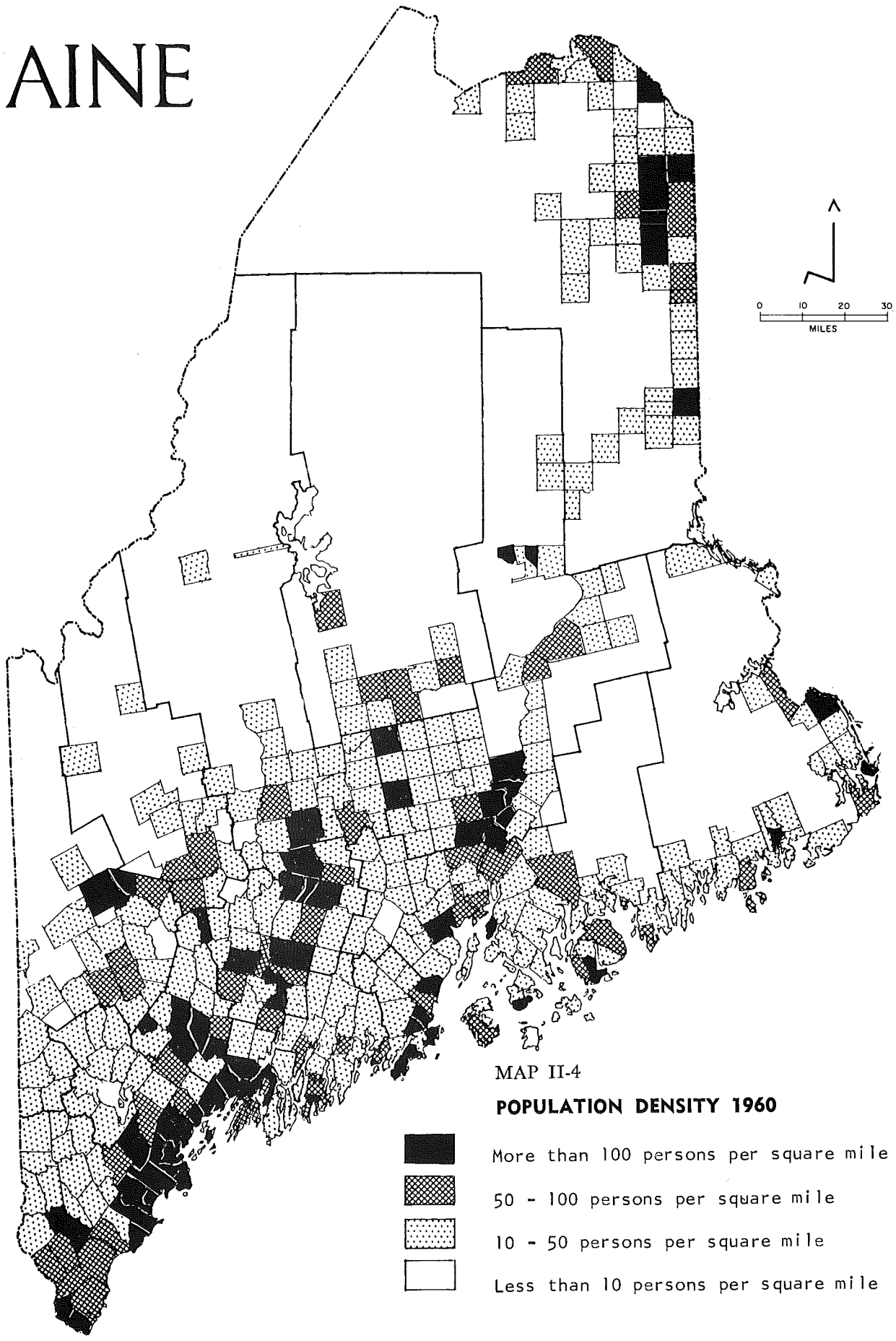
MAP II-3

POPULATION DENSITY 1950

- More than 100 persons per square mile
- 50 - 100 persons per square mile
- 10 - 50 persons per square mile
- Less than 10 persons per square mile

Department of Economic Development,
State House, Augusta, Maine

MAINE



MAP II-4

POPULATION DENSITY 1960

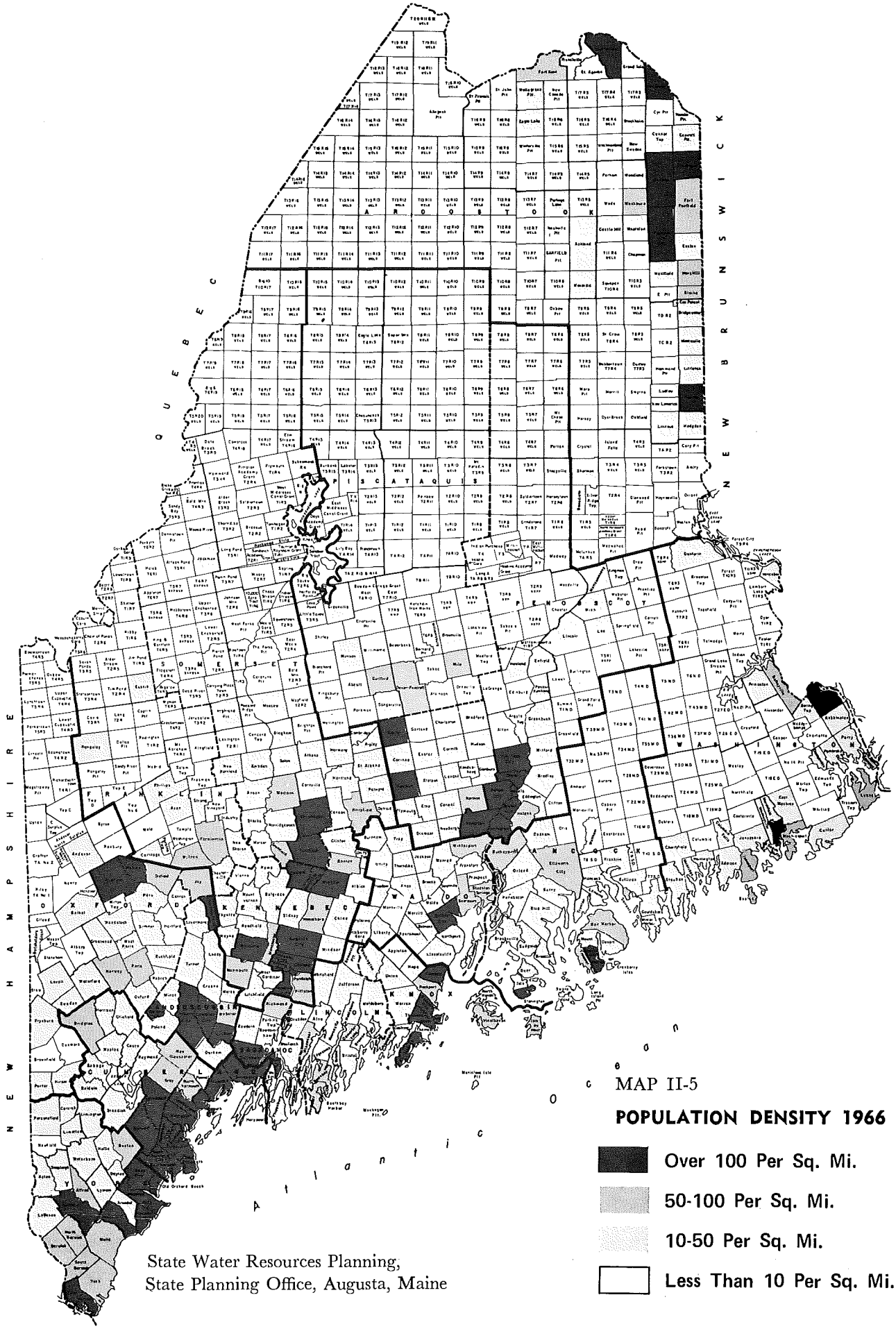
More than 100 persons per square mile

50 - 100 persons per square mile

10 - 50 persons per square mile

Less than 10 persons per square mile

Division of Research and Planning, Department of Economic Development, State House, Augusta, Maine

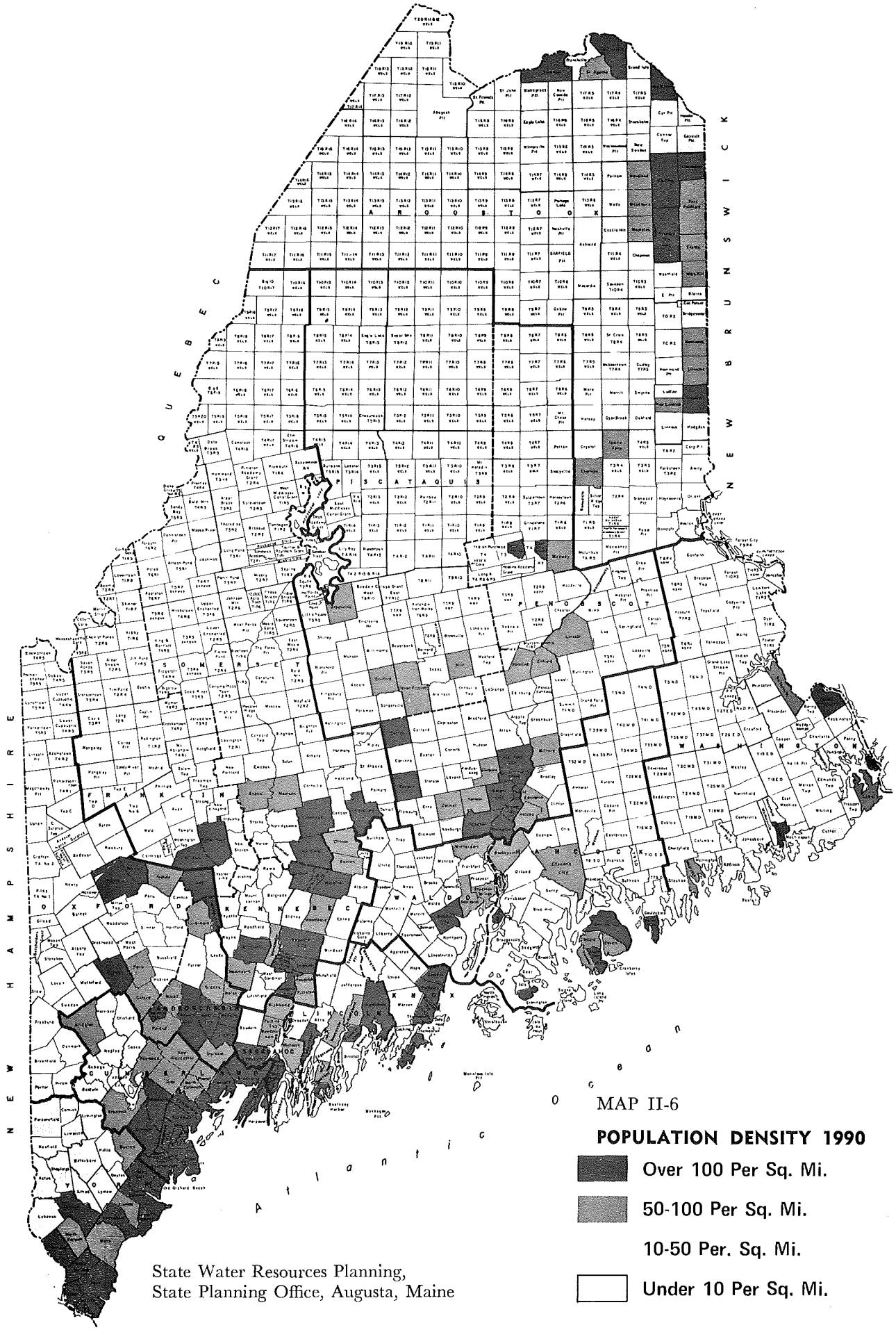


MAP II-5

POPULATION DENSITY 1966

- Over 100 Per Sq. Mi.
- 50-100 Per Sq. Mi.
- 10-50 Per Sq. Mi.
- Less Than 10 Per Sq. Mi.

State Water Resources Planning,
State Planning Office, Augusta, Maine



MAP II-6

POPULATION DENSITY 1990

- Over 100 Per Sq. Mi.
- 50-100 Per Sq. Mi.
- 10-50 Per. Sq. Mi.
- Under 10 Per Sq. Mi.

State Water Resources Planning,
State Planning Office, Augusta, Maine

Comparative Employment and Wage Levels

The Maine Unemployment Level Has Apparently Stabilized.

According to the Maine Employment Security Commission, the number of unemployed members of the labor force of Maine was 16,200 in 1968. (See Table II-15.) This represented an unemployment level of 4.1 percent of the labor force, slightly higher than the 3.9 percent levels of 1967 and 1956, and not seriously higher than the 3.7 percent level of the boom year of 1952, as shown by Table II-16. Unemployment in Maine was higher during all other post-World War II years. The analysis presented by the Phase II PARC study still appears to be valid, however, and it is worthy of direct quotation at this point:

> The unemployment rate in Maine has been consistently higher than the comparable national average since 1946. Furthermore, Maine's unemployment peaks have been substantially higher during years of national recession. At the present time, both the state and national rates are almost identical, as shown . . . below.

Although Maine has a number of seasonal activities and industries, such as food processing, fishing, and tourism, there appears to be surprisingly little seasonal unemployment in the State. According to monthly data for 1967 from the Maine Employment Security Commission, unemployment ranged from a low of 3.1% of the labor force in October to high of 4.4% in April and June. The total number of persons in the labor force was considerably higher from June through October, mostly because of an influx of students during the summer vacation months.[10]

[10]Public Affairs Research Center of Bowdoin College, *A Public Investment Plan for the State of Maine,* Brunswick, Maine, December 1968, p. 8.

TABLE II-15

EMPLOYMENT STATUS OF MAINE LABOR FORCE: 1958-1968
(in thousands)

Year	Total	Employed	Unemployed
1958	366.4	335.3	31.1
1959	366.2	341.7	24.5
1961	373.3	343.0	30.3
1967	388.1	372.8	15.3
1968	394.0	377.8	16.2

Source: Maine Employment Security Commission, 1969 (not yet published).

TABLE II-16

UNEMPLOYMENT RATES, U.S. AND MAINE: 1940-1968
(Percent of Labor Force)

Year	United States	Maine
1940	14.6	10.3
1944	1.2	0.6
1949	5.9	8.7
1952	3.0	3.7
1954	5.5	5.7
1956	4.1	3.9
1958	6.8	8.5
1959	5.5	6.7
1961	6.7	8.1
1967	3.9	3.9
1968	—	4.1

Source: Maine State Employment Security Commission, 1969 (not yet published).

As the Phase II study has pointed out, employment in Maine has generally climbed since 1940, reaching a peak of 378,500 during World War II, when many persons who would not normally be considered a part of the labor force were employed. As Table II-15 indicates, the entire labor force in Maine was 366,400 in 1958. During the 1960's it gradually rose, reaching 394,000 in 1968, an increase of 27,600 in ten years. During the same ten years the number of employed persons in Maine rose from 335,300 to 377,000, an increase of 42,500. During the past two years, however, the number of unemployed persons has changed very slightly.

Wage-and-Salary Employment Appears to Be Increasing, Particularly in NERC No. 13, but Agricultural Employment, Self-Employment, etc., Are Decreasing.

On the basis of data provided by the Maine Employment Security Commission for 1967 and 1968 and presented in Table II-18, it would appear that the number of persons engaged in agricultural employment in Maine has decreased from 16,200 in 1967 to 15,400 in 1968, a drop of approximately 5 percent in one year. Self-employment of a nonagricultural nature, and employment of unpaid family workers and domestic workers in private homes, has decreased from 39,700 in 1967 to 38,700 in 1968, a drop of almost 3 percent in one year. Wage-and-salary employment, primarily in industry, commerce, and governmentally supported work, has increased from 316,800 in 1967 to 323,700 in 1968, or about 2 percent statewide.. In NERC No. 13 Southwestern Subregion, however, wage-and-salary employment has increased from 181,190 in 1967 to 187,890 in 1968, or nearly 3.7 percent. (See Table II-18.)

Unemployment appears to have dropped slightly in NERC No. 12 and substantially in NERC No. 13, but it appears to have risen in the other Subregions. As Table II-17 indicates, preliminary estimates suggest that the total number of the unemployed in NERC No. 10 Northern Subregion has increased slightly from 1967 to 1968, though an increase of 250 persons is hardly significant. The increase in unemployment in the NERC No. 11 Eastern Subregion, however, is very pronounced, rising from 3,880 in 1967 to 5,720 in 1968, an increase of more than 47 percent. It is probable that the termination of civilian employment at Dow

TABLE II-17

CIVILIAN AVERAGE WORK FORCE, EMPLOYMENT, AND UNEMPLOYMENT, BY NERC SUBREGIONS[a]: 1967-1968

	Total Estimated Civilian Work Force[b]		Estimated Number Total Employed		Estimated Number Total Unemployed	
	1967	1968	1967	1968	1967	1968
NERC No. 10 Northern Subregion	36,950	36,640	35,300	34,740	1,650	1,900
NERC No. 11 Eastern Subregion	93,950	94,680	90,070	88,960	3,880	5,720
NERC No. 12 Western Subregion	43,830	44,210	42,250	42,710	1,580	1,500
NERC No. 13 Southwestern Subregion	213,270	218,470	205,080	211,390	8,190	7,080
TOTAL	388,100[b]	394,000[b]	372,700	377,800	15,300	16,200

a Employment by place-of-work and unemployment by place-of-residence. Many of the detailed figures are preliminary estimates and precise area studies might lead to revisions.

b Subsequent statewide estimates reflect an increase from the above 1967 figures of 100 in Nonagricultural Wage and Salary employment, augmenting the 1967 Total Employed figure to 372,800 and the Total Civilian Work Force to 388,200. Statewide the total figure also includes 100 persons in 1967 labor-management disputes, not distributed by areas, and 400 persons in 1968 labor-managment disputes, including 200 in the Portland metropolitan area and under 50 in each of the Lewiston-Auburn and Bangor areas.

Source: Maine Employment Security Commission, March 1969, mimeographed preliminary data. (Original data by county, here grouped into NERC Subregion totals.)

TABLE II-18

ESTIMATED CIVILIAN WORK FORCE IN AGRICULTURAL EMPLOYMENT, IN NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT, AND IN ALL OTHER NONAGRICULTURAL EMPLOYMENT BY NERC SUBREGIONS[a]: 1967-1968

	Number in Agricultural Employment		Number of Nonagricultural Wage and Salary		Nonagricultural Self-Employment And All Others[b]	
	1967	1968	1967	1968	1967	1968
NERC No. 10 Northern Subregion	6,400	5,920	25,400	25,380	3,500	3,440
NERC No. 11 Eastern Subregion	3,850	3,610	74,510	74,160	11,710	11,190
NERC No. 12 Western Subregion	1,780	1,780	35,700	36,270	4,770	4,660
NERC No. 13 Southwestern Subregion	4,170	4,090	181,190	187,870	19,720	19,410
TOTAL	16,200	15,400	316,800	323,700	39,700	38,700

a Employment by place of work. Many of the detailed figures are preliminary estimates and precise area studies might lead to revisions. Subsequent statewide estimates reflect an increase from the above 1967 figures of 100 in Nonagricultural Wage and Salary employment, augmenting the 1967 Total Employed figure to 372,800.

b This group includes all self-employed persons in nonagricultural work, together with unpaid family workers and domestic workers in private households.

Source: Maine Employment Security Commission, March 1969, mimeographed preliminary data. (Original data by county, here grouped into NERC Subregion totals.)

Air Force Base, plus the depression of commercial activity resulting from the closing of that base, has much to do with the increased unemployment in that Subregion.

Unemployment dropped very slighty in NERC No. 12 Western Subregion, as indicated by Table II-17, though the decrease, 80 persons, is of little significance. In NERC No. 13 Southwestern Subregion, however, unemployment dropped markedly from 8,190 in 1967 to 7,080 in 1968, down nearly 14 percent.

Employment opportunities in NERC No. 13 Southwestern Subregion appear to be more promising than in the other Subregions of Maine. According to the estimates presented in Tables II-17 and II-18, NERC No. 13 showed the greatest proportionate increase in employment of the four Subregions of Maine during the period from 1967 to 1968. The labor force increased 5,200, from 213,270 in 1967 to 218,470 in 1968, an increase of about 2.5 percent. During the same period, unemployment shrank from 3.8 percent of the labor force to 3.3 percent. Agricultural employment was relatively small, about 2 percent of total employment, but it still represented over 25 percent of the total agricultural employment in the State of Maine. Self-employment in nonagricultural work decreased slightly, from 9.6 percent of total employment in 1967 to 9.2 percent in 1968. Wage and salary employment showed the greatest improvement, rising from 181,190 in 1967 to 187,890 in 1968, an increase of 6,680 jobs, or about 3.7 percent.

Although NERC No. 10 Northern Subregion has been termed the"potato empire," agricultural employment accounted for only 18.1 percent of the 1967 total employment in that Subregion, and only 17.1 percent in 1968. This represents a drop of one percent in the total proportion of employment, but a drop of 7.5 percent in the number of agricultural workers. There was no significant change in the number engaged in nonagricultural employment. Nonagricultural self-employment accounted for about 10 percent of the employed, and wage-and-salary workers accounted for approximately 73 percent of the employed in NERC No. 10, as indicated by Table II-18.

In NERC No. 11 Eastern Subregion, the labor force

increased slightly, less than one percent, while the proportion of unemployed rose from 4.1 percent to 6.0 percent of the labor force. The proportion engaged in agriculture dropped very slightly from 4.3 to 4.1 percent of the employed. Nonagricultural wage and salary employment also dropped slightly, as indicated by Table II-18.

NERC No. 12 Western Subregion showed no significant change from 1967 to 1968. The labor force increased very slightly, from 43,830 in 1967 to 44,210 in 1968, less than one percent. Other shifts are even less significant since the Maine Employment Security Commission was forced to estimate much of the data. Unemployment apparently decreased slightly, from 3.6 percent of the labor force in 1967 to 3.3 percent in 1968. Wage and salary employment increased from 35,700 to 36,270, slightly more than one percent, as indicated by Table II-18.

The General Wage Level in Maine Is Seriously Below the National Average in Major Industries, Except for Paper Mill Wages.

General wage levels in Maine, as indicated by Table II-19, are seriously below the national average. The Maine average industrial wage of $4,580 in 1967 was approximately 18 percent below the U.S. average industrial wage of $5,616. Wages paid by resource industries in Maine were almost 29 percent below the U.S. average. Wages paid by service industries were more than 16 percent below the national average, and manufacturing wages averaged about 24 percent below. In certain industries the margin was not so great, the leather industry, for example, falling less than 4 percent below the national average wage for that industry. In all major industrial categories, however, Maine wages are lower than those of the United States, with the one exception of the paper manufacturing industry. Paper mill workers in Maine were relatively fortunate, earning an average of $7,324 in 1967, 9 percent above the national average for that type of employment.

In certain categories of industry employing lesser numbers of people, such as agricultural services, forestry, and fisheries, Maine wages equalled or surpassed the U.S. averages. It is possible that when updated statistics for 1968 become available, Maine's relative wage situation may show slight improvement.

TABLE II-19

AVERAGE WAGE BY INDUSTRY, U.S. AND MAINE: 1967

Industry	Dollars	
	U.S.	Maine
All Industries	5,616	4,580
Resource Industries	6,320	4,508
Manufacturing	6,572	5,020
Food	5,852	4,416
Textiles	4,556	4,472
Lumber and Wood	4,588	4,424
Paper	6,744	7,324
Leather	4,284	4,144
All other manufacturing	6,884	5,128
Service Industries	5,036	4,196
Contract Construction	6,652	5,544
Wholesale Trade	6,884	5,540
Retail Trade	3,740	3,440
Medical and Health	3,668	3,044
All other services	5,364	4,472

Source: U.S. Department of Commerce, *County Business Patterns.*

Maine average wages increased about 5 percent during 1967 and about 6 percent during 1968, but average wages in NERC No. 11 Eastern Subregion kept shrinking throughout the period. The dollar amount of average wages in NERC No. 11 shrank a fraction of one percent from 1966 to 1967, and again another fraction of a percent from 1967 to 1968, as indicated by Table II-20. The failure of wages in this Eastern Sub-

region to keep up with the inflation in costs of food, clothing, fuel, local property taxes, and other necessities appears to be serious.

Wages in NERC No. 10 Northern Subregion gained slightly more than the State average, approximately 6 percent in 1967 and 7 percent in 1968. NERC No. 12 Western Subregion moved above the State average in 1967, advancing some 6 percent over 1966, but advanced only 3 percent in 1968.

NERC No. 13 Southwestern Subregion advanced less than the State average during 1967, increasing average wages only about 4 percent that year, but advanced 7 percent during 1968. The number of workers in NERC No. 13 also increased slightly, both in absolute numbers and as a proportion of the total number of workers in Maine. The 123,389 workers of 1966 increased to 130,793 in 1968, or about 6 percent in two years. In proportion to the total number of workers in Maine, NERC No. 13 Southwestern Subregion accounted for 58 percent in 1966 and 59 percent in 1968, as indicated by Table II-20.

Wages listed as "inter-divisional" revealed the greatest increase, rising about 7 percent in 1967 as compared to 1966, and then jumping 60 percent in 1968 over 1967. The number of such workers whose wages cannot be ascribed to any single Subregion is so small, less than 2 percent of the total number of workers on whom data was compiled, that these figures are probably quite insignificant.

Per Capita Effective Buying Income Is Higher in NERC No. 13 Southwestern Subregion than in the Other Subregions.

Although the statistics assembled by *Sales Management Survey of Buying Power,* presented in Table II-21, refer to the year 1966, incomplete statistics from other sources, together with the implications of the data in Tables II-18 and II-20, indicate that the general statistical relationships expressed in Table II-21 have changed very little although the 1968 dollar amounts would be about 10 percent greater than those in the 1966 array.

TABLE II-20
TOTAL AND AVERAGE ANNUAL WAGES PAID BY SUBREGION: 1966-1968

	Total Wages Paid	Total Workers	Annual Ave. Wage
	1966		
Maine	$1,029,962,772	212,497	$ 4,847
Northern Subregion			
NERC No. 10	63,525,183	13,716	4,631
Eastern Subregion			
NERC No. 11	224,725,477	46,606	5,036
Western Subregion			
NERC No. 12	119,732,944	24,697	4,848
Southwestern Subregion			
NERC No. 13	593,935,398	123,389	4,814
Inter-Divisional	28,043,770	4,089	6,858
	1967		
Maine	$1,104,484,320	217,309	$ 5,083
NERC No. 10	67,989,874	13,998	4,857
NERC No. 11	237,290,989	47,210	5,026
NERC No. 12	127,575,314	24,892	5,125
NERC No. 13	636,280,967	126,369	5,035
Inter-Divisional	35,347,176	4,840	7,303
	1968		
Maine	$1,189,505,612	220,885	$ 5,385
NERC No. 10	72,007,774	13,867	5,193
NERC No. 11	237,290,989	47,737	4,971
NERC No. 12	128,372,264	24,399	5,261
NERC No. 13	703,803,977	130,793	5,381
Inter-Divisional	48,030,608	4,089	11,741

*Inter-Divisional wages are those paid which cannot be ascribed to any single area within the State.

Source: Maine Employment Security Commission, unpublished data.

TABLE II-21

DISPOSABLE PERSONAL INCOME BY COUNTY AND SUBREGION: 1966

	Effective Buying Income Per Capita	Household
Northern Subregion		
Aroostook	$ 1,674	$ 6,789
Eastern Subregion		
Hancock	2,028	6,428
Knox	2,078	6,584
Penobscot	2,079	7,531
Piscataquis	1,810	6,116
Waldo	1,746	5,920
Washington	1,729	5,578
Western Subregion		
Franklin	1,828	6,397
Oxford	2,054	6,982
Somerset	1,899	6,396
Southwestern Subregion		
Androscoggin	2,161	7,010
Cumberland	2,766	9,157
Kennebec	2,135	7,424
Lincoln	2,035	6,386
Sagadahoc	2,243	7,350
York	2,156	7,216
Maine	2,154	7,380

Source: *Sales Management Survey of Buying Power,* 1967.

TABLE II-22

PERCENT OF HOUSEHOLD BY INCOME GROUP BY COUNTY AND SUBREGION: 1966

	Under $3,000	$3,000-4,999	$5,000-7,999	$8,000-9,999	$10,000 & over
Northern Subregion					
Aroostook	25.8	24.0	28.8	10.2	11.2
Eastern Subregion					
Hancock	26.5	24.3	29.2	10.6	9.4
Knox	26.8	21.6	29.9	12.1	9.6
Penobscot	21.5	19.2	33.1	12.3	13.9
Piscataquis	24.8	25.3	33.7	7.9	8.3
Waldo	28.4	23.9	31.0	9.7	7.4
Washington	33.9	25.3	25.0	8.5	7.3
Western Subregion					
Franklin	24.6	26.3	31.9	8.8	8.4
Oxford	23.2	19.9	31.7	12.2	13.0
Somerset	25.1	22.9	31.4	10.7	9.9
Southwestern Subregion					
Androscoggin	22.4	20.3	33.8	11.8	11.7
Cumberland	6.9	17.7	39.4	16.3	19.7
Kennebec	22.2	20.0	32.7	11.6	13.5
Lincoln	27.3	22.9	30.0	9.7	10.1
Sagadahoc	23.4	16.1	34.5	12.1	13.9
York	22.8	19.6	32.1	12.5	13.0
Maine	20.6	20.6	33.2	12.3	13.3

Source: *Sales Management Survey of Buying Power,* 1967.

NERC No. 13 Southwestern Subregion leads the other Subregions in effective buying income per capita and per household. Of the 16 counties in Maine, Cumberland ranks first, Sagadahoc second, Androscoggin third, York fourth, and Kennebec fifth in effective buying income per capita. These are the five most populous of the six counties in NERC No. 13. The sixth county in that Subregion, Lincoln, ranks ninth, but its population is so small that it has little effect upon the relative prosperity of NERC No. 13.

Of the other counties in Maine, Penobscot and Knox, both in NERC No. 11 Eastern Subregion, rank sixth and seventh respectively in effective buying income per capita, but the four other counties in that Subregion are below the Maine median. Oxford County in NERC No. 12 Western Subregion ranks just above the State median, but Somerset and Franklin fall slightly below the median in effective buying income per capita.

Of more significance, probably, is the distribution of households by income groups, as indicated by Table II-22. Again, NERC No. 13 Southwestern Subregion appeared to have more prosperity and less poverty than the others. Cumberland County, the most populous county in the Subregion, had only 6.9 percent of its households below the arbitrary "poverty level" of $3,000 per annum, as compared to the State average for that category of 20.6 percent. In the next higher category, Cumberland County had 17.7 percent of its households with incomes between $3,000 and $4,999 in 1966, compared with the State average of 20.6 percent. In the three highest groupings of household income, Cumberland County showed substantially greater prosperity than any of the other counties of the State. Other counties in the NERC No. 13 Southwestern Subregion tended to be closer to the State average. It should be pointed out that the relatively large population of Cumberland County, with its very small proportion of households in the "poverty level," caused all the other counties in Maine to have a greater percentage of households with income under $3,000 than the average for the State.

Although Penobscot County was close to the State average of household income groups, the other counties in NERC No. 11 Eastern Subregion showed a much lower level of household income. The two counties which indicated the greatest economic distress in Maine, Washington County and Waldo County, are both in NERC No. 11. More than one third of the households in Washington County were below the $3,000 "poverty level." More than one quarter fell in the range between $3,000 and $4,999. Another quarter were ranked in the $5,000 to $7,999 category. This left only 8.5 percent in the $8,000 to $9,999 group and only 7.3 percent in the $10,000 and over rank. The distribution in Waldo County was almost as unfortunate as that in Washington County.

Summary

So long as average wage levels and family income levels in Maine lag substantially below the New England average, the out-migration of substantial numbers of the potentially most productive part of the population will continue. Maine needs to attract more industries which will offer employment at the higher wage levels, but Maine's labor force does not contain as large a proportion of persons with post-secondary education as the New England average. Apparently one of the greatest needs for public investment in the State of Maine is the expansion of post-secondary education, particularly of technical nature, so that Maine may provide a technically trained labor pool to attract high-wage industry.

The movement of Maine's population from rural areas to urban and suburban areas, particularly in the vicinity of Bangor and throughout the "urban corridor" of NERC No. 13 Southwestern Subregion, appears to be a continuing trend. Public investment to anticipate the needs generated by this urban movement will be needed.

The importance of Maine's seasonal residents to the economy of the State should not be underrated. This seasonal population should be considered in public investment planning so that Maine may become an increasingly attractive place for seasonal as well as permanent residents.

CHAPTER III

ECONOMIC PROFILES OF THE NERC SUBREGIONS OF MAINE

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CHAPTER III

ECONOMIC PROFILES OF THE NERC SUBREGIONS OF MAINE

Chapter Outline

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Chapter III

ECONOMIC PROFILES OF THE NERC SUBREGIONS OF MAINE

General Considerations

Chapter II of this study analyzed certain social and economic trends as they affected the State of Maine as a whole, with some mention of each trend's significance to the particular NERC Subregion affected.[1] The organization of Chapter III, following this introductory section about the general trends and needs to which public investment policies should be responsive, treats each NERC Subregion as an individual entity. Some detailed data will be presented concerning each Subregion, and various trends affecting the individual Subregions will be discussed. Duplication of data or discussion already covered in Chapter II will be avoided.

Public Investment Policies Should Be Responsive to Certain General Trends and Needs.

Some of the most important matters to be considered in the development of public investment policy cannot be confined to the geographical boundaries of any one NERC Subregion. These might be summarized under seven general headings.

Public investment policies should recognize the continuing trend toward concentration of population into an "Urban Corridor." As indicated in the series of population density maps[2] and the accompanying text in Chapter II, the population of the State of Maine is becoming concentrated in an arc of urbanized areas that extend northeasterly through NERC No. 13 Southwestern Subregion, bisect NERC No. 11 Eastern Subregion at a north-northwestern angle, and continue up the Eastern edge of NERC No. 10 Northern Subregion. The southern border of NERC No. 12 Western Subregion lies generally parallel to this corridor, and several "spurs" of relatively dense population will extend northward into this Subregion by 1990, as indicated by Map II-6 in the previous chapter.

That the population of the State is increasing only in the more densely populated areas of the State is further indicated by the fact that, of the estimated 1960 to 1966 population growth of 34,362, only 1,727, or about 5 percent of the total population increase, was attributed to the more than 350 small municipalities in Maine, so classified because each of them had a population of less than 1,200 according to the 1960 census.[3]

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[1]For a description of the New England Regional Commission (NERC) Subregions, see the opening pages of Chapter II.

[2]See Maps II-3, II-4, II-5, II-6 in the previous chapter.

[3]Derived from *Population Estimates for Minor Civil Divisions,* State Department of Health and Welfare. (Estimates for York County are from an unpublished revision; all others are from unrevised estimates.)

TABLE III-1

FOREST LAND AREA AS A PERCENT OF TOTAL LAND AREA IN THE VARIOUS NEW ENGLAND STATES, 1870 AND 1962

State	Percent of Land in Forest in 1870	Percent of Land in Forest in 1962
Connecticut	60%	64%
Rhode Island	40%	64%
Massachusetts	30%	65%
Vermont	41%	63%
New Hampshire	51%	87%
Maine	76%	88%
New England as a Whole	58%	79%

Source: Arthur D. Little, Inc. *Projective Economic Studies of New England.* Cambridge, Mass., 1964, p. G-1.

The statistics presented in Table III-1 support the opinion that much of the land that was used for pasture or otherwise farmed in the smaller municipalities of declining population is reverting to forest. The trend in all Subregions is toward reforestation, with further concentration of urban population and cash-crop agriculture on a small portion of the land area. Most of Maine is poorly suited to highly competitive cash-crop agriculture, and the proportion of forest to total land area appears to have been steadily increasing since about 1870.

Public investment policies should recognize the continuing importance of paper manufacture and forest-products industries. At the present time, 88 percent of Maine's land area is covered by forests, which support large and growing paper and woodpulp industries, together with small wood-products and wood by-products industries. The importance of the pulp and paper industry in Maine, in comparison to the rest of New England, is depicted in Table III-2. In 1960 Maine produced 1.8 million tons of paper and paper board, or 54 percent of the entire production of the six New England states. Although Maine's future proportion of the total tonnage is expected to decrease slightly, the absolute increase in Maine's annual tonnage is expected to continue at a rate exceeding one percent a year until at least the end of this century. Maine's future growth in pulp and paper production obviously stems, in part, from its large forest areas. Arthur D. Little, Inc., in its study for the Corps of Engineers commented on this point:[4]

[4]Arthur D. Little, Inc., *Projective Economic Studies of New England,* Cambridge, Massachusetts, 1964, p. G-1.

TABLE III-2

PRODUCTION AND PROJECTED PRODUCTION OF PAPER AND PAPER BOARD IN NEW ENGLAND BY STATES FOR SELECTED YEARS[a]

Year	Maine	N.H.	Vt.	Mass.	Conn.	R.I.	TOTAL
			(Thousand Tons)				
1946	1,195	216	99	691	334 (R.I. included)		2,535
1950	1,328	263	*	718	316	*	2,771
1960	1,806	344	*	870	336	*	3,552
1970	2,250	410	260	900	360	20	4,200
1980	2,680	580	360	1,050	400	30	5,100
1990	3,150	750	500	1,250	500	50	6,200
2000	3,570	910	660	1,400	580	80	7,200
2020	4,700	1,400	1,060	1,800	840	200	10,000

[a]Production estimates from U.S. Bureau of the Census Current Industrial Report Series, Pulp and Paper Board.

*No figures given in Bureau of the Census reports because of disclosure problem.

Source: Arthur D. Little, Inc. *Projective Economic Studies of New England.* Cambridge, Mass., 1964, p. E-17.

> The forest land area of New England has changed in past years. In 1600, forests covered about 95 percent of the New England land area. As agriculture expanded, the forests decreased rather gradually until 1800 and then more rapidly until 1870, when forests covered only 58 percent of the six-state area. Since that time the forest land has increased and the present forested area is almost the same as in 1800.

The probable return to forest of land which is still used for pasture may also be expected if the profits of dairy farming continue to diminish. The national decrease in the use of butter through the substitution of margarine, the popularity of ice cream substitutes in which butter fat is replaced by vegetable oils and algin emulsifiers, and the threat of filled milk which utilizes only a small proportion of real milk are making the dairy business very difficult for all but the most scientific farmers. Many lands which have been traditionally used for pasture cannot support the efficiency level of milk production needed in today's competitive market. Such lands will be more profitable as pulp wood plantations.

A large part of the increase in pulp production will probably come from improved forestry management and also from less wasteful methods of cutting the pulp wood. It is probable that the increase in forest acreage in Maine during the remainder of this century will not amount to much more than 4 percent, and that the remainder of the increase in paper and paper board tonnage in Maine will come from greater efficiency in forest management and in less waste in pulp cutting, together with a greater reuse of waste paper and the possible importation of pulp whenever the price of imported pulp or cellulose is sufficiently low.

Although most of the population of Maine is being concentrated in the Urban Corridor, there are pockets of urbanization in places well removed from the Corridor, particularly in the vicinity of large, but relatively isolated paper mills. Public investment policies must take into account the importance of encouraging measures which will result in good living conditions for the citizens in such places.

Public investment policies should recognize the relative importance of agriculture and fisheries, and the processing of their products. Though the chief agricultural area in Maine is located in NERC No. 10 Northern Subregion, smaller areas in each of the other Subregions produce agricultural crops of economic significance to the State. The fisheries of Maine, located along the coast of NERC No. 11 Eastern Subregion and NERC No. 13 Southwestern Subregion, are also of continuing significance, in spite of many circumstances which appear to threaten the vitality of the fishing industry in Maine. Many of these problems are discussed in the final chapter of this report, dealing with the need of public investment for environmental controls. In addition to matters discussed in detail in that chapter, it would appear that public investment will be needed in research in constantly improving agricultural methods, in developing feasible methods of aquaculture, and in developing better ways to process food products to appeal to the consumer's growing demand for "instant" or "heat and serve" foods.

Public investment might also be justified in research in the possibility of attracting "seasonal" industry which could furnish employment during the off-seasons in agricultural or fishing employment. If factories could be established for the manufacture of products for which there would be little demand during the summer or fall, but heavy demand during the winter or spring, factory employment could then supplement employment in agriculture or the fisheries for many persons.

Public investment policies should recognize the relative importance of the recreational industry. Public investment must also take into consideration the relatively large seasonal population along the coast of NERC No. 13 and NERC No. 11, together with the large inland seasonal population in the lake resort and mountain areas through all four Subregions, but especially in the northern section of NERC No. 13 and the central and southern areas of NERC No. 12.

Although the harvesting of pulpwood will probably be the major industry of most of the land area of Maine, these same forested areas can also support a variety of recreational activities. As the leisure time and disposable personal income of urban families in the cities south of Maine increase, the recreational value of Maine's many mountains, lakes, and salt-water coastal areas will increase. The needs of public investment should therefore be evaluated so that all these factors are taken into account, for the social and environmental needs of both permanent and seasonal populations should be met as effectively and with as little waste as possible. These matters will be discussed a length in the final chapter of this report..

Public investment policies should anticipate problems caused by deep-water port development for the petroleum and petrochemical industries. In addition to the obvious need for public investment to provide the needed research for the development of a feasible method of protecting marine life and coastal property from damage caused by oil spills, the development of any new deep-water oil port would require substantial public investment to care for the needs of the many workers who would have to reside in the vicinity.

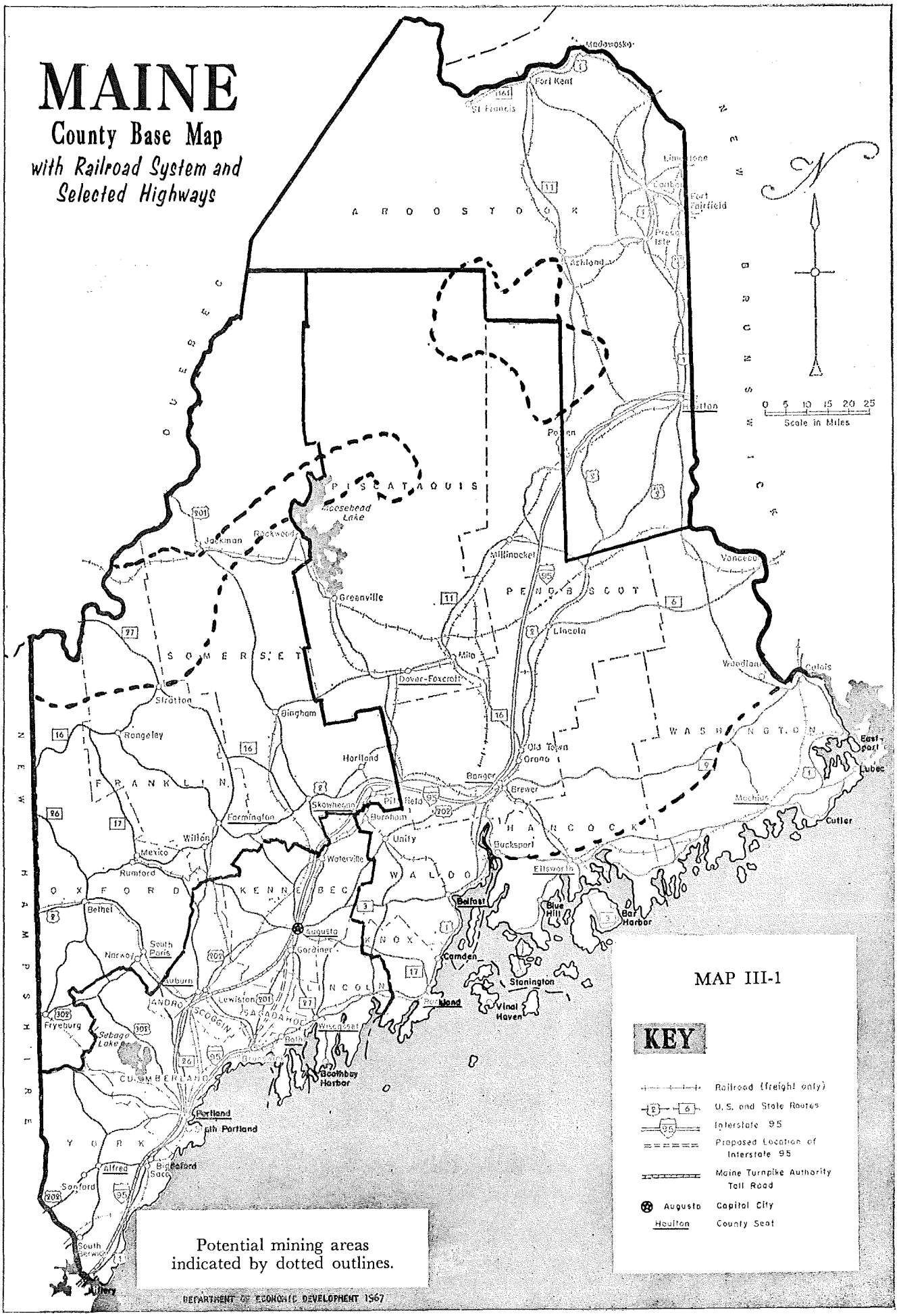
Machiasport, near the eastern end of the coast of Washington County in NERC No. 11, would need extensive urban improvements, together with much new housing, to meet such needs. Long Island, a part of the City of Portland, located northeast of Peaks Island at the mouth of Portland harbor in NERC No. 13, would need improved housing for workers living on the island, and improved ferry service, both for the families of island dwellers and for workers commuting from the mainland. If oil refineries were developed near either of these locations or near any of several possible deep-water locations in Penobscot Bay, the public investment needs would be increased for added housing, urban improvements, and pollution control. Such possibilities should be anticipated.

Public investment policies should anticipate problems caused by exploitation of Maine's potential mining

MAINE

County Base Map

with Railroad System and Selected Highways



Potential mining areas indicated by dotted outlines.

MAP III-1

KEY

- Railroad (freight only)
- U.S. and State Routes
- Interstate 95
- Proposed Location of Interstate 95
- Maine Turnpike Authority Toll Road
- Augusta — Capital City
- Houlton — County Seat

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areas. Geological exploration indicates that Maine possesses three extensive areas where rock outcroppings indicate the presence of ore containing molybdenum, usually in association with copper, as indicated by Map III-1.

The northern area lies partly in NERC No. 11, with two roughly triangular protrusions into NERC No. 10, but it can be reached by public road only from NERC No. 10 Northern Subregion. As Map III-1 indicates, the northeastern tip of the potential mining area comes close to the Aroostook County town of Ashland, and both State Highway 11 and a branch of the Bangor and Aroostook Railroad run through the southeastern part of the area. The southeastern boundary of the area is roughly parallel to the eastern end of Interstate 95, about 10 miles to the southeast. If sufficiently large bodies of ore are discovered to justify an open-pit mining operation in this area, the chief need for public investment would probably be in the enforcement of proper pollution controls and other environmental controls, for the area lies close to the northern and eastern boundaries of Baxter State Park and just to the east of the Allagash Wilderness Waterway.

The western potential mining area, as Map III-1 indicates, is located near the border of the Province of Quebec, stretching eastward from the northern boundary of New Hampshire across NERC No. 12 Western Subregion to the north of Moosehead Lake and also the NERC No. 11 Eastern Subregion. The Canadian Pacific Railroad crosses the area from Moosehead Lake on the east to the Quebec border on the west, passing through Jackman, a town of a little less than 1,000 population. Jackman, the center of prospective open-pit mining in this area, is located on U.S. Highway 201, the principal route from Maine points to the City of Quebec. The only other highway passing from south to north through any part of this area is Route 27, running from Farmington in the south-central part of NERC No. 12 through Stratton village (a part of the town of Eustis, the total population of which is less than 700) and then northwest to the Quebec border. There is no railroad in this part of the area.

The third potential mining area, as Map III-1 indicates, is a strip close to the coast of NERC No. 11 Eastern Subregion. The Maine Central Railroad passes through the eastern two-thirds of the strip, most of which is also served by U.S. Highway 1. There is some current open-pit mining near Blue Hill, which is shown on the map. Environmental controls are particularly important in this area, for Acadia National Park, comprising Isle au Haut, much of Mount Desert Island, and Schoodic Point, is the center of a coastal summer resort and recreational area of much economic value to the State.

Public investment policies should be responsive to the varied social and economic needs of Maine's population. In all four Subregions of the State, public investment is needed, both in educating the public as to the need to plan, and also in developing plans that will insure an optimum balance between industrial development and conservation. For example, the Urban Corridor already presses closely against the recreational area edging the coast of NERC No. 13 and much of NERC No. 11. Long-range planning for the entire area and public management of selected portions will assure balanced development of these coastal resources. U.S. Senate Bill S 2802, introduced by Senator Warren Magnuson of Washington and Senator Philip Hart of Michigan, if enacted, might be of substantial benefit in providing such planned public investment, for it would permit the establishment of Coastal Zone Authorities that would receive some federal funds. This could mean much to Maine.

A Profile of NERC No. 10 Northern Subregion

Aroostook County comprises NERC No. 10 Northern Subregion. Roughly shaped like a slightly jagged and inverted capital L, it lies north of NERC No. 11 Eastern Subregion. It shares its eastern and most of its northern boundaries with the Canadian Province of New Brunswick, and its extreme northern and northwestern boundaries with the Canadian Province of Quebec. The southern part of Aroostook County is a narrow strip, only some 30 miles wide from east to west, and running due north for some 55 miles before it widens into the northern part, so that, some 67 miles north of its southern extremity, Aroostook County is slightly more than 100 miles wide.

Physiographic Regions, Population, and Urban Development

Aroostook County contains two separate physiographic regions. The first of these, the western portion, comprises the greater part of the land area of NERC No. 10. It is the northernmost extension of the northeastern uplands of the United States and is largely forested and uninhabited. The northern half of the famous Allagash Wilderness Waterway, frequently used for canoe trips by sportsmen, passes from south to north through the center of this area. The southern part of this western portion of Aroostook County in-

cludes a portion of the northern potential mining area, shown on Map III-1, earlier in this chapter, and described in the text accompanying the map. The area, however, is primarily of economic importance because it produces immense quantities of pulpwood for paper mills, together with a substantial amount of timber for wood industries in the eastern portion of Aroostook County.

The second portion is a relatively narrow strip along the eastern and northeastern edges of NERC No. 10. It varies in width, but it widens to about 25 miles in its most intensively cultivated part. It is generally flat or gently rolling and supports the largest concentration of agriculture, devoted primarily to the raising of potatoes and sugar beets, in the State of Maine. The agricultural section of Aroostook County is actually a part of the St. John River valley, but the eastern boundary of the County is a surveyed north-south international boundary line a few miles west of the St. John River. At the northeastern corner of the County the line touches a bend in the river, and most of the northern cap of the County is bordered by the river itself. This extreme northern portion supports a large paper manufacturing industry and other wood-using industries.

Population and Urban Development. The estimated population of Aroostook County in 1966 was approximately 111,873 permanent residents, with an added seasonal population of approximately 13,000 during the summer. Although there is a seasonal increase in population of almost 12 percent, the proportionate increase in summer residents is less than that experienced in any of the other Subregions in Maine.[5]

It will be noted that the rate of increase in population in NERC No. 10 Northern Subregion has fluctuated much more than that of Maine as a whole. For the period between 1960 and 1975 it is anticipated that the rate of increase in population will be very nearly the same as that of the State as a whole, but it is also anticipated that the population of Aroostook County will tend to concentrate more and more in the northern section of Maine's Urban Corridor.

[5]See Table II-6, previous chapter.

TABLE III-3

POPULATION OF NERC NO. 10 NORTHERN SUBREGION COMPARED WITH THOSE OF MAINE AND NEW ENGLAND FOR SELECTED YEARS

(in thousands)

	1940	1950	1960	1975[a]
NERC No. 10 Northern Subregion	94	96	106	114
Maine	847	914	969	1,044
New England	8,437	9,314	10,509	12,491

Source: The Public Affairs Research Center of Bowdoin College, *A Public Investment Plan for the State of Maine,* Brunswick, Maine, December 1968, p. 27.

U.S. Bureau of the Census, *Statistical Abstract of the United States: 1967* (88th ed.), Washington, D.C., 1967 (Series II B).

TABLE III-4

PERCENT INCREASE IN POPULATION OF NERC NO. 10 NORTHERN SUBREGION AS COMPARED WITH MAINE AND NEW ENGLAND

(in percentages)

	1940-1950	1950-1960	1960-1975
NERC No. 10 Northern Subregion	2.1	10.4	7.6
Maine	7.9	6.0	7.8
New England	10.4	12.8	18.8

Source: Derived from Table III-3, above.

As indicated by Table III-5, the urban population of Aroostook County has been constantly increasing since 1940, whereas the rural population has been decreasing. In 1940 less than 50 percent of the population was urban, but in 1950 some 54 percent had become urban. An even greater shift took place between 1950 and 1960, at the end of which time about 64 percent could be classified as urban. It is estimated that this trend will continue. The estimates for 1966 indicate that fully 66 percent of the population had become urban by that time.

Increased mechanization on the huge farms of Aroostook County means that relatively fewer farmers can raise the crops, but the shift in consumer marketing habits means that relatively more workers will be employed in food processing plants, which turn out increasing volumes of frozen french fried potatoes, other precooked potato products, including instant mashed potatoes, and other products. Industrial developments in NERC No. 10 also tend to speed the concentration of population in urban centers and in suburban communities surrounding the major centers.

TABLE III-5

POPULATION OF URBAN COMMUNITIES IN NERC NO. 10 NORTHERN SUBREGION BY SELECTED YEARS, 1940-1966

	1940	1950	1960	Estimate 1966[a]
Caribou	8,218	9,923	12,464	13,299
Fort Fairfield	5,607	5,791	5,876	5,690
Fort Kent	5,363	5,343	4,761	5,062
Houlton	7,771	8,377	8,289	9,015
Limestone	1,855	2,427	13,102	17,441
Madawaska	4,477	4,900	5,507	6,018
Presque Isle	7,939	9,954	12,886	12,638
Van Buren	5,380	5,094	4,679	4,635
Total Urban Population	46,610	51,809	67,564	73,798
Total Rural Population	47,826	44,230	38,500	38,075
Total NERC No. 10 (Aroostook County)	94,436	96,039	106,064	111,873
Urban Percentage of Total Population	49.5%	53.8%	63.7%	66.0%

Source: The National Survey, *Maine Population Data Sheets with County Maps,* Chester, Vermont, 1968.

[a]State of Maine, Department of Health and Welfare, mimeographed data.

As indicated by Table III-5, it is now estimated that more than 66 percent of the population of Aroostook County is concentrated in the eight urban centers in this northern section of Maine's Urban Corridor. Three of these communities, Limestone, Caribou, and Presque Isle, account for almost 59 percent of the total urban population in NERC No. 10. Limestone and Caribou are the two largest communities, and they both have been showing consistant growth. Presque Isle, the third largest community, has suffered from the closing of the Presque Isle Air Force Base in 1961.[6] In 1960 there had been 870 military personnel and 165 civilians employed at the base, with an annual payroll of $3,500,000. The 1960 population of 12,886 for Presque Isle has dropped slightly and is estimated at 12,638 for 1966, a very small loss when the number of civilians formerly employed at the Air Base is considered.

Limestone, the largest community in Aroostook County, with an estimated 1966 population of 17,441, is the location of Loring Air Force Base. In 1968, Loring Air Force Base employed 4,077 military personnel with an annual payroll of $26,543,000. During the same year 626 civilians were employed at that base.[7]

The personnel at Loring Air Force Base has been

[6]*Portland Sunday Telegram,* December 21, 1968.
[7]*Ibid.*

reduced substantially from its earlier peak of 1966 when there had been an estimated 10,000 military personnel and dependents, with an annual payroll of $28 million, plus an additional 900 civilians drawing a payroll of $3.5 million. During 1966 the base purchased supplies in Aroostook County amounting to $3.5 million and spent another $1.5 million for procurement in other Subregions in the State of Maine. An additional million dollars was spent on construction.[8]

The possible closing of Loring Air Force Base would therefore depress the economy of Aroostook County if the Base should be phased out too rapidly. Public investment is needed for economic planning to counter the effects of such a contingency.

Economic Activities and Types of Employment in NERC No. 10

There are seven major economic activities in NERC No. 10. Of the Aroostook County workforce, estimated to include 35,300 persons, nearly 58 percent are employed either in agriculture, wholesale or retail trade, food processing, service occupation, lumber and wood products, contract construction, or the paper industry.[9] These activities are almost entirely concentrated in or near the Urban Corridor, between Houlton on the south and Madawaska and Fort Kent on the north.

Agriculture, primarily the growing of potatoes or sugar beets, is the largest single category of employment. As indicated by Table III-6, approximately one-sixth of the total workforce in NERC No. 10 is employed in agriculture. It should be pointed out also that a certain proportion of the second most numerous category, "wholesale or retail," could be considered subsidiary to the category of those employed in agriculture, for farmers not only buy their machinery and supplies locally, but aso tend to deal with local wholesale merchants in order to dispose of their crops. The third most important category, "food processing," is also dependent upon agriculture for the source of supply of foods to be processed. The importance of agriculture in the economy of NERC No. 10 is therefore much greater than the number of workers employed in basic agriculture might make it appear.

On the outskirts of the Urban Corridor in Aroostook County, in a band about 25 miles in extreme width running along the New Brunswick border, an estimated 38.5 million hundredweight of potatoes were grown on some 154,000 acres in 1966.[10]

Since Aroostook County can now produce more potatoes than can be sold in its share of the national market, a stabilizing agricultural crop has been introduced through the growing of sugar beets. This newly introduced crop was made possible through a formal 33,000-acre allotment by the United States Department of Agriculture in 1964. The potential crop yield of this acreage is estimated to approximate 6.6 million tons of sugar beets. The end product, sugar, is being refined at Easton in NERC No. 10 by the new plant of the Valsing Enterprises.[11]

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[8] *Ibid.*

[9] Maine Employment Security Commission, March 1969, unpublished data.

[10] Aroostook County Chamber of Commerce. *Aroostook County Maine,* pub. by Gross and Allen, Portland, Maine, 1967, p. 13.

[11] *Ibid.,* p. 16.

TABLE III-6

MAJOR ECONOMIC ACTIVITIES IN NERC NO. 10
NORTHERN SUBREGION, 1968

Category of Economic Activity	Number Employed 1968
Agriculture	5,920
Wholesale or Retail	5,364
Food Processing	2,525
Services	1,969
Lumber & Wood Products Industry	1,746
Contract Construction	1,280
Paper Industry	1,039
TOTAL	19,843

Source: Census of Maine Manufacturers and Maine Employment Security Commission, March 1969.

Industries using forest products are also very important. Lumber, wood products, and paper production furnish a major source of employment, particularly at the extreme northern end of NERC No. 10 along the St. John River. Almost all the Subregion, outside the less than 12 percent of its acreage close to the Urban Corridor, is forested. There are 3,854,000 acres of commercial forest land. Each year, Aroostook produces more hardwood and softwood timber and more pulpwood than any other Maine County. In 1965 the hardwood timber out in Aroostook County totalled 38,601,000 board feet, while softwood timber amounted to 137,236,000 board feet, and pulpwood produced 417,008 standard cords.[12]

Seven large paper companies control 1,608,000 acres of forest land in Aroostook County. They are the Great Northern, Georgia Pacific, International Paper, St. Regis, Penobscot Development, Standard Packaging Corporation, and Irving Pulp and Paper Company. In addition, 1,851,000 acres are owned by one or another of four large private estates.[13]

TABLE III-7

NUMBERS EMPLOYED IN NERC NO. 10 NORTHERN SUBREGION DURING SELECTED YEARS ACCORDING TO STANDARD INDUSTRIAL CLASSIFICATIONS NO. 20 TO NO. 39[a]

SIC No.	Category	1960	1962	1964	1966	1968
20	Food	992	1,569	1,854	2,120	2,525
24	Lumber	1,475	1,452	1,850	1,845	1,746
26	Paper	941	1,127	1,054	1,158	1,039
27	Printing	42	34	53	66	78
28	Chemicals	76	69	123	260	174
31	Leather	*	*	*	*	708
32	Stone	*	28	30	58	42
35	Machine	58	44	73	95	88

[a]SIC stands for Standard Industrial Classification as indexed by the *Standard Industrial Classification Manual* of the Bureau of the Budget. SIC code numbers omitted in the left column indicate that no data were reported in the missing categories.

*Federal law prohibits reporting which might identify an individual employer. If there are fewer than four competing firms submitting data, or if any one firm provides more than 80 percent of the volume of business activity or employment in a given category, the data cannot be published.

Source: *Census of Maine Manufacturers,* 1960-1968.

The food industry has been showing rapid and consistent growth since 1960. As indicated by Table III-7, this industry has been growing more steadily than any other in the SIC group of listings. It has grown more than 250 percent in eight years, and for the past two years has been continuing to grow at the rate of about 10 percent each year.

The second most important category above, "lumber," and the third most important category, "paper," are very important sources of employment, but the number of employees has apparently leveled off, according to the tabulation above. Of the other categories listed, only "leather" and "chemicals" employ sufficient numbers for comment. The leather industry, with several competitive firms, accounts for 708 workers, and the chemical industry, which peaked at 260 workers in 1966, reports its second highest level of employment in 1968 with 174 employees.

Relative rates of pay are frequently of more significance to the economic health of an area than the mere count of persons employed. The paper industry tends to be one of the highest-wage-paying industries in the State, and the economic impact of the wages earned by the 1,039 persons employed in this industry in 1968 should not be discounted.[14] In several of the listed industries the decline in numbers employed may

[12]*Ibid.*, p. 21.
[13]*Ibid.*, p. 21.
[14]See discussion of average wages in various industries, Chapter II.

reflect a higher degree of mechanization, which is usually accompanied by higher wages for those who continue to be employed.

Employment in non-manufacturing occupations has shown little change since 1966. As indicated by Table IV-8, total employment in agriculture and forestry has decreased about 9 percent since 1966, and employment in "transportation, communications, electric, gas, and sanitation" has decreased about 5 percent. These decreases have been made up by an 8 percent increase in employment in contract construction, a 13 percent increase in employment in wholesale and retail trade, and a 4 percent increase in employment in "services and other non-manufacturing."

TABLE III-8

NON-MANUFACTURING EMPLOYMENT IN NERC NO. 10
NORTHERN SUBREGION 1966-1968

(Estimated to the nearest hundred)

	1966	1967	1968
Agriculture, forestry, etc.	6,500	6,400	5,900
Mining	0	0	0
Contract Construction	1,200	1,300	1,300
Transportation, Communications, Electric, Gas and Sanitation	1,700	1,600	1,600
Wholesale and Retail Trade	4,800	5,400	5,400
Finance, Real Estate, Insurance	700	700	700
Services and Other Non-manufacturing	2,500	2,600	2,600
TOTALS	17,400	18,000	17,500

Source: Maine Employment Security Commission, March 1969 and May 1969.

Limited highway transportation links between the Urban Corridor in NERC No. 10 and other parts of the United States appear to present a problem. It is an ironical fact that the Urban Corridor is linked to the Canadian Province of New Brunswick by seven 24-hour border crossings, plus a few additional crossings which are open for less than 24 hours a day. On the other hand, the Presque Isle-Fort Fairfield-Caribou-Limestone urban complex can be approached by highway from other points in the United States only by U. S. Route 1 from Houlton, the terminus of Interstate 95, located 41 miles south of Presque Isle, or by a circuitous use of highways 163 or 277. These lead 20 miles west from Presque Isle to connect with Route 11, a crooked north-south route which runs some 95 miles due south from Fort Kent through the forested wilderness before it reaches its interchange with Interstate 95 at Sherman, 38 miles southwest of Houlton.[15] Neither of these highways north of Interstate 95 is designed to meet the needs of modern high-speed traffic or heavy use by trailer-trucks.

Railway and air service in NERC No. 10 appear to be adequate. The Bangor and Aroostook, the railway leading south from the more heavily populated section of Aroostook County, provides very adequate freight service. If its line should be cut, interconnections with the Canadian Pacific Railroad near Houlton or Fort Fairfield would provide an alternate route for rail freight.[16] There is adequate air service between Presque Isle and Bangor, and thence to other points in the United States. The Presque Isle airport, originally constructed as a military Air Force Base, has sufficient length of runway to accommodate large jet planes, and is said to be large enough to handle several times its present volume of planes and passengers without further expansion.[17]

Conclusions and Recommendations

Expansion of technical education. A good start has been made at the Vocation-Technical Institute at Presque Isle, but such programs should be expanded. Public investment will be required to provide a greater variety of technical and other post-secondary courses for commuting students. Consideration should be given

[15]State Highway Department, *General Highway Atlas—Maine,* Augusta, Maine, 1964, Maps 3, 4, 8, 9, 10.

[16]See Chapter VII, Map VII-3.

[17]Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* Portland, Maine, August 1969, V-2.

to developing "junior college" programs at Aroostook State College, especially in view of the shortage of medical-ancillary personnel described in Chapter V of this report.

Improvement of highways. Highway U.S. 1 north of Houlton should be improved to meet the needs of high-speed traffic. It should eventually be brought up to the engineering and safety standards of Interstate 95 south of Houlton. If mining activity is developed in the potential mining area near Ashland, State Route 11 will need substantial public investment to meet the needs of the increased heavy truck traffic.

Environmental controls. Public investment is needed for the planning of proper environmental controls, including zoning, development of sewage treatment and other sanitary improvements, establishment of better industrial pollution controls, and the setting aside of public recreational areas and other facilities to insure orderly development in a healthful setting which will enable the residents to live a "good life."

Recreational development. The increasing affluence of American society, coupled with the trend toward longer vacation and the growing interest in wilderness camping and canoeing, will lead to increased use of the wilderness resources of western Aroostook County. Public investment in planning is needed, so that future recreational development will not harm the natural environment. There is a problem of planning proper access roads, of providing necessary public facilities, of guarding against pollution, erosion, the unsightly and unsanitary accumulation of trash, etc.

Potential mining activity. Route 11, which has been previously described, crosses an arm of Maine's northern mineral belt just north of Patten, a town nine miles north of the interchange with Interstate 95. The greater part of this section of the mineral belt lies a few miles west, so that Route 11 either crosses or lies close to the mineral belt for some 45 miles between Patten and the northern town of Ashland, where Routes 163 and 227 branch off toward Presque Isle, some 20 miles to the east.[18]. A number of firms are now prospecting for profitable concentrations of such minerals as molybdenum, nickel, and copper. Ores containing these minerals are found throughout the mineral belt, and it is reasonable to assume that, sooner or later, sufficient concentration of reasonably high-grade ore will be discovered to justify mining activities. The anticipation of the development of mining implies a need for public investment in planning for zoning and environmental controls to avert the danger of potential land erosion and various types of pollution.

A Profile of NERC No. 11 Eastern Subregion

Six counties, all of which are south of NERC No. 10 Northern Subregion, make up NERC No. 11 Eastern Subregion, which forms the largest Subregion in terms of land area in the State of Maine. From east to west, the counties directly south of NERC No. 10 are Washington, Penobscot, and Piscataquis. Washington County is bounded on the east by the Canadian Province of New Brunswick, and on the south by the Atlantic Ocean. The other counties in NERC No. 11 are all coastal: Hancock, Waldo, and Knox. The shorelines of Waldo County and of most of Knox County run along the west shore of Penobscot Bay. These latter two counties are bounded on the west by NERC No. 13 Southwestern Subregion, while the western boundaries of Penobscot and Piscataquis Counties abut the NERC No. 12 Western Subregion.

Except for the area near the coast or on the lower reaches of the Penobscot River, NERC No. 11 is very sparsely settled.[19] The greater part of the Subregion is covered with huge tracts of forest land, stretching as much as 85 miles without any public highways whatsoever, north from the Sebec Lake resort just north of Dover-Foxcroft to the boundary of NERC No. 10, north of which stretches another unbroken expanse of wilderness.

Infrastructure, Population, and Urban Development

The population has been growing slowly since 1960. As Tables III-9 and III-10 indicate, NERC No. 11 Eastern Subregion grew more rapidly than the State of Maine as a whole during both the 1940-1950 and the 1950-1960 decades, but it is believed that its current growth is now much slower than that of the State as a whole.

The closing of Dow Air Force Base has adversely affected population growth. The Dow Air Force Base was located in Bangor and was shut down completely on June 25, 1968. It is hoped that a sufficient amount of international air traffic will be diverted to the former military air field to compensate for the loss of the business which had been generated by the Dow Air Force Base. The economic importance of this base to the metropolitan Bangor area was summarized in an arti-

[18]See Map III-1, earlier in this chapter. For more detail, see: State Highway Department, *General Highway Atlas—Maine,* Augusta, Maine, 1964, Maps 7 and 9.

[19]See State Highway Department, *General Highway Atlas—Maine,* Augusta, Maine, 1964, Maps 16-18A, 21, 22, 28-39, and 48, which show every house or other building located outside the urban built-up districts.

cle in the Portland Sunday Telegram of November 22, 1964. According to the article, the base then employed 12,000 military personnel and their dependents, together with approximately 600 civilian employees, 358 in Civil Service positions and 242 in other civilian employment. The total annual payroll was $22.7 million. In addition, annual expenditures for procurements in the area amounted to $466,500 for heating fuel, $500,000 for electricity, $42,000 for water, and $20,000 for gas. Other estimates of the economic benefits included the purchase of $746,000 of furniture by new arrivals, the donation of $23,000 to the Bangor United Fund by base personnel, and the expenditure of $1,500,000 for food and drink at base clubs. In addition to all this, approximately 3,500 charge accounts carried by local merchants were in the names of military personnel. With so great an economic loss occasioned by the closing of Dow Air Force Base, it is easy to see that the population of NERC No. 11 will tend to grow relatively slowly during the period of economic readjustment.[20]

TABLE III-9

POPULATION OF NERC NO. 11 EASTERN SUBREGION COMPARED WITH THOSE OF MAINE AND NEW ENGLAND IN SELECTED YEARS

(in thousands)

	1940	1950	1960	1966[a]
NERC No. 11 Eastern Subregion	223	244	260	272
Maine	847	914	969	1,044
New England	8,437	9,314	10,509	12,491

Source: The Public Affairs Research Center of Bowdoin College, *A Public Investment Plan for the State of Maine,* Brunswick, Maine, December 1968, p. 27.

[a]U.S. Bureau of the Census, *Statistical Abstract of the United States: 1967* (88th ed.), Washington, D.C., 1967, (Series II B).

TABLE III-10

PERCENT INCREASE IN POPULATION OF NERC NO. 11 EASTERN SUBREGION AS COMPARED WITH MAINE AND NEW ENGLAND

(in percentages)

	1940-1950	1950-1960	1960-1975
NERC No. 11 Eastern Subregion	9.4	6.6	4.6
Maine	7.9	6.0	7.8
New England	10.4	12.8	18.8

Source: Derived from Table III-9, above.

More than one-third of the population of NERC No. 11 lives in or near Bangor. Of the estimated 265,054 residents of NERC No. 11, 55 per cent live in 22 urban communities, all but five of which are either in the Bangor metropolitan areas or along the seacoast. As the series of following tables, grouped under the heading of Table III-11, indicate, there are only 22 municipalities with populations exceeding 2,500 in the entire NERC No. 11 Eastern Subregion. Their 1966 estimated total urban population was 145,471. Of this urban population, 15.7 percent, or 22,961 persons, lived in the five inland urban centers of Dexter, Lincoln, Millinocket, Dover-Foxcroft, and Milo, municipalities located from approximately 30 to about 60 miles north or northwest of Bangor.[21]

The Bangor metropolitan area, however, consisting of Bangor, Brewer, Hampden, Old Town, Orono, and Orrington, accounted for 78,080 of the total urban

[20]*Portland Sunday Telegram,* November 22, 1964.
[21]See Table III-11.

population is now 11,042, or 7 percent of the urban residents in NERC No. 11.

Two highways leading south from Bangor run through a group of coastal urban centers too far from Bangor to be considered a part of metropolitan Bangor, but near enough to be considered in its sphere of influence. Route 3 leads south to Bucksport on the east bank of the Penobscot River just before it enters Penobscot Bay, and then east to Ellsworth and Bar Harbor. This section of Route 3 may be considered a spur to the east of the central portion of Maine's Urban Corridor. Route 1, south of Bangor, passes through Belfast, Camden, Rockland, and Thomaston, the municipalities at the southern end of this central portion of Maine's Urban Corridor.[22] The total population of these seven urban centers south of the Bangor metropolitan area is 33,388, or approximately 23.1 percent of the urban population of NERC No. 11.

The only other urban centers in NERC No. 11 are found at the eastern end of Washington County, on the shore near the border of the Canadian Province of New Brunswick. These places were classified as urban according to the 1960 census, but it is estimated that the populations of three of them have now fallen below the 2,500 urban minimum. If so, Calais will be the only urban place in Washington County after the next census. For convenience, however, Calais, Eastport, Lubec, and Machias have all been classified as urban in the accompanying tabulation. Their total estimated population is now 11,042, or 7 percent of the urban population of NERC No. 11.

The urban trend is apparent in only 2 of the 6 NERC No. 11 counties. In the entire Subregion the trend of populations to become concentrated in urban areas has currently reached significant proportions only in Penobscot and Hancock Counties. In the other counties in NERC No. 11 the urban proportion of the total population is either changing very little or else actually decreasing. The most urban county in the Subregion is Penobscot County, with about 67.5 percent of its population classified as urban, or 65,420 out of a total of 97,104. In 1966 approximately 70.0 percent of the population of Penobscot County was urban, or 94,406 out of an estimated total of 135,005. The greatest urban gain, of course, was in the Bangor metropolitan area, whose six municipalities swelled their population from 51,830 in 1940 to 78,080 in 1966. It must be remembered, of course, that no data have yet been compiled concerning the effects upon population in that metropolitan area following the closing of the Dow Air Force Base. It is entirely possible that there may be a period of readjustment which may last for several years before the growth in population in the Bangor metropolitan area resumes its upward trend.

[22]See Map III-1 near the beginning of this chapter for these urban locations. For greater detail, see Maine State Highway Department, *General Highway Atlas—Maine,* Augusta, Maine, 1964, Maps 17-18A, 21, 33, and 48.

TABLE III-11

POPULATION OF URBAN COMMUNITIES AND COUNTIES IN NERC NO. 11 EASTERN SUBREGION FOR SELECTED YEARS, 1940 TO 1966

	1940	1950	1960	1966[a]
HANCOCK COUNTY				
Bar Harbor	4,378	3,864	3,807	3,634
Bucksport	2,927	3,120	3,466	3,501
Ellsworth	3,911	3,936	4,444	4,872
Total Urban Population	11,216	10,920	11,717	12,007
Total Rural Population	21,206	21,185	20,576	20,088
Total for Hancock County	32,422	32,105	32,293	32,095
KNOX COUNTY				
Camden	3,556	3,670	3,988	3,888
Rockland	8,899	9,234	8,769	9,110
Thomaston	2,533	2,810	2,780	2,698
Total Urban Population	14,986	15,714	15,537	15,696
Total Rural Population	12,205	12,407	13,038	12,617
Total for Knox County	27,191	28,121	28,575	28,313

	1940	1950	1960	1966[a]
WALDO COUNTY				
Belfast	5,540	5,960	6,140	5,685
Total Urban Population	5,540	5,960	6,140	5,685
Total Rural Population	15,619	15,727	16,492	16,683
Total for Waldo County	21,159	21,687	22,632	22,368
PENOBSCOT COUNTY				
Metropolitan Bangor Area				
Bangor	29,822	31,558	38,912	42,635
Brewer	6,510	6,862	9,009	10,014
Hampden	2,591	3,608	4,583	5,014
Old Town	7,688	8,261	8,626	8,812
Orono	3,702	7,504	8,341	8,683
Orrington	1,517	1,895	2,539	2,922
Northern Urban Centers				
Dexter	3,714	4,126	3,951	3,819
Lincoln	3,653	4,030	4,541	4,648
Millinocket	6,223	5,890	7,453	7,859
Total Urban Population	65,420	73,734	87,955	94,406
Total Rural Population	31,684	34,464	38,391	40,599
Total for Penobscot County	97,104	108,198	126,346	135,005
PISCATAQUIS COUNTY				
Dover-Foxcroft	4,015	4,218	4,173	4,101
Milo	3,000	2,898	2,756	2,534
Total Urban Population	7,015	7,116	6,929	6,635
Total Rural Population	11,452	11,501	10,450	9,437
Total for Piscataquis County	18,467	18,617	17,379	16,072
WASHINGTON COUNTY				
Calais	5,161	4,589	4,223	4,546
Eastport	3,346	3,123	2,537	1,932
Lubec	3,108	2,973	2,684	2,236
Machias	1,954	2,063	2,614	2,328
Total Urban Population	13,569	12,748	12,058	11,042
Total Rural Population	24,198	22,439	20,850	20,159
Total for Washington County	37,767	35,187	32,908	31,201
Total Population for NERC No. 11	234,110	243,915	260,133	265,054

Source: The National Survey, *Maine Population Data Sheets with County Maps,* Chester, Vermont, 1968.

[a]State of Maine Department of Health and Welfare, May 1969.

As will be seen from a study of Table III-11, Hancock County has increased the proportion of its urban population from 34.6 percent of the 1940 total population of 32,422 to 36.6 percent of the 1966 estimated total population of 32,095.

Although Piscataquis County has shown a gain in proportion of urban population, the total population of the County has shrunk from 18,467 in 1940 to an estimated 16,072 in 1966, and the urban population has also shrunk, through to a lesser degree, from 7,015 to 6,635 during the same period. The population of Knox County has remained relatively static since 1950, and

the urban population has remained at approximately 55 percent during the entire period from 1940 to 1966.

Waldo County, a county with a relatively high incidence of families whose incomes are below the poverty level,[23] has tended to become slightly more rural since 1940, 26.6 percent of its population living in its one urban center of Belfast in 1940, and only 25.4 percent residing there in 1966, according to Maine Department of Health and Welfare estimates. The very slight growth in the total population would appear to be entirely rural, on the basis of an analysis of the data in Table III-11.

Washington County has been experiencing a constant decline in both urban and rural population ever since 1940, with an estimated 17 percent decline in total population between 1940 and 1966. There has been a slightly greater proportionate drop in urban population than in rural population. Washington County appears to be in serious need of industrial employment for a substantial proportion of its adult population. There is a possibility that some part of the potential mining area near the coast of Washington County may prove feasible for open-pit mining.[24] Of greater probability is the development of a deep-water oil tanker terminal, together with a possible refinery and petrochemical complex in one of the deep harbors, such as a location near Machiasport. Should such a development occur, substantial public investment would be required for housing, sewers and sewage treatment facilities, improved water systems, and other public improvements.

Economic Activities and Types of Employment in NERC No. 11

Wholesale and retail trade form a major source of employment in the NERC No. 11 Eastern Subregion. Bangor is the hub of commercial activity for the entire Subregion, and it also serves as a wholesale center for much of the commercial activity in NERC No. 10 Northern Subregion, to which it is connected by the Bangor and Aroostook Railroad and also many trucking lines. Several other urban centers in NERC No. 11 are secondary commercial centers. Dexter serves Piscataquis County. Rockland serves Knox County and also portions of Waldo County and some of the eastern communities in NERC No. 13 Southwestern Subregion. There are also several commercial centers in some of the other larger towns in the NERC No. 11 Eastern Subregion.

As will be seen in Table III-12, nearly 12 thousand persons were employed in wholesale or retail trade in NERC No. 11 in 1966. Somewhat more than a third as many were employed by the food industry, a form of employment which will probably continue to expand as the American consumer demands an ever-increasing proportion of pre-cooked, "instant," or other convenience foods requiring little or no home preparation.

The paper industry and the leather industry employed very nearly four thousand workers apiece, but persons employed in "agriculture, forestry, fisheries" dropped to approximately 3,600. It is unfortunate that any person attempting to appraise the economy of various types of occupations in Maine has to be confronted with agriculture, forestry, and fisheries lumped together. Each is a separate and relatively important facet of Maine employment, especially in the case of such a diverse geographical area as NERC No. 11 Eastern Subregion.

According to the classifications given by the *Census of Maine Manufacturers,* the service industries, employing almost 3,300, and the lumber industries, employing

[23]See discussion of income levels in Chapter II.
[24]See Map III-1 and accompanying discussion.

TABLE III-12

EMPLOYMENT LEVELS IN SEVEN MAJOR INDUSTRIAL CLASSIFICATIONS IN NERC No. 11 EASTERN SUBREGION IN 1966

Industrial Classification	Number Employed
Wholesale and Retail Trade	11,821
Food	4,275
Paper	3,951
Leather	3,877
Agriculture, Forestry, Fisheries	3,610
Service	3,287
Lumber	3,105

Source: *Census of Maine Manufacturers,* 1966.

more than 3,100, ranked sixth and seventh in order of importance.

The following tabulation, Table III-13, provides data concerning the varying levels of employment in 15 industrial classifications, as defined and indexed by the *Standard Industrial Classification Manual* of the Bureau of the Budget. It must be remembered that Federal law prohibits the reporting of data which might identify an individual employer. If there are fewer than four competing firms submitting data, or if any one provides more than 80 percent of the volume of business activity or employment in a given category, the data cannot be published.

A good example of the latter situation is indicated by the category of "furniture" in Table III-13. No data can be given for 1966 or 1968, because the Moosehead Manufacturing Company of Monson has become a major manufacturer of furniture, producing more than 80 percent of the output of NERC No. 11. A similar possibility may be true in the case of some of the other categories marked with asterisks in Table III-13.

The leather industry now provides the greatest number of industrial jobs of any SIC group in NERC No. 11. The number of employees has almost doubled since 1960. The growth in the leather industry is probably the most pronounced trend in the pattern of industrial employment in the Subregion.

The food industry now ranks a close second in industrial employment. It experienced a slackening of employment in 1962 and again in 1964, but it has been gaining slowly ever since.

Employment in both the lumber industry and the paper industry has dropped from the 1960 level. Employment in the lumber industry, however, appears to be recovering gradually from the drop in 1962.

The almost steady drop of employment in the paper industry might look alarming if the forecasts for greatly increased output of paper in the future were not known. It would appear that the slackening of employment in the paper industry during the 1960-1968 period is the result of mill modernization with improved equipment that provides a higher output for each man-hour of labor. It is also known that one or more relatively small and inefficient mills which could not raise the capital for modernization were forced to close.

The textile industry in NERC No. 11 still employs more than 1,600 persons. Employment in this industry appears to fluctuate from year to year, without evidence of any particular trend. Much the same comment may be made about the relatively small apparel industry, though a marked rise in employment in that industry occurred in 1968.

TABLE III-13

NUMBERS EMPLOYED IN NERC NO. 11 EASTERN SUBREGION DURING SELECTED YEARS ACCORDING TO STANDARD INDUSTRIAL CLASSIFICATIONS NO. 20 TO NO. 39[a]

SIC No.	Category	1960	1962	1964	1966	1968
20	Food	4,269	4,072	3,545	4,275	4,359
22	Textiles	1,609	1,807	1,712	1,943	1,632
23	Apparel	450	439	381	395	516
24	Lumber	3,565	3,031	3,196	3,105	3,338
25	Furniture	38	39	25	*	*
26	Paper	4,258	4,033	4,033	3,951	3,180
27	Printing	469	463	486	497	546
28	Chemicals	539	525	334	358	285
29	Petroleum	—	—	20	125	*
31	Leather	2,395	2,669	3,340	3,877	4,549
32	Stone	375	438	430	475	404
34	Fabricated Metals	28	67	99	96	46
35	Machinery, etc.	—	38	344	388	380
37	Transportation Equipment	385	336	421	445	455
39	Miscellaneous	50	—	—	—	7

[a]SIC is explained in the accompanying text. No data reported for SIC No. 21, 30, 33, 36, or 38.

*Federal law forbids data which might result in company identification.

Source: *Census of Maine Manufacturers,* 1960-1968.

Employment in the printing trades appears to be increasing, but chemical plants in NERC No. 11 appear to be slackening employment. It is interesting to note that the leather industry appears to be increasing employment in this Subregion, showing a constant rise from 2,395 employees in 1960 to 4,549 in 1968, almost doubling the number of workers over the eight-year period.

Comment might also be made on the emergence of a machinery industry and the growth of the transportation equipment industry. Data about employment in "machinery, etc." was not reported in 1960, but the number peaked to 388 in 1966 and then fell back very slightly to 380 in 1968. Persons employed in "transportation equipment" dropped back slightly from the 385 reported in 1960 and then steadily increased after 1962 to the current peak of 455.

Non-manufacturing business employs more than 23,000 persons in NERC No. 11. A comparison of Tables III-13 and III-14 indicates that the ratio of persons employed in non-manufacturing business to those employed in manufacturing industry is constantly increasing.

TABLE III-14

NUMBERS EMPLOYED BY NON-MANUFACTURING BUSINESS IN THE NERC NO. 11 EASTERN SUBREGION, 1966 TO 1968

Category	1966	1967	1968
Agriculture, forestry, fisheries	3,920	3,850	3,610
Mining	168	111	134
Contract Construction	3,247	2,765	2,824
Transportation, Communications, Electric, Gas, and Sanitation	2,755	2,838	2,868
Wholesale and Retail Trade	11,302	11,537	11,821
Finance, Insurance, Real Estate	1,633	1,677	1,763
Services	3,027	3,175	3,287
Total of Above Categories	22,461	22,422	23,013

Source: Maine Employment Security Commission, March 1967 and May 1969.

It is impossible to tell from available data whether the slackening off in employment since 1966 in "agriculture, forestry, fisheries" indicates a decline in employment in all three categories, or not. It is probable, but not certain, that the decline in population along the coastal fringe of Washington County also indicated a more pronounced decline in employment in fisheries than in the other two categories.

Employment in mining appears to fluctuate from one year to another, but all other categories which have not previously been mentioned appear to show a healthy increase in employment, according to Table III-14. It is anticipated that some of these categories will be adversely affected by the recent closing of Dow Air Force Base when 1969 statistics are released.

Conclusion and Recommendations

The greatest growth potential in the population of NERC No. 11 Eastern Subregion appears to be in the Bangor metropolitan area. Although the closing of Dow Air Force Base has apparently set back the growth of the Bangor metropolitan area for a period, the air field appears to have potential as a servicing point for large jet planes, as a place where cargoes from overseas can be broken up for shipment to a variety of American cities, and as an emergency airport of entry into the United States when the airports in Boston and New York have too many planes to handle. Congested conconditions and high costs at the airports in major East Coast cities may possibly make Bangor a favored location for the servicing and repair of the planes of certain overseas airlines. This, in turn, would probably attract associated industry.

Palo Alto in California and Metropolitan Boston in Massachusetts exemplify the new kind of industrial "seed bed," especially for the development and healthy growth of electronic firms. The combination of Bangor's strong financial interests, the graduate instruction through the College of Engineering at the University of Maine in suburban Orono, and the availability of

inexpensive but well-equipped factory spaces at Dow Field provides a potential "seed bed" found nowhere else in Maine. Developments based on this combination may soon take the place of the former Air Force Base in boosting the economic activity of the Bangor area.

Technical education should be expanded. More programs of the type commonly found in Community Colleges, which provide technically and vocationally oriented courses appropriate to the needs of their local areas, should be developed for commuting students in major centers of population in NERC No. 11. The chief center for this type of education in the Subregion would probably be the South Campus of the University of Maine, located at the former Dow Air Force Base in Bangor.

Public investment should anticipate the development of a petrochemical complex on the coast of NERC No. 11. The greatest probability of such development appears to be at Machiasport, but there are several other potential locations where large tankers requiring extremely deep, protected anchorage areas might discharge their cargo. A major industry offering year-round employment, rather than the brief, seasonal employment of the sardine canneries and the blueberry fields, is needed if Washington County is not to continue to lose population from its coastal towns. If such industrial development occurs, public investment will be needed for planning for development of proper zoning and for environmental controls.

Housing development will be needed in any area where immediate promise of major economic development occurs. Present housing conditions in most coastal towns would not be adequate to allow for the sudden influx of workers. The State Housing Authority should plan programs in conjunction with local housing authorities to implement the expansion of adequate housing for employees in areas where large-scale economic development is proposed. If this is not done, inadequate housing conditions might become a major stumbling block to further economic development.

Consideration should be given to developing, near the head of Penobscot Bay, docking and unloading facilities for jet-fuel tankers. Bangor International Airport will need increasing quantities of this fuel as more air carriers use the airport for a refueling stop. A pipeline already exists, and the proposed docking facilities should allow discharge of jet fuel into this pipeline, or an enlarged line, for transmission to the airfield.

Properly controlled recreational development and seasonal residence should continue to be encouraged. Seasonal residents already swell the total Subregional population by approximately 64 percent. This is all the more amazing when it is remembered that the great majority of the summer residents occupy a narrow strip along the seacoast and on the major coastal islands of the Penobscot Bay, Blue Hill Bay, and Frenchman's Bay sections. Coastal summer residents are particularly numerous in Knox, Waldo, and Hancock Counties. With proper environmental controls, coastal development to promote more summer residency along the shores of Washington County should be encouraged. Public investment might well be used for proper planning and also for the establishment of public beaches and other recreational areas open to the public before the Washington County coastline becomes too highly developed for summer residency by private interests.

Recreational boating could become a more popular activity along the eastern coast of NERC No. 11. Since this area of Maine has an ideal coastline for boating, it is possible that recreational boating could be further stimulated in the section where it is already prevalent and developed to a much greater extent in the Washington County areas farther east, by means of public investment in marinas, boatels, and other boating facilities.

Recreational development of many lakes, particularly in Washington County, might be encouraged. Although bogs, swamps, and other undesirable terrain may make a number of Washington County lakes unsuitable for most forms of recreational development, there are many unspoiled lakes which could be utilized if access roads were built and plots of land along the shores made available, partly for general public use and partly for cottage lots. Public investment should be made for planning so that such development will be in the best interests of the public for years to come. Such planning might point the way to further public investment in building and maintaining access roads, developing campsites and marinas, providing for proper zoning and environmental and sanitary controls, and furnishing patrols to maintain public safety.

Multipurpose use of certain forested areas would benefit both the tourist industry and also the residents of Maine. Maine is fortunate in having Acadia National Park, Baxter State Park, and the Allagash Wilderness Waterway, together with a number of smaller state parks. Baxter State Park, in the central portion of Piscataquis County, is an excellent example of a virgin-wilderness recreational development for nature lovers who are willing to rough it. Other preserves of this type might well be developed. On the other hand,

persons who desire to camp in greater comfort, traveling most of the time by automobile, should also have more access to the beauties of northern Maine. The northern parts of Penobscot and Piscataquis Counties are primarily uninhabited woodlands, serving as a major resource for the pulp and paper industry. This timberland could serve as a multipurpose resource if the State were to invest in access roads and campsites to attract visitors.

A Profile of NERC No. 12 Western Subregion Infrastructure

The NERC No. 12 Western Subregion of Maine is composed of Oxford, Franklin, and Somerset Counties. It is the only Subregion in Maine to have parts of its boundaries contiguous with those of all three other Subregions. It lies directly north of NERC No. 13 Southwestern Subregion, east of Northern New Hampshire, and west of the northern part of NERC No. 11 Eastern Subregion. Approximately 15 miles of the extreme eastern part of its northern boundary lies south of the west end of NERC No. 10 Northern Subregion, but most of its northern boundary borders the Canadian Province of Quebec.

The western border of NERC No. 12 Western Subregion is a straight line, running from south to north, and bordering the State of New Hampshire, but the other boundaries are almost unbelievably crooked, making the general shape of NERC No. 12 that of an irregular diamond, some 85 miles wide from east to west at its widest measurement and 102 miles long on its western side which borders New Hampshire. Its northeastern corner, however, is some 85 miles farther north than its northwestern corner. Although its southeastern corner is some 50 miles farther north than its southwestern corner, this means that its extreme north-south measurement near its eastern boundary is approximately 127 miles.[25]

The greater part of the territory is a picturesque wilderness of lakes and heavily forested mountains, many of the mountains exceeding 3,000 feet in height, and a number exceeding 4,000 feet.[26] Much of the northern forest is controlled by paper manufacturers, but except for the northeastern section extending some 65 miles north from Rockwood on Moosehead Lake, where there are no public highways, a hiker in the wilderness would always be within 15 miles or less of some public highway if he headed in the right direction.

Only two public highways lead north out of Subregion No. 12 into Quebec Province. U.S. Rt. 201, scenic, but generally narrow and crooked, leads up the Kennebec River Valley to West Forks and then strikes north through the wilderness to Jackman and the Quebec border. It is the only major highway from Maine to Quebec City, but it would need much improvement in both Maine and Quebec Province before it could stimulate the full potential of tourist travel which might be encouraged to tour Maine en route to or from Quebec City. The other highway, Route 27, follows the historic Arnold Trail northwesterly to Lac Megantic in Quebec Province. If this route could be improved in Maine, and if the Province of Quebec could be encouraged to build an improved highway, following generally the unimproved roads from Woburn, P.Q., just south of Lac Magantic, west to Cookshire and Sherbrooke, to make connections with L'Autoroute des Cantons de l'Est, Maine then could have a reasonably high-speed direct route to Montreal. If this were built, however, it would then be advisable for Maine to construct a new Highway, running 50 miles due north from Upton to connect with the Quebec highway running west from Woburn, P. Q. Such a link would provide much more direct access to Montreal from Portland and Lewiston-Auburn, Maine.

Nearly all the population lives within a few miles of the NERC No. 13 border. With the exception of the inhabitants of such relatively small towns as Jackman and Bingham on Route 201 and the Stratton settlement in Eustis township on Route 27, together with people living in other small towns, principally in the Rangeley area, the entire permanent population of NERC No. 12 lives within 25 miles in airline distance from the border of the much more populous NERC No. 13 Southeastern Subregion.[27]

Only 11 municipalities in NERC No. 12 have sufficient population to meet or exceed the urban minimum of 2,500. Four of these are directly on the southern border, while a fifth urban center, Paris, adjoins the border urban center of Norway. Of the others, Wilton and Farmington are both within ten air-miles of the southern border, Skowhegan and Madison are not more than 13 air-miles north of the border, and only Mexico and Rumford, approximately 17 air-miles north of their part of the border, are any greater distance from the NERC No. 13 Southwestern Subregion.

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[25]State Highway Department, *General Highway Atlas—Maine*, Augusta, Maine, 1964, Maps 13-15, 24-27, 41-47.

[26]*Ibid.* Altitudes of all major mountains are indicated in this atlas.

[27]*Ibid.* All houses outside densely settled urban areas are marked on the atlas maps, and municipal populations are also indicated.

This southern populated strip in NERC No. 12 contains many small but very beautiful lakes and it is very hilly. The western two-thirds of the strip is drained by the Androscoggin River and its many small tributaries. The eastern third is in the Kennebec River watershed. Many of the valleys and lower hills are well suited for apple orchards, dairy farming, and other forms of agriculture.

The highways of the Subregion are very scenic but not adapted for high-speed transportation. They tend to follow twisting valleys between the hills and mountains. The principal truck route, and the best highway, Route 26, has no direct access to the Maine Turnpike at Gray in NERC No. 13, where it passes over the Turnpike, is very circuitous, has long stretches where it is unsafe to pass under normal traffic conditions, and makes abrupt turns at Norway, South Paris, Bryant Pond, and Bethel, conflicting with local business traffic in each of these towns. The other important highway, U.S. 2, connecting Skowhegan, Farmington, Wilton, Rumford, and Bethel with the New Hampshire border, is equally crooked in many locations. There are many other highways in the southern part of NERC No. 12, but they all suffer from similar disadvantages.

Population and Urban Development in NERC No. 12

The population of the Subregion has grown only about 25 percent since 1880. Between 1940 and 1950 it increased about 4 percent, rising from 101,000 to approximately 105,000, as indicated by Table III-15. During the 1950's, out-migration caused the loss of almost one percent of the permanent population, but it is now estimated that the population is rising again and should reach about 107,000 in 1975.

It should be mentioned, however, that the current permanent population of approximately 105,000 increases to about 146,000 during the summer months, a seasonal increase of 38.6 percent.[28] Summer residents often retire to live permanently in their summer homes after retirement from business. This means that there tends to be a disproportionate population of elderly residents in many of the smaller communities in the Subregion.

[28]Table II-6, previous chapter.

TABLE III-15

POPULATION OF NERC NO. 12 WESTERN SUBREGION COMPARED WITH THOSE OF MAINE AND NEW ENGLAND

(in thousands)

	1940	1950	1960	1975[a]
NERC No. 12 Western Subregion	101	105	104	107
Maine	847	914	969	1,044
New England	8,437	9,314	10,509	12,044

Source: The Public Affairs Research Center of Bowdoin College, *A Public Investment Plan for the State of Maine,* Brunswick, Maine, December 1968, p. 27.
[a]U.S. Bureau of the Census, *Statistical Abstract of the United States: 1967* (88th ed.), Washington, D.C., 1967 (Series II 8).

TABLE III-16

PERCENT OF CHANGE IN POPULATION OF NERC NO. 12 WESTERN SUBREGION AS COMPARED WITH MAINE AND NEW ENGLAND

(in percentages)

	1940-1950	1950-1960	1960-1975
NERC No. 12 Western Subregion	3.96	–0.95	2.88
Maine	7.9	6.0	7.8
New England	10.4	12.8	18.8

Source: Derived from Table III-15, above.

A comparison of Table III-16 with the earlier Tables III-10 and III-4, which present similar statistics for other subregions, will indicate how slowly the Western Subregion is developing in comparison to the Subregions which have been previously discussed. The estimated gain in population in NERC No. 12 is less than 3 percent during the 15-year period ending in 1975, while the NERC No. 11 Eastern Subregion anticipates a gain of 4.6 percent, and the NERC No. 10 Northern Subregion looks for a gain of 7.8 percent during the same 15-year period.

It should be pointed out that permanent population estimates in this Subregion are especially difficult to make because of the elderly retired people who consider themselves permanent residents because they live more than six months out of each year in their Maine homes, but who are apt to be travelling in warmer climates from December until the beginning of May. Fall weather tends to be very pleasant in Maine, and there is little danger of heavy snow until about the beginning of December. Spring, on the other hand, comes very slowly in NERC No. 11. Deep snow drifts persist into the latter part of April very frequently, and snow squalls occur periodically until the beginning of May. Accordingly, any population count taken during April is apt to omit a number of retired persons who are legally permanent residents, but who travel south from December through April.

The subregional trend toward urban concentration of population is not found in Oxford County. Within NERC No. 12 the trend toward population concentration in urban centers is marked especially in Franklin County, proceeding more slowly in Somerset County, but not apparent in Oxford County. As Table III-17 indicates, the Subregion as a whole, however, is following the current trend for population to grow in urban and suburban communities and to move away gradually from rural communities.

According to Table III-17, the total population of NERC No. 12 Western Subregion increased by 7,756 persons, or approximately 7.74 percent, between 1940 and 1966. Approximately 98 percent of this increase was represented by the increase of 7,636 in urban population.

If Oxford County, which runs counter to general trends, is excluded from discussion, the shift from rural to urban population concentration becomes much more noticeable. The combined populations of Franklin and Somerset Counties increased from 58,141 to 64,597 between 1940 and 1966, a gain of more than 11 percent. The urban part of the population of these counties, however, increased from 29,447 to 37,070 during this period, a gain of fully 25.8 percent. On the other hand, the rural population decreased from 28,694 to 27,526, a loss of 1,168 rural inhabitants, or a decrease of 3.93 percent in the rural population during the 1940-1966 period.

Oxford County, therefore, should be considered separately from the rest of the Subregion. Its four urban municipalities actually should be considered as two urban centers. Rumford and Mexico form one interlocking urban center on the north shore of the Androscoggin River, the business district of one merging without a noticeable break into the business district of the other, with the economy of both municipalities dependent on the industrial activity of one large paper mill which dominates the entire industrial employment of the surrounding area. As the grouping of urban communities in Table III-17 indicates, Rumford has lost very slightly in population, while the more suburban Mexico has gained enough to make a net increase in population in the two municipalities of some 567 persons between 1940 and 1966, a gain of a little less than 3.9 percent.

Approximately 22 miles airline distance south of Rumford, but almost twice as far by a very twisting road, Norway and Paris make up another pair of urban communities, with separate central business districts connected by a short highway strip of newer business developments. These twin towns still show remnants of their past importance as the market center and supply center for an extensive agricultural area extending some miles south in NERC No. 13 Southwestern Subregion. They have a number of relatively small industrial plants, including small shoe factories, factories manufacturing various types of wooden products, a tannery division of Swift & Company, and a sporting goods company manufacturing Snowcraft.[29] The population of the area, however, is shrinking, though it is possible that official census counts fail to recognize a number of retired persons who maintain legal permanent residency but who travel in warmer climates from December through April whenever they can afford to do so. Many persons do retire to this section of Oxford County, living in their former summer residences from May until November. For this reason, it is often difficult to differentiate between elderly seasonal residents and elderly permanent

[29]Tower Publishing Company, *Maine Register: State Year-Book and Legislative Manual No. 101,* Portland, Maine, 1969, pp. 713-715 and 716-718.

TABLE III-17

POPULATION OF URBAN COMMUNITIES AND COUNTIES IN NERC NO. 12 WESTERN SUBREGION FOR SELECTED YEARS 1940 TO 1966

	1940	1950	1960	1966[a]
OXFORD COUNTY				
Mexico	4,431	4,762	5,042	5,447
Rumford	10,230	9,954	10,005	9,781
Norway	3,649	3,811	3,733	3,620
Paris	4,094	4,358	3,601	3,569
Total Urban Population	22,404	22,885	22,382	22,417
Total Rural Population	20,258	21,336	21,963	21,545
Total for Oxford County	42,662	44,221	44,345	43,962
Urban Percent of Population	52.5	51.7	50.8	51.2
FRANKLIN COUNTY				
Jay	2,858	3,102	3,237	4,144
Wilton	3,228	3,455	3,274	3,763
Farmington	3,743	4,677	5,001	5,220
Total Urban Population	9,829	11,234	11,522	13,127
Total Rural Population	10,067	9,448	8,547	8,338
Total for Franklin County	19,896	20,682	20,069	21,466
Urban Percent of Population	49.1	54.3	56.0	61.2
SOMERSET COUNTY				
Madison	3,836	3,639	3,935	4,295
Skowhegan	7,159	7,422	7,661	8,382
Fairfield	5,294	5,811	5,829	6,898
Pittsfield	3,329	3,909	4,010	4,368
Total Urban Population	19,618	20,781	21,435	23,943
Total Rural Population	18,627	19,004	18,314	19,188
Total for Somerset County	38,245	39,785	39,749	43,131
Urban Percent of Population	51.3	52.4	54.0	55.5
SUMMARY FOR NERC NO. 12				
Total Population for NERC No. 12	100,803	104,684	104,163	108,559
Urban Population of NERC No. 12	51,851	54,896	55,339	59,487
Urban Population Percentage	51.5	52.4	53.0	54.9

Source: The National Survey, *Maine Population Data Sheets with County Maps,* Chester, Vermont, 1968.

[a]State of Maine Department of Health and Welfare, May 1969.

residents who leave the area only during the stormiest and rawest months of the year.

Jay, in Franklin County, and Fairfield, in Somerset County, are linked more closely to NERC No. 13 than to other districts of NERC No. 12. The two municipalities of Jay and Livermore Falls actually form one paper manufacturing complex which was originally centered just south of the boundary of NERC No. 12 but whose more important part has been recently constructed north of the boundary in the town of Jay. As a result, the estimated population of Jay has increased from 3,237 in 1960 to 4,144 in 1966, a growth of 28 percent in only six years.

Fairfield, on the other hand, has developed largely as a result of suburban development, coupled with expansion of urban business and industry moving across

the northern boundary of NERC No. 13 at Waterville into Fairfield, which lies just inside the boundary of NERC No. 12. This development has been influenced also by the convenience of the Fairfield interchange on Interstate 95, which helps make Fairfield a favored location for new industry utilizing long-distance trucking concerns. The development of Interstate 95 also appears to have been of substantial benefit to Pittsfield, approximately 15 miles northwest of Fairfield, and also located conveniently close to an interchange. Fairfield has grown an estimated 18.5 percent in population in the six years between 1960 and 1966, while Pittsfield has gained 9 percent in the same period.

Economic Activities and Types of Employment in NERC No. 12

Paper manufacturing is an important source of employment. Unfortunately, two paper mills, one at Jay and one at Rumford, are the major employers in this category and federal law forbids disclosure which would tend to identify a single company. The other mills in the subregion are relatively small, as for example, the Kennebec River Pulp and Paper Company at Madison. The mill at Jay is a part of the Otis Division of the International Paper Company of Chisholm, whose offices are just across the boundary in NERC No. 13. Accordingly, there are no segregated statistics for the part of the operation in NERC No. 12. The Rumford mill is part of the Oxford Paper Company, a division of the Ethyl Corporation. It is the chief industrial employer for the male labor force of the combined towns of Rumford and Mexico, whose joint population is in excess of 15,000.[30]

The leather industry is a major employer. According to Table III-18, the leather industry, principally but not entirely shoe manufacturing, is now the major source of industrial employment of those which can be legally reported for NERC No. 12. In 1960 it had ranked behind the lumber industry in numbers of persons employed, but it increased its employment by some 20 percent in 1966, and apparently is continuing at close to this higher level of 6,600 employees.

The lumber industry is still of major importance. Employment has remained comparatively steady, fluctuating about 5 percent above and below a median of about 5,700 over the past eight years.

Other manufacturing employment appears to be of minor importance. The food processing industry, which used to be of substantial importance in Oxford County, appears to be rapidly declining. A similar decline is apparent in the textile industry. The machinery industry was of very minor importance until 1968, when it tripled its employment to nearly 100. This industry, like the furniture industry, employs relatively small numbers of workers in NERC No. 12, but it appears to offer some promise for the future.

[30] *Ibid.*, pp. 355, 544, 724, 862.

TABLE III-18

NUMBERS EMPLOYED IN NERC NO. 12 WESTERN SUBREGION DURING SELECTED YEARS ACCORDING TO STANDARD INDUSTRIAL CLASSIFICATIONS NO. 20 TO 39[a]

SIC No.	Category	1960	1962	1964	1966	1968
20	Food	774	452	321	298	249
22	Textiles	511	760	618	353	337
24	Lumber	5,571	5,394	5,701	6,010	5,763
25	Furniture	—	—	—	182	185
26	Paper	*	*	*	*	*
27	Printing	106	110	42	93	111
31	Leather	5,425	5,549	5,473	6,615	6,573
32	Stone	—	48	68	25	26
35	Machinery, etc.	—	26	27	32	99
37	Transp. Equip.	12	12	9	5	4
39	Miscellaneous	65	41	59	27	28

[a]No data reported for SIC No. 21, 23, 28-30, 33-34, 36 , or 38. For further explanation see Table III-7.

*Federal law forbids publication of data which may identify a single or major employer. Note comment in preceding text.

Source: Maine Department of Labor and Industry, *Census of Maine Manufacturers,* Augusta, Maine, 1960, 1962, 1964, 1966, 1968.

TABLE III-19

NUMBERS EMPLOYED BY NON-MANUFACTURING BUSINESS IN THE NERC NO. 12 WESTERN SUBREGION, 1966 TO 1968

Category	1966	1967	1968
Agriculture, forestry, etc.	1,780	1,780	1,780
Mining	16	27	45
Contract Construction	755	908	822
Transportation, Communications, Electric, Gas, and Sanitation	597	596	563
Wholesale and Retail Trade	2,937	3,052	3,277
Finance, Insurance, Real Estate	413	437	436
Services	1,026	1,132	1,202
Total of Above Categories	7,524	7,932	8,125

Source: Maine Employment Security Commission, March 1967 and May 1969.

Principal non-manufacturing employment increased about 8 percent between 1966 and 1968. Of the larger categories of employment, contract construction fluctuated between 9 and 20 percent above the 1966 level, transportation and allied employment dropped approximately 6 percent, employment in finance, insurance, and real estate increased about 6 percent, employment in wholesale and retail trade increased 11 percent, and employment in service occupations increased 17 percent during the two-year period.

Conclusions and Recommendations

Open pit mining will probably be developed in the Jackman area of NERC No. 12. The Spooner Mines and Oil, Ltd., has completed test borings near Jackman, a few miles south of the border of the Province of Quebec. It is anticipated that open pit mining for ores containing molybdenum and copper will be started within the next decade. Other firms are also conducting exploration for high grade sources of such ore. Deposits of ore of varying qualities can be found throughout the northern mineral belt, which includes the very northern tip of Oxford County, takes in the northern section of Franklin County, extending some 30 miles south from the Quebec Provincial border to Flagstaff Lake, and then becomes narrower as it proceeds across Somerset County in a northeasterly direction near Jackman toward the northern part of the Moosehead Lake region and into the Ripogenus Lake region of NERC No. 11 just southwest of Baxter State Park.[31]

While it is highly probable that mining will take place in this area, it is doubtful that any mining activity will become an employer of substantial numbers of people. Since it is entirely probable that some of the potential mines might be marginal from an economic point of view, public investment will probably be needed to provide proper environmental controls and to police operations so that land erosion or other irreparable damage to the environment may be averted.

Paper making and other forestry-connected industries will continue as major sources of employment. All of NERC No. 12 except for a relatively narrow band of territory within 25 miles or less of its southern border is a vast forestry reserve, much of which is also used by sportsmen and others who enjoy various forms of outdoor recreation. If the forecasts of the demand for paper production described in the introductory section of this chapter are correct, the paper mills will need to expand their employment, enlarge their equipment, and develop improved methods of forest crop management and pulpwood production. The paper industry is essential to the health of NERC No. 12, just as it is to all the Subregions of Maine. It provides a remarkably stable level of employment and pays average gross wages considerably above the state average.

In many parts of Maine the paper industry also acts as a sort of Siamese twin to another major industry of very different characteristics, the leather industry. Whereas the paper industry provides employment for a large proportion of men, but relatively few women, the leather or shoe factories, with their tendencies toward greater fluctuations in employment and lower rates of pay, provide supplementary employment for the wives of papermill employees, thereby increasing family income. Such combination employment appears to be

[31]See Map III-1 and accompanying discussion, earlier in this chapter.

quite frequent in the Rumford-Mexico area, the Jay-Wilton area, and the Madison-Skowhegan area in NERC No. 12.

Improvement of present educational resources will provide eventual economic benefits for NERC No. 12. The Western Subregion has gained several major School Administrative District high schools during the 1960's. It is believed that the greatly expanded range of high school programs will meet the needs of a greater variety of adolescents, reduce drop-outs, provide pertinent vocational courses for those not interested in post-secondary education, and also provide much better preparation for those who go on to post-secondary education. Probably at least two-thirds of the courses offered by these SAD high schools are new to the Subregion, for the curriculum has generally been severely limited in the small high schools which have been replaced by the SAD high schools.

The recent transfer of Farmington State College to the University of Maine system should also provide a much greater range of post-secondary opportunities for residents within commuting distance of Farmington. The broadening of opportunities would depend, of course, on whether sufficient public funds were available for the University of Maine to introduce Continuing Education and other courses, especially in pertinent technical subject areas. Another limiting factor would be highway conditions, more suited under today's conditions for leisurely tourist sight-seeing than for the hurried commuting of evening students from the Madison-Skowhegan area, or the Rumford-Mexico area. And there is no rapid way to get from Norway-Paris to Farmington — or to any other university campus location, for that matter.

The Farmington State College already has a stabilizing and beneficial influence upon the economy of the surrounding section of NERC No. 12, for the faculty earns substantial salaries which help boost the commercial activity of the area. If a greater range of day and evening courses, particularly of a two-year technical nature were offered, and if highways were improved to make commuting easier from Madison-Skowhegan and Rumford-Mexico, the University's educational center at Farmington could be of even greater benefit to a substantial portion of NERC No. 12.

The present highway system of NERC No. 12 hampers the growth of the greater part of the populated strip of the Subregion. All the present highways, with the exception of the tiny section of Interstate 95 which cuts across the extreme southeastern corner of NERC No. 12, are winding roads, almost all of exceptional scenic beauty, but unsuited for high-speed traffic, except in very limited stretches. These highways should be preserved, for they are very attractive to leisurely tourists. But new highways should be engineered to provide more direct passage from south to north, as well as to provide a safer and speedier east-west route from Skowhegan to Farmington to Rumford. Farmington should be more accessible directly from Interstate 95 at Augusta. A route running in nearly a straight line, roughly parallel to but west of the present Route 26, would be of substantial benefit to Norway-Paris if it were engineered to make direct connection with the Gray interchange of the Maine Turnpike.

Probably the most helpful route in the long run would be one paralleling the New Hampshire border, insofar as mountains and lakes would allow. The southern leg of this route, in NERC No. 13, would provide more rapid connections between the southern end of the Maine Turnpike and North Berwick and Sanford. North of the Sanford area, the road would help encourage development of the Shapleigh-Newfield area, and then, as it entered NERC No. 12, the Fryburg area of Maine, near the Pleasant Mountain ski development. If the route could then be engineered as directly as possible north to Bethel, then follow present Route 26 to Upton, and then cut north through the wilderness to a point near Woburn, P. Q., and if the Provincial government could be persuaded to improve the highway from Woburn west to Sherbrooke, P. Q., Maine would then have the benefits of direct, high speed access to Montreal, and both Maine and the Eastern Cantons of the Province of Quebec would be benefited by the increased tourist traffic which would be generated.

It is probable that such a route would not be considered economically feasible for years to come. The southern end of such a route, however, might prove feasible, possibly as a toll road administered by the Maine Turnpike Authority.

Improved airports and third level air services would provide another catalyst for growth in the NERC No. 12 area. Because of the extremely hilly and frequently mountainous nature of most of the terrain in NERC No. 12, potential airport development appears to be quite limited, most of the present airports, like the one near Rangeley, being appropriate only for "bush pilots." The present airport at Norridgewock is located close to Madison and Skowhegan, and within easy driving distance of Farmington. Within the next ten years it might be economically feasible to develop third-level air service to Norridgewock to meet the air transport

needs of this corner of the NERC No. 12 Western Subregion. If the highway west from this area were improved to give faster and more direct access to Farmington, and then to Rumford, the Norridgewock airport could then serve a greater area. A high-speed highway link to Farmington would be particularly beneficial, because the most highly developed winter recreational area in Maine lies directly north of Farmington.

A new airport near Rumford, to serve the southwestern part of NERC No. 12, is apparently needed. The recent Altenburg, Kirk and Co. report states:

> The airport program for the State of Maine should give top priority to the construction of an airport, suitable for Commuter Air Carrier service, in the Rumford area. . . Expansion at Jackman should be considered later, as events may determine.[32]

All-season recreational development is especially well suited for expansion in NERC No. 12. Both terrain and climate make the north-central section of the Western Subregion ideally suited for year-round recreational development. When the lakes grow too cold for swimming at the end of the summer, the fall foliage puts on a magnificent display to attract tourists. This season merges directly into the fall and early winter hunting season, after which, skiing and other winter sports in the mountains provide recreational attractions until the brooks and lakes open for spring fishing, followed once again by summer recreational advantages.

The area directly north of Farmington in Franklin County is already being developed for all-season recreation. There is extensive development at Saddleback Mountain between Phillips and Rangeley Village, and at Sugarloaf Mountain just north of Kingsfield. Many relatively expensive chalets are now being built in the vicinity of these developments.

About ten miles north of Sugarloaf Mountain, a new ski resort at Bigelow Mountain planned by International Design and Development. A publication of the Maine Department of Economic Development, entitled *New Town Development in Maine,* describes this potential development and points out its advantages as follows:

> Flagstaff is a proposed, year-round, recreation community to be located some 200 miles north of Boston near Stratton, Maine. Incorporating the Bigelow Mountain range and bordering Flagstaff Lake, the project, covering some fourteen square miles, will feature the development of comprehensive year-round outdoor recreation facilities, including several major ski areas, golf courses and a complete marina; the creation of a permanent new town and residential community; and the construction of a major all-weather, regional airport. Designed as both a recreation and real estate development project, Flagstaff will serve the extensive and rapidly growing vacation and second-home markets of eastern United States and Canada.
>
> Perhaps the greatest asset of the Flagstaff project is the physical aspects of the area and their adaptability to recreational use. The combination of the 20,000 acre Flagstaff Lake and Bigelow Mountain presents recreational potential unexcelled in the East. Sno-Engineering, Inc., of Franconia, New Hampshire, has stated that, 'The land mass of Bigelow Mountain has outstanding ski potential. Its tremendous scope, conformation of terrain, and heavy snow accumulation provide a unique combination of physical attributes which are unsurpassed east of the Rockies . . .'[33]

A Profile of NERC No. 13 Southwestern Subregion

Infrastructure

The smallest of Maine's Subregions in geographic area, NERC No. 13, comprises the six southwestern counties, in which live more than half the population of the entire State[34] In addition to this, the added seasonal population of summer residents is greater than the entire permanent population of either NERC No. 10 or NERC No. 12.[35]

In geographic shape, NERC No. 13 somewhat resembles a badly gnarled club. Its width varies from 25 miles to as much as 45 miles, and its extreme airline length stretches 126 miles from Kittery on the New Hampshire border to the northeastern nubble of the Subregion, about 10 miles northeast of Waterville. The Subregion is bounded on the west by the southern 50 miles of the New Hampshire border, on the northwest by the southern border of NERC No. 12 Western Subregion, on the east by NERC No. 11 Eastern Subregion, and on the southeast by the Atlantic Ocean.

Because of the deeply fretted coastline, particularly

[32]Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* Portland, Maine, August 1969, V-2.

[33]Department of Economic Development, *New Town Development in Maine,* 1968,pp. 38-39.

[34]See Table III-20, later in this chapter.

[35]See Table II-6, previous chapter.

east of Portland, and the estuarian nature of the Kennebec River south of Augusta, most of the locations in NERC No. 13 are within less than 25 miles of tidal water. In addition to this, the inland sections of the Subregion have a profusion of lakes, including the Sebago Lake chain, the Androscoggin Lake chain, the Cobbossecontee Lake cluster, the Belgrade Lakes, the China Lakes, and Damariscotta Lake section. There also are many smaller lakes not associated with any of the mentioned groups.[36]

NERC No. 13 has a profusion of lakes but it lacks any true mountains.[37] Most of its so-called "mountains" are less than 1,000 feet in altitude. There are only two peaks in excess of 1,400 feet, Douglass Mountain in Sebago at 1,415 feet, and the shoulder of Pleasant Mountain which protrudes from NERC No. 12 into the NERC No. 13 town of Bridgton at an altitude of 1,920 feet at the NERC No. 13 boundary line. Many of the lakeside areas provide good views of these picturesque "mini-mountains," frequently with a backdrop view of the mountains north of the Subregional border in NERC No. 12 or in New Hampsire.

The coast offers both excellent beaches and a multitude of sheltered bays and estuaries, providing a wide variety of salt-water recreation. It has one disadvantage, the scarcity of park areas open to the general public, which causes overcrowded conditions in the relatively few public park areas that are available.

NERC No. 13 is well provided with winding two-lane highways, but needs more highways designed for rapid travel. For high-speed traffic, the entire Subregion has to depend upon the Maine Turnpike to Augusta, with the freeway Interstate 95 extension beyond Augusta, together with the portion of Interstate 95 which has been constructed for most of the distance between Portland and Brunswick, plus the freeway between Brunswick and Bath. Fortunately, the present Urban Corridor of more densely populated towns and cities is served by the combination of the Maine Turnpike and Interstate 95, except for Sanford, 12 miles distant from either the Maine Turnpike or the Spaulding Turnpike of New Hampshire.

For air transportation the Subregion has only one civilian airport suitable for large commercial jet transport, and this is at Portland. Small airports at Lewiston-Auburn, Augusta, and Waterville can be used by small commercial aircraft, but only Portland offers frequent air service.

Adequate rail freight transport is provided for Urban Corridor cities, again excluding Sanford. The Boston and Maine serves the Urban Corridor from the New Hampshire border to Portland. Beyond Portland the principal service is provided by the Maine Central. The Canadian National also has a line to Portland, but this line is of dwindling importance insofar as local service in the NERC No. 13 Southwestern Subregion is concerned. Except for long-distance shipment of heavy, bulk products, an increasing proportion of freight is now moving by truck shipments over the highways.

The development of electrical power in NERC No. 13 is apparently keeping pace with Subregional demand, several steam power stations having been put into operation since World War II, with a new atomic power station under construction at Wiscasset. Prior to World War II, most of the electricity was provided from hydroelectric plants, most of which are still in use.

As for other sources of heat and energy, the Subregion is now benefiting from a natural gas pipeline which now extends from the New Hampshire border through the Portland area to Lewiston-Auburn. Fuel oil, however, is the major fuel source for the Subregion. Although huge tankers deliver great quantities of imported oil at South Portland for the pipeline serving the refineries at Montreal, all petroleum consumed in NERC No. 13 has to be refined at Bayonne, New Jersey, or points farther south, and then brought to Portland by small coastal tankers, or else shipped by rail to the major urban centers of the Subregion. High fuel costs, apparently incapable of being lowered so long as current federal policies exist, are shared by this Subregion and all other Subregions in New England.

Population and Urban Development in NERC No. 13

NERC No. 13 has experienced the most rapid population growth of any of the Subregions in Maine. Its growth since 1950, however, has been somewhat slower than that of New England as a whole.

As shown by Table III-20, immediately prior to World War II a little less than half of the population of Maine resided in NERC No. 13. By 1950 about 51.5 percent of Maine's residents lived in NERC No. 13. By 1960 the proportion had passed 52 percent, and by 1975 it is estimated that about 53.5 percent of Maine's residents will live in the Southwestern Subregion.[38]

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[36]State Highway Department, *General Highway Atlas—Maine*, Augusta, Maine, 1964, Maps 1, 11 A-D, 12 E-G, 19, 20, 23, 53 A-C, and 54 D-F.

[37]*Ibid.* See also the 15-minute series of U.S. Topographic Maps for sale by U.S. Geological Survey, Washington, D.C. (Scale 1:62500). For places near the coast and west of the Kennebec River an even more detailed series is available at a scale of 1:24000, i.e., one inch equals 2000 feet.

[38]See Table II-3, previous chapter.

TABLE III-20

POPULATION OF NERC NO. 13 SOUTHWESTERN SUBREGION COMPARED WITH THOSE OF MAINE AND NEW ENGLAND

(in thousands)

	1940	1950	160	1975[a]
NERC No. 13 Southwestern Subregion	418	469	506	558
Maine	847	914	969	1,044
New England	8,437	9,314	10,509	12,491

Source: The Public Affairs Research Center of Bowdoin College, *A Public Investment Plan for the State of Maine,* Brunswick, Maine, December 1968, p. 27.

[a]U.S. Bureau of the Census, *Statistical Abstract of the United Staes: 1967* (88th ed,), Washingon, D.C., 1967, (Series II B).

TABLE III-21

PERCENT OF INCREASE IN POPULATION OF NERC NO. 13 SOUTHWESTERN SUBREGION AS COMPARED WITH MAINE AND NEW ENGLAND

(in percentages)

	1940-1950	1950-1960	1960-1975
NERC No. 13 Southwestern Subregion	12.2	7.9	10.3
Maine	7.9	6.0	7.8
New England	10.4	12.8	18.8

Source: Derived from Table III-20, above.

The various counties in NERC No. 13 have all increased in population, but not at a uniform rate. The fastest rate of development has been at the southwestern end of the Subregion, in York County, which borders New Hampshire and which is consequently geographically most affected by the growth of industrial development moving from the overcrowded labor market in the Greater Boston area into southern New Hampshire and gradually into Southwestern Maine. As indicated by Table III-22, this more rapid rate of growth since World War II is almost as great in Cumberland County as in York County. Sagadahoc County, next along the coast to the east, shows the third highest rate of growth of the six counties in NERC No. 13. The rate of growth in the counties farther east or north was noticeably slower than the rates experienced by the three western coastal counties.

TABLE III-22

ACTUAL AND PROPORTIONATE GROWTH OF POPULATION OF THE COUNTIES OF NERC NO. 13 1966 AS COMPARED TO 1940

	1940 Population	1966 Population[a]	Percent Increase
Coastal Counties			
York	82,550	109,550	32.5
Cumberland	146,000	192,234	31.9
Sagadahoc	19,123	24,095	26.1
Lincoln	16,294	19,707	21.0
Inland Counties			
Androscoggin	76,679	86,804	13.4
Kennebec	77,231	93,662	21.5
NERC No. 13 as a Whole	417,877	526,049	26.0

Source: The National Survey, *Maine Population Sheets with County Maps,* Chester, Vermont, 1968.

[a]State of Maine Department of Health and Welfare, May 1969.

Naval defense activities have benefited the three western coastal counties. Such activities include the Naval Shipyard at Kittery (often called the Portsmouth Navy Yard), the Naval Air Station at Brunswick, and the Bath Iron Works at Bath, a firm which has periodically received major naval construction contracts. The Brunswick Naval Air Station appears to fill a functional need which will probably continue for the foreseeable future, but both the others have a somewhat uncertain future. The Bath Iron Works may receive a major contract which will mean substantial expansion of the yard itself and the need for more housing in the vicinity. It may, however, lose the contract, with a possible reduction of workers if a commercial contract cannot be obtained to make up for the loss of naval work. The Navy Yard at Kittery has been threatened with being closed. If this should happen, plans are being made to attract other industry to that location, but there would probably be a period of difficult economic readjustment.

In 1968 the Navy Yard at Kittery, Maine, employed 8,625 civilians with a payroll of $68,696,000 and 1,867 military personnel with a payroll of $4,504,000, according to the New England Business Review, published by the Federal Reserve Bank of Boston, which estimated that the elimination of 3,650 jobs at the Navy Yard would also cause the elimination of another 2,200 local jobs on the part of those supplying goods and services for Navy Yard workers and their families. Only time will tell, of course, whether the decision made by former Secretary of Defense McNamara to phase out the Navy Yard by 1975 will be actually carried out.

The urban population trend in NERC No. 13 is apparently now shifting into a suburban population trend. The trend toward urbanization became so pronounced by 1940 that a slight reversal now appears to be taking effect. Actually, it might be defined as the movement toward the suburbs, many of which are still too small to meet minimal urban standards requiring a municipal population of at least 2,500 residents.

TABLE III-23

PROPORTIONATE CONCENTRATION OF URBAN POPULATION IN NERC NO. 13 COUNTIES 1940 AND 1966

	1940	1966[a]
Coastal Counties		
York	81.0%	82.7%
Cumberland	92.5%	92.0%
Sagadahoc	65.6%	64.2%
Lincoln	15.3%	15.5%
Inland Counties		
Androscoggin	85.6%	84.0%
Kennebec	70.5%	69.0%
NERC No. 13 as a Whole	80.8%	80.5%

Source: The National Survey, *Maine Population Sheets with County Maps,* Chester, Vermont, 1968.

[a]State of Maine Department of Health and Welfare.

The apparent tendency of the population of NERC No. 13 to become slightly more rural is, therefore, a semantic problem, based on the definition of any resident of a municipality of less than 2,500 being a rural resident. The actual population trend in NERC No. 13 appears to be a movement out of core cities into suburban areas, some of which have not yet developed a population of more than 2,500 permanent residents. There is also a tendency on the part of some families to winterize summer residences which are within easy commuting distance of the city where the head of the family is employed. Once the children are grown, the parents may sell their city home and live in their former home, the head of the family commuting to work until retirement.

As in the case of NERC No. 12, the substantial numbers of retired persons who legally become permanent residents in places where they had come to be known as seasonal residents may depress census counts and make the population seem less than it actually may be. Because of the high cost of fuel in Maine, many retired persons who are actually permanent residents travel south during the period from mid-December until the beginning of May, and they may therefore be mistakenly classified as seasonal residents rather than permanent residents when the census is taken.

A good example of the tendency to winterize and eventually take up permanent residence in former summer cottages may be seen in Table III-24 in regard to the York County town of Old Orchard Beach. Prior to World War II it had a very small permanent population, though it was crowded during the summer months. Workers at the South Portland shipyard in Cumberland County started winterizing Old Orchard Beach cottages so that they could have a place to live within easy commuting distance of work. The effect may be noted by the jump in permanent residents from 2,557 in 1940 to 4,707 in 1950. After a slight decline in 1960, the permanent population climbed again to the 1966 estimate of 5,074 including, among the permanent residents, a number of retired persons who tend to travel south from mid-December until about the first of May.

During July and August the NERC No. 13 population exceeds 715,000 persons. It is estimated that approximately 190,600 summer residents are added to the population of NERC No. 13 during the summer months.[39] This group includes those who own and occupy summer cottages and also those who rent or board for protracted periods, but it does not include the many transient tourists who pass through the Subregion without staying for a protracted period.

Economic Activities and Types of Employment

The employment economy of NERC No. 13 is well diversified. The Southwestern Subregion is the only one of the four Maine NERC Subregions to register employment in all Standard Industrial Classification categories 22 through 39 inclusive, together with classification 20, which covers employees in the food industries.[40] Before the various categories of manufacturing employment are considered, it might be well to review the recent developments in employment in non-manufacturing occupations.

As in the other Subregions of Maine, mining furnishes relatively little employment. In comparison to other Subregions, NERC No. 13 offers a small proportion of employment in agriculture, forestry, and fisheries, though the total number of approximately 4,000 is still consequential. In all other fields of non-manufacturing employment, the employment levels are quite impressive in comparison to other Subregions in Maine.

[39]See Table II-6, previous chapter.
[40]See Table III-26.

TABLE III-24

POPULATION OF URBAN COMMUNITIES AND COUNTIES IN NERC NO. 13 SOUTHWESTERN SUBREGION FOR SELECTED YEARS, 1940 TO 1966

	1940	1950	1960	1966[a]
YORK COUNTY				
Berwick	1,971	2,166	2,738	3,162
Biddeford	19,790	20,836	19,255	24,068
Eliot	1,932	2,509	3,133	3,515
Kennebunk	3,698	4,273	4,551	4,995
Kittery	5,374	8,380	10,689	10,590
Old Orchard Beach	2,557	4,707	4,580	5,074
Saco	8,631	10,324	10,515	11,273
Sanford	14,886	15,177	14,962	16,492
South Berwick	2,546	2,646	3,112	3,169
Wells	2,144	2,321	3,528	3,504
York	3,283	3,255	4,663	4,692
Total Urban Population	66,812	76,595	81,726	90,534
Total Rural Population	15,738	16,946	17,676	19,016
Total for York County	82,550	93,541	99,402	109,550
Urban Percent of Population	81.0	82.0	82.2	82.7

CUMBERLAND COUNTY				
Bridgton	3,035	2,950	2,707	2,634
Brunswick	8,658	10,996	15,797	18,629
Cape Elizabeth	3,172	3,816	5,505	7,083
Cumberland	1,491	2,030	2,765	4,198
Falmouth	2,883	4,342	5,976	6,398
Freeport	2,764	3,280	4,055	4,795
Gorham	3,494	4,742	5,767	7,081
New Gloucester	2,334	2,628	3,047	2,778
Portland	73,643	77,634	72,566	69,013
Scarborough	2,842	4,600	6,418	7,060
South Portland	15,781	21,284	22,788	23,334
Westbrook	11,087	12,284	13,820	14,336
Windham	2,381	3,434	4,498	5,563
Yarmouth	2,214	2,669	3,517	4,253
Total Urban Population	135,779	157,271	169,226	177,155
Total Rural Population	10,221	11,930	13,525	15,076
Total Cumberland County	146,000	169,201	182,751	192,231
Urban Percent of Population	92.5	93.0	93.0	92.0
SAGADAHOC COUNTY				
Bath	10,235	10,644	10,717	9,846
Topsham	2,334	2,626	3,818	5,644
Total Urban Population	12,569	13,270	14,535	15,490
Total Rural Population	6,554	7,641	8,258	8,605
Total Sagadahoc County	19,123	20,911	22,793	24,095
Urban Percent of Population	65.6	63.6	63.7	64.2
LINCOLN COUNTY				
Waldoboro	2,497	2,563	2,882	3,989
Total Urban Population	2,497	2,536	2,882	3,089
Total Urban Population	13,797	15,468	15,615	16,618
Total Lincoln County	15,294	18,004	18,497	19,707
Urban Percent of Population	15.3	14.1	15.6	15.5
ANDROSCOGGIN COUNTY				
Auburn	19,617	23,134	24,449	24,146
Lewiston	38,598	40,974	40,804	39,365
Lisbon	4,123	4,318	5,042	5,831
Livermore Falls	3,190	3,359	3,343	3,543
Total Urban Population	65,728	71,785	73,638	72,885
Total Rural Population	10,951	11,809	12,674	13,919
Total Androscoggin County	76,679	83,594	86,312	86,804
Urban Percent of Population	85.6	86.0	85.2	84.0

KENNEBEC COUNTY				
Augusta	19,360	20,913	21,680	21,667
Gardiner	6,044	6,649	6,897	6,511
Hallowell	2,906	3,404	3,169	3,235
Oakland	2,730	2,679	3,075	3,488
Waterville	16,688	18,287	18,695	18,112
Winslow	4,153	4,413	5,891	7,740
Winthrop	2,508	3,026	3,537	3,712
Total Urban Population	54,389	59,371	62,944	64,465
Total Rural Population	22,842	24,510	26,206	29,197
Total Kennebec County	77,231	83,881	89,150	93,662
Urban Percent of Population	70.5	71.0	71.0	69.0

Source: The National Survey, *Maine Population Data Sheets with County Maps,* Chester, Vermont, 1968.

[a]State of Maine Department of Health and Welfare, May 1969.

TABLE III-25

NUMBERS EMPLOYED IN NON-MANUFACTURING BUSINESS IN THE NERC NO. 13 SOUTHWESTERN SUBREGION, 1966 TO 1968

Category	1966	1967	1968
Agriculture, forestry, fisheries	4,170	4,170	4,090
Mining	44	42	46
Contract Construction	7,193	7,261	7,299
Transportation, Communications, Electric, Gas and Sanitation	7,524	7,583	7,436
Wholesale and Retail Trade	30,384	31,328	32,807
Finance, Insurance, Real Estate	6,235	6,606	6,946
Services	9,001	10,058	10,298
Total of Above Categories	64,551	67,048	68,922

Source: Maine Employment Security Commission, March 1967 and May 1969.

Almost half the non-manufacturing employment reported is in wholesale and retail trade. More than three times as many persons were employed in such work as those employed in the next most frequent category, services.

Employment in service occupations has shown the most proportionate growth since 1966. Over the two-year period there has been an increase of about 14.5 percent in the number employed in services, an increase of 11.4 percent in the number employed in finance, insurance, and real estate, an increase of about 8 percent to 32,807 in the number employed in wholesale and retail trade, and an increase of about 1.5 percent of those employed in contract construction. The net increase in non-manufacturing employment over the two-year period amounts to approximately 6.5 percent.

Manufacturing employment in NERC No. 13 represents the full range of Standard Industrial Classification categories reported for Maine. There have been declines in employment in several traditional categories, howver, as indicated by Table III-26. Declines are most marked in the food industry, which dropped off in employment by about 10 percent between 1960 and 1968, in textiles, which dropped off some 16 percent in employment during the same period, and in lumber, which employed some 26 percent fewer workers in 1968 than in 1960.

The leather industry, already the chief manufacturing employer in 1960, showed a 12 percent increase in employment between 1960 and 1968. Marked increases may also be noted in such categories of industry as electrical, machine, fabricated and primary metals, and rubber.

Some categories indicate a certain amount of fluctuation. Furniture, still down from its 1960 level, registered a return upward in 1968. Paper, a major source of

relatively high-wage employment, advanced slightly. Printing, which had been fluctuating in employment, also advanced enough to set a 1968 record more than 5 percent higher than that of any of the previous years recorded in Table III-26.

TABLE III-26

NUMBERS EMPLOYED IN NERC NO. 13 SOUTHWESTERN SUBREGION DURING SELECTED YEARS ACCORDING TO STANDARD INDUSTRIAL CLASSIFICATIONS NO. 20 TO 39[a]

SIC No.	Category	1960	1962	1964	1966	1968
20	Food	5,808	6,000	5,759	5,320	5,218
22	Textiles	10,245	9,144	8,851	8,949	8,630
23	Apparels	1,885	1,085	2,073	1,757	1,680
24	Lumber	2,166	1,691	1,852	1,548	1,621
25	Furniture	700	311	255	254	397
26	Paper	5,991	6,142	6,007	6,042	6,068
27	Printing	1,672	1,661	1,683	1,616	1,768
28	Chemicals	113	135	115	132	135
29	Petroleum	—	49	72	35	89
30	Rubber	596	1,077	1,667	2,295	3,156
31	Leather	14,961	14,898	15,933	16,831	16,807
32	Stone	522	608	648	660	710
33	Primary Metals	172	190	155	408	471
34	Fabricated Metals	1,332	1,561	1,977	1,703	2,207
35	Machine	280	750	1,724	2,589	2,635
36	Electrical	375	896	1,376	2,522	3,858
37	Transportation Equip.	11,326	12,265	9,193	8,803	9,752
38	Instruments	39	—	—	—	100
39	Miscellaneous	428	441	441	678	313

[a]Standard Industrial Classification No. 21 not reported for Maine. For further explanations, see Table III-7.

Source: Maine Department of Labor and Industry, *Census of Maine Manufacturers,* Augusta, Maine, 1960, 1962, 1964, 1966, 1968.

Conclusions and Recommendations

Public investment should meet needs in the Portland terminal area of the new Nova Scotia ferry. According to the current schedule, the new ferry service should commence in July 1970 and operate daily, 350 days each year. Public investment will be needed for pier facilities, parking facilities, and access roads. Since the proposed ferry service should prove of economic benefit to the entire NERC No. 13 Subregion, public investment for needed facilities at Portland should receive immediate priority.

Public investment is needed to provide ways and means to control oil spillage in the Casco Bay area. If the current experimental journey through the Northwest Passage to the North Alaskan oil fields proves successful, it is very probable that the Long Island oil terminal will become a reality. There is also the possibility that off-shore exploration for oil may eventually be successful. In any case, public investment will be needed to assist in establishing proper environmental controls, including ways and means to control the oil spillage in the Casco Bay area.

Public investment will be needed if the Foreign Trade Zone application is approved. Since the State of Maine has applied for a Foreign Trade Zone to be located at Portland harbor, it is reasonable to expect the federal government to grant the request eventually. When the request is granted, public investment will be needed for facilities, equipment, access roads, and the like, together with financial support for necessary promotional activities to help make the zone economically successful.

Public investment will be needed to provide more housing of acceptable standards if the Bath Iron Works receives a major naval construction contract. If the contract is granted, the great expansion of the work force at Bath will require the improvement of present housing facilities in the area and the development of much

new housing. Such possibilities should be anticipated so that public investment funds may be available for needed environmental controls and such public utilities as improved roads, water mains, sewers, etc.

Industry should be encouraged to locate in the area, through public investment in "industrial parks" with adequate water mains, sewers, and other utilities and with proper access roads to express highways. Developments of this sort in South Portland and other cities have been highly successful. With the exception of Sanford, which needs express highway connections with the Maine Turnpike, all the major population centers in NERC No. 13 are close to the Turnpike or Interstate 95. Professional feasibility studies for the locations of more industrial parks should be undertaken, and locations which offer good potential should be developed.

More low-cost loans to help new industry to become established should be provided. Mortgage rates are now so high that the development of new small industries in adequate plants has become exceedingly expensive. Consideration should be given as to ways and means to encourage new industries which appear to offer economic benefit to the communities in which they settle.

Certain new highways should be planned and some means found for their eventual construction. As has been previously mentioned, Sanford is too isolated from the other urban centers of NERC No. 13. It would appear that a high-speed controlled-access link with the Maine Turnpike should be planned at least as far as Sanford, with eventual plans to engineer a through road to the north, eventually to provide a rapid highway to Quebec Province, with anticipated linkage in that Province to the Sherbrooke terminus of the present Autoroute des Cantons de l'Est to Montreal. Although the completion of such a highway might lie very far in the future, the southern part of such a highway, running from the Maine Turnpike to Sanford, East Fryeburg, and Bethel, should do much to open up the NERC No. 12 Western Subregion to expanded year-round recreational activity by providing rapid access to residents of eastern Massachusetts.

Another high-speed route of great potential value to the NERC No. 13 would be a highway from the Maine Turnpike to Sanford, to Rochester, New Hampshire, and directly west across southern New Hampshire and southern Vermont, to connect with the New York Throughway. Such a "Massachusetts Bypass" would appear to be of substantial economic advantage to Maine. [41]

Vocational-technical and other post-secondary vocational training programs should be expanded. Although NERC No. 13 has better facilities for post-secondary technical education than the other Subregions in Maine, the local needs do not appear to be met adequately. The present Vocational Technical Institute should be expanded, both to admit more qualified applicants and also to provide more training to meet localized industrial needs. Junior college programs, such as the two-year business course at the Portland campus of the University of Maine, should be developed at more centers and enlarged to include technical education for a number of the medical ancillary technical workers. Public investment in such programs should be provided in addition to continued support for the higher educational programs of the University of Maine system.

Social needs should not be neglected. Other chapters in this report deal with many of the health needs, mental health needs, and social rehabilitation needs which can be met only through increased public investment. Since more than half the population of Maine lives in NERC No. 13, the Subregion has a multitude of social needs which are described in the following chapters of this report.

Public investment in planning, zoning, and the establishment of proper environmental controls is especially needed in NERC No. 13 to provide an optimum balance between conservation and development. The concentration of cottages with inadequate septic tank drainage areas is both productive of eventual rural slums and also hazardous to public health. The problem is being increased as more and more summer cottages are turned into year-round retirement homes by their owners.

Maine also needs public controls to save unwary city dwellers from being sold cottage lots in places where sanitary sewage disposal cannot be installed or in places where flooding is to be expected nearly every spring. Cottage developments, as well as urban developments, should be subject to regulations as to lot sizes and sanitary requirements.

There is a need for public investment in studies and also in action to bring about regional governmental cooperation and coordination. The population distribution between urban core areas and suburban areas, including many former summer recreational areas which are rapidly becoming suburban, is creating local governmental problems that can only be solved through larger

[41] Altenberg, Kirk and Co, *Public Transportation in the State of Maine,* Portland, Maine, August 1969, VI-21.

governmental units. Environment controls are needed to meet the problem of waste disposal, the protection and expansion of public water supplies, the avoidance of problems which would tend to create future slums or other conditions hazardous to health or safety. Land development should be orderly, and adequate public recreational areas should be set aside for public use. As the Urban Corridor develops, as it has already near Portland, so that one drives from one municipality into another without any open space marking municipal limits, metropolitan services of many kinds would produce efficiencies and economies, especially in matters of public police and fire protection, ambulance services, and many other municipal services needed equally on either side of the municipal line.

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CHAPTER IV

PUBLIC INVESTMENTS NEEDS FOR EDUCATION AND CULTURE

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Chapter IV

PUBLIC INVESTMENT NEEDS FOR EDUCATION AND CULTURE

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Chapter IV

PUBLIC INVESTMENT NEEDS FOR EDUCATION AND CULTURE

Introduction

Maine must make substantial public investment in technical training and other forms of appropriate education at various levels if it is to meet the challenges of industrial development needed for a healthy state economy. Modern types of industries which offer the higher wage and salary scales, particularly for heads of families, tend to require a better level of technical competence on the part of their employees. Unlike the older types of relatively high-wage industry, such as the paper mills and major shipyards, which have provided their own apprenticeship training programs, the newer industries which come into Maine rarely provide their own program of technical training leading to employment at the higher pay levels.

If the State of Maine desires new industries with relatively high pay scales, the State must provide the proper technical training for the labor pool from which the industries may draw their employees. Newer industries which locate plants within the state cannot afford to take the time to put their new employees through both a basic technical training program and also a specialized plant-operations program before production is started. They must start with personnel who already possess a background in basic technical training, and such industries will tend to establish themselves only in communities where such a background is provided. Moreover, most such industries tend to establish themselves in or near communities where their employees can take evening courses that will keep them in touch with the newer developments in technology.

The economy of Maine has been oriented to certain industries which have required little or no technical training for the labor force: textiles, shoes, dowels and similar wood products, and more recently, small electronic assembly work. Such industries pay relatively low wages and offer comparatively few well-paid jobs for heads of families.

If Maine desires to attract industries which will offer higher pay scales and better opportunities for its citizens, it will need to make greater public investment in technical training facilities and programs. Economic opportunities for Maine people seem to be directly related to the level of skills and general education available. The past has seen the out-migration of Maine's most valuable resource — the younger members of the labor force and the graduates of the higher educational institutions. Net out-migration is heaviest among the 20-34 age group, the most productive members of society.[1] In certain counties the problem is so great that total population has fallen. Washington and Piscataquis Counties actually lost 42.8 percent and 47.2 percent, respectively, of young adults in the 20-24 age group between 1950 and 1960.[2] If Maine were to combine an economically relevant education with its newly developing economic opportunities, this trend might be reversed.

POST-SECONDARY TECHNICAL TRAINING AND GENERAL EDUCATION

Increased Public Investment in Post-Secondary Technical Training and General Education Is Needed.

The many unfilled job offers at relatively high rates of pay available to graduates of Maine's present vocational-technical institutes indicate the need for expanding such facilities and programs. In addition, far too few students of the two-year associate-degree business program of the University of Maine in Portland are currently being graduated to fill the offers made by Maine firms.

To fill the current needs in Maine employment, approximately eight times as many persons should receive one- or two-year training in technical or similar post-secondary education as the number who attend four-year colleges. Only 7 percent of all jobs in Maine are held by college graduates, whereas more than 50 percent of all Maine jobs are in the trade, technical, and distributive fields.[3]

More opportunities therefore need to be provided for post-secondary technical education. The president of Eastern Maine Vocational-Technical Institute, as quoted in the Portland newspapers, has stated that only 16 percent of the qualified high school graduates applying for two-year technical training can get into Maine's vocational-technical institutes.[4] The total 1969

[1]See Table 7, Ch. II.
[2]See Table 8, Ch. II.
[3]Cole Report. *Higher Education in the State of Maine, Tentative Report of the Advisory Commission for the Higher Education Study,* Augusta, Maine, October 31, 1966.
[4]"Downstreet," *Maine Sunday Telegram,* April 13, 1969, p. 7D.

enrollment in all four of Maine's publicly supported, post-secondary institutes was only 1,363, as shown by Table IV-1.

Added to this total of 1,363 there are approximately 700 students enrolled in two-year programs of a business or technical nature at the various campuses of the University of Maine.

Contrasted to this total of less than 2,100 technical students, there are more than 7,000 full-time freshmen, sophomores, juniors and seniors in the four-year undergraduate programs of the University of Maine, plus several thousands more in the other public and private colleges in the state.[5] The disproportion between the substantial enrollment in four-year college programs and the relatively tiny enrollment in two-year technical or business programs is all too obvious in face of the employment opportunities and the economic needs of the State.

[5]See Table IV-2.

TABLE IV-1

MAINE POST-SECONDARY VOCATIONAL-TECHNICAL PROGRAMS
1969 ENROLLMENT

	CMVTI	EMVTI	SMVTI	NMVTI
Auto Professions	35	48	97	66
Accounting	—	—	—	24
Building Construction	31	28	76	21
Culinary Arts	—	—	90	—
Architectural Drafting	24	13	—	17
Marine Technology	—	—	105	—
Mechanic Drafting	20	—	—	—
Electronics	—	—	90	20
Industrial Electricity	30	58	31	33
Graphic Arts	41	—	—	—
Heating and Air Conditioning	—	—	53	—
Machine Tool	35	41	46	—
Masonry	—	—	—	6
Process Control	4	—	—	—
Sheet Metal	—	—	—	8
Practical Nursing	38	—	—	34
Secretarial	—	—	—	23
Distributive Education	—	73	—	—
	258	261	592	252

Grand Total = 1,363

Source: Maine Department of Education. *The Post-Secondary Vocational-Technical Institutes of Maine,* Augusta, Maine: 1969.

Certain vocational training needs are ignored by Maine's public institutions. Maine suffers great difficulty in filling certain types of positions. There appear to be shortages of many types of technicians needed in the field of public health, for instance. Dental hygienists are especially needed, for it is estimated that a dental hygienist can save approximately one-quarter of a dentist's time—and Maine already suffers from a great scarcity of dentists.[6] One private junior college is the only source of dental hygienists in the State of Maine, and this school happens to be located in the one area of the State where there happens to be an adequate number of dentists to meet national standards.[7] Additional facilities for the training of dental hygienists are therefore badly needed in Eastern Maine and Aroostook County, where there are the greatest shortages of dental services.

[6]Maine Department of Health and Welfare, Division of Dental Health. *1964/1966 Biennial Report,* (Augusta, Maine: 1966), p. 10.

[7]The one school offering a course in dental hygiene is Westbrook Junior College in Portland. For figures on dentists, refer to Chapter VI, Table 8, of this report.

It has been reported by leaders in the health field that there is a shortage of many types of para-medical technicians throughout the State, especially in the areas outside Cumberland County. There is a similar problem concerning the shortage of nurses in the rural areas.[8] A part of this problem might be solved if technical training could be provided at conveniently located centers so that former nurses who may have dropped out of nursing to rear a family might take refresher and up-dating courses so that they might return to nursing now that their families have grown to maturity. Such vocational training needs are ignored by Maine's public institutions.

Technical training is needed to anticipate future needs. Maine will need to educate personnel for positions as public assessors, public health personnel, medical and dental support personnel, social workers, and other professionalized groups to man its expanded services. In addition, technical institute research will be needed in the areas of great concern to the State of Maine, such as air and water pollution control, waste disposal, marine biology, oceanography, public administration, and area economic planning.

Although most of these programs will have to be headed by persons with one or more college degrees, many more subordinate employees will be needed with a briefer but appropriate technical education. Public investment should be directed to make appropriate technical training programs available, as well as appropriate university programs for the necessary specialists and administrators.

Public Support of Community Colleges May Be the Answer.

In December 1968, the Chairman of the Legislative Committee on Education announced that too little emphasis in the past had been given to providing for students who did not want or could not use four-year higher education, and he indicated his intent to push for a system of junior colleges.[9] Junior colleges, often called community colleges or technical institutes, have shown a very rapid increase in other parts of the United States during the past few years. In 1969 approximately 2,188,500 students were enrolled, as compared to only 148,916 in 1961. Community college costs are cut by allowing students to live at home and to commute to classes.

About one third of the students in the typical community college will eventually go on to a four-year college for further education, but about two-thirds of the students take vocational programs which lead them directly to employment. The American Association of Junior Colleges has recently made the following policy statement:

> Among the cures of poverty that are being proposed, education perhaps offers the best hope for bringing the educationally, socially and economically handicapped into the mainstream of American life.
>
> Among established educational institutions, community and junior colleges are especially well qualified to offer opportunities for the disadvantaged.
>
> Found in urban centers, in suburban and industrial districts, and in rural settings, the two-year colleges are now widely accessible to the poor regardless of where they may live.[10]

The final sentence of this pronouncement may be true of America as a whole, but it is not yet true of the State of Maine. Limited programs which, if expanded, could be developed into true community college programs are presently available in only a few locations, as at the four vocational-technical institutes already mentioned, three of the campuses of the University of Maine, and a very few private institutions. Community colleges need to be developed, with dual emphasis upon technical training for the majority, and possible academic transfer to a four-year college for the academically minded minority.

The economic value of such institutions may be illustrated by the appraisal of the president of the Milwaukee Vocational Technical and Adult Schools, who has estimated that the acquired skills of one class, which completed its work in June 1967, will increase the economic wealth of his community by more than 186 million dollars over the next 30 years. He has calculated that the more than 2,000 students who had taken one- or two-year programs leading to an industrial or business competence had increased their earning power by at least $1.50 an hour.[11]

Continuing Education Programs Should Be Supported.

The Continuing Education Division of the University of Maine brings educational opportunity to many areas of the State, offering classes, mostly in the evening, at 31 locations. Last year there were 9,369 regis-

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[8]See Chapter VI, Table 7.

[9]"Degree Program Failure is Criticized by Senator Katz," *Maine Sunday Telegram,* May 11, 1969, p. 7D.

[10]"Community Colleges New Frontier in Education," *U.S. News and World Report,* May 5, 1969, p. 66.

[11]*Ibid.,* p. 66.

trations in such courses. A substantial proportion of those taking courses are employed during the daytime in business or industry.

This important program reaches the out-of-school population by bringing courses to small towns as well as to the larger cities. In addition, the ETV network of the University of Maine reaches 524 registered students, as well as many others who do not register to obtain college credits but use this facility.

The Continuing Education Division is presently required to charge sufficient tuition to meet the costs of the instructors' salaries. In other words, it is not subsidized by public funds to the extent of most other educational programs of the university. The tuition for the typical course is $66, and there is a question as to whether some sort of publicly subsidized scholarship should not be made available for persons of low income who would benefit by such courses.

Generous Subsidies for Students of Medicine or Dentistry Who Agree to Settle in Maine Should Be Provided.

On the basis of its population, there is a shortage of 296 doctors and 181 dentists in the State of Maine, according to national standards. Only four counties in Maine meet the national norms of one physician for each 800 inhabitants, and Cumberland County is the only county to have sufficient dentists to meet the norm of one dentist for each 2,000 inhabitants.[12] It is not economically justified to suggest that Maine attempt to establish a medical school or a dental school under present conditions,[13] but it does appear that serious consideration be given to establishing a generous subsidy program to encourage Maine youth of appropriate potential to go through the long and expensive program of medical or dental education out of state and, in return, come back to Maine to practice. The subsidy would be in the form of a loan, sufficient to meet all professional school expenses, a portion of which could be given for each year of practice in the State of Maine, or in certain designated counties in Maine.

Another suggestion would pertain to medical school graduates coming to Maine for their internship and residency programs. It has been pointed out that young doctors tend to set up practice in the areas where they have completed such programs, since their internship enables them to gain beneficial contacts with established physicians in the area and also helps them to become acquainted with many potential patients. A State grant to provide a reasonable supplement to the income of each intern or hospital resident on the staff of a Maine hospital might encourage more medical school graduates to complete their internship in Maine and, eventually, tend to increase the number of doctors settling in the State. The chief weakness of this suggestion, however, appears to be that the areas of the State most in need of added physicians are the areas distant from hospitals which could provide acceptable programs for interns.

The University of Maine Should Be Encouraged to Expand Programs of Functional Benefit to the State.

Although the future role of each unit in the enlarged University of Maine system is yet to be defined, it is evident that public support must provide adequate educational facilities to meet the needs of Maine citizens. The primary mission of the university is to provide both undergraduate and graduate education of the highest quality. The university also has an obligation to engage in the expansion of knowledge, both through basic research and also through applied research of potential public benefit. A public university has an added obligation to provide educational services to the taxpayers who support it, with a broad range of informal educational programs through extension services, and more formalized university course work, available to adults during evening hours and at many convenient locations, through its Continuing Education Division.

Although the Vocational-Technical Institutes are not now part of the University of Maine, discussion about their role in higher education should be included in comprehensive planning. Whether such institutions eventually become a part of the university system or not, it should be recognized that their future position is inevitably linked together. It has been suggested that the Higher Education Council address itself to the problems and act as a clearinghouse to keep each of the institutions informed about the programs which are being planned at the other institutions, or to suggest which institution might effectively add needed programs.[14] The Council could provide the machinery for inter-institutional cooperation.

The current problems of obtaining a realistic balance in enrollments in the various programs of public post-secondary education in Maine are indicated by the following projections.

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[12]See Chapter VI, Tables 6 and 8.

[13]Refer to John B. Thurlow, *Feasibility of Establishing a Medical School in Maine,* prepared for the Legislative Research Committee, Augusta, Maine, 1966.

[14]Institute for Education Development, *A Report on Comprehensive Facilities for Higher Education in the State of Maine,* New York, August 31, 1968, p. 16.

TABLE IV-2

PROJECTED ENROLLMENTS IN MAINE INSTITUTIONS

	1969	1970	1971	1972	1973	1974	1975
University of Maine							
Aroostook State	573	619	669	669	736	842	898
Farmington State	1,140	1,250	1,334	1,410	1,485	1,560	1,635
Fort Kent State	300	315	330	350	370	410	440
Gorham State	1,350	1,575	—	—	—	—	—
Washington State	500	550	600	650	700	750	800
MMA	550	570	585	600	600	600	600
Augusta	300	400	—	—	—	—	—
Orono	7,810	8,300	—	—	—	—	—
Portland	1,430	1,600	—	—	—	—	—
School of Law	160	200	—	—	—	—	—
State Department of Education Vocational-Technical Institutes							
CMVTI	300	300	419	478	591	651	750
EMVTI	300	350	N.A.	—	—	—	—
NMVTI	245	270	300	345	380	440	480
SMVTI	775	900	1,000	1,200	1,400	1,600	1,800
Wash. County VTI	—	45	80	150	—	—	—

Source: *Report on Comprehensive Facilities Planning for Higher Education in the State of Maine.* The Institute for Educational Development. (New York: August, 1968).

TABLE IV-3

PUBLIC SCHOOL STUDENT GRADUATES ENROLLED IN POST-HIGH SCHOOL EDUCATION, CLASS OF 1968

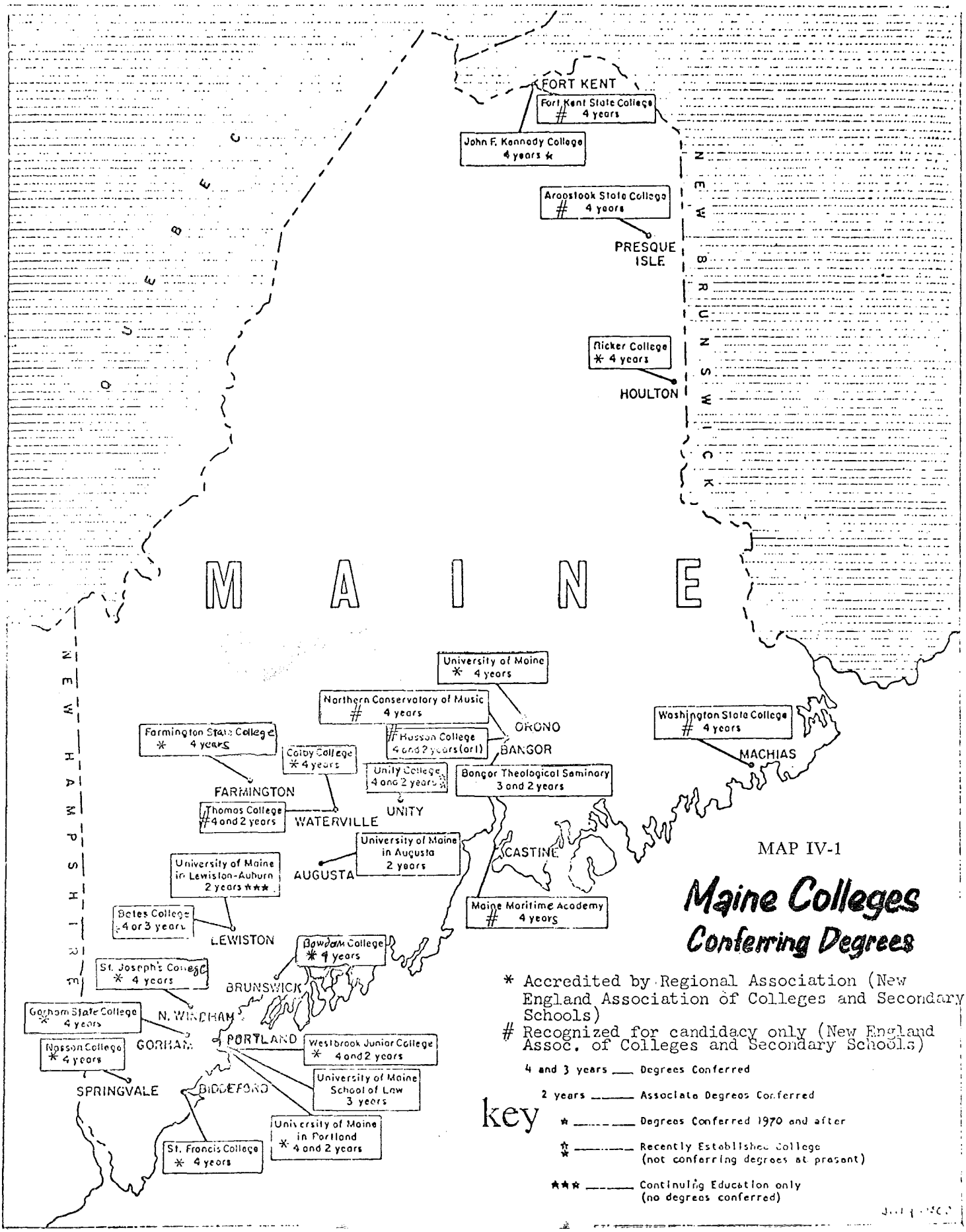
Category	Attending In Maine	Attending Outside Maine	TOTAL
Post-graduate High School Course	213	11	224
Junior College	222	165	387
College or University	2,593	883	3,476
Vocational, Commercial, or Technical	1,433	320	1,753
Nursing School	200	100	300
TOTALS	4,661	1,479	6,140

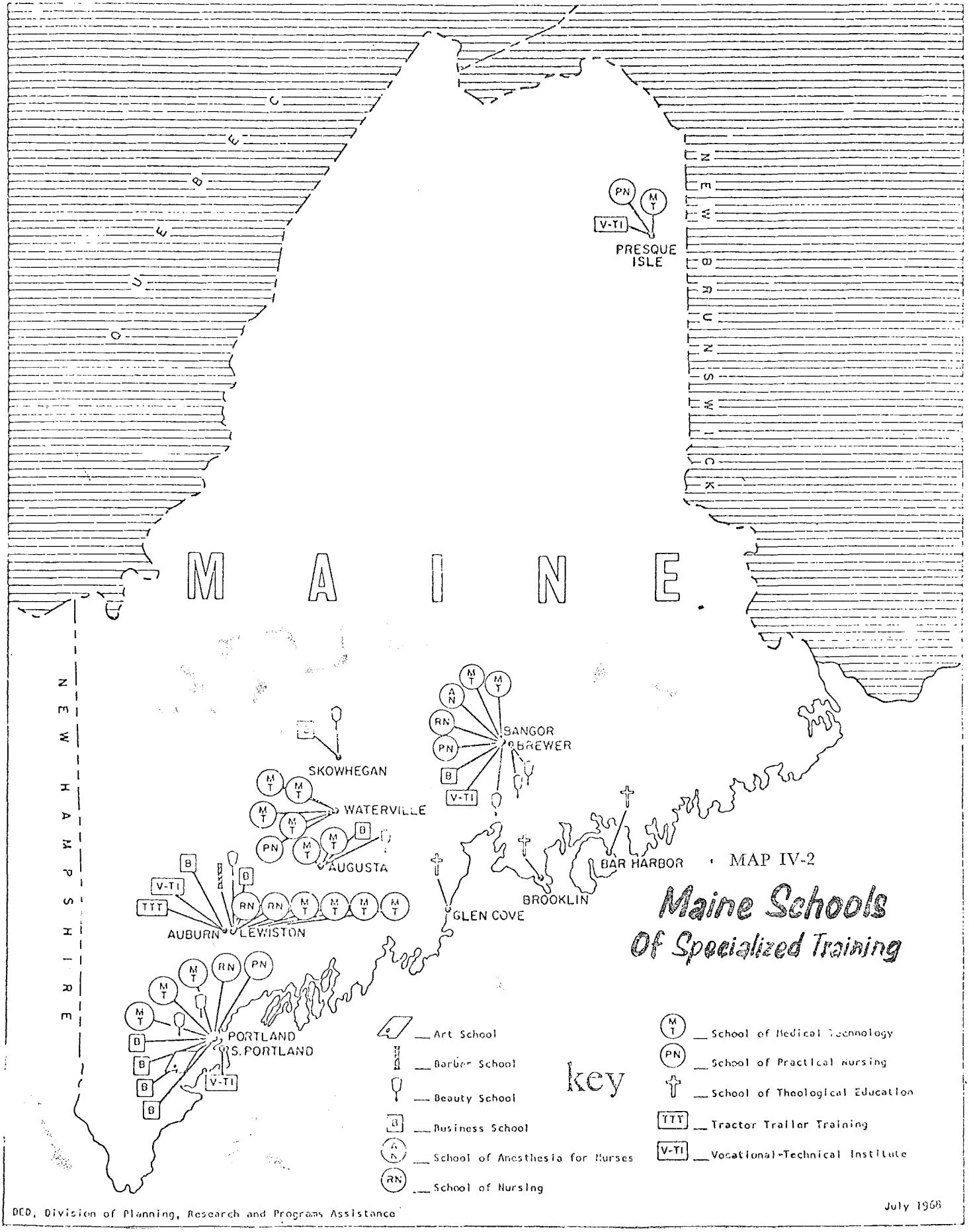
Source: Dept. of Education, Bureau of Statistical Services.

The projected enrollments might well be compared to the enrollments reported by Maine high schools concerning their graduates of the Class of 1968:

On the basis of these reports compiled from high school principals or guidance people, it would appear that some 51 percent of the 12,014 public high school graduates of the Class of 1968 enrolled in some type of post-high school education or training. More than three-quarters of this group pursued that education in Maine, some in private institutions, but most in public institutions.

When the entire group of 12,014 high school graduates is considered, it is apparent that far too small a proportion is listed as continuing with vocational, technical, or commercial post-secondary training. There is also a question whether some of those attending a four-year college or university should not have been given an opportunity to follow a mixed technical and academic curriculum of the type offered by most community colleges in other parts of the nation. For this reason, the balance of post-secondary educational opportunities in Maine seems to aggravate the entire problem of out-migration of our youth. In other words, it encourages too large a proportion of those who are not particularly academically minded to attempt a liberal-arts type of four-year college curriculum for which they


FORT KENT
Fort Kent State College # 4 years
John F. Kennedy College 4 years ★
Aroostook State College # 4 years
PRESQUE ISLE
Nicker College * 4 years
HOULTON
NEW BRUNSWICK
QUEBEC
MAINE
University of Maine * 4 years
Northern Conservatory of Music # 4 years
ORONO
Husson College 4 and 2 years (or 1)
BANGOR
Washington State College # 4 years
MACHIAS
Farmington State College * 4 years
Colby College * 4 years
Unity College 4 and 2 years
Bangor Theological Seminary 3 and 2 years
FARMINGTON
Thomas College # 4 and 2 years
WATERVILLE
UNITY
University of Maine in Augusta 2 years
AUGUSTA
CASTINE
University of Maine in Lewiston-Auburn 2 years ***
Bates College * 4 or 3 years
LEWISTON
Maine Maritime Academy # 4 years
Bowdoin College * 4 years
St. Joseph's College * 4 years
BRUNSWICK
Gorham State College * 4 years
N. WINDHAM
Nasson College * 4 years
GORHAM
PORTLAND
Westbrook Junior College * 4 and 2 years
University of Maine School of Law 3 years
SPRINGVALE
BIDDEFORD
University of Maine in Portland * 4 and 2 years
St. Francis College * 4 years
MAP IV-1
Maine Colleges
Conferring Degrees
* Accredited by Regional Association (New England Association of Colleges and Secondary Schools)
# Recognized for candidacy only (New England Assoc. of Colleges and Secondary Schools)
key
4 and 3 years ___ Degrees Conferred
2 years _____ Associate Degrees Conferred
★ _____ Degrees Conferred 1970 and after
☆ ★ _____ Recently Established College (not conferring degrees at present)
★★★ _____ Continuing Education only (no degrees conferred)



DED, Division of Planning, Research and Programs Assistance

July 1968

are not particularly suited. It offers too little opportunity for those who might benefit by a two-year curriculum with a vocational or technical emphasis, and it offers no way for a student who desires to transfer from one type of curriculum to another to do so with a reasonable transfer of credits within the State of Maine. Since this sort of flexibility is not currently available within the State, all too many students are encouraged to leave the State. An ambitious and academically "late blooming" graduate of a Maine technical-Vocational institute can find many four-year colleges outside Maine which will grant him a reasonable number of transfer credits towards a bachelor's degree or accept him for a higher level of technical education. A drop-out from a four-year college in Maine, on the other hand, can find educational institutions outside the State where he can select a curiculum more suited to his needs. Opportunities of these kinds should be provided within the State if we are ever to hope to reduce the net out-migration of our young adult population.

More Public Investment Is Needed to Improve Elementary and Secondary Education.

Maine has recently made substantial progress in its public school education, both through the establishment of School Administrative Districts—a movement greatly accelerated by the Sinclair Act of 1957—and through the more recent establishment of Regional Vocational Centers at the secondary level, some fifteen of which should be operating by 1972. Maine has made much progress in the past few years, but it still has a long way to go, particularly with the added burden placed upon the public school system through the closing of so many parochial schools.

Public investment is needed for accelerated extension of School Administrative Districts. Presently 283 Maine towns have been forced into 75 School Administrative Districts, but there are 495 organized municipalities in the state, plus a handful of unorganized townships and Indian schools. Maine has only 23 cities, most of which are too small to provide sufficiently large and diversified schools to offer the variety of public education to fit the needs of the total population of public-school age. Ideally speaking, School Administrative Districts should be formed to meet the needs of almost 200 of the Maine municipalities which are not yet served by such districts.

Districts are usually composed of two or more towns which share on the physical plant, administration, faculty, and curriculum, providing not only monetary efficiencies, but also bringing a richer educational program. It is estimated that up to one-third of the pupil cost is saved by the district approach.[15] The Department provides a 10 percent increase in state subsidy to each SAD. In addition, the curriculum base of an SAD is better equipped to qualify for federal funds. As a partial substitute for the SAD system, some 166 Maine towns are presently linked into school unions. But the only advantage of the school union comes from the services of a superintendent, shared by the various schools in a union. This enables a certain amount of savings, but it is a poor substitute for the SAD. Public investment to stimulate the formation of more SAD's therefore appears highly advisable.

SAD schools have a higher retention rate and a much higher rate of graduates continuing with post-secondary education than the small rural high schools. The Bureau of Statistical Services, Maine Department of Education, reported in February 1969 that 63 percent of Maine's secondary pupils receive their education in SAD high schools or urban secondary schools of comparable size. Because of the larger enrollments of pupils, a somewhat smaller proportion of teachers (61 percent) is needed, but a much greater diversity of courses is offered. There are consequently fewer drop-outs and a higher proportion of graduates, but the most significant statistic seems to be that these schools, which enroll only 63 percent of the high school pupils, produce 73 percent of those who pursue post-high school education.[16]

The Bureau of Statistical Services, State Department of Education has published estimates of secondary enrollment and graduating students for each year until 1974, as indicated in Table IV-4. It is possible that these estimates are somewhat too modest, if th probable effects of the following factors are taken into consideration:

(1) As of recent years, the Maine public high schools have provided education for only some 87 percent of the secondary school students in Maine. A few of the remaining 13 percent attend private college preparatory schools, but most attend either local private academies or Catholic high schools. Recent trends indicate that a number of the Catholic high schools may be forced to close because of the shortage of teachers from religious orders and the high costs of lay teachers. Efforts are also being made to provide the advantages of SAD high school education for some of the pupils who have previously attended private academies of limited

[15]State Department of Education, Bureau of Statistical Services.

[16]State Department of Education, Bureau of Statistical Services.

TABLE IV-4

PROJECTED SECONDARY ENROLLMENT AND GRADUATING STUDENTS[17]

Year	Secondary Enrollment	Graduates
1969	62,495	12,014
1970	64,182	12,836
1971	65,915	13,183
1972	67,695	13,539
1973	69,523	13,904
1974	71,400	14,280

Source: Bureau of Statistical Services, State Department of Education.

size and curriculum. These trends may increase the secondary enrollment in public high schools from five to ten percent above the estimates tabulated above.

(2) As has been previously mentioned, SAD schools have a higher retention rate than the smaller rural high schools. If the trend toward grouping more municipalities into SAD districts continues, total secondary enrollments should increase because of the larger numbers of juniors and seniors continuing in their high school studies until graduation. There is no indication that the tabulation which has been given allows for this probability, for the proportion of graduates to total secondary enrollment remains very nearly constant at almost precisely 20 percent from 1971 to 1974.

(3) Apparently no allowance has been made for the probable success of the secondary technical-vocational* schools which should be operating in 15 regional centers by 1972. If these centers are as successful in cutting the number of high school drop-outs as their advocates claim, secondary public school enrollments in 1972, 1973, and 1974 should be somewhat greater than the projections which have been given.

Newly established technical-vocational regional secondary schools will require substantial public investment. These schools, established by the 102nd Legislature, are comprehensive senior high schools which offer vocational courses and have been approved by the State Board of Education to serve students from surrounding communities. It is expected by 1972 that 70 percent of Maine's students will live in areas served by a regional technical-vocational system. Presently, wide gaps occur in areas served. The NERC No. 13 Southwestern Subregion will be adequately served, but parts of the following counties in the other three Subregions are not served at all: Aroostook (NERC No. 10), Hancock, Knox, Oxford, Penobscot, Piscatquis, Somerset, Waldo, and Washington. Enrollment has justified the wisdom of the program, as it has risen from 1,362 in 1967; to 2,808 in 1968; and to 3,892 in 1969. Although the program is young (except for commercial, home economics, and manual arts), it offers the following: Agricultural and Forestry, Trade and Industrial, Home Economics (gainful). Fifteen technical-vocational centers are now operating or will be operating within two years.

The technical-vocational concept has been advocated as a much needed device for solving Maine's underemployment problems and, if it can be extended to the out-of-school, will make real inroads among drop-outs. Students who might otherwise be drop-outs, together with those who do not intend to go on to higher education, can now learn enough to make their services more valuable in employment. By having contact with a vocation in the formative years, they hopefully will be induced to pursue their chosen aspect of vocational-technical training in depth.

Substantial public investment will be required to update the technical-vocational secondary centers with expanded and pertinent curricula, modern and relevant equipment, and competent staff. If these centers are to do the job for which they are intended, they must train technical workers for the kinds of skills which will be needed by Maine commerce and industry. Expensive equipment will have to be constantly renewed. Curricula will have to be planned to meet the technical needs of various types of employment. Instructors will have to be paid salaries comparable to those offered by private industry.

The very rapid technical advances in industry today make the problem of training technicians a difficult one.

[17]In the State of Maine, approximately 2,000 additional students graduate each year from private secondary schools.

*Throughout this report, "technical-vocational" refers to vocational training in high schools or at the secondary level while "vocational-technical" refers to post-secondary levels.

Substantial public investment for planning, for replacing outdated equipment with modern equipment, and for instruction will be essential if these schools are to fulfill their purpose.

A recent report estimates the Greater Portland area T-V Secondary School cost for buildings and equipment at $4.9 million.[18] This would provide space for courses for students who will enter college but want some vocational skills as typing, space for afternoon and evening programs for area adults, and facilities for secondary students who want to take courses providing office skills, computational skills, construction skills, manipulative skills for employment in textile manufacture, laundry work, dry cleaning, assembly work, food services, retail sales work, and various other technical occupations and health occupations. Job openings in these fields in the Greater Portland area each year total more than 1,500.

In the smaller high schools of Maine, where the course offerings have been very limited, the percentage of high school drop-outs has been as high as 45 percent among those who start high school, according to the Maine Mental Health Final Report.[19] Many teenagers see no future in the usual classical and general courses. Adolescents of this type might be held in school if they felt they were being taught a relevant skill which would enable them to earn a good living. Vocational training of this sort is needed badly; and it is probable that it should, whenever possible, be coupled with some form of on-the-job training to make the experience more relevant.

The current shortage of classrooms and equipment will require substantial public investment. The 1968 Digest of Educational Statistics lists the classroom shortage for the State of Maine at 800 rooms for elementary and secondary pupils, as determined by local administrators.[20] This estimate is merely for meeting overcrowded conditions under the present system, without allowing for the construction of new centralized SAD high schools or regional vocation-technical secondary schools.

Greater public investment in new centralized buildings with proper equipment is needed for long-range economies and for desired economic benefits. One of the advantages of the SAD school is the relatively smaller number of teachers required to provide a broad diversity of courses taught to classes of relatively optimum size. There are ten rural schools in Maine where the entire twelve or thirteen years of elementary and secondary grades are taught, with an average of only 3.3 teachers at the secondary level. Although the secondary pupil-teacher ratio in such schools is only 17, the small number of teachers makes the curriculum very limited. Certain other schools are almost as limited in their offerings, more than 700 Maine high school students attending secondary schools of less than 100 pupils.[21]

[18]Arthur D. Little, "Report for New England School Department Council." (Cambridge, Mass.: August, 1969).

[19]Department of Mental Health and Corrections. *Mental Health Planning, Final Report. New Perspective. Maine's Mental Health Plan.* (Augusta, Maine: 1966), p. 29.

[20]Maine Department of Health, Education, and Welfare. Office of Education. *Digest of Educational Statistics, 1968.* (Augusta, Maine: 1969).

[21]State Department of Education, Bureau of Statistical Services.

TABLE IV-5

MAINE SCHOOL ENROLLMENTS AS OF 1968

Number of Schools	Public	Private
Elementary	711	87
Secondary	152	42
TOTAL	863	129
Enrollment		
Elementary	169,786	16,309
Secondary	62,728	9,065
TOTAL	232,514	25,374
Number of Teachers		
Elementary	7,350	687
Secondary	3,777	707
TOTAL	11,127	1,394

Source: Bureau of Statistical Services, Division of Administrative Services, State Department of Education.

The possible closing of academies and parochial schools may increase the need of additional public school construction. In some communities it may be possible for the public school department to rent former parochial school buildings, but such opportunities are limited. In most cases it is probable that public school classroom space will have to be constructed to accommodate the pupils who would have formerly gone to parochial schools which are closed for economic reasons.

Private academies also present a problem, particularly in rural communities, where the old-fashioned, privately endowed academies have functioned as the only secondary schools in their area. The legal bequests which have endowed these academies tend to prevent their being absorbed into School Administrative Districts. It would appear that the State Legislature should address itself to relieving the legal barriers which prevent such academies from becoming parts of School Administrative Districts when the academy trustees deem such action advisable.

The potential impact of the problem which the public school systems of Maine may have to face, if many present academies are absorbed into School Administrative Districts and if many more parochial schools have to close, is indicated by Table IV-5.

It must be remembered that a few of the private schools enumerated in the tabulation are well endowed, charge substantial tuition fees, emphasize a college preparatory program of high quality and of substantial appeal to children of well-to-do families, and are in little danger of closing. Most of the enumerated schools, however, lack a comfortable margin of financial resources, and it is probable that a number will have to close if school costs continue to mount much longer. If this should happen on a wide-spread scale, the public schools of Maine would need to accommodate as much as ten percent more pupils than at the present.

Greater financial support from various public sectors will be needed to meet the rising per-pupil operating costs. The per-capita operating costs in public school education in Maine have increased by an average of about ten percent per year. Of the New England states, Maine has the lowest pupil allowance. Only Alabama, Arkansas, Kentucky, Mississippi, North Carolina, Tennessee, and West Virginia have a lower expenditure per pupil.[22]

An immediate problem, according to the Maine Council of Education, is that the poorer units of the State are being forced by present policies to choose between raising local property tax rates very substantially to support school operation or trying to provide less expensive educational programs so that state and federal subsidies will cover a larger percentage of the cost. State allowances are based on the average of the two preceding years' "adjusted resident average daily membership" of pupils attending school multiplied by an allowance for each pupil. The balance is made up by the local unit, but the procedures followed by various local units are not uniform. Presently, there is no uniformity in the property valuation practices used by neighboring towns, many of which have never called upon the services of professional assessors. Added to this is the lack of any uniform tax rate, a condition which results in a reluctance of the "wealthier" towns to enter into School Administrative Districts with "poorer" towns. Since 1950 the trend has been for the State to absorb a greater share of pupil costs. In 1950 the State contributed 24 percent of the average pupil cost, by 1967 this had risen to almost 31 percent, and by 1971, as Table IV-6 indicates, it should reach almost 42 percent.[23]

The problem of helping the sparsely settled rural communities raise their share of educational costs appears insurmountable without certain reforms. The Maine Education Council recommends the establishment of a uniform school fund to be administered by the Department of Education and to be supported partly by legislative appropriation and partly by a uniform local tax rate on the state-equalized valuation of each municipality, the rate to be established by each regular session of the legislature. This would do away with the discrepancies between the present formula allowance and the actual per-pupil cost. In 1968-69, for instance, the formula allowed for $408 per secondary pupil; but the actual cost—excluding all necessary transportation, capital outlay, debt service, state retirement payments, or cost of operating the services provided by the State Department of Education—was $522, and the estimated total cost came to an average of approximately $663 per pupil.[24]

Another advantage of the suggestion of the Maine Education Council would be that the "wealthier" towns could enter in School Administrative Districts with "poorer" neighboring towns without a disproportionate increase in school costs for the taxpayers in the "wealthier" towns.

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[22]Maine Department of Health, Education, and Welfare, *op. cit.*

[23]Maine Department of Education, Bureau of Statistical Services, *Summary of Monies Used for Public School Education.*

[24]Special Message on Education by Kenneth E. Curtis, Governor of Maine to the 104th Legislature, February 11, 1969, p. 9.

TABLE IV-6

LOCAL SCHOOL EXPENDITURES AND SOURCE OF REVENUES BY SELECTED YEARS, 1966-67 TO 1970-71

Year	Expenditures	Local Percentage	Federal Percentage	State Percentage
1966-67	$116,796,739	61.33%	7.70%	30.97%
1967-68	127,529,883	60.29%	7.49%	32.22%
1968-69	137,931,114	58.04%	7.21%	34.75%
1969-70	150,991,640	55.35%	6.76%	37.89%
1970-71	160,162,362	51.83%	6.44%	41.73%

Source: Bureau of Statistical Services, Division of Administrative Services, State Department of Education.

It is possible that some other equitable method will be found to achieve the same ends. Whatever the solution may be, it must provide for a more equitable method of local educational support and a more uniform quality of adequate and appropriate public school education for Maine youth, whether they happen to live in a "poor" town or a "wealthy" town. There are too many inequities today. The Citizens Task Force on Municipal and State Revenues, in its report of November 1968, pointed out that "for 1966 the paper mill municipality of Rumford had an effective property tax rate of only $17.70 per thousand, whereas the adjacent municipality of Mexico, where many of the mill workers live, had to charge a rate of $38.20 per thousand, more than double the Rumford rate."[25] Discrepancies like this example are common in Maine, and some way needs to be found to provide a more equitable distribution of the costs of public school education.

Maine Public Service Education. With the trend toward more and larger services to the people of Maine, government, both state and local, finds itself competing for a qualified personnel base in a seller's market. Competent man power resources must be trained to meet the needs of increasingly complex agencies. Employees must be brought into these agencies with a greater knowledge base than their predecessors who grew up with the agency.

In 1968 Maine state and local governments reported 34,000 full-time employees. A reasonable estimate is that 40,000 will be employed by them in 1975. Over 1,300 upper-management positions will be vacated and 3,100 middle-management personnel will be replaced.[26]

Public service education in Maine will produce only 10 graduates in 1970 at a bachelor's or master's level. The only way for most Maine government professional-administrative-technical personnel to prepare for management responsibilities in the 1970's will be through in-service training.[27]

An educational program for public service personnel with emphasis in managerial development for mid-management persons is needed since most vacancies occur at this level.

A program similar to the two-year business program in Portland could be developed within the framework of the University system. The two-year business program has been remarkably successful in training mid-management people for the new businesses locating in greater Portland. Existing in-service training should be continued and expanded, but the State and the individual would benefit from the formal public service knowledge base prior to employment.

Libraries and Cultural Programs

Greater Public Investment Is Needed in Support of Libraries and Cultural Programs.

The educational and cultural benefits of adequate libraries for schools, universities, and the public at large are widely recognized. The rapid technological changes of today's society and the constant expansion of knowledge require municipalities and educational institutions to keep updating their library collections at substantial expense, if they are to meet the needs of their readers.

Maine has experienced positive growth in its library resources at all levels of education and within the system of local public facilities. Unfortunately this growth has been grossly uneven because of the low priorities

[25]Maine Education Council, *The State Investment in Maine Education, Report No. 1,* December 1, 1968. Appendix 2.

[26]D. R. Baggett, *Maine Public Service Education,* study completed in August 1969 for the New England Board of Education and the New England Regional Commission, p. 1.

[27]*Ibid.,* p. 2.

assigned to library service by the public. Surveys indicate that Maine follows a national trend in its unevenness of facilities. The mood of legislatures around the country has been detrimental to expanded service and many libraries are forced to limit service because of budget cuts.

The Federal government, in pursuing its policy of aid in this area, has made a great deal possible at all levels of library use. We now face possible curtailment, if not abandonment, of the vital projects at the federal level.

A "rule of thumb" formula for state support of public libraries is $.25 per capita. This would call for an appropriation of about $250,000 for Maine. Most states exceed this amount, even the poorer ones, but Maine appropriated only $16,000 for municipal library support in 1969, an amount unchanged for several years.

Libraries in Schools and Educational Institutions Need More Public Support.

Only 59 high schools and 13 junior high schools in the entire State of Maine have full-time librarians.[29] Many Maine schools are operating according to the guidelines established by the American Library Association in 1945, which called for a pupil expenditure of about $4 per year—in dollars which purchased at that time more than double the value of goods purchased by the dollars of today. To accomplish the same ends as the expenditure of $4 in 1945, it is probable that more than $10 per pupil would have to be expended today. Many schools, however, do not even meet the 1945 norm of $4 per capita. The unevenness of per capita pupil expenditures points to the need for uniform standards to be established for public school libraries throughout Maine.

The University of Maine system is nearly 770,000 volumes short by college standards and always faces accreditation problems with its colleges and divisions.[30] At present the university library at Orono fills the roll as principal library in the new university system.

Maine's Public Libraries Also Need Much More Support.

One-half of the municipal public libraries are open less than ten hours per week. Seventy percent are open less than 20 hours per week. Half of those libraries add fewer than 100 volumes per year. Seventy percent add fewer than 200 volumes per year.[31] This low level of library service in Maine results in substantial cultural and educational deprivation for half a million Maine people. Dr. Edward Y. Blewett, president of Westbrook Junior College, states, "We have failed in reaching to get across clearly the roll that libraries play in a complete community; to show the need of all people of all ages for good library service; and to make clear the social and educational interest that can be reaped on each dollar invested in our libraries."[32]

The Maine State Library Should Receive More Support From State Funds.

It has extended its services greatly in the past few years. It now operates eight bookmobiles and nine interlibrary teletypes, with a network of thirty-seven correspondent libraries. It circulates about 400,000 volumes per year with net annual accessions amounting to about 20,000 volumes. Its budget is about $560,000 per year,

[28]Seminar remarks of the Maine State Librarian, Ruth Hazelton, citing guidelines of the American Library Association, June 21, 1969.

[29]Maine School Library Association. *Maine School Library Survey, Interim Report.* (Augusta, Maine: March 28, 1969).

[30]Maine School Library Association. *Maine School Library Survey, Interim Report.* (Mimeographed and not for news release.) (Augusta, Maine: March 28, 1969).

[31]*Ibid.*

[32]E. Y. Blewett, "Focus: Your Local Library: A Hub or Backwater," *Maine Sunday Telegram,* April 27, 1969, p. 1D.

TABLE IV-7

COMPARATIVE DATA ON SELECTED MUNICIPAL LIBRARIES IN MAINE

Municipality	Total Volumes	Per Capita Expenditure	Circulation
Bangor	400,000	7.89	12.7
Portland	200,000	2.73	4.4
Lewiston	88,000	1.33	3.0
Waterville	51,000	2.72	6.4
Boothbay Harbor	12,000	4.63	10.6
Jackman	4,100	.08	.5

Source: Maine Department of Economic Development, *The Maine Handbook—A Statistical Abstract 1968.* Augusta, Maine, 1968.

half of which has been federal grant money.[33] This system would be most vulnerable to changes in federal support. It aids special libraries at the state prison, the Stevens School, and the Baxter School for the Deaf, and also functions on a training and advisory basis for libraries needing help around the state. More than any other facility, the Maine State Library reaches the people least covered by other libraries: the disadvantaged, the aged, and the poor.

Because the Maine State Library is of such great social importance in reaching citizens who need its services and have nowhere else to turn, it should receive much more substantial State support than at present.

Public Investment Is Needed to Support Programs of Cultural Benefit.

Until very recent years, most of Maine's cultural life had been left to private organizations. During the summer season, privately supported theater, music, and art have existed in their best forms for the enjoyment of summer visitors and the more affluent residents of the State. In a few municipalities, museums have been established, usually through the bequests of wealthy citizens. The more educated citizens of college towns have also participated to some extent in cultural events of the campus. But little of this influence has leaked into the educational process at the public level or reached into the lives of the average Maine citizen. The result, with few exceptions, has been a level of cultural bankruptcy which has perpetuated itself over time. This legacy is difficult to overcome, but at last a real effort is being made.

Two years ago, the Maine State Commission on the Arts and Humanities came into existence with a legislative appropriation of $25,000 matched by $39,000 of federal funds and $78,000 raised privately. Its programs were so successful in 1968 that in 1969, when the $25,000 of state money was matched by federal money of only $31,000, the commission has already raised $85,000 privately.[34]

The commission has accomplished a fine program of performing arts, exhibitions, festivals, and special projects. Although the commission has become deeply associated with many local art groups, it does not intend to be a substitute for primary arts organizations. Its main purpose is to widen the horizons of established arts and to create fresh exposure for them. The Maine State Commission on the Arts and Humanities appears to have made an excellent start, and its programs merit continued public support.

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[33]Maine State Library, *Fifty-Ninth Report.* (Augusta, Maine: 1968).

[34]"The Arts: Part II, Here to Stay," *Maine Sunday Telegram,* May 11, 1969, p. 4D.

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CHAPTER V

PUBLIC INVESTMENT NEEDS FOR HEALTH, WELFARE, AND HOUSING

Chapter Outline

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ACUTE HEALTH FACILITIES

The major goal of Maine for acute health facilities should be the provision of an adequate health maintenance system. The basis of this system is the complete or full-range health care provided by acute hospital facilities, which are feasible only in large population areas. This type of facility serves the population within a 25-30 mile radius. At present there are 61 hospitals in Maine; but using the 25-30 mile service area, about 30 hospitals could serve the needs of Maine people and avoid duplication of services, personnel, facilities, and do the same job at a lower patient cost.[1]

In outlying areas, where there are sufficient population concentrations to warrant health servicing, diagnostic and treatment centers give service of an emergency or non-specialized nature. In areas where there is not sufficient population for any type of facility, emergency transportation serves as the method of obtaining the rapid disposition to the nearest facility.

Present indications are that there is need for serious consideration of hospital combinations, mergers, facility specialization and sharing to give the greatest benefits at the lowest costs. The Health Facilities Planning Council, an independent, non-profit, impartial organization can take a realistic, unbiased view of an area. Planning through this Council should be stimulated to avoid local entanglements or competition among hospitals to provide the same services and facilities in a given area.

The Hill-Burton Act makes available, on a 50 percent matching basis, funds for the construction and modernization of hospitals, long-term care centers, diagnostic and treatment centers, and rehabilitation facilities. The funds are divided among the four areas by a formula set by the federal government. Although the State of Maine has no control over the division of funds in the four areas, if there are no approvable applications for work in the areas of hospitals, funds in this area can be transferred to long-term care facilities, from there to diagnostic and treatment centers, and finally to rehabilitative centers. It is noteworthy and commendable that since the inception of this Federal funding, less than $50,000 of the funds allocated to the State have gone unused out of a total of almost $22 million.

Hospitals

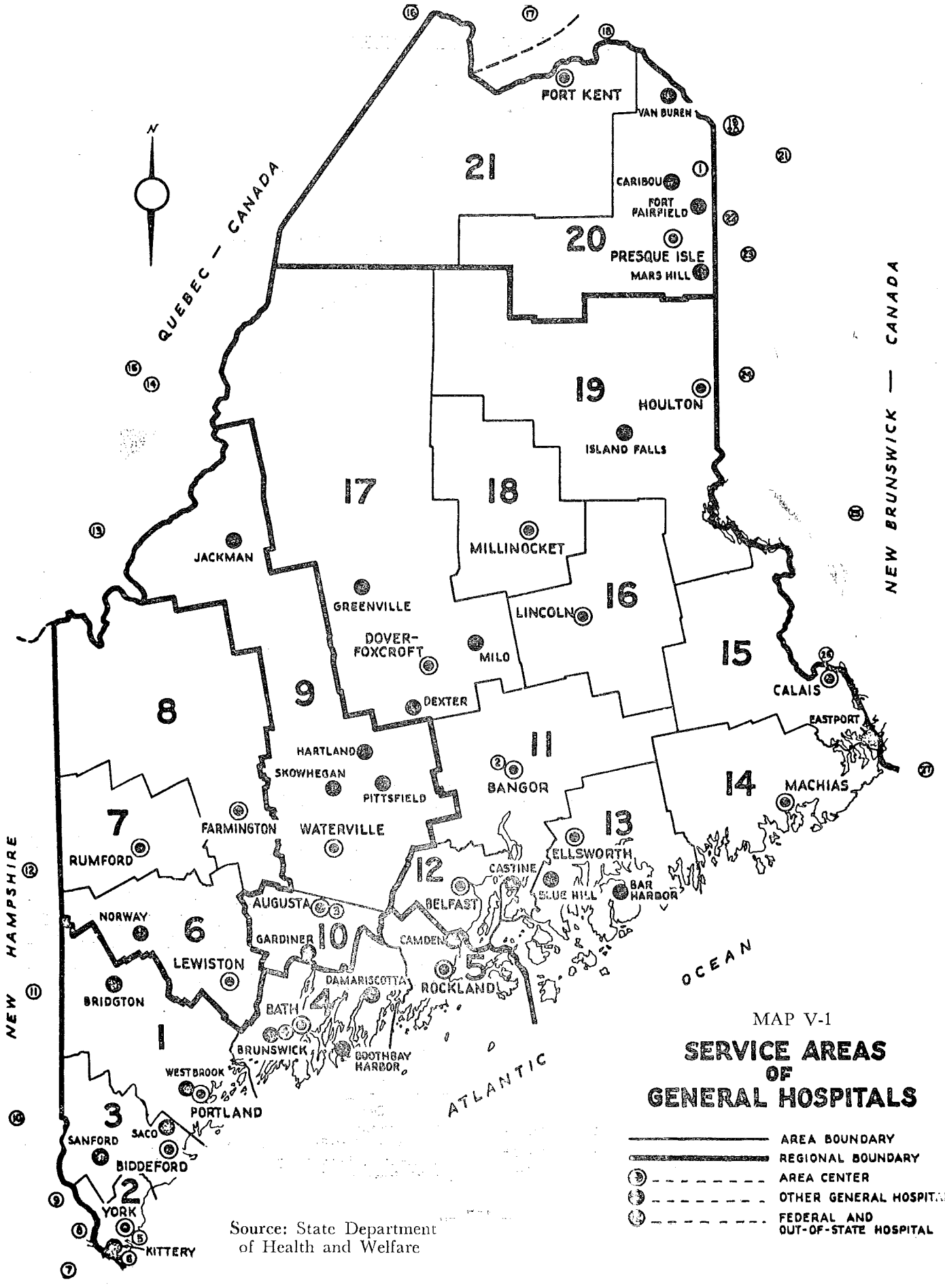
Map V-I shows the twenty-one service areas of general hospitals within the State of Maine. These twenty-one service areas were determined by studies of patient origination at each of the existing facilities. This origination factor can be considered to be the trading area from which the hospital draws its clientele. The table also sets forth the existing beds in each service area, the projected need through 1973 based on estimated population and rate of use, the number of beds presently conforming to Federal standards, and the need for modernization and new construction to meet the anticipated 1973 need. These figures were determined by the State Department of Health and Welfare in conjunction with the administration of Hill-Burton funds within the State and reflect a generally accepted method of need determination. Work is presently being done on preparation of a facilities report, with projected need through 1975.

The 1968 Hospital and Medical Facilities Survey and Construction Plan showed a need of 4,055 acute hospital beds by 1973 and 4,301 beds in existence today, But only 2,378 of the present beds conform to United States Government standards as to building construction, safety standards, room size and services, and auxiliary services, such as laundry and kitchen facilities. About 625 of these non-conforming beds were so because the structure was not fire resistant, and 766 were due to inadequate safety standards, such as fire alarms, fire escapes, stairwell construction, and other non-conforming safety factors.[2] Although these beds do not conform to the standards, they are in actual use and treat patients in serving the health needs within their general service areas.

At present, four of the general service areas, Fort Kent, Lincoln, Belfast, and Farmington, have no beds which conform to the Federal standards. The hospital at Fort Kent has plans for modernization of its facilities and the addition of 2 new beds. This would provide enough conforming beds for the anticipated needs of the area through 1973. There are presently two hospitals serving Lincoln, neither of which is certifiable for the Medicare program. The 103rd Legislature authorized establishment of a hospital district for the area and preliminary plans are under way. The hospital at Belfast is non-conforming due to the roof construction, which

[1]This information was obtained by drawing 25-mile radius circles around the centers of the 21 hospital service areas and determining overlaps and service area duplications as shown by the circles and from interviews with officials of the State of Maine Department of Health and Welfare.

[2]Department of Health and Welfare, *State of Maine Hospital and Medical Facilities Survey and Construction Plan,* Annual Revision 1968 (Augusta, Maine, Department of Health and Welfare), p. 155.



MAP V-1

SERVICE AREAS OF GENERAL HOSPITALS

- AREA BOUNDARY
- REGIONAL BOUNDARY
- AREA CENTER
- OTHER GENERAL HOSPITAL
- FEDERAL AND OUT-OF-STATE HOSPITAL

Source: State Department of Health and Welfare

at the time it was built was acceptable under State of Maine standards. The Health Facilities Planning Council has completed an intensive study of the Farmington area and recommended the establishment of a new hospital for this area to better serve the population distribution of the area. Thus, in each of the four totally nonconforming areas there is a recognition of the need, and work has been started in three of the areas to rectify the present problems. It would be well to build these new facilities large enough for the patient and bed needs as projected through 1975 and in light of the economic growth potential and projection for each area.

Secondary priority areas for construction and modernization, as established by *The 1968 Hospital and Medical Facilities Survey and Construction Plan,* are York, Dover-Foxcroft, Rockland, Presque Isle, Houlton, Augusta, and Ellsworth.[3] The other areas of the State have needs, but they have at least 50 percent of their projected needs met by conforming beds, and generally have a surplus of existing beds.

Further study and analysis of actual acute utilization of hospitals should be undertaken. It is possible and probable that some acute beds are being ineffectively utilized. This situation could cause overstated and inflated use rates in some areas. For example, some preoperative tests do not require a patient to remain within the hospital facility on an overnight basis, yet patients

[3] *Ibid.*, p. 160.

TABLE V-1

HOSPITAL BEDS BY REGION

Region	No. of Facilities	Existing Beds	Conforming Beds	Total Beds Needed	New Beds Needed	Modernized Beds Needed
Fort Kent	1	64	—	85	21	64
Houlton	3	130	30	126	—	96
Presque Isle	5	239	61	249	10	178
Northern Subregion	9	433	91	460	31	338
Bangor	4	500	224	402	—	178
Belfast	1	75	—	63	—	63
Calais	2	47	32	65	18	15
Dover-Foxcroft	4	78	16	90	12	62
Ellsworth	3	130	35	124	—	89
Lincoln	2	44	—	43	—	43
Machias	1	36	36	38	2	—
Millinocket	1	34	32	38	4	2
Rockland	2	106	35	117	11	71
Eastern Subregion	20	1,050	410	980	47	523
Farmington	1	56	—	55	—	55
Rumford	1	99	91	99	—	8
Western Subregion	2	155	91	154	—	63
Augusta	2	209	53	188	—	135
Bath	5	275	201	239	—	38
Biddeford	4	268	145	247	—	102
Lewiston	3	542	328	486	—	158
Portland	6	811	649	785	—	136
Waterville	8	500	401	442	—	41
York	2	58	9	74	16	49
Southwestern Subregion	30	2,663	1,786	2,461	16	659
TOTAL	61	4,301	2,378	4,055	94	1,583

Source: Maine Department of Health and Welfare. *State of Maine Hospital and Medical Facilities Survey and Construction Plan.* Augusta, Maine, 1968.

requiring such testing are forced to stay overnight in some service areas, because no other method of obtaining medical testing is available to the patient. If these tests were performed on an out-patient basis, this change in procedure could result in more effective utilization of hospital beds and facilities for actual acute patients. It would also lower the cost of hospital care to those who are presently functioning in this manner. Several doctors noted that it has been necessary for them to extend the hospital stay of some of their patients, particularly elderly patients, because room was not available in an extended-care facility or any other type of external care facility.

In the long run, it would appear to be less expensive to provide more facilities for this type of basically out-of-hospital need. Both construction costs and the necessary cost of providing services would be less expensive in terms of the numbers of persons served. The less costly facilities and programs could be provided in a larger number of places, conveniently located to serve the needs of the greater part of the population of Maine.

Medical Diagnostic and Treatment Centers

A medical diagnostic and treatment center provides care on an out-patient and emergency basis within the populated areas. In many rural areas, particularly those with wide population dispersion, these centers provide the only medical care facility available. These centers provide adjacent residents with trained care for such emergencies as accidents and other illness requiring immediate attention. As time is the critical factor in many cases, these centers should be placed so as to supplement

TABLE V-2

DIAGNOSTIC AND TREATMENT CENTERS BY REGION

Area	Existing	Needed	To Be Added	To Be Modernized
Fort Kent	1	2	1	1
Houlton	3	2	—	2
Presque Isle	5	5	—	4
Northern Subregion—NERC No. 10	9	9	1	7
Bangor	4	5	1	3
Belfast	1	1	—	1
Calais	2	2	—	1
Dover-Foxcroft	4	2	—	1
Ellsworth	6	7	1	6
Lincoln	2	1	—	1
Machias	2	2	—	1
Millinocket	1	1	—	—
Rockland	3	2	—	1
Eastern Subregion—NERC No. 11	25	23	2	15
Farmington	1	2	1	1
Rumford	1	1	—	—
Western Subregion—NERC No. 12	2	3	1	1
Augusta	2	2	—	1
Bath	5	5	—	1
Biddeford	4	3	—	3
Lewiston	3	4	1	1
Portland	6	6	—	4
Waterville	9	7	—	2
York	2	2	—	2
Southwestern Subregion—NERC No. 13	31	29	1	14
Total	67	64	5	37

Source: Maine Department of Health and Welfare. *State of Maine Hospital and Medical Facilities Survey and Construction Plan.* Augusta, Maine, 1968.

general hospital facilities for rural areas and relieve pressure on acute beds in the densely populated areas.

Priority for new construction should be given to the rural communities, while priority for modernization should be placed on the densely populated areas. This priority of new construction for rural areas would provide medical assistance to those areas which now do not have any facilities, while modernization in populated areas will help to provide greater services to those in these areas. The diagnostic and treatment center can be of great importance in the rural areas where there are high concentrations of the aged and elderly who have greater medical needs and requirements than the general population, but whose need is on an out-patient basis rather than on an acute basis.

Table V-2 shows the existing diagnostic and treatment centers, the need as projected through 1973, the number of new facilities needed, and the modernization needed. According to *The 1968 Hospital and Medical Facilities Survey and Construction Plan,* five areas, Stonington, Livermore Falls, Madawaska, Bucksport, and Rangeley, are in need of diagnostic and treatment centers.[4] The Maine Coast Memorial Hospital of Ellsworth is planning a facility at Stonington to service the need in this island community. As developed by the Health Facilities Planning Council, the plan for the Farmington area envisions a new center at Livermore Falls to serve the new International Paper Company mill in that area. Peoples Benevolent Hospital at Fort Kent will build a center at Madawaska and furnish transportation and communications systems for the area to tie in with their general hospital facility.

Future development of diagnostic and treatment centers should be planned in accordance with new industrial and economic development of a particular area. For example, should the Carrabasset area develop into the proposed summer and winter recreational area, consideration should be given to the placement of a diagnostic and treatment center in this area. As new industrial and recreational areas develop at distances from the general acute facility servicing the area, study should be undertaken to determine the feasibility of a center to serve these growing areas where size and remoteness preclude establishment of a large acute facility.

With the establishment of the five diagnostic and treatment centers suggested to supplement the present general service hospitals, over 90 percent of Maine's population would have some type of medical facility within twenty-five miles of their residence.[5] Although this does not measure actual commuting time, it is a realistic attainment of adequate service on an acute basis to the overall population.

Emergency Medical Care and Transportation

In most rural areas, there is not sufficient population development to justify a diagnostic and treatment center, nor is there a general service acute hospital facility within a short distance. In these areas, some type of emergency transportation unit can be provided to transport the patient from the community to the nearby medical facility rapidly. This service is not only imperative in rural communities, but also necessary in urban areas in order to insure proper methods of patient treatment and transportation.

The Accident Prevention Program of the State Department of Health and Welfare undertook to stimulate communities in the establishment of rescue and first aid squads. Not only did this program improve the care of the injured following an industrial, home, or automobile accident, but it also served all persons within the area, particularly the elderly.

Basic emergency transportation has in the past been carried on as a supplemental activity by local funeral directors. Approximately 80 percent of the emergency transportation service available in the State today is carried on by these funeral directors. Recent developments have indicated that many of these operators do not wish to continue with this service. The discontinuance of this service and the scarcity of other types of emergency transportation units will serve to compound an already pressing problem within the State of Maine.

Proper training of personnel, manning of emergency units, and sufficient equipment to insure adequate emergency treatment enroute to an acute facility are imperative. The proper staffing, training, and equipping of the personnel and vehicle within the transportation system are but one part of the total activity. The hospital emergency unit must also be properly staffed, trained, and equipped, and there must be understanding and interaction between the hospital emergency unit and the mobile emergency unit.

Perhaps stimulation of these programs can be undertaken through cooperation with the State Department of Health and Welfare, the Maine Medical Association, and the Department of Economic Development's Com-

[4] *Ibid.,* p. 162.

[5] This information was obtained by drawing 25-mile radius circles from the area center of each general hospital service area and 10-mile radius circles from each medical diagnostic and treatment center outside a service area, then counting the population not included within these circles.

munity Betterment Association program. This would require involvement of the medical profession, coordination by the Department of Health and Welfare, and a program of community involvement by the Community Betterment Association. Community involvement is perhaps the most necessary ingredient, as it is at the community level that these emergency medical care and transportation programs can best be evaluated and implemented. Not only can this program apply to those rural areas where no acute facilities are available, but also in cities and towns where general service facilities are available. It is needed, not only to provide rapid movement of the patient from the point of occurrence to the place of treatment, but also to insure proper care at the point of occurrence, enroute to the general service facility, and upon arrival.

Communications play a significant role in the effectiveness of an emergency medical transportation system. Citizens within the community should be made aware of the service and the proper channel for rapid dispatch of the service. Members of the unit should be connected with some type of communications network so as to minimize the time between the call for the unit and the arrival of the unit at the place of need. Communication between the unit itself and the general service facility to which it is enroute is necessary for two purposes. One purpose is to allow the service facility to prepare for the arrival of a given patient, so valuable time will not be wasted upon arrival at the facility. Another purpose is to allow the unit's personnel to maintain contact with the facility's personnel for possible instruction and help in the treatment of the unit's patient. A study is presently under way by Arthur D. Little of Cambridge, Massachusetts, concerning the technology of an emergency communications system and network within the State of Maine. This study will serve as the basis in the development of an overall communications system for the State.

The highway network also determines the comparable rapidness of dispatch and movement. A good highway network in rural areas is essential to speed the unit from the point of occurrence to the general service facility.

Even before the training, staffing, and equipping procedures take place, definitive action must be taken to determine the type of training necessary and standards to meet approval, plus definition of equipment needs and standards for equipment. It is equally important to define the amount of care the units should provide at the scene of occurrence and enroute. It should be determined whether they are to be merely "snatch and run" units, minimal first aid units, or emergency care units. In the latter case, the degree of lifesaving care they should provide must be determined.

That good emergency service is vital to any community goes without saying, and of all areas of Maine medical services, the provision of emergency service and transportation is one of the areas of greatest immediate need. The American College of Surgeons estimates that at least 25 percent of the people who annually suffer permanent disability, due to accidents or injury, would not be permanently disabled had they received **proper care** immediately upon occurrence.[6] Many of them did receive care, but the key is **proper care.**

Although emergency medical service and transportation must be quickly implemented, it is a task which would possibly require a relatively small public investment. Much of the actual training of personnel, procuring of vehicles, and equipping can be done at the local level. Perhaps the Knox County program of volunteer service in cooperation and conjunction with the local hospital unit could serve as a model upon which to base other efforts in the State. Probably the greatest State help can be in the area of stimulation and coordination of the local efforts, plus establishment of training and equipment standards. Once this groundbreaking effort by the State government has been undertaken, communities themselves, with the help and aid of interested local organizations and citizens, could provide the impetus for adequate and prompt emergency medical service and transportation for each and every Maine resident.

Long-Term Care Facilities

Medical treatment and care for the elderly in Maine have been typically performed by the acute hospital facility until such time as the patient could be discharged to his home, or space could be found in an extended care or nursing home facility. Many times the patient stayed longer than necessary at the acute facility, as there was no outside facility which could care for him, or his home environment was lacking proper care services. The advent of Medicare has increased the pressures of this problem, not only on the acute facility, but also on the external services available once the patient is removed from the confines of the general hospital.

The goal of planning in this area of medical facilities and services should be the provision of adequate numbers of beds, personnel and services to care for the

[6]"Solving the Ambulance Crisis," *Parade,* May 18, 1969, p. 33.

chronically ill or convalescent in light of the patient's actual needs and capabilities. The patient's needs and capabilities must be stressed and emphasized. It is possible and probable that some patients are presently receiving services actually above their needs and that many are not receiving any services even though they have needs. It is also probable that many are receiving services even though they have unutilized and unrealized capabilities which would raise them from their present category of need to one requiring fewer services.

In a four-year period to 1963, general hospitals in Maine increased their usage by 67,381 patient days or about 7 percent, while long-term care and nursing home facilities increased by 271,345 patient days, or 35 percent. In 1962-1963, the extended care facilities exceeded general hospitals in the number of patient-days of care extended to the public in Maine.[7] Between 1963 and 1968, general hospitals increased their patient-days by about 5 percent and extended care facilities experienced another 35 percent increase in patient-days.

It is estimated by the United States Bureau of Census that the population over 65 years of age, or the principal users of the extended care facilities, increased 3.2 percent between 1960 and 1964 at a time when patient-days in the facilities increased 35 percent. They also projected that the period from 1964 to 1970 would see a 5.5 percent increase in this age group, but again the usage had increased by 35 percent by 1968. The Bureau estimates a 3.5 percent increase in the over-65 age group from 1970 to 1975. Based on the past experience, this should increase patient-day usage of extended care facilities by at least 25 percent to 35 percent for this time period.

At present, there are basically two types of facilities to be characterized as long-term care units in Maine. The first is the skilled-nursing or extended care facility, which is defined as a facility that provides 24-hour nursing service, sufficient to meet the nursing needs of all patients. Such facilities have at least one registered nurse employed full-time, responsible for the total nursing service, in addition to one in charge of nursing activities during each tour of duty. The second facility is a nursing home which provides some nursing service, but not on a 24-hour, full shift basis.

Table V-3 lists the present beds which are included under the definition of skilled-nursing facility. Also included are the beds which presently conform to Federal Government standards and the needs for construction and modernization through 1973. In regard to these facilities the *State of Maine Hospital and Medical Facilities Survey and Construction Plan, Annual Revision 1968,* stated:

> It is considered desirable to locate long-term care facilities as a part of, or at least adjacent to, general hospitals. Such planning permits the ready referral of patients to the hospital during acute stages of illness and for diagnostic services or treatment; conversely, it permits patients who no longer require the facilities of the hospital to be easily transferred to the long-term care facility, thereby making more hospital beds available for acutely ill patients. Furthermore, if both the hospital and the long-term care facility are adjacent and are under the same ownership, many economies can be realized.[8]

The importance of beds in this type of adjacent facility can not be underestimated. It is through these beds that the general hospital realizes the full potential of its wide range of acute treatment facilities, from the actual beds to doctors, nurses, x-ray, laboratory, to dietary and linen service. It is also through these extended care beds that the patient is able to obtain care more suitable to his actual needs and at a cost more consistent with the length of service needed. As can be seen from Table V-3, there are five areas in Maine, Farmington, Ellsworth, Machias, Millinocket, and Houlton, which presently have no beds classified as long-term care beds. The table also shows that no area of the State has enough beds.

In a study conducted in 1965, the Department of Health and Welfare found that 30 percent of the nursing home patients had come from a general hospital facility while about 39 percent had come from their own or a relative's home.[9] This 30 percent figure again reinforces the concepts of both physical and operational nearness to the general hospital for the extended care facility. Because the patient was recently hospitalized, it is necessary for the extended care facility to have accurate and adequate medical records on the patient and at the same time be near enough to the hospital facility to insure proper doctor visits and consultation.

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[7]Department of Health and Welfare, Office of Health Education, *Nursing Home Patient Care—A Study.* (Augusta, Maine: Department of Health and Welfare, January 1965), p. 5.

[8]Department of Health and Welfare. *State of Maine Hospital and Medical Facilities Survey and Construction Plan, Annual Revision 1968.* (Augusta, Maine: Department of Health and Welfare), p. 34.

[9]Department of Health and Welfare, Office of Health Education. *Nursing Home Patient Care—A Study.* (Augusta, Maine: Department of Health and Walfare, January 1965), p. 27.

It is probable that the 39 percent from their home environment were placed in the facility due to the amount of care necessary, and that this care was not available in the home environment. Thus, there are two distinct types of patients at opposite ends of the spectrum being cared for in the same facility. One type is the patient who will require services almost as extensive as those given in a hospital. The second type has needs minimally above those received in an everyday residential setting. By both being placed in the same facility, it is a valid conclusion either that one is under-serviced and the other over-serviced, or else, if this is not true, that one is over-paying for services while the other is under-paying. Thus two types of inequities would exist, service and cost.

This same study found that over 55 percent of the nursing home population was 80 years of age or over, and almost one-third of them had been in a facility of this type for over 3 years.[10] As the population in the over-65 age group increases, the number of people needing extended care facilities will increase. However, the problem will be greatly increased by longer residence of patients in the facilities due to increased longevity.

[10] *Ibid.*, p. 31.

TABLE V-3

LONG-TERM CARE FACILITIES—CALENDAR YEAR 1966

Region	1973 Needed Beds	Present LTC Beds	Present Conforming Beds	Beds Needed to Conform	New Beds Needed	Beds to be Modernized
Fort Kent	76	93	32	44	—	44
Houlton	127	—	—	127	127	—
Presque Isle	109	12	12	97	97	—
Northern Subregion	312	105	44	268	224	44
Bangor	375	238	74	301	137	164
Belfast	118	61	—	118	57	61
Calais	47	37	30	17	10	7
Dover-Foxcroft	131	32	—	131	99	32
Ellsworth	131	—	—	131	131	—
Lincoln	57	16	—	57	41	16
Machias	143	—	—	143	143	—
Millinocket	33	—	—	33	33	—
Rockland	155	36	—	155	119	36
Eastern Subregion	1,790	420	104	1,086	770	316
Farmington	82	—	—	82	82	—
Rumford	106	56	56	50	50	—
Western Subregion	188	56	56	132	132	—
Augusta	459	94	—	459	365	94
Bath	163	73	40	123	90	33
Biddeford	325	140	108	217	185	32
Lewiston	875	530	—	875	345	530
Portland	809	378	143	666	431	235
Waterville	406	152	28	378	254	124
York	91	54	40	51	37	14
Southwestern Subregion	3,128	1,421	359	2,769	1,707	1,062
Total	4,818	2,002	563	4,255	2,833	1,422

Source: *State of Maine Hospital and Medical Facilities and Construction Plan* prepared by the Department of Health and Welfare, 1968 Annual Revision.

Table V-4 lists the present long-term care beds and nursing home beds by region and the projected need through 1973. It is unfortunate that a terminology problem exists within the definition of a "nursing home." The 1965 study found that about one-third of the "nursing homes" employed neither a registered nurse nor a licensed practical nurse. Thus, in actuality, these homes were really not providing any type of professional nursing care, while some "nursing homes" were providing the full care as defined in a skilled-nursing care facility. This emphasizes that there are at least two levels of care to be performed under the title of a "nursing home," and there is the need for more stringent and more properly defined divisions in the field of elderly care. As Table V-4 indicates, the combination of these two types of facilities more clearly reflects the actual availability of residency nursing care.

In this comparison, six areas of the State have sufficient or surplus facilities as projected through 1973. As recommended, major consideration of new facilities should be placed so as to maximize the interaction and economies between the general service facility and the long-term care facility. Priorities should be given to the population density areas, so as to remove some of the burden for extended care from the acute hospitals which have to service the largest concentrations of people. This would also place the priorities in areas where there are larger numbers of personnel, such as doctors and nurses, to serve the extended care facility.

TABLE V-4

LONG-TERM CARE AND NURSING HOME FACILITIES—BY REGION

Region	Present LTC Beds	Present Nursing Home Beds	Total Beds Available	1973 Needed Beds	Adjusted Actual Need
Fort Kent	93	—	93	76	(17)
Houlton	—	100	100	127	27
Presque Isle	12	43	55	109	54
Northern Subregion	105	143	248	312	98
Bangor	238	116	354	375	21
Belfast	61	21	82	118	36
Calais	37	—	37	47	10
Dover-Foxcroft	32	54	86	131	45
Ellsworth	—	109	109	131	22
Lincoln	16	37	53	57	4
Machias	—	111	111	143	32
Millinocket	—	—	—	33	33
Rockland	36	90	126	155	29
Eastern Subregion	420	538	958	1,190	232
Farmington	—	70	70	82	12
Rumford	56	50	106	106	—
Western Subregion	56	120	176	188	12
Augusta	94	309	403	459	56
Bath	73	101	174	163	(11)
Biddeford	140	202	342	325	(17)
Lewiston	530	212	742	875	133
Portland	378	323	701	809	108
Waterville	152	295	447	406	(41)
York	54	65	119	91	(28)
Southwestern Subregion	1,421	1,507	2,928	3,128	394
Total	2,002	2,308	4,310	4,818	508

Source: Maine Department of Health and Welfare. *State of Maine Hospital and Medical Facilities Survey and Construction Plan.* Augusta, Maine, 1968.

Areas in this priority category would include Portland, Lewiston, Augusta, and Houlton-Presque Isle.

Table V-5 shows sizes of long-term care and nursing home facilities in Maine. It will be noted that 49.2 percent of the beds are in facilities of less than 29 beds. A minimum size of 30-35 beds is estimated to be needed for economically feasible operation, with provision of the full range of required services, if the facility is not an integral part of a general hospital.[11] It can be concluded that many of the facilities existing in Maine do not provide the services needed to their patients as most of the facilities are proprietary, operated for their own profit. Once again, there is indication of the existence of a definition "gap" as to what constitutes a "nursing home" and what constitutes a long-term facility.

Perhaps a solution to the whole problem of proper care for Maine's chronically ill and convalescent evolves into a problem of properly defining the various levels of care needed, the facilities and services to be offered at these various levels, and a determination of the need at each level. One proposal in regard to the levels of care is that they be established in the following pattern:

[11]Department of Health and Welfare. *State of Maine Hospital and Medical Facilities Survey and Construction Plan, Annual Revision 1968.* (Augusta, Maine: Department of Health and Welfare), p. 34.

TABLE V-5

LONG-TERM CARE AND NURSING HOMES—BY SIZE

Region	Number of establishments with: Under 11 Beds	11-29 Beds	30-100 Beds	Over 100 Beds	TOTAL
Fort Kent	—	—	2(93)	—	2(93)
Houlton	1(6)	5(94)	—	—	6(100)
Presque Isle	4(12)	3(43)	—	—	7(55)
Northern Subregion	5(18)	8(137)	2(93)	—	15(248)
Bangor	4(20)	7(139)	4(195)	—	15(354)
Belfast	1(7)	1(14)	1(61)	—	3(82)
Calais	1(7)	—	1(30)	—	2(37)
Dover-Foxcroft	1(3)	5(83)	—	—	6(86)
Ellsworth	1(3)	4(75)	1(31)	—	6(109)
Lincoln	—	3(53)	—	—	3(53)
Machias	1(9)	2(48)	1(54)	—	4(111)
Millinocket	—	—	—	—	—
Rockland	5(34)	3(56)	1(36)	—	9(126)
Eastern Subregion	14(83)	25(468)	9(407)	—	48(958)
Farmington	1(5)	4(65)	—	—	5(70)
Rumford	1(6)	—	2(100)	—	3(106)
Western Subregion	2(11)	4(65)	2(100)	—	8(176)
Augusta	3(25)	13(252)	2(126)	—	18(403)
Bath	2(20)	4(81)	2(73)	—	8(174)
Biddeford	2(13)	9(178)	3(151)	—	14(342)
Lewiston	4(33)	9(166)	4(191)	1(352)	18(742)
Portland	7(55)	14(269)	6(377)	—	27(701)
Waterville	—	9(194)	5(253)	—	14(447)
York	—	3(48)	2(71)	—	5(119)
Southwestern Subregion	18(146)	61(1188)	24(1242)	1(352)	104(2928)
Total	39(258)	98(1858)	37(1842)	1(352)	175(4310)
% of Total Facilities	22.3%	56.0%	21.1%	.6%	
% of Total Beds	6.1%	43.1%	42.6%	8.2%	

Parentheses ( ) indicate the total number of beds in these establishments.

Source: Maine Department of Health and Welfare. *State of Maine Hospital and Medical Facilities Survey and Construction Plan.* Augusta, Maine, 1968.

(1) The extended care or skilled nursing facility—This facility would have 24-hour professional nursing care available and a wide range of services to offer, including rehabilitation. This type of facility to be built near, or as part of, the general hospital facility so as to realize the interaction between the hospital and the facility, and the resulting economies.

(2) Nursing homes—The nursing home would provide professional nursing care, but not to the extent of full, complete 24-hour coverage. This facility would be for a patient who is mobile to a great extent, but still has requirements of some nursing care, perhaps two hours a day or week.

(3) "Foster home" facilities—This facility would be where the patient does not require nursing care but does need care in watchfulness of his general well-being, such as proper diet and hygiene.

(4) Domiciliary facility—The facility in this category would provide primarily a place of residency where little or no care is needed and provide an atmosphere conducive to good personal habits, proper diet, and environment for the aged.

(5) Home residency where it is possible and available, with services to the recipient, such as homemaker service, visiting nurse service, and recreational and other opportunities available within the community, such as senior citizen centers.

The types of facility and services available to the elderly have great impact on State expenditures. It has been found that 60 percent of the nursing home population are financing their care through public assistance from the State.[12] Thus, if these patients are placed in a facility providing a higher level of care than is necessary, the cost to the State is greater than necessary. Studies of public and private patients within nursing homes have indicated that 50 percent of them do not need to be in nursing homes. [13] This fact, coupled with the drastic increases in patient-days within extended care and nursing home facilities, suggests the need for other levels of elderly care. The three aforementioned lower levels of care would, in many instances, be the proper place of care for many present higher level patients and with substantially reduced costs, and at the same time provide new areas of care for many, who at present are not receiving care at all.

Present Homemaker Service programs and visiting nurse programs should be expanded and upgraded to improve services in the present lower levels of care. Local and regional programs backed by community efforts, public and private, should be encouraged to relieve the overall burden on the State government resources. Development of senior citizen centers and programs, educational and recreational, should be implemented by localized efforts. Better informational programs will help create more community awareness of the local problems of the elderly and will help to polarize and encourage local participation. It is through these local efforts that services can be provided at low costs while meeting the needs of more people. By development of these lower levels of care, it is possible to effect savings in general assistance costs per client, and at the same time provide great outreach and more realistically meet the need of all people involved.

Vocational Rehabilitation

The experience of rehabilitation can best be summed up by a quotation from the Rhode Island Public Investment Plan:

> "Few investments in state programs have as good a return as this one. A disabled person, instead of being supported by taxes his fellow Americans pay, is himself a taxpayer, once he goes to work. For every Federal dollar invested in his rehabilitation, he will return an average of $5 to the U. S. Treasury in Federal income tax."[14]

Experience has shown that approximately 25 percent of those rehabilitated were previously in public assistance categories or dependent upon tax-supported institutions. In 1965-1966 in Rhode Island, 211 persons were successfully rehabilitated at a cost of approximately $400,000 in State money. These 211 people had been receiving welfare grants or support of almost $3,000,000 a year. [15] Thus a vocational rehabilitation plan provides a three-pronged goal: (1) removal of the rehabilitated from the welfare rolls, (2) creation of new skills for the employment pool, and (3) return of tax dollars once earning power is resumed.

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[12]Department of Health and Welfare, Office of Health Education. *Nursing Home Patient Care—A Study.* (Augusta, Maine: Department of Health and Welfare, January 1965), p. 20.

[13]Department of Health and Welfare, Office of Health Education. *Nursing Home Patient Care—A Study.* (Augusta, Maine: Department of Health and Welfare, January 1965), p. 45.

[14]Rhode Island Development Council, Rhode Island Department of Administration and the Rhode Island Statewide Comprehensive Transportation and Land Use Planning Program. *A Plan for Public Investment for the State of Rhode Island, First Draft.* (March 1968), p. III-17.

[15]*Ibid.*, p. IV-17.

In light of the Rhode Island experience, it is well to note that Maine's 1969 quota of Federal funds for vocational rehabilitation was about $3.25 million and that based upon the present State budget expenditure of $400,000 in this area, almost $1.25 million of this Federal money will go unused. This $1.25 million could have been received had an appropriation of $200,000 more of State funds been made. The Maine Commission on Rehabilitation Needs states that Maine's "two major vocational rehabilitation agencies . . . are now serving only 3,000 of the estimated 50,000 Maine citizens eligible for these programs."[16]

The goal of rehabilitation in the State should be to provide adequate rehabilitation service, either public or private, to all needy citizens with an objective of returning as many as possible to the work force. The primary priority should be the establishment of a comprehensive plan for statewide rehabilitative facilities and services. This plan would then establish the patterns of development for the State.

Principal priority areas for consideration in this comprehensive state plan are:

(1) Improvement of service to handicapped children with emphasis on identification of these children at an early age.

(2) Increased State appropriations to receive Federal monies to ease staff shortages and improve compensational levels to attract and retain qualified personnel.

(3) Expansion of training for personnel and possible development of Continuing Education programs through the University of Maine to upgrade personnel professionalism.

(4) Development of programs and facilities, perhaps mobile, for use in rural areas.

(5) Establishment of a program and personnel for rehabilitation of nursing home and extended care patients so as to reduce their dependence upon full service care institutions and facilitate their return to everyday environments.

(6) Increased cooperation and regional programs for in-hospital rehabilitation at present acute general service facilities.

(7) Establishment of a comprehensive medical rehabilitative center for the whole State to provide accommodations and treatment facilities for those not able to receive such treatment on a localized basis.

Tuberculosis Facilities

The tuberculosis hospital at Fairfield has a present bed capacity of 88 beds, 64 of which conform to Federal standards. *The State of Maine Hospital and Medical Facilities Survey and Construction Plan, 1968 Annual Revision,* has estimated that by 1973 there will be a need for 68 beds at this facility. Therefore, there is need to modernize four beds to meet the anticipated 1973 need. In 1965 there were 142 reported cases of tuberculosis in the State, and as of June 30, 1966, there were 699 persons with the disease, 147 hospitalized and 552 not.[17]

The Division of Tuberculosis Control has moved from a treatment emphasis to a preventive emphasis. Programs are carried on in the areas of (1) treatment of known cases, (2) maintenance of files and records for lifetime follow-up on all cases, (3) adequate follow-up of all contacts with preventive and prophylactic treatment where necessary, and (4) testing of children for detection, particularly of "reactor" children.

The Division is to be commended for its excellent detection program among school age children. It is possible that the responsibility of the Division could be increased to include the detection, diagnosis, and treatment of all respiratory diseases. This would draw upon their previous knowledge and experience gained through work with tuberculosis patients, and effectively utilize the hospital facility and staff at Fairfield. The diabetes detection program could be expanded, as well as other wide-range detection programs.

MEDICAL AND ALLIED PERSONNEL AND PROGRAMS

The previous section of this report was concerned with the facilities needed to insure adequate availability of medical treatment to Maine citizens. It is necessary to provide these facilities, but the "bricks and mortar" are but one part of the overall problem, and perhaps the easiest obstacle to overcome. Even greater in magnitude is the provision of people, adequate numbers who are adequately trained, to staff these facilities. The finest buildings and best equipment are only as effective as the people who operate them.

It is indeed unfortunate that much of the present data assembled on medical and allied personnel is con-

[16]Maine Commission on Rehabilitation Needs. *Major Recommendations of the Maine Commission on Rehabilitation Needs.* (Augusta, Maine: October 1968), p. 17.

[17]Department of Health and Welfare, *1964-1966 Biennial Report.* (Augusta, Maine: Maine Department of Health and Welfare, January 1967), p. 15.

cerned only with the quantity of these people. It is only one aspect of the problem to provide enough quantity of medical personnel, and yet a larger part of the problem is to be sure that those who are available are of the highest caliber and are continually informed and educated in new and better techniques and methods. There is a definite need in the State for a determination of personnel requirements, but there is still a greater need for determination of the quality of present personnel and methods by which present and future personnel can be supplied in sufficient quantity and with proper quality.

These quantity and quality determinations must encompass far larger areas of concern than have been studied in the past. Not only must doctors, dentists, and nurses, the seemingly larger factors in the medical equation, be studied, but also all the others, such as x-ray technicians, laboratory technicians, dieticians, hospital administrators, dental hygienists, physical therapists, nurses, anesthetists, and the whole complement of medical and allied personnel necessary to insure the proper and adequate availability of trained personnel, so that all Maine citizens can be assured of full and sufficient medical care.

Physicians

The physician is at the top of the medical pyramid in relation to all other personnel. It is the physician who takes the role of the director while other medical personnel are the cast players in the production of medical services. Sufficient numbers of doctors are necessary to insure that each Maine resident receives medical care, but also as the doctor is the necessary ingredient before other allied services can be provided. The experience of Jackman illustrates this very appropriately. A newly built hospital facility with modern equipment which could have supplied needed care and medical services to a heretofore neglected segment of Maine's population was unable to operate due to the lack of a physician in the area. Thus, the machinery necessary for proper care can be available, but the lack of the principal necessary to activate that machinery, the physician, can cause the entire process to remain idle.

Table V-6 lists the present licensed practicing physicians by county and the population figures for each county. The national average of approximately 800 people per practicing physician is attained in only four counties, while three counties have twice as many people per physician as the national average. In order to bring each county to the national level of 800 people per physician by 1975, 296 new physicians will be needed, many of them in rural areas. Rural areas are a difficult problem to cope with, as today's new physician is a specialist to a great extent and can practice specialized medicine only in the more densely populated areas.

There is no easy solution to the anticipated physician need in the State. Development of a medical school complex and program has, to a large extent, been found too costly in relation to the number of actual physicians who would become a part of a Maine community. It has been found that once graduated from a medical school, the potential physician tends to do his internship and residency in another locale and to remain in this other locale rather than return to his place of formal education. Thus, a medical school would add to the national doctor pool, but would have little or no effect on the number of physicians in Maine. As the physician tends to settle in the locale of his intern and residency programs, one possible way of stimulating physician settlement in Maine is through the establishment of more internships and residency programs within Maine hospitals. This could be done at a much lower cost than establishment of a medical school complex and would have a greater stimulation of physician settlement in Maine.

The regionalized approach to physician training has financial advantages to Maine. The present University of Vermont School of Medicine deserves the support of New England citizens and at the same time provides a vehicle through which Maine students can receive training before returning to Maine for the intern and resident programs. This regionalized School of Medicine in Vermont allows development of a more economically efficient plan so that specialized programs offered in only one university location in Maine, New Hampshire, or Vermont can be shared on a tri-state basis. The responsibility of Vermont for the medical school allows Maine to develop educational facilities in oceanography to serve the tri-state area. Basic to the development of this regionalized program at Vermont is the establishment of stronger graduate and full undergraduate programs in the biological and social sciences at the University of Maine. It is through these Maine programs that the student pool for medical training will become available. It is also necessary to stimulate programs to channel high school students into these college programs.

To prepare for such development, a statewide agency is needed to correlate and coordinate all currently operative programs and efforts in the field of health education and research, to encourage coordinated support, and oversee new programs and projects. It is only through this one statewide agency approach that a program will develop which will not be fragmented, sectionalized,

TABLE V-6

LICENSED PRACTICING PHYSICIANS—MAY, 1969

County	Total M.D.'s D.O.'s	County Pop.	Population Per Doctor	1975 County Pop.	Required Number of Doctors	Needed Doctors
Aroostook	64	107,300	1,677	114,700	143	79
Northern Subregion	64	107,300	1,677	114,700	143	79
Hancock	44	32,700	743	34,500	43	(1)
Knox	41	29,200	712	30,500	38	(2)
Penobscot	122	127,300	1,043	139,000	174	52
Piscataquis	16	17,300	1,081	17,000	21	5
Waldo	14	22,800	1,629	23,000	29	15
Washington	20	32,400	1,620	32,500	41	21
Eastern Subregion	257	261,700	1,018	276,500	346	90
Franklin	22	21,100	955	21,000	26	4
Oxford	35	44,100	1,260	46,500	58	23
Somerset	27	40,400	1,496	41,500	52	25
Western Subregion	84	105,600	1,257	109,000	136	52
Androscoggin	111	90,500	815	95,500	119	8
Cumberland	282	190,700	676	214,000	268	(14)
Kennebec	126	91,800	729	101,500	127	(1)
Lincoln	19	18,800	990	21,500	27	8
Sagadahoc	20	23,000	1,150	28,500	36	16
York	87	103,600	1,191	115,000	144	57
Southwestern Subregion	645	518,400	804	576,000	721	75
Total	1,050	993,000	946	1,076,200	1,346	296

Sources: Number of Physicians—State Department of Health and Welfare.

Population Projections—New England Regional Council, Bowdoin College Public Affairs Research Center, University of Maryland.

uneconomical, and inappropriate for the State's immediate needs.

Maine is fortunate in having a strong physician population of osteopathy. These Doctors of Osteopathy and the Osteopathic Hospital system within the State have contributed to Maine's present well-being in health services. It is advisable that loan programs for Maine students be developed both at the Vermont Medical School and at a School of Osteopathy. This program would involve low cost loans to Maine students at these institutions and a cancellable provision if these students return to practice in Maine for a stipulated time period upon completion of training and intern periods. The statewide agency mentioned in connection with the development of health education and research could be the administering and granting agent for this loan program.

Not only is there need for stimulation of new physicians in the State, but also constant efforts should be directed toward bringing new knowledge, techniques, and programs to the present physician population. The efforts of Maine's Regional Medical Programs[18] are to be encouraged and supported in this field, as well as the activities of the Division of Cancer Control in the State Department of Health and Welfare, and the American and Maine Medical Associations. It is through this continual dissemination of information and knowledge that all of Maine's present physicians maintain their participation in developments in new areas, such as cancer, stroke, heart disease, etc. The Regional Medical Program is broad-based, and has the potential to become a leading force in the area of regionalized planning in the State, and should work in conjunction with the State Planning Office. An exchange of data, plans,

ideas, and other pertinent factors would avoid duplicate efforts and make best use of the meager planning components available.

Registered Nurses

The registered nurse has a wide range of service fields, including hospitals, nursing homes, extended care facilities, school nursing, private duty work, public health nursing, industrial nursing, and office nursing, just to mention a few. In a study conducted in 1966, the Health Facilities Planning Council [19] found there were 4,050 active registered nurses in the State out of a total of 5,686 licensed registered nurses. The percentage and number by places of employment for these 4,050 active nurses are as follows:

Hospital or related institution	2,369	63.4%
Nursing home	78	1.9
Industrial Nurse	82	2.0
School of Nursing	60	1.5
Private Duty	496	12.2
Public Health or School Nurse	250	6.2
Office Nurse	213	5.3
Other or did not state	302	7.5
Total	4,050	100.0%

At the time of the study, there were about 4.1 active registered nurses per 1,000 population in Maine, as compared to 3.1 nationally. The recommended national need for 1970, as estimated by the Surgeon General's Consultant Group on Nursing, is 4.0 nurses for every 1,000 population.[20] By this standard, Maine, as a whole, has an adequate supply of registered nurses. There are, however, pockets of scarcity within Maine.

Table V-7 indicates the number of registered active nurses per county as found by the Health Facilities study. The larger population counties, with the exception of Aroostook and York, all have ratios per 1,000 population above the recommended national level, while many of the smaller population counties, particularly Waldo, Franklin, Lincoln, Somerset and Washington, have a scarcity. Using this recommended national level of 4.0 nurses per 1,000 population at estimated country populations for 1975, there is a projected need for approximately 255 more active registered nurses on a statewide basis. The two principal areas of need by 1975 would be Aroostook County, needing 166 nurses, and York County, needing 149 new nurses. Development of a program for training and educating these needed nurses should be a priority for these two counties, as well as other areas of the State.

Need is evident for training courses throughout the State to take advantage of the present pool of inactive and licensed-lapsed nurses available. The replies to the nursing study from 1,200 registered nurses presently not working indicated that 44% of them desired some type of refresher course now or at some future time to become active again.[21] Not only are these refresher courses necessary for nurses wishing to return to the employment pool, but also desirable for presently employed nurses to upgrade their skills and the quality of care. Many of the present nursing homes in Maine are making use of personnel who could greatly benefit from the courses, especially courses in rehabilitative techniques and methods. Selected programs in this area should be started immediately, and other programs could be instituted as the demand is indicated.

The Division of Public Health Nursing works in the rural areas of Maine, primarily assisting patients and families in their own homes and giving a family-centered service. As the rural areas are the ones in greatest need of registered nursing skills, this State program is of great importance in terms of service rendered to about half of Maine's population. Immunization programs and school health programs are also offered through this Division. Immunization clinics in cooperation with the Division of Communicable Disease Control could be expanded to reach more of Maine's rural population. In the urban areas of the State, there are about 45 local public health nursing agencies carrying on the same type of work and about 40 school systems with full-time nursing personnel. Coordination and correlation of the efforts of these local agencies and the State Public Health Nursing Division must be carried out to avoid duplication of efforts and to make certain that all programs and services are being offered to both the urban and rural areas.

The trend toward school administrative districts will and should motivate the employment of school nurses on a full-time basis. This will relieve part of the present school nurse burden from this State Division and allow them to concentrate their efforts on other needed activities, particularly home care for the elderly. Medicare enlargement will place a definite strain on the resources of this Division. Enlargement of the staff is a requirement if adequate home nursing services are to be provided without case overloads. Both salary scales and

[18]See Appendix B.

[19]Health Facilities Planning Council. *Nursing Personnel Resources: An Analysis of the Supply of Registered Professional Nurses in Maine.* (Augusta, Maine: 1966).

[20]*Ibid.*, p. 10.

[21]*Ibid.*, pp. 18-19.

TABLE V-7

LICENSED REGISTERED NURSES BY HOSPITAL COMMUNITY OF RESIDENCE AND COUNTY—1966

County	Licensed R.N.'s	Active R.N.'s	County Pop.	Active Nurses Per 1,000 Pop.	County Pop.	Req. R.N.'s	Needed R.N.'s
Aroostook	417	293	107,300	2.7	114,700	459	166
NERC No. 10	417	293	107,300	2.7	114,700	459	166
Hancock	163	117	32,700	3.6	34,500	138	21
Knox	181	125	29,200	4.3	30,500	122	(3)
Penobscot	781	544	127,300	4.3	139,000	556	12
Piscataquis	80	56	17,300	3.2	17,000	68	12
Waldo	82	51	22,800	2.2	23,000	92	41
Washington	112	85	32,400	2.6	32,500	130	45
NERC No. 11	1,399	978	261,700	3.7	276,500	1,106	128
Franklin	76	55	21,100	2.6	21,000	84	29
Oxford	200	139	44,100	3.1	46,500	186	47
Somerset	140	96	40,400	2.4	41,500	166	70
NERC No. 12	416	290	105,600	2.7	109,000	436	146
Androscoggin	556	400	90,500	4.4	95,500	382	(18)
Cumberland	1,551	1,096	190,700	5.7	214,000	856	(240)
Kennebec	738	551	91,800	6.0	101,500	406	(145)
Lincoln	43	30	18,800	1.6	21,500	86	56
Sagadahoc	135	101	23,000	4.4	28,500	114	13
York	431	311	103,600	3.0	115,000	460	149
NERC No. 13	3,454	2,489	518,400	4.8	576,000	2,304	(185)
Total	5,686	4,050	993,000	4.1	1,076,200	4,305	255

Sources: Licensed and Active R.N.'s—"Nursing Personnel Resources: An Analysis of the Supply of Registered Professional Nurses in Maine" prepared by Health Facilities Planning Council, Augusta, Maine.

Population Projection—New England Regional Council, Bowdoin College Public Affairs Research Center, University of Maryland.

working conditions must be improved if the Division is to recruit and retain personnel.

Educational opportunities and programs must be expanded for the present personnel to maintain their high level of up-to-date knowledge and practices. The public health nurse is more than a professional nurse in the sense that she also is a teacher, counselor, coordinator, case finder, and community health leader. She must be equipped by continuous education and experience, with knowledge and skills required for public health practices.

Dentists

The primary goal of dental health should be the provision of necessary dental service to all residents on an equitable basis. Many problems exist in Maine in the area of dental health. Foremost among them is the decreasing number of dentists and their concentration in urban areas. In surveys of school children of elementary and junior high school age, the Division of Dental Health found that "for every 100 Maine children, 6 to 14 years old, there were at least 800 decayed teeth; of these 250 have been corrected by filling, and 40 extracted because of excessive decay,"[22] leaving 510 uncared-for decayed teeth.

The problem becomes more complex when one examines, county by county, resident dentists and popula-

[22]Maine Department of Health and Welfare, Division of Dental Health. *1964-1966 Biennial Report.* (Augusta, Maine), p. 21.

tion comparisons set forth in Table V-8. The national average of 2,000 persons for each practicing dentist is achieved only in one county, Cumberland, while four counties, Waldo, Aroostook, Somerset, and Washington, have over 4,000 population per dentist. Taking county population estimates for 1975 and assuming the 2,000 population per dentist to be the standard, there will be a need for 181 dentists, or 50 percent more than the present 359 practicing registered dentists in Maine now. Each county in Maine will need new dentists by 1975 to meet the standard.

The problem then becomes one of attracting dentists to Maine to meet this projected need by 1975, rural areas being prevalent in the need. It is very simple to say that we need an additional 181 dentists by 1975, but it is a much more complicated procedure to implement a program to attract and retain these dentists. Stimulation of Maine students to enter dentistry is one way by which the need could be partially met. The establishment of a loan and contract program for Maine students at Tufts School of Dentistry is desirable. This program would loan up to a certain amount each year to qualified students, and the loan would be cancellable if, upon graduation, the student practiced in Maine for a stipulated period of time. Although this program is basically a stop-gap measure, it would attempt to stimulate settlement in Maine of dentists for at least a minimum period of time, and hopefully this minimum period would allow them to build up a sufficient practice to keep them in the State once the loan cancelation period had terminated.

Another pressing problem in personnel is that of the dental hygienist. It is estimated that "a dental hygienist can release about a fourth of the dentist's chairside time

TABLE V-8

PRACTICING REGISTERED DENTISTS RESIDING IN MAINE—MAY 1969

County	No. of Dentists	County Pop.	Population Per Dentist	1975 County Pop.	Required Dentists	Needed Dentists
Aroostook	19	107,300	5,647	114,700	57	38
NERC No. 10	19	107,300	5,647	114,700	57	38
Hancock	13	32,700	2,515	34,500	17	4
Knox	12	29,200	2,433	30,500	15	3
Penobscot	39	127,300	3,264	139,000	70	31
Piscataquis	6	17,300	2,883	17,000	9	3
Waldo	3	22,800	7,600	23,000	12	9
Washington	7	32,400	4,629	32,500	16	9
NERC No. 11	80	261,700	3,271	276,500	139	59
Franklin	6	21,100	3,517	21,000	11	5
Oxford	17	44,100	2,594	46,500	23	6
Somerset	9	40,400	4,489	41,500	21	12
NERC No. 12	32	105,600	3,300	109,000	55	23
Androscoggin	38	90,500	2,382	95,500	48	10
Cumberland	104	190,700	1,834	214,000	107	3
Kennebec	39	91,800	2,354	101,500	51	12
Lincoln	6	18,800	3,167	21,500	11	5
Sagadahoc	8	23,000	2,875	28,500	14	6
York	33	103,600	3,139	115,000	58	25
NERC No. 13	228	518,400	2,274	576,000	289	61
Total	359	993,000	2,766	1,075,200	540	181

Sources: Number of Dentists—Maine Department of Health and Welfare, Division of Dental Health.
Population Projections—New England Regional Council, Bowdoin College Public Affairs Research Center, University of Maryland.

for more complicated procedures."[23] At present, there is only one school in Maine which offers a program in this vital field. Not only does the demand for this type of personnel exist with the dentists themselves, but also in the local and state dental programs. There are presently dental hygiene positions available, but they are unfilled due to lack of qualified applicants. This is also true of the Division of Dental Health at the State level.

The Division of Dental Health states that "fluoridation is the most promising answer for large-scale improvement of Maine's dental health."[24] The report cites the experience of Norway, Maine, which began operating its fluoridation facilities in October, 1952, and saw a 50 percent decline in decay in children's teeth in the next ten years at a cost of eleven cents per person per year. In many communities, there are no community water supplies, while in others there is great resistance to fluoridation of the public water supply. In these communities, the need is best met by topical applications. The present program in these areas, as provided by the Division of Dental Health, is small in relation to the need. Salary scales must definitely be increased to retain present personnel and fill new positions created to meet the pressing Maine dental health needs. The Division estimates that they need 15 dental hygienists working year around if they are to meet the present needs for topical applications in towns without community water supplies.

Allied Fields

"Modern health services are no longer sustained alone by doctors and nurses in appropriate numbers. They involve many more professions, teamwork skills, modern facilities, and continuous education of all professional personnel."[25] Little work has been done in Maine in the determination of personnel and education needs for allied medical service personnel, such as x-ray technicians, laboratory technicians, pharmacists, physical therapists, hospital administrators, nursing aides, licensed practical nurses, medical-record librarians, and many others who support the physician and registered nurse in the administration of health care.

Needs within these areas exist, and probably in greater numbers than in categories of physicians and registered nurses, but little has been done to determine these needs. The first step toward adequate planning in this area is an inventory of present personnel. These allied fields can work in specified areas to allow physicians and nurses more time for patient care, thereby making possible a higher level of patient care.

Bureau of Health

The Bureau of Health is one of two major components of the overall jurisdiction of the Department of Health and Welfare. It is the job of the Bureau to provide and promote health care and service in Maine. The Bureau is divided into thirteen divisional responsibilities and has a budget equal to approximately 11 percent of the total State and federal appropriations of the Department of Health and Welfare. Many of the divisions have been covered in preceding sections due to their integral relationship with previous areas of concern. Among them are Hospital Facilities Construction Program, Medical Transportation and Emergency Services, Dental Health, Hospital Services, Public Health Nursing, Tuberculosis Control, and Communicable Disease Control. Brief discussion of the remaining six divisions follows.

The Division of Sanitary Engineering has many diverse functions, among them the supervision of conditions in eating and lodging places, plus trailer and overnight camping areas, plumbing control, public water supplies, school plans, public swimming facilities, water supplies for interstate carriers, industrial health, radiological health, and poison information center. Many of the programs suffer from a lack of funds and personnel. Particular emphasis should be placed on proper control of sewage wastes to prevent and halt pollution, and control of recreational facilities to insure proper water supplies and waste disposal. Much of the work, if aimed at prevention of pollution before it starts, would involve much smaller expenditures at this stage than after-the-fact pollution control methods. Programs for food handlers in various parts of the State can be expanded and cooperation with local sanitarians continued.

The Public Health Laboratory performs laboratory services in areas which are not available to most Maine communities. Among these are PKU (phenylketonuria) tests for detection of a disease causing severe mental retardation, streptococcal disease testing for rheumatic fever, syphilis testing, tuberculosis testing, rabies testing, and a program of evaluating the quality of Maine laboratories outside hospitals and physicians' offices. A new laboratory facility has been built under Hill-Burton funds to increase space and improve the older, inadequate facilities, but additional personnel are a must if the laboratory is to fulfill its growing responsibilities.

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[23] *Ibid.*, p. 21.

[24] *Ibid.*, p. 21.

[25] Truslow, John B., M.D. *A Report to the Legislative Research Committee on the Feasibility of Establishing a Medical School in Maine.* (August 1966), p. 27.

Alcoholism Services are principally a conduit through which people with drinking problems may seek counseling, diagnosis, and referral to proper channels of assistance. The court-connected counseling program has had excellent recovery experience and should be expanded. The complete recovery rate of court referrals has been 30 percent, the same rate as other referrals. The pilot "halfway house" project should be completely evaluated before new projects are undertaken. There is need for a woman counselor, as at present there is little work being done with the female drinking problem. The data under which the Division is operating was compiled by a twenty-five year old survey, and there should be a new study conducted to determine drinking patterns in Maine, problems resulting, and possible new avenues of help.

The Division of Health Education provides materials to people within the State on a wide range of health subjects. Films and audio-visual aids, plus exhibits and displays, are part of their work. References and resource materials are maintained for use. The Division estimates that it does not reach one-third of the people in Maine, particularly those in the lower economic levels where need for health services and information is the greatest. Thus, new and improved methods of operations and expanded staff are needed to reach this vital segment of the population and acquaint them with services, programs, and general health practices and information.

Maternal and Child Health provides a variety of services for mothers and children. Such services as prenatal, post-partum, and family planning services, high-risk mother programs, epileptic care and treatment, nutritional services, crippled children services, children cardiac program, child health conferences, speech services, and medical social services are among these programs. Emphasis is placed on service to low income families and rural areas. Many of the programs should be expanded, but staff and fund requirements are above present appropriation levels. Also, difficulty in acquiring skilled personnel has been a problem in certain areas. The program is essentially a preventive and rehabilitative one at the age levels where excellent progress can be made. Monies expended in these areas at these age levels have excellent return factors, as they reduce the need for expenditures in programs throughout the life of the client. Efforts should be made to continue and expand programs and services for this Division, with emphasis on cooperation and effective utilization of present and future agencies at local levels, plus encouragement of local efforts to bring about increased awareness, concern and action on regional or community levels.

The Cancer Control Division's present programs consist of the public and professional medical personnel in the field of cancer. Programs to maintain a well-informed and up-to-date medical profession are very desirable, and cooperation between this Division and the Regional Medical Programs educational efforts are recommended. Public awareness of the dangers of cancer and detection of early signs and warnings should be increased.

In Maine, as in the whole United States, cancer is the second leading cause of death. Preventive techniques are yet to be fully developed, so early detection remains the primary goal. There should be continued support of tumor clinics and increases in the number of people reached.

POSSIBLE WELFARE RESEARCH PROJECTS

The Commissioner of the Department of Health and Welfare has suggested a possible study to determine the effects of a federally guaranteed minimum income or negative income tax on welfare costs and programs in the State of Maine. As there is currently much concern and debate in Congress, the Executive Branch, and economic circles over these income proposals, a study would allow Maine officials to know the implications of a program of this type and allow planning to take place in event of implementation. It also would perhaps be beneficial to determine what effects a State-supported program would have, as the benefits derived from this program could possibly result in Welfare cost savings greater than the cost of the income maintenance program. It would also allow State officials some solid grounds upon which to argue, pro or con, in the event of consideration by Congress of proposals in this area of income maintenance.

The present proposal by President Nixon regarding the revision of Welfare is to take effect in fiscal 1971. The program, at present, is only a proposal and will be reworked and shaped by Congress after much discussion and debate. The final piece of legislation will no doubt differ from this initial proposal and thus it becomes almost impossible to foresee what effect this will have on Maine's welfare programs and expenditures. However, planning should be undertaken immediately to explore all avenues and their possible impacts on Maine programs.

Other possible research projects include planning for the development of facilities, programs, and personnel

for care and treatment of the elderly, chronically-ill and convalescent in Maine; a study of alcoholism in Maine to better plan programs for care and rehabilitation of alcoholics and their families; agency needs for and coordination of medical planning to effectively utilize existing agencies; and a plan for the reorganization of the Maine Department of Health and Welfare in light of their interim organization changes.

WELFARE PROGRAMS

The Bureau of Social Welfare of the State Department of Health and Welfare operates through five basic divisions, namely, Eye Care and Special Services, Family Services, Child Welfare, General Assistance, and the Welfare Resources Unit. The annual services of the Bureau are about 62 percent federally financed, 31 percent State financed, and 7 percent locally financed. Table V-9 sets forth the expenditures in each of the above areas and their source of funds for the year ended December 31, 1967.

Because almost two-thirds of the funds in the welfare programs originate federally, planning must be tailored to federal action. Planning, however, must not take place merely as a means of participating in each and every federal program, because there are federal funds available, but rather the State should be prepared to participate in programs where there is demonstrated need to provide care and services to State residents, whether there are federal monies available or not. All legitimate advantage of available federal funds should be taken to make best use of the resources and to guarantee that programs undertaken have the maximum benefit in federal funding. Programs must be conducted in such a way that they contribute to the prevention of dependency and social maladjustment, maintain the preservation of family life, and encourage dignity, self-

TABLE V-9

WELFARE EXPENDITURES AND SOURCES—CALENDAR YEAR, 1967

	Dollar Total	State Dollars	State %	Local Dollars	Local %
Aid to aged, blind & disabled	8,989,590	2,144,545	24%	——	—
Aid to families with dependent children	7,446,721	938,110	13%	842,761	11%
Medical Assistance	9,941,979	3,575,114	36%	——	—
Child Welfare	2,048,440	2,035,540	99%	——	—
General Assistance	2,143,673	705,674	33%	1,437,999	67%
Total Assistance	31,601,878	9,398,983	30%	2,280,760	7%
Administration	3,862,794	1,581,175	41%	427,349	6%
Total All Categories	34,643,946	10,980,158	31%	2,708,109	7%

	Federal Dollars	Federal %
Aid to aged, blind & disabled	6,845,045	76%
Aid to families with dependent children	5,665,850	76%
Medical Assistance	6,365,965	64%
Child Welfare	12,900	1%
General Assistance	——	—
Total Assistance	18,889,760	63%
Administration	2,065,919	53%
Total All Categories	20,955,679	62%

Source: Community Research Associates, Inc. *Improving the Administration and Financing of General Assistance in the State of Maine.* New York: May, 1968.

respect, and self-reliance. Programs should be funded to enable participants to maintain a reasonable standard of health and decency based upon current costs of living rather than upon outdated costs. As an ultimate objective, programs should be structured to encourage persons to upgrade themselves until they no longer need services in these areas.

Present planning within the Department of Health and Welfare is divided into four major categories:

(1) Plans of operation for present need. Included in this category are the development of operational procedures to guide personnel in the Department. An example of this would be a procedural process to determine whether a present nursing home patient receiving financial assistance from the Department is obtaining the right financial aid in the correct dollar amounts, and if the service he receives is of the right magnitude.

(2) Planning for foreseeable organizational changes within the Department. Here planning is carried out to implement and coordinate planned changes in the Department so as to have a smooth transitional period. An example of this type of planning would be planning which was carried out to change over to the computer processing of data.

(3) Objective planning to anticipate future problems. This area of planning is concerned with objectively looking at present programs in light of the needs of three to four years hence. Present planning for implementation of the comprehensive health plan is an example in this area, with determination of needs, methods for evaluation of the program itself, development of the department unit concerned with the comprehensive health plan, and determination of personnel needs and a basic consideration of needed skill levels. Another example is the evaluation of the costs and effectiveness of the Selective Service Referral Program which was terminated in light of this evaluation.

(4) Federal government planning is mostly concerned with meeting federal requirements as to data, programs, and plans for bloc and special grants of federal funds.

The planning is not as formalized nor as intensified as it should be, and this is recognized by the Department. Primary problems in implementation of proper planning are basically time, people, and money. There are not enough people in most sections of the Department to carry out current programs for the public; therefore, little time can be spent in planning future programs. This is understandable and very valid in light of the heavy work load of present personnel. Funds are also limited and thus must be devoted to programs of present service to people within the State. If planning is to be done within the confines of the Department, funds must be appropriated specifically to the planning function, staff must be assembled and trained, and the various segments of the overall Department must learn to coordinate and cooperate with the planning component.

The principal area of concern for future planning must be medical aid to the indigent, as this will require significant new fund commitments to upgrade the program to federal standards by 1975. The expansion of programs by federal legislation and the need to meet the federal program objectives by 1975 will require expansion and upgrading of the planning effort. The recognition of the national need in this area has stimulated a proliferation of programs, such as Medicare, Medicaid, and a whole host of other programs, not only for the aged, but for all age groups. Proper planning must be carried out to insure the orderly development of programs, staff, and facilities in the State of Maine. Regionalization and local agency consultation and cooperation are required if the appropriated monies are to be spent wisely and give the greatest return of services and care to Maine citizens.

The role of the Department of Health and Welfare in this vital area of concern will require a re-evaluation of the role of public health and public medical aid in Maine, definition of problems, establishment of priorities, effective mobilization, utilization, and employment of appropriate resources. It will require reorganization of present divisional responsibilities, realignment of current policies and actions, and possible creation of whole new fields of activity. It is a job which must be done by 1975 if Maine is to participate to the fullest, and one which requires immediate devotion to new planning concepts and responsibilities.

The Citizen's Task Force on Intergovernmental Welfare Programs estimates that present federal, State, and local programs, including Social Security and unemployment, reach about 241,000 of the people in Maine, or about 25 percent of Maine's population. It is further estimated that the amount of benefits paid totals about $170 million a year. Table V-10 outlines these programs, beneficiaries, and benefits.

That welfare is a major part of Maine's economy is understood, but the exact magnitude is hard to delineate. It is estimated that payments for medical care have given rise to new nursing home construction on the level of $12 to $15 million of new taxable property

TABLE V-10

GOVERNMENTAL PROGRAMS IN THE STATE OF MAINE PROVIDING INCOME MAINTENANCE, ASSISTANCE AND PREVENTIVE AND REHABILITATIVE SERVICES

Program	Number of Beneficiaries	Amount of Benefits Paid
Old-age, Survivers & Disability Insurance (Social Security)	135,441	$113,374,728[a]
Unemployment Compensation	28,352	7,726,370[b]
State Welfare Assistance	34,120	32,499,334[d]
Local General Assistance	6,900	1,437,999[b]
Economic Opportunity Programs	16,000	11,703,303[d]
Title V Work Experience and Training Program	900	1,169,596[c]
Vocational Rehabilitation	1,246	535,755[d]
Donated Commodity Program	14,203	410,499[d]
Manpower Development and Training Act	2,392	1,250,000[b]
Department of Indian Affairs	1,200	240,000[d]
Totals	240,613	169,347,584

[a]For Calendar year 1966.
[b]For Calendar year 1967.
[c]Allocated for fiscal year ending March 31, 1968.
[d]Fiscal year ending June 30, 1967.

Source: Study and Report of Citizen's Task Force on Intergovernmental Welfare Programs, September, 1968, page 10.

and created 500 new jobs. Many rural communities are actually dependent upon social security and welfare payments for their existence. The payments continue in good, as well as bad, times and help to even out downtrends in the economy. Low cost housing in the State is in essence subsidized by welfare payments. New programs and re-orientation of old programs must be evaluated for their impact on the economic well-being of Maine.

Overall estimates indicate the expenditures of the Bureau of Social Welfare will climb from their present level of approximately $35 million per year to a range between $45 and $50 million per year by 1975. This projection assumes no new congressional programs or expansion of existing programs, but merely implementation and continuation of present programs with current staff and administrative requirements, and a constant cost structure. The major expenditures will be $5 to $7 million for implementation of major programs for the indigent or medically indigent, $1 to $1.5 million for old-age assistance and Medicare, $1.5 million a year for aid to dependent children, and approximately $1 million a year for other programs. The assumption of constant costs is open to question, and if present trends continue, salary and cost adjustments would add another $1.5 to $2 million per year, carrying expenditures in Health and Welfare near the $55 to $60 million level per year, or an increase of almost $20 to $25 million from the present levels. Approximately two-thirds or $13 to $16 million would come from Federal funding while $7 to $9 million of additional State and local funding would be required on a yearly basis. At present, it is estimated that almost $6 million in Federal funding is not being realized in present programs due to low State and local appropriations, and this is an area of immediate concern.

Eye Care and Special Services

The Maine Commission on Rehabilitation Needs recommends that this Division, together with the Division of Vocational Rehabilitation, Division of Alcoholism Services, and other rehabilitative services as deemed advisable, be combined into a Bureau of Rehabilitation. This combination would place all rehabilitation agencies under one roof and avoid duplication of effort and staff in many areas. It would also provide comprehensive rehabilitation services to the people of Maine on a single effort basis rather than the multi-agency approach now in effect.

The Work Experience Program is designed to help parents with dependent children become more employable so that they might support themselves and their families. The Homemaker Services enable children and older people to receive services in their homes during an illness rather than to transfer to another facility. Both of these vital services need expansion. These preventive programs reach people at lower costs and with better results than do the programs of a general assistance nature.

There are many people in the State, especially in the rural areas, who could be helped by the services of this Division or the proposed Bureau of Rehabilitation, but who are not now included. Federal funds are available to increase the span of the agency, and they should be utilized. As mentioned before, the Maine Commission on Rehabilitation Needs estimates that presently only 3,000 of the estimated 40,000 eligible are being reached by these programs.

Division of Family Services

Prior to July 1, 1969, the Division of Family Services was entrusted with the dual responsibility of aid to families with dependent children and aid to the aged, blind and disabled. The age groups represented by these two categories, persons under 20 years on one hand, and persons over 65 on the other, are the fastest growing segments of Maine's population.

Effective July 1, 1969, the Division of Family Services and Child Welfare underwent an interim organizational change. This change placed all services to children (ADC, foster children, committed children, etc.) under Child Welfare and made Family Services responsible for aid to the aged, blind, and disabled.

It is felt this change would allow one caseworker to cover all needy children, give more preventive services as this is less costly than a committed program and avoid duplication between the two divisions. It will also allow Family Services to better service the elderly in Maine, an area which is increasing in scope and definition due to broadening of Federal standards.

This experimental reorganization will require a new type of director at the district level who will be responsible for coordinating and supervising activities of both divisions. It will also require a higher degree of sophistication on the part of caseworkers in each division and emphasize the need for higher educational levels and needs for educational leaves of absence.

This temporary reorganization should, as it will, be thoroughly studied for implications and ramifications on the future of these two service areas of Maine's welfare programs.

In the future, aid to the aged, blind, and disabled will need sufficient staff to cope with the problems in this area. Present caseloads are too high for the depth of service needed. Because definitions broaden as to who falls in these categories of need, new staff is necessary to cope with the sharp increases in new applications for service. New types of personnel will have to be added. Continuing education of all personnel will be needed to provide adequate service to clients.

The Food Stamp Program and federally donated commodities program are both administered by the Bureau of Social Welfare, although by separate divisions. In light of recent Federal proposals in this area, it is deemed advisable that the Department explore ways by which it can provide sufficient food for adequate nourishment to all income families without regard to whether they are receiving general assistance. Work should be aided by cooperation with the Division of Maternal and Child Services and local agencies in planning dietary education for persons in these two programs so that the nutritional needs of the low income people can be better met.

Child Welfare

Although all services to children, including the relatively extensive program of Aid to Dependent Children, was placed under Child Welfare through the interim organizational change of July 1969, the Division of Child Welfare had been previously involved only with neglected, abused, deserted, orphaned, and other children in need of temporary care. The first part of the following disscusion will, therefore, have to do with the traditional responsibilities of the Division, whereas the latter part of the subsection will deal with some of the problems of the program of Aid to Dependent Children.

In the case of children in need of temporary care, the most critical time for the Division of Child Welfare is at the time of the first contact with the case. In many instances, it is at this point that preventive measures can be taken to provide for the child and its family in such a way as to insure continued family life. It is this "intake" procedure which determines the effectiveness of the whole child welfare program. The program should be designed to strengthen family life and prevent, if possible, separation of children from their families.

Traditional Categories of Aid

As of March 1967, there were 4,318 children[26] under the program in the following categories of aid:

Preventive Program	1,231 children
Committed Program	2,665 children
Voluntary Placement	165 children
Special Study	180 children
Special Appropriation	77 children

The Division has highly qualified and educated personnel in well-run programs, but the salaries are low in relation to other states, and they should be upgraded if personnel are to be retained. As it is necessary to keep caseloads low to insure proper servicing of clients, additional personnel are needed.

"The child who remains in placement more than 18 months is likely to remain in placement throughout his minority years,"[27] thus preventive programs should be stressed. Programs to prevent removal from the home, such as Homemaker Services, day care, "drop-in" centers, and services to children of divorced parents, are advisable. The special services to divorce courts are one way by which this preventive service can take place.

The higher education plan for committed children, for the provision of their education beyond high school, has tremendous potential if increased funding is granted. Foster care service is overburdened and the rates for taking care of these children are low. More consideration should be given to voluntary placements where specialized services are needed, and funds should be granted to allow purchase of these services from outside and local agencies.

Facilities and services for mentally retarded children represent an increasing need as more and more help is sought by parents of these children. Regionalized programs can be developed in this area to a great extent, but cooperation with local agencies should be essential.

Day Care

The Division of Child Welfare has responsibility for Day Care programs which give them an opportunity to reach many children who are not presently served by their present programs but who have need of some services. There are presently two types of day care being offered in Maine:

(1) The day-care home supervises from one to six children, and if there are more than three unrelated children present, it must be licensed. There are presently 34 licensed and approximately 41 non-licensed homes of this sort.

(2) The day-care center handles more than seven children, and it must be licensed and follow rigid standards. There are presently 24 licensed centers, and another 13 non-licensed. None of the facilities are state-owned or administered. It is estimated that about 2,000 children are served by licensed facilities, and there are needs for facilities to care for another 5,000 to 6,000 children.

There is need for development of a third type of care center; that is the group home for between seven and twelve children. Present regulations preclude its development, because of the stringent and rigid requirements for any facilities serving more than seven children. Legislation in this area should be implemented quickly to allow development of these "group homes."

The present staff of the day-care department is inadequate in light of the potential of this program. There are needs for more social workers, program planning, and research personnel. The present staff is concerned primarily with licensing and not actual stimulation of day-care development in Maine. The operation of non-licensed facilities has continued as staff limitations have prevented the inspection and certification of these facilities.

The coordinated community center offers exciting potential, for it can be large enough to provide specialized services now available only in certain areas, such as dental care, health care, and psychological help if necessary. Day-care centers, whatever the type, will allow enlargement of the labor pool of ADC mothers who become employable. Thus day-care should receive the encouragement, support, and cooperation of Maine's industry and labor unions, so that such centers may be developed with cooperation and partial funding from these groups.

Aid to Dependent Children

One of the major problems formerly faced by the Division of Family Services and now faced by the Division of Child Welfare is the administration of Aid to Dependent Children. At present, the town of settlement of an ADC family is to pay 18 percent of the cost of assistance, but the rules and regulations as to what constitutes settlement are complicated and result in State assumption of full payments in many instances. The Task Force on Intergovernmental Welfare Programs has recommended elimination of this 18 percent settlement

[26]Rosema, Robert. *Report of the Study of the General Membership Study of the State of Maine Department of Health and Welfare in the Child Welfare League of America.* p. 20.

[27]*Ibid.,* p. 31

contribution by the local communities and full assumption of the total program by the State agency. However, this recommendation must be considered in light of the present contribution of about $843,000 to this program by the local communities and the problem of where this amount would be obtained at the State level.

The welfare proposal outlined by President Nixon, if adopted, would eliminate residence requirements for receipt of welfare aid. However, the past Maine Legislature did not do away with this requirement and thus it will remain until Congress or the next State Legislature acts on it. The major reason put forth in opposition to the elimination of residence requirements was the absorption of cost by the State. The proposed federal minimum payment and revenue sharing with the states and local governments would ease the burden if residence requirements were eliminated.

Another recommendation of the Task Force included use of "self-declaration" forms for all categories of general assistance. This would involve need determination by use of an examination of an affadavit by a case technician, rather than by caseworker. Grants could then be calculated by computers to save further time. This procedure saves the time of the social worker and allows him to visit the individual for the purpose of providing other kinds of services.

One major need is for upgrading the payments to ADC families. The present level is estimated by the Department to be about 60 percent of the actual need. Moreover, the food standards used are of 1958 vintage and are not realistic in terms of today's food prices. The unrealistic level of State aid has forced many people receiving these benefits to request general assistance, from their local city or town.

Because of great differences in the attitudes and funding available at the local levels for these general assistance programs, many inequities arise. The reconciliation of this problem has two possible approaches. First, the State might assume the whole burden and give adequate ADC payments on a standardized basis. Second, local supplements might be standardized as to the amounts persons on ADC would obtain from local sources.

ADC is probably the most misunderstood and maligned program that is offered in the area of welfare; yet it is one of the most necessary, if Maine is to meet the economic and medical needs of these people and rehabilitate them to a position of self-support and self-care. The program should insure a standard whereby the monies granted would be sufficient if wisely spent, with education to teach them to spend money wisely. The key to the whole program lies in its objective of rehabilitation and restoration of the individual and family structure. Emphasis should therefore be placed on the transitory nature of the program. It must be developed in such a way that the persons receiving aid come to look at the objectives of the program in the same light as the administrators and not as a way of life.

Programs, such as Head Start, Work Study, and other educational projects aimed at encouraging higher education and developing the skills of children of low-income families, must be continued and enlarged to have the positive affect necessary to insure that these children rise above their present economic conditions. Work Training and Day Care Programs (as mentioned earlier) should be implemented to facilitate return to the employment pool, if possible, of mothers and parents within this ADC category.

General Assistance

"To multiply the value of Maine Welfare tax dollars, eliminate duplication between the State and towns, decrease paperwork, promote movement between prevention and rehabilitation, and provide equitable treatment to all needy persons, the responsibility for the administration of general assistance shall (should) be transferred from the municipalities to the State Department of Health and Welfare."[28]

The present general assistance program is designed primarily for those people without established legal settlement in any Maine community, while those who have established settlement are cared for by the local communities. Since there are 496 different communities in Maine, there are 496 different ways and methods for administering general assistance to legally settled persons. The 1967 expenditures in this area indicated that two-thirds of the funds came from the local communities. If the above recommendation is implemented, not only must the State cover these expenditures, but it must also increase its staff to handle the increased caseload that would be involved. Probably establishment of assistance guidelines and standards for the communities to follow would be unpalatable, but this would be the only method by which the present inequities could be removed without having the State assume the finan-

[28]Michaud, Neil D., Chairman. *Study and Report of Citizen's Task Force on Intergovernmental Welfare Programs.* (Augusta, Maine: Sept. 1968), p. 15.

cial burden at a time when many other programs are in need of additional funding.

The Jefferson Camp program of this Division has served as an example for welfare officials from other states. It is a camp for homeless and indigent men at the site of a former CCC camp in Jefferson, Maine. It has a staff of six and an average enrollment of 40 men. Many of the persons involved have drinking problems, and it serves as a rehabilitation or halfway house for such persons. The camp is also used as a center for medical evaluation and work-potential observation for the heads of dependent families who are admitted. Operating on a budget of about $55,000, the camp serves a distinct need. A study should be undertaken to determine the potentials for similar facilities for other persons, such as adolescents.

Federally-Donated Commodities program is administered by this Division, and integration, coordination, and cooperation should be undertaken with the Food Stamp Program, possibly to the extent of combining them for more efficient service to Maine's hungry.

Veteran Services

The task of the Department of Veteran Services is fourfold:

(1) To provide claims services, upon request, to all veterans and their dependents having potential claims with the Federal Government or other agencies and to provide information, upon request, about services and aid available to veterans.

(2) To provide direct-emergency, financial aid to needy dependents of totally disabled or deceased war veterans.

(3) To maintain a military records file on all Maine men who have, or have had, any military affiliations.

(4) To administer and operate the Maine Veterans Memorial Cemetery.

About 70 percent of the approximately $800,000 appropriated to this Department is used for emergency financial aid to needy dependents of war veterans. Although the caseload in this particular facet of the Department's operation has remained fairly constant for the past four years, there is no assurance that this will be true in the future. Although this staff has remained at a constant level throughout its history, the number of veterans in Maine has doubled in the same time period.

One new area which would be beneficial to veterans and the State economy as a whole is the addition of greater informational facilities and personnel. As much of the work of the Department has to do with claims service and information to veterans, an informational program would help the veteran to learn of the many Federal programs available to him. This would benefit the economy of the State, because the monetary, training, and educational benefits would increase the economic prosperity of the State. At present, approximately $40 million each year is paid in veteran benefits to residents of the State of Maine. This amount could be increased through this informational program, for the Department is currently making recoveries through their claims service at the rate of almost $1.5 million per year without an informational program. There is also need for several additional case workers to distribute the caseload more evenly throughout the state and to provide for auxiliary workers in districts where vacations, sickness, or overloads are taking place.

Indian Affairs.

In 1965, the State of Maine became the first state to create a separate Department of Indian Affairs for the administration of programs specifically to meet tribal and reservations needs. The Department services the approximately 1,600 tribal members of the Penobscot reservation at Indian Island at Old Town, the Passamaquoddy reservation at Pleasant Point near Perry, and Indian Township near Princeton.

Tribal population by the 1967 Tribal Census[29] for each reservation was as follows:

[29]Maine Department of Indian Affairs. *Indians of Maine—General Information.* (Augusta, Maine: 1968), p. 3.

	No. Present on Reservation	No. Absent from Reservation	Total
Penobscot	604	189	793
Pleasant Point	342	385	727
Indian Township	221	109	330
TOTAL	1,167	683	1,850

The long-range goals and objectives of the Department of Indian Affairs are stated to include:

(1) Administration and continuation of assistance programs for indigent tribal members on the reservations to such extent as needed.

(2) Full use of Federal funds for upgrading housing, water, sanitation, living conditions, educational and recreational facilities on the reservations.

(3) Upgrading of the educational and skill levels to insure adequate incomes and reduction or elimination of general assistance aid.

(4) Provision of adequate on-reservation health services and facilities.

(5) Initiation and development of programs in the areas of home and community development.[30]

At present, construction programs are either under way or proposed to the present Legislature for provision of adequate sewerage, sanitation, and water facilities on each reservation, plus upgrading of educational and classroom facilities. Once these projects are undertaken, federal funds can be obtained to provide approximately 100 housing units on the reservations. Replacement and building of community buildings on the reservations should be undertaken to provide space for tribal meetings, recreational activity, and adult education activities. These buildings could also be used to provide space and facilities for health care on an outpatient basis. The visiting nurse program should be expanded. The present staff of the Department is undermanned, and consideration should be given to adding additional people at the State office in Augusta and at the reservation level.

The proposed legislation establishing a Human Rights Act and Human Rights Commission would be a desirable step to help the Indians overcome obstacles to employment and other human rights. These obstacles currently deter them from social and economic progress. One possible alternative in economic upgrading of skills and educational levels would be cooperation with the Department of Economic Development and the Department of Indian Affairs for location of manufacturing facilities in the electronics or allied industries near the Passamaquoddy tribe and Penobscot tribe to utilize the adept manual dexterity of these people to the fullest.

Many of the programs presently undertaken and recently proposed, plus those with future potential, can receive federal funding. In some instances, this means that one dollar of state money will generate as much as four or five dollars for direct application to the reservations. Programs such as these should be undertaken to utilize effectively the total resources available for improvement of the reservations and the upgrading of the educational and economic well-being of the tribal members.

HOUSING

Housing in Maine has suffered from the lack of a central, state-wide agency charged with data collection, fact assemblage, and action intended to stimulate, improve, and correlate housing programs and activities. The latest figures available, in Table V-11, show that Maine has a high proportion of housing considered to be deteriorating and dilapidated. Not one of Maine's counties is up to the national average of sound housing. The worst conditions exist in the rural counties, such as Aroostook (NERC No. 10); Franklin, Oxford, Somerset (NERC No. 12) and Piscataquis, Hancock, Waldo and Washington (Part of NERC No. 11). The more populated counties, particularly the Southwestern Subregion NERC No. 13, have somewhat better, though nowhere ideal, conditions.

The goal of housing in the State should be the elimination or upgrading of these deteriorating and dilapidated housing units by 1975, and provision of adequate housing for all income and age groups. The housing should be consistent with good construction practices, proper land use, and adequate sewerage and water supplies. Not only is this important for the present population, but it is also a necessity for economic development in order to attract and retain industry and encourage higher skill levels within the State.

The present average cost of $25,000 for building a new home is far beyond the means of most Maine families. A Department of Economic Development publication, *Maine's 'Income Gap,' What It Is and How It Can Be Closed,* found that 70 percent of Maine's families earn under $8,000 per year. With this income level and a reasonable ratio of housing costs at two and one-half to three times family income, the greatest need for housing is under $20,000 in cost. Yet this is the housing in Maine which is not being provided. Builders and contractors cater to the remaining 30 percent of families because of the profit margins involved. Thus the "income gap" has created a "housing gap" which has left many Maine citizens without adequate housing and has

[30]Maine Department of Indian Affairs. *The Department of Indian Affairs.* (Augusta, Maine: February, 1968).

TABLE V-11

HOUSING CONDITIONS IN MAINE BY COUNTY IN 1960

	Sound	Deteriorating	Dilapidated
Northern Subregion			
Aroostook	70.3%	20.1%	9.7%
Eastern Subregion			
Hancock	77.0%	16.8%	6.2%
Knox	76.8%	17.7%	5.4%
Penobscot	76.5%	18.2%	5.3%
Piscataquis	63.0%	26.9%	10.1%
Waldo	68.3%	24.9%	6.8%
Washington	74.0%	19.4%	6.6%
Western Subregion			
Franklin	68.2%	21.9%	9.9%
Oxford	75.7%	17.2%	7.1%
Somerset	69.2%	22.8%	8.0%
Southwestern Subregion			
Androscoggin	83.9%	13.0%	3.1%
Cumberland	84.4%	12.4%	3.2%
Kennebec	81.0%	15.4%	3.6%
Lincoln	76.0%	16.6%	7.4%
Sagadahoc	79.4%	15.7%	4.9%
York	81.0%	14.9%	4.1%
Total State	78.0%	16.6%	5.4%

Source: The Public Affairs Research Center of Bowdoin College. *A Public Investment Plan for the State of Maine.* Brunswick, Maine: December, 1968.

not even kept pace with the demand for homes costing less than $20,000.

The housing problem is particularly relevant to Maine's rural areas. "More than one in four rural homes are structurally unsound. To be most effective, a housing program for the State of Maine must take this pattern into consideration and not immediately concentrate on efforts to establish multi-unit, renter occupied dwelling structures in rural Maine."[31]

There is a need for revision of foreclosure and lien laws so that out-of-state investors might be encouraged to enter the field. There is currently a scarcity of funds and a lack of financial institutions large enough to warrant investment in the higher risk, low income and rural areas.

The possibility of sudden economic activity at Bath, Machiasport, or at any of a number of locations raises the spectre of chaotic housing problems. Not only is there a shortage of housing in these areas already, but if sudden economic development were to take place, serious questions would arise as to whether such economic development might not be checked by the lack of adequate housing and facilities.

There are presently twelve communities, in addition to the three Indian reservations, which have some type of housing authorities. Most of Maine's cities and towns are left without any means of planning orderly housing in the process of development. What housing development there is becomes random and uncontrolled in the process of development. Larger towns and cities must be encouraged to create housing authorities, while regional efforts can be stimulated in the smaller communities. The recently enacted State Housing Authority legislation gives the mechanism whereby any municipality can set up its own housing authority, and this feature of the act must be implemented immediately.

Housing in Maine: A Preliminary Report and Legislative Program, published by the State Planning Office, outlines the various alternatives and opportunities available. In addition, the present Citizens Advisory Committee of the Bureau of Social Welfare has made a number of recommendations in regard to housing.

This Citizen's Advisory Committee estimates that at

[31]Maine State Planning Office. *Housing in Maine: A Preliminary Report and Legislative Program.* (Augusta, Maine: December, 1968), p. 3.

least 40,000 residences need replacement or major repair, and that $500,000,000 is needed to meet the projected needs for new units and the rehabilitation of old units in the next few years. As a direct outgrowth, the coastal communities in Knox County are presently engaged in determining ways in which housing problems might be solved in their communities. Publicity has been given by the local newspaper to alert area citizens to local needs in housing. Similar local efforts must be encouraged in other areas of Maine, if the problems are to come anywhere near to an equitable and beneficial solution.

Housing for the elderly is a particular need especially in the rural areas. Because the elderly tend to have limited, fixed incomes, and needs for specialized housing, housing authorities must be formed to meet this need.

On July 2, 1969, Governor Kenneth Curtis signed a bill into law creating the Maine Housing Authority.[32] Provisions of the bill (L.D. 1572) became effective October 1, 1969, stating that the new authority is empowered to provide for the construction or repair of "housing projects"; to undertake studies of Maine housing needs; to cooperate with federal agencies in the leasing or renting of facilities embraced in a housing project; to determine where "slum areas" exist and to make recommendations relative to the problems of clearing, replanning, and reconstruction of such areas.

In addition the Maine Housing Authority is empowered to act as a clearinghouse for Maine housing information; to conduct research and development programs relative to planning, land use, building design, construction techniques, code enforcement, and management procedures; to issue bonds in the name of the Authority, and to roll over mortgages or notes held by the Authority; and to purchase first mortgages or notes on homes in Maine provided such mortgage or note is dated after October 1, 1969.

This State Housing Authority will provide the initial impetus to the development of adequate housing in Maine. Although it is only a first step, it is necessary and will provide the building block upon which a concentrated state and local effort can be made. Stimulation of planning and housing activities will also take place, in that municipal and regional planning agencies undertaking comprehensive planning under the Urban Planning Assistance program must include a housing study element identifying housing problems and means by which they can be solved.

A proposed project to create a construction company of low-income workers within the Model Cities area of Portland should be closely watched, for it might well become an example of a means which might be adopted on a wider scale to help meet the problem of relatively low-cost modernization and construction. The objective of the Portland program is to provide jobs for low-income residents with skills in the building trades, so that they may participate in the actual renovation of the kind of homes they themselves occupy and also participate in the construction of badly needed, low-cost housing in their area.

Expanded education in the building trades, such as the training of carpenters, masons, electricians, plumbers, and heating personnel, should be carried out by the vocational schools to provide the needed manpower to support the housing needs. Labor unions and other building trade organizations should encourage apprenticeship programs and new job opportunities. Utilization of new building techniques, such as prefabrication, should be employed if housing at the needed income levels is to be provided. Updating of existing zoning statutes and procedures, together with enforcement and updating of building codes, must be done to insure a minimum standard of building construction and effective land use throughout the State.

At present, mobile homes account for approximately 65% of the total new housing in Maine,[33] thus pointing up the problem of families with income levels under $8,000 finding adequate housing in the present market situation. Several unfortunate consequences arise from mobile homes. One is that lending agencies charge higher interest rates on mobile homes than on conventional housing. Secondly, whereas conventional housing usually appreciates in value over time, mobile housing may actually depreciate in value. Thus, those who can ill-afford it, pay higher borrowing costs and end up owning an asset which has less value than when it was purchased. If the boom in mobile housing is to continue, it will be necessary to establish standardized zoning procedures to insure adequate lot sizes and avoid crowding and unsightly development, as well as development of water supplies and adequate sewerage systems.

Although mobile homes provide part of the answer to the under $8,000 income level in the housing market, it is not an adequate answer. Stimulation and development of factory prefabrication methods in Maine, low-cost apartment dwellings, and mass construction techniques must be undertaken.

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[32]For exact provisions, refer to Legislative Document No. 1572, "An Act to Create a State Housing Authority," enacted by the One Hundred and Fourth Legislature.

[33]Maine State Planning Office. *Housing in Maine: A Preliminary Report and Legislative Program.* (Augusta, Maine: December, 1968), pp. 4-5.

APPENDIX A

SOUTHWESTERN MAINE SERVICE AREAS OF GENERAL HOSPITALS

The accompanying map of Southwestern Maine shows the service areas of York, Biddeford, Portland, Lewiston, and Bath hospital centers. This illustrates the overlap of service areas using a 25-mile radius as the maximum coverage for a general hospital. Much of the Biddeford radius is covered by the York and Portland districts while the Brunswick area with two hospitals of its own is within the radii of Portland and Lewiston.

Also illustrated is the duplication which takes place within the districts themselves. Within the 25-mile radius of Portland there are a total of ten hospitals; four in Portland, two in Biddeford and Brunswick, and one in Westbrook and Saco.

For these hospitals to offer the same services would be an unnecessary duplication of resources and possible operations at high cost, yet there are competitive facilities and services being offered now. The solution to this problem does not lie in a central agency dictating what each facility shall offer, but rather in the facilities themselves cooperating and coordinating their activities and services to best serve the health needs of their area.

This process of integration and coordination cannot be achieved overnight, but rather must evolve over time as the various facilities and staffs become specialized in certain areas. This trend could be accelerated by various state and federal agencies as they make funds available to these institutions. Funds should not be made available for construction of duplicative facilities in specialized activities.

As an illustrative example, obstetrics could be consolidated at the Mercy Hospital in Portland, cardiac and intensive care at the Maine Medical Center, and chronically-ill and convalescent facilities at the Portland City Hospital and the Osteopathic Hospital of Maine. This is given only as an example, and the final evolution of this specialization will take place only after the hospitals themselves have determined what services are needed, in what amounts, and where best they can be given.

APPENDIX B

GOALS FOR THE REGIONAL MEDICAL PROGRAM

1. Continuous opportunities for postgraduate education of all levels of health personnel.
2. Participation of the regional organization in planning and expanding systems of undergraduate education conducive to attracting and maintaining an adequate flow of health workers from every health discipline into service.
3. A system of coordinated patient referral that will assure the patient in the most remote hamlet the full benefits of the latest advances in the diagnosis and treatment of heart disease, cancer, stroke and related diseases.
4. Interchange on personnel between cooperating facilities.
5. Regionalization in rural areas is in need of constant development. The development of local leadership in the Regional Medical Program for Maine is a basic requirement and a goal of planning.
6. Expansion of effective systems of consultation and continuing education utilizing new and developing communications technology such as television and telemetry.
7. Development of programs of research specific to regional interests and problems.
8. Development of an evaluation methodology for the operational projects which will develop from the planning program.
9. A flexible system of medical communication that will significantly reduce the time lag between new developments and their application to health care.

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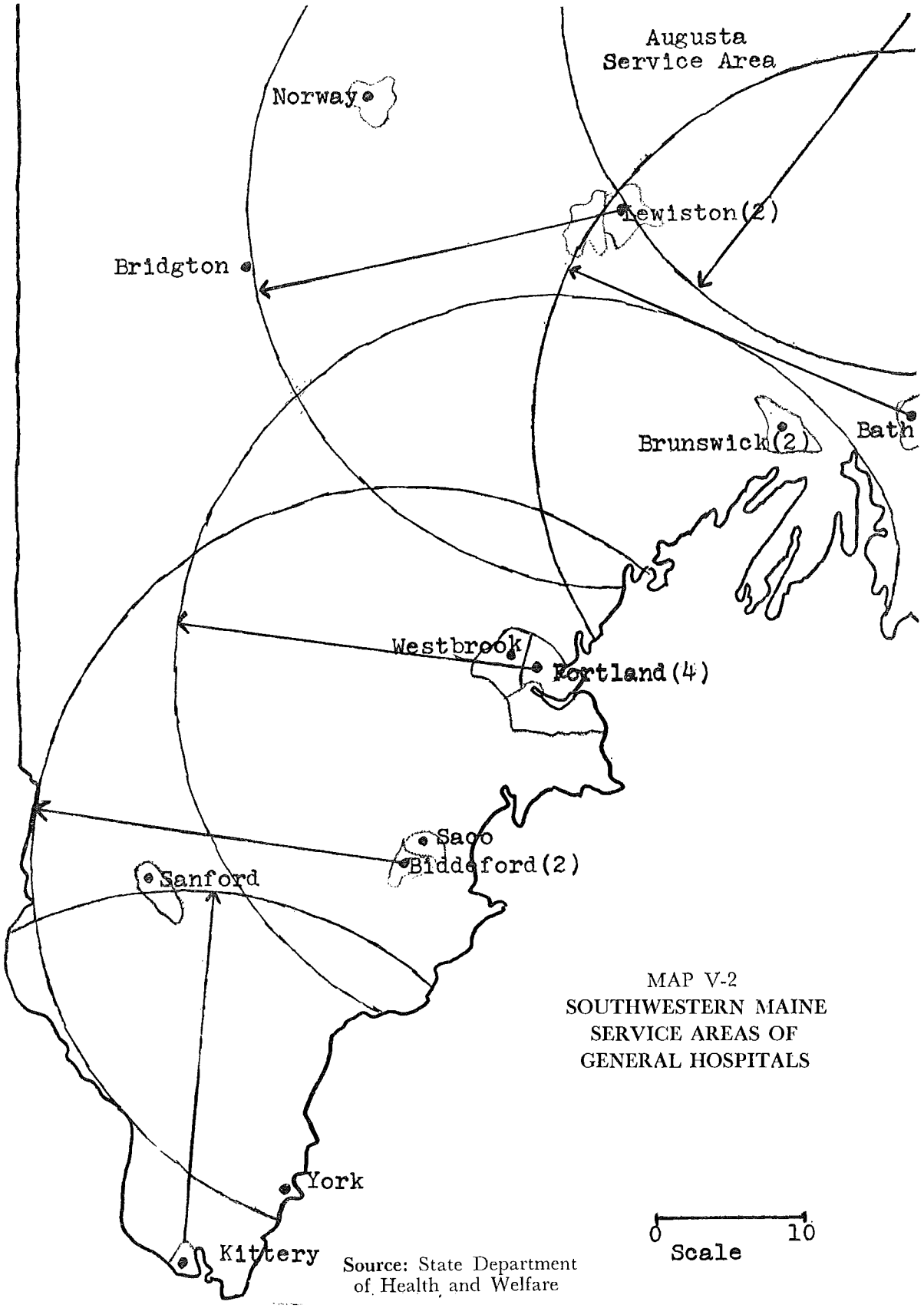

MAP V-2
SOUTHWESTERN MAINE
SERVICE AREAS OF
GENERAL HOSPITALS

Source: State Department of Health and Welfare

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CHAPTER VI

PUBLIC INVESTMENT NEEDS FOR MENTAL HEALTH AND CORRECTIONS

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CHAPTER VI

PUBLIC INVESTMENT NEEDS FOR MENTAL HEALTH AND CORRECTIONS

Chapter Outline

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Corrections

INTRODUCTION

The Department of Mental Health and Corrections represents one of the major investments of the State of Maine in its human resources—its citizens—adult and minor, mentally alert, unstable and retarded, whether law abiding or offenders. Through its elected representatives in the 104th Legislature, the citizens of Maine have committed themselves to an investment of $42,541,715 for the biennium 1969-71.

The State of Maine has been blessed with the highest quality in the way of professional leadership in this department and, in particular, in the Bureau of Mental Health and the Bureau of Corrections. As will be documented, the Bureau of Mental Retardation is handicapped by the lack of funds necessary to employ a department head.

The Bureau of Mental Health has achieved prominence as a leader in state mental health administration in the United States. Through progressive leadership, the Bureau is well on the way to achievement of the dual objectives of national policy in mental health: (1) the de-emphasis on institutionalization of patients in state mental hospitals; (2) the provision of needed mental health care to patients within their own communities.

In the field of corrections, the state has made considerable progress in recent years. The Bureau has instituted progressive policies which accentuate rehabilitation of the offender rather than punishment or mere custody. Development of vocational rehabilitation programs is an example of the progressive philosophy of the Bureau of Corrections.

The major handicap to the department in achieving its goals is neither lack of knowledge nor motivation, but lack of necessary funds to do the job. In the long run, it would appear economically advisable to provide greater funding when:

1) services are preventive in nature, and when failure to provide them will probably lead to more critical needs later, ultimately requiring a considerably heavier investment.

2) services are fundable on a matching basis with federal dollars, even though matching federal grants may be reduced or dropped in future years, provided they are for a needed state service. If the initial period of matching federal grants is not utilized, the result is often the eventual development of the same services without the benefit of federal subsidy.[1]

3) services are provided under sufficiently flexible guidelines to allow departmental administration to utilize these funds on the basis of the most effective and efficient means of meeting actual needs.

Increased flexibility in dispensing funds would enhance the effective and efficient administration of the department. While it must be recognized that certain safeguards would have to be built into a system to insure against mismanagement, the overall effect of the flexibility would be to enable the administrators to utilize the limited funds where they can be most appropriately used at a given time, either in the institutions or communities. The freedom to use these funds would likely result in maximizing the availability of federal matching funds.

Provision of bloc grants to the State from the federal government would eliminate the negative effect of federal regulations on State planning, would reduce competition among state departments for federal funds to undertake what might be duplicating activities, and would insure more effective coordination by the States in the utilization of federal funds.

Provision of bloc grants by the State Legislature to the departments could eliminate any possible inefficient spending patterns developing, and provide departmental administrators with the flexibility necessary to utilize the funds in the most efficient manner possible.

The extension by the State of Medicare eligibility to persons over 45 in the State Hospitals would mobilize considerable federal dollars, which in turn could be used to complete the expansion of community services and initiate the task of improving the quality of care within the State Hospitals.

The key to success in maximizing current limited resources is the effective blending in each of the Bureaus, of:

1) institutional and community services—some of the current burdens now placed in the institutions could be ameliorated by improv-

[1]"There is a matching grant of $65,000 for the community mental health program, and some few project grants, one to Pineland for the addition of a speech and hearing facility, and grants to the three hospitals for five years for in-service training. Federal grants for projects are given for a brief time, and in the expectation that the state will pick up the projects and carry them on." Department of Mental Health and Corrections. *Mental Health Planning, Final Report, New Perspective, Maine's Mental Health Plan.* (Augusta, Maine: 1966), p. 45.

ing the capacity of community services to handle the patient load and by insuring the availability of the institutional services to the community resources when needed.

2) public and private resources—other state services such as Health and Welfare and Education offer community services which could be more effectively mobilized on behalf of the departmental service recipients; private agencies in the communities, particularly social service agencies and hospitals, have considerable potential for services to mental health and retardation patients, as well as to parolees and probationers.

More effective coordination of inter-departmental community services could be achieved through the development of working agreements between the community mental health clinics, the community retardation programs, and the division of probation and parole.

The more effective use of private community resources, such as local social service agencies, counseling programs, and hospitals, even to the extent of state subsidization, could substantially reduce the cost of ever-increasing community services.

With increased financial resources and central staff, the Bureau of Mental Health could achieve more effective coordination between the State Hospitals and community clinics. This coordination could take the form of more effective screening programs to reduce the input of patients into the hospitals and better developed after-care services which could speed the release of patients from the hospitals.

The manpower shortage, particularly of professional staff, is a major obstacle to the provision of quality services. This shortage is related to two major deficits: inadequate funding of personnel; and the absence of professional training institutions for mental health, corrections, and mental retardation staff.

Increased development of manpower training programs must rely on existing educational resources, particularly the University of Maine. The development of courses under the Continuing Education Division would be the most effective beginning. On a longer range basis, the establishment of residency programs in psychiatry at key hospitals, the development of a School of Social Work at the University of Maine, and liason with training programs for psychiatric nurses and occupational therapists represent eventual goals.

The development of "realistic" salary scales is essential to the recruitment and maintenance of staff, as evidenced by the recent problems confronted by the State Hospitals and Pineland.

It will be noted in the following recommendations that each Bureau within the Department of Mental Health and Corrections stresses a single major priority, upon which all the other priorities are based. Most of these priorities do not require extremely large investments, for they represent improvements in organization, coordination, and quality of services, rather than substantial expansion in service.

The current allocation by the State Legislature to the Mental Health institutions is $11,800,000, amounting to $8.76 per patient-day. An increase in the allocation to a rate of $13.00, the figure recommended by the National Institute of Mental Health, would amount to an increase in the total Bureau budget of approximately $6,000,000.

The entire investment package, on the basis of recommended priorities, would provide an increase of $6,000,000 for the Bureau of Mental Health, an increase of $500,000 for the Bureau of Corrections, and an increase of $43,000 for the Bureau of Mental Retardation—a recommended total increase of $6,543,000 per biennium.

DEPARTMENT ORGANIZATION

The Department of Institutional Services was established in 1939 to oversee thirteen institutions, including the TB Sanitarium. The Division of Probation and Parole was added in 1957, and the name was changed to The Department of Mental Health and Corrections by the legislature in 1959, and designated as the Mental Health Authority for Maine.

The Bureau of Mental Health, established within the department, has been entrusted with the "promotion and guidance of mental health programs in the communities of the state." Currently the Bureau of Mental Health provides personnel for community services in Portland, Lewiston, Waterville, Bangor, and Fort Fairfield,[2] as well as grant-in-aid funds for nearly 40 other communities. All the institutions of the department are also under the direction of the Bureau of Mental Health, including Augusta State Hospital, Bangor State Hospital, and Pineland Hospital and Training Center.

Responsibility for Mental Retardation services in Maine has always been vested in the Department of Mental Health and Corrections. The major institution-

[2]Department of Mental Health and Corrections. *Mental Health Planning, Final Report. New Perspective, Maine's Mental Health Plan.* (Augusta, Maine: 1966), p. 11.

al resources for Mental Retardation are located at the Pineland Hospital and Training Center. The community Mental Retardation services have consisted primarily in special educational programs for the trainable retarded people sponsored throughout the state by voluntary organizations and financed partially through grant-in-aid from the Bureau of Mental Health.[3]

In 1966, the legislature established the Bureau of Mental Retardation within the Department of Mental Health and Corrections, but did not fund it. As of July 1, 1969, the financing of some of the community educational programs for the retarded has been assumed by the Department of Education. The only full-time person operating in retardation at the state level is the Mental Retardation Planner, and the Bureau at this point has no direct responsibility for the administration of either institutions or community services.

The correctional institutions are under the jurisdiction of the Bureau of Corrections, within the Department of Mental Health and Corrections. The Bureau of Corrections is administered by a Director who supervises the activities of the division of probation and parole as of October 1969, and the five correctional institutions, namely: the Maine State Prison at Thomaston, the Men's Correctional Center at South Windham, the Women's Correctional Center at Skowhegan, the Boys Training Center in South Portland, and the Stevens School (for girls) in Hallowell.

The Department of Mental Health and Corrections is generally authorized to "provide for the care, custody, relief and improvement" of the inmates of the above institutions.[4] Within this context it may implement various rehabilitation programs, including work release.

Within the Bureau of Corrections, the Division of Probation and Parole functions as the administrative structure for the provision of community-based correctional and rehabilitation services. Headed by a Director, the Division consists of a field staff of probation-parole officers with offices in Portland, Lewiston, Augusta, and Bangor.

With respect to the provision of services for Juvenile Delinquency prevention and control, the legislature in 1966 authorized, for two years, the Commissioner of Mental Health and Corrections to appoint a "Coordinator of Youth Activities, who shall cooperate and assist when warranted with the various communities in the state, the Division of Probation and Parole, with the after care organization of Juvenile Centers, with the committed population of the centers and with any or all other agencies which are desirous of receiving assistance to stimulate preventive measures to reduce Juvenile Delinquency."[5] A coordinator was appointed but the position expired with the loss of funds.

DESCRIPTION OF MAJOR PLANNING EFFORTS

The foundation for future planning in the Department of Mental Health and Corrections was laid in 1963, when Maine began its plan for a statewide comprehensive Mental Health program. The plan "to strengthen community mental health programs and improve the mental health of people in Maine,"[6] achieved far more than its intended goal and set the pace for planning in human services, not only in mental health, but in retardation services and corrections as well.

The initial mental health planning approach set the focus of future planning in two ways:

1) Future planning up to the present appears to be primarily community-focused, rather than institutionally oriented.

2) The planning process seems to take a dual-phased approach, the first being a "Plan for Planning"; the second, a "Plan for Action."

The "Plan for Planning" phase has, as its major planning vehicle, the development of task forces which have, as their objectives, the identification of major problems, the articulation of general goals as solutions to these problems, and the specification of programs which may be designed to achieve these goals.

The "Plan for Action" phase utilizes activity-oriented regional groups which collect data on needs and resources, analyze the relationship between the two, and develop proposals, arranged in order of priority calling for the implementation of existing resources or the development of new resources to meet the needs.

Mental Health Planning

The Comprehensive Mental Health Plan is the only plan of the three divisions which has actually completed both phases of planning. The first phase, the "Plan for Planning," has described the planning activities designed to meet the mental health needs of all the people

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[3]Mental Retardation Planning Office. *Reaching the Retarded in Maine with Regional Resources.* (Augusta, Maine: 1968), p. 8.

[4]Maine Law Enforcement Assistance and Planning Agency. *The Comprehensive Law Enforcement Plan.* April 1969, p. 32.

[5]*Ibid.*, p. B5.

[6]Department of Mental Health and Corrections. *Mental Health Planning, Final Report. New Perspective, Maine's Mental Health Plan.* (Augusta, Maine: 1966), p. 17.

of the State of Maine.[7] The comprehensive long-range plan for the construction of community mental health centers was developed during the second phase of the planning operation. "Each regional and special task force was given the responsibility of developing a plan for improving the mental health of the people of Maine in its own assigned field of area."[8]

The State was originally divided into 17 planning regions which were later reorganized into five multi-county areas. Ideally, each area should comprise a population between 75,000 and 200,000, as prescribed by the National Institute of Mental Health. Area II exceeds the 200,000 limit by about 13 percent, while Area V exceeds the ideal limit by more than 60 percent. Serious consideration is therefore being given to dividing Area V into three regions, separating York County into a southern region served by Biddeford-Saco as the population center.

For the time being, however, the organization of the State into five areas, as shown on the map on the next page, constitutes a major planning design which has been followed in all subsequent planning.

The five areas consist of the following counties:

Area I—Aroostook, population 108,819.

Area II—Piscataquis, Penobscot, Washington, Waldo, Hancock, population 227,037.

Area III—Somerset, Kennebec, Knox, Lincoln and part of Sagadahoc, population 166,823.

Area IV—Franklin, Oxford, Androscoggin, population 145,885.

Area V—Cumberland, part of Sagadahoc, York, population 320,701.

Mental Health Priorities. In developing Phase II of the planning, the mental health planner has developed a priority system of ranking the five areas according to need, using four component categories.

Category A, population characteristics, includes number of persons per square mile, percentage over 65, and percentage under 18.

Category B, socio-economic characteristics, includes median family income, percent of civilian labor force unemployed, percent of substandard housing units, houses with telephones, percentage of population over 25 which completed 8th grade, Child Welfare load per 100,000 child population, divorce or annulment per 100,000 population, illegitimate births per 100,000 population, suicides 1962-64 per 100,000 population.

Category C, mental health facilities, includes existing hospitals and clinics as well as professional personnel, (M.D.'s, D.O.'s, psychiatrists, clinical psychologists).

Category D, social problems indicative of high incidence groups, includes those socio-economic factors which could be combined and ranked as a single unit in establishing mental health center priorities. Also to identify the special needs of certain groups in relation to these socio-economic factors.[9] Examples of these factors are low median family income, high percent of substandard housing, low educational levels, and other environmental deprivations which may cause high prevalence rates.

On the basis of these criteria, the areas were first ranked on a priority basis according to each of these categories:

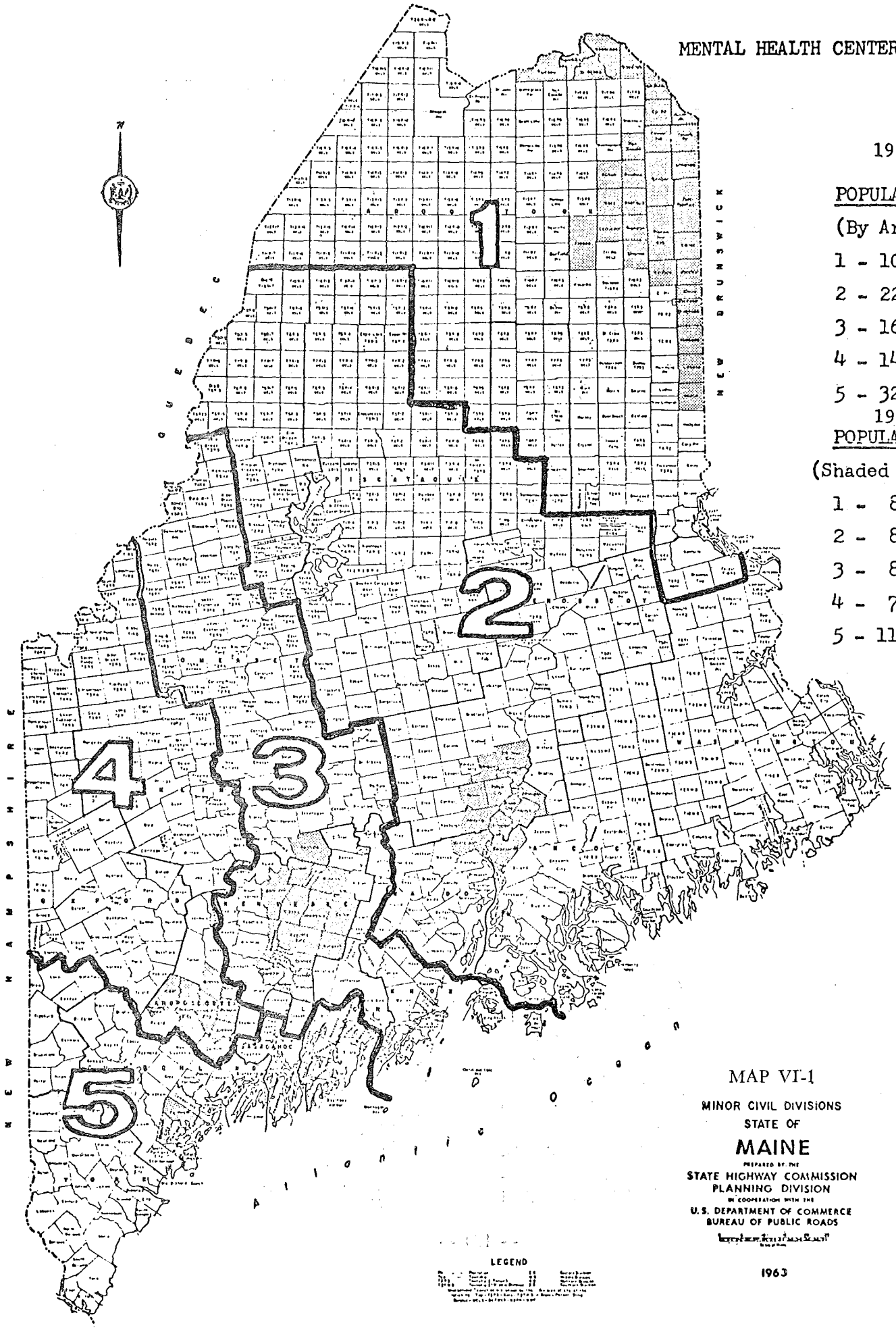
[7] *Ibid.*, p. 17.
[8] *Ibid.*, p. 21.

Area	Category A	Category B	Category C	Category D
I	1	1	1	3
II	2	2	4	2
III	5	2	4	1
IV	2	2	3	4
V	4	5	2	4

The categories were then weighted. Categories A, B, and D were considered equivalent, but Category C was considered of much greater importance. Accordingly Category C rankings were multiplied by three, to give the following weighted totals, which resulted in the final ranking:

[9] Department of Mental Health and Corrections. *Mental Health Planning. Regional Reports.* (Augusta, Maine: 1966), p. 45.

MENTAL HEALTH CENTER AREAS



1960

POPULATION

(By Area)

1 - 108,819

2 - 227,037

3 - 166,823

4 - 145,885

5 - 320,701

1960

POPULATION

(Shaded Areas)

1 - 89,939

2 - 85,103

3 - 81,292

4 - 75,798

5 - 111,701

LEGEND

MAP VI-1

MINOR CIVIL DIVISIONS

STATE OF

MAINE

PREPARED BY THE

STATE HIGHWAY COMMISSION

PLANNING DIVISION

IN COOPERATION WITH THE

U.S. DEPARTMENT OF COMMERCE

BUREAU OF PUBLIC ROADS

1963

Area	Cat. A Weighted	Cat. B Weighted	Cat. C Weighted	Cat. 4 Weighted	Weighted Total	Final Rank
I	1	1	3	3	2	1
II	2	2	12	2	18	3
III	5	2	12	1	20	5
IV	2	2	9	4	17	2
V	4	5	6	4	19	4

The priority ranking originally developed in 1965 was updated in 1967 as follows:

Area	Counties Included	1965 Rankling	1967 Ranking
I	(Aroostook)	1	1
II	(Pisc., Penob., Wash., Waldo, Han.)	2	2
III	(Somer., Ken., Knox, Lincoln, part of Sag.)	4	5
IV	(Frank., Ox., Andro.)	3	2
V	(Cumb. part of Sag., York)	5	4

In the regulations of the Community Mental Health Centers Act of 1963 and the 1967 annual modification of the Community Mental Health Center State Construction Plan, Area I (Aroostook County) retains priority number one. The remaining areas have shifted priorities slightly because of a regrouping of the factors and changes in services rendered in the various areas. The factors used in establishing the modified rankings are similar to those indicated in the discussions of each category.[10] Determination of priority of individual projects will be in accordance with the priority of the area. Ranking of projects will normally be in accordance with the established priority, except when a project with a lower priority is more urgently needed to provide adequate mental health services. Exceptions may be made because of feasibility.[11] Matching fund capability will also be considered essential when federal funds are available for important items on the department's priority list.

Mental Health—Some Observations. The Department of Mental Health and Corrections is presently handicapped by guidelines which restrict the use of funds to specific categories. Any alteration of the line budgeting requires approval of the Governor and Council.

The same restrictions apply to federal funds which are provided for specific purposes in response to application for funding on the basis of federally determined priorities. For example, one year federal funds may be for vocational training for state hospital patients, when the need may be for physical therapy. Another time, federal funds may be available for job placement, when nursing home placement is needed.

The concept of flexible financing is seen by the department administration as an effective vehicle for efficient and effective management. Flexibility is required at two levels: (1) federal—through the awarding of bloc grants to the states to be expended according to the priorities of the state rather than by federally determined priorities; (2) state—through more flexible utilizaion of the department budget approved by the legislature. For example, both Bureau of Mental Health and Bureau of Corrections could provide more efficient services if the funds granted by the legislature could be used interchangeably for either institutional or community services.

Planning to Meet Needs of Mental Retardation.

The Maine Committee on Problems of the Mentally Retarded carried out the initial comprehensive survey of the numbers, distribution, needs, available local resources, and future problems of the retarded.[12] The major research tool utilized 700 questionnaires.

In 1967, the Bureau of Mental Health was designated as the planning agency for mental retardation. The administration of construction programs was given to the Department of Health and Welfare. Following the geographical planning areas outlined above, the mental retardation planner proposed in the Third Annual Construction Report "both long and short range goals for development of a plan integrated with other health facilities and serving the needs of the mentally retarded in all of the five planning regions."[13]

Two factor groups for priority determination in regard to mental health, the socio-economic factors and

[10] *Ibid.*, p. 46.
[11] *Ibid.*, p. 47.
[12] Mental Retardation Planning Office, *op. cit.*, p. 4.
[13] Department of Mental Health and Corrections. *Mental Retardation Facilities Construction Plan.* Third Annual Report. (Augusta, Maine: 1967), p. 1.

TABLE VI-1

TABLE OF RELATIVE NEED

Area	Priority	Population Centers
I	1	Presque Isle-Caribou-Fort Fairfield
II	2	Bangor
III	3	Augusta-Waterville
IV	5	Lewiston-Auburn
V	4	Portland

the population factors, have been used in the following priority determination in planning to meet the needs of mental retardation.

Until all Planning Areas in the State have had at least one project, those Areas where no grants have been made will have priority over those Areas where projects have been approved, regardless of priority ranking. Projects have been already approved for Areas I, II, and III. After projects are approved for Areas IV and V, the approval of further projects will be considered in order of priority ranking.

Mental Retardation Priorities. Four sets of weighted factors have been used in establishing priorities in the following table:

1) Background Factors—the number receiving mental retardation services.

2) Socio-Economic Factors—income, age, education.

3) Specific Needs—diagnostic and evaluation services, day care, residential services.

4) Population Factors—population, need, demand, and potential utilization.[14]

As indicated by the following table, background factors and socio-economic factors each receive a weight of one, whereas specific needs and population factors each receive a weight of two.

[14] *Ibid.*, p. 5.

TABLE VI-2

MENTAL RETARDATION PRIORITIES BY AREA

Ranking Considerations	Area I	Area II	Area III	Area VI	Area V
Background Factors (weight of One)	1.5	3.0	5.0	4.0	1.5
Socio-Economic Factors (weight of One)	1.0	2.5	2.5	4.0	5.0
Specific Needs (weight of Two)	2.0	6.0	4.0	8.0	10.0
Population Factors (weight of Two)	5.0	2.0	3.0	4.0	1.0
Sum of Rank	9.5	13.5	14.5	20.0	17.5
FINAL RANK ORDER	1	2	3	5	4

Mental Retardation—Some Observations. The Bureau of Mental Retardation has been maintained in an embryonic state since its inception by the 103rd Legislature. Efforts to fund the necessary positions to administer the Bureau have repeatedly failed.

The essential need at this point is for funds to finance two administrative personnel, a Director of the Bureau of Mental Retardation, and a Community Organization Specialist to assist communities in development and coordinating Mental Retardation programs.

At present, Mental Retardation activities in Maine are characterized by a lack of coordination and planning. Mental Retardation programs are operated by other departments, such as Education, which funds

[15] *Ibid.*, p. 7.

special classes for educably retarded; Mental Health, which provides funds for classes for trainables; and Health and Welfare, which supports many profoundly retarded through its child welfare programs.

The absence of leadership at the state level is also evidenced by the inability of local associations for retarded children to coordinate their activities on a regional level. Most associations are geared to meeting the needs of certain children at the local level with no relationship to the needs and resources at the regional level.

The need for the financing of the positions of the Director of the Bureau of Retardation and the Community Organization Specialist emerges as the major priority of the Bureau, without which other recommendations are unattainable. The cost of achieving this would be $43,000, including needed clerical staff and other operational expenses, above the current funding level of $22,000 in support of community retardation services. A mental retardation planner who is assigned to the Bureau of Mental Health is financed with federal funds.

The Bureau of Mental Retardation currently operates as a division of the Bureau of Mental Health. Administration officials feel that the Bureau of Mental Retardation requires independence and individuality if it is to achieve leadership in the retardation field in Maine and the support of state and local agencies.

Until the Bureau of Mental Retardation is funded to the extent of having its own Director and Community Organization Specialist, little can be expected in the way of major progress either in planning or program implementation. Meanwhile, considerable federal dollars are being lost to the state because of this lack of organization required to develop plans and programs within federal eligibility guidelines.[16]

Planning for Corrections

Due primarily to financial limitations, the Bureau of Corrections has not carried out any comprehensive planning program with respect to the long-range development of resources or facilities, nor for the expansion or modification of existing resources. However, the Bureau is now on the threshold of launching a long-range planning program.

Established as a separate agency under the Executive Department in February, 1969, the Maine Law Enforcement Assistance and Planning Agency is presently engaged in a comprehensive planning effort designed to achieve a more effective law enforcement system in Maine. Its area of concern is very broad and includes the handling of both adults and juveniles, local and state resources, and community and institutional facilities and services. In this last aspect it currently provides long-range planning services to the Bureau of Corrections. It would be advisable for the Bureau of Corrections to maintain close communication with this planning agency to maximize its resources for its own planning needs.

The Maine Law Enforcement Assistance and Planning Agency has submitted its first "Plan for Planning" to the Governor and is in the process of instituting the second phase "Plan for Action." This will be done through the development of regional study committees from each county, as was done in the Mental Health Planning. These regional committees will develop specific recommendations for action. It is anticipated that these committees will be activated during the 1969-70 fiscal year since the legislature has provided the required $60,000 in matching funds for each year of the biennium.

Up to the present, the priorities developed by the Law Enforcement and Planning Agency have been limited to those of needs and problems in the Maine Criminal Justice Administration, determined on the basis of inquiries and discussions with many law enforcement officials and other interested parties. The ability to be precise is limited in certain areas by a lack of detailed supportive information.[17] In addition to direct contact with concerned parties, extensive use has been made of previous studies dealing with certain aspects of Maine's law enforcement system.

Correction Priorities. As needs and problems have been identified, general programs have been developed, not on the basis of geographical areas, but rather on the basis of expressed need, reflecting the initial stages of the planning process. These programs are major groupings of similar projects which have been developed or solicited for the initial action plan or anticipated in fu-

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[16]"Maine has only 4 state-supported clinics, run at a cost of $183,000 in 1963-64. All the mental health services of the community grant-in-aid programs, together with 13 programs for trainable retarded children, received only $105,000 for 1964-65, a drop in the bucket, really. This amount should be substantially increased and communities make every effort to find greater matching funds in order to take advantage of grants-in-aid programs." Department of Mental Health and Corrections. *Mental Health Planning, Final Report. New Perspective. Maine's Mental Health Plan.* (Augusta, Maine: 1966), p. 46.

[17]Maine Law Enforcement Assistance and Planning Agency. *op. cit.*, p. A1.

ture action plans. Each program is broad in scope. Because of the different program areas which have been considered, there should be no problem in classifying future projects within established program areas. The State Planning Agency Board of Directors has defined the program areas and established program priorities as follows, by a nearly unanimous vote:

I—Highest Correction Priorities

Improving the Selection, Training and Education of Personnel.

Improving the Compensation of Personnel.

Improving Characteristics Relating to Work and Working Conditions Including Up-grading Information and Communications System.

Public Education.

II—Next Highest Correction Priorities

Increased Pooling or Use of Resources.

Improvement of Agency Effectiveness and Efficiency.

Improvement of Court Management and General Operations.

Improvement of Rehabilitation Capabilities for Juveniles.

Extension of Rehabilitation Programs.

III—Third Level Correction Priorities

Reducing the Causes of Crime and Offering Alternatives to Crime.

Law Reform.

Improvement of Coverage by Prosecution and Defense.

Improvement of Personnel Training in Community Relations.[18]

The most recent comprehensive planning which pertains specifically to the Bureau of Corrections was carried out in 1968 by the Task Force on Corrections of the Maine Commission on Rehabilitation Needs. The Task Force was organized to assist the Commission in preparing a statewide plan for comprehensive services to be available to all segments of Maine's handicapped population by 1975.[19] The recommendations were formulated by four subcommittees which addressed themselves to such specific areas as institutional and after care services, programs for youth, adult corrections, probational-parole services, development of rehabilitation and treatment services, community involvement, attitudes and public education.

The recommendations are also program-oriented at a statewide level, rather than related to specific geographic areas of the state, and they do not propose a specific order of priority for implementation. The major recommendations are presented further in this report.

A recurrent request for a study, which has been submitted by the Bureau of Corrections to each session of the legislature for the past decade with no success, is the "Study of Need for a Third Correctional Institution." Its major promise is that a "study of other correctional institutions reveals that Maine is lagging in the treatment of offenders and that it would not be to the best interest of the state to just enlarge existing institutions."[20] It recommends the establishment of a Reception, Diagnostic, and Treatment Center at a location other than those of the existing institutions.

The establishment of a Reception, Diagnostic and Treatment Center for female juveniles is the major recommendation of another report entitled "Treatment of Female Offenders."[21] The same report urges that the present physical plant at Stevens School at Hallowell (Area III) be used.

It also calls for the establishment of a single correctional center for female offenders, both adult and juvenile, and recommends that the facility now serving as the site for the Women's Correction Center at Skowhegan (Area III) be used.[22]

Corrections—Some Observations. The major deterrent to a greater expansion of correctional community services has been the lack of funds. Requests for funds to expand the Division of Probation and Parole have been refused. The recent inclusion of this division within the Bureau of Corrections may solve the financial problem.

The recent passage by Congress of the Omnibus Crime Bill, better known as the Safe Streets Act, should make available to all states the necessary funds for both planning and implementing crime prevention and

[18]*Ibid.*, p. A2.

[19]Correctional Rehabilitation Committee. *Maine's Treatment of its Public Offenders.* (Augusta, Maine: September, 1968), p. 1.

[20]Department of Mental Health and Corrections. Report to the 103rd Legislature. *Study of the Need for a Third Correctional Institution.* (Augusta, Maine: 1967), p. 3.

[21]Ward E. Murphy. *Treatment of the Female Offender.* Augusta, Maine: September, 1968), p. 14.

[22]*Ibid.*, p. 15.

treatment programs. The major beneficiaries of these funds will be agencies for community correctional services. The recent establishment of the Comprehensive Law Assistance and Planning Agency, as part of the Executive Branch, will insure the coordination and planning necesary for the development of the most effective services possible. Every effort should be made to insure the stability of this agency and support its efforts to coordinate the development of local and statewide law enforcement and correctional services.

The Bureau of Corrections is on the threshold of a period of progress in the rehabilitation of adult offenders. It has successfully introduced vocational rehabilitation programs into its institutions and moved toward the expansion of its community probation and parole services. The key ingredient now required is establishment of a diagnostic center to provide more effective screening of those committed to its care and more meaningful disposition of each case. Besides having been a major recommendation of the Committee on Corrections, establishment of such a diagnostic center is seen by the administration of the Bureau as a necessary precondition for implementation of its other recommendations.

With the cost of incarceration, as reported by the Department of Mental Health and Correction auditors, ranging from $2,725 a year at the Maine State Prison, to $7,380 per year at the Women's Reformatory, the provision of an effective screening device, which would keep many offenders out of the institutions, would eventually pay for itself.

Although the diagnostic center could be constructed by federal funds, it would require an estimated $500,000 of state funds per biennium to operate. Such an investment, however, would seem to be fruitful, not only from the financial point of view, but in averting the loss of many human lives which could be salvaged.

The establishment of a diagnostic center by the Bureau of Corrections could also provide for more effective coordination of community services within the department, and for better service in mental health, corrections, and mental retardation. The disagnostic center could draw on community mental health staff for the provision of mental health services in either diagnosis or treatment.

Until such a diagnostic center is established, the community correctional services should develop closer lines of communication with existing community mental health services for the provision of diagnostic and treatment services to parolees and probationers. Thus, in the absence of the physical facilities of a diagnostic center, some steps may be taken in this direction through a closer working relationship between probation-parole services and community mental health services.

For a diagnostic center to be most effective, it must have the flexibility of making, in each case, the disposition most appropriate to the needs and capacities of the particular offender. To achieve this would require a change in the current legislation which commits an offender to the particular institution. Such a change would be in keeping with progressive penal philosophy of rehabilitation rather than punishment.

Summary of Major Planning Efforts

The Federal Government, with its focus on the development of community resources, appears to be a major factor in slanting the long-range planning effort toward community services. The initial momentum for community-oriented planning in Mental Health, Mental Retardation, and Law Enforcement has come primarily from federal grants through new legislation and the subsequent availability of funds.

The trend seems to have left the two state hospitals, the childrens' psychiatric unit at Pineland Hospital and Training Center, Pineland Hospital itself, and the adult and juvenile institutions without any long-range plan or direction. This is unfortunte, as a point stressed in future mental health planning is to upgrade the hospital programs and the diagnostic and therapeutic services.[23] A similar upgrading is stressed in mental retardation planning with respect to Pineland, where it calls for "adequate provision at Pineland Hospital and Training Center for those requiring highly specialized medical care, educational training, or treatment, as well as custodial cases requiring prolonged care."[24] But quality care requires a skilled staff which in time necessitates adequate salaries. The recent demise of the physical therapy program at Pineland is an example of an attempt to provide quality care without adequate salary structures.

Institutional improvements are also stressed in correctional studies, particularly in giving greater emphasis to rehabilitation as opposed to restrictively custodial methods of treatment.[25]

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[23]Mental Health Bureau. *Mental Health Planning.* Task Force Reports. (Augusta, Maine: 1965), p. 5.

[24]Mental Retardation Planning Office, *op. cit.,* p. 33.

[25]Correctional Rehabilitation Committee, *op. cit.,* p. 10.

SUMMARY OF PRIORITIES, RESOURCES, AND MAJOR RECOMMENDATIONS BY AREA

Area I—Aroostook County: Population 108,819, Northern Subregion, NERC No. 10.

Mental Health—Priority I

Resources: One Outpatient Mental Health Clinic at Fort Fairfield.

Recommendation. To carry out the plan for promoting and implementing needed comprehensive mental health services in Area I.

Probable Construction. An outpatient clinic and psychiatric unit of a general hospital in the Fort Fairfield-Presque-Isle-Caribou area.

Comments. This priority recommendation has been achieved with the establishment of the clinic. Major problems continue to be securing of professional staff, particularly psychiatric and psychological staff. The Mental Health Plan has also recommended consideration of the construction of a children's psychiatric hospital to serve the northern part of the state.[26]

Mental Retardation—Priority I (see Appendix)

Resources. Six community-sponsored classes for trainable retarded children. The Opportunity Training Center, a day school, was built in Presque Isle and serves more than sixty students. Six public school classes for the mentally retarded serve 105 children.

Needs. There is an acute need for diagnostic services which are completely lacking in Area I, as well as for vocational training.

[26]Department of Mental Health and Corrections. *Mental Health Planning.* Regional Reports. (Augusta, Maine: 1966), p. 55.

Area II—Piscataquis, Penobscot, Washington, Hancock and Waldo Counties: Population 227,000, Eastern Subregion, NERC No. 11

Mental Health—Priority III.

Resources. Bangor State Hospital
The Counseling Center—Bangor
The Hancock County Mental Health Association
Mt. Desert Child Guidance Asociation.

Recommendations. The consolidation of all mental health services in the population center in Area II, with long-range study to determine the most practical approach in providing the populace with adequate facilities and services. If housing is needed, construction should be contemplated.

Probable Construction. An outpatient and psychiatric unit at the Eastern Maine General Hospital.

Comments. The "consolidation" has taken place with the integration of Eastern Maine Guidance Center and the Family and Children's Services. The newly emerged Counseling Center is currently in the process of securing federal staffing funds for the expansion of staff and services and is planning construction of a new facility adjacent to Eastern Maine General Hospital.

Mental Retardation—Priority II (see Appendix)

Resources. The Katahdin School for Exceptional Children, a day-school serving 20 trainable children, in addition to others in the area. Diagnostic services are being provided in existing mental health services, and 315 children are being served in the public schools through special classes.

Needs. Major voids are in the area of vocational training and residential care.

Comments. Plans are now under way for the construction of a residential facility for the severely retarded on the grounds of the Bangor State Hospital.

Area III—Somerset, Kennebec, Knox and parts of Lincoln and Sagadahoc counties: Population 166,823, Portions of Subregions, NERC No. 11, No. 12, and No. 13

Mental Health—Priority V

Resources. Togus V.A. Hospital
Kennebec Mental Health Clinic, Waterville
Augusta State Hospital
Mid Coast Mental Health Clinic.

Recommendations. Definition of respective responsibilities and coordination of activities between Kennebec Mental Health Clinic, the Augusta State Hospital, and other local mental health services.

Probable Construction. In the event of consolidation of mental health services in this area, provision should

be made for construction to house expanded services at Thayer Hospital, developed under the Community Mental Health Program.

Comments. The Kennebec Mental Health Clinic has submitted an application for federal construction funds to erect a Comprehensive Community Mental Health Center adjacent to Thayer Hospital. The coordination of services with Auugsta State Hospital still appears a goal to be achieved.

Mental Retardation—Priority III—Augusta-Waterville (see Appendix)

Resources. The Hilltop School in Waterville services 60 children in trainable and pre-trainable categories fairly adequately. Diagnostic services are provided and 405 children are being serviced in the special classes of the public schools. Special classes are also available at Augusta.

Needs. Major needs are for vocational training and residential care.

Corrections. It has been recommended that a Diagnostic, Reception and Treatment Center for juveniles be established at the Stevens School in Hallowell. It has also been recommended that a single correctional center for female offenders be established at Stevens.

Area IV—Androscoggin, Oxford and Franklin Counties: Population 145,885.

Mental Health—Priority II, Part of NERC Subregion No. 12 and No. 13

Resources: Child and Family Mental Health Services, Lewiston
Oxford County Mental Health Services.
Franklin County Mental Health Services.

Recommendations. A comprehensive approach to mental health needs, to consolidate all existing mental health resources in the Lewiston-Auburn region, to ally closely with the Franklin County Mental Health Services, and to implement new services in Oxford County at the Rumford area as a satellite clinic.

Comments. A Comprehensive Community Mental Health Center has been established in Lewiston through an expansion of Child and Family Mental Health Services, and the construction of a new facility. Satellite clinics have been established in Oxford County, both at Rumford and Norway, and staff expansion is now under way. The development of services in Franklin County has been slower, and no change has taken place there.

Mental Retardation — Priority V — Lewiston-Auburn (see Appendix)

Resources. This area is fairly well covered for diagnostic services as well as for vocational training.

Needs. The development of day schools for the pre-trainable and trainable, as well as further expansion of the special classes of the public schools beyond the current 195 retarded children. The proximity to Pineland seems to indicate that the development of other residential facilities is not warranted.

Area V—Cumberland, Sagadahoc and York Counties: Population 320,701

(This is a tentative geographic division and may be sub-divided later.)

Resources. Sweetser Children's Home

Maine Medical Center Mental Health Clinic

York Mental Health Association

Pineland Hospital and Training Center

Bath-Brunswick Mental Health Association

Child and Family Services, Portland.

Recommendations. The coordination of all mental health facilities in the area, and the development of a clear understanding of the part that each facility or service plays in realizing essential services.

Proposed Construction.

Community Mental Health Centers:
Portland: Maine Medical Center, 1970
Biddeford: Webber Hospital, 1975

Comments. The construction of the Community Mental Health Center at the Maine Medical Center is nearly complete and all essential services are operative. Services and efforts are currently under way to sub-divide the area, with York County becoming Area V South. A Community Mental Health Center for Area V South has been established, with Sweetser Home serving as the nucleus. Because of the population factor, the Bath-Brunswick Region may also later sub-divide from the area.

Mental Retardation—Priority IV—Portland (see Appendix)

Resources. Diagnostic services are adequately provided by existing services. This area also has the largest aggregate of special classes for retarded children in the public schools. The location of Pineland gives it a special accessibility.

Needs. The development of vocational training services emerges as the major need.

Comments. One of the major recommendations of the mental retardation plan was for the expansion of the 35-day evaluation service at Pineland Hospital and Training Center. Community facilities for the retarded in the Portland area are very limited.

GENERAL RECOMMENDATIONS

Mental Retardation

The Comprehensive Plan for Retardation in Maine has cited as its major goals:

1) Provision of services and facilities to meet "the specialized needs for the different degrees of retardation at various stages in the life of the retarded."[27]

2) Provision of the opportunity for a retarded person to attain his fullest potential.

To achieve these goals, the planner for mental retardation has determined that:

1) Facilities must be located as to be readily accessible to all but the most remote regions.[28]

2) Services must be provided in each of the five regions, any of which might qualify for construction funds.

3) As services develop at the local level, they must be so located as to insure cooperation and communication between them, and construction proposed to house such services must be accessible to other services.

Major gains have been achieved in the expansion of special classes in public schools. Less tangible gains have been made in increased services to the retarded through strengthening mental health clinics in the regions.[29]

The Maine Committee on Problems of the Mentally Retarded considers the following necessary to improve the lives of the retarded people, their families, and their communities:

1) State owned and operated, or State supervised, regional residential facilities for the chronic care of moderately retarded and mildly retarded persons.

2) Expansion of the 35-day evaluation service at Pineland with direct and continuing counseling to families and schools.

3) Further development and expansion of education and training programs for the retarded through increased financial support for schools, community programs, and training teachers for the mentally retarded.

4) Expanded pre-vocational, rehabilitation, and employment services for the retarded.

5) Improved preventive services through improved pre-natal, obstetrical, and pediatric programs.

6) Staff development and public information programs.

The plan for the increased development of mental retardation services has not specified the where, what, and how of such development for each of the five areas. However, the degree to which the mental health plan serves as a model suggests that the major nucleus for this development may appropriately be the community mental health center in each area.

Mental Health

While a mental health center might not provide the appropriate educational and vocational training, it could well serve as the provider of diagnostic and counseling services which have been identified as much needed, and which would provide a catalyst for securing the other needed services. A mental health center could also coordinate the many educational vocational services in each area which are not otherwise interrelated.

In the implementation of Maine's Mental Health Plan, an attempt is being made to mobilize local services in each area and relate them to state services.[30] The

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[27]Department of Mental Health and Corrections. *Mental Retardation Facilities Construction Plan.* Third Annual Report. (Augusta, Maine: 1968), p. 1e.

[28]*Ibid.*, p. 1e.

[29]*Ibid.*, p. 20.

[30]Department of Mental Health and Corrections. *Mental Health Planning.* Regional Reports. (Augusta, Maine: 1965), p. 55.

achievement of maximum services requires maximum utilization of existing resources which are too expensive to reduplicate. Pineland and the State hospitals at Augusta and Bangor represent a total investment of over $20 million in their plants.

More specifically, the plan estimates that the central portion of the state is adequately served with hospital beds by Augusta State Hospital, and the eastern and lower portions of the northern part of the state are adequately served by the Bangor State Hospital. This leaves the extreme northern and southern portions of the state without easily available inpatient facilities. Long-range plans project an inpatient facility located in Portland and another in the population center of the Presque Isle-Caribou-Fort Fairfield area.

The recently established Mental Health Center in Area IV will eventually provide adequate outpatient services. Being relatively close to Augusta State Hospital, it will utilize the hospital for long-term inpatient services.

Basically, Maine's Mental Health Plan is to maintain the State Hospitals with "improvements and expansion of their outpatient facilities and the services coordinated and offering continuity of care to the other services throughout the State of Maine."[31] Beyond these state services, "there should be expanded state support for locally established mental health services and probably also for hospitalization for mental illness in the local general non-profit hospitals."[32]

With the establishment of the new mental health center Area Boards, considerable progress has been made in joining existing facilities and services to form a mental health center complex in each of the five areas. The community general hospitals are expected to play a major role in the success of this plan in providing short-term inpatient care. As previously mentioned, the state hospitals will serve as long-term care facilities.

Beyond this, "the state should consider construction of new acute reception buildings and an effort should be made to renovate and up-date the existing facilities to comply with elements of service which constitute adequate care, re-emphasizing that each of the two state mental hospitals by renovation should have a discreet[33] admission and intensive treatment service."[34]

In evaluating the alternatives for maximizing the availability of federal funds for the institutions, the Bureau of Mental Health had considered making the mental hospitals comprehensive community mental health centers. This would make available considerable federal dollars for the development of more effective diagnostic and treatment services as recommended by the various studies.

Since the Bureau of Mental Health, according to its plan, has placed priority on the development of comprehensive community mental health centers at the local level, this development of the state hospitals into comprehensive community mental health centers must assume secondary priority. The administration sees the appropriateness of pursuing state hospital quality improvement when two factors are present:

1) an improvement in federal requirements which will make such a transition possible within the limited financial and personnel resources of the state;

2) a level of stability in the provision of service by the community health centers, so that the major burden now on the state hospitals, can be lightened. Increased funding could satisfy the major needs, as expressed by the Bureau administration, for both institutional and community services. The Bureau of Mental Health is currently receiving only $8.76 per day per patient in the mental institutions. These funds must finance all institutional services.

An increase from this $8.76[35] to $13.00 per patient-day as recommended by the National Institute of Mental Health would enable the Bureau to meet its minimal essential responsibilities.

Corrections

With the exception of the proposal for a third institution—a reception and diagnostic center—the recommendations deal with improving the quality of the rehabilitative efforts of the corrections process.

It is also significant that the studies and recommendations are not related to specific geographic areas of the state.

The major source for specific recommendations is the report of the Sub-committee on Corrections of the

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[31] *Ibid.*, p. 54.

[32] *Ibid.*, p. 55.

[33] By "discreet admission" is meant that these two state hospitals should be used only for those cases which require intensive treatment rather than the treament of all persons regardless of the severity of their need and condition.

[34] *Ibid.*, p. 55.

[35] This figure was obtained by dividing the current budget by the patient-days in mental institutions.

Maine Commission on Rehabilitation Needs. The subcommittee proposed the following major recommendations:

1) Give greater emphasis to rehabilitative, as opposed to restrictively custodial methods of treatment.

2) Give greater emphasis to winning public acceptance of the ex-offender.

3) Reorganize the Bureau of Corrections to provide more effective coordination and thus strengthen treatment programs.

4) Sentence offenders to the Bureau of Corrections instead of to specific institutions.

5) Supply the Bureau of Corrections and the individual institutions with sufficient staff so that rehabilitative, as well as custodial services, may be provided.

6) Raise salaries of institutional personnel so that they are no longer the lowest paid in New England.

7) Provide opportunities and incentives for in-service training of correctional personnel.

8) Establish central record-keeping and data gathering within the Bureau of Corrections.

9) Promote more effective liaison with the other New England states for the purpose of arranging transfer of correctional clients, for exchanging specialists and other personnel, and for conducting research.

10) Combine Stevens School and the Women's Correctional Center into a single correctional unit for females in Hallowell.

11) Provide for the custodial care of female felons under an interstate compact.

12) Consolidate the county jail system and provide for its supervision by the Bureau of Corrections.

13) Establish vocational rehabilitation programs and facilities at each of the State-operated correctional institutions.

*14) Establish diagnostic and reception centers, one for juvenile offenders, and the other for adult males.

*15) Establish a pre-release center for adult male offenders, to be located in the Southern Maine region.

16) Promote more effective cooperation among agencies concerned with correctional personnel.

17) Establish State Hospital based treatment centers in Augusta and Bangor for confirmed alcoholic offenders.

18) Establish a continuing public information program as a full-time function of the Bureau of Corrections and the Bureau of Mental Health.

19) Recruit and train volunteers in the community to assist the probation and parole effort.

20) Increase the utilization of community resources, particularly the social service agencies, both public and private.

21) Establish a citizens' committee to serve as an advisory body to the Bureau of Corrections.

*refers to long-range goal (1975); all others need implementation by 1970.

The Bureau of Corrections is currently preparing for the initiation of a long-range planning program which should provide more specific information with respect to recommendations for expansion of existing resources and development of new resources in specific geographic areas.

An effort is under way by the Bureau of Corrections to establish a diagnostic and reception center by taking over the Job Corps site at Bar Harbor. This represents a high priority achievement with little capital investment.

MANPOWER DEVELOPMENT

With the tremendous surge in public awareness of and concern about mental illness and mental retardation, the demands for such services have expanded far beyond the capacity of the state to meet them.

In the pre-war decades, the fate of the mentally ill was a sentence to a state mental institution which was expected to do little more than provide custodial care. With the emergence of the "miracle drugs"—the phenothiazines, which have proven effective at controlling abnormal human behavior, society has come to expect more of the mental hospital than just custodial care of its patients. Chemotherapy, however, is just one of the necessary approaches to effective treatment, all of which require skilled professional manpower. And it is here that the system has not been able to produce.

The State of Maine has major deficiencies in terms of profesional manpower resources. Without a medical

school and accompanying residency program in psychiatry, it has no readily available source from which to draw psychiatrists. The absence of a school of social work forces the hospital to compete for out-of-state trained social workers in a highly competitive market. There is no training program for occupational therapists, or psychiatric nurses in the state.

Current developments in the university system offer some hope for the future. The graduate program in psychology at the University of Maine is now seeking accreditation. Furthermore, the Maine Chapter of the National Asociation of Social Workers has recently undertaken, with a grant from the Bureau of Mental Health, a feasibility study for the establishment of a graduate school of Social Work at the University of Maine in Portland. The Dean of the School of Social Work at Hunter College in New York City, who is also the chairman of the curriculum committee of the National Council on Social Work Education, has recently completed his study and will soon be making what appears to be positive recommendations to the Chapter and to the University. The establishment of such a school would be a major breakthrough in the professional manpower impasse in the areas of mental health, mental retardation, and corrections.

RESEARCH RESOURCES

Research in the field of human behavior has only recently assumed prominence in scientific endeavor. In recent years, as research methods in human behavior have achieved increasing validity, considerable attention, energy and funds have been given to research in mental health in general. The major impetus has come from the federal government, through the National Institute of Mental Health. After nearly ten years of pioneering the research effort, the National Institute of Mental Health is now insisting that individual states and their mental health facilities improve their own research capabilities. In fact, "research and evaluation" has been designated by NIMH as one of the ten major services to be provided by each eligible mental health center to be eligible for NIMH funding for construction and staffing.

To aid in the development of effective and reliable research tools, the National Institute of Mental Health has funded several regional research projects in which it has encouraged states to participate. One such project in which the Bureau of Mental Health is currently participating is housed at Rockland State Hospital in upper New York State. Through participation in this project, the Bureau of Mental Health, its institutions and community facilities will be able to computerize significant data on the quantity and quality of services to patients as well as meaningful data on the patients served.

This is an example of federally motivated progress which is heavily dependent upon federal policy. Without an active, up-to-date, state-controlled research department, progress in the area of research will be sporadic, not coordinated, and of questionable long-range value to the state. Much valuable information is lost due to the absence of a central research control and information bank available to each department involved in the various types of research which should be shared on an interdepartmental basis.

APPENDIX (TABULATED INFORMATION)

Provided by the Maine Department

of

Mental Health and Correction

June 1969

Mental Health Plan

Recommended Placement of Clinics by Mental Center Area

	Location	Type of Clinic	Plan
Mental Health Center Area 1	Fort Fairfield	Center	Operative
	Fort Kent	Satellite	Operative
	Houlton	Satellite	1 year
Mental Health Center Area 2	Bangor	Center	Operative
	Bar Harbor	Satellite	Operative
	Dover-Foxcroft	Mobile	1 year
	Ellsworth	Satellite	Operative
	Lincoln	Mobile	1 year
	Machias	Satellite	Operative
	Millinocket	Mobile	Operative
Mental Health Center Area 3	Augusta	Satellite	Operative
	Rockland	Satellite	Operative
	Skowhegan	Mobile	*Operative
	Waterville	Center	Operative
Mental Health Center Area 4	Farmington	Satellite	Operative
	Lewiston-Auburn	Center	Operative
	Rumford	Satellite	1 year
	Norway	Satellite	1 year
Mental Health Center Area 5	Bath-Brunswick	Satellite	Operative
	Bridgton	Satellite	1 year
	Portland	Center	Operative
	Saco	Satellite	Operative
	Sanford	Satellite	1 year
New Hampshire	Portsmouth	Center	Operative

*Operative purchasing services from the Center.

Source: Department of Mental Health and Corrections. *Mental Health Planning, Final Report. New Perspective. Maine's Mental Health Plan.* (Augusta, Maine: 1966), pp. 64-67.

Additional Facilities Proposed and Probable Construction Sites

Community Mental Health Centers

Area	Proposed Location	Facility	Associated Institution(s)	Year
1	Fort Fairfield	Center, North	Community General Hospital	1966
	Houlton	Center, South	Madigan Memorial Hospital	1980
2	Bangor	Center, North	Eastern Maine General Hospital	1975
	(under study	Center, South	General Hospital	1975
3	Augusta	Center, South	Augusta Hospital	1975
	Waterville	Center, North	Thayer Hospital	1970
4	Lewiston	Center	Central Maine-St. Mary's	1968
5	Portland	Center, North	Maine Medical Center	1967
	Biddeford	Center, South	Webber Hospital	1975

Other

Augusta	Augusta State Hospital	Augusta General
Bangor	Bangor State Hospital	Eastern Maine General
Bangor	Private Psychiatric Hospital	Utterback Private
Bangor	Children's Psychiatric	Bangor State Hospital
Pownal	Children's Psychiatric	Pineland Hospital & Training Center
Saco	Children's Services	Sweetser Children's Home
Central Maine	Summer Camp for Emotionally Disturbed and Mentally Retarded Children	Bureau of Mental Health Dept. of Mental Health and Correction

Source: Department of Mental Health and Corrections. *Mental Health Planning, Final Report. New Perspective. Maine's Mental Health Plan.* (Augusta, Maine: 1966), pp. 64-67.

Additional Facilities Proposed for State Outpatient Clinics

and

Psychiatric Units of the Community Hospital

(Probable Construction)

Area	Proposed Location	Name of Association Institution of Hospital	Name of Clinic	Psy. Beds	Year
1	Fort Fairfield	Community General Hosp.	Aroostook Mental Health Clinic	20	1970
1	Houlton	Madigan Memorial Hosp.	Clinic	10	1970
2	Bangor	Eastern Maine General	Eastern Maine Guidance Center	15	1970
2	Bar Harbor	Mt. Desert Island	Mt. Desert Child Guidance Clinic	10	1970
3	Rockland	Knox General Hosp.	Community Mental Health Clinic	10	1970
3	Augusta	Augusta Gen. Hosp. (Augusta State Hosp.)	Community Mental Health Clinic	10	1970
3	Waterville	Thayer Hospital	Kennebec Mental Health Clinic	10	1970
4	Lewiston	Central Maine Gen.	Mental Health Clinic	10	1970
4	Lewiston	St. Mary's General	Mental Health Clinic	10	1970
5	Bath	Bath Memorial Hosp.	Bath-Brunswick Mental Health Clinic	10	1970
5	Brunswick	Bath Memorial Hosp.	Bath-Brunswick Mental Health Clinic	10	1970
5	Biddeford	Webber Hospital	Community Mental Health Clinic	10	1970
5	Portland	Maine Medical Center	MMC Mental Health Clinic	25	1966
*5	Sanford	Henrietta Goodall Memorial Hosp.	Community Mental Health Clinic	10	1970

NOTE: In some instances the numbers of psychiatric beds listed as contemplated are not realistic. This is merely a rule of thumb indicating that there should be hospital beds for short-term care provided by the hospital. Individual experiences will actually set the number. Although the term psychiatric unit is used, it is our hope that the smaller general hospitals will designate general medical surgical beds to be used interchangeably with psychiatric beds. The larger general hospitals may want distinct psychiatric units.

Source: Department of Mental Health and Corrections. *Mental Health Planning, Final Report. New Perspective. Maine's Mental Health Plan.* (Augusta, Maine: 1966), pp. 64-67.

Recommendations for a System of Corrections

Recommendations	Objective	Implementation	Est. Cost
Reorganize central Bureau of Correction to include Division of Probation-Parole and supervision of the county Jail System	To increase effective administration, and improve liason among related services	Legislation	None
Appoint a Citizens Committee to serve as an advisory board to the Bureau of Corrections	To assist in overall planning and implementation	Legislation and funding	$2,000
Indeterminate sentences	Release should be contingent upon progress and prognosis	Legislation and treatment	None
Sentencing to Bureau of Corrections rather than to institutions	Better treatment procedures	Legislation and funding for receiving	None
Statewide standards for classification of inmates (no sooner than 4 weeks after admission)	Improve inmate handling; meet standards of American Correctional Association	Administrative	None
*Multi-Professional Diagnostic and Reception Center	More effective evaluation and treatment planning	Legislation and funding	$800,000
Progress in evaluative research of publishable quality, including purposeful experiments and scientific evaluation of educational program	To attract qualified professionals	Administrative action	None
Internships for graduate students in fields of corrections	Supervised experience for interns and additional staff for institutions	Administrative action	None
College-level in-service training for Correction Officers, including educational leave (e.g. instruction in theories of personality and techniques of counseling)	Raise caliber of inmate care	Legislation for hiring replacements on temporary basis; raised pay levels for successful students	$25,000
Elementary and high school level educational programs	Make up educational deficiencies of inmates	Expanded programs, particularly at Men's Correctional Center	Undetermined
Correspondence courses available for qualified inmates	To augment their education	Administrative action	Undetermined
Where feasible, local community educational facilities and personnel should be utilized	Education of inmates	Administrative action	$5,000

*1975 Priority

Source: Correctional Rehabilitation Committee. *Maine's Treatment of its Public Offenders.* (Augusta, Maine: September, 1968), pp. 27-28.

Recommendations	Objective	Implementation	Est. Cost
Use of Continuing Education Service of University of Maine	Education of inmates and staff development	Administrative action	Undetermined
Expansion at adult facilities of psychological counseling, casework and clinical services with plans of research designs to test results	Upgrade quality of rehabilitative treatment	Minimum of one counselor to each 150 inmates. Three counselors needed at Maine State Prison; two at Men's Correctional Center; and one at Women's Correctional Center	$42,000
At Maine State Prison Hospital, a full-time nurse and two more officers needed for around-the-clock coverage	Necessary inmate care	Funding	$20,000
At Maine State Prison: Additions to the Deputy Warden's building	Necessary inmate care	Funding	$20,000
Full-time Athletic and Recreation Dir. for all institutions	Meet standards of American Correctional Association	Funding and recruitment	$28,500
Full-time librarian available at all correctional facilities	Meet standards of American Correctional Association	Funding and recruitment	$10,500
At Maine State Prison: expansion of recreation facilities outside wall	Although there is a softball field within the Prison, its closeness to granite cliffs and industrial buildings, restrict play. Outside field would be much more beneficial	Funding	$42,000
Multiple-use recreation building at all institutions, particularly at Maine State Prison	Could be used for full evening program for Maine State Prison inmates	Conservative estimate that 8 additional custodial officers would be needed to give this area adequate coverage at the Maine State Prison	$400,000
Full-time Catholic Chaplain at Maine State Prison	Better meet spiritual needs of Catholic inmates	Diocesan intercession	$8,500
A publication in each instiution written for and by population and published on a regular basis	Increase intra-institution communication	Administrative	Undetermined
Additional garage area outside walls at Maine State Prison	Instructional purposes	Garage supervisor needed to serve as officer and vocational instructor	$197,000
Incentive level of remuneration for inmates whose work contributes to financial success or reduction of maintenance cost of work program	Enhance inmate preparation for free world	Funding	$75,000

Source: *Ibid.*, pp. 28-30.

Recommendations	Objective	Implementation	Est. Cost
Vocational rehabilitation units needed at all correctional facilities	Rehabilitate handicapped inmates eligible for vocational rehabilitation services	Professionally trained vocational counselors should be available at all facilities, each having not more than 150 inmates	In-kind services
Work release potentials for community integration of offenders should be explored and developed where feasible	Citizen participation in correctional programs should be encouraged and implemented	Tap resources of Maine State Employment Security Commission for inmate rehabilitation. Use of Citizen advisory groups for inmate vocational training and placement	None
Therapeutic furlough	To augment pre-release program	Study feasibility of home visits for strengthening family ties	None
*Pre-release center: outer-orientation toward extra-mural adjustment	Re-entry into main stream of society; lessening of restrictive effects of confinement	Capital budget and personnel	$150,000
*128 more staff needed at Maine State Prison (1975)	Bring Maine State Prison staff up to average inmate-staff ratio presently enjoyed by other Maine and N.E. Institutions. Provide 40-hour week. Rehabilitative objectives cannot be met in under-manned institutions which present security hazards and custodial problems	Personnel Board action	$700,000
*128 more staff needed at Maine State Prison (1975) (con't.)	Meeting personnel needs in areas of custody is inescapable prerequisite for successful treatment programs		
*61 more staff needed at Men's Correctional Center (1975)	Provide 40-hour work week and meet personnel needs as stated above	Personnel Board action	$329,000
Transfer of female felons through interstate compact	Eliminate costs of operating Skowhegan facility	Legislation	Approx. Annual savings: $88,000
Female misdemeanants under 21 years of age to be housed in a facility located at Stevens School	Reduce costs through use of a combined facility; improve treatment programs	Legislation	Undertermined
State Hospital-based treatment centers for confirmed alcoholic offenders	To aid rehabilitation of this group through Mental Health and Alcoholism Rehabilitation State services	Legislation and funding	Undetermined

Source: *Ibid.*, pp. 30-32.

Recommendations for Juvenile Corrections

Recommendations	Objective	Implementation	Est. Cost
Individual treatment plans based on students' abilities, limitations and past experience	Development of effective programs aimed at preventing further delinquency	Coordinated staffing procedures; additional personnel; funding	Undetermined
*Reception, Diagnostic and Treatment Center for Juveniles	Improved evaluation procedures and programming	Legislation and funding	$300,000
New vocational rehabilitation building at the Boys Training Center	To provide training; sheltered workshop experience	Supplemental appropriation request	$350,000
Expansion of aftercare program at Boys Training Center	More adequate supervision and foster home placement	Appropriation	$92,000
Increased clothing allowance at Boys Training Center	To provide more individualized clothing	Appropriation	$10,000
Develop community volunteer contacts and services regularly within institutions serving youthful offenders	Increase community involvement; aid rehabilitation	In process	In-kind service
Take fuller advantage of Employment Opportunity, MDTA, Youth Corps, Neighborhood Youth, Upward Bound and similar programs	Education, training and work release opportunities	Administrative consultation	None
Cordinate all educational programs with on-going programs within the State Dept. of Education	To aid in vocational education, curriculum development, guidance, special education and general education	Administrative consultation	None
Uniform aftercare program for all youths	To aid reinstatement in the community	Legislation and funding	Undetermined
Period (6 months) evaluation to determine progress in all phases of treatment	To measure progress	Administrative staffing	None
Treatment Coordinator (for both juvenile and adult institutions)	To work out of Bureau of Corrections and provide professional consultation	Administrative and funding	$15,000
Correctional Rehabilitation Specialist (for both juvenile and adult institutions)	To work out of Division of Vocational Rehabilitation and provide professional consultation to institutional units	Administrative and funding in process	In-kind matching
Addition to academic building at Boys Training Center (10 rooms)	Provide needed classroom space	Budget request	$385,000

Source: Correctional Rehabilitation Committee. *Maine's Treatment of its Public Offenders.* (Augusta, Maine: September, 1968), pp. 33-35.

Recommendations	Objective	Implementation	Est. Cost
Medical-psychiatric Unit at Boys Training Center	Provide for the aggressive, highly emotionally disturbed at the Center	Budget request	$400,000
Additional nursing staff at Boys Training Center	To give 24-hour service; assist cottage parents	Budget request	$7,000 first year
Additional staff (61) at Boys and Girls Training Centers	To go on 40-hour week	Budget request	$140,000
Expand staff training and development at Boys and Girls Training Centers	In-service training; educational leave	Budget request	$12,500
Long-term construction plans for Boys Training Center:		Budget request	
All Faiths Chapel			$ 150,000+
Child Care Building			400,000+
Administration Building			155,000+
Maintenance Bldg. and Garage			220,000+
Service Building			200,000+
Development of Cottage Life Facilities			1,500,000+

†Figures based on 1966 estimates.
Source: *Ibid.*, pp. 34-35.

Recommendations for Probation and Parole Services

Recommendation	Objective	Implementation
Upgrade salaries of all Probation-Parole Officers	To bring them in line with salaries being paid elsewhere and hence to aid in recruitment	Legislation and funding
Four additional Probation-Parole Officers for general supervision	Two men, two women to reduce caseloads of present staff	Legislation and funding
District Probation-Parole Officers	Three officers, one in each district office to assist in placement and field contacts	Legislation and funding
Juvenile Probation Officers	At least 8 additional counselors, with responsibility for Juveniles only, to be located 2-each at Lewiston - Auburn, Augusta - Waterville, Bangor-Brewer-Old Town, Aroostook, and other appropriate locations	Legislation and funding
Increase opportunities for in-service training	To enhance professional training and development	Legislation and funding
Probation-Parole Officer in central office	To take charge of research activities and personnel training	Legislation and funding

Source: Correctional Rehabilitation Committee. *Maine's Treatment of its Public Offenders.* (Augusta, Maine: September, 1968), p. 36.

Recommendations for County Jail Services and Facilities

Recommendations	Objective	Implementation	Est. Cost
Work release potentials for community integration of offenders	Citizen participation, especially of prospective employers, should be encouraged and implemented	Tap community resources; establish citizen advisory groups	None
Transfers among local jails or to state correctional or psychiatric facilities to be effected by Bureau of Corrections	To facilitate treatment programs and employment opportunities	Legislation	None
Consolidate housing of jail inmates regionally	Economy of operation; improved treatment	Legislation	Saving of app. $100,000 annually
Establish vocational rehabilitation programs within jails large enough to sustain them	To identify vocational handicaps; provide counseling, job training and placement	Administrative	To be determined
A wall-less facility such as a camp or farm for short-term minimum-security jail inmates	Directly productive work assignments	Administrative	Undetermined
Caseworkers and counselors employed by Bureau of Corrections to be available to county and local jail inmates	Guidance and counseling	Personnel needed in ratio of one to each 150 inmates	Undetermined
The Director of Corrections to ensure that jail deficiencies are corrected within a reasonable time	State law does not define this responsibility clearly	Legislation	None

Source: Correctional Rehabilitation Committee. *Maine's Treatment of its Public Offenders.* (Augusta, Maine: September, 1968), p. 37.

Recommendations for Improving Community Support

Recommendations	Objective	Implementation	Est. Cost
Establish a Public Information and Education Office within the Dept. of Mental Health and Corrections	To conduct a continuing program designed to increase public awareness of correctional rehabilitation needs	Legislation and funding	$25,000
Coordination of community-based programs for ex-offenders	To implement a State-wide project within the Bureau of Corrections, in which local communities undertake the rehabilitation of their own public offenders	Legislation and funding	Total max. outlay for $20,000
Recruitment programs for youth	To interest young people in correctional rehabilition as a career	Administrative	None

Source: Correctional Rehabilitation Committee. *Maine's Treatment of its Public Offenders.* (Augusta, Maine: September, 1968), p. 38.

REGION I

SERVICES FOR THE RETARDED

PARENT ASSOCIATION:

Central Aroostook Association for Retarded Children, Presque Isle
St. John Valley Association for Retarded Children, Madawaska
Southern Aroostook Association for Retarded Children, Houlton
Green Valley Association for Retarded Children, Island Falls

COMMUNITY CLASSES FOR TRAINABLE RETARDED CHILDREN, SPONSORED BY PARENT ASSOCIATIONS

Green Valley School for Retarded Children, Island Falls
Hope Training School, Van Buren
Houlton Class for Trainables, Houlton
Jack and Jill Class, Madawaska
Opportunity Training Center, Presque Isle
Task Training Center, Fort Kent

PUBLIC SCHOOL ELEMENTARY SPECIAL CLASSES:

Caribou	2	Presque Isle	2
Houlton	1	Sinclair	1

CLINICS OFFERING SERVICES TO THE MENTALLY RETARDED:

Aroostook Mental Health Clinic, Community General Hosp., Fort Fairfield
Satellite—Peoples Benevolent Hosp., Fort Kent
Clinic for Pre-School, Mentally Retarded, Thayer Hosp., Waterville
Houlton Mental Health Clinic, Madigan Memorial Hosp., Houlton

NUMBER FROM REGION IN RESIDENCE AT PINELAND:

69

NUMBER ON LEAVE FROM PINELAND:

46

Source: Department of Mental Health and Corrections. *Mental Retardation Facilities Construcion Plan.* Third Annual Report. (Augusta, Maine: 1968), p. 22.

REGION II

SERVICES FOR THE RETARDED

PARENT ASSOCIATIONS:

Dale Evans Chapter, Association for Retarded Children, Dover-Foxcroft
Eastern Maine Friends for Retarded Children, Bangor
Greater Lincoln Friends of Retarded Children, Lincoln Center
Katahdin Friends of Exceptional Children, East Millinocket
Penquis Friends of Retarded Children, Milo
Washington County Friends of Retarded Children, Machias

COMMUNITY CLASSES FOR TRAINABLE RETARDED CHILDREN, SPONSORED BY PARENT ASSOCIATIONS:

Children's Opportunity Center, Brewer
Little Red Schoolhouse, Dover-Foxcroft
Katahdin School for Exceptional Children, East Millinocket

Lincoln Class for Retarded Children, Lincoln
Penquis Friends of Retarded Children, Milo
Washington County Summer Program, Machiasport

PUBLIC SCHOOL ELEMENTARY SPECIAL CLASSES:

Bangor	4	Ellsworth	1
Bar Harbor	1	Lubec	1
Belfast	1	Milford	1
Brewer	2	Millinocket	4
Carmel	2	Orono	1
Machias	1	Searsport	1
Winterport	1	Old Town	1

CLINICS OFFERING SERVICES TO THE MENTALLY RETARDED:
Clinic for Pre-School Mentally Retarded, Thayer Hosp., Waterville
Eastern Maine Guidance Center, Bangor
Family and Child Services of Bangor, Bangor
Mt. Desert Island Child Guidance Assoc., Bar Harbor and Southwest Harbor
Traveling Psychiatric Clinic, Machias and Bangor
Washington County Mental Health Clinic, Down East Community Hosp., Machias

NUMBER FROM REGION IN RESIDENCE AT PINELAND:
175

NUMBER ON LEAVE FROM PINELAND:
115

TRAINING WORKSHOPS:
Sheltered Workshop (Eastern Maine Friends of Retarded Children), Brewer
Manpower Development Training Workshop, Bangor

TEACHER TRAINING:
University of Maine, Orono

Source: Department of Mental Health and Corrections. *Mental Retardation Facilities Construction Plan.* Third Annual Report. (Augusta, Maine: 1968), p. 24.

REGION III

SERVICES FOR THE RETARDED

PARENT ASSOCIATIONS:
Boothbay Region Association for Retarded Children, Southport
Camden Association for Handicapped Children, Camden
Greater Waterville Association for Retarded Children, Waterville
Kennebec Valley Council for Retarded Children, Augusta
Sebasticook Association for Retarded Children, Pittsfield
Skowhegan Area Association for Retarded Children, Skowhegan

COMMUNITY CLASSES FOR TRAINABLE RETARDED CHILDREN, SPONSORED BY PARENT ASSOCIATION:
Camden Class for Trainables, Camden

Hilltop School and Day Care Center, Waterville
Kennebec Valley Training Center, Hallowell
Marie Bradford School, Pittsfield
Mary Donovan Holland School, Skowhegan
Seaside School of Hope, Boothbay Harbor

PUBLIC SCHOOL ELEMENTARY SPECIAL CLASSES:

Augusta	4	North Anson	1
Bristol	1	Pittsfield	2
Camden	1	Rockland	2
East Boothbay	1	Skowhegan	2
Fairfield	2	Thomaston	1
Gardiner	1	Waldoboro	1
Hallowell	1	Waterville	4
Madison	1	Winslow	2
Monmouth	1	Winthrop	1

CLINICS OFFERING SERVICES TO THE MENTALLY RETARDED:

Clinic for Children with Handicaps, Thayer Hosp., Waterville
Clinic for Pre-School Mentally Retarded, Thayer Hosp., Waterville
Kennebec Valley Mental Health Clinic, Thayer Hosp., Waterville
Mid-Coast Mental Health Clinic, Medical Arts Building, Rockland
Psychiatric Services, Vickery Hill Building, Augusta
Traveling Psychiatric Clinic, Rockland

NUMBER FROM REGION IN RESIDENCE AT PINELAND:

201

NUMBER ON LEAVE FROM PINELAND:

121

Source: Department of Mental Health and Corrections. *Mental Retardation Facilities Construction Plan.* Third Annual Report. (Augusta, Maine: 1968), p. 26.

REGION IV

SERVICES FOR THE RETARDED

PARENT ASOCIATIONS:

Franklin County Friends of Retarded Children, Inc., Farmington
Lewiston-Auburn Association for Retarded Children, Inc., Auburn
Oxford County Association for Retarded Children, West Peru
Southern Oxford County Association for Retarded Children, West Peru

CLASSES FOR TRAINABLE RETARDED CHILDREN, SPONSORED BY PARENT ASSOCIATIONS:

Franklin County Training Center, Farmington
Hope Training School, Mexico
Lewiston-Auburn School for Retarded Children, Lewiston
Day-Care Center, Lewiston
Southern Oxford County Class for Mentally Retarded, Welchville

PUBLIC SCHOOL ELEMENTARY SPECIAL CLASSES:

Auburn	4	Livermore Falls	1
Bethel	1	Norway-South Paris	2
Farmington	2	East Wilton	1
Lewiston	5		

CLINICS OFFERING SERVICES TO THE MENTALLY RETARDED:

Child and Family Mental Health Center, Lewiston
Child Guidance Clinic, Farmington
Clinic for Pre-School Mentally Retarded, CMG Hosp., Lewiston
St. Mary's General Hospital, Lewiston
Franklin County Area Counseling Services, Inc., Wilton
Oxford County Mental Health Service, Rumford Community Hosp., Rumford
Stephens Memorial Hospital, Norway
Traveling Psychiatric Clinic, Y.M.C.A. Clubrooms, Auburn

NUMBER FROM REGION IN RESIDENCE AT PINELAND:

150

NUMBER ON LEAVE FROM PINELAND:

78

TRAINING WORKSHOPS:

Lewiston-Auburn Occupational Training Center, Lewiston

TEACHER TRAINING:

Farmington State College, Farmington

Source: Department of Mental Health and Corrections. *Mental Retardation Facilities Construction Plan.* Third Annual Report. (Augusta, Maine: 1968), p. 28.

REGION V

SERVICES FOR THE RETARDED

PARENT ASSOCIATIONS:

Bath-Brunswick Regional Association for Retarded Children, Inc., Bath
Greater Portland Association for Retarded Children, Portland
Pineland Parents and Friends Associates, South Portland
Sanford-Springvale Association for Retarded Children, Sanford
Saco Valley Association for Retarded Children, Inc., Saco
Waban Association for Retarded Children, Inc., Box 355, Wells

COMMUNITY CLASSES FOR TRAINABLE RETARDED CHILDREN, SPONSORED BY PARENT ASSOCIATION:

Elmhurst Center, Bath
Pride Training School, South Portland
Saco Class, Saco
Sanford-Springvale Class, Sanford
Woodfords School for Trainable Children, Portland
Youth Development Center for Retarded Children, Portland

PUBLIC SCHOOL ELEMENTARY SPECIAL CLASSES:

Bath	3	Saco	1
Biddeford	1	Sanford	2
Bridgton	1	South Portland	5
Brunswick	2	Topsham	1
Freeport	1	Wells	1
Gorham	2	Westbrook	2
Gray	1	Windham	1
Hollis	2	York	1
Kittery	1		
Portland	13		

CLINICS OFFERING SERVICES TO THE MENTALLY RETARDED:

Bath-Brunswick Mental Health Association, Inc., Guidance Center, Bath
Regional Memorial Hospital, Brunswick
Child and Family Guidance Association, Biddeford and Sanford
Clinic for Pre-School Mentally Retarded, CMG Hos., Lewiston
St. Mary's Hospital, Lewiston
Diocesan Bureau of Human Relations Services, Portland
Holy Innocent's Child Home-Care Service, Portland
Hub Learning Center, Saco
Traveling Psychiatric Clinic, Portland

NUMBER FROM REGION IN RESIDENCE AT PINELAND:

243

NUMBER ON LEAVE FROM PINELAND:

132

TRAINING WORKSHOPS:

Work Adjustment Center, Portland
Elmhurst Workshop, Bath-Brunswick Area

STATE RESIDENTIAL FACILITY:

Pineland Hospital and Training Center, Pownal

Source: Department of Mental Health and Corrections. *Mental Retardation Facilities Construction Plan.* Third Annual Report. (Augusta, Maine: 1968), p. 30.

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CHAPTER VII

PUBLIC INVESTMENT NEEDS FOR TRANSPORTATION

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CHAPTER VII

PUBLIC INVESTMENT NEEDS FOR TRANSPORTATION

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State funds should be made available to local communities for the building of access roads to all new major recreational areas. The present New Hampshire plan or some modification of the plan should be considered.	209
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There should be a state department charged with the responsibility of providing adequate public urban transportation.	209
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Chapter VII

PUBLIC INVESTMENT NEEDS FOR TRANSPORTATION

Introduction

The purpose of this discussion of the transportation problems in Maine is to help State officials identify areas of need that require public investment.

It is the State officials' responsibility to allocate funds to meet those transportation needs that will be of the greatest economic and social benefit to the state.

This report attempts to summarize, update, and evaluate the principal transportation needs which have been discussed in previous State studies or which have been suggested by appropriate State officials.

The Ports of Maine and Their Potential.

Background of Control Activities

Forty years ago coastal freight and passenger boat services were used extensively by the coastal communities between Boston and the New Brunswick border. When highway bridges at certain major coastal points, such as the Carlton Bridge at Bath, were constructed in the late 1920's, highway transport became more important. During the early 1930's coastal water traffic declined rapidly.[1] By the inception of World War II, this type of traffic fell to almost zero, with the exception of a few coastal tankers. Trans-Atlantic shipping of dry cargo continued, with the chief activity at the Port of Portland. After World War II, 90 percent of intercoastal and coastal shipping in dry cargo vanished from all ports.[2] Although such activity did not return to Maine, the economy of the State did not seem to suffer. Its loss affected only those directly connected with the waterfront. The freight moved via rail and truck over the highway instead of coastal vessels. Passengers traveled at first by rail; then later traffic shifted to buses, private automobiles, and air transportation. Finally, the various Maine railroads abandoned passenger service, one after another, and passenger movement to all except island points was confined to the highways and the air.[3] Ferry service was still necessary between the mainland and certain islands. A few privately operated ferry lines still remain.[4]

Maine Currently Has Two Major Port Facilities with Many Minor Ports Along the Coast.

With the exception of island ferry service, water transportation in Maine is now largely a matter of export and import trade through the State's two principal ports, Portland and Searsport. A major portion of the total tonnage moving through Maine ports now consists of oil discharged at South Portland for the pipeline to Montreal. There is also a limited amount of dry-cargo shipping through the Port of Portland, as indicated by Tables VII-1 and VII-2.

Searsport is Maine's second most active port, handling some oil and a substantial quantity of dry cargo. It also has adequate railroad and trucking service. Additional cargo ports of Maine include Bucksport, Bangor, Rockland, Bath, and Eastport. There are many other ports used by local fishing craft and, during the summer, by cruisers and other forms of recreational boating.[5]

Brief Profile of the Port of Portland

The Port of Portland is currently a major oil transfer point, one of the leading ports in tonnage on the Atlantic Coast of the United States.[6] It also has a lesser amount of coastal tanker trade. Current economic activity in the Portland area, however, has resulted in limited imports of dry cargo and even more limited export shipments. Because of this lack of exports, dry cargo ships are not attracted to the port. This situation has resulted in underutilization of the Maine State Pier and other piers for dry cargo in Portland. There is a consequent underemployment of the labor force of longshoremen who are dependent upon dry cargo for work. The

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[1]Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* Portland, Maine, August, 1969, p. VI-1.

[2]*Ibid., loc. cit.*

[3]John H. Morrison, *History of American Steam Navigation.* New York: Steven Daye, 1958. Chapter VII, pp. 386-405. Re: Coast of Maine and Boston.

[4]The numerous references to federal, state and local documents in the bibliography have not been cross-referenced to individual paragraphs in this study of Maine's transportation needs. The footnotes given refer to the broader view of transportation and logistics problems, applicable to Maine but not written for this purpose.

[5]British Government, *Report of the Committee of Inquiry into the Major Ports of Great Britain.* London: Her Majesty's Stationery Office, 1962, pp. 80, 107, 113, 119, 122-127, 191, 208-209. This is the famous Rochdale report which argues against the public need for development of every possible port, would merge small ports in order to make them more nearly self-supporting, and stresses the need for a few very deep water ports for Britain, each with container and bulk cargo facilities and each well located in relation to interior import destinations and export origins.

[6]New England Division, Corps of Army Engineers, Waltham, Mass., as cited by Edward Langlois, General Manager, Maine Port Authority, in an interview on August 12, 1969.

present annual average income for the typical longshoreman is estimated to be less than $2,000.[7]

To bring the income of these workers up to a satisfactory level would require frequent employment of their services. This might be done under the conditions offered by the present port facilities if the State could attract industries that would import and export a substantial volume of dry cargo by water.

The Port of Portland is served by three major railroads, the Maine Central, the Boston and Maine, and the Canadian National Railways, which provide rail connections and interchange with water carriers, primarily through the freight spurs and other local connections of the Portland Terminal Company. The Maine Central is linked with the Bangor and Aroostook, so that there is convenient and direct freight transport by rail from Portland to all parts of Maine, to New Brunswick, to northern New Hampshire and Vermont, and to Montreal and other points in Quebec Province.

Brief Profile on the Port of Searsport

Searsport offers good port facilities at a rail freight terminus of the Bangor and Aroostook Railroad, providing direct access by one rail freight carrier to Bangor and points throughout northern Maine. It is the only port in Maine to offer these specific advantages to cargo vessels and tankers of the large sizes now common in trans-Atlantic service. In volume and variety, Searsport is estimated to be as important a general cargo port as Portland. (See Tables VII-1 and VII-2.) It serves a very extensive and sparsely populated area, whereas Portland serves a smaller geographical area of much greater population and with many more surrounding urbanized centers.

The Bangor and Aroostook has installed facilities at Searsport which now handle more than 1,500,000 long tons of bulk cargo, gas, and oil annually.[8] Two new cranes have been recently installed at the Bangor and Aroostook pier to enable the port to handle bulk sugar shipments, a newly developed industry that will probably require expansion of facilities in future years.

The agricultural industries and paper mills of Maine use large quantities of bulk products. The handling of these bulk materials, such as salt cake, phosphate rock, salt, and caustic soda, accounts for much of the tonnage received from cargo ships serving Searsport. Bauxite is also an important bulk product which moves through this port. (See Table VII-2.)

Searsport is conveniently close to extremely deep water anchorages. Due south of the Bangor and Aroostook wharves at Searsport, the northern tip of the island of Islesboro splits Penobscot Bay into the East Bay and West Bay sections, each providing very deep anchorages with sufficient water for the largest tankers contemplated for the foreseeable future.[9] Portland possesses a similar advantage through the extremely deep anchorages provided by Hussey Sound and Broad Sound, which lie as close to Portland as the Penobscot Bay anchorages to Searsport.[10]

[7]Portland Shipping Association, Portland, Maine, as cited by Edward Langlois, General Manager, Maine Port Authority, in an interview on August 12, 1969.

[8]ESCO Research, Inc., *A Study for the Maine Port Authority,* Portland, Maine: January, 1969, p. 15.

[9]*Ibid.,* p. 16.

[10]*Ibid.,* pp. 19-20.

TABLE VII-1

ALL TYPES OF EXPORTS, IMPORTS, AND COASTWISE TRAFFIC PORTS OF PORTLAND, AND SEARSPORT IN TONS

Portland, Maine	1964	1965	1966	1967
Exports:				
Dry Cargo	26,563	46,188	164,067	37,436
Imports:				
Dry Cargo	108,213	134,946	119,742	88,021
Petroleum, etc.	15,581,883	15,219,383	18,422,560	17,706,475
Coastwise Traffic:				
Petroleum, etc.	2,442,974	2,685,333	2,619,666	2,720,698
Coal	38,043	37,696	20,514	16,347
Fishmeal	——	——	3,614	4,672
Vessels Served:	645	620	645	620

Searsport, Maine

Exports:				
Dry Cargo	53,115	31,020	36,233	23,927
Imports:				
Dry Cargo	70,879	85,237	40,952	55,505
Petroleum, etc.	579,336	687,390	569,558	524,510
Coastwise Traffic:				
Dry Cargo	64,292	79,262	101,340	54,443
Coal	54,278	50,376	41,412	51,070
Petroleum, etc.	627,614	540,092	696,126	641,067
Vessels Served:	169	160	154	133

Source: Altenburg, Kirk and Company, *Public Transportation in the State of Maine*, Portland, Maine, August 1969, VI-50.

TABLE VII-2

IMPORTS AND EXPORTS OF SELECTED COMMODITIES IN TONS

Port of Portland

IMPORTS 1965		IMPORTS 1968	
Oil	17,904,715	Oil	26,251,302
China Clay	42,098	China Clay	27,469
Coal	37,696	Fishmeal	6,731
Woodpulp	30,139	Woodpulp	4,044
Tapioca Flour	6,935	Casein	2,311
Hides	3,173	Titanium Dioxide	2,270
Titanium Dioxide	2,683	Hides	1,746

EXPORTS 1965		EXPORTS 1968	
Grain	40,980	Flour	806
Flour	2,495		
Steel Pipe	1,516		
Paper Products	1,198		

Port of Searsport

IMPORTS 1965		IMPORTS 1968	
Gas and Oil	1,227,482	Gas and Oil	962,186
Phosphate Rock	79,262	Salt and Coke	146,588
Salt	42,994	Caustic Soda	60,752
Coal	41,412	Coal	40,673
Tapioca Flour	28,221	Tapioca Flour	19,639
Potash	6,962	Sugar	16,277
Bauxite	5,603	Bauxite	12,911
Steel	1,457	Gypsum	12,150

EXPORTS 1965		EXPORTS 1968	
Paper	31,020	Woodpulp	23,956
		Paper	14,437
		Potatoes	8,831

Source: Maine Port Authority, *Annual Activity and Progress Report, Calender Year 1968*, Portland, Maine, 1969, pp. 16-17.

Development of Alternatives for Maine Ports

Specialized port development. The ports of Maine are becoming specialized in the types of cargo they service. The international trend is to develop specialized ports which will compete primarily for the types of cargo in which they specialize.[11] It is probable that Maine ports are already evolving toward a measure of specialization, and that they could be further developed to provide greater efficiencies in the handling of the types of cargo in which they specialize. Such development would require substantial public investment to further the serving ability of each given port in its area of specialty.

With this development, the Port of Portland will probably concentrate on oil, with probable construction of facilities for deep-water supertankers in Hussey Sound or Broad Sound. The dry cargo facilities of the present Port of Portland, however, should not be eliminated. There should be service for the limited dry cargo which moves through Portland, especially as future industrial development might increase the demand for such service.

If the current experiment to bring Alaskan oil through the Northwest passage to the Atlantic Coast of the United States succeeds and if the King Resources Terminal on Long Island in Portland Harbor is used for storage, then there is a possibility that dry cargo in containers might be loaded on the deck of the returning supertankers to supply the need of the oil companies that will be located in northern Alaska.[12]

Searsport will probably continue to develop as a port specializing in dry cargo, because it serves an industrial area with a substantial need for bulk dry-cargo shipments and only limited need for petroleum products. Its facilities for handling dry cargo are presently operating at close to maximum capacity and there has already been discussion regarding the expanding of these facilities.[13] There is the possibility that any dry cargo now shipped in bags will be eventually shipped in large containers. Containerization provides a more efficient use of space and harbor facilities, but it also requires a type of equipment not presently available at Searsport. Should the trend toward containerization affect the types of dry cargo handled at Searsport, the Searsport dock facilities would have to be developed to meet that demand, and it is possible that a certain amount of public investment might be needed.

Serious consideration should be given to facilities for the handling of jet fuel that will be required by the Bangor International Airport for the increasing number of air carriers that will be refueling at this expanding airport. Public investment may be needed to develop facilities at the head of Penobscot Bay for tankers to discharge jet fuel. Serious consideration should be given to the transportation of this fuel to the airfield by the currently existing pipeline or by an enlarged line. In view of the importance of the former Dow Field to the economy of Maine it may be in the best interest of the State to service this need.

The State should provide adequate funds to the Maine Port Authority for technological research so that Maine ports may compete for the water shipments of tomorrow. Such technical research should include participation in studies of handling containerized cargo or utilizing other methods which may arise. Another possibility to be evaluated is whether Maine might feasibly participate in the land-bridge concept of international freight movements. This is a new concept of intermodal shipping, utilizing a combination of land and ocean carriers. One example might be shipment from the Orient to Europe, first via water to Seattle, then by railroad across the continent through Detroit and then via the Canadian National to Portland, and finally by ship to Europe.

Study of the Industrial Foreign Trade Zone concept as it might affect the ports of Portland, Searsport and Machiasport should be continued. Although federal political considerations have held the possibility of such development in abeyance, the studies which have been completed should be kept up to date.[14]

Development of recreational boating. Maine harbor facilities should be developed to stimulate the growth of recreational boating. Maine should capitalize on its natural advantages wherever possible. Although marinas are now found at scattered locations along the coast, there appears to be a need for more frequent facilities and better developed facilities. If recreational boating is to be developed to its full potential, conveniently spaced marinas with adquate docking facilities, boat services, boatels, and restaurants must be provided. Low-cost State loans or partial subsidies might encourage the construction of a sufficient number of such facilities, but it might be economically desirable for the State to invest in, own, and lease facilities along the shoreline

[11]See Footnote 4 earlier in this chapter.

[12]*The Houston Post,* Houston, Texas, August 27, 1969.

[13]Interview with Edward Langlois, General Manager, Maine Port Authority, Portland, Maine, August 12, 1969.

[14]Samuel A. Lawrence, *U.S. Merchant Shipping Policies and Politics,* Washington, D.C.: Brookings Institution, 1966, Chapter 4, on "Changes in the Shipping Industry after World War II," pp. 83-104, Chapter 7, section on "Flags of Convenience," pp. 182-187.

to attract summer boaters to Maine, much as they are now attracted to the Florida waters during the winter.

The development of recreational boating has already been encouraged by public investment in harbor improvements. These existing anchorage areas could benefit by the addition of modern boating facilities. Maine, with its many scenic harbors, has a natural advantage for recreational boating during the summer months. Certain harbors, such as Portland, are so badly polluted that recreational boating is discouraged in the inner harbor areas. If the level of pollution could be brought within reasonable limits, Portland might successfully support marinas and boatels.[15]

Another development of potential economic value to the State of Maine would be the development of vacation cruises along the coast. Federally guaranteed mortgage loans are currently available for financing as much as 87.5 percent of the cost of a first-class cruise ship.[16] Such a ship might be used for cruises out of Florida during the winter. During the summer it could feature cruises along the Maine coast, with stops at resort harbors, such as Boothbay Harbor, Camden, and Bar Harbor. A recreational facility of this type might be combined with air charter flights from such cities as Tulsa and Oklahoma City, bringing vacationers from the hot, dry cities of the midwest to enjoy a couple of summer weeks on the cool Atlantic waters of the Gulf of Maine.

Possible increase in water-borne shipment of mineral products. The current possibility of the development of mining activity in various parts of Maine, particularly in areas near the coast, may create expansion in shipping activities and also industrial development in or near certain ports. Curernt developments in the petroleum industry will probably create expansion in shipping activities. As has already been mentioned, Machiasport probably will develop into a major petro-chemical center and petroleum import port if the federal government eventually grants permission for an Industrial Foreign Trade Zone at Portland, with a sub-zone at Machiasport, and if an oil-import allotment is subsequently granted for Machiasport.

Another potential development may take place at Long Island, just off Portland harbor, provided the Northwest Passage proves to be feasible for the shipment of Northern Alaskan oil to the Atlantic coast. If the current experimental trip through the Northwest Passage proves feasible, supertankers from Alaska may discharge their cargo as they anchor in the deep waters of Hussey Sound by the shore of Long Island. Smaller tankers would then take the oil from Long Island to

[15]Urban Design Group for Greater Portland Chamber of Commerce, *Port of Portland, Maine, Development Plan,* Portland, Maine, May, 1969.

[16]Under Title XI of the Merchant Marine Act, 1936, the Maritime Administration is authorized to insure mortgages not to exceed 87.5% of actual cost on (1) passenger vessels, designed to be of not less than 1,000 gross tons and capable of a sustained speed of not less than 8 knots, to be used solely on inland river and waterways, (2) oceangoing tugs of more than 2,500 horsepower, (3) oceangoing barges of more than 2,500 gross tons, and (4) other vessels of not less than 3,500 gross tons and capable of a sustained speed of 14 knots. On ships not meeting these requirements and on those built or rebuilt with construction subsidy, the agency may insure loans and mortgages for up to 75% of the actual cost of building and rebuilding.

TABLE VII-3

MAINE STATE FERRY TRAFFIC

Ferry	Passengers 1963	1964	1965	1966	1967
Islesboro	37,835	39,014	39,167	42,732	40,056
Vinalhaven	26,724	27,743	28,991	30,589	28,574
Swans Island & Long Island	19,987	20,623	22,265	23,220	24,861
North Haven	12,408	12,557	13,502	14,184	14,259

SCHEDULED SERVICE — 1968

	Number of Daily Round Trips Summer	Winter
Islesboro	9	4
Vinalhaven	3	2
Swans Island & Long Island	6	3
North Haven	3	2
TOTAL ROUND TRIPS	21	11

Source: Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* August 1969, VI-45.

various refineries. It is also possible that a refinery might be constructed at some mainland location linked by pipeline to Long Island. If this latter possibility should occur, it is probable that southern Maine, especially NERC No. 13 Southwestern Subregion, would gain in industrial development, tank car movements, and general freight traffic.[17]

Maine's ferry services will need further public investment. There are several privately owned ferry services between Maine coastal points and offshore islands, in addition to the State Ferry service. The principal private service is provided by the Casco Bay Lines, which operates three ferries for passengers and a ferry for vehicles moving between Portland and the principal islands of Casco Bay. Farther east, there are a number of other small ferry boats carrying freight and passengers to off-shore islands, such as Monhegan and Matinicus.

Although such private services are not normally subsidized by state and local funds, the State is increasingly required to provide and maintain docks and other necessary land facilities. For example, the docking facilities of the Casco Bay Lines are publically maintained although used by private enterprise. In addition the City of Portland is providing the terminal for the proposed Nova Scotia ferry. It is probable that the Casco Bay Lines will request improved facilities for its vehicle ferries at Long Island and Chebeague Island, for servicing vehicles at all tides. It is probable that a similar public investment will be requested for Frenchboro.

If the King Resources oil terminal should be constructed at Long Island, additional facilities would be required there. The facilities on Long Island may be installed by King Resources, but additional land facilities might be requested of the State so that the heavier freight ferries, which the Casco Bay Lines would have to provide, could dock at other points.

State ferries serve Vinalhaven, North Haven, Isleboro and Swans Island- Long Island Plantation. Travel on State ferries, as indicated by Table VII-3, has increased at an average rate of approximately 2 percent per year. Whereas the State ferry equipment is currently in good repair, much of the fleet was obtained around 1960 and will untimately need replacement. There is no indication, however, that substantial replacement will be needed until well after 1975.

The Canadian National Railway Company has operated an international ferry service since 1965 between Bar Harbor, Maine, and Yarmouth, Nova Scotia. This important transportation link, as indicated by Table VII-4, carried 98,444 revenue passengers and 33,999 automobiles, trailers, buses and trucks in 1968.

[17]For explanation of New England Regional Commission Subregions, see the opening paragraphs of Chapter II.

TABLE VII-4

BAR HARBOR-YARMOUTH, NOVA SCOTIA, FERRY "BLUENOSE"

	1965	1966	1967	1968
Revenue Passengers	93,525	94,448	83,248	98,444
Automobiles	27,644	27,338	24,138	28,549
Automobile Trailers	519	645	789	1,007
Buses	153	194	161	210
Trucks:				
Straight Trucks	1,869	1,897	2,111	2,123
Trailer Trucks	1,656	1,737	1,659	1,510

Source: Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* Portland, Maine, August 1969, VI-46.

A new ferry service between Portland and Nova Scotia is scheduled to begin in July 1970. This service will require substantial public investment for terminal and dock facilities, and also for land acquisition for parking and related needs.

Airports and Air Travel

During the past ten years, air passenger traffic in the United States has shown a dramatic rise in growth, as indicated by Table VII-5. The "Airways" category in the *Statistical Abstract* includes private pleasure and business flying, as well as revenue passenger miles. The *Aviation Handbook,* however, lists only the revenue passenger-miles in Scheduled Domestic Service of the Certified Route Air Carriers. Accordingly, the difference in the totals is accounted for by pleasure, business, and non-certified flying, which has ranged between 10 and 11 percent of the total passenger-mile during the period between 1958 and 1965.

TABLE VII-5

AIRWAYS PASSENGER MILES IN THE UNITED STATES
(in millions of passenger-miles)

Year	Statistical Abstract	Aviation Handbook	Difference	Percent
1954	19,568	16,802	2,766	14.2
1955	22,741	19,852	2,889	12.7
1956	25,523	22,398	3,125	12.3
1957	28,128	25,379	2,749	9.8
1958	28,552	25,375	3,177	11.1
1959	32,566	29,308	3,258	10.0
1960	33,958	30,557	3,401	10.0
1961	34,599	31,062	3,537	10.2
1962	37,491	33,623	3,868	10.3
1963	42,765	38,457	4,308	10.1
1964	49,185	44,141	5,044	10.3
1965	58,083	51,887	6,196	10.7

Source: Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* Portland, Maine, August 1969, III-1.

An indication of the future magnitude of air travel in the nation was given during hearings on airport needs and problems in 1967 by the Senate Aviation Sub-Committee. It was estimated airports will be called upon to accommodate 200 million passengers by 1971, and 454 million passengers by 1977.[18] Nationwide increases expected in air cargo are estimated to be about 75 percent greater in 1970 than they were in 1965, and about 162 percent greater in 1975 than they had been in 1965, as indicated by Table VII-6.

[18]Wilbur Smith & Associates, *A Master Development Plan, Auburn-Lewiston Municipal Airport,* Auburn, Maine, 1968.

TABLE VII-6

U.S. DOMESTIC AIR PASSENGER-MILES
(in Certified Carriers)

Year	Actual or Estimated	Billion Passenger-Miles
1965	Actual	51.8
1970	Estimated	90
1975	Estimated	135
1980	Estimated	185
1985	Estimated	250
1990	Estimated	337

Source: Lockheed California Co., *Air Traffic Demand, 1967-1990,* Burbank, California, 1966.

As pointed out in Table VII-5, private aircraft usage is also on the increase, and according to Lockheed estimates, it will probably increase at a slightly greater rate than in the past.[19]

The number of scheduled airline passengers has also been increasing, Maine recording more than double the number of passengers in 1967 than had been totaled for 1957, as Table VII-7 indicates.

Aviation Needs in Maine[20]

Because of its geographic position, Maine needs a level of air service greater than that of a more centrally

[19]Lockheed California Co., *Air Traffic Demand, 1967-1990.* Burbank, California: 1966. Separate forecasts made for Boston (only New England point given separately), for domestic and for International Air Travel by Occupation, Income and Major City.

[20]For a fuller discussion of this topic, see Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* Portland, Maine, August, 1969.

located state. Without such service certain Maine industries will have difficulty competing with areas farther south and west. With the high quality of air service to supplement basic surface transport systems, Maine's cities and towns will have a better chance to grow and prosper equally with the rest of the nation. Maine also needs direct air service to nearby Canadian cities.

TABLE VII-7

SCHEDULED AIRLINE PASSENGERS

	National (Domestic) (000)	Maine (Total)	Maine (Intra-State)
1950	14,223	82,308	17,232
1951	N.A.	N.A.	N.A.
1952	20,623	107,173	16,554
1953	22,557	111,657	13,702
1954	25,289	125,584	17,654
1955	28,955	155,988	18,120
1956	33,678	167,337	15,054
1937	36,721	179,685	15,666
1958	37,017	166,582	14,170
1959	38,863	197,880	11,300
1960	38,889	188,180	8,900
1961	40,143	192,440	9,960
1962	42,759	174,320	5,860
1963	49,047	189,320	6,740
1964	55,697	216,380	7,740
1965	60,594	263,120	10,440
1966	70,069	308,260	8,440
1967	88,435	367,840	7,200

N.A. — Not Available.

Source: Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* Portland, Maine, August 1969, VI-54.

Maine currently has a level of air service below that of many other states. Maine is the only State in the Union without a scheduled regional air carrier, now that Northeast Airlines has become only a trunkline carrier, a situation that may become less important as third level carriers develop.[21] Practically all flights serving northern New England cities now terminate in Boston, where air passengers must transfer to continue to other destinations. The State of Maine is served by one trunk carrier and three air-taxi carriers, as indicated by Maps VII-1 and VII-2. There is, of course, air mail service by Northeast Airlines, together with a recently established air-taxi carriage of first class mail from Portland to Albany.[22] Currently Northeast Airlines is seeking permission from CAB to permit Executive Airlines use of the Northeast franchise to take over service to Augusta-Waterville, Auburn-Lewiston, and Rockland airports.[24]

Airports in Maine

Maine has five airports with year-round certificated commercial air service and six others providing air taxi service, as shown on Maps VII-1 and VII-2. There are also numerous small airfields without commercial service.[25] The national airport plan recognizes 37 officially designated airports in Maine and calls for construction of 22 additional airports.[26] All-weather jetport facilities for the major population centers are located in Portland, Bangor, and Presque Isle. Each of these serves its respective geographical region of the state.

[21]See full page advertisement in *Portland Press Herald* and other Maine daily newspapers on August 29, 1969.

[22]Interstate Commerce Commission, *Air-Truck Coordination and Competition,* Washington, D.C., U. S. Government Printing Office, Statement 67-1, February, 1967. (See the 16 conclusions on pp. 1-5 and the project developments to 1975 and beyond in Chapter IV, pp. 73-81.)

[23]Robert F. Stoessel, *Assuring Air Cargo's Future,* Toronto, Canadian Transportation Research Forum, May, 1969.

[24]See full page advertisement in *Portland Press Herald,* August 29, 1969.

[25]Aircraft Owners and Pilots Association, *The Truth About General Aviation,* Washington, D.C., February, 1968. (Note the table on page 8 concerning congestion and federal air traffic control.)

[26]Federal Aviation Administration, U.S. Department of Transportation, *National Airport Plan FY 1968-1972.*

The airport at Portland is in the process of expanding its all-weather capability. With this improvement, together with the new terminal, the enlarged runways, taxi strips, and parking aprons, Portland will have a thoroughly modern jetport.

Both Bangor International Airport and the Presque Isle Airport are former military air bases with large enough runways for modern jetport service. Both airports, however, will need further public investment for repairs and improvements. The runway at Presque Isle has deteriorated and needs resurfacing, sub-work, and drainage. Two $100,000 grants from the Federal government were recently awarded for instrument landing equipment and lighting equipment at Presque Isle.

The Bangor International Airport is an excellent facility serving Central Maine and providing Maine an opportunity to compete in the international air transport service. It is particularly suited to international air carriers which wish to use a low-density airport for their overseas terminals. The airport is also ideal for SST passenger flights which will fly at supersonic speeds over the water areas and then fly at less than the speed of sound over land. To attract this level of airport usage, some public investment will be needed for capital expenditures.

Bangor has recently been used as a refueling stop by some air traffic from Europe. The first direct transportation link with the mid-west by flights between Bangor and Chicago, with stops at Portland; Manchester, New Hampshire; and Burlington, Vermont, has recently been established by Northeast Airlines. Although traffic will at first be light along the route, it should stimulate business with Midwestern concerns and also open up Maine's recreational areas to Midwestern vacationers.

Farther down the line in Bangor's potential is its possible use as the location of a major airline's flight school. The location has many advantages, primarily low-density air space available for training flights.

The upgrading of Maine's feeder-type airports suitable for recreational flying and company planes would be beneficial to the expansion of Maine's recreational industry. In addition, it must be remembered that certain corporations limit their choice of plant location to areas where airports suitable for company aircraft are available. Thus, the State should remain responsive to the demand of improved small airport facilities.

The problem of developing or relocating the Augusta-Waterville airport is one that needs to be resolved. The present airports at Augusta and Waterville will be inadequate for the demands placed upon them by proposed Northeast Airlines equipment. Furthermore, the Federal Government has been unwilling to provide federal funds for expansion at the Augusta site. Efforts have been made to find a new site acceptable at both Augusta and Waterville.[27]

Some promoters of Franklin County recreational areas support the concept of a Mountain Resorts Airport Authority that would be empowered to issue up to $20 million in private bonds to provide a jet airstrip for the Sugerloaf and Saddleback ski areas. Although this project would be presumably undertaken by private investment, it is possible that the State will be called upon for a portion of the cost. There is no indication, however, that the traffic generated by a jetport in Franklin County ski area in NERC No. 12 would justify the investment.[28]

It would appear more feasible to serve the Franklin County recreational area by improving the airport facilities at Norridgewock and providing all-weather capabilities for third-level carriers. The air passenger skier can now gain access to the slopes through the use of a rental car if he lands at Portland. Similar car-rental service could be available at Norridgewock to provide quick access to the Franklin ski area.

In our opinion, the greatest support the recreational areas can get is not from air travelers, but year-round motor vehicle visitors. Improving the highways will better serve recreational communities than the construction of a jetport.

Railroads

Like all railroads, those of Maine have lost traffic to rival modes of transportation. Some authorities suggest that the chief reason for such loss, both of passengers and freight, has been the unbalanced support given to other forms of transportation by both federal and state governments. This, however, is not the only reason. There have been technological developments, population shifts, industrial migrations, and the growing demands of some shippers and travelers for faster service at higher costs, and of others for lower cost services. Maine railroads have also been handicapped by a slow growth in the State's population and in the slow development of industries that generate a heavy amount of rail freight

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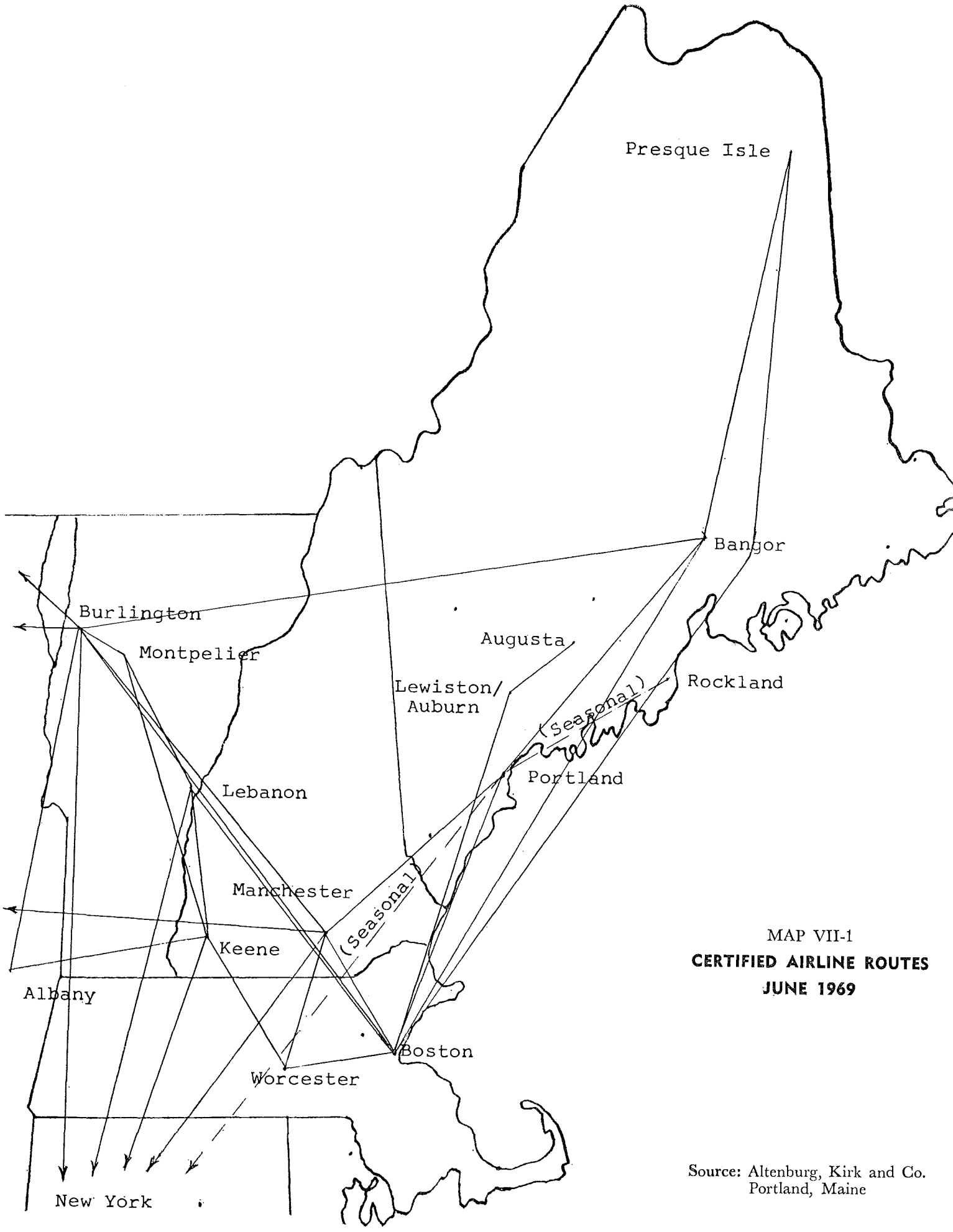
[27]Maine State Transportation Commission, *First Annual Report to the Governor and Legislature,* Augusta, Maine, March 1967, p. 5.

[28]New England Regional Commission coding of Subregions in Maine is explained at the beginning of Chapter II.

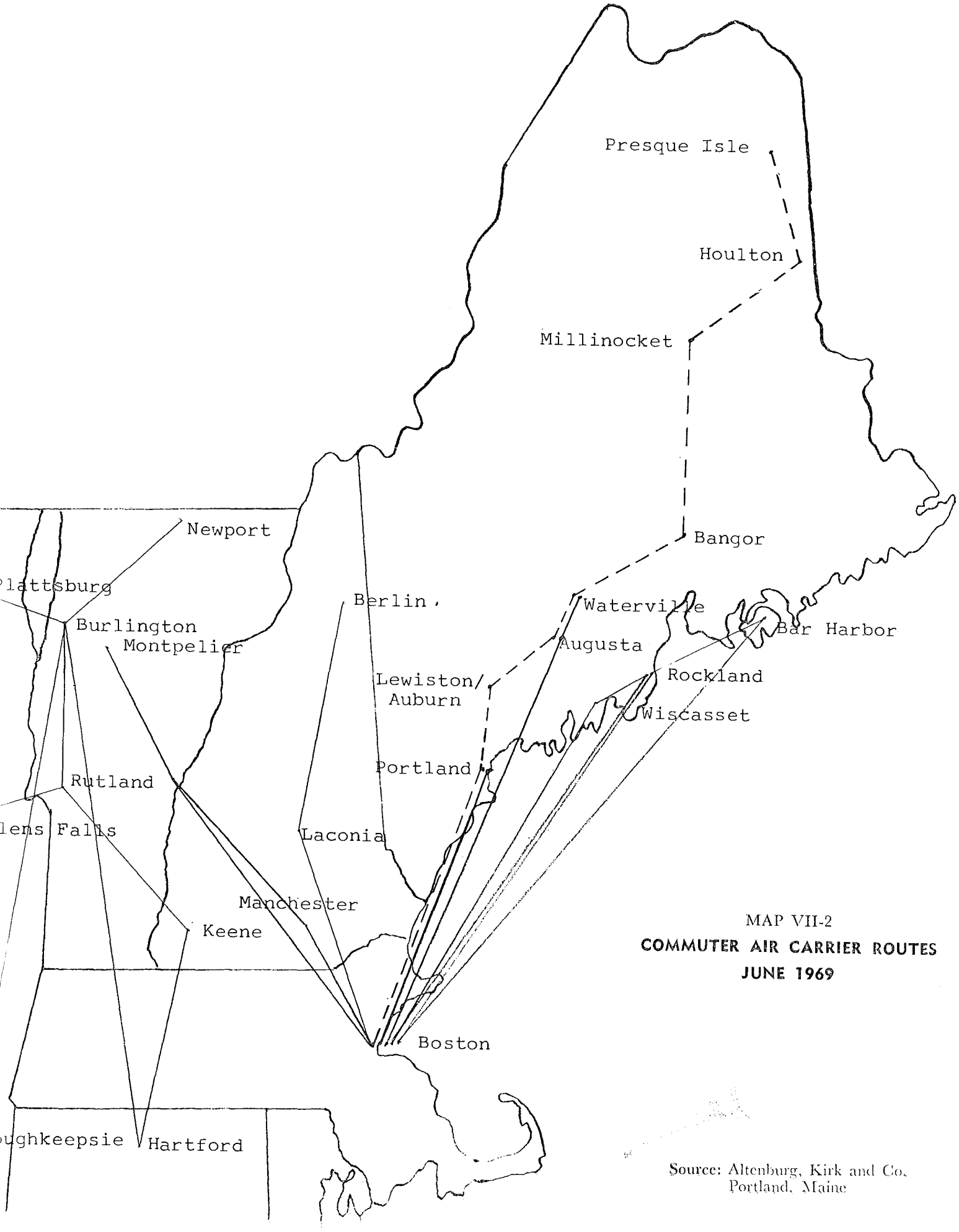


MAP VII-1

CERTIFIED AIRLINE ROUTES

JUNE 1969

Source: Altenburg, Kirk and Co.
Portland, Maine



MAP VII-2

COMMUTER AIR CARRIER ROUTES

JUNE 1969

Source: Altenburg, Kirk and Co.
Portland, Maine

traffic.[29] With the exception of Maine's expanding paper industry, growth in manufacturing has been concentrated in industries that do not generate large tonnages of rail traffic or whose products find some other form of transport preferable in their scheme of distribution. Under these conditions, Maine railroads have been unable to procure enough traffic to prevent curtailment of rail operations. (See Table VII-8.)

The reasons for the loss of passenger traffic are well known. Competition from other forms of transportation is the major factor accounting for the decline and the final abandonment of the major portion of passenger train service in Maine. The railroads have simply been unable to cope with the privately owned automobile and its great advantages of privacy, convenience, and flexibility. Bus lines, with their lower fares and relatively frequent schedules, have much of the market formerly served by passenger trains. Commercial air transportation with its greater advantage of speed has also taken traffic away from the railroads.

The private automobile is the major mode of transportation for the typical vacationer who needs to carry bulky camping and sporting equipment and who desires to visit various areas throughout the State. There are, however, a number of seasonal visitors to the State who come for the entire summer and either occupy their own homes or stay for an extended time at some of the hotels, motels, or boarding houses at various points. Many visitors of this type are elderly and unable or unwilling to fly.

Maine's potential for attracting passenger traffic on railroads is so small that its rail needs center around freight services vital to industries. Certain lines serving the coastal areas should generate increased freight traffic if the petroleum industry locates in the Washington County area. On the other hand, many freight trains serving remote areas of the State will become less profitable. As the company operating such trains projects future costs and revenues, it may be tempted to petition to discontinue service. Public investment, as has happened already in Vermont will be needed, as explained in the March-April 1969 issue of the *New England Economic Review*.[30]

Rail service in Maine should be continued whenever it is really needed to support established industry in remote areas. Maine should adopt the Vermont Plan and maintain rail freight transportation in such cases by investing in branch line tracks and right-of-way property, charging a reasonable fee to the agency moving the freight cars.[31]

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[29]Norman S. Fieleke, "Toward A More Efficient (New England) Railroad System," *New England Economic Review,* March-April 1969, Federal Reserve Bank of Boston, pp. 2-20. (Conclusions on p. 20 favor the merger of New Haven into Penn Central and the pending merger of the Boston and Maine into Norfolk and Western—Chesapeake and Ohio.)

[30]*Ibid.,* page 16, refers to Rutland Track acquisition by the State of Vermont.

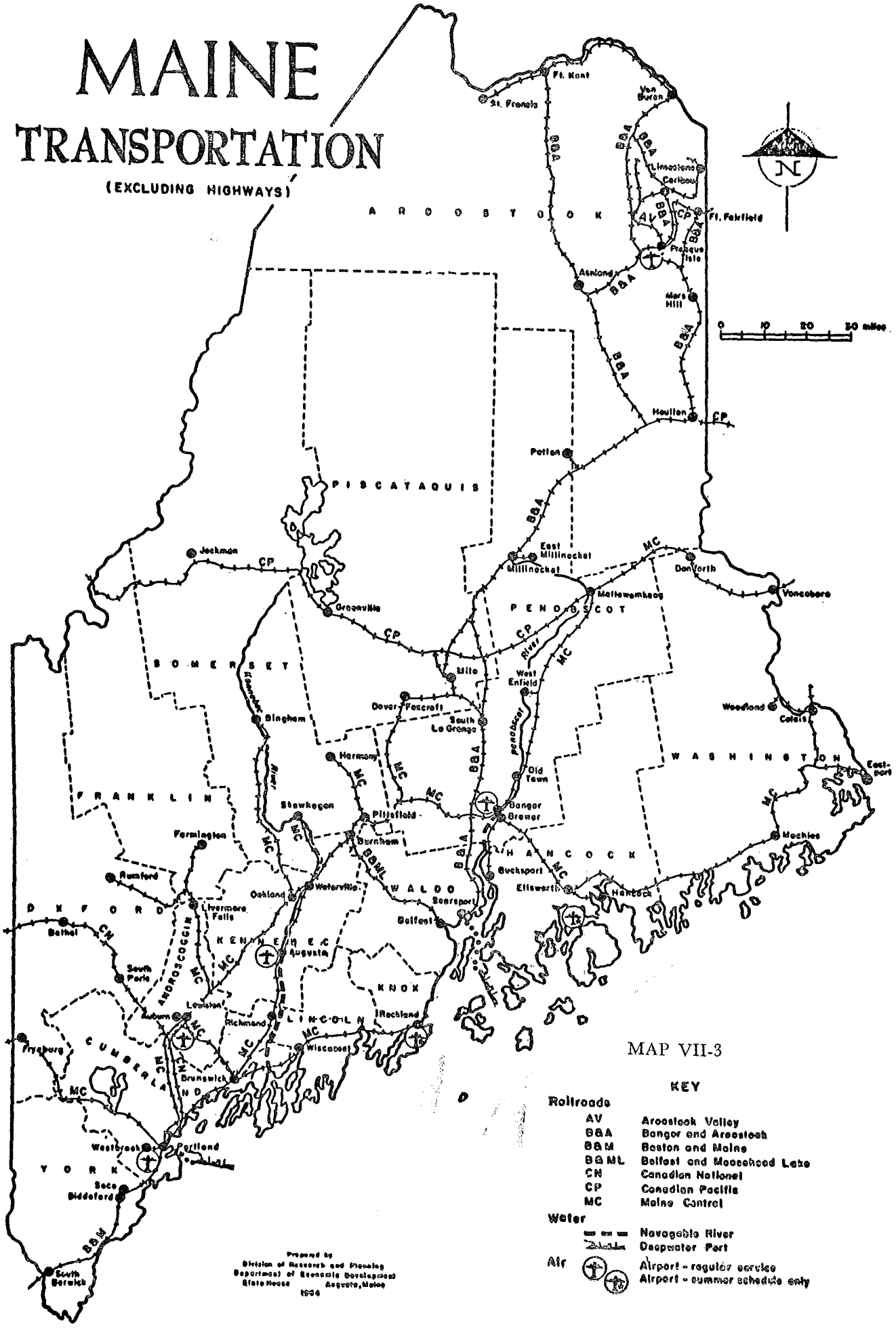
[31]Francis S. Doody, Ph.D., Project Director, *The Economic Impact of the Discontinuance of the Rutland Railway,* Bureau of Business Research, Boston University, Boston, 1964, Chapter 12. (This exhaustive interview-type study concluded that discontinuance did not result from decline in the region served, but because only low-value, high-bulk commodities remained as shipments by rail. Discontinuance caused little indirect unemployment, but transport costs by truck increased.)

TABLE VII-8

RAILROAD MILEAGE OPERATED IN MAINE

	1950	1955	1960	1965
Canadian National Railway Co.	90	90	90	90
Canadian Pacific Railway Co.	234	234	234	234
Boston & Maine Corp.	63	46	46	46
Maine Central RR. Co.	838	801	794	788
Bangor & Aroostook RR. Co.	602	602	595	544
Aroostook Valley RR.	32	32	32	32
Belfast & Moosehead L. RR. Co.	33	33	33	33
Total Mileage	1,892	1,838	1,824	1,767

Source: Public Utilities Commission.


MAINE
TRANSPORTATION
(EXCLUDING HIGHWAYS)
A R O O S T O O K
P I S C A T A Q U I S
P E N O B S C O T
S O M E R S E T
F R A N K L I N
W A S H I N G T O N
H A N C O C K
W A L D O
K E N N E B E C
K N O X
L I N C O L N
C U M B E R L A N D
Y O R K
Ft. Kent
St. Francis
Van Buren
Limestone
Caribou
Ft. Fairfield
Presque Isle
Ashland
Mars Hill
Houlton
Patten
Jackman
Greenville
East Millinocket
Millinocket
Mattawamkeag
Danforth
Vanceboro
Milo
West Enfield
Dover-Foxcroft
South La Grange
Bingham
Harmony
Old Town
Bangor
Brewer
Pittsfield
Skowhegan
Farmington
Dexter
Dixmont
Burnham
Waterville
Oakland
Rumford
Buckspport
Ellsworth
Hancock
Mechias
Eastport
Woodland
Calais
Belfast
Searsport
Livermore Falls
Bethel
South Paris
Augusta
Auburn
Lewiston
Richmond
Rockland
Wiscasset
Brunswick
Freeport
Westbrook
Portland
Saco
Biddeford
South Berwick
0 10 20 30 miles
MAP VII-3
KEY
Railroads
AV Aroostook Valley
BBA Bangor and Aroostook
BBM Boston and Maine
BBML Belfast and Moosehead Lake
CN Canadian National
CP Canadian Pacific
MC Maine Central
Water
Navigable River
Deepwater Port
Air
Airport - regular service
Airport - summer schedule only
Prepared by
Division of Research and Planning
Department of Economic Development
State House Augusta, Maine
1964

Highway Transportation

Most transportation of people, goods, and services in the State of Maine regularly takes place on a system of public roads and highways comprising, according to Table VII-9, a total of 21,005 miles in 1965. Although there was a decline in total mileage between 1950 and 1965, the decrease was represented in "town ways." During this period of decrease in the generally poorest classification of roads, a 16 percent increase in the mileage of state highways took place, and an increase of almost 16 percent in mileage was gained by the secondary highways in the Federal-Aid System.

The extension of the Maine Turnpike, which more than doubled its length between 1955 and 1960, together with the building of more than half the projected Intersate 95 system in Maine between 1960 and 1965, represented the greatest transportation advances of this period. Under normal driving conditions during daylight hours, not only passenger automobiles, but buses and heavy, freight-laden trucks, now became able to operate safely at uninterrupted speeds of 70 miles per hour between the entrance tollgate at Kittery and the exit tollgate at Augusta, 113 miles to the northeast. As Table VII-9 indicates, the freeway extension beyond the end of the Maine Turnpike was rapidly pushed forward, past Waterville and the northeastern limits of NERC No. 13, and then east across NERC No. 12 approximately to Bangor by 1965.

During the period between 1950 and 1965, motor vehicle registrations increased far more rapidly than the population. According to the Bureau of the Census, the population of Maine increased only 6.1 percent between 1950 and 1960.[32] During this same ten years, as Table VII-10 indicates, the number of motor vehicle registrations in Maine increased from 304,021 to 426,941, or approximately 39 percent, more than six times as great a proportionate increase as that of the population.

During the decade from 1950 to 1960, where Table VII-10 indicates a 39 percent increase in registered motor vehicles, Table VII-9 indicates an increase of only 10 percent in the mileage of State Highways, including an increase of only 2 percent in the Federal-Aid System. The situation has improved slightly since 1960, according to Table VII-9, primarily because of the I-95 extensions.

Traffic on the Maine Turnpike has increased dramatically since 1955. In 1956, when the Portland to Augusta extension was opened, the traffic count jumped 40 percent, from 2,460,767 to 3,474,381. More recently, the freeway extension of I-95 has encouraged even more traffic, the 1967 total of 6,180,811 turnpike vehicles being almost precisely 250 percent of the 1955 total.[33]

[32]U.S. Bureau of the Census, *Statistical Abstract of the United States: 1966,* (87 ed), Washington, D.C., 1966, p. 13.

[33]Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* Portland, Maine, August 1969, VI-18.

TABLE VII-9
MILEAGE OF PUBLIC ROADS IN MAINE
Classified by State and Federal-Aid Systems

	1950	1955	1960	1965
State Systems				
State Highway	3,147	3,163	3,477	3,662
State Aid	7,721	7,927	7,712	7,701
Town Ways	10,976	9,292	9,271	9,259
Turnpike	53	53	112	113
Reservation Roads	139	165	204	270
Total	22,036	20,600	20,777	21,005
Federal-Aid System				
Interstate	—	—	73[2]	167[3]
Primary	1,648	1,631[1]	1,618	1,653
Secondary	2,267	2,252	2,297	2,507
Total	3,915	3,883	3,988	4,327
Not on Federal-Aid System	18,121	16,717	16,789	16,678
Grand Total	22,036	20,600	20,777	21,005

[1]Includes 299 miles carried as Interstate Traveled Way.

[2]Includes 62 miles on Maine Turnpike. 239 miles on Projected Locations not included.

[3]Includes 59 miles on Maine Turnpike. 145 miles on Projected Locations not included.

Source: Maine State Highway Commission in letter to ESCO.

TABLE VII-10

MAINE MOTOR VEHICLE REGISTRATIONS BY TYPES

	1950	1955	1960	1965
Passenger	202,777	237,799	263,342	338,503
Commercial Truck	64,197	67,651	66,458	74,450
Farm Truck (1)	—	—	5,042	5,946
Trailer	20,243	27,712	42,615	66,302
Convertible (2)	6,464	14,297	38,043	—
Taxi	1,195	1,089	718	702
Bus	395	315	460	278
Tractor	5,867	6,750	8,110	9,595
Coach	272	277	277	235
Motorcycle	2,581	1,448	1,862	5,034
Side Car (3)	30	17	14	—
TOTAL VEHICLES	304,021	357,355	426,941	501,045

(1) Farm truck category first applied in 1956; had previously been included in commercial truck totals.

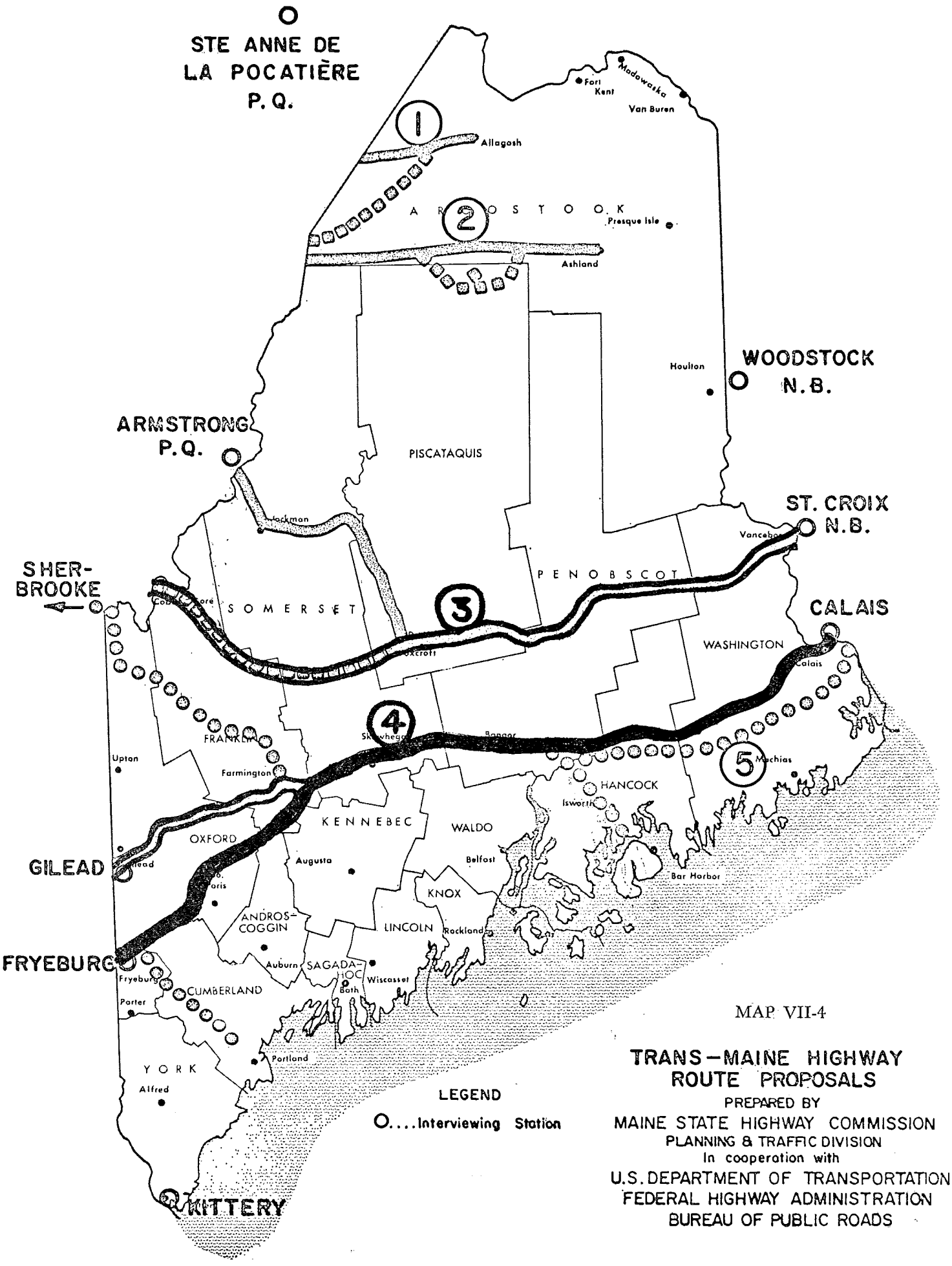
(2) Convertible category discontinued at the end of 1961; subsequently have been included in passenger totals.

(3) Side Car category eliminated at the end of 1961. Insufficient number of units to warrant continuance.

Source: State Director of Motor Vehicles.

Although the I-95 extension of the Maine Turnpike, as well as the I-95 sections in several places between Portland and Brunswick, together with a freeway spur from Brunswick to Bath, has undoubtedly been of great benefit to Maine as a whole, and particularly to the cities along the route, the State Highway funds required to supplement the federal funds have forced a cut-back on other needed State Highway construction. The cut-back in federal funds ordered by President Nixon may therefore make possible certain State Highway improvements, as the following newspaper article by Frank Sleeper, Business Reporter for the *Portland Press Herald-Express,* indicates:

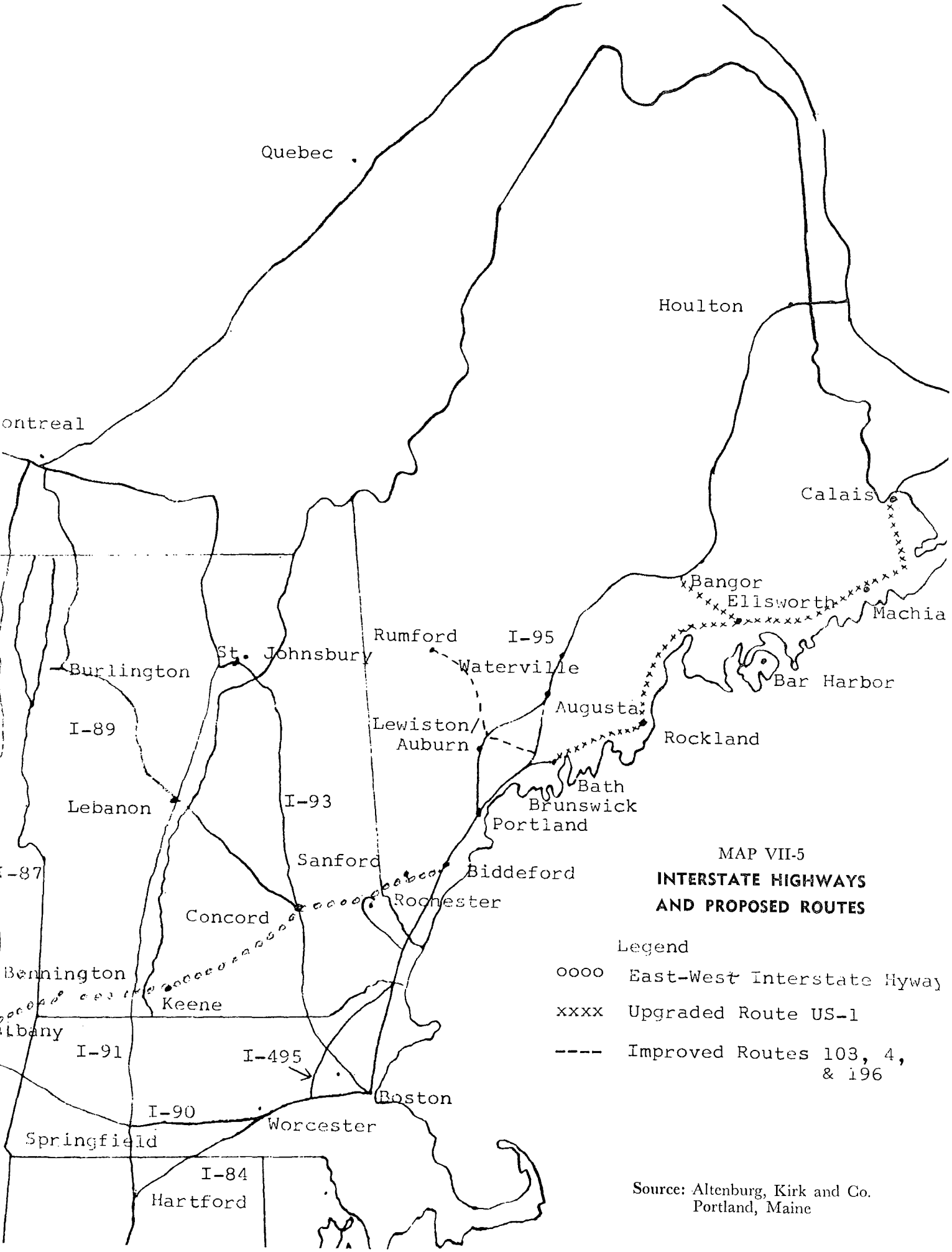
> Interstate highway construction, especially in the Portland area, could slow down considerably in the next year or so if the 75 percent cutback on federal construction funds continues that long.
>
> David H. Stevens, chairman of the State Highway Commission, said . . . that it looks "practically certain" to him that federal funds for highway construction will come under the cutback as of Oct. 1.
>
> In Maine, that is likely to mean few—maybe none—new contracts for interstate highway construction until the cutback ends.
>
> Maine is now getting $7 to $8 million in federal funds a quarter for highway construction, Stevens told the National Highway Week group at a Maine press luncheon in the Lafayette Town House.
>
> "As we see it now, we'll only be getting $5 million for the next three quarters of the fiscal year under the cutback program," he said.
>
> "This will mean a very drastic reduction in any new work," Stevens asserted.
>
> If there's only the limited amount of federal funds, most of them will be used on road projects where half the money is federal and half is state.
>
> That means that most new interstate contracts—some of them for projects already under way which have been broken up into several contracts—just won't go up for bid.
>
> That is because the interstate construction is financed by 90 percent federal and only 10 percent state funds.



MAP VII-4

TRANS-MAINE HIGHWAY ROUTE PROPOSALS

PREPARED BY
MAINE STATE HIGHWAY COMMISSION
PLANNING & TRAFFIC DIVISION
In cooperation with
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
BUREAU OF PUBLIC ROADS



MAP VII-5

INTERSTATE HIGHWAYS AND PROPOSED ROUTES

Legend

oooo East-West Interstate Hyway

xxxx Upgraded Route US-1

---- Improved Routes 103, 4, & 196

Source: Altenburg, Kirk and Co.
Portland, Maine

"We would want to have the federal funds do the most good possible," Stevens said, "and that's why we'd do the projects where only half the financing comes from the federal government."[34]

The cutback on the interstate freeway contracts may therefore help the State to improve certain other highways that have long been overdue for improvement. One example is Route 302, a federal-aid highway from Portland to the New Hampshire line beyond Fryeburg. Such roads should be improved by public investment to provide for the vehicles which are using them each year in increasing numbers.

The NERC No. 12 Western Subregion is badly isolated from each access to the Maine Turnpike and the I-95 freeway. Better access is needed from the Augusta interchange of the Turnpike to Farmington and the recreational area to the northwest of that town. A high-speed road appears to be badly needed between the Maine Turnpike near Gray and the Norway-Paris and Rumford areas of NERC No. 12. Another high-speed route appears to be needed from the Turnpike near Biddeford to Sanford, with an ultimate highway running north, roughly parallel to the New Hampshire border, to Bethel, Upton, and the Quebec border. Besides serving an important recreational area in NERC No. 12, such a route would give easy access to Quebec Province at a point not very far from Sherbrooke, the present terminus of L'Autoroute des Cantons de l'Est, a turnpike running directly to Montreal. There is no rapid route from Maine to Montreal at present, yet Montreal is much larger than Boston and much closer than New York City.

There are other proposals to link Maine with Canada by means of better roads. The chief proposals are indicated by Maps VII-4 and VII-5. The northern routes marked on Map VII-4 would not tend to attract traffic from the more densely populated areas of Maine unless high-speed feeder highways were constructed, for these northern routes do not tap any heavily populated areas in the State.

A proposal has been made for a 200-mile improved highway from Vanceboro on the New Brunswick border on the east, following the general right of way of State Route 6 as it runs west across the State to the Quebec border and then, presumedly by the Quebec highway system to Sherbrooke and then Autoroute to Montreal. As Map VII-4 indicates, this route would give better access to Montreal from the Bangor area than it would from most of the populated areas of NERC No. 13.

A more southern route from Calais to Fryeburg, marked as Number 4 on Map VII-4, would pass through more of the populated areas of Maine and might serve more people than any of the northerly routes, but the very mountainous regions west of Fryeburg in New Hampshire and Vermont would make access to Montreal somewhat circuitous. Regarding this route, the Altenburg, Kirk and Co. study comments:

> The section of the East-West Highway proposal between Bangor and Calais was the subject of a detailed feasibility report prepared in 1968 by Edwards and Kelcey, Inc., for the State Highway Commission. This report concludes that an express highway from Bangor to Calais would be premature at this time. It further concludes that Route U.S. 1 should gradually be rebuilt to express highway standards, starting with by-passes around the urban and congested areas.[35]

As Map VII-5 indicates, the Altenburg, Kirk and Co. study emphasizes the potential value of a highway of Interstate freeway standards which would connect with the Maine Turnpike at the Biddeford Interchange, pass through Sanford; Concord, New Hampshire; Keene, New Hampshire; Bennington, Vermont; and Albany, New York.

The Study emphasizes the importance of a freeway from the Biddeford Interchange of the Turnpike to Sanford. It explains that a given table:

> . . . shows the ranking of the top 20 city pairs in Maine, developed from the Community of Interest data . . . It will be seen that the first city pair not connected by Express Highway is No. 7, Portland-Sanford. This would indicate that the southern route of the proposed East-West highway might best serve the intrastate travel requirements of Maine residents. This route might also be used for an inter-state bus route and provide Portland-Sanford bus service which is not now available.
>
> When a detailed feasibility study of the East-West highway routes is made, an alternate to the southern route as outlined in the New England Regional Commission Report should be considered. Instead of the segment in Maine running from Rochester, New Hampshire, to Sanford to Gorham to Westbrook to Portland,

[34] *Portland Press Herald,* September 23, 1969, p. 1.

[35] Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* Portland, Maine, August 1969, VI-25.

the alternate would run from Rochester, New Hampshire, to Sanford to Biddeford, where it would connect with the Maine Turnpike.[36]

A preceding paragraph on the same page of the Altenburg, Kirk and Co. study points out that the proposed freeway from Albany through Bennington, Keene, Concord, Sanford, and Biddeford would save from 50 to 80 miles when compared to the present route to Albany from southern Maine by way of the Massachusetts Turnpike. For vehicles traveling at the highest permissible turnpike speeds, this could mean a saving of almost an hour and a half in time.

Three other types of Maine roads appear to be in need of added public investment. State funds should be made available to local communities for the building of access roads to all new major recreational areas. The current New Hampshire plan or some modification of that plan should be considered by the Maine legislature.

Another type of road in need of added public investment is found in compactly built-up urban areas. Practically no federal money is available for urban road improvement, and this burden falls heavily upon the local property tax payer, as well as the State. Many city streets need re-engineering and reconstruction to meet the heavy needs of through traffic.

County roads also need added public investment, for the counties are too dependent upon the property taxes paid to the local municipalities which, in turn, provide much of the county funds. Consequently, many county roads fail to meet present highway standards, because the counties cannot afford to maintain them or improve them properly.

Whereas adequate federal money is not currently available for such projects as the three types just mentioned, it would appear that the most promising method of financing would be through the use of State highway bonds, provided this method of expanding the use of State highway bonds could be made legally possible. Although this method of financing carries the extra cost of interest, the cost of construction is currently advancing more rapidly than the cost of interest. The total cost to the taxpayer is consequently less if he borrows money for immediate construction than if he defers construction for several years. In addition, immediate construction provides the State with the economic benefits provided by the improved roadways. Therefore, it is reasonable and prudent to consider bonding for such construction.

Bus Transportation

The Altenburg, Kirk and Co., study of "Ranking of City Pairs" indicates that there is intercity bus service between all major municipalities with a strong bond of common interest except Portland and Sanford, Bath-Brunswick and Lewiston-Auburn, and Bangor and Dover-Foxcroft.[37]

Intercity bus service in Maine is graphically indicated by Map VII-6, which shows the number of daily bus runs between major points during the summer season.

Intracity bus service, however, is limited to a very few municipalities, and persons in most urban places in Maine must either provide their own transportation or rely on taxi service. Elderly citizens who cannot provide their own transportation need some form of inexpensive bus service for shopping and medical care. Persons who are too young to drive also are frequently handicapped by lack of adequate bus service. Public transportation also makes it possible for more people to accept employment, which frequently is not within walking distance of the homes of persons who cannot provide their own transportation for one reason or another.

The State might consider establishing a State Bus Authority to provide transportation for urban areas where the need exists. It could operate on a basis similar to the State Ferry Service, attempting to pay its way whenever possible. At the present time, the State Highway Commission is assisting with some planning, but urban bus transportation is not the responsibility of that department. There should be a department charged with the responsibility to plan a course of action which could provide adequate public urban transportation.

State assistance in the form of subsidy is needed for intracity bus systems. Such systems should include school buses and, at least experimentally, crosstown routes for Medicare and similar purposes. This subsidy might be supplemented by federal funds.[38]

Coordinating Transportation[39]

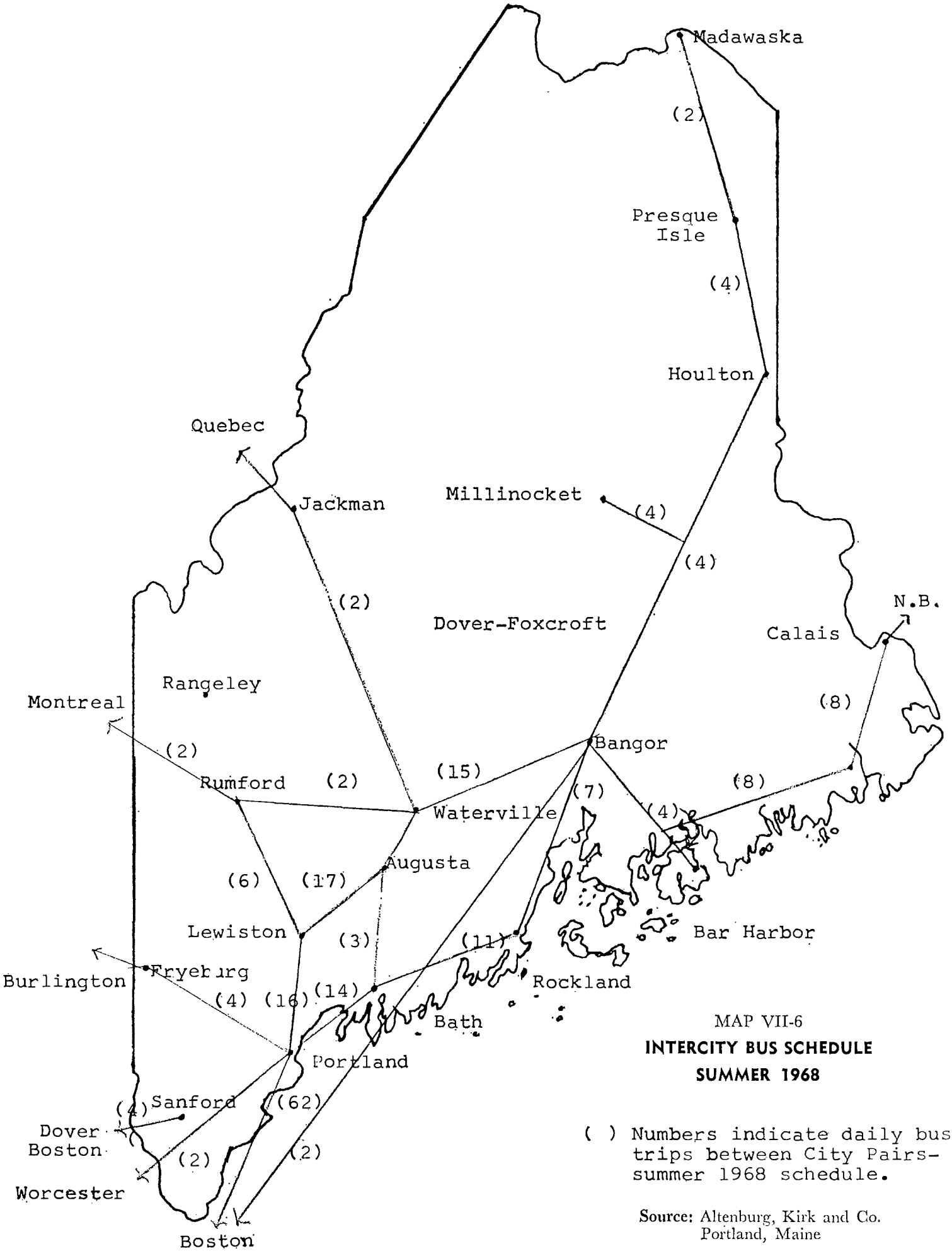
Coordination of the modes of transportation is needed to improve efficiency of the existing facilities. For example, a through bus from Boston to Rockland should

[36]Altenburg, Kirk and Co., *Public Transportation in the State of Maine,* Portland, Maine, August 1969, VI-21.

[37]Altenburg, Kirk and Co., *Op. Cit.,* VI-24.

[38]Appendix B., by Dr. E. Grosvenor Plowman, former Chairman, Maine State Transportation Commission, discusses the problems of urban transportation and transportation for urban type residents of rural areas.

[39]For a fuller discussion of this topic, see Altenburg, Kirk and Co., *op cit.,* Chapter II, Section C.



MAP VII-6

INTERCITY BUS SCHEDULE

SUMMER 1968

( ) Numbers indicate daily bus trips between City Pairs-summer 1968 schedule.

Source: Altenburg, Kirk and Co. Portland, Maine

be able to swing directly off the Maine Turnpike at the Portland Airport to pick up air passengers who need to continue to points between Portland and Rockland. At the present time the access road is under construction. When it is completed, efforts should be made to persuade the bus companies and airlines to coordinate their routes and schedules to provide convenient services for the traveling public.

Better coordination is also needed for freight shipments between truck, rail, ship, and air. Modern methods of loading truck trailer bodies on railroad flat cars are common further south, but there are limited facilities for this type of freight transfer in Maine.

It is argued that coordination, as described, is the responsibility of the carriers and shippers rather than governmental agencies.. However, it is likely the necessary changes in attitudes will be slow where long-standing inter-modal rivalry exists. Therefore, it may be that the State should play a key role in the development of transportation coordination.

The basis of concern for transportation is simply the fact that transportation moves the people and goods and, in so doing, moves the economy. If transportation fails to keep pace with the economy of a state, this economy will falter, growth and prosperity will taper off, communities and regions will not realize their full potential, and citizens will be denied opportunities to enrich their individual lives.

Since the public is the common source for money spent on transportation facilities, the investment of funds must be carefully calculated to give the public the greatest benefit for the dollars invested.

Although attempts are made to provide the people with the best transportation systems feasible under the circumstances, it is not the planners who have the final say in transportation. The users of the transportation system, the people and industries of the State, and visitors who travel in Maine for one purpose or another, will determine, in the last analysis, the kind and quantity of transportation they want and will use.

APPENDIX A

A pertinent portion of Part III, "New Transportation Services and Technologies," *First Annual Report to the Governor and Legislature,* Maine State Transportation Commission, Augusta, Maine, March 1967. (with footnotes added by Dr. E. Grosvenor Plowman, former Chairman, Maine State Transportation Commission.)

The Predictions

Recently, the literature dealing with transportation has been full of confident predictions of advancements which will take place in the next twenty years or sooner. It seems to be agreed that advancements in energy and power will probably bring about our greatest changes in transportation. Today, nuclear power has made only minor inroads against coal, oil and hydro-electric energy, but it will become more competitive as time goes on. For a considerable time it is thought that the natural fuels from the earth will still be used but that it may be cheaper to convert petroleum and coal into electrical energy at mine or well mouth for transmission by wire just as hydro-electric power is transmitted today. In turn, transmission of power by wire may be superseded by delivery of energy via radio or light waves or production of on-site power by conversion of solar energy.[40], [41]

It is believed by many that if advancements in power and energy conversion are accompanied by progress in reducing friction, pipelines or pneumatic tubes may well move containers full of commodities and even passengers at speeds in excess of 100 miles per hour. From what is now taking place in the transmission of many things, solids and liquids, by pipeline, it seems obvious that, in the years past, the pipeline people have prepared themselves, through research and experimentation, for bigger and more challenging transport undertakings. Pipes under the ground may eventually do much of the transportation of bulk commodities at rates much lower than anything possible today.

In highway transportation there will undoubtedly be new types of freeways overshadowing the national system of interstate and defense highways now under construction. Among these may well be the "no-hands" electronically controlled highway, with which experiments are now being conducted. On such highways once a driver has turned onto it and made simple adjustments, he will be guided without further attention to the conrol of his car or truck either as to speed or steering. Between certain important centers there may be conveyor networks onto which vehicles will be automatically moved at terminals and will ride a belt or electrified rail to an exit port where they will automatically be discharged.

The truck train moving over highways reserved to truck traffic is looked upon as a certain development in highway transport. The plan appears to be to move five, six or seven bottoms as a unit, pulled by one huge tractor or trailer and one or more automatically controlled booster units. In addition, in order to maintain flexibility, some highway trains will be made up of self-propelled units all controlled by the driver of the leading vehicle.

Air-cars, hover-craft and such glamorous types of vehicles will be restricted to other types of highways. The feasibility of the air-cushion vehicle has already been established. It can hover inches above the surface of land or water or rise to a considerable height. It can be powered by propellers, by jet engines, or by air jet. Fantastic speeds are predicted. Since these vehicles can go where no other surface vehicle can go, they may well be an indispensible adjunct to rail, motor, water and air transportation.

On the seas and other waterways, nuclear-powered ships and hydra-foils or other types of surface-effect ships are predicted for operation on the surface and huge nuclear-powered submarine cargo carriers for operation below, all moving at much faster speeds than has been possible heretofore.

Lately there has been more said about pending development in the air than almost anything else in transportation, chiefly about the supersonic airplane—faster than the speed of sound—probably three times faster. Such a transport is planned to fly at about 2,000 miles per hour with from 70 to 160 passengers. They will each cost between $20 and $25 million, with government costs for developing a prototype above $1 billion. There are many problems to be solved before we are using this aircraft, but no technological breakthroughs are required. Their eventual commercial use is more dependent

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[40]U.S. Department of Housing and Urban Development, *Tomorrow's Transportation, New Systems for the Urban Future,* Washington, D.C., U.S. Government Printing Office, No. 68-61300, May 1968. This 100 page paperback recommends 7 urban systems for research and development, pages 58-79.

[41]Frederick C. Appel, "The Coming Revolution in Transportation," *National Geographic,* September 1969, pages 301-341. An excellent illustrated evaluation of many new transportation ideas and actual developments.

on economic factors. Probably it will not be before 1975, that such fast travel will become available to the public.

It is predicted that every town of any size or importance will have an airport from which small aircraft can operate or which can be used by larger and faster vertical-take-off aircraft providing an air-taxi service between such towns and airports used by the larger subsonic aircraft. This will make air transportation truly "mass transportation."

On the railroads the most dramatic development is the high speed train. The High-speed Ground Transportation Act of 1965 provided $90 million of Federal funds for a comprehensive research and development program. Included in this program is a three-year experiment to improve rail travel in the Northeast Corridor between Boston and Washington (Megalopolis). The project, to be undertaken jointly with the Pennsylvania and New Haven railroads, will be the first government-sponsored research on behalf of the railroads. It could, conceivably, lead to the same kind of spectacular breakthroughs in rail transportation technology that have resulted from government-sponsored research and development in aviation.

Many railroad improvements inaugurated during the past few years will develop further. Some of these are the large specialized freight cars such as the triple-decker automobile rack car; special flat cars for carrying two 40-foot truck trailers in the trailer-on-flat or "Piggyback" service; 30,000-gallon tank cars, 100-ton covered hopper cars and the like. It is almost certain that the principle of the unit train carrying a single cargo between two points at sharply reduced rates will be expanded to all bulk commodities. Truck trailers on flat cars, commonly known as Piggybacking, will be developed further and practiced by all railroads as will the containerization process in which wheel-less cargo containers of standardized dimensions are moved by train and interchanged with trucks, aircraft and ships. Various automobile-on-train plans already in operation will probably be expanded so that cars built for the purpose will enable passengers to ride in their automobiles while on the train instead of leaving them and going to regular passenger cars as is now the case. Traveling **with** your car on a train is not a new idea, but traveling **in** your car on a train is.

Looking further into the future it is predicted by some that the railroads' rights of way will become the most valuable things they own since they can be completely controlled as pieces of private property and used for many purposes. It is predicted that under what is now a railroad may be large and small plastic pipes through which many bulk materials can move by improved flow systems or by use of compressed air to force containers for many types of manufactured goods at high speeds over long distances. On the surface, using these same rights of ways, may be vehicles of the hover-craft type moving at speeds up to 500 miles per hour carrying pasengers and mail on a cushion of air. It is expected that in all probability the railroad tracks will continue much as they are today to preserve the interchangability of freight and other cars but such carriers will become "Transportation Companies" in a much broader sense than they are today.

Application to Maine

Consideration of the predictions above mentioned, particularly the most imaginative of them, leads one to the inescapable conclusion that much money and time will have to be spent on research and development activities before the proposals can be implemented. This will take several years; and many of the newer developments, like the surface effect ships for coastwise and overseas commerce, the high speed trains to serve the congested megalopolis areas, and the electronic highways, will require government operation or heavy subsidy to private operators. It will be a long time before all the improvements foreseen can be applied to Maine's transportation system, if ever, because many of them are designed for use in areas with greater population and greater concentration of population as well as greater or longer freight traffic flows. As these technologies in transportation are developed, however, there will be side effects or side assets that can be adopted by Maine carriers and put into effect in a manner to improve the total picture in this State, such for example as faster and larger aircraft by the airlines and the smaller vertical-take-off aircraft for service between smaller and larger airports throughout the State; containerization and trailer-on-flat plans on the railroads; improved traffic control on the principal highways; and more efficient motor trucks for that service.

It seems certain that in Maine there will be a closer relationship between railroads and trucks. One prime reason why we will take part in this is that the State's rail network reached its peak several decades ago and since then has remained static or has shrunk. Industry, however, has moved into the State and into communities not served by the railroads. These industries have, fortunately, not lacked for adequate transportation because through the technique of a truck picking up a trailer or other container and moving it to a point for transfer to a flat car, it is possible for long distance rail service to be linked up with such industrial locations.

APPENDIX B

A paper written by Dr. E. Grosvenor Plowman, Former Chairman, Maine State Transportation Commission, reproduced by permission of the author.

Personal Mobility, Great National Asset

One of America's greatest contributions has been in making personal mobility available to nearly everyone. Each year a higher percentage of the U.S.A.-Canadian population has nearly unlimited access to the use of a private automobile. More cars carry more people for somewhat greater average distances at slightly higher per capita cost. This latter factor of slightly increasing average per capita cost is not visible to most car users, because they see and measure only the cost of fuel, tires, and parking.

In spite of the high and increasing proportion of our population that has access to a car, there is a residue that are not so fortunate. These include children not old enough to drive, and teenagers not able to get the use of a car. It includes also the old and the infirm of all ages who do not drive for reasons of safety or poverty. Finally there are the 'downtown dwellers' who have given up automobile ownership as being more trouble than it is worth due to congestion and lack of curbside parking spaces.

To meet the needs of the non-automobile using group large American cities use what is left of the former street car routes, now bus routes, together with the school bus. In addition to these carriers that operate over fixed routes, taxi service is available at premium rates between all parts of the city. Airports, being at recently established locations, rarely have bus service, so its place is taken by the premium fare airport bus, supplemented by taxi service.

Intercity transportation, involving distances beyond about 20 miles, is supplied by bus carriers. Beyond about 100 miles intercity service is supplied by airplanes and by bus. The former train and street car commuter services, connecting the suburbs with downtown, have disappeared except in a few very large metropolitan areas.

Viewed as a social asset, it seems clear that everyone is entitled to the advantages of personal mobility to the extent of his or her minimum needs. It is equally clear that the private automobile cannot do the whole job. Abandonment of an unprofitable bus route eliminates an economic loss; but it may create a community or social problem if it leaves stranded old people who are entitled to and need hospital out-patient Medicare, and who cannot afford taxi fare. The radial pattern of the typical bus routes into downtown requires a transfer from bus to bus in order to go from one's ghetto home on one spoke of the wheel to a work place on an adjacent spoke of the radial pattern. Many companies have provided charter bus service for this kind of ghetto-to-work-place transportation. Often such busing proves to be a temporary expense that disappears as car pool arrangements are worked out.

A transition is taking place. Before World War II the private automobile might properly be thought of as supplemental to urban bus transportation. Today the scheduled bus, the school bus, the airport bus, and the taxi are supplemental to the private automobile. They supply transportation that the private owner-driven car cannot or does not perform. Experience is showing that the bus and the taxi are not doing the whole job, as at present patterned and operated. There is a gap caused by the need for spoke-to-spoke transportation routes for ghetto dwellers and also for Medicare patients and for one-car family housewives. There is the gap between the bus fare and the taxi charge, for those who must have personal point-to-point transportation but cannot afford taxi service. There must be changes in both route planning and in equipment, and of course in the operating arangements. Subsidies were unthinkable as long bus transportation was viewed as an economic problem. But subsidies may be the only possible anwer if the social goal of meeting minimum personal mobility needs of persons who do not have access to the private automobile becomes the primary goal.

Much planning and experimentation already has been done. The next step would seem to be to view the problem of personal mobility in urban areas as a whole, not as disjointed and unrelated parts. In general the coordinated approach involves two major parts. These are reduction of delay and cost effects of traffic congestion; and finding by experimentation ways to fill the empty gap between the bus and the taxi so as to provide minimum personal mobility to every one who needs it but cannot afford taxi service.

Congestion is not caused by the number of people transported, but by the number of cars, trucks, and buses that try to occupy the same city street or thruway. Ultimately, and regardless of the unpalatable overtones of added cost for some and of regimentation of the car driver, congestion is apparently going to force segregation by type of vehicle. Trucks are going to be prohibited from using certain streets or thruways during rush hours.

Buses and fully loaded private automobiles are going to be directed into a constant-speed no-passing lane for non-stop fast movement from one major exit to the next. If the number of private automobiles, as observed by the closed-circuit TV cameras, exceeds the capacity of the remaining lanes, entry opportunity will be reduced, thus forcing some of the automobiles to use the less popular routes. If an emergency such as a multiple car collision occurs, all vehicles will be required to stay in line instead of bunching up and fighting for head-of-the-line position. The safety strip will thus be left usable for the passage of police, fire, wrecking, and ambulance vehicles.

The technical problems faced by the designers and experimenters in creating a useful and reasonably economic vehicle are formidable, but certainly not impossible. The basic specifications seem to be already partially worked out in the small school bus. Capacity must be limited, yet large enough to meet the need of supplementing the radial route bus service during rush hours. The bus must have the capability to handle wheelchair travelers if it is to meet the Medicare problem. It must reduce rather than increase air pollution. It must be operated, like the taxi, during non-rush hour periods on a door-to-door basis, using telephoned requests and radio instructions. Its aged, sick or unemployed clientele for this door-to-door service would be carried for not more than normal bus fare. Naturally the patrons would have been provided with some identification as proof of eligibility. Although eligibility would reflect income level, this would probably be implemented on the basis of residence location, or disability, or destination, or age group, rather than an actual means test.

In the intercity transportation area, on the other hand, the great issue has been and continues to be speed with safety. America is working towards the 100 miles per hour bus or automobile or truck on its intercity thruway; the 150 miles per hour railroad train; the 250 miles per hour helicopter or STOL (Short Take-Off and Landing) commercial airplane. Each has its own technical and safety problems. Each has the economic fact of enormous cost for its intercity equipment, also for the new highways or new railroad roadbeds or modern airports. Each has its own place in the task of providing for personal intercity travel mobility.

There is a personal mobility gap area in intercity transportation that is related to the urban transit problem discussed above. The rural poor are not the farmers who raise cash crops and have the motorized equipment and the automobiles or trucks required by their location and activities. The typical rural poor are families who have taken over or built shack-type housing alongside or near a paved highway. These families subsist on cash income derived from casual or permanent employment, usually many miles away from home.

The personal mobility needs of the rural poor are partially met by the school bus and by the home-to-work and work-to-home trips of the breadwinner in his own car or in a pool car. The greatest gap is the need for transportation for medical and cultural reasons, especially for the "stay-at-home" portion of the family.

In this area and in other non-urban emergency needs such as recreation or highway accidents or emergency illness, there is an important future role for the helicopter ambulance. This is one of Maine's important public needs.

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CHAPTER VIII

PUBLIC INVESTMENT NEEDS FOR ENVIRONMENTAL CONTROL

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CHAPTER VIII

PUBLIC INVESTMENT NEEDS FOR ENVIRONMENTAL CONTROL

Chapter Outline

List of Maps

MAJOR RECOMMENDATIONS

	Reference to Page in Chapter VIII
Economic growth should be balanced with **conservation** and recreation to assure the "good" life for each citizen and accomplish the greatest benefit for the population as a whole.	222, 226
Immediate action is recommended in ten specific areas to deal with present pollution and unnecessary destruction and mis-use of natural resources (listed).	222-223
Continued study to provide scientific understanding and public education should be encouraged.	223
Preparation must be made to assure proper environmental control of situations arising from the new industries and technological developments within present industries in the State of Maine.	223-224, 231-232
Public access to the coast, lakes, rivers, scenic areas and other aesthetic and recreational areas should be assured.	223, 229
An administrative structure to coordinate activities relating to Maine's natural resources and their management is needed.	223, 229-230, 233-234
A combination of effluent fees and user charges as recommended by the *Maine Water Resources Plan* should be instituted to supplement available public investment funds in the financing of pollution control facilities.	234, 240-243
Public investment is needed for flood control and environmental control of flood plains.	223, 234
State controls are needed to supervise mining operations and prevent destructive erosion.	225, 234-235
The long-range planning program of the Park and Recreation Commission should receive increased support.	235
Public education and policing to control pollution and trash disposal by individuals, especially in public camping and recreation areas, should be instituted.	228, 235-236
Research Studies in Environmental Control should receive increased public support, including but not limited to the State Planning Office's proposal for a Coastal Development Plan and the proposed studies by the Department of Sea and Shore Fisheries.	230, 236-237
A central organization to receive and consolidate data, interchange information, suggest unfilled needs in study and planning, and act as an agency of coordination should be developed.	223, 229-230, 233-234, 238-239

PUBLIC INVESTMENT NEEDS IN ENVIRONMENTAL CONTROL

Introduction

Maine has an abundance of natural resources which should be utilized in such a way that a healthy balance between development and conservation will be achieved. Maine has substantial agricultural land, primarily in Aroostook County, the New England Regional Commission (NERC) No. 10 Northern Subregion.[1] It has vast areas of forest, stretching throughout the greater parts of NERC No. 11 and NERC No. 12, the Eastern and Western Subregions. The watersheds of these latter regions, in turn, are drained by a number of rivers, including the St. Croix, the Penobscot, the Kennebec, and the Androscoggin, which provide sites for some of the largest paper mills in the nation.

The coastline of Maine, deeply indented with tidal estuaries which give it a total length of 3,500 miles or more, forms the southern boundary of NERC No. 11 and NERC No. 13, the Eastern and Southwestern Subregions. In spite of pollution, which has closed many areas of clam flats, the coastal area supports a very important lobstering and fishing industry. It also is of great recreational importance for residents of the State, as well as for summer residents and tourists.

The recreational industry is served, not only by the coast, but by the abundance of lakes and ponds found in the inland parts of all the Subregions in Maine. In addition, the State offers a wide variety of winter sports in all regions, but particularly in the mountainous NERC No. 12 Western Subregion, where a number of year-round recreational resorts, providing excellent winter skiing, are established.

In addition to these natural resources, two other types of natural resources appear to offer future potential, provided proper public investment in environmental control is established. One resource consists of ore deposits containing molybdenum and associated minerals located in three potentially valuable mineral belts, one in NERC No. 10 Northern Subregion, one in NERC No. 11 Eastern Subregion, and one in NERC No. 12 Western Subregion, as described in Chapter III.

Another natural resource, found only in Maine of all the Atlantic Coastal states, consists of several extremely deep harbors, capable of serving the largest oil tankers yet contemplated. Because there are no sheltered anchorages for tankers drawing more than 80 feet of water in the Atlantic ports farther south, it is probable that Maine will become the site of several major oil tanker terminals and petroleum storage facilities. It is also probable that oil refineries may be developed in Maine.

The proper development of these various natural resources will require controls to restrict pollution of various sorts and to permit the healthy growth of a balanced economy. Maine is already suffering from certain undesirable uses of land and water. Through planning and regulation the various uses of Maine's natural resources should be made compatible.

A balance between development and conservation must be achieved. Maine's need for more industry that will pay wages at or above the national averages has been discussed in Chapter II. In that chapter it was pointed out that the average annual earnings of Maine workers fall substantially below both the national and New England averages and that Maine's relatively slow population growth has been due largely to the out-migration of young adults in search of higher paying jobs. It was also pointed out that the paper industry (a relatively high polluter) was the only major Maine industry that paid wages in excess of the national averages.

It is not a necessary corollary, however, that in order to attract and hold high-paying industries in the state, Maine must put up with excessive amounts of air and water pollution. Present and future industries in the state can be regulated so that their establishment and expansion will not pose a threat to the environment. Maine needs to develop economically, but at the same time she needn't destroy her most valuable natural asset. An equitable balance between conservation and economic growth must be established.

And to those who oppose all industrial development on the basis of pure conservation attitudes and a supposed concern for the welfare of the people of Maine, we can only say that the poor housing, insufficient education, and present pollution which in large part result from the inadequacy of our present degree of development are more of an environmental blight than a modern industrial complex operating under the strictest posible regulations.

Immediate action is recommended in certain aspects of environmental control. Public investment is needed to deal effectively with the problems of present or po-

[1]For a discussion of the New England Regional Commission subregions, see the introduction of Chapter II.

tential pollution, or the unnecessary alteration or destruction of natural resources, in relation to a desirable balance of industrial, commercial, residential, and recreational development in a healthful and attractive environment. Specific activities which should be stressed in Maine include the following, most of which are already receiving some public attention, but all of which require more public investment than has yet been provided:

1. Building an administrative organization for coordinating and exchanging information about environmental control activities.

2. Setting standards to guard against further development of urban, congested-area, or cottage-lot "slums," through reasonable requirements for domestic water supply, sanitary disposal, distance of buildings from lot lines, etc., and encouraging professional urban planning and zoning, with requirements that any major housing developments include or be located near adequate playground or park facilities.

3. Acquiring land for public use at reasonably frequent intervals, especially along the coast and at points on the shores of lakes near major highways or urban areas.

4. Planning for flood control and prohibiting construction of buildings on certain low-lying riverbank areas which should normally be flooded in the spring to protect down-stream property from damage.

5. Setting and enforcing minimal sanitary standards for public dumps, together with standards for screening them from the view of the public traveling either on highways or in watercraft.

6. Rehabiltating land and water resources through various sanitary controls, grading and planting projects, etc.

7. Stimulating the building of domestic water and sanitary sewage treatment facilities.

8. Guarding against destructive or unsightly land erosion and also providing controls to preserve our coastal marshes and wetlands, which are considered vital to the survival of our commercial marine species.

9. Encouraging the training of technicians to work on various environmental control and ecological research projects. Each professional bacteriologist, ecologist, chemist, or engineer working in such areas will need several technically trained subordinates to assist him; and a source of such trained technicians should be developed.

10. Sponsoring public education concerning the importance of environmental controls. Public education will be needed to back legislation to make possible some of the activities mentioned in the previous points. Public education will be needed to make possible legislative controls that will insure that any new industrial or commercial construction will not add to existing pollution or cause other adverse effects in an area. Public education will be needed to provide wide-spread support for all efforts to clean up existing sources of pollution and other conditions detrimental to the public well-being.

Continued study to provide scientific understanding and public education should be encouraged. In the preceding discussion of points of action, it was pointed out that public education is all important. Environment includes, in addition to land and water, the atmosphere, the climate pattern, and certain asthetic or man-made factors, such as smell, noise, roadside litter, and excessive use of detergents or pesticides. Smog, the annual winter salting of highways and streets, noxious factory operations, airport noise, 'throw away' beer cans and plastic containers, as well as chemicals used to destroy insects, all have their pollution overtones. Once the public understands the importance of environmental control and the benefits of environmental control, the public will support legislative action and necessary legislation appropriations. Closely allied to the matter of public education is the recommendation to build an administrative organization for coordinating and exchanging information about pertinent work conducted by various groups. Several groups are now engaged in research concerning ecological or other environmental problems in the coastal waters of Maine. Among others, there is the research being conducted by the Darling Center of the University of Maine. There are also proposed studies by the Department of Inland Fisheries and Game, the Sea and Shore Fisheries, and the State Planning Office. Still another study will be directed to a Coastal Development Plan for the Maine Coast and the New England Coastal Region. Constant interchange of information is needed.

New Economic Development Will Create Added Environmental Problems

As has been pointed out in a previous section of this report, the population of Maine is tending to move toward the more urbanized centers within the state. The NERC No. 13 Southwestern Subregion appears to be producing the most consistent growth in both population and industrial development of all the Subregions. Because of this trend, plus the spill-over into Maine from southeastern New Hampshire's rapid economic development, NERC No. 13 Southwestern Subregion has been producing most of this growth in population and economic activity, which is taking place in a rather narrow band, running along the Coastal Route, U.S. 1, and up the Androscoggin and Kennebec River valleys. Near the larger established urban centers there is substantial population growth in the suburbs, but the industrial and commercial growth tends to remain either within the municipal boundaries of the older cities or else just outside their boundaries. There are many isolated exceptions to this pattern, of course, but the general trend follows the basic pattern.

Many environmental problems are rapidly becoming more acute as this pattern develops. There are suburban problems connected with such needs as extending water lines to districts which once depended upon private wells, providing disposal facilities for solid wastes, and meeting the sanitary problems presented by large volumes of liquid sewage which may be in excess of the capacity of private septic tanks and leaching beds as suburban development continues.

The older urban areas are confronted with even more serious problems, for almost all have combined sewerage systems for the collection of both storm water and sanitary wastes, with a multitude of outfalls depositing the untreated sewage into convenient streams or other bodies of water. These older cities also are faced with increasing difficulties disposing of solid wastes and controlling air pollution. As residential, commercial, and industrial areas crowd out toward and often across the old municipal limits and as suburban development spreads out from the cities, the problem becomes more perplexing because of the blurring of lines of responsibility and the need for a metropolitan area approach to the problems of pollution abatement and desirable environmental control.

Fortunately for Greater Portland, a precedent for joint action was established some years ago through the formation of the Portland Water District which has successfully given a high quality of service to Portland and most of its suburbs for many years. The Portland Water District is now empowered by the legislature to provide trunk collection sewers and sewage treatment facilities for those municipalities in the District which vote to take advantage of the opportunity.

Many other environmental control problems, however, are not yet treated in this coordinated manner. All too often an individual community endeavors to solve its own environmental problems without adequate land and water-use planning, without local zoning, and often without due regard to the environmental needs of its neighbors.

Preparations should also be made for proper environmental controls as new technological and industrial developments affect Maine. It is very probable that added marine oil terminals, with major oil storage areas and even refineries, will introduce environmental control problems which should be anticipated with proper planning. The increased development of open pit mining near the coastal sections of NERC No. 11 Eastern Subregion, together with anticipated developments of open pit mining in NERC No. 10 Northern Subregion and NERC No. 12 Western Subregion, may produce pollution problems if proper planning and controls are not worked out in advance. Atomic power plants may introduce new hazards. Various technological advances in established industries may introduce problems. There are also possibilities of new types of industry, such as aluminum reduction plants, which may have adverse effects upon the environment unless appropriate environmental controls are established.

New oil terminals, storage areas, and even refineries will probably be developed near one or more coastal points. The probability of deep-draft tanker transport of oil from the oil field of northern Alaska through the Northwest Passage to a marine terminal on the coast of Maine, together with the possibility of a trade zone complex which might involve a petrochemical industry, and the possibility of off-shore drilling for oil, suggest that public investment be made to provide adequate funds for zone planning, air and water pollution controls, and protective mechanisms to clean up the oil in cases of oil spillage.

Ecological studies should be made to determine possible adverse effects upon the marine fisheries of Maine if off-shore oil wells are developed, and public investment should be made to be sure that protective mechanisms can be provided as soon as there are indications they may be needed.

The development of deep-water oil terminals, ex-

tensive tank farms, and possible refineries has been suggested for Machiasport in NERC No. 11 Eastern Subregion, and near Long Island, an island part of the City of Portland, in NERC No. 13 Southwestern Subregion. There is sufficient depth of protected water for the largest super-tankers yet projected, and there is no protected location south of Portland along the entire Atlantic Coast with comparable depth of water. It is therefore probable that deep-water oil terminal development will occur at either or both of the locations mentioned, or at Penobscot Bay, and public investment should provide plans for appropriate environmental controls before such developments are completed.

As far as the immediate effects of the Machiasport project are concerned, the State of Maine is already drafting plans to ensure that such a large-scale development would not harm the aesthetic and ecological factors of the eastern Maine coastal environment.

It is a firm policy of the present state administration to proceed on the Machiasport plan only if environmental quality can be preserved in the development area. Governor Curtis has designated a special subcommittee of the state Conservation and Planning Committee to monitor the possible harmful effects of such an industrial development. And while the initial focus of the pollution subcommittee has been on controlling the air and water effluent from the refinery and establishing procedures governing the on and off-loading facilities, it is also responsible for the development of appropriate formulas to govern losses occurring from accidental spills and potential disasters. Additionally, once the Zone is operating, there should be special funds available through the Marine Resources Foundation for continued research and development in improved environmental control systems as applied to the entire Machiasport area.[2]

Increased open pit mining is highly probable in Maine. There are three potential mining belts where the open pit mining of ore containing molybdenum in association with copper may be developed. There is a coastal belt in NERC No. 11 Eastern Subregion, where some mining has already started.[3] Farther to the north in NERC No. 10 Northern Subregion, exploration for suitably rich veins of ore gives promise of future mining development. Another belt which is being explored crosses much of the northern part of NERC No. 12 Western Subregion. Development of substantial mining operations in any of these areas may produce various types of pollution problems unless proper environmental controls are introduced before damage starts. The coastal mining belt introduces added problems because of its possible detrimental effect upon marine fisheries and coastal recreational activities. Success in mining operations in this area will require development of port facilities for the shipment of ore and probably encourage increased economic activities as industrial firms move their manufacturing and processing operations close to the source of raw material. Again, public investment is needed for planning, zoning the use of the coastline, control of land erosion, protection of marine life from possible chemical pollution, and protection of the extensive recreational activities on land and water throughout the area.

Atomic power installations will introduce new problems of environmental control. One atomic power plant is already under construction at Wiscasset in NERC No. 13 Southwestern Subregion, and it is entirely possible that more such plants may be added during the next decade. The Darling Oceanographic Center of the University of Maine is already conducting research on the probable effects of the thermal alteration which may occur as a result of the operation of this atomic plant.

Although sufficient safeguards have been developed to reduce the danger of the emission of radio-active gasses from atomic power installations, the large volumes of cooling water which are emitted by such plants are certain to cause a degree of thermal alteration in the environment. Some scientists believe that the great tides of the Gulf of Maine will tend to dissipate the heated water around Wiscasset.[4] It is possible, however, that even a slight average increase in the water temperature of the estuary may affect the rate or reproduction of various types of marine life. If the change in water temperature encourages the increase in one species at the expense of another, the shift in the ecological food chain might have a highly multiplied effect upon marine fisheries in the area. This effect might possibly be beneficial, or it might be detrimental.

Matters such as these, together with a study of the possible effects of sudden shifts in the discharge of cooling water which might accompany plant shutdowns for repair, should be carefully studied so that planning for proper ecological controls will be completed before such plants go into operation on the coast of Maine.

Various technological advances in established indus-

[2]Statement of Governor Kenneth M. Curtis in Response to the Natural Resources Council of Maine, Concerning the Machiasport Project.

[3]See Mining Belt Map in Chapter III.

[4]*The Maine Alumnus,* Orono, Maine, Vol. 50, No. 5 (June 1969), p. 7.

tries may cause environmental problems. Since World War II, changes in the manufacture of pulp, especially through the wide-spread adoption of the Kraft process, have resulted in serious problems of unpleasant odors pervading areas down-wind from paper mill chimneys. Paper mills in urban areas are attempting to reduce the emission of such odors, but they have not yet been successful in eliminating the problem.

Other developments in the paper manufacturing industry and in the food processing industry are also apt to cause environmental control problems. The American consumer's desire to purchase instant mashed potato and frozen cooked potato products instead of raw potatoes has resulted in serious waste disposal problems in certain communities in NERC No. 10 Northern Subregion. New chemical products used by established industries, including new types of fertilizers, insecticides, and chemical topping agents used in agricultural production, frequently cause ecological shifts which have not been anticipated. The problems caused by DDT are so well publicized that they need no further comment. There has also been an increase in recent publicity about the effects of certain fertilizers on certain streams and ponds, which are now being rendered unfit for recreational use by the accelerated growth of algae. The broiler industry and the fisheries industry represent other industries of great economic importance to Maine, both of which seem to be introducing increasingly acute environmental control problems as technology advances and as larger and larger centralized plants spew forth increasing quantities of waste products. Recently developed plants to concentrate the protein-rich solids of waste products from poultry and fish processing industries are also producing environmental control problems of both water pollution and air pollution.

New types of industry may cause environmental control problems. Recent publicity about the apparent efforts of an aluminum-reduction firm to gain civic backing for the establishment of a plant in NERC No. 11 Eastern Subregion and, more recently, in NERC No. 12, indicates the potential environmental control problems which may be introduced by certain new types of industry in Maine. There is also a certain amount of publicity concerning groups fearful of potential oil refinery development in NERC No. 11 and NERC No. 13.

Types of new industry which may present substantial environmental control problems are almost certain to come to Maine. As has already been stated, Maine has the only extremely deep, protected anchorages along the entire Atlantic coast of the United States. Maine can accommodate tankers drawing more than 80 feet of water, but no other eastern state can.[5] Maine also possesses large, sparsely populated areas, with a laboring population used to wage rates substantially below the national average. These economic advantages will eventually mean additional growth in industry, particularly in the coastal areas of NERC No. 11 and the eastern parts of NERC No. 13. A balance between conservation, recreational development, and new industrial development is seriously needed if Maine is to provide the environment for the truly "good life" of its citizens.

The Impact of Growth on Maine's Natural Resources

Although the population of Maine is growing very slowly, numerous factors make environmental control measures of much greater immediate importance than in the past. For one thing, there has been a gradual building up of the effects of long-continued industrial pollution and urban sewage which have resulted in deep deposits in certain tidal estuaries and harbors, as well as in some bodies of fresh water. Industrial plants of increasing size have accentuated this problem in certain rural areas. But the problem appears to be most acute in the more urbanized areas toward which the population is constantly shifting. Water pollution, air pollution, solid waste pollution, pesticide and other chemical pollution, noise "pollution," and the reduction of open space for free public outdoor enjoyment are all growing problems which need to be solved.

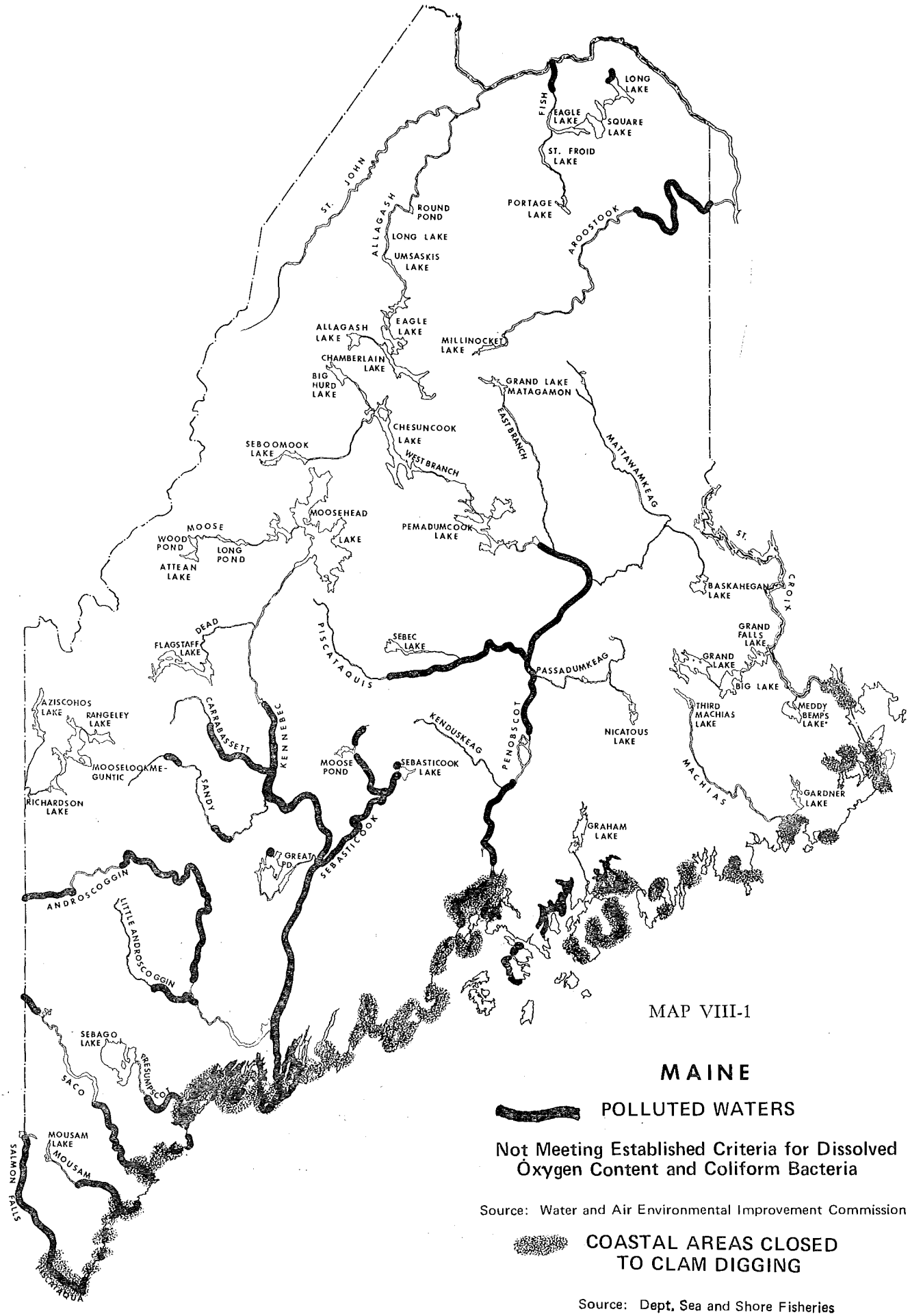
Maine's major rivers and estuaries are seriously polluted. The impact of economic growth along the three major rivers of the State and the resulting problems are illustrated by Map VIII-1, which locates the polluted waters. The extent of this pollution may be noted from the river basin maps in volume II of the *Maine Water Resources Plan.*[6]

The pollution load of these three rivers is 1,647,000 pounds of Biochemical Oxygen Demand (B.O.D.) per day, of which 1,600,000 pounds of B.O.D. is industrial waste.[7] The greater part of this industrial waste is attributable to "wet process" industries, mostly paper mills, though plants engaged in food processing, leather tanning, or the manufacture of plastics or chemical products also contribute a share. Because of this river pollution, several hundred miles of waterfront property of potential recreational value are unusable for such purposes, and the pollution carried to the sea by these rivers affects large areas of tidal water, forcing produc-

[5]Quoted from interview with the General Manager, Maine Port Authority, Sept. 16, 1968.

[6]Edward C. Jordan Co., *Maine Water Resources Plan,* Vol. II, (Portland, Maine: February 1969).

[7]*Ibid.*


LONG LAKE
FISH
EAGLE LAKE
SQUARE LAKE
ST. FROID LAKE
ST. JOHN
ALLAGASH
ROUND POND
PORTAGE LAKE
AROOSTOOK
LONG LAKE
UMSASKIS LAKE
ALLAGASH LAKE
EAGLE LAKE
MILLINOCKET LAKE
CHAMBERLAIN LAKE
BIG HURD LAKE
GRAND LAKE MATAGAMON
EAST BRANCH
MATAWAMKEAG
CHESUNCOOK LAKE
SEBOOMOOK LAKE
WEST BRANCH
MOOSEHEAD LAKE
MOOSE
WOOD POND
LONG POND
ATTEAN LAKE
PEMADUMCOOK LAKE
ST. CROIX
BASKAHEGAN LAKE
DEAD
FLAGSTAFF LAKE
PISCATAQUIS
SEBEC LAKE
GRAND FALLS LAKE
GRAND LAKE
BIG LAKE
PASSADUMKEAG
AZISCOHOS LAKE
RANGELEY LAKE
CARRABASSETT
KENNEBEC
KENDUSKEAG
PENOBSCOT
NICATOUS LAKE
THIRD MACHIAS LAKE
MEDDY BEMPS LAKE
MOOSELOOKMEGUNTIC
SANDY
MOOSE POND
SEBASTICOOK LAKE
MACHIAS
RICHARDSON LAKE
GARDNER LAKE
GREAT PD.
SEBASTICOOK
GRAHAM LAKE
ANDROSCOGGIN
LITTLE ANDROSCOGGIN
SEBAGO LAKE
PRESUMPSCOT
SACO
MOUSAM LAKE
MOUSAM
SALMON FALLS
MAP VIII-1
MAINE
POLLUTED WATERS
Not Meeting Established Criteria for Dissolved Oxygen Content and Coliform Bacteria
Source: Water and Air Environmental Improvement Commission
COASTAL AREAS CLOSED TO CLAM DIGGING
Source: Dept. Sea and Shore Fisheries

tive clam flats to be closed and debasing the value of recreational properties.

Parts of many other rivers and other bodies of water are also affected, chiefly by industrial pollution but also by volumes of untreated sewage from municipalities and, along the coast, by private cottages. Every one of the four economic Subregions of Maine is affected by fresh water pollution, while the western half of the coastal border of NERC No. 11 Eastern Subregion and the entire coastal strip of NERC No. 13 Southwestern Subregion are seriously affected by many miles of polluted coastal waters. Most of the clam flats in the Casco Bay area, all the clam flats near the mouth of the Kennebec, and many of the clam flats in the Penobscot Bay area are now closed because of pollution.

Air pollution in Maine is an increasing problem. A recent State study, entitled *Air Resources of Maine,* identifies the major sources of air pollution.[8] Kraft paper mills and manufacturing plants head the list, but the fires from more than 300 town dumps also are of importance in contributing to the problem. An ever-growing contribution to air pollution in Maine is the exhaust of automobiles, buses, trucks, and other motorized vehicles, including diesel locomotives and airplanes. Industrial fuels with high sulfur content and also gasses emitted into the air from water-borne pollutants add to the problem. An effort to control some aspects of the problem has been made through the passage of an added new Chapter 4, "Protection and Improvement of Air," under Title 38 of the Revised Statutes of Maine. This act, defining the powers and duties of the Water and Air Environmental Improvement Commission and other State agencies with respect to air pollution, was signed by the governor on July 2, 1969.

The sanitary disposal of solid wastes presents a growing problem. As was mentioned in the preceding paragraph, more than 300 burning dumps spread air pollution across sections of Maine. These dumps are also usually located in low-lying areas where they tend to spread pollution from their decomposing material into streams and bodies of water.[9] Most of the burning dumps need to be abolished in rural areas because of these air and water pollutant effects, as well as their tendency to stimulate the breeding of rats, flies, and other disease-carrying vermin. Most of these conventional dumps could be replaced by sanitary land-fill operations.

In areas lacking suitable locations for land-fill dumps, which ideally require extensive tracts of low-cost gravel land, so that trenching and covering can be maintained economically, the problem of solid waste is yet to be solved, in a satisfactory way. Cities like Portland have been plagued with run-away dump fires, smoke, stench, incessent problems of rat control, and difficulties in finding places for new dumps when the older sites have been filled to capacity. No economically feasible solution to the problem in Maine has been found, and public investment appears to be needed to help our larger urban centers test methods being tried in other parts of the country. One highly successful method being used in Philadelphia and being tested by New York City is the creation of compressed plastic-wrapped bales of waste for burial outside of the city.

Certain pesticides and allied chemicals cause a pollution problem in Maine. The recent wide-spread use of DDT has resulted in pesticide pollution which may continue to build up in certain areas for years after such spraying is stopped. David Dean, director of the Darling Oceanographic Center said, "There is a DDT problem in lobsters. Our vast forests have been sprayed with the insecticide for many years. This material now is finding its way to the Gulf of Maine in significant concentrations."[10]

A recent example of the problem created by the spraying of DDT was the marked reduction of land-locked salmon population of Sebago Lake. It appeared that insects sprayed with DDT were eaten by smelts which, in turn, were eaten by salmon which were then adversely affected. The smelts which lived were unable to spawn effectively because of the build-up of DDT in their systems. This situation cut down the food supply of the remaining salmon, reducing the salmon population still further. The entire ecosystem of Sebago Lake was significantly harmed until the spraying was stopped, smelt eggs from unaffected areas were brought into tributaries which provided the smelt population of the lake, and extensive work was done restocking the salmon.

DDT has affected our entire food chain. It persists in the soil, killing beneficial insects as well as harmful ones. It reduces the population of birds, especially those that eat insects sprayed by DDT. It enters food crops and the food animals which eat such crops. Its long-range effect upon man is not yet demonstrated, but William Deichman, of the University of Miami School of Medicine, states:

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[8]University of Maine, *Air Resources of Maine . . . A Preliminary Study.* Orono, Maine: December, 1968.

[9]Peter N. Hazlett, "Intrusions Mar Recreation Value of Saco River," *Maine Sunday Telegram,* March 30, 1969, p. 19A.

[10]David Dean, *Maine Alumnus,* (Orono, Maine: University of Maine, June, 1969), p. 6.

> . . . persons who had liver cancer, leukemia, high blood pressure, and carcinoma at the time of death had two or three times more residues of DDT and related pesticides stored in their body tissues than did persons who died accidental deaths.[11]

Pesticide pollution is not limited to DDT alone, for it may result from any of the "dirty seven" of the chlorinated hydrocarbon pesticides. It is this type of pesticide which

> . . . leaves an insidious environmental legacy, accumulating in the soil and water and in the fatty tissues of animals, including man.[12]

Although the indiscriminate use of DDT and other chlorinated hydrocarbons has apparently been curbed, environmental controls are needed to prevent the widespread use of other toxic chemical compounds which may also have serious after-effects.

Noise "Pollution" should be subjected to proper environmental controls. The current development of supersonic jet passenger planes may bring problems to Maine, for flight paths in northern Maine, probably affecting NERC No. 11 Eastern Maine Subregion more than NERC No. 10 Northern Subregion, are currently under discussion. Since noise from planes is said to be detrimental to certain types of wildlife, either inhibiting reproduction or causing the young to be killed or abandoned, further research would be advisable, so that reasonable environmental controls might be established.

There are many other types of noise "pollution" causing discomfort to man, but it is probable that local ordinances and policing can curb most of the excessive and unnecessary noise of motorized vehicles and equipment. Legislation introduced to curb the problem in the larger, congested cities of other states may eventually be needed in Maine. Landscape plantings of shrubbery along our freeways will also be beneficial in reducing the noise of heavy traffic.

Steps should be taken to provide more public parks and other areas for the public enjoyment of nature. The problem of public access to the coast is rapidly growing more serious as land values increase and private cottages prevent easy access to the shore. A start is being made to improve the situation which has already developed along much of the coast of NERC No. 13 Southwestern Subregion, partly through one or two new State parks, partly through private gifts of lots of land. Much more needs to be done to prepare for the future population increase in this part of coastal Maine.

The comparatively recent activity of the Maine Highway Commission in providing rest areas, with picnic tables and often with sanitary out-houses, at various spots along Maine highways is much to be commended because it adds to the pleasure of vacationing in Maine. But there is a problem of whether dedicated highway funds should be the only source of funds used to construct and maintain these picnic areas.

Public investment should be considered to keep open and to police sections of scenic alternate routes, posted for low speeds and barred to through-traffic vehicles exceeding the size or weight of a conventional passenger automobile. Public investment should also be provided for many more picnic spots at scenic places, often in connection with public park areas providing opportunities for swimming and boating. There will be need for further development of this sort throughout Maine, but the most critical need which has already developed will be found in NERC No. 13 Southwestern Subregion, along the coastal estuaries and the lakes a few miles inland, where private development is rapidly barring the public from enjoyment of these natural resources of recreational value. Urbanized development is constantly increasing through much of this area, making a greater need for public "open spaces" and making the development of such "open spaces" more expensive as each year passes. Immediate land acquisition would appear to be more economical in the long run.

Both Study and Action Are Needed to Preserve Maine's Natural Resources

Maine Needs an Administrative Structure to Coordinate Activities Relating to Managing Maine's Natural Resources.

Various aspects of the management of Maine's natural resources currently fall under the responsibility of a variety of State, County, and local officials. Much of the practice today is a heritage from the past, when each village or urban center was separated from neighboring built-up areas by a sparsely settled buffer zone of farms and woodlands. Until the period just before World War II, there were few commuters or suburban dwellers in the State of Maine. With only a few exceptions, such as the sanitary controls exercised by the Portland Water District, this made environmental control primarily a local matter. Even as pollution started building up in the major rivers, it was commonly felt that twenty miles or less of river flow would "purify" a

[11] Jane E. Brody, "Attacks on Use of DDT Increasing." *New York Times*, April 30, 1969, p. 43, Col. 1.
[12] *Ibid.*, p. 43.

river.[13] It is only in recent years that the need of a coordinated approach to manage Maine's natural resources and to maintain a proper balance between development and conservation has received much public support. It is now apparent that Maine does need some sort of administrative structure to coordinate the many independent activities currently taking place in the State.

Each State agency involved in resource management is legally authorized to concern itself with only given segments of a larger problem. In many instances a given State agency will undertake studies which will nearly duplicate those already completed by some other agency. Occasionally a State agency will seek to undertake action which will be in conflict with action proposed by another agency, neither agency being aware of the other's proposed action. Some form of coordination is needed.

The coordination of data, studies, and planning activities of all the agencies is another matter, however. The State Planning Office serves as the state coordinator under the State Planning Act of 1968, to provide general coordination and review of plans in functional areas of the State government in the light of their relationship to the comprehensive planning process, but this alone does not provide adequate, day-to-day coordination of action programs and projects.

1. **Task forces and other new agencies have been recently organized.** An Environmental Task Force has been organized by Governor Curtis for the purpose of protecting and enhancing the environment. It will consider the implications of economic growth and other changes in the environmental balance and determine how these may affect the environment and the resources within the environment. It has already set up various committees to consider specific problems of recreational development, electrical power, industrial development, and solid waste. One of the first projects to be considered is a study of coastal development in Maine.

The State Planning Office has already established a Task Force on Water and Related Land Resources. This group is so organized as to make use of the experience and data accumulated by the Division of Sanitary Engineering, the Water Resources planning unit of the State Planning Office, and other pertinent agencies. Among other objectives this Task Force will endeavor to coordinate current activities in this area so that there may be a better interchange of information and so that unnecessary overlapping and duplication of effort may be avoided.

2. **Maine is a member of the New England River Basins Commission.** The New England River Basins Commission was established in 1967 to provide a working partnership of public agencies which share responsibility for planning and management of water and related land resources. Legislative authority for the River Basins Commission was established in the Water Resources Planning Act of 1965. Under this Act the River Basin Commission performs the following functions: (1) to serve as the principal agency for the coordination of water and related land use planning in the New England region, including federal, state, interstate, local and non-governmental planning; (2) to prepare and keep up to date a comprehensive joint plan for use and development of water and related land resources (this plan is being prepared in stages and is designed to identify alternatives and is directed at specific action projects); (3) to recommend long-range schedules of priorities of individual projects; and, (4) to stimulate and undertake studies in specific areas on particular problems.

The state-federal-interstate partnership vested in the Basins Commission is designed primarily to provide leadership, guidance and coordination of planning for action by the agencies represented. These agencies, with Commission leadership, have the capacity to act as well as plan. The agencies involved may build dams to control floods, to supply water, to acquire and protect wetlands and scenic areas and to abate water pollution.

The Basins Commission is composed of a chairman appointed by the President, a state's member designated by each Governor, a member designated by the head of each of eight federal departments or agencies with substantial programs or interest in water or related land resources, and a member designated by each of the six Interstate Compact Commissions.

The Maine State Planning Director acts as the State of Maine representative on the New England River Basins Commissions. His membership implements the State Planning Act of 1968 which created a State Planning Office to coordinate and develop the many planning responsibilities of state government and has, as one of its major duties, the responsibility for inter-governmental planning of an interstate nature.

3. **Maine is participating in the New England Interstate Water Pollution Control Compact.** On April 14,

[13]Note discussion of aerial spectral photographic techniques revealing pollution of 37 miles of the Niagara River: Kenneth R. Piech, "Identifying and Measuring the Pollutants in our Waterways," *Research Trends,* Cornell Aeronautical Laboratory, Inc., Buffalo, N. Y., Summer 1969, pp. 43-47.

1969, the Governor signed a bill adding a new section 491-A and also adding to several subsequent sections of Title 38 of the Revised Statutes. The new section 491-A reads as follows:

> The State reaffirms its support of the cooperative approach to the abatement and control of water pollution as embodied in the New Engand Interstate Water Pollution Control Compact. In view of the increases in population concentrations, the growing need of industry and agriculture for water of reasonable quality and the quality requirements of water based recreation and other uses, the New England Interstate Water Pollution Control Commission shall develop and maintain its programs, including research on water quality problems, at such levels, including, to the extent necessary, levels above those originally provided when this State first enacted the compact, as may be appropriate.[41]

The intent of the Legislature to avoid unnecessary duplication of activities and to encourage proper coordination and interchange of information between agencies is indicated by section 496-B, as follows:

> The Commission, in cooperation with this State and such other states signatory to the New England Interstate Water Pollution Control Compact as may participate, shall establish and maintain a water quality sampling and testing network. The network shall, to the fullest extent practicable, rely upon the sampling and testing programs of this State, such other participating states, and upon information available from agencies of the Federal Government, and shall not duplicate any of their activities. However, if the sampling and testing programs of this State and other states, and the information available from agencies of the Federal Government are insufficient to provide the commission with records of water quality adequate for its needs, the commission may supplement the sampling and testing otherwise available to it.
>
> Sampling pursuant to this section shall be at points at or near the places where waters cross a boundary of this State, and the samples shall be tested in order to determine their quality. The sampling and testing provided for herein shall be scheduled by the commission or in accordance with its requests, and shall include such factors or elements as the commission shall request. Any sampling and testing done by the Water and Air Environmental Improvement Commission of this State as part of the activities of the commission's network shall be reported fully and promptly by such agency to the commission, together with the results thereof.[15]

It should be pointed out, however, that the only New England state with which Maine shares a common boundary is New Hampshire. There appears to be comparatively little problem concerning any serious pollution of the waters flowing from the Aziscohos Lake watershed or the Umbagog Lake watershed into New Hampshire, at the northern edge of the western boundary of NERC No. 12 Western Subregion, for this entire area is heavily forested, with only a minimal scattered resident population and no industrial plants.

Umbagog Lake is the principal source of the Androscoggin River, which enters New Hampshire without measurable man-made pollution, but which returns across the Maine border some miles farther south with substantial pollution, mostly of industrial nature. According to data from the Water and Air Environmental Improvement Commission, as graphically displayed on Map VIII-1, the Androscoggin enters Maine with waters not meeting classification.[16] (Compare Maps VIII-1 and VIII-2.)

According to the same map (Map VIII-1), the Saco River also enters Maine from New Hampshire with waters not meeting classification, but the Ossipee River, which forms the boundary between NERC No. 12 Western Subregion and NERC No. 13 Southwestern Subregion as it enters Maine from New Hampshire, meets classification standards.

The southern half of the New Hampshire boundary of NERC No. 13 is formed by the Salmon Falls and Piscataqua Rivers, which fail to meet classification standards according to the Water and Air Environmental Improvement Commission. A map revealing this condition and also indicating the substantial pollution of the Maine tributaries of these rivers is also displayed in the Map VIII-1.[17] Whereas both industrial and domestic pollution enters the Salmon Falls and Piscataqua Rivers from both sides of the New Hampshire-Maine state line, interstate regional cooperation will be needed to relieve the condition. This is particularly

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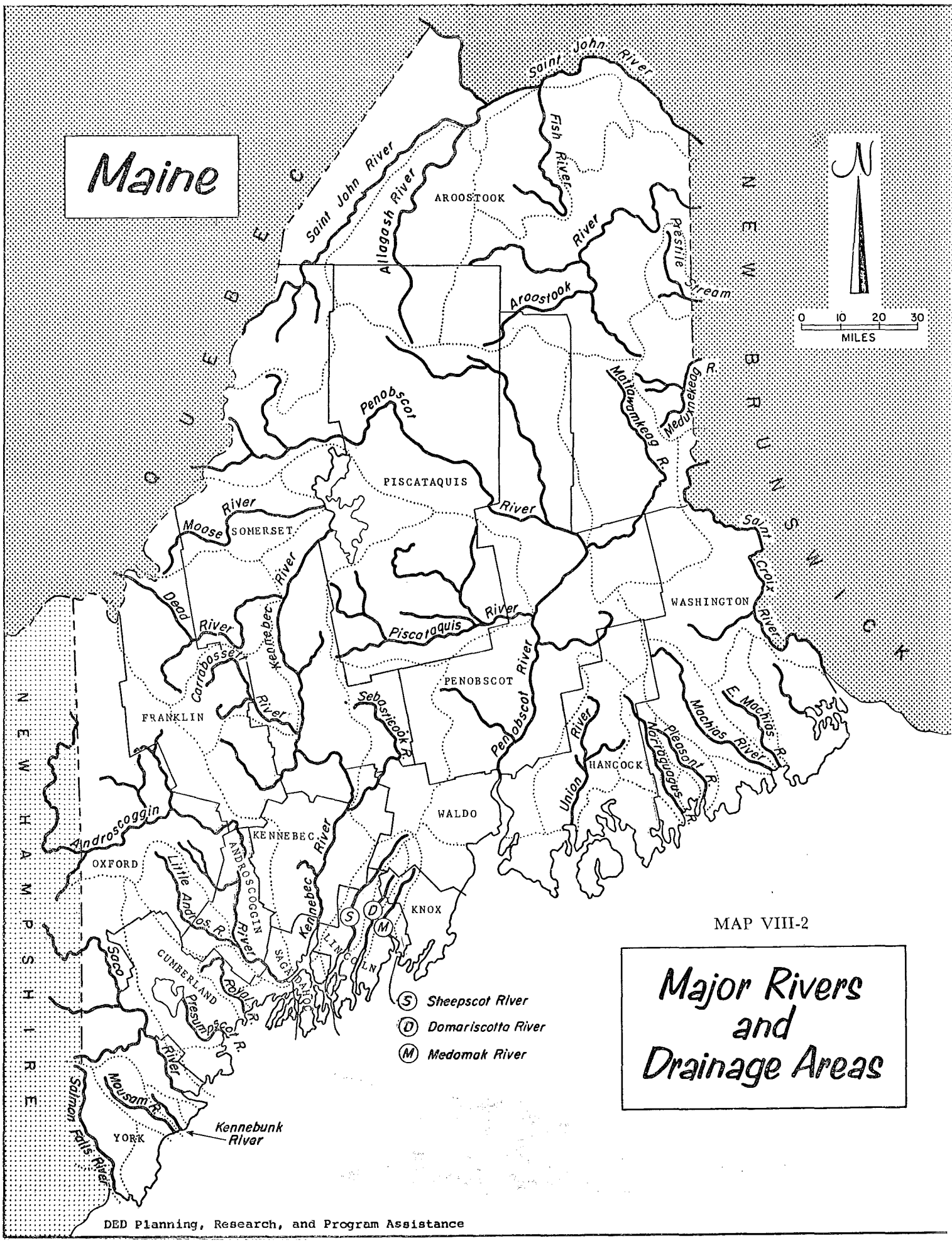
[14]Maine State Legislature. *An Act Concerning the Administration and Program of the New England Interstate Water Pollution,* Title 38, Part 491-A, 104th Legislature, April 14, 1969.

[15]Maine State Legislature. *An Act Concerning the Administration and Program of the New England Interstate Water Pollution,* Title 38, Part 496-B, 104th Legislature, April 14, 1969.

[16]E. C. Jordan Co., *Maine Water Resources Plan,* Vol. II, p. 110.

[17]*Ibid.,* Vol. II, p. 128.


Maine
QUEBEC
NEW BRUNSWICK
NEW HAMPSHIRE
Saint John River
Saint John River
Allagash River
Fish River
AROOSTOOK
Aroostook River
Prestile Stream
Aroostook
Penobscot
Mattawamkeag R.
Meduxnekeag R.
PISCATAQUIS
Piscataquis River
Moose River
SOMERSET
Dead River
Kennebec River
Carrabassett River
FRANKLIN
Sebasticook R.
PENOBSCOT
Penobscot River
Saint Croix River
WASHINGTON
E. Machias R.
Machias River
Pleasant R.
Narraguagus R.
Union River
HANCOCK
WALDO
KENNEBEC
Androscoggin
OXFORD
Little Androscoggin R.
ANDROSCOGGIN
Kennebec River
KNOX
LINCOLN
SAGADAHOC
CUMBERLAND
Saco
Royal R.
Presumpscot R.
Mousam R.
YORK
Kennebunk River
Salmon Falls River
0 10 20 30
MILES
S Sheepscot River
D Domariscotta River
M Medomak River
MAP VIII-2
Major Rivers and Drainage Areas
DED Planning, Research, and Program Assistance

true because of the increase in industrialization in Dover, Somersworth, and Rochester in Strafford County, New Hampshire, which appears to be stimulating potential expansion of industrial development in Berwick and adjacent communities on the Maine side of the Salmon Falls River. As time goes on, it is probable that a band of industrial development will spread east from Dover, New Hampshire, to Sanford, Maine, with strips of housing developments occupying most of the space between the industrial plants. Public investment will be needed to stimulate a regional approach to the abatement of pollution and the establishment of the environmental controls needed for a wholesome type of development.

$50,000,000 Bond Issue for Pollution Abatement. The 104th Legislature also passed a bill authorizing the Treasurer of the State to issue bonds in the sum of 50 million dollars for the purpose of raising funds to provide for the planning, construction, and equipment of "pollution abatement facilities" throughout the state. The act (L.D. 1209), signed by Governor Curtis on July 2, 1969, is subject to ratification by referendum vote on November 3, 1969.

If ratified, the bill specifically would empower the Water and Air Environmental Improvement Commission to use the bond proceeds, procured by the State Treasurer, as it wishes for the purpose of "pollution abatement" in the State of Maine. The bonds shall mature 20 years after their issuance, and may be redeemed before maturity at the option of the Treasurer of the State.

The act enables the Water and Air Environmental Improvement Commission to apportion and expend $4.3 million during the period ending June 30, 1970, and $7.3 million during the following 12 months. Although these funds will provide only a very small portion of the public investment needed to help Maine municipalities construct and equip adequate sewage treatment facilities, they will provide seed money as a step in the right direction.

The Maine Water Resources Plan indicates the need for $300 million for water pollution control and $50 million in public water supply development. The opening summary of the report states:

> . . . There is currently no body within the State which possesses either the authority or capability to conduct integrated statewide water resources planning and to implement coordinated programs which are within the financial means of the citizens of the State.
>
> The lack of specific water resource goals and the limitation of our institutional systems have resulted in painfully slow progress in water resources development and pollution control efforts. A program of pollution control of a magnitude of $300,000,000 must be anticipated if the waters of the State are to be maintained in a condition consistent with established water quality standards. A program of public water supply development and improvement of a magnitude of $50,000,000 must be anticipated if modern, safe, and reliable water supplies are to be available to the people of Maine.[18]

The summary also points out the need of developing "least cost alternatives to achieve maximum results."[19] Unless flexible, imaginatively sound, and properly funded "programs are developed, efforts toward pollution control will likely be ineffective. The result will be damaging to economic growth and diversification and to efforts to conserve both the economic and esthetic values of the natural environment."[20]

River Basin planning and the possible creation of river basin commissions are recommended. The *Maine Water Resources Plan* makes the following "Institutional Recommendations":

> The institutional system adopted must provide equitable and efficient means to finance the planning and implementation of water resource development and pollution control systems within the financial capability of the State and its citizens. It should be capable of relieving the State, and particularly local governments, of this financial burden. Economic techniques must be used to provide waste reduction incentives to industries and municipalities.
>
> The planning and implementation of an integrated pollution control and water resources development program must be a governmental function. These responsibilities should be carried out at the lowest level of government capable of effectively coping with the many complexities inherent in the program. Our analysis indicates the following:
>
> 1. State wide river basin and coastal area planning can be accomplished most effectively at the State level. To carry out effectively coordinated statewide water resources planning, a State water resources agency must be empowered with responsibility to develop plans and opera-

[18] *Ibid.*, Vol. I, p. 14.
[19] *Ibid.*, Vol. I, p. 15.
[20] *Ibid.*, Vol. I, p. 15.

tional programs for each river basin and coastal area consistent with the needs of the State as a whole.

2. Operational implementation of water resources plans can take place effectively at either river basin or State levels. Implementation of water resources programs at the river basin level requires the creation of river basin commissions with authority transcending local political boundaries and encompassing an entire river basin and contiguous areas. There is currently no such level of government in Maine. Creation of river basin commissions would in effect establish another level of government between municipalities and the State.[21]

The report mentions that a State water resources agency might be authorized and funded to implement these water resources programs if it were decided not to create river basin commissions, but it urges that a thorough study be made of the advantages and disadvantages of the alternatives before any legislative decision is made. A series of five recommendations for legislative action are given. (See Appendix A at end of this chapter.)

A combination of effluent fees and user charges should supplement available public investment funds in the financing of pollution control facilities. The discussion of "Financial and Operational Recommendations" (See Chapter Appendix A) points out that the most desirable approach would satisfy the following criteria:

A. It would enable development of integrated river basin and coastal area systems that represent optimal allocation of funds and effort.

B. It would provide an equitable and efficient means of financing pollution control systems.

C. It would provide economic incentives for reducing waste discharge.[22]

Unless effluent charges were imposed, the latter conditions might not be satisfied, whereas user fees would be needed to finance treatment facilities as an alternative to placing too great a financial burden upon individual municipalities and industries. The combination approach recommended by the *Maine Water Resources Plan* is therefore:

> River basin commissions or the State water resources agency may adopt a system using a combination of effluent charges, and ownership and operation of pollution control facilities financed by user fees.[23]

A detailed discussion of these recommendations may be found in Volume One of the *Maine Water Resources Plan.* (See Chapter Appendix A.)

More public investment in flood control and environmental control of flood plains is needed. When the ice melts in the spring, a certain amount of flooding is to be expected in all of Maine's major river valleys, affecting all four Subregions of the State. One recommendation that has been publicly discussed is impounding reservoirs in the upper parts of the major river valleys and on tributary streams so that the towns and cities farther down the valleys may be saved from excessive flood damage.[24]

Of great importance is the need of zoning natural flood plains so that unwary persons will not be allowed to erect buildings in places where extensive spring flooding is to be expected nearly every spring. The flat lands near Lovewell Pond in Fryeburg near the New Hampshire border in NERC No. 12 Western Subregion are a good example. State zoning ordinances should be adopted to protect unwary investors from being sold cottage lots in flood plains. Flood plains should be so designated. In limited cases construction might be permitted if artificial mounds were first built to raise building foundations above anticipated spring flood levels, but most of the flood plain area should be held for the temporary storage of normal flood waters in the spring, with summertime use for farming, parks, and playgrounds. Since rural, sparsely settled communities lack the necessary administrative apparatus for zoning controls, such zoning should become a function of the State.

State controls to prevent destructive erosion and supervise mining operations should be expanded. A good beginning of such controls was made by the passage and signing of a new part 5-A which was added to Title 10 of the Revised Statutes on July 2, 1969. The "Declaration of Policy" reads as follows:

> It is declared to be policy of this State while encouraging the prudent development of its mineral resources that where mining operations are conducted, to provide for the reclamation of affected lands and to encourage their productive use, including but not limited to: The planting of forests; the seeding of grasses and legumes for grazing purposes; the planting of

[21] *Ibid.*, Vol. I, p. 15.
[22] *Ibid.*, Vol. I, p. 16.
[23] *Ibid.*, Vol. I, p. 16.
[24] *New York Times,* April 20, 1969.

crops for harvest; the enhancement of wildlife and aquatic resources; and for the conservation, development, management and appropriate use of all the natural resources of such areas for compatible multiple purposes, and to protect the health, safety and general welfare of the people, as well as the natural beauty and environmental values.

It is the policy of the State of Maine that unless the mining operation includes provisions to rehabilitate the area of land affected or otherwise comply with an approved mining plan issued pursuant to this chapter, a mining operation is justified only in the case of national emergency.[25]

A following paragraph 2203 of the statute establishes the Maine Mining Commission, consisting of one representative of mining interests, one representative of conservation interest, two public members trained in the fields of either geology, planning, biological science or civil engineering, and one other public member, to be appointed for rotating 5-year terms by the Governor and Council. The Maine Mining Commission is empowered to employ a director, at compensation set by the Governor and Council, and the director is empowered to employ "such personnel as may be necessary to properly administer this subchapter, including mining engineers and persons experienced in land management and reclamation."[26]

Every mining operator must file with the commission an acceptable mining plan providing for the reclamation of land affected by a mining operation subsequent to the effective date of this chapter. The mining plan is to be accompanied by a fee, ranging from $50 to $500, depending upon the acreage involved, and also accompanied by a bond ranging from "not less than $100 nor more than $1,500 for each acre or fraction thereof of the affected area."[27]

There is a question whether the maximum permissible bond is sufficient to insure compliance with the intent of the statute. If the inflated costs of today continue to increase, it would probably be much cheaper to forfeit the bond than reclaim the land so that vegetation can be restored.

There is also a question whether the "grandfather" clause may not be abused for want of stricter definition of land excluded from this protection because it was "affected" by mining operations prior to the new law. The all-important "affected" is not included in the definitions.

It also appears unfortunate that "sand, gravel or borrow operations" are specifically and completely excluded from any form of control. Although such operations need not be controlled as strictly as the mining of ore, uncontrolled operations of this sort can result in unnecessary erosion, often interfering with the property rights of others.

No mention is made in the statute about the control of possible chemical pollution of coastal or other waters. When exposed to the rain, certain types of ore tend to allow injurious chemicals to leach away. This is particularly true when various processes for concentrating the richness of the ore are used and the tailings are dumped in low areas.

The long-range planning program of the Park and Recreation Commission should receive increased public support. Their current study of the recreational and environmental conservation needs of Maine is scheduled to be completed by January 1971. Whether the planning will include any recommendations for small picnic areas or incidental parks of limited size is not yet known, but it would appear that the more densely populated areas, particularly in NERC No. 13 Southwestern Subregion, need a number of such small public areas to be set aside before summer cottage and commercial developments choke off any more public access to the seashore or the shores of nearby lakes.

There appears to be a continuing rise in state park utilization, but there is some question whether sufficient funds are available for the proper maintenance and servicing of these parks. It is probable that camping fees should be increased and the receipts used to pay for expanded services. As a matter of general policy, however, it would appear that park services should receive additional public funds.

To supplement the state parks, community park facilities and private camping developments should be encouraged within the framework of proper sanitation and land use. The new all-season recreational area at Brownfield near the extreme southern corner of NERC No. 12 Western Subregion is an example of one such project, developed by private citizens with the technical assistance of specialists in the Cooperative Extension Service of the University of Maine at Portland.

Public education is needed concerning pollution and trash disposal. Many motorists traveling from Maine

[25]Maine State Legislature, *Declaration of Policy,* Title 10, Part 5-A, 104th Legislature, July 2, 1969.
[26]Maine State Legislature, Maine Mining Commission paragraph 2203.
[27]*Ibid.*

through New Hampshire and Vermont notice that the roadsides and picnic areas in New Hampshire and Vermont seem to be much neater than those in Maine. There seems to be a lack of public education in Maine to promote civic pride in neatness and trash disposal. This appears to be true not only of our individual citizens but also our municipalities, all too many of which seem to have no compunctions about letting their dumps and dump fires offend the eyes and noses of tourists on the public highways. Public education to develop a higher level of civic pride appears to be needed.

Public education is also needed to develop a sense of shame on the part of people who dump trash, garbage, and other refuse from automobiles on the highways or from boats into harbors, lakes, and streams. Although policing such infractions is very difficult, maximum fines might be assessed whenever eyewitness testimony corroborates such infractions, and the fines should be given full publicity in newspapers. Every pyschological stratagem should be used to promote pride in public neatness on the part of our citizens.

It might be advisable to create some public sanitation officers to patrol our major state parks, emphasizing public education about neatness, sanitation, and the general housekeeping of camping, but also having police powers so that campers who disregard this public education could be served with a court summons and properly prosecuted.

Other types of public education to develop public awareness of the importance of individual cooperation in natural resource management should be expanded. The Department of Inland Fisheries and Game is currently administering a $10,000 expenditure in conservation education for teachers and school children. It might be desirable to use additional public funds to extend such education to a larger segment of Maine's population.

Research Studies in Environmental Control Should Receive Increased Public Support.

In addition to the various public action plans discussed in the previous pages of this chapter, there appears to be a need for innovative studies designed to advance the state of the art of managing natural resources.

Many of the departments and commissions of State government have been engaged in specialized studies related to the preservation of natural resources. It is hoped that all these studies will make a contribution to conservation. A few important basic studies, however, appear to deserve a priority in the allocation of public funds.

The State Planning Office's proposal for a Coastal Development Plan deserves high priority in public investment. This proposal is being advanced as part of a plan and action program for the entire New England coastal zone, to be coordinated by the New England River Basin Commission. New Hampshire, Massachusetts, Rhode Island, Connecticut, and the Long Island Sound area of New York are also preparing individual development plans for their own coastal zones. The New England River Basin Commission is expected to coordinate the efforts among the states, develop regional inputs, and draw national considerations from appropriate federal agencies.

According to a recent Associated Press news release, a federal grant has been awarded, but certain State legislative action will also be needed:

> The State Planning Office has received a $50,000 grant to start work on a comprehensive development plan for the Maine coast, Gov. Curtis announced . . .
>
> Curtis said the plan is "the number one priority for state planning." He said the coast is under extreme pressure by persons who want recreational and living space and industrial and commercial opportunities.
>
> He said the plan—first of its sort in the country—will place special emphasis on a land classification system with development standards for specific areas that will allow land-use control.
>
> The governor will recommend necessary legislation, as well as methods of financing the project and administrative arrangements, to the next legislative session.
>
> Water use will also be examined closely.
>
> Planning Office Director Philip Savage will cordinate the project.
>
> A tentative timetable has 1970 as the target date for gathering basic information, 1971 for a draft of a comprehensive plan and 1972 for public hearings and revisions.
>
> The final plan will be published in late 1972.[28]

The study proposed by the Maine State Planning Office would encompass three major elements, the first of which would be the preparation of a basic inventory of existing land types, use, and ownership. This activity

[28] *Portland Press Herald,* September 18, 1969.

would include the classification of all coastal shoreline, including islands and estuaries, by physical type, together with a general analysis of ownership patterns by lot size and owner residence, with real and assessed valuations. The inventory would also include land-use mapping prepared through the use of aerial photographs, information obtained by field investigations, and supplementary information from existing land-use studies. Any important historical, commercial, or recreational features would be considered, as well as actual and potential transportation facilities and long-range trends in both seasonal and permanent population. The composite of all these elements would then form a basis for consideration of the relationship between land and water use.

The second major element in the study would comprise a review of existing plans and proposals for the coastal area, including examination of federal, State, and local plans along with private, industrial, recreational, and commercial plans. Interagency and public-private coordination would be examined and evaluated, so that an effective planning partnership might be created, with organization to provide coordination among federal, State, and local governments and private enterprise activities. This should be accomplished early in the study, so that the planning process, coordinating procedure, and necessary controls can be established and implemented as soon as possible.

The third and final major element of the study would be the preparation of a comprehensive development plan for the coastal areas of Maine. The plan would place special emphasis on a land classification system, with development standards to be applied to specific areas. The classification system would be designed to permit adoption and enforcement of land-use controls by appropriate local, State, and federal levels of government and to guide sound development practices by both private enterprise and public agencies. Necessary State legislation and local ordinances would be recommended, together with financing proposals and administrative arrangements. Background information of transportation, population, community plans, and various specific State goals would be included in the plan documents.

The study would attempt to relate proper land use to water use, water pollution, and problems anticipated from offshore activities. Among other subjects, this aspect of the study would define regulations needed to control mineral exploitation, as in the case of exploitation of gas and oil deposits, establish an adequate information base and scientific approach for conservation laws, deal with problems arising from marine recreation, consider navigational limitations and port development, and make a detailed study of the overall pollution problem in relation to recreational, commercial, and industrial development. The object of this aspect of the study would be to make compatible, through planning and regulation, many of the present incompatible uses of water and land along our coastal areas.

The proposal which has just been described has been presented as a top-priority project for the State Planning Office as part of its statewide planning responsibility. There appears to be an urgent need for such a plan to assure sound and orderly development as a means to conserve one of Maine's greatest assets, its coastal resources.

The proposal has been approved by federal authorities as a demonstration planning project, for such a project would be appropriate to any state with substantial lakeshore property, as well as to any state with a seacoast. It appears certain that coastal areas on seacoasts and large lakes throughout America will be subject to increasing demands because of development activity concentrating population along these coastal stretches.

Proposed studies by the Department of Sea and Shore Fisheries deserve support through increased public investment. A number of the recent research projects developed by the Department of Sea and Shore Fisheris have been of great economic benefit to the State of Maine, but officials of the Department maintain that our living marine resources are endangered in their abilities to survive because of the increases in damaging waste products of industry, agriculture, and concentrations of population. The Department is currently engaged in a number of monitoring programs to check marine pollution by heavy metals, pesticides, oil, thermal alterations, radionuclide contaminations, industrial wastes, etc.[29] These programs, however, need to be expanded, and public investment is needed to provide added personnel, together with the necessary laboratory and field equipment.

The Department of Sea and Shore Fisheries is also working jointly with the Department of Inland Fisheries and Game on a comprehensive study which will inventory specific categories related to fish, wildlife, and marine resources.[30] The organized data compiled by this study, together with its ecological implications, will be of value as an independent study. Its usefulness, however, will be multiplied, for it is proposed to be related to the Coastal Development Plan, the important proposed project of the State Planning Office, as described in the preceding subsection of this chapter.

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[29]Letter from Ronald W. Green, Commissioner, Department of Sea and Shore Fisheries, State House, Augusta, Maine, July 25, 1969.

[30]*Ibid.*

APPENDIX

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Maine Water Resources Plan, Vol. I, pp. 16-22.

Financial and Operational Recommendations

Three financial and operational techniques are available for effective pollution control in Maine. These techniques are:

1. An effluent charge, imposed by the river basin commissions or the State water resources agency to be paid by waste water producers, both public and private, in relation to the quality and quantity of wastes which they discharge. Industry and municipalities would provide and operate their own treatment facilities.
2. River basin commissions or State water resources agency ownership and operation of all pollution control facilities whether treatment or nontreatment in nature, financed by user fees.
3. River basin commissions or the State water resources agency may adopt a system using a combination of effluent charges, and ownership and operation of pollution control facilities financed by user fees.

A combination approach, as described in item 3 above, offers the greatest promise of satisfying the following criteria for effective pollution control programs:

a. It would enable development of integrated river basin and coastal area systems that represent optimal allocation of funds and effort.

b. It would provide an equitable and efficient means of financing pollution control systems.

c. It would provide economic incentives for reducing waste discharge.

Legislative Recommendations

1. The Legislature should empower a water resources agency to establish and levy initial effluent charges sufficient to provide funds for comprehensive, detailed water resources planning for all river basins and coastal areas in Maine.
2. The water resources agency should be empowered to employ a core staff of professional engineers, planners, economists, and ecologists to define detailed planning goals and to administer the planning program. Competent consultants should be used to assure that alternatives and plans are developed within a reasonable period and to avoid major staffing problems.
3. Upon Legislative review of completed plans and establishment of basic State policy, river basin commissions should be created and empowered to implement water resource development systems through authority to levy user fees and effluent charges, to construct and operate pollution control facilities, and to undertake optimum combinations of management techniques which may be applicable. The water resources agency would then become an advisory State-level institution administering grant-in-aid programs and providing continuing planning to coordinate the activities of the river basin commissions in relation to statewide goals and programs.

   If detailed planning and evaluation of the advantages and disadvantages of creating an intermediate level of government dictate it undesirable to establish river basin commissions, the water resources agency should be empowered to implement the system in a like manner.
4. The water resources agency should be vested with continuing planning and operational responsibilities to successfully accommodate economic growth and changing conditions in ways consistent with the preservation of Maine's natural environment and established goals.
5. During the initial planning process the water resources agency should coordinate current construction and use Federal aid programs to maximum advantage and ensuring that facilities so installed reflect

to the extent possible the long-range goals of the State.

Discussion of Recommendations

River Basin Planning

The State of Maine has not established the goals of its water resource development program in terms that can be translated into operational courses of action. It is insufficient to say that the water resources goal is economic development consistent with environmental conservation. While such a statement is a sound policy goal in a broad sense, it neither suggests finite achievement goals to serve as a basis for operational programs nor does it suggest criteria by which performance may be measured.

The finite goals of the State's water resource development program must be melded with the economic realities of achieving these goals. How much are the citizens of Maine willing to pay for given levels of water quality and resource development? What should be the proper balance of industrial growth and resource conservation? What benefits can be achieved through various levels of pollution control effort? What allocation of financial and technical resources represents the maximum benefits for the least cost? What is the optimum relationship of expenditures for pollution control to other State needs, such as education, transportation, and welfare? These questions are indeed difficult to answer. However, they must be answered before a truly sound pollution control and water resource development policy can be established.

The determination of a water resources policy will require a great deal more basic data and evaluation before the Legislature can be realistically expected to formulate the State's goal. The advent of the digital computer and advanced engineering, economic, and social technology make sophisticated analytical capabilities available. The magnitude of its water resource problem is so great that Maine cannot afford to ignore these analytical tools.

Maine is singularly suited to carrying out statewide water resources planning. The size of its river basin is such that the development of one cannot be isolated from that of the State as a whole. Many of Maine's rivers are intrastate. Most are related through their common terminus in the tidal zone of the sea. Thus, analysis of water resources requires State level coordination of the goals and programs established for each of the river basins and coastal areas. All phases of water and land use must be considered in relation to resulting environmental changes and their economic impact. Because of the far reaching impact of any significant water use, planning solely on the local level, or even the regional level, is excessively narrow. It should be realized that the needs of all Maine communities are related by a common water resource, and that State level coordination is necessary to assure their effective articulation and representation.

There is currently no body or institution at the local, regional, county, or State level of government to effectively undertake the necessary comprehensive planning. This planning should be accomplished by a level of government adequate to implement programs on a river basin level. This can best be achieved by either river basin commissions created for such purpose, or by State government through a water resources agency with adequate authorization and funding. The need for comprehensive planning is urgent. To meet this need, it is recommended that it be carried out by a State level organization which can effectively relate the economy of each basin with that of the State as a whole.

Institutional Systems

The present institutional system for pollution control and water resource development consists of a State-designated stream classification procedure requiring generally uniform reduction of waste loads. As has been mentioned, planning, construction, and operation of pollution control and water supply facilities are primarily functions of local government and industry. These fragmented efforts are incapable of efficiently meeting the demands of the future, although they have, up to this time, identified problems and impeded further water degradation. The present system has created a public awareness of the state's pollution control problem. It is probably the best system that could have been expected until the full scope of the water pollution problem was understood by the people.

The present system has several weaknesses rendering it ineffective for action on the massive scale ahead. Classifications established for the State's water may not represent the best usage of any given water. In some instances the assigned classification may permit a low quality of water due to existing waste load conditions, while detailed land and water use analysis may demonstrate that a higher quality of water would be

in the best interest of the State. In other areas, the cost of pollution control facilities necessary to maintain a given classification may be unrealistically high when weighed against the resulting benefits. The degree to which land and water resources may be misallocated cannot be determined without detailed river basin planning. The current classifications were established after limited study by the Water and Air Environmental Improvement Commission. Limited staff, limited funds, and limited authority have prevented a more complete analysis.

The present system, especially as regards the uniform reduction of wastes requirement, enables neither optimization of facilities nor consideration of the value of non-treatment methods of pollution control such as low flow augmentation, re-oxygenation, and effluent distribution. Studies using optimization techniques for the Delaware and Potomac River Basins have demonstrated that to achieve a given water quality by uniform reduction may cost several times more than an alternative least cost system which enables concentration of effort on the major sources of pollution. To achieve an optimal system the water resources agency or river basin commissions must have the flexibility to provide varying degrees of pollution control depending upon the overall benefits to be derived within the region. While it is unlikely that a theoretical least cost system can be achieved in actual operations, the magnitude of the problem requires that every attempt should be made to approximate it.

The existing classification and uniform reduction system provides no economic incentive for reducing the waste load beyond that specified, even though further reduction might be economically justified by downstream usage. Economic incentives for waste reduction should play a vital part in the State's long-range water resources program. They provide inducement for self-reduction of wastes and minimize necessity for direct public regulation and enforcement. The current system requires essentially uniform pollution reduction at all facilities regardless of the river flow, temperature, and other factors affecting waste assimilation. It is possible that significantly reduced operating costs can be achieved if plant operations are effectively geared to river conditions. Such variable treatment is practical only if pollution control facilities are considered as interrelated elements within an entire river basin system. Modern technology and management techniques enable continuous monitoring and operational control of the system's pollution control devices. In this way efficiency adjustments can be made as needed to assure optimal benefits from the system.

It is generally accepted that in many urban areas regionally integrated pollution control systems represent the most efficient method of pollution control, allowing the most flexibility in water and land use planning. Yet the present institutional system has no way of assuring installation of regionally integrated systems. As a result few have been effectively initiated. Where detailed studies indicate that a regionally integrated system is best suited to an area, ways must be found to assure its implementation.

The current system places construction and operational responsibility for pollution control facilities on the local community. While State and Federal aid programs are available, municipalities are faced with the problem of bond financing a portion of the pollution control works as well as all improvements to its collecting system. This adds to the pressing demands for local capital improvement funds. State and river basin programs would relieve municipalities from the financial burden for all pollution control facilities except municipal sewers.

Municipalities are also burdened with recruiting and training treatment plant operating personnel. It is indeed ironic that many communities have treatment facilities, worth perhaps a million dollars, operated by essentially untrained and inexperienced personnel. The operation of treatment plants is likely to become more complex as industrial wastes are entered into the systems. A State sponsored training program for all treatment plant operators would provide a corps of qualified personnel to operate an interrelated system of facilities.

Institutional Alternatives

It is apparent that a basic change in the institutional systems for pollution control and water resource development is necessary. The remainder of this section discusses alternative institutional techniques.

1. The State could establish effluent standards under which each outfall would be assigned a maximum waste discharge limit.

To approach optimization effluent standards should vary with river conditions and vary with locations along the river. The establishment of such effluent standards

would be complex. If varying effluent standards were set so a least cost system could be approached, a severe equity problem would exist between polluters. If uniform standards were set on all effluents a least cost system could not be realized; thus effort could not be concentrated so to achieve the maximum benefits possible.

Whenever development within a river basin results in new waste loads of regional significance, effluent standards on all outfalls may require adjustment to maintain river conditions. When pollution control facilities are subject to separate ownership and control, such a procedure is obviously difficult.

Effluent standards usually do not involve consideration of the value of non-treatment methods of pollution control. If such methods are used with effluent standards there is no way of relating the cost thereof to those who benefit from their installation.

The effluent standard also fails to provide economic incentives for waste reductions beyond the minimum set by law. It does not assure the installation of regional systems; does not relieve municipalities of financing and operating problems; and, cannot utilize advantages of a river basin systems approach to operations.

The conclusion is that a system of effluent standards has little advantage to offer over present procedures. In fact, if Federally suggested minimum uniform reductions are adopted, the present system is basically an effluent standard system.

2. River basin commissions or the water resources agency could establish effluent charges whereby each source of pollution would pay an annual charge in relation to the wastes produced.

This procedure would provide an economic incentive for all polluters to construct waste reduction facilities to minimize their costs. Subject to the constraints imposed by a minimum stream classification, effluent charges could be set at a level which would tend to optimize facilities through economic balance. Economic incentives also tend to induce continued waste reduction beyond minimum limits to a point where costs are minimized by each polluter.

The establishment of effluent charges would require careful study and analysis through river basin planning. Charges may be uniform over the watershed or may vary along the river. If the charges are varied, an equity problem may arise; if uniform, the trend to optimization is lessened. Effluent charges should reflect damage functions, or the external costs created by pollution discharges, as well as the benefits derived through concentration of pollution control efforts.

The income from charges would be used to construct non-treatment pollution control facilities and water resources development assistance to municipalities. The cost of such facilities could in this way be related to the values gained by the polluter.

The weaknesses of the effluent charge approach are that it would not assure the installation of regional systems; would not relieve local communities of financing, constructing, and operating pollution control systems; and, would not be conducive to a river basin systems approach to pollution control operations.

Effluent charges, however, have the advantage of enabling significant benefits which cannot be derived from the present procedures. While the establishment of proper charges is a complex technical and economic problem, this technique deserves careful consideration in future planning.

3. River basin commissions or the water resources agency could construct, own, and operate all basic pollution control facilities, whether treatment or non-treatment. The facilities would be financed by user charges paid by municipal, industrial, and other producers of waste water. User charges would be set in relation to the quantity and quality of wastes produced.

By applying optimization techniques within a river basin it is possible to determine the types and combinations of facilities which approach the least cost method of achieving established river basin goals. User charges can be set on the basis of minimized costs and allocated among users in relation to benefits derived from both treatment and non-treatment pollution control facilities. Certain benefits of a pollution control system accrue to all citizens within the river basin and the State whether or not their property is connected directly to a sewer. In recognition of these widespread social benefits, a portion of the annual cost can be allocated to general tax revenues. In this way, equity problems could be reduced to the extent possible.

Capital costs of the facilities could be met through the issuance of revenue bonds which would be redeemed by a designated share allocated from income produced by the facilities. Treatment facilities constructed would

be eligible for the maximum aid under existing Federal programs.

Although limited Federal funds may be available for planning, the magnitude of the problem indicates that Maine must take the initiative and undertake river basin planning without procedural delay.

By charging users on a waste produced basis, an economic incentive is provided for continuing reduction of waste discharges. Charges on wastes produced could begin immediately and be used to fund detailed river basin planning leading to construction of necessary facilities. Immediate incentives would also be provided for in-plant waste reductions. Pollution control facilities owned by river basin commissions or the State water resources agency could assure adequate pollution control facilities to new industrial firms locating in the State. The cost of pollution control can be made available to a prospective industry thus eliminating an "unknown" during the site selection process. This device can also contribute to control over the development of new wet process industrial installations to assure their location in areas where the wastes can be handled properly rather than discharged into tributaries to lake systems, public water supplies, recreational, and other protected areas..

Ownership of pollution control facilities by river basin commissions or the State represents a radical change in concept. Essentially it transfers the pollution control function of government (but not municipal waste water collection) from the local level to either a river basin or State level. It must be noted, however, that even today local governments have limited control over the degree and type of treatment installed. The State and Federal governments now establish the criteria while the municipalities are left to finance and operate the facilities.

The institutional system currently being considered by the Portland Water District most nearly approaches the river basin commission concept. Contemplated legislation would give the District authority to provide pollution control facilities not only to communities in the Greater Portland Urban Area, but also the areas in the Sebago Lake Region to protect that source of water supply. Thus, the scope of the pollution control program contemplated by the District includes a major part of the Presumpscot River Basin and its adjoining coastal areas. An expansion of authority could make the District an integrated pollution control and water resources development institution for the Presumpscot River Basin. The relationship of water supply and pollution control makes such institutional systems mandatory.

To many, this transfer of pollution control function may be seen as eroding local control and placing authority farther from the individual citizen. The economic and environmental benefits gained by such transfers, however, would seem to outweigh the lessening of local control, provided the river basin commission or the State agency is organized to efficiently accomplish its assigned task. To minimize the loss of local autonomy, local communities and regional planning commissions should have an effective voice in establishing policy goals and programs by the Legislature and the water resources agency. Establishment of the recommended legislation and institutional structures should give careful consideration to the need for local participation.

Our analysis indicates that a combination of publicly owned facilities, at the State or river basin level, financed by user fees and effluent charges may be the best long-range pollution control system for the State of Maine. Comprehensive river basin planning may reveal that certain industries and isolated sources of pollution can more effectively utilize an effluent charge system than full ownership by a river basin commission of the State water resources agency. The optimum combination of facilities and charges should be established upon completion of river basin and coastal area planning. It must be recognized that a State owner system will be a massive undertaking requiring careful scheduling to assure its completion within a reasonable time period. Lengthy delays involve a danger of some areas being provided with the benefits of the system while others are not. While temporary misallocations may exist during installation, their continuance would be unwise.

Relation of Water Resources Commission to Water Supply Systems.

The problems of maintaining a potable water supply cannot be separated from pollution abatement. Therefore, the primary thrust of the previous discussion is directed toward broad macro-scale pollution control and water resources development through a water resources agency empowered to plan and carry out a statewide program. This agency should also participate in water supply planning. The agency's activities should include analysis of the basic water supplies of each water sup-

ply system with recommendations for consolidation to most effectively utilize available water resources. Plans should be based on an evaluation of the potential impact of demands to export water to the metropolitan regions of the south.

The water resources agency should also require that all public water supply facilities be analyzed by their management to determine detailed system capacity and ability to meet modern standards. The agency should be empowered to require improvements by local water systems to meet minimum standards of quantity of supply, quality of supply, and fire protection; and, to require consolidation of supplies when such consolidation proves in the best interest of the region. Staffing of the agency should enable it to monitor the quality of individual well water sources through analysis and inspection, and to require discontinuance of use if health considerations warrant.

Summary

In summary, it is our finding that Maine can achieve effective water resources management systems by combining effluent charges and user fees to finance the ownership and operation of pollution control facilities by a State water resources agency or river basin commissions subject to statewide water resources policy. Detailed planning for the implementation of this system can be started now. Legislature action empowering a water resources agency to implement initial effluent charges would provide funds for statewide water resources planning and an immediate economic incentive for reduced pollution. Upon completion of this planning the Legislature can determine the appropriate blend of administrative techniques and provide additional authority to implement the selected system.

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