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A Plan for Highway Classification in Maine, 1952

Maine State Highway Commission

Maine Department of Transportation

Automotive Safety Foundation

U.S. Bureau of Public Roads

U.S. Department of Commerce

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A plan for HIGHWAY CLASSIFICATION in Maine

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A plan for HIGHWAY CLASSIFICATION in Maine

1952

An Engineering Report

to the

State Highway Commission

State of Maine

Lloyd B. Morton, *Chairman*
Harley D. Welch
Harold B. Emery

Authorized by

The 95th Legislature

State of Maine

Chapter 117, Resolves of 1951

H.P. 1780 — L.D. 1318

AUTOMOTIVE SAFETY FOUNDATION
700 Hill Building—Washington 6, D. C.

December 15, 1952

Mr. Lloyd B. Morton, Chairman
State Highway Commission
State of Maine
Augusta, Maine

Dear Mr. Morton:

In accordance with our agreement with the State Highway Commission concluded March 12, 1952, transmitted herewith is the engineering report entitled "A Plan for Highway Classification in Maine".

This report fulfills the requirements of paragraph I of the 1951 RESOLVE of the Legislature of the State of Maine "Authorizing a Reclassification of Highways" and directing the State Highway Commission "to employ an impartial consulting organization" to make the study.

Paragraph II of the RESOLVE calls for an analysis of town road needs which is also included in our agreement. A report on this subject will be rendered soon after compilation of new inventory data for all such roads, which work is proceeding as rapidly as possible.

In conducting the classification study and producing the final report, we received the wholehearted cooperation and assistance of the Commission, State Highway Department personnel, other state departments, and members of the U. S. Bureau of Public Roads. Our appreciation is extended to them and especially to Messrs. Lucius D. Barrows, Chief Engineer; Fred G. Eaton, Director of the Highway Planning Division; L. Smith Dunnack, Assistant Attorney General; Oscar A. Crockett, Project Manager; Arthur Edgerly and Kenneth Hamilton of the Planning Division; and Lawrence Cote and Linwood Partridge who supervised preparation of maps, charts and layout.

Mr. James O. Granum, Registered Professional Engineer, State of Maine No. 777, was in direct responsible charge of the study for the Automotive Safety Foundation. Other staff members who participated include J. P. Buckley, Chief Engineer and Albert Proctor, Editorial Adviser.

The Foundation assumes full responsibility for recommendations and contents of this report, and believes that they offer the State of Maine an improved basis for sound highway management, development and financing.

Yours very truly,

C. E. Fritts
Vice President

Prepared by the

AUTOMOTIVE SAFETY FOUNDATION

in cooperation with

STATE HIGHWAY COMMISSION
STATE OF MAINE

and

BUREAU OF PUBLIC ROADS
U. S. DEPARTMENT OF COMMERCE

A Federal-aid State-wide Highway Planning Project

financed by

STATE HIGHWAY COMMISSION, STATE OF MAINE
U. S. BUREAU OF PUBLIC ROADS

SUMMARY

Maine's 22,000 miles of highways, roads and streets are divided into three systems by the State Highway Commission, whose policies are guided by basic legislation enacted in 1912 and amendments which have served to increase the state's responsibilities for management and finance.

Today, the state is almost wholly responsible for 45 per cent of all mileage — the highest of any state except four which control nearly all their mileage — and 6 per cent more are designated. The trend has been steadily upward; since 1937, State Highway mileage has increased 43 per cent, State-aid Highways, 52 per cent. However, funds available, at 1937 values, permitted less work in 1951 than in 1937.

Both state systems are supported largely by highway user taxes and Federal Aid, with funds divided almost equally between the two systems. Property taxes provide nearly 30 per cent of all highway, road and street funds; they are used mainly for Town Ways, for which organized towns are solely responsible, and to aid initial improvement of State-aid Highways and for snow removal.

Three systems, when properly classified, were found adequate to re-define management responsibilities, financing methods and standards of construction and maintenance. Roads and streets whose predominating service was identified, by engineering analysis of a number of factors, as of state-wide importance were classified as State Highways; those of community-wide importance, as State-aid Highways; the remaining mileage of interest primarily to local users, as Town Ways.

Results show that each existing system includes some facilities that should be in another classification, with net results shown below;

	Existing Mileage	*Recommended Mileage*
State Highways	3,167	3,250
State-aid Highways	7,922	5,578
Town Ways	10,765	13,055
Total	21,854	21,883

The basic management question is whether the trend should continue toward ultimate state control of *all* roads and streets, or whether strong, efficient units of local road administration would produce greater benefits for highway transportation.

The former solution might result in somewhat greater efficiency and simplicity, but is not consistent with traditional American philosophy of government which favors leaving responsibility for predominantly local problems in local hands. It might also reduce financial support locally, with consequent dispersion of state funds, as well as attention, from the principal arteries of the state.

The second course would call for greater efficiency and economy in Town Way operation, suggesting the need for formation of "road unions" or county administration. Either, on the basis of experience in many other states, could become an efficient administrative agency. At the same time, more state responsibility for urban routes is suggested.

In any event, continuation of the present trend of gradual change, with its attendant mixing of routes having state-wide importance with others of more local significance, should be corrected. Reclassification is needed regardless of ultimate decisions to divide, or not to divide, road and street administration among units of government; it is still the foundation for tax policy, allocation of funds, planning, standards and priority.

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INTRODUCTION

Highway classification is the grouping of highway routes of similar predominating service into manageable systems for administration, financing, development and maintenance.

Classification is required to answer these basic questions —

- What agency of government should administer which roads and streets?
- How should they be paid for?
- What standards should be used?

In order that each unit of government may know what its responsibilities are, what plans to make for caring for the roads or streets under its jurisdiction and what funds it may expect, the classification plan needs to be clear-cut and firmly fixed in keeping with the permanence of financing methods and the life of road improvements.

Further, the plan should assign each class of roads and streets to the governmental agency which has the most logical interest in its management and which is best able to meet its needs.

The plan must be based upon facts which identify the systems and the specific routes which should be contained within them. All roads or streets in a given system should be of similar service importance, within the limits of practical ranges. Otherwise, instability results, with attendant difficulty of planning for the future in all phases of the highway programs of every governmental unit concerned.

All tax-paying groups likewise have a vital stake in the development of a sound plan. Naturally they wish to know their future obligations.

This study is the first of its kind called for by the Legislature since it originally directed the State Highway Commission to classify highways 40 years ago. That action had far-reaching effects and has been the basis for development of today's highway transportation system in Maine. Positive action based on the findings of this study, can now set a course for future progress, guided by experience and facts.

To obtain maximum benefits, it is suggested that legislative consideration be given to certain recommendations falling outside the powers and duties of the State Highway Commission, but implied in the RESOLVE authorizing this report, quoted in part as follows:

> *"Reclassification of highways authorized. Resolved: That the state highway commission be, and hereby is, authorized and directed to study the present administrative classification of all public highways in the state and to reclassify highways now designated as state and state aid highways on a basis of traffic and benefits rendered as provided by statute; and be it further*
>
> *Resolved: That, to implement this study and reclassification, the state highway commission is authorized and directed to employ an impartial consulting organization experienced in the field of highway planning and administration to:*
>
> *I. Study the overall administrative classification of highways as well as the highway laws relating to such classification and make recommendations relating thereto; . ."*

The recommendations and suggestions contained in this report are designed to provide the basis for long-range improvement of highway transportation in all areas of the state and in each class of roads and streets.

Chapter I

SYSTEMS TODAY

The 22,000-mile public road and street network of the State of Maine is divided into three systems, each of which is differently administered and financed. This chapter describes the present systems, how they are determined and the existing management and financing methods.

All these are based on laws and policies which reflect the experience, knowledge and judgment of many people. Certainly the present plan should be changed only when it is found that Maine's interests could be served better by making some revisions. Therefore this study begins by reviewing the situation as it exists today.

State laws give to the State Highway Commission the power to select which roads and streets are to be included in the two systems established by the Legislature, and provide also for distinction between rural and urban portions of them.

The third system consists of all other public roads and streets which, under state laws, have been determined by county commissioners or town officials.

Federal laws also provide for selection of federal-aid systems by the state, with approval of the U. S. Bureau of Public Roads, both acting within limits set by Congress. The federal-aid systems do not necessarily affect selection of state systems. Rather, they indicate which portions of the latter are eligible for expenditure of federal-aid funds for construction.

The Maine Turnpike, a toll road, is not included in this review and analysis since it is the subject of special determination and legislation which does not affect the state's obligation to provide general highway service on a toll-free basis.

In addition, there are small mileages of state and federal park and forest roads which are not included in this study since they are independent of the general road network and financing.

STATE SYSTEMS

The road network of the state and the specific rural roads contained in the three state systems are shown in maps on the next pages. The three are:

State Highways	3,167 miles
State-aid Highways	7,922 miles
Town Ways	10,765 miles
All Roads and Streets	21,854 miles

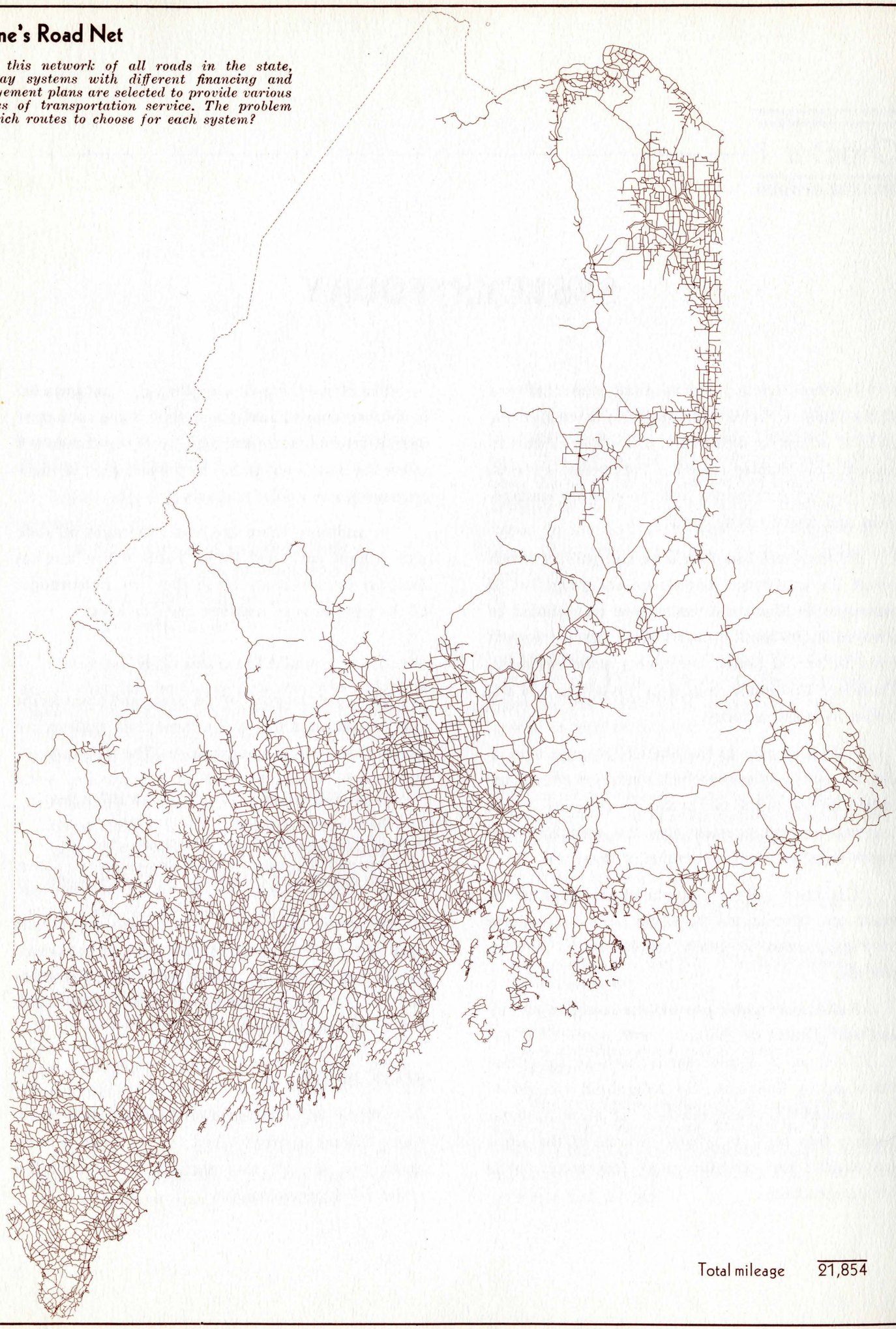
Of this grand total of all public roads and streets open to travel, according to the most recent inventories, 1,031 miles are in 30 urban areas. These are defined as compact portions of towns within which live 5,000 people or more.

STATE HIGHWAYS

Of the 3,167 miles of designated State Highways, 133 are in urban areas, leaving 3,034 in rural areas and the compact sections of communities under 5,000 population.

Maine's Road Net

From this network of all roads in the state, highway systems with different financing and management plans are selected to provide various degrees of transportation service. The problem — which routes to choose for each system?



Total mileage 21,854

Maine's Road Net

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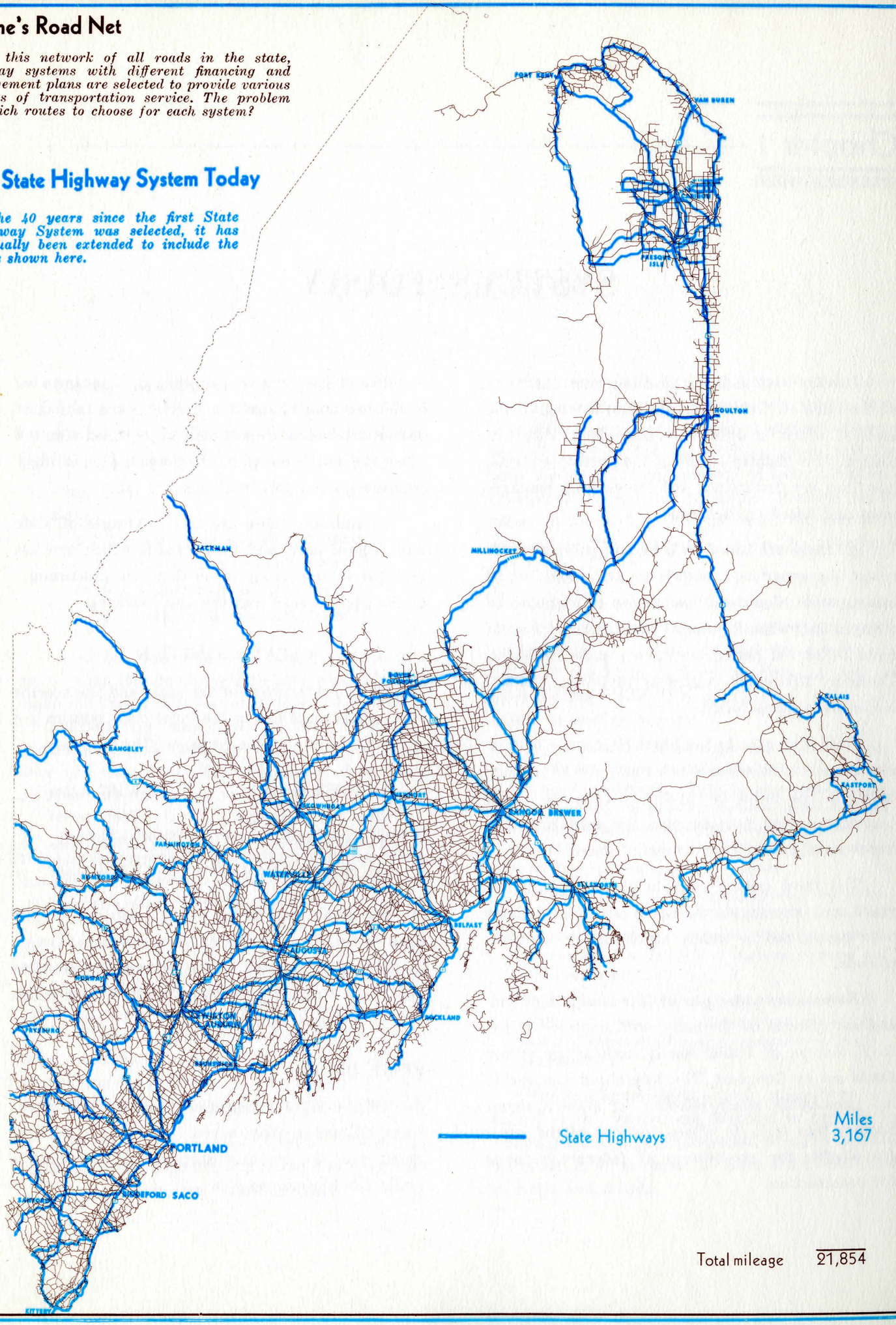
The State Highway System Today

In the 40 years since the first State Highway System was selected, it has gradually been extended to include the roads shown here.



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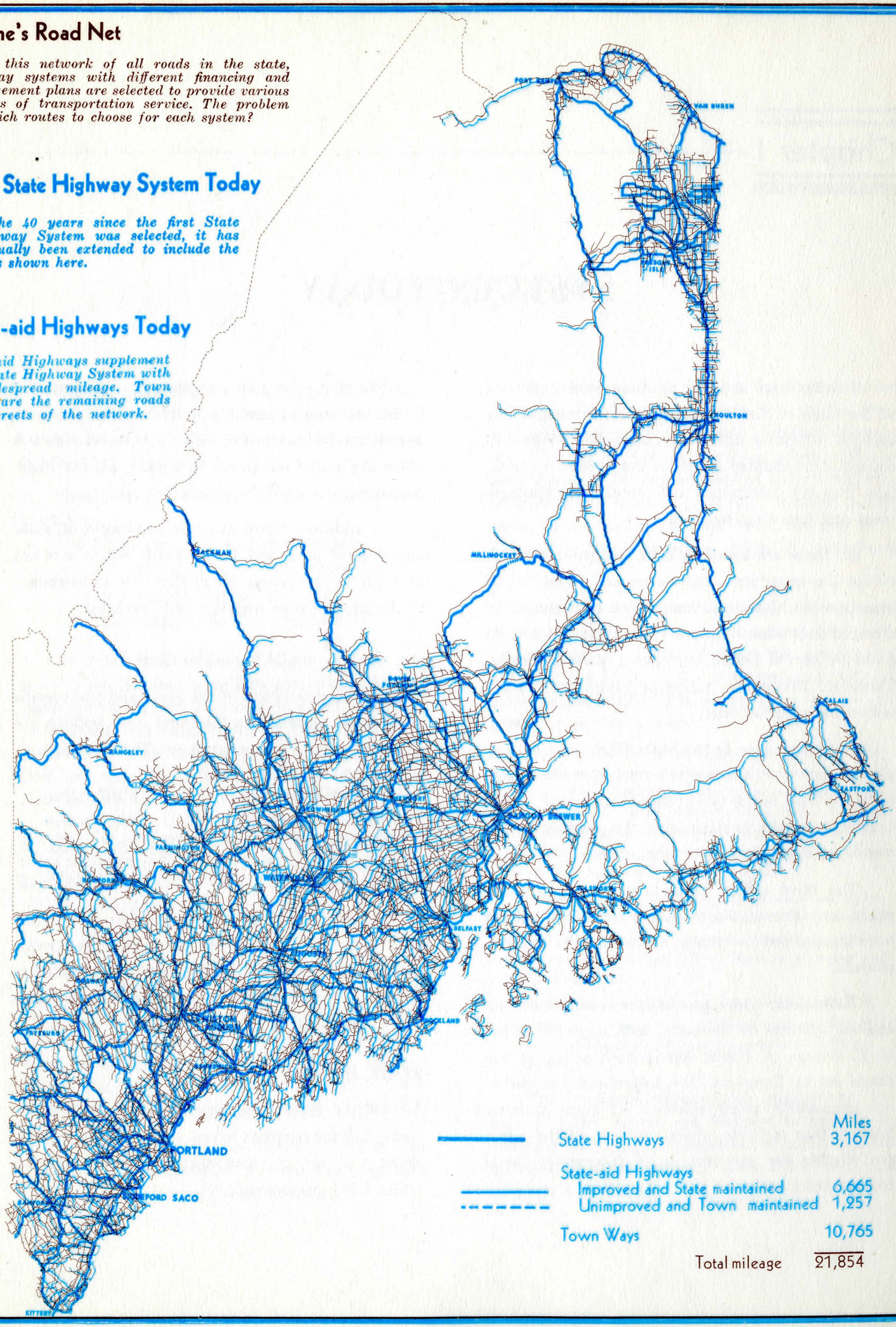
The State Highway System Today

In the 40 years since the first State Highway System was selected, it has gradually been extended to include the roads shown here.

State-aid Highways Today

State-aid Highways supplement the State Highway System with a widespread mileage. Town Ways are the remaining roads and streets of the network.



The routes comprising this system were selected solely by the State Highway Commission under the terms of a legislative act calling for an interlocking "system of connected main highways throughout the state." Interpretation of this requirement is left to the discretion of the Commission.

Management — planning, design, construction, operation and maintenance — of the State Highway System is entirely in the hands of the State Highway Commission and its employees, except in the 30 urban areas. There the state may construct with its own funds alone, or in cooperation with the cities and towns, but maintenance is entirely the responsibility of the respective towns.

Financing of the State Highway System is dependent almost entirely on motor fuel taxes, motor vehicle license fees, federal aid and a little miscellaneous income. Property taxes raised by the towns contribute a small amount towards costs of snow removal and ice control. Currently, bond issues (to be repaid from tax sources just mentioned) are authorized to accelerate the improvement program.

Total income from motor-fuel taxes and license fees is applied to the State Highway System and the State-aid Highways in proportions which are at the discretion of the Commission, after legislative requirements for debt service, contributions to Town Ways and matching of town contributions for state-aid highway improvements and bridges have been allocated.

Amounts involved are shown later in this chapter, and in some detail in the next.

STATE-AID HIGHWAYS

Up to March 1, 1952, requests by town or county authorities for designation of 7,922 miles as State-aid Highways had been approved by the State Highway Commission. Of this amount, 114 miles are in urban areas.

Legislative acts define State-aid Highways as those "not included in the system of State Highways as shall be thoroughfares between principal settlements, or between settlements and their market or shipping point and in so far as practicable feeders to the State Highways." The present State Highway Commission further restricts additions to this system to those roads carrying at least 50 vehicles per day on the average throughout the year. No other definite criteria are utilized.

Management, including reconstruction and maintenance, of the State-aid Highways is the sole responsibility of the State Highway Commission after the designated routes have been improved to minimum standards through joint action of the towns and the state. About 1,143 designated miles have not yet so qualified and according to law, 114 miles in urban areas must be maintained by the respective towns. This leaves 6,665 miles for which the state is completely responsible.

When any town desires an unaccepted but designated route to be accepted for maintenance by the state, it must provide a portion of the funds for improvement to minimum acceptable standards. Counties act in the same manner for unorganized areas. By legislative act, the state must aid in the cost according to a sliding scale (higher valuation towns contribute 50 per cent, with lower valuation towns paying less) and plan, supervise and construct the improvement whenever the town or county raises its share.

Towns or counties themselves, then, are responsible for a portion of the initial improvement cost of designated State-aid Highways and for the maintenance of designated but not improved (to standards acceptable to the state) roads and those in the 30 urban areas. The towns finance their shares largely from property taxes.

About 84 per cent of the designated mileage must be maintained and reconstructed as necessary by the state, which also must contribute to initial improvement of the remainder when requested.

Present highway classification in urban areas is limited to the extensions of rural systems. This map of Presque Isle shows in blue the State Highway System (wide lines) and the State-aid System (thinner lines). The brown shaded areas are business and industrial locations, and brown lines are Town Ways. Urban areas are studied to determine adequacy of system selections.

Funds for this work come from the same sources used for the State Highway System, and the Commission determines the annual budget for each system.

In 1951 calendar year, about $11,418,000 was spent on the State Highway System, of which the towns contributed $168,000. In that year, $10,914,000 was used on the State-aid Highways, of which towns contributed $2,369,000; state-collected taxes and federal aid provided the rest.

TOWN WAYS

All remaining public roads and streets are classified as Town Ways and are the sole responsibility of the respective towns (or counties in unorganized areas). There are 9,981 such miles in rural areas, including communities under 5,000 population, and 784 miles in urban areas, or a total of 10,765 miles of Town Ways.

Most of the cost (largely maintenance) totaling $7,862,000 in 1951 is financed by locally raised property taxes; the state contributes a half million dollars from highway user taxes, plus small additional amounts for snow removal.

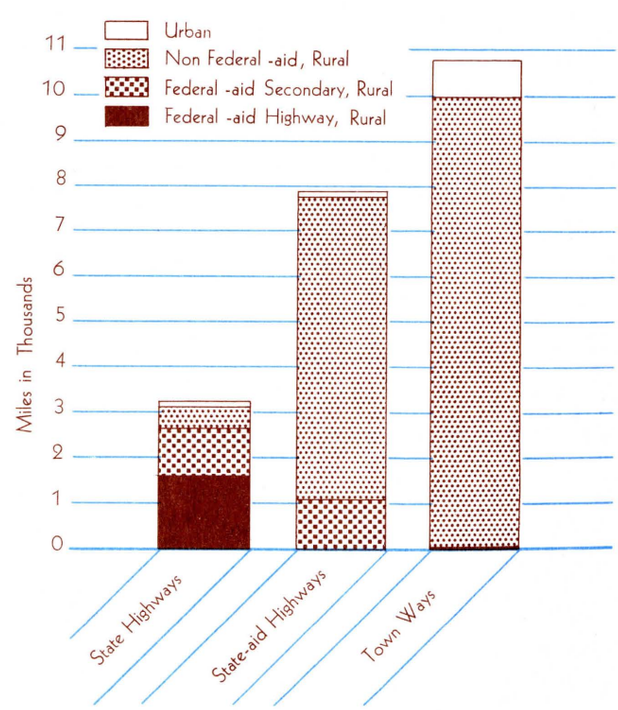
SUMMARY OF STATE SYSTEMS

The following table summarizes the mileage data for each state system:

System	*Rural Mileage*	*Urban Mileage*	*Total Mileage*
State Highways	3,034	133	3,167
State-aid Highways	7,808	114	7,922
Town Ways	9,981	784	10,765
All Roads and Sts.	20,823	1,031	21,854

In addition to complete responsibility for constructing, reconstructing and maintaining bridges on the State Highway System, the State Highway

Mileage of Existing Systems



Commission is also required to participate in construction costs of bridges on State-aid Highways when towns and counties contribute their specified amounts and request state assistance. Following construction, the state maintains such bridges also.

Further state responsibility for snow removal is required by legislative act. In the winter of 1950-51, the State Highway Department supervised snow removal on 15,247 miles of "accepted (for snow removal) roads," including all rural State Highways, 6,127 miles of State-aid Highways and 6,152 miles of Town Ways. Total cost of snow removal and ice control was $2,895,000 of which the towns contributed $838,000. Most of the latter went towards the cost of $1,357,000 on the 12,279 miles not part of the State Highway System.

FEDERAL-AID SYSTEMS

Since 1916, when the first Federal-aid Highway Act was passed by Congress, federal-aid funds have been available to the states on a matching basis for construction on limited systems.

In 1921 Congress limited the mileage of the Federal-aid Highway System in each state to seven per cent of its total mileage. Each state desiring to obtain federal funds was then asked to select a connected system of principal routes (whose total mileage was within the prescribed limits) for approval by the U. S. Bureau of Public Roads.

The purpose of this limited selection was to concentrate funds so that improved routes would connect the important centers of population and movement of people and goods would be speeded between them. As this was accomplished, mileage could be added if requested by the state.

The 1944 Federal-aid Highway Act also called for definite selection of a Federal-aid Secondary System. Funds provided for secondary roads are concentrated on this system to extend the improved mileage in an orderly manner No mileage limits were set, but initial selections were held to around 10 per cent of total mileage since that would provide a sufficiently large system upon which to program improvements for some years, depending on the amount of funds available.

The same Act provided for selection of an urban system upon which to use funds earmarked for cities of 5,000 or more population. Initially only the existing federal-aid routes were eligible, but as necessary, additional main streets have been selected to comprise an integrated system for traffic movement in the cities.

In 1952, first earmarked allocation of funds was made by Congress for the National System of Interstate Highways, established by the 1944 Act and limited to 40,000 miles of the nation's major highways.

FEDERAL-AID SYSTEMS IN MAINE

The State of Maine has designated and the U. S. Bureau of Public Roads has approved the following federal-aid systems in Maine:

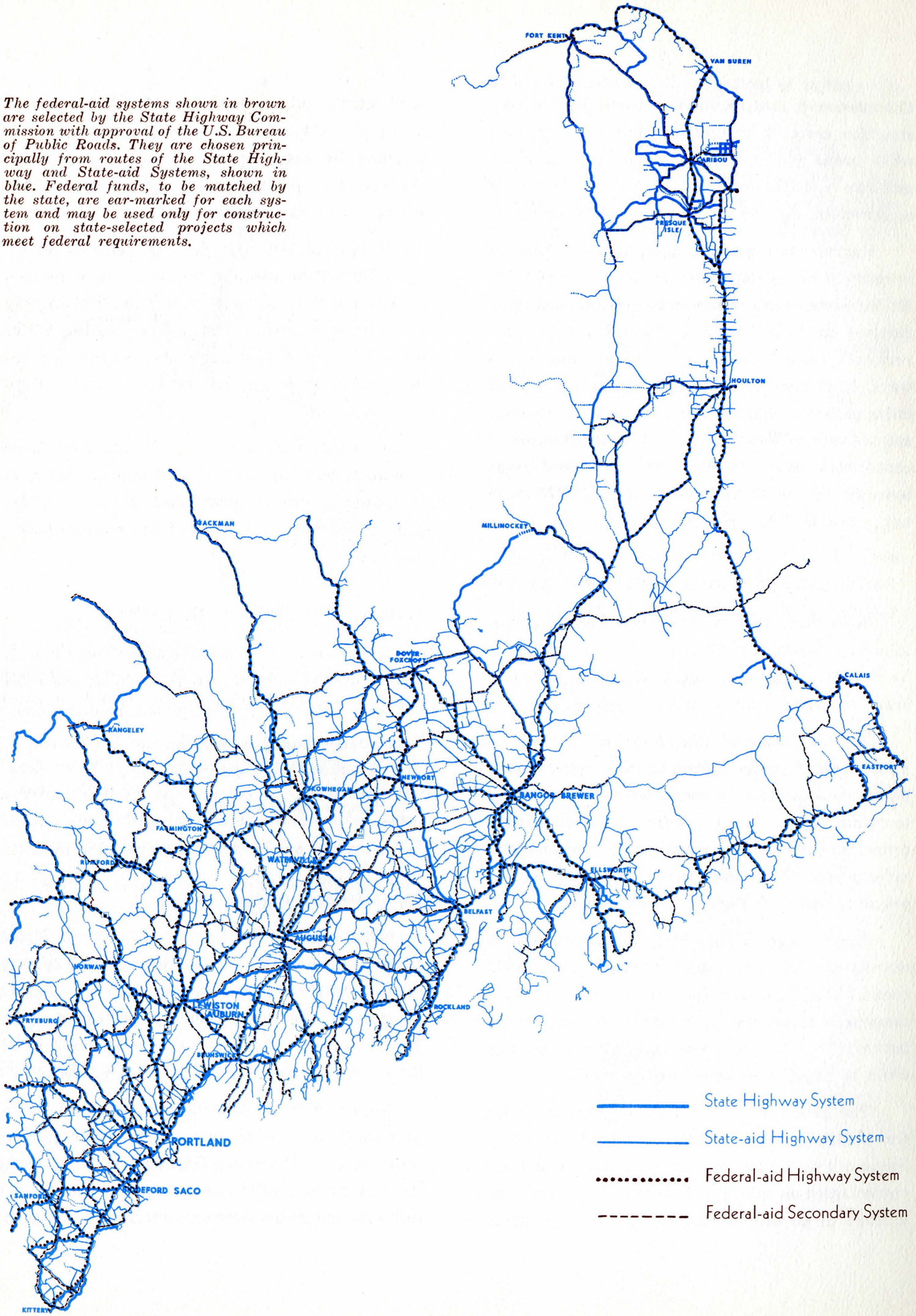
The Federal-aid Highway System	1,622 miles
The National System of Interstate Highways *(a specially designated part of the Federal-aid Highway System)*	(299 miles)
The Federal-aid Secondary System	2,248 miles

The Federal-aid Highway System

The Federal-aid Highway System in Maine totals 1,622 miles, or about 7.5 per cent of all mileage in the state. It corresponds quite closely to the initial selection of the State Highway System in 1913. Today, however, the latter is approximately twice the extent of the Federal-aid Highway System.

About 99 miles are in the 30 urban areas, practically all on existing State Highways. By terms of the Federal-aid Highway Acts beginning in 1944, special funds are earmarked for use on this mileage alone, including approved extensions.

The federal-aid systems shown in brown are selected by the State Highway Commission with approval of the U.S. Bureau of Public Roads. They are chosen principally from routes of the State Highway and State-aid Systems, shown in blue. Federal funds, to be matched by the state, are ear-marked for each system and may be used only for construction on state-selected projects which meet federal requirements.



The National System of Interstate Highways

Maine has selected, with the approval of the Bureau of Public Roads, 299 miles as its part of the National System of Interstate Highways. This is the United States' most important highway system, currently comprising 37,800 miles of routes which provide the greatest transportation service to the states and the nation.

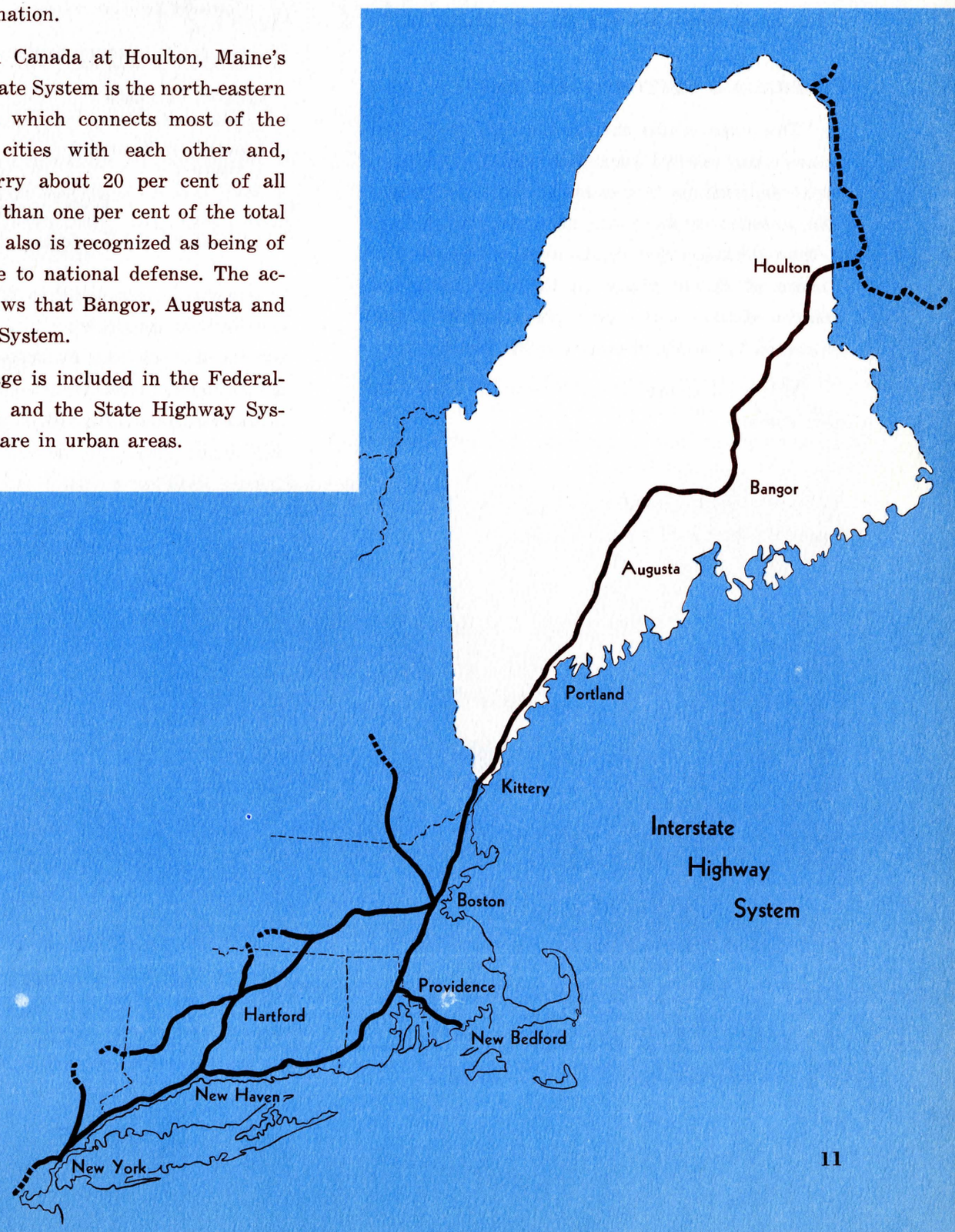
Connecting with Canada at Houlton, Maine's portion of the Interstate System is the north-eastern terminus of the net which connects most of the country's principal cities with each other and, nation-wide, will carry about 20 per cent of all travel on little more than one per cent of the total mileage. The System also is recognized as being of maximum importance to national defense. The accompanying map shows that Bangor, Augusta and Portland are on the System.

The entire mileage is included in the Federal-aid Highway System and the State Highway System. About 27 miles are in urban areas.

The Federal-Aid Secondary System

The Federal-aid Secondary System in Maine was selected to include those routes considered to be of importance to traffic and the state's economy second only to the Federal-aid Highway System.

The Secondary System includes 2,248 miles,



almost evenly divided between routes on the State Highway System and those on the State-aid System.

Although, by terms of the Federal-aid Highway Act, no mileage of Secondary routes can be included in urban areas (of 5,000 or more population) some 28 miles are still so designated in Maine pending selection of urban systems for newly defined urban areas which are in a state of transition.

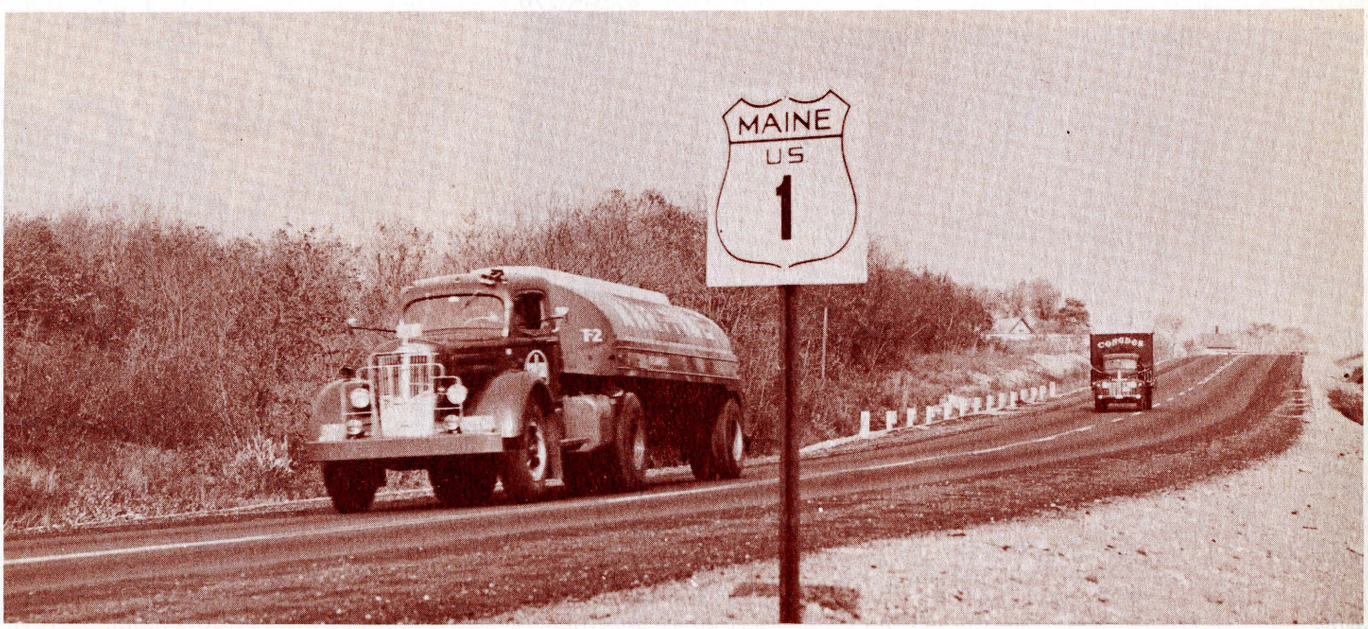
FEDERAL-AID SYSTEMS — SUMMARY

The maps in this chapter have shown the locations of the selected rural federal-aid systems and their relationships to the designated state systems. The selection by the state of routes for inclusion in the federal-aid systems, as approved by the U. S. Bureau of Public Roads on the basis of general criteria of importance, provides valuable evidence needed in the study of state classifications.

Mileage data are summarized in the table in the next column.

	Rural Mileage	*Urban Mileage*	*Total Mileage*
Federal-aid Highway System			
Located on the State Highway System	1,519	99	1,618
Located on Town Ways	4	—	4
Total	1,523	99	1,622
National System of Interstate Highways (*included in above mileages*)	(272)	(27)	(299)
Federal-aid Secondary System			
Located on State Highway System	1,077	28	1,105
Located on State-aid Highways	1,143	—	1,143
Total	2,220	28	2,248
All Federal-aid Systems	3,743	127	3,870

It should be noted that 437 rural and six urban miles of the designated State Highway System are not included on any Federal-aid System. Likewise not included in the federal-aid category are 6,779 miles of State-aid Highways, and all Town Ways.



As an aid to motorists, map makers, and information services, important main routes of the country are identified with shield-shaped markers bearing the initials "U.S." and a route number. The routes are designated and numbered by joint action of the state highway departments, through the American Association of State Highway Officials. Under this numbering system, adopted in 1925, highways running east and west bear even numbers and those running north and south have odd numbers. The smaller numbers are in the east (U.S. 1, for example, is between Maine and Florida) and in the north (U.S. 2 runs from Maine to Idaho). Such "U.S." designations do not necessarily indicate that the road is part of the Federal-aid Highway System on which federal funds may be used for construction.

Chapter 2

PUBLIC POLICY

The 1951 State Legislature, in calling for a study of highway classification in Maine, took a significant step in line with those which have guided highway policies over the years.

Since the grouping of highways into systems is a basic consideration in establishing methods of financing, in assignment of management responsibility and in highway development, the pertinent public policies leading to the existing classification should be understood and carefully considered. The principles are not altered lightly — they change slowly in keeping with long-time trends and gradually changing conditions. Always the modifications build on past practices and within the framework of a philosophy of government. So a review of the present classification plan must recognize how and why it exists; any proposed revision must remain within historically practical limits.

POLICIES STABILIZED — BUT SYSTEMS CHANGE

Stability of basic policy is evident in the history of legislative action on highway affairs in Maine.

For nearly 80 years, towns were mainly responsible for all road and street development. Then, beginning in 1901, state aid was offered in increasing amounts to encourage towns to inter-connect their respective main highways, and state aid remains a firm public policy today.

But aid alone proved inadequate for a motor age that does not recognize political boundaries. As early as 1901, a system of principal roads under state control was advocated, and by 1913 such a system was a reality. It was intended to "interlock" many of the state-aid roads already built, to form a system connecting the major centers of the state, and to provide a much greater measure of state responsibility for such routes. Not until 1945, however, did the state assume nearly complete financial and administrative operation of the State Highway System. (Towns still contribute towards snow removal costs and maintain the routes through urban areas).

EARLY RESPONSIBILITIES

Soon after Maine first became a state, 132 years ago, town governments became chiefly responsible for road development and maintenance.

County commissioners remained the legal authority to lay out "county and inter-county" roads and were authorized to build and maintain them. But state legislation gave the principal power of taxation for such purposes directly to the towns. As these grew in numbers and population, the counties' concern with roads declined rapidly, except in unorganized areas.

The first state appropriation for roads was made in 1881 to help Aroostook County fix a former

military road. A few other specific roads and bridges were also given state funds in the 1880's, but there is no evidence that either the counties or the state influenced the pattern of road improvement.

STATE INTEREST APPEARS

In 1901, Governor Hill pointed to the need for a state highway system. However, the Legislature chose to continue local responsibility but offered to match a maximum amount of $100 in each town up to the limit of the $15,000 appropriated. The towns received the aid in the order of their applications, for use on "state roads". These were defined by the law which said:

> **"Upon the request of the municipal officers of any town, the county commissioners of the county wherein said town is located, shall designate that highway running through said town which in their judgment is the main thoroughfare, and said highway shall be known as a state road."**

Six years later, in 1907, following increases in the previous appropriations, the basic structure of the existing state-aid highway law was adopted. The act's objective was "to obtain a more uniform system for the permanent improvement of main highways . . ."

A "State Road" constructed by the town of Cambridge, 1910.

A State Highway Department headed by a State Commissioner of Highways was established to administer the act, advise local officials, make plans for major projects and inspect all work done with state aid.

The act permitted voters or municipal officers to alter the designation of "state roads", or to extend their mileage after completion of needed improvements on those first designated, with approval of the State Commissioner of Highways.

Towns desiring state aid were required to set apart funds, in amounts depending directly on their valuation, to be used for "permanent improvement of their main highways". The state raised its share from property taxes and apportioned it to towns in reverse ratio to their valuation. By 1911, the state property tax for this purpose was eliminated, and an annual general fund appropriation was substituted. Towns, or counties in unorganized areas, remained responsible for all maintenance.

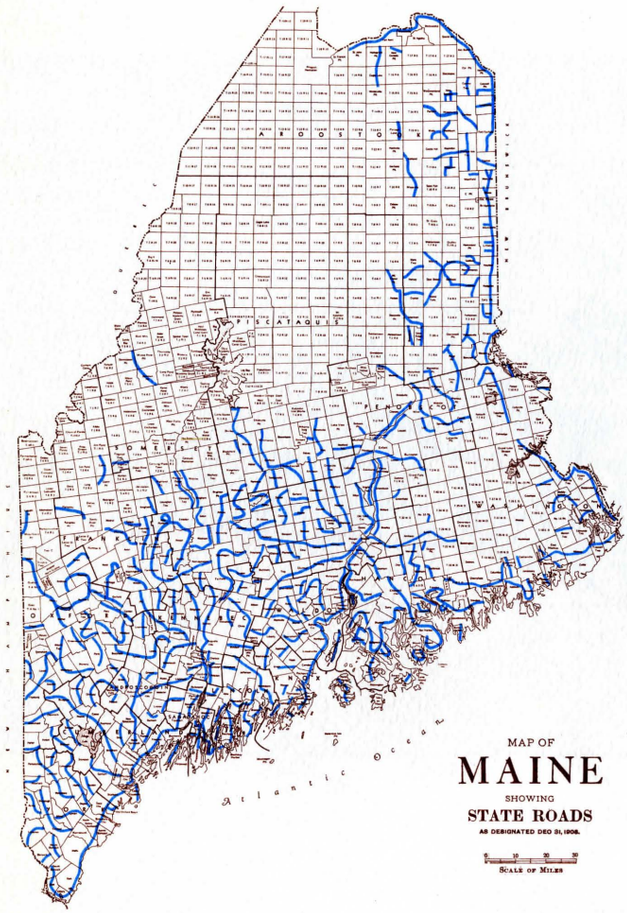
The Decade — A Transition Period

Coincident with the early appearances of the automobile came the search for ways and means of improving the roads.

The towns could not develop all roads in a uniform manner; acting independently they chose a wide variety of improvements and locations which often failed to match their neighbors'.

The State Legislature quickly recognized the need for assistance and co-ordination. It wisely provided incentive for the selection of main thoroughfares on which to concentrate improvements and it encouraged inter-town cooperation.

But through this period (1901-11) results came slowly, as illustrated by the map on next page. Aptly termed the "angleworm" system, the disconnected roads selected for development were



Selected by town officials, these disconnected "State Roads" of 1908, shown in blue, were the framework from which the first State Highway System was chosen to "interlock" the main thoroughfares of the state.

becoming so numerous that wide dispersion of available funds reduced the quality of improvements. Corrective action was indicated.

STATE HIGHWAY SYSTEM ESTABLISHED

In 1913 the Legislature acted to "provide for an interlocking system of state highways", as had been advocated 12 years before. This far-reaching move has remained the basic state law for nearly 40 years, its amendments serving primarily for gradual increase of the state's responsibilities.

The original act set up a State Highway Commission which took over the duties of the previous Department and its Commissioner, including administration of the state-aid program, which was continued. And for the first time, the state became responsible for maintenance "of all highways to the improvement of which the state has contributed or shall hereafter contribute".

Classification and Finance

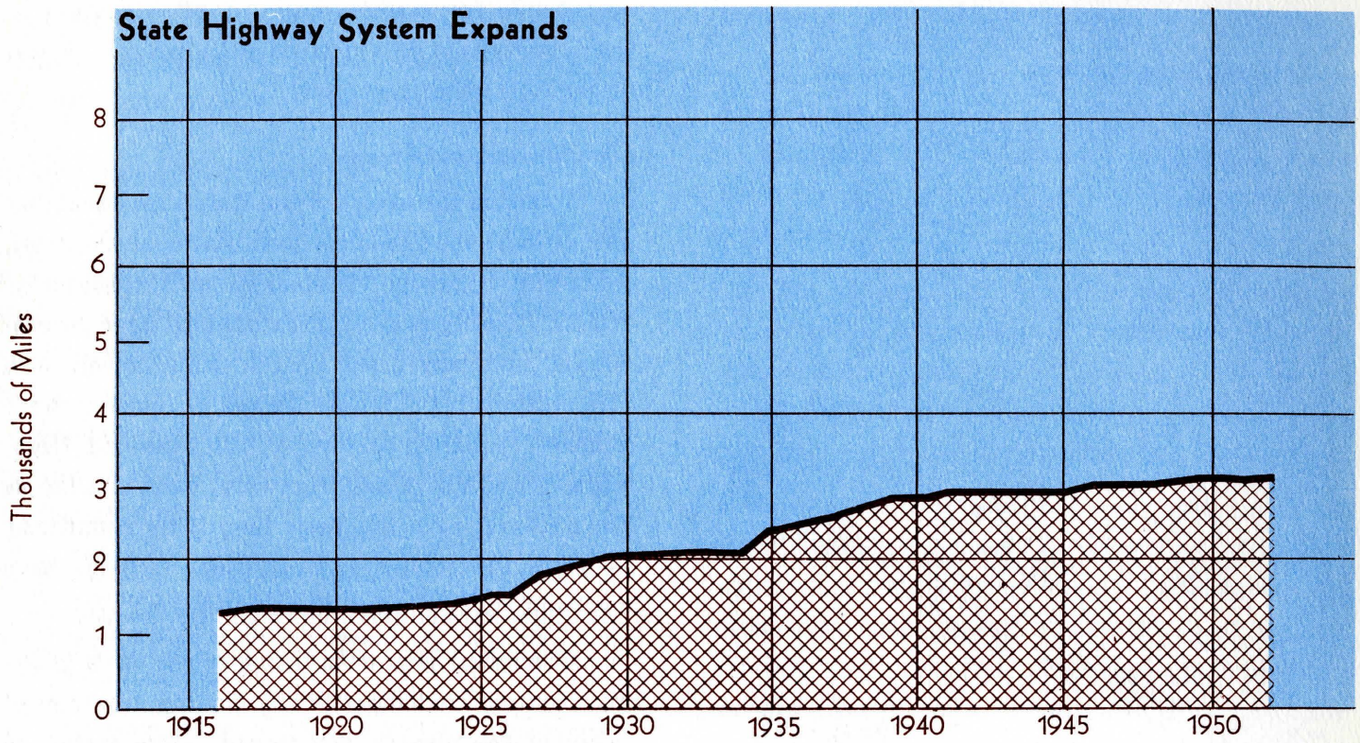
To define the extent of the state's responsibility and to meet the needs for systematic development, the State Highway Commission was required to "classify the highways of the state into three general classes, and may from time to time amend such classification . . ." These classes or systems were named (1) State Highways, (2) State-aid Highways, (3) Third Class Highways, known today as Town Ways. Like the basic law, their definitions, as given in Chapter 1, SYSTEMS TODAY, have not been changed since their inception.

The initial plan of selection of the State Highway System contemplated the linking together of many of the already determined "state roads" to provide better means of through travel. Thus the main roads of a number of towns, which had selected them, became part of the new State Highway System. The system totaled 1,342 miles in 1914.

Improvements were financed by a $2,000,000 bond issue voted by the people in 1912 following legislative action the previous year. Funds for interest and principal were derived from motor vehicle registration and license fees which the act dedicated to highway purposes for the first time.

Maintenance was financed in part by towns (which were charged costs up to $60 per mile per year), by general fund appropriations and by any funds available from motor vehicle fees after debt service needs. In addition, the state maintained improved State-aid Highways, for which towns were also charged up to $30 per mile per year or a maximum of half the actual cost.

In 1916, the state maintained 330 miles of State Highways and 460 miles of improved State-aid Highways. But in addition, the State Highway



The State Highway System mileage has doubled since 1925 . . . now represents 14.5 per cent of total mileage in the state.

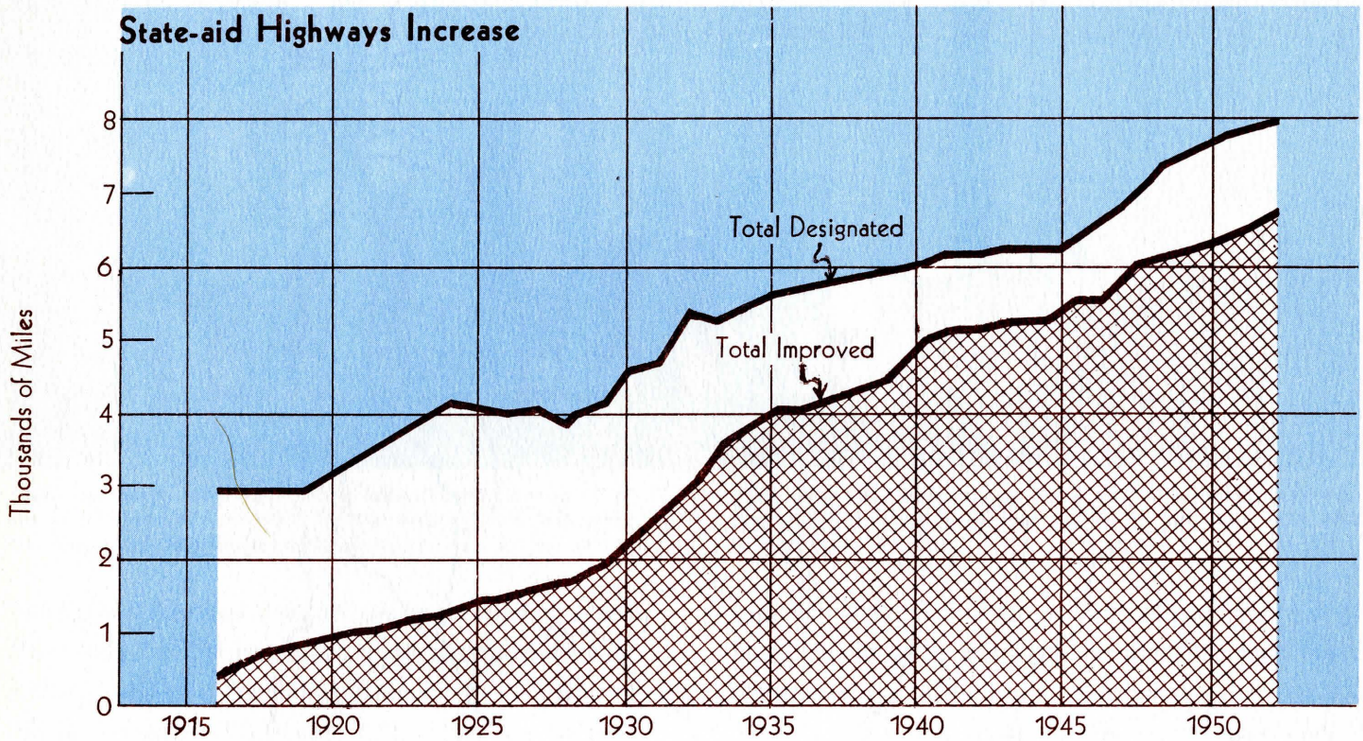
Commission also maintained nearly 2,700 miles of other roads "mutually agreed upon by municipal officers of the town and the Commission" under terms of a 1915 law which also required the towns to pay up to $60 per mile for the service. Such mileage first increased and then declined in later years. By 1935, most of it was included in the State-aid or State Highway Systems, and the original provisions were repealed.

SYSTEMS AND STATE RESPONSIBILITIES GROW

The charts on these pages show how the State Highway and State-aid Highway Systems have been extended over the years, with consequent increasing state and decreasing town responsibilities. At the same time, legislation has added to the state's obligations, and mounting traffic and costs have further increased the state's financial requirements to meet the needs of the expanded systems.

The various periods of stability and growth of the systems reflect not only the policies of the various State Highway Commissions, but also the state's ability to finance improvements, maintenance and reconstruction; and in the case of State-aid Highways, the concurrent ability of the towns to provide matching funds for initial improvement.

Mileage of State Highways has doubled since 1925, and now represents 14.5 per cent of the total mileage in the state. Designated State-aid Highway mileage also has doubled in the same period, now amounting to 36.5 per cent. Thus the state now has a potential responsibility for 51 per cent of all roads and streets, and almost wholly finances and supervises 45 per cent — the remaining 6 per cent being designated State-aid Highways not yet improved and taken over by the state for maintenance.



Designated State-aid Highway mileage has also doubled since 1925 . . . now is 36.5 per cent of total mileage in the state.

HIGHWAY FINANCE GEARED TO CLASSIFICATION

It has already been shown how particular financial plans have been developed for each class of highway. From time to time various changes were enacted, but these nearly always were keyed to systems.

- Bonds have been issued . . . for use on the State Highway System.
- Federal aid has been made available . . . for use on the Federal-aid Systems.
- Highway user taxes have been enacted . . . with funds apportioned between systems.
- State property taxes (no longer levied) were raised . . . and proceeds allocated to systems.
- Towns raise funds . . . for use on their own Town Ways and, in specified manner, on other systems as well.

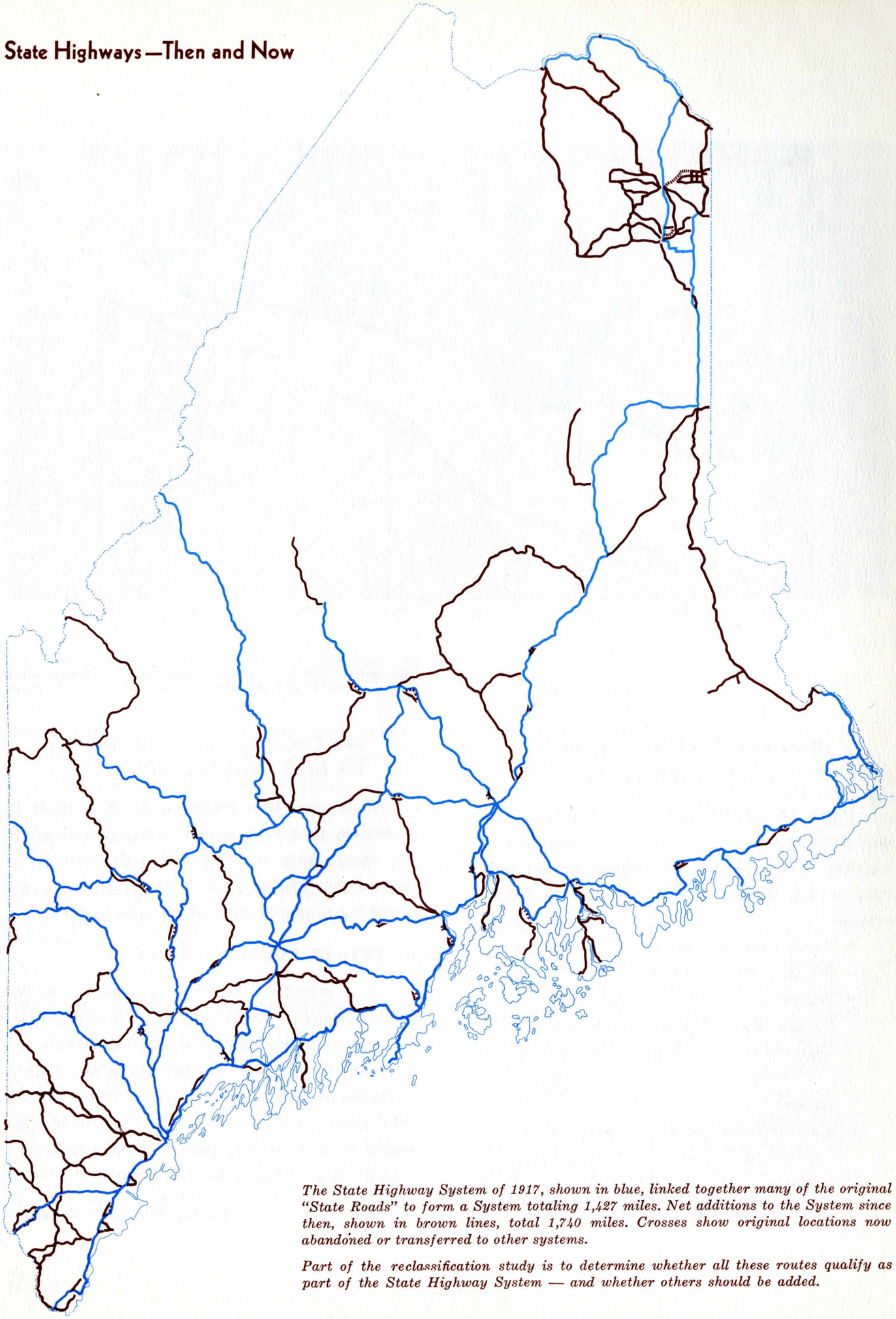
There have been exceptions, such as costs in connection with bridges and snow removal which for many years were treated independently of systems, but gradually their financing, too, is approaching a specific method for each system.

RESULTS OF FINANCING METHODS

In a report to the 94th Legislature, entitled "Maine Highway Needs", the State Highway Commission ably reports the history of highway finance in Maine. Comparison of expenditures and sources of income by systems, in the years of 1937, 1947 and 1951, shown in the charts on page 19, indicates the results of policies established by the Legislature, the Commission, the towns and counties.

The charts show that highway user taxes and

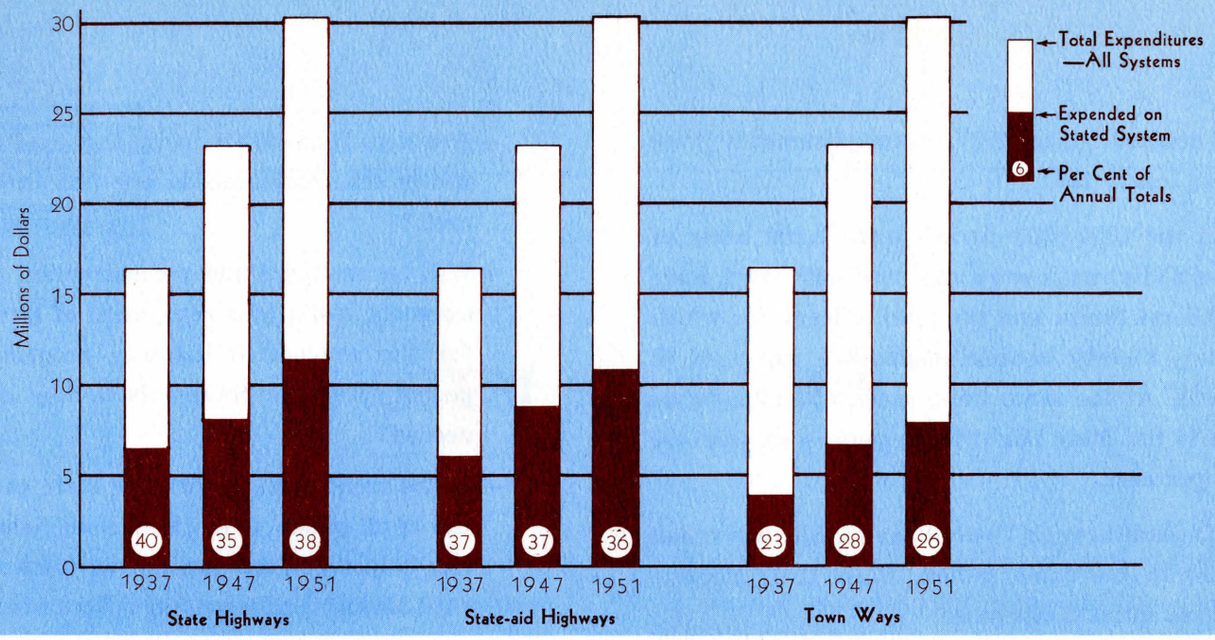
State Highways—Then and Now



The State Highway System of 1917, shown in blue, linked together many of the original "State Roads" to form a System totaling 1,427 miles. Net additions to the System since then, shown in brown lines, total 1,740 miles. Crosses show original locations now abandoned or transferred to other systems.

Part of the reclassification study is to determine whether all these routes qualify as part of the State Highway System — and whether others should be added.

Expenditures Increase . . System Shares Nearly Constant



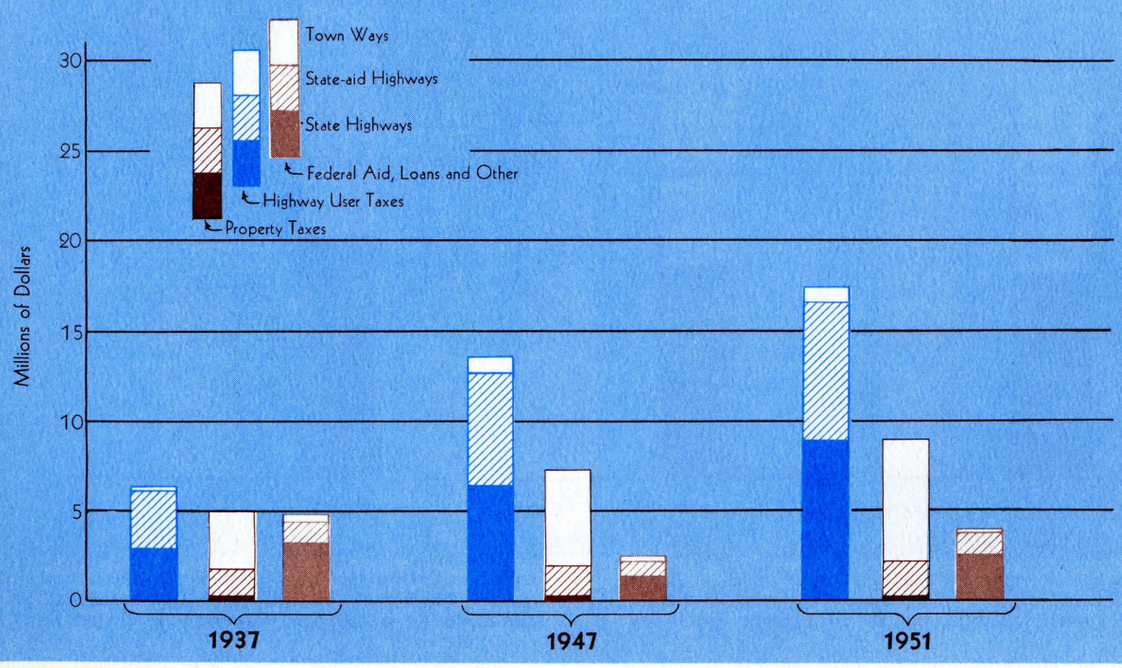
Total highway, road and street expenditures increased 80 per cent from 1937 to 1951. Of the totals, State Highways and State-aid Highways each received from 35 to 40 per cent, with 1951 amounts at $11.4 and $10.9 million, respectively. Town Ways used from 23 to 28 per cent, with $7.9 million spent in 1951.

federal aid supplied most of the funds used on State Highways for improvement, maintenance and debt service, and also furnished from 70 to 80 per cent of the costs for State-aid Highways. The balance came mainly from property taxes raised by the towns for improvement projects and snow removal.

Property taxes continue to furnish close to 30 per cent of all highway, road and street funds. The proportion of annual expenditures coming from highway user taxes has increased from 39 per cent of all funds to 58 per cent. In addition, such taxes were used for state bond retirements totaling 1.4, 1.7 and 1.1 million dollars in the respective years.

The charts also reveal that available funds have been divided about equally between the State Highways and State-aid Highways, while the total amount increased 80 per cent from 1937 to 1951. However, since the prices of doing highway work

Users Furnish Most . . Property Supplies 30 per cent



Funds derived from highway user taxes increased from 39 to 58 per cent of all highway expenditures between 1937 and 1951. Property taxes, in the three years shown, furnished from 29 to 31 per cent, with federal aid and loans supplying the balance. User taxes were almost evenly divided between State Highways and State-aid Highways.

have doubled since 1937, accomplishments were actually less in 1951.

In the 1937-1951 period, some 2,200 miles of State-aid Highways were improved with town, state and federal funds, and the total mileage for which the state thereby became responsible increased 52 per cent. At the same time, about 450 miles were added to the State Highway System — an increase of 43 per cent.

Expenditures on Town Ways slightly more than doubled in the same period, while their mileage decreased about 2,300 miles.

In order to help meet the accumulated backlog of needs on the State Highway and State-aid Highway Systems, a $27,000,000 bond issue has now been authorized, plus another $7,000,000 for the Fore River bridge. These amounts will be repaid from future highway user imposts.

It is clear that the state's increasing obligations raise important questions in connection with future policy —

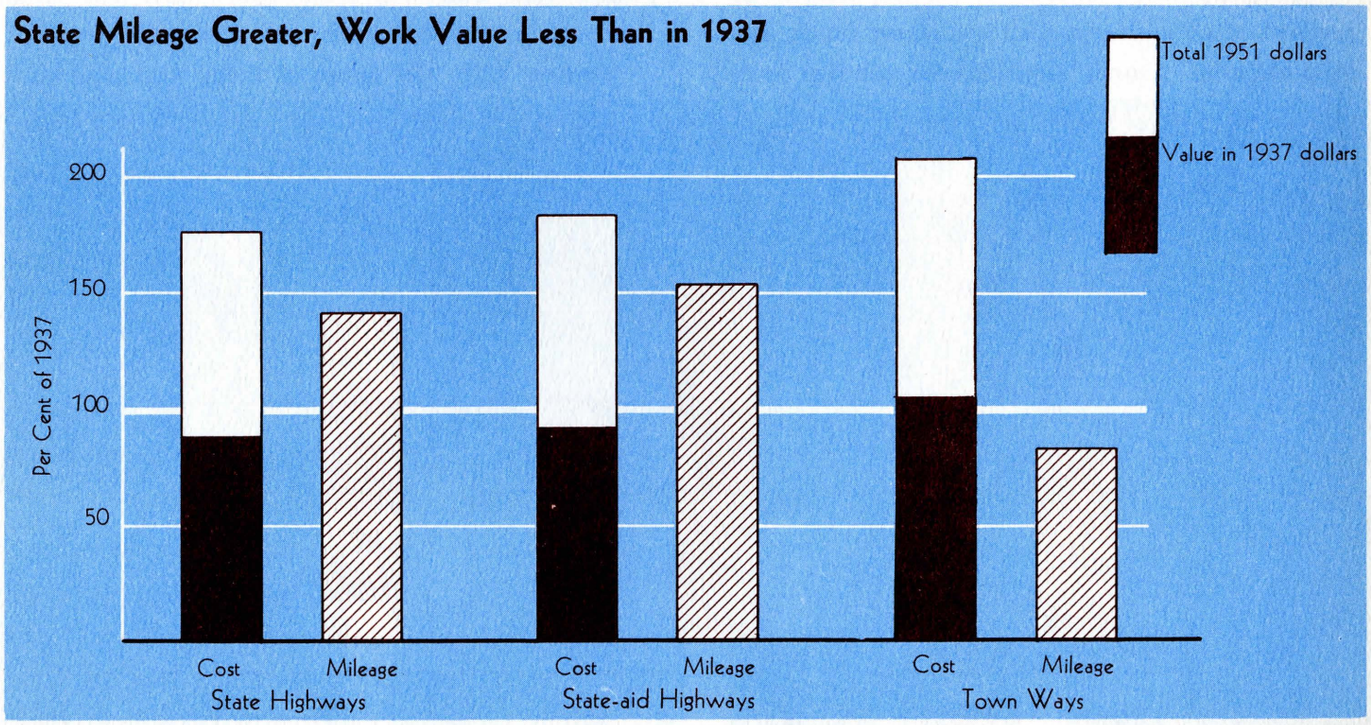
—Are state funds again being dispersed so widely that major needs are difficult to meet?

—Will maintenance and reconstruction of worn out roads, plus repayment of loans for the accelerated highway program, permit future improvements as they are needed?

—Is the trend toward complete state control of all public ways (with some financial help from the towns), in keeping with Maine's philosophy of government?

—Are there better ways to provide the maximum service to highway transportation at minimum cost?

The ultimate answers to these questions will play a major role in Maine's future highway development. A firm and clear-cut classification plan is essential for sound decisions which will govern long-range plans for financing, management and improvement standards.



State responsibilities grew between 1937 and 1952 — State Highways increased 43 per cent; State-aid mileage up 52 per cent. Increased expenditures in 1951 were offset by inflation, reducing work accomplished to less than 1937 levels except for Town Ways, whose improved position was enhanced by a mileage reduction of 17 per cent.

Chapter 3

SYSTEM SELECTION

Two basic questions arise in selecting highway systems to meet the objectives of classification stated in the Introduction —

- How many systems are needed?
- How should each system be selected?

Preceding chapters have shown the historical answers to these questions and the results of the policies which were adopted from time to time.

This study finds no reason for increasing or decreasing the number of systems now established by law. The original concept of the function of each system remains adequate to meet the needs of the state. Further subdivisions would only complicate financing plans and management responsibilities without affecting the kind of service which each system should provide. On the other hand, were the number of systems to be reduced to less than the present three, there would not be sufficient basis for establishing specific minimum standards of construction and maintenance, and methods of equitable financing.

Furthermore, the three-system plan has been adopted in many states (in some of them quite recently) and is in accord with practical methods of distinguishing the different characteristics of each system.

SYSTEMS DEFINED

The historically accepted terms — "State Highways", "State-aid Highways" and "Town Ways" — best express both the function of each system and the implied governmental responsibilities thereof. Hence this study retains these names for the three systems which, taken together, comprise the entire road and street transportation system of the state.

Such terms as "main highways", "feeder roads" and "local roads" (or streets) also are descriptive of the three systems; but lacking more adequate definition, they are subject to many different interpretations. These ordinary names, however, all have one thing in common — they describe the principal ***function*** or the predominant purpose of the roads in serving the nation's economy.

The "local" road or street serves primarily the people who live on it. Of course these people produce goods or services which benefit not only themselves, but their community, state and nation. In return, they receive over the road many services and supplies from others. Such interchange, with speed and continuity, keeps our economy and social structure functioning. Thus the local road has some community, state and national significance. However, by reason of its location, its ***predominant*** use is for traffic movement directly to or between the land users.

The "main" highways, although serving some local users directly on the way, have the primary purposes of connecting major centers of population, facilitating through travel between them and serving large numbers of people throughout the state.

Between these two extremes are the inter-community and collector roads and streets. These serve communities which individually are of lesser economic importance to the state as a whole, yet provide some of the services and goods which attract traffic from the surrounding territory.

PREDOMINANT SERVICE IS GUIDE

The idea of grouping Maine highways into systems grew out of economic necessity 40 years ago. The systems as initially selected were based on the principles of predominant service. It was recognized that all roads did not have the same function, nor should all be improved alike. At that time, the job ahead was so great that the general directives of the Legislature were sufficient for selecting reasonably sound systems as a basis for early development.

Today the economic factors may be more completely evaluated and related to the actual uses of the roads and streets. These considerations should guide the modern highway classification plan. Therefore this study has proceeded on the concepts that—

- The State Highway System should be composed of those routes whose predominant function is to provide state-wide service between principal cities and towns of the state and adjoining areas.
- The State-aid Highway System should be composed of those routes whose predominant function is to provide community-wide service supplementing the State Highway System.
- Town Ways should comprise those public ways whose predominant function is to provide local service between and to the various land users wherever it is needed.

These definitions, in themselves, are not enough to guide the selection of specific routes. Methods of measuring the degree of state, community and local service must be utilized, and further tests must be applied to roads and streets to define the limits of "predominant" service.

Other elements such as topography, land values and improvement status or cost also enter into the final selections. Consequently, neither exact definitions nor precise mathematical formulas have proven feasible in making final selections of the recommended systems.

SELECTING THE SYSTEMS

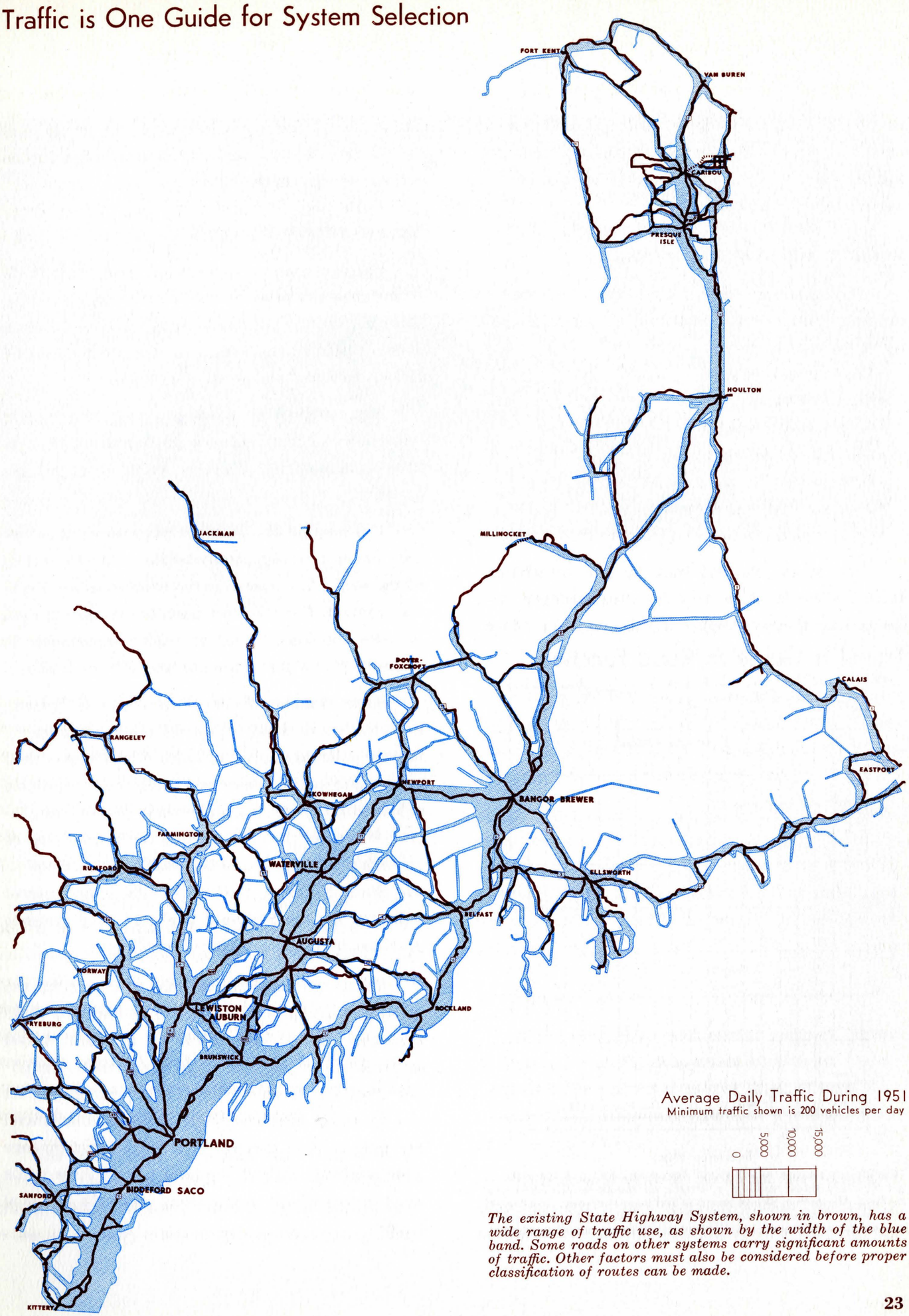
Determination of the primary function of each public way and its classification into one of the three aforementioned systems must be made on a factual basis. Given the essential facts, the objective is to group in each system only those roads and streets which have characteristics similar to each other. Within practical limits, all highways in each class should have the same function. If they differ greatly in this respect, the whole plan will become unstable and unwarranted shifts from one system to another will be the inevitable result.

Efforts have been made to simplify the process of selection. For example, minimum traffic limits have been set in qualifying roads for inclusion as State Highways; lower limits still for State-aid Highways. While traffic volume is certainly one criterion, it cannot by itself provide an adequate basis for classification because there are generally too many exceptions to the rule.

If limits were made too rigid, there might be gaps between cities or towns where volumes fall below the established level. Such gaps are not permissible, if a system for through travel is to be provided. If the minimum volume were reduced to a level which would insure a connected system, then it would be found that there are many other roads which would also qualify on that basis, but which otherwise would not have the characteristics of a main highway network.

Furthermore, as traffic volumes continue to increase, the traffic limits would have to be changed

Traffic is One Guide for System Selection



The existing State Highway System, shown in brown, has a wide range of traffic use, as shown by the width of the blue band. Some roads on other systems carry significant amounts of traffic. Other factors must also be considered before proper classification of routes can be made.

continually. Failure to do so would gradually bring more and more roads into the system, thus preventing the stability which is necessary for financial and administrative purposes.

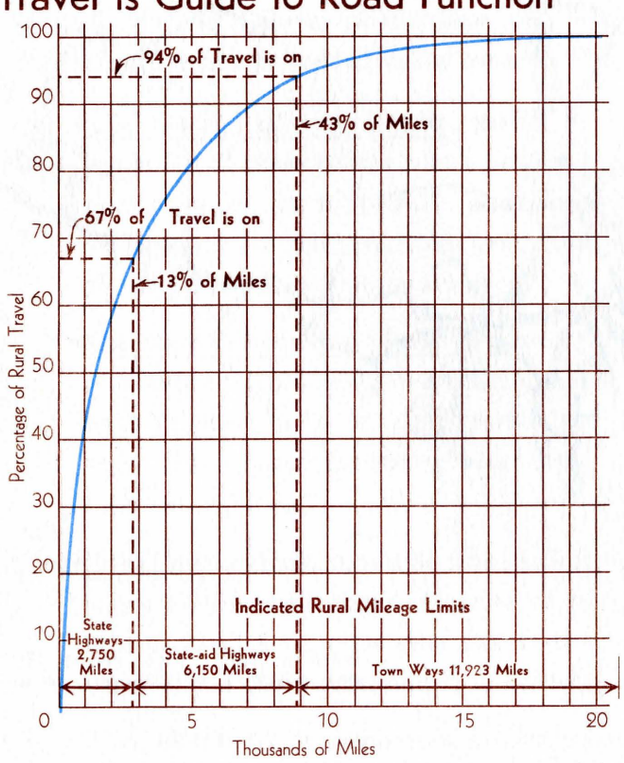
VARIETY OF EVIDENCE NEEDED

The following factors all have a bearing on classification analysis and should be taken into account for every location:

- Traffic considerations
- Economic value
- Geographic service
- Integration and circulation
- Topography
- Service to national defense
- Present classification and improvement status.

One single element may be the controlling factor; a combination provides even stronger evidence. How they are applied in this study to produce the recommended classification of all roads and streets into three systems is demonstrated in the balance of this chapter.

Travel is Guide to Road Function



A high proportion of all rural travel in 1951 was carried on a relatively small mileage of roads, as shown in the left-hand part of the curve. When more mileage is included, the travel per mile decreases rapidly. Mileage limits of state-wide, community-wide and local interest roads are thus indicated.

TRAFFIC CONSIDERATIONS

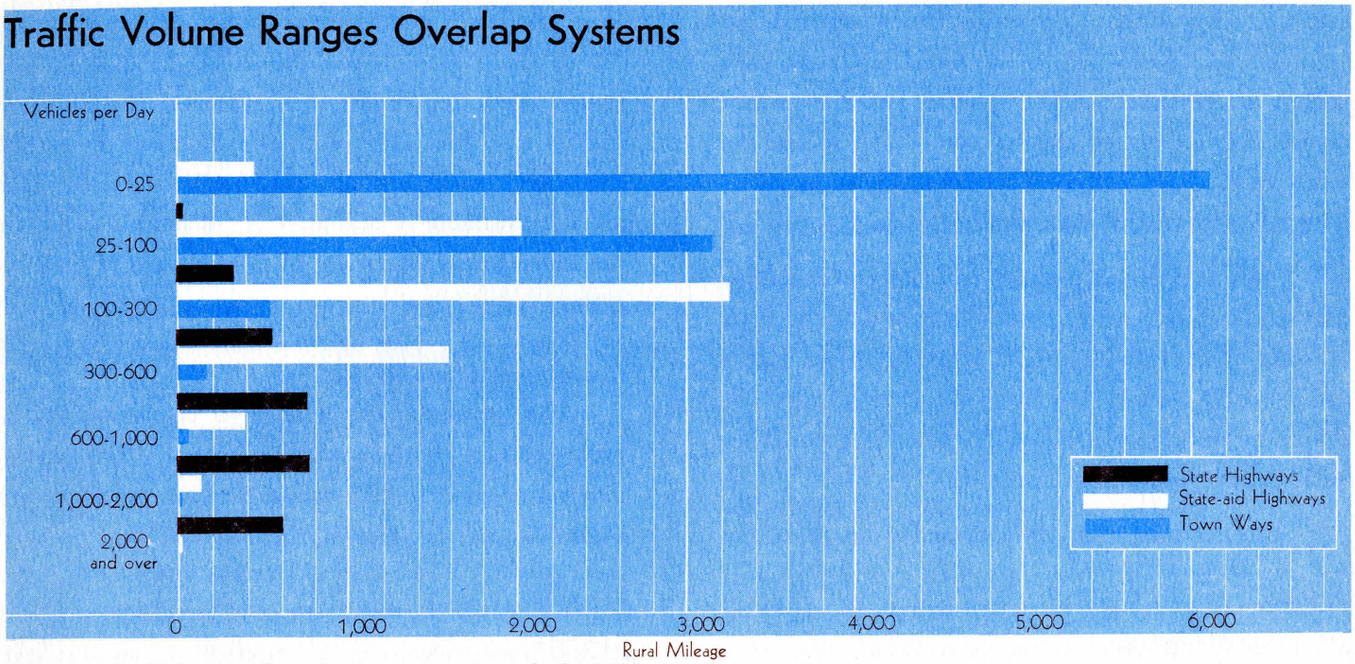
Use of a road or street is one good guide to its importance and proper classification. By virtue of a facility's location, it may attract a high proportion of the traffic in the area, provided it is improved enough to accommodate it.

High volumes on roads generally reflect their importance to the state — a predominance of state interest is manifest. Very low volumes suggest the opposite.

The map on the previous page shows the relative amounts of significant traffic on all the roads of the state. Also shown is the existing State Highway System. For the most part, the present system includes the lines of major traffic importance. It connects places that generate and attract traffic.

Some locations of the State Highway System, however, serve small volumes; other locations of heavier volumes are not included. These routes need to be examined in accordance with other principles of classification to determine their proper designation. Wherever the other factors confirm the degree of state-wide importance necessary for inclusion in the State Highway System, or the lesser degree indicated for the State-aid Highways, the evidence provided by traffic volume is conclusive.

Charts on these pages help to determine the amount of traffic which tends to de-limit the three systems. In 1951, two-thirds of all rural travel occurred on 13 per cent of all rural roads (including streets in places below 5,000 population). At this point on the curve, it is apparent that travel per mile of road declines rapidly. A large mileage adds relatively little to the total travel; these roads exist primarily to serve small amounts of local traffic.



Most of the higher traffic volumes on rural roads in 1951 were found on the existing State Highway System. However, 900 miles of that System carried less than 600 vehicles per day; higher volumes than that were found on 540 miles of present State-aid Highways.

Thus it is indicated, on the evidence of traffic interest alone, that about 2,750 miles of road carrying 67 per cent of the rural travel qualify for inclusion in the State Highway System; about 6,150 miles carrying 27 per cent of the travel qualify for the State-aid System; and the remainder, 11,073 miles with 6 per cent of travel, for the Town Ways.

The minimum traffic volumes at the breakpoints on the curve are respectively 600 and 150 vehicles per day (average for the year 1951). As previously stated, however, such values cannot be the sole indicator for classifying highways. Nevertheless, roads in the State Highway System, for example, having less than the indicated 600 vehicles per day should be examined carefully to see whether they qualify on other counts.

The bar chart on this page shows the existing system mileage which falls in each of a number of traffic volume groups. It shows that a total of 900 miles of existing State Highways carry less than 600 vehicles per day, whereas 540 miles of the State-aid Highways carry more than that amount. These data suggest that possibly such mileages should be exchanged between the two systems.

Similarly, 2,450 miles of State-aid Highways carry less than 100 vehicles per day, and 750 miles of Town Ways carry more. Perhaps there is reason to exchange this mileage also. Wherever these locations exist, they need to be studied in the light of other criteria.

ECONOMIC VALUE

Highways, roads and streets connect places and areas of varying economic importance. It follows that the highways linking those of most significance to the state's economy have a predominance of state-wide interest.

Extensive studies in Michigan, over a period of several years, have indicated a close relationship between the economic importance of a trade center

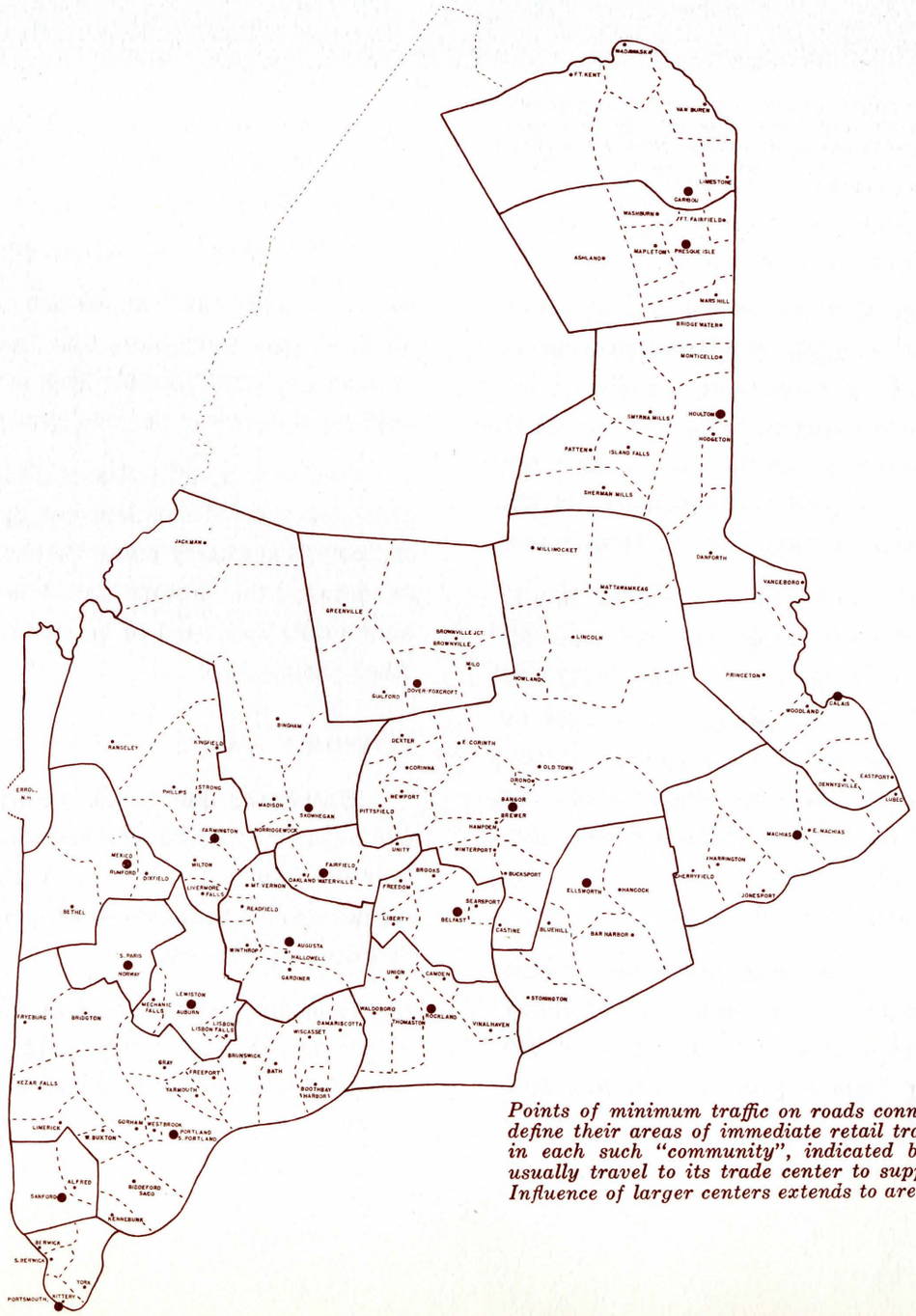
and the proportion of its traffic which moves to or from points outside of its surrounding trade area within which most of the routine daily trips are made. The amount of the former — the special interest trips — logically indicates the degree of state-wide interest in the community.

There is a direct parallel between the economic class into which a trade center falls and the amount of state-wide traffic which it attracts. When places are properly classed, the roads connecting them (by minimum mileages) are also classified in accordance with their predominant function.

State, county and city authorities in Michigan have endorsed the highway classification growing out of these studies and the Michigan Legislature passed laws confirming such systems. The State of Illinois also has utilized these principles in recent highway reclassification. Although complete data are not available in Maine, it is reasonable to accept the basic principle as one of the criteria of classification.

Community Classification

The economic importance of a community is indicated in a number of ways, four of which particularly are used in this study because the facts are available and, in general, representative.



Points of minimum traffic on roads connecting trade centers define their areas of immediate retail trade influence. People in each such "community", indicated by the dashed lines, usually travel to its trade center to supply every-day needs. Influence of larger centers extends to areas within solid lines.

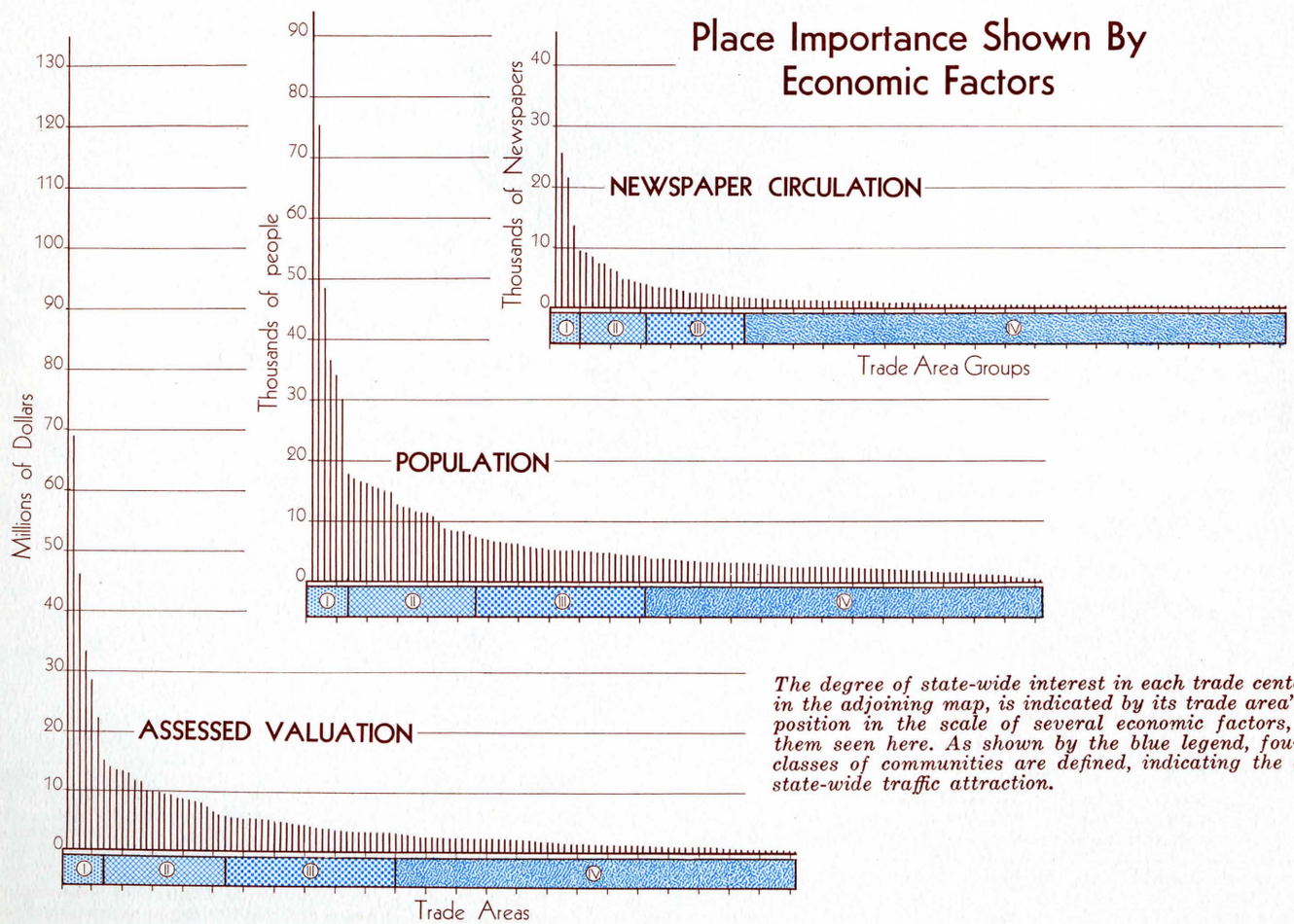
The volume of retail trade is believed to be the best indicator, but data are given in U.S. Census Bureau reports for only 25 organized places in Maine. Newspaper circulation, assessed valuation and population are available for all 121 communities which can be classified, and bank assets are indicated for 79 places.

Each community, to which these facts pertain, includes the immediate trade area surrounding the compact business center. The trade areas, shown in the map on page 26, have been identified on the basis of people's travel habits as reflected in traffic studies.

The accumulation of people traveling to or from their normal trade centers causes traffic volumes to increase as the distance to the center decreases. If two adjoining communities had centers of equal economic importance, a point half way between them would normally be that of minimum traffic, since people would usually be inclined to travel each way from that point to the nearest center.

Therefore, points of minimum traffic located on roads connecting business centers identify the maximum limits of their normal retail trade areas. Lines connecting these points around the trade centers contain the areas tributary to each, as shown in the map on page 26. These are the economic "communities" whose size and shape depends on competition from other areas, topography, availability of highways and other factors.

Three of the sets of facts accumulated for each of these 121 trade areas are shown in the chart on this page. Each community takes its place in the sequence of values. They fall into four broad groups,



The degree of state-wide interest in each trade center, shown in the adjoining map, is indicated by its trade area's relative position in the scale of several economic factors, three of them seen here. As shown by the blue legend, four general classes of communities are defined, indicating the degree of state-wide traffic attraction.

all places in each group being of similar general importance to the state's economy. Group I, however, ranges from Portland, of top significance, to Sanford. These 7 places stand out above all others.

In general, each place fails in its respective group on the basis of each set of factors. However, if it was found, for example, that a trade area falling in Group II on the basis of its population, was in Group III for two other factors, its final classification placed it in the latter group. Madawaska and Kittery are examples of area centers whose population does not wholly indicate their economic importance.

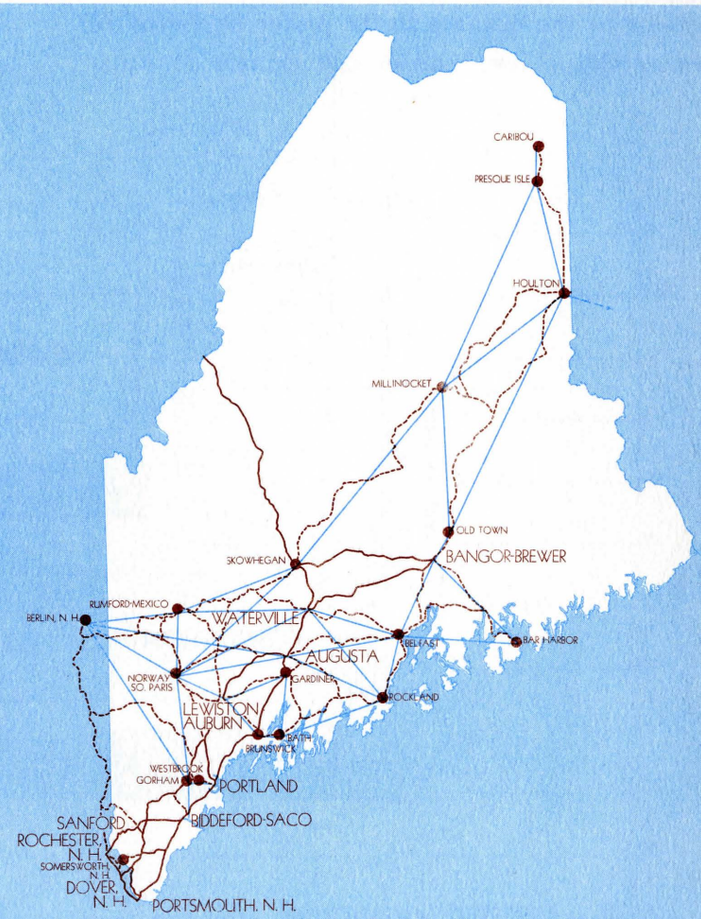
Small neighborhood centers are in a fifth group whose importance is predominantly local.

Road Class Follows Community Class

As shown in the maps on this page, straight lines drawn between places in Group I, and between these and similar places outside the state but nearest to it, indicate the major desire lines of travel. The actual highways which most closely follow these desire lines, therefore, have the greatest state-wide economic importance and should be classed as State Highways.

Topographic difficulties, existing degree of improvement and location of nearby populated places often preclude any attempt to conform rigidly to the direct desire line, especially where the percentage of extra distance involved in traveling between the principal centers is small. Also in the interest of

Straight lines indicate the travel desires for movement between places of greatest economic importance. The most feasible highway routes indicated by the desire lines are selected with due regard for topography, economy and distance. Such routes (shown in brown) should be State Highways, as classified by the predominant state-wide interest and traffic attraction of the places they principally connect. This process, continued as shown in the adjoining map, is another factor of many used in the classification study.



Places of next importance are connected with each other and the preceding places by straight travel desire lines, except where desires are satisfactorily provided for by closely parallel lines, by routes already selected, or where distances and topography prevent reasonably direct connections. Routes following the added desire lines are selected (shown in dash brown lines) and are of second highest state importance. The process is continued, until all connections are classified.

economy, maximum transportation service should be provided with minimum mileage, making one road section serve several travel desires if possible. All these factors combine, for example, to make impractical a straight line service from Portland, Lewiston and Bangor to Quebec. Reasonable service for these, as well as Augusta, Waterville and other areas of the state, can be provided by following the central desire line from Waterville northwest along U.S. 201 to or from Quebec.

The initial routes thus selected also serve to connect some other places in groups of lesser economic importance. By adding to the first selections the remaining Group II places which are not so connected with Group I or other Group II places, an increment of new desire lines and highways is indicated, as shown in the second map. These, in turn, serve more places in lesser groups.

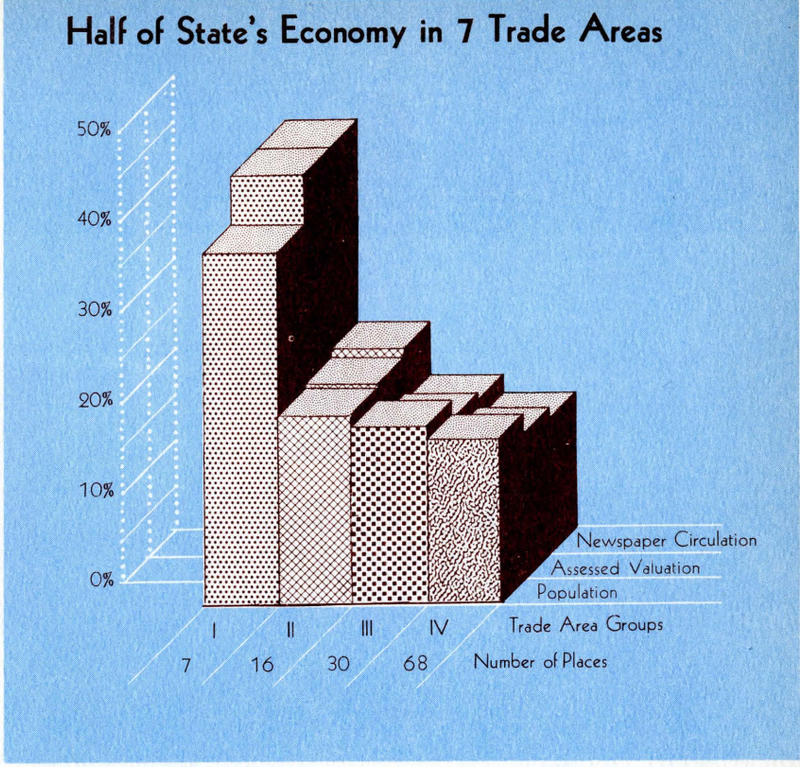
The process is then repeated, utilizing to the utmost those roads already selected. In the case of Group III places, more or less direct connections are limited to distances within the regional area of trade influence, or adjacent communities; and in the case of Group IV places, to adjoining local trade areas.

The results of this analysis show that trade areas of Portland-South Portland, Lewiston-Auburn, Bangor-Brewer, Biddeford-Saco, Waterville-Fairfield, Augusta and Sanford are Group I communities, with a total population of 361,000, or 40 per cent of the state total. Highway mileage required to connect them with each other and similar out-of-state places totals 522 miles.

There are 16 areas totaling 198,000 people, or 22 per cent of the state's population, in Group II. About 1,051 additional miles are required to serve these communities.

In Group III are 30 places with 185,000 people, another 20 per cent of the state. To serve them, 485 miles more are needed.

Group IV includes 68 places, 167,000 people or 18 per cent, and they would require 830 miles in addition to previous selections.



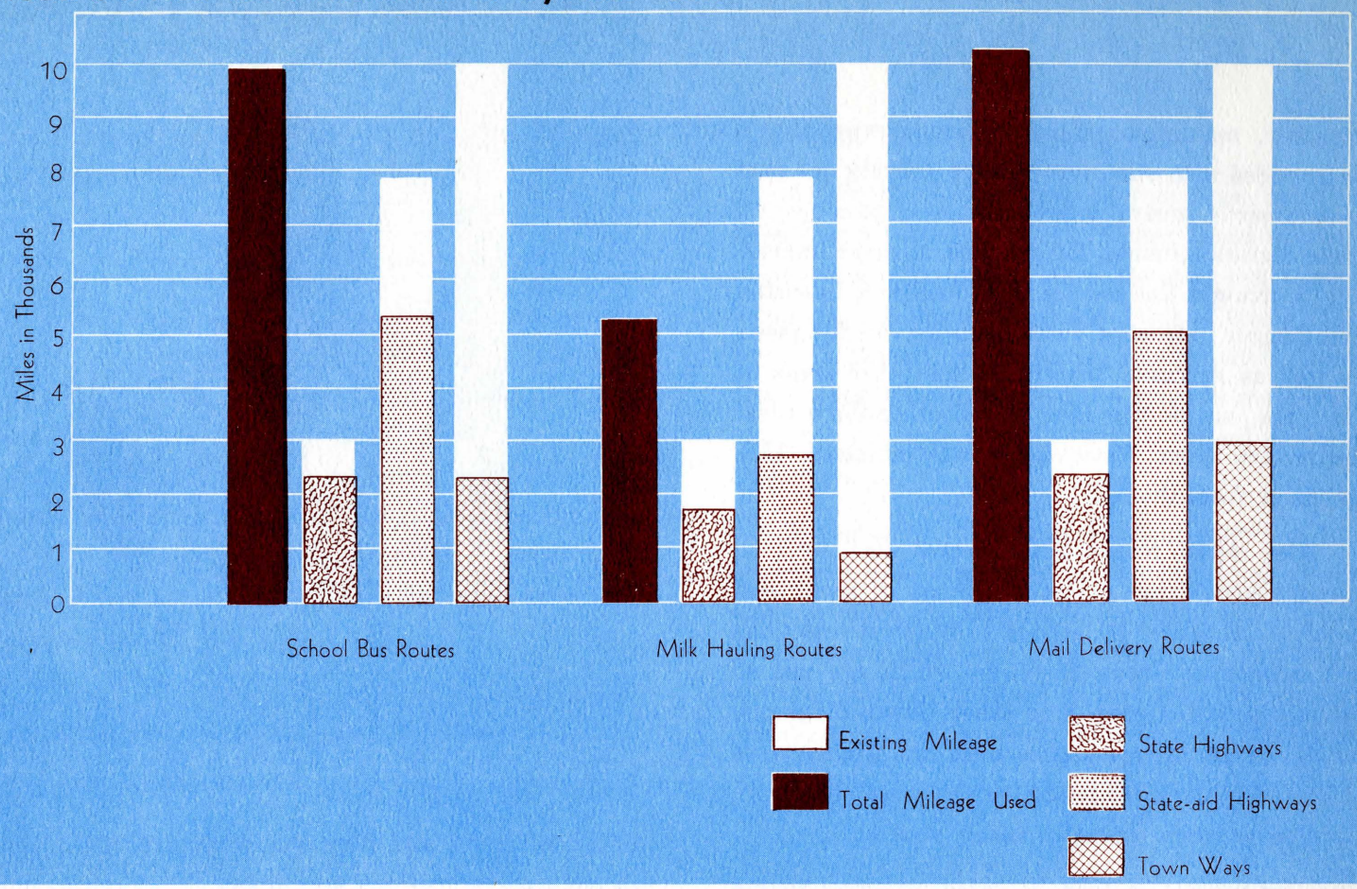
The chart on this page shows the relative proportions of some of the economic factors surveyed which are found in each group of trade areas.

The State Highway System should include all minimum mileages directly connecting places in Groups I, II and III. It is clear that their predominant function is to render state-wide service. Whether the System should extend to additional mileages required to serve all Group IV places should be guided by the total mileage of a State System suggested by the traffic curve on page 24. About 2,750 miles are indicated, which would permit most of the needed Group IV connections. To establish the required uniformity of classification, all such places are included, thus setting a tentative total of 2,888 miles for the State Highway System, subject to further analysis.

Other Economic Indicators

Especially as regards the State-aid System, regular use of roads by school buses, milk haulers and rural mail carriers are important guides to road function in community service.

Road Service One Indicator of System Class



Total rural mileages and the proportion of each existing system's length used for school bus routes, regular milk hauling and mail delivery are shown. When a road is used for all three purposes, it is strong indication of its value to the community.

Through cooperation of the State Department of Education and school authorities, the State Division of Animal Industry, dairies and milk haulers, and the U.S. Post Office Department, complete maps of regular routes used in such services have been compiled. The chart on this page shows mileages of each existing system which are used for the three purposes mentioned. The data reveal for instance, that of the designated State-aid Highway System totaling 7,922 miles, about 5,300 miles, or two-thirds, are used for school bus routes; 2,800 miles, or 35 per cent, are used for milk hauling; and 5,000 miles for mail delivery.

Wherever a road is used for all three services, it is a strong indication of its value to the community as a whole. Frequently such roads would qualify for either the State Highway System or the State-aid System for other reasons. Where they do not, such facts should be considered. Conversely, when roads are not used for these purposes, it suggests that they belong in the Town Ways.

The maps on page 31 show the specific roads used as school bus, milk and postal routes. They have been related carefully to all other factors in reaching final conclusions about the proper classification of each road.

Forest lands and resort areas are the foundation of much of the state's economy, and adequate road service is essential to their continued operation.

In the past, much of the tree crop has been floated to the mill by way of the vast lake and stream network, and many summer visitors arrived by train or boat. Today, however, a large percentage of logs and pulpwood are brought from the woods by truck, and the motor car is preferred transportation for the great majority of visitors. The traffic flow map on page 35 shows, for example, that motor vehicle traffic in the Bar Harbor area is considerable today, whereas in 1924 there was not enough to be shown on the map. At that time, most people arrived by boat.

Many private roads penetrate the wide-spread forests and serve for timber cropping. Once an area

School Bus Routes

Milk Hauling Routes

Mail Delivery Routes

is cut, a number of years pass before another crop is ready. It is neither necessary nor economical to provide permanent public ways for such uses alone. However, strategically spaced collector roads leading to town and mill are needed to tap these resources, especially when the roads can serve other purposes as well.

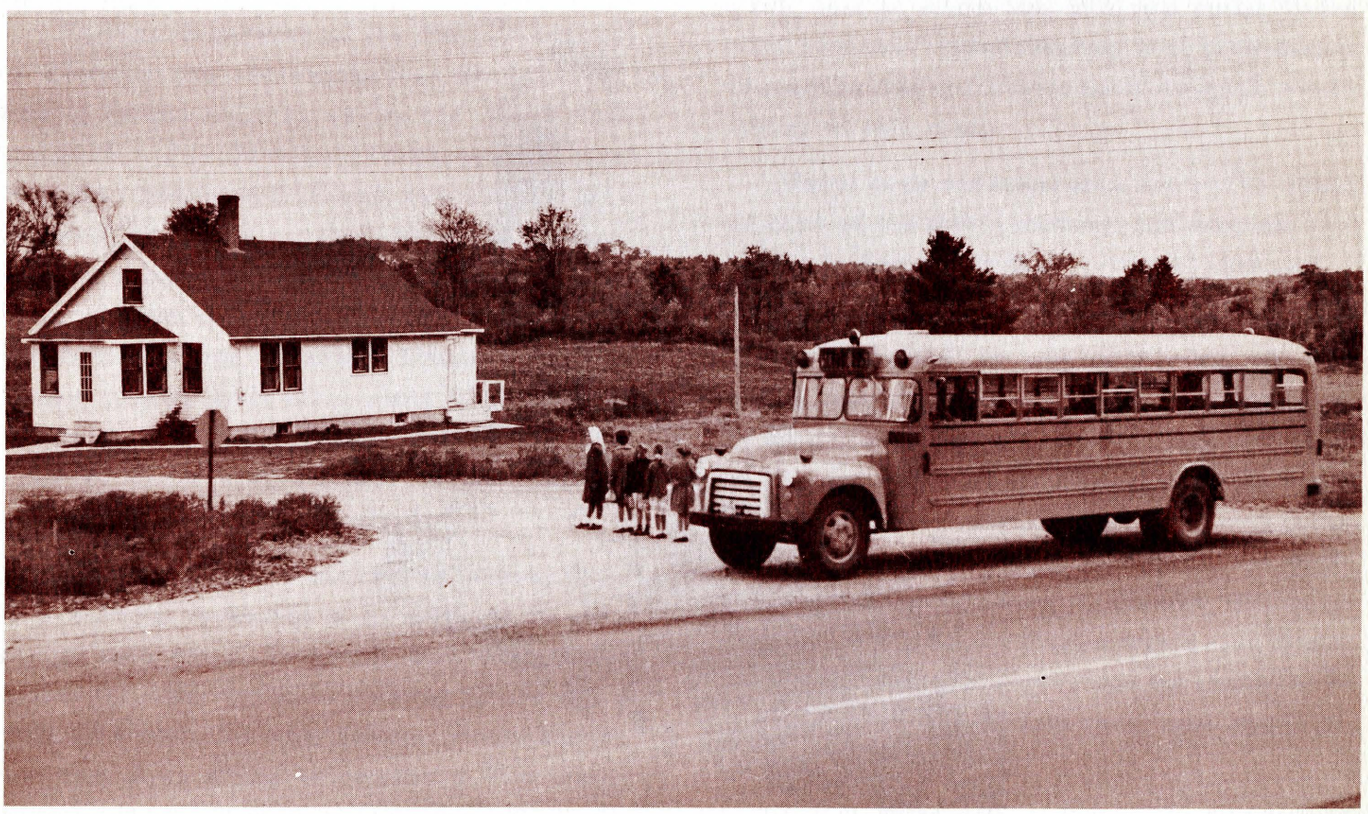
Summer traffic in resort areas reaches peaks considerably above the year-round averages. This fact is considered in defining their degree of economic importance.

GEOGRAPHIC SERVICE

In addition to other considerations in the selection of a State Highway System, the state has an obligation to provide highway service within a reasonable distance of any area of the state. What is "a reasonable distance" depends greatly on the economic and geographic characteristics of the area.

The large unpopulated northwestern area of Maine, with long distances and rough terrain between available State Highways, poses a serious problem as to the ultimate extension of the State Highway System in that area. Nevertheless, its economic assets of timber and minerals, combined with recreational possibilities, suggest that this vast expanse should be served in some way as a matter of general state interest. In such areas there would be considerable distance between any state routes.

But where the population is more dense and agricultural production more intensive, state service should be provided through closer spacing of State Highways, so that no individual or product will have to travel unreasonable distances to reach a main highway system. Consequently, state routes may be needed at intervals between those which connect populated places.



Use of a road by school buses is one of the many facts which must be considered in determining the road's proper class.

To provide for the shorter hauls, to collect from local roads and feed to and from the State System, consideration must be given to the need for geographic subdivision of areas between State Highways — that is, criss-crossing State-aid Highways, relatively short distances apart, to produce a good distributive and circulatory system.

The maps on this page indicate four of the principal agricultural production areas of the state. It is in such areas that State and State-aid Highways should provide a higher degree of service supplementing, if necessary, the main routes connecting communities.

INTEGRATION AND CIRCULATION

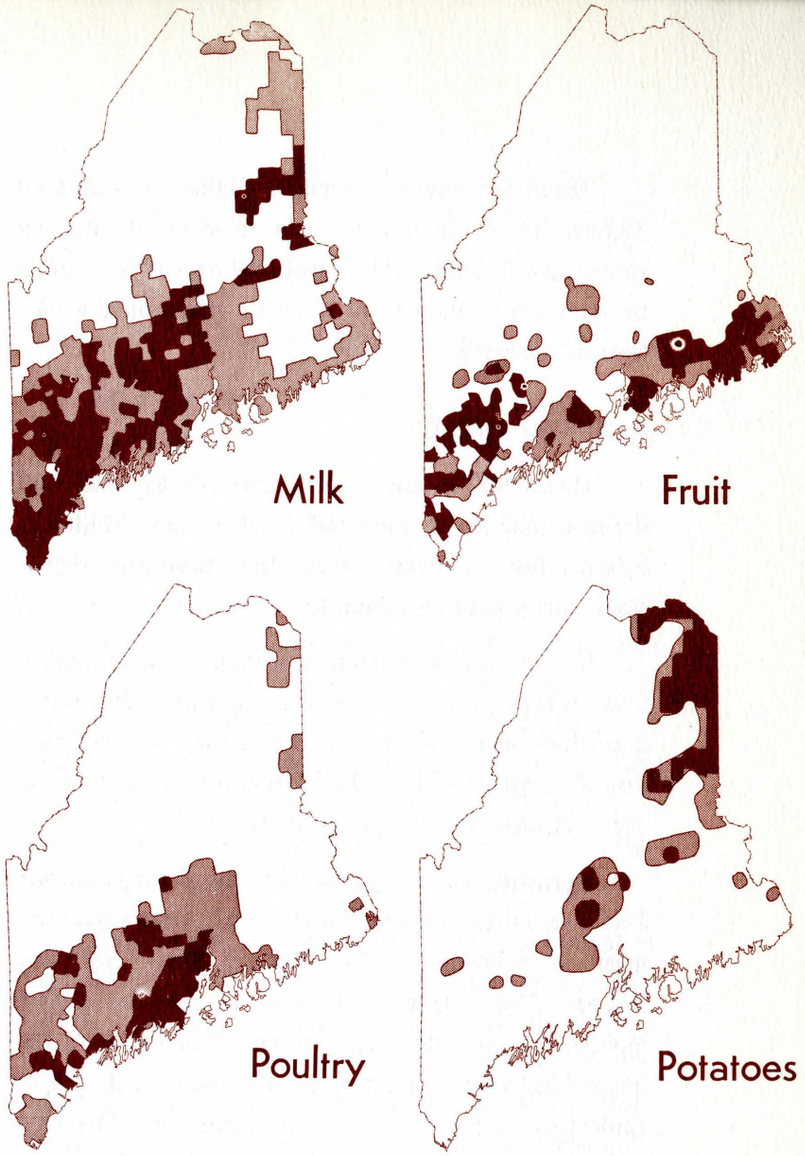
When the State Highway System is selected, it furnishes the framework upon which the State-aid System is established; while all Town Ways rest upon the foundation of the other two systems. With this principle applied, the systems become "integrated", or in terms of the legislation of 40 years ago, "interlocked". Each system is supplementary to the others.

To give true meaning to the term "system", dead-end roads and isolated segments should be excluded. Only thus can adequate traffic circulation and maintenance economy be obtained. The need can be determined only by map study with full consideration of the general economic and geographic character of the areas involved.

If the roads or places are such distances apart that little or no interchange of traffic is anticipated, then dead ends are justified. This is particularly true of Town Ways, and sometimes of the other systems — for example, when it is obvious that no interconnections are feasible as a means of reaching state parks or points along the coast line.

LAND TOPOGRAPHY

In both the State and State-aid Systems, duplication of routes serving the same purposes through parallel facilities should be avoided. There is usually little reason to provide alternative routes to perform the same function. One route generally can be developed more economically to higher standards of safety and service than can two routes. In effect, this follows the principle of selecting the minimum mileage between places.



Intensive agricultural production areas (dark brown) require a higher degree of road service than many other areas of the state. Moderate production is indicated by shaded areas.

Exceptions to this rule may be valid in cases of geographic barriers which distinctly separate one area from another as, for example, a large river on each side of which may run parallel roads. If both sides of the river have considerable areas served by tributary roads, then it may be more economical to provide parallel routes than to build several bridges to channel traffic into a single road on one side.

Mountain barriers, swamps, lakes and bays all dictate, to some degree, the location of system routes. Such topographic features are so numerous in Maine that they have a major effect on the pattern of systems.

NATIONAL DEFENSE

Roads of special significance to the national defense should be included in the State Highway System for the reason that they have not only a state, but a national, function.

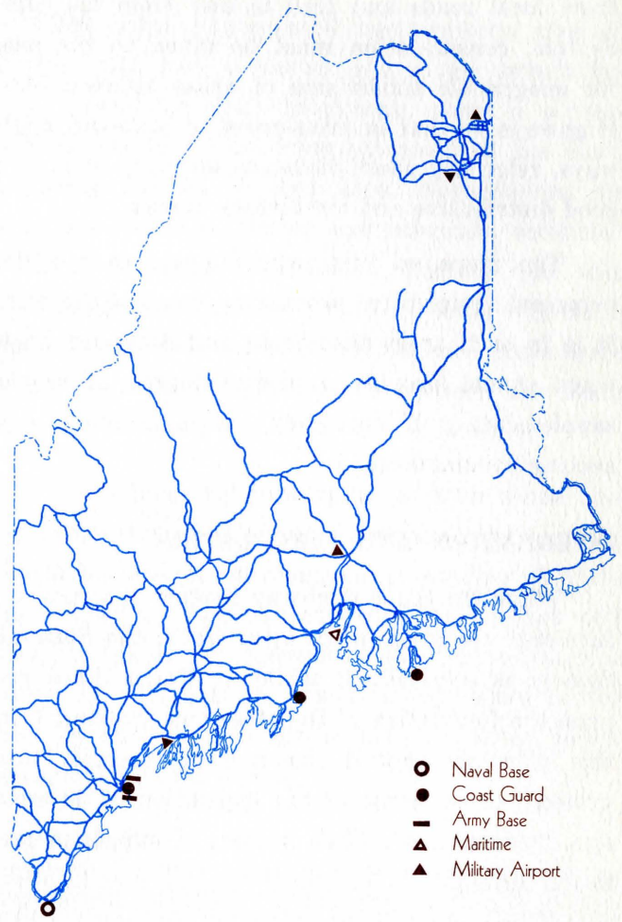
The Interstate System specifically comes within this category. Since Maine's portion, previously described, has been designated jointly by the State and Federal governments, it should be a part of the State Highway System, as it now is.

Locations of Army, Navy, Coast Guard and Air Force installations are shown on the accompanying map, in relation to the existing State Highway System. The majority of these are served almost directly by the Interstate System. Extensions of the State Highway System along the east coast and to Limestone serve the remaining locations. When access roads, such as one between Limestone and Caribou, are built, they should become part of the State Highway System.

PRESENT CLASS AND IMPROVEMENT

In the final analysis, and within limitations guided by the preceding factual studies and principles, engineering judgment may be the controlling factor in selection of one route rather than another for a given system. In this connection, the existing classification and present degree of improvement are important in determining final recommendations.

Long-established route designations, although in some cases not strictly in accord with those which might seem the logical choice today, sometimes have the advantage of grooving a travel pattern which should be retained, especially if other advantages of an alternative route are slight.



Bases of importance to the national defense, shown here in relation to the present State Highway System, should be adequately served by State Highways.

The stability of travel patterns is apparent in the map on next page, showing the relation of 1924 traffic to that of 1951. For the most part, the major lines of travel almost 30 years ago are still the major lines today.

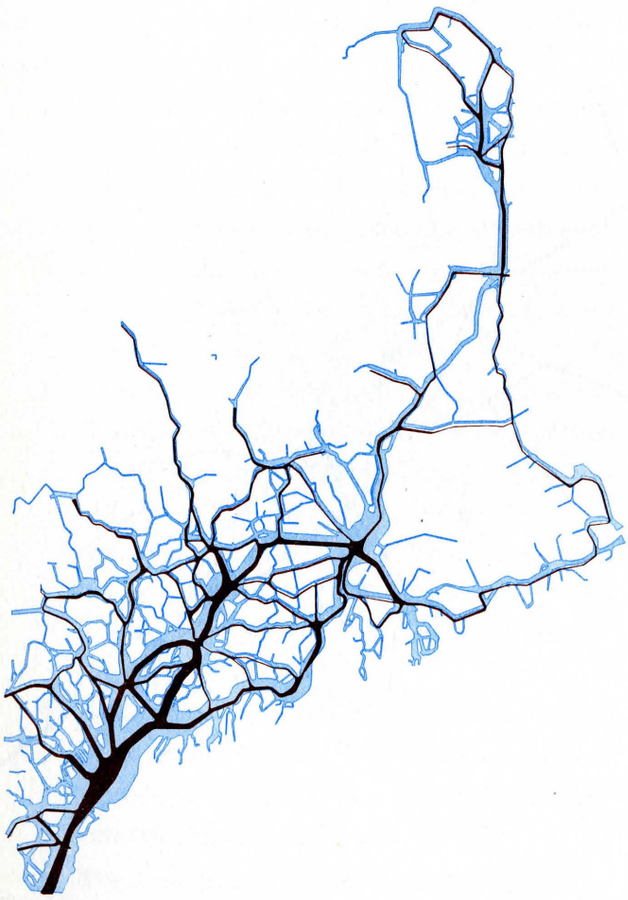
Furthermore, improvement of some existing routes might have progressed to a stage beyond their needs if other nearby routes were now selected instead. New designations would then simply duplicate, uneconomically, investments already made.

As can be seen by referring to the desire line diagrams on page 28, present main highways often do not follow the straight lines very closely. However, by utilizing the existing system as much as possible, economical transportation is maintained.

Designations of routes as part of the Federal-aid Highway System or Federal-aid Secondary System normally have been made on the framework of the existing state systems. Such federal-aid designations, limited in total mileage, were carefully studied and represent considered judgment of relative importance. They are not readily altered, especially where federal funds have been spent.

The recent adoption of the state's "accelerated highway program" also must be considered. While final recommendations of route classification call for transfers between State and State-aid Systems, it is believed that all project locations indicated in that program would remain legally qualified.

Historical precedent and original engineering judgment cannot be ignored as they often reflect intimate knowledge of construction problems or economic facts which should be taken into account in the reclassification process.



Major traffic flow of 1951 (blue bands) follows the principal lines of travel in 1924 (brown bands), though total volumes have increased. New roads and economic growth have extended the older pattern.

URBAN SYSTEMS

Establishment of urban street systems is an important aspect of highway classification. Urban areas are focal points of traffic interest, and city streets carry large volumes of traffic. Street inadequacies today are a major highway transportation problem whose solution rests in part on a sound plan of street development. Such a program must have a good classification plan to start with. As in all other areas of the state, it becomes the basis for improvement standards, management responsibilities and financing. And with specific allocations of federal-aid now earmarked for urban systems, adequate street system plans are indispensable.

Most of the present urban street classification is limited to the existing State Highway designations, with some additions of State-aid routes. Bangor and Portland, however, have given careful study to street planning problems and have indicated arterial street systems in planning reports. The State Highway Department's Planning Division and the Bureau of Public Roads also are establishing Federal-aid Urban Systems for the purpose of defining where Federal-aid Urban funds may be used.

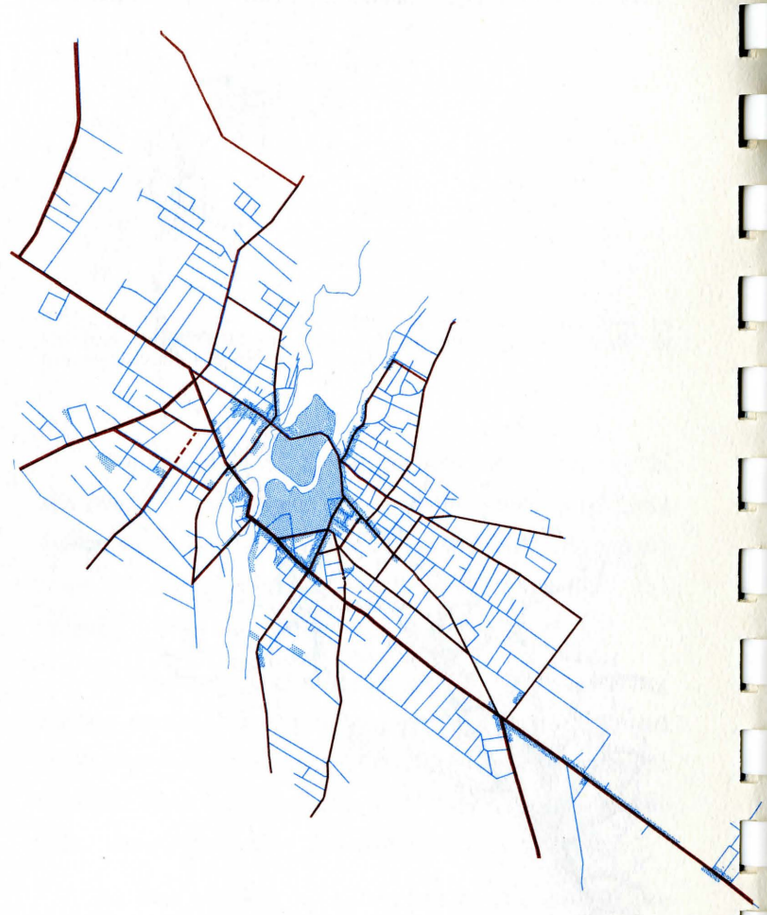
Fundamentally, the same principles of classification apply to urban as well as rural areas, the main difference being the compactness of the area under consideration. State Highways and State-aid Highways can be located by the same definitions and much the same methods as in rural areas. However, all of the detailed data such as used in the general analysis are not readily available. Therefore, personal inspection and analysis of every urban area was made. Maps were prepared showing all streets, rural connections, business, industrial and residential areas. Present street usage and character were examined.

One of the maps of the Biddeford-Saco urban area on this page illustrates the existing classification. The study indicated that other streets also had arterial characteristics — in other words, did more than merely serve abutting property. Such streets are also shown on the second map, illustrating an integrated system, keyed to main rural roads and serving the principal traffic needs of the area.

Such streets usually have higher traffic volumes than most of the others. They connect the central business district with tributary trade areas, neighborhood shopping centers within the city, or commercial industrial districts. These are also inter-connected by the systems, and superior service is provided at spaced intervals through residential districts, keeping heavy traffic out of local residential streets. Where necessary, the systems include pairs of one-way streets and special truck routes.

Thus, proposed systems were developed for each of the 30 urban areas. State Highways were located on streets which connect most efficiently with the recommended existing rural locations. State-aid Highways include recommended rural State-aid connections and other arterial streets rendering similar service. The balance of the urban streets were left as Town Ways.

Present classification of city streets is limited to extensions of rural systems into the urban areas. On this map of the Biddeford-Saco area, existing State Highways are shown in wide brown lines and State-aid Highways in narrow brown lines. All other streets are Town Ways.



An adequate classification plan for urban areas identifies the streets of predominant state-wide, community and local interest, using the same principles as in rural areas. The recommended systems (identified like those in the adjoining map) provide the basis for consideration of financing, management and development.

Chapter 4

RECOMMENDED SYSTEMS

The complete engineering analysis described in the preceding chapter has identified all roads and streets which should be included in each of the three recommended systems — State Highways, State-aid Highways and Town Ways. All evidence has been carefully examined in the light of the stated principles, and these general conclusions have been reached:

1. The State Highway System should contain some routes not presently designated; some other existing State Highways do not meet qualifying tests and should be transferred from the System. The net result is a recommended System containing 83 miles more than at present.
2. Considerable readjustment of the State-aid Highways is recommended. Some existing routes should be State Highways; others should be Town Ways, and some of the latter should be added to the State-aid System. All parts of the state would be affected, with a resulting net reduction of 30 per cent of the present mileage.
3. Urban street classification has been inadequate in most areas. The State-aid System should be extended to include principal arterial streets.
4. The topography and geography of Maine require a relatively greater mileage of both State and State-aid Highways than would be warranted in many other states.
5. The Federal-aid Systems are generally well-chosen, as far as mileage limits will permit.

The maps on the following pages show the final recommended rural State Highway and State-aid Systems, with remaining roads classed as Town Ways. Detailed large scale work maps covering the entire state and each urban area are on file as permanent records in the Highway Planning Division of the State Highway Department, which also retains all data connected with the study.

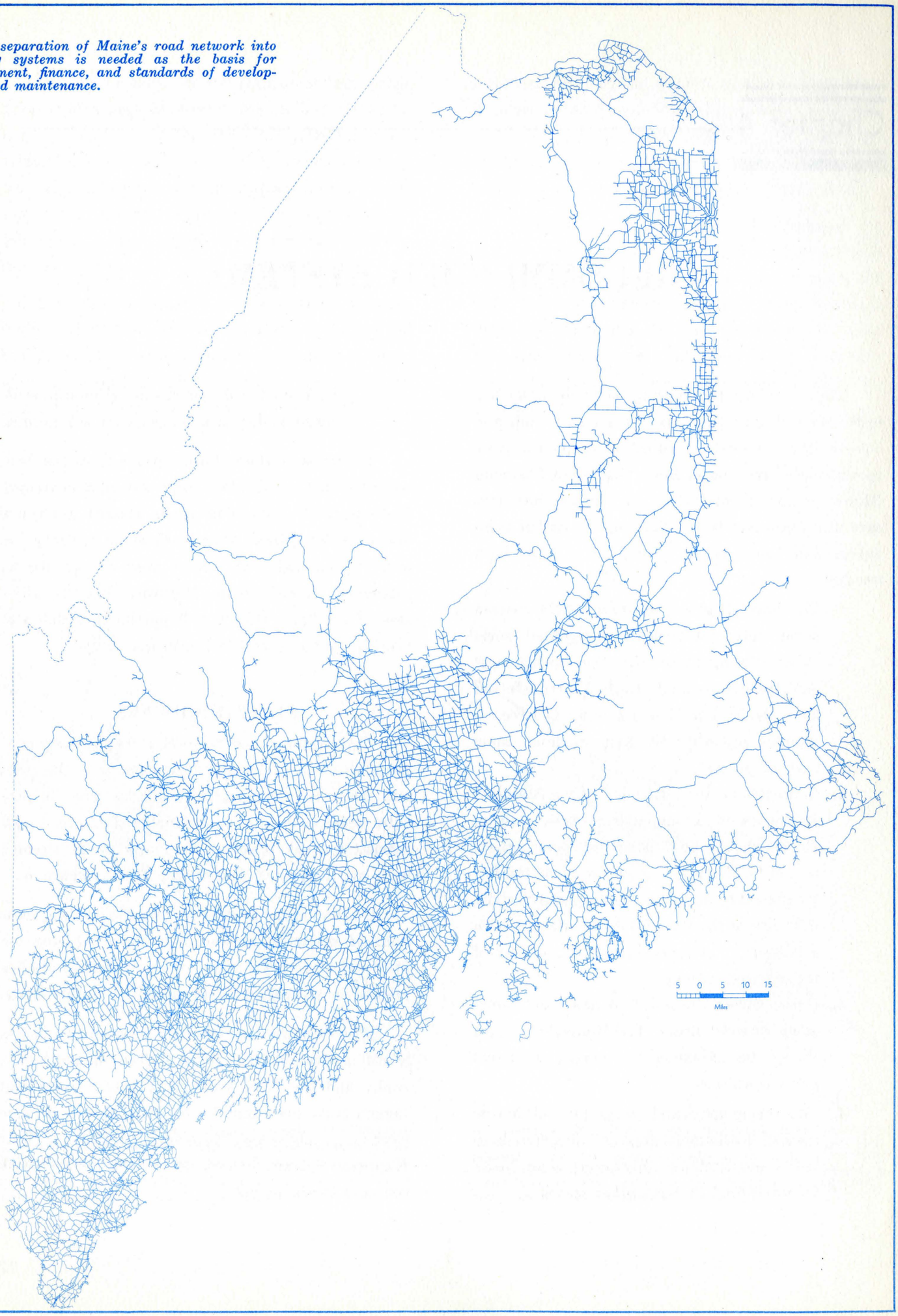
STATE HIGHWAYS

The recommended State Highway System connects all of the principal trade centers of the state and many smaller neighborhoods as well. It provides service, within a reasonable distance, to all populated areas. It serves the major traffic streams with an integrated system for free circulation.

Generally, the System follows the existing locations of presently selected and improved State or State-aid Highways, since minor relocation studies involve detailed analysis not called for in this study.

While the shortest distance between two points is still a straight line, Maine's often rugged topography and the large number of lakes, rivers and jagged coast lines prohibit economical straight line location of highways. However, the existing State Highway System has often provided alternative routes between points.

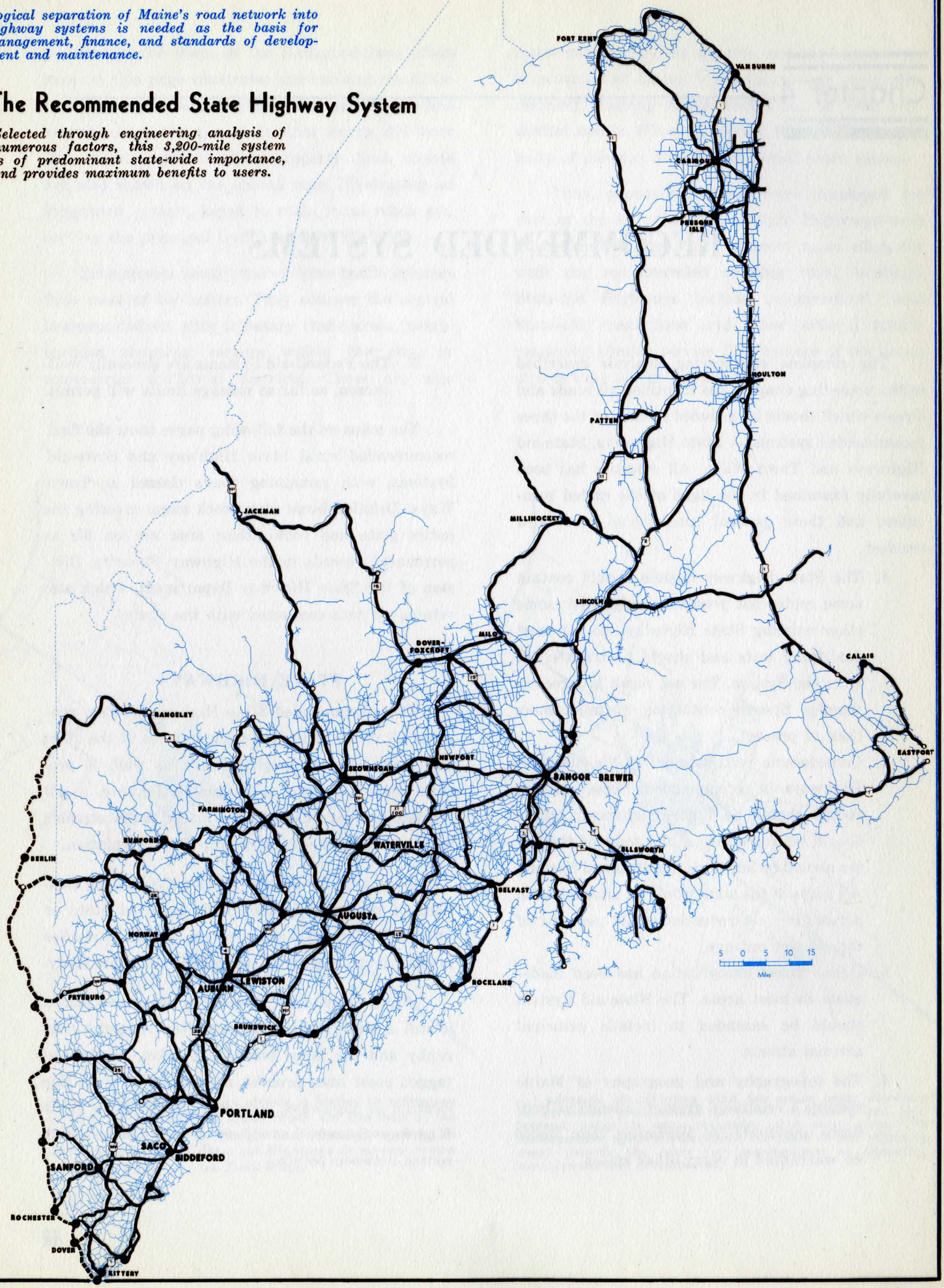
Logical separation of Maine's road network into highway systems is needed as the basis for management, finance, and standards of development and maintenance.



Logical separation of Maine's road network into highway systems is needed as the basis for management, finance, and standards of development and maintenance.

The Recommended State Highway System

Selected through engineering analysis of numerous factors, this 3,200-mile system is of predominant state-wide importance, and provides maximum benefits to users.



Logical separation of Maine's road network into highway systems is needed as the basis for management, finance, and standards of development and maintenance.

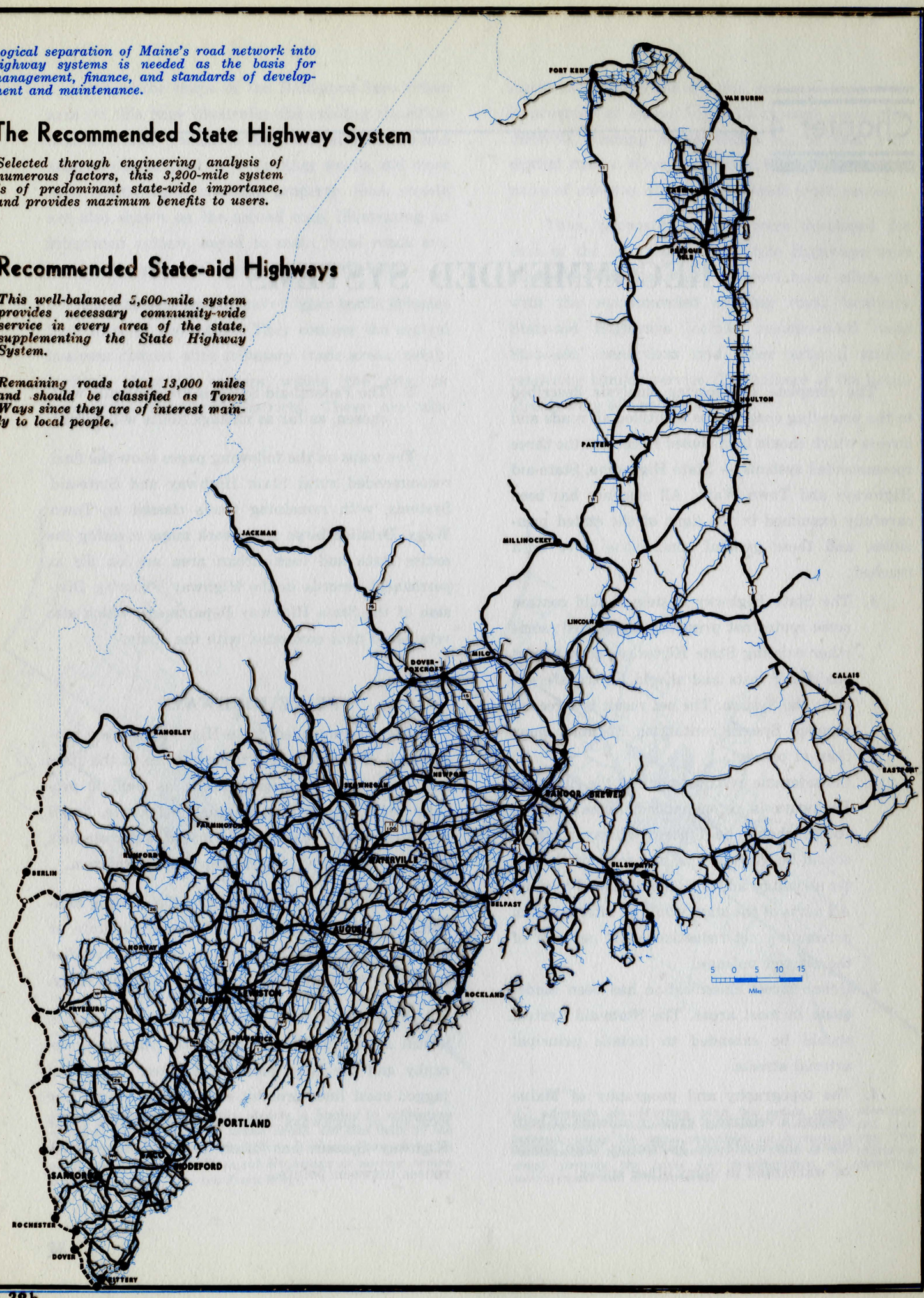
The Recommended State Highway System

Selected through engineering analysis of numerous factors, this 3,200-mile system is of predominant state-wide importance, and provides maximum benefits to users.

Recommended State-aid Highways

This well-balanced 5,600-mile system provides necessary community-wide service in every area of the state, supplementing the State Highway System.

Remaining roads total 13,000 miles and should be classified as Town Ways since they are of interest mainly to local people.



In this study, every effort was made to avoid duplication of uneconomical State Highway service, although it was found that, nevertheless, the existence of presently improved diagonals carrying much traffic frequently required their inclusion in the recommended system, as a practical recognition of an already accomplished fact.

MILEAGE SUMMARY

The recommended rural and urban State Highway System totals 3,250 miles as a result of transfers to, and additions from, other systems as shown in the following table:

	Existing Mileage	*Added Mileage*	*Transferred Mileage*	*Net Mileage*
Rural	3,034	596	519	3,111
Urban	133	18	12	139
Total	3,167	614	531	3,250

As stated in Chapter 3, SYSTEM SELECTION, about 2,750 rural miles were indicated from the traffic analysis as being of state-wide importance. About 2,900 rural and urban miles were the maximum resulting from the separate study of place classification by economic analysis; this mileage included most, but not all, routes of major traffic significance. Additions for this and other reasons cited in Chapter 3 brought the total to the 3,250 miles, or 14.8 per cent of all mileage in the state. That percentage compares with other New England states as follows:

	Rural Primary System	
	Miles	*Per Cent*
Connecticut	2,551	24.3
Massachusetts	1,848	10.6
New Hampshire	1,511	12.1
Rhode Island	738	32.5
Vermont	1,766	13.3

The recommended rural State Highway System contains about 700 miles having less than 600 vehicles average per day in 1951, compared to 900 miles in the existing System. About 65 per cent of the rural vehicle mileage would be carried by the recommended System, compared to 63 per cent at present.

STATE-AID HIGHWAYS

The recommended State-aid Highway System supplements the proposed State Highway System, providing a complete network of collector and feeder roads and streets of community-wide importance in every area of the state. The State-aid System totals 5,578 miles, about 2,300 miles less than presently designated, and 1,087 miles less than currently improved and state-maintained. Study results are shown in the following table:

	Existing Mileage	*Added Mileage*	*Transferred Mileage*	*Net Mileage*
Rural	7,808	750	3,176	5,382
Urban	114	110	28	196
Total	7,922	860	3,204	5,578

The net mileage compares with the maximum of 6,150 miles indicated as of combined state and local interest by the traffic analysis described in Chapter 3. Part of the mileage transferred was included in the State Highway System for reasons other than traffic indications.

It was found that all areas of the state now contain more designated State-aid Highways than are warranted by the criteria of predominant community-wide service. Net reductions were 19-21 per cent of currently designated mileage in 2 counties, 25-30 per cent in 6 counties, 32-36 per cent in 6 counties and 40-44 per cent in 2 counties. Many of such routes have not been improved, even though designated for some time, and clearly served only relatively few land users.

The recommended State-aid Highways would serve the entire state with a uniformly selected system, providing service in accord with population and economic needs. Concentration of effort on this system, which includes all Federal-aid Secondary routes not located on the State Highway System, would produce greater benefits than the growing dispersion now evident.

However, it will be noted that about two-thirds of the existing State-aid mileage has been retained in the recommended system (or transferred to recommended State Highways), indicating that selections made in the past were relatively sound and have generally benefited both the community and the state as a whole.

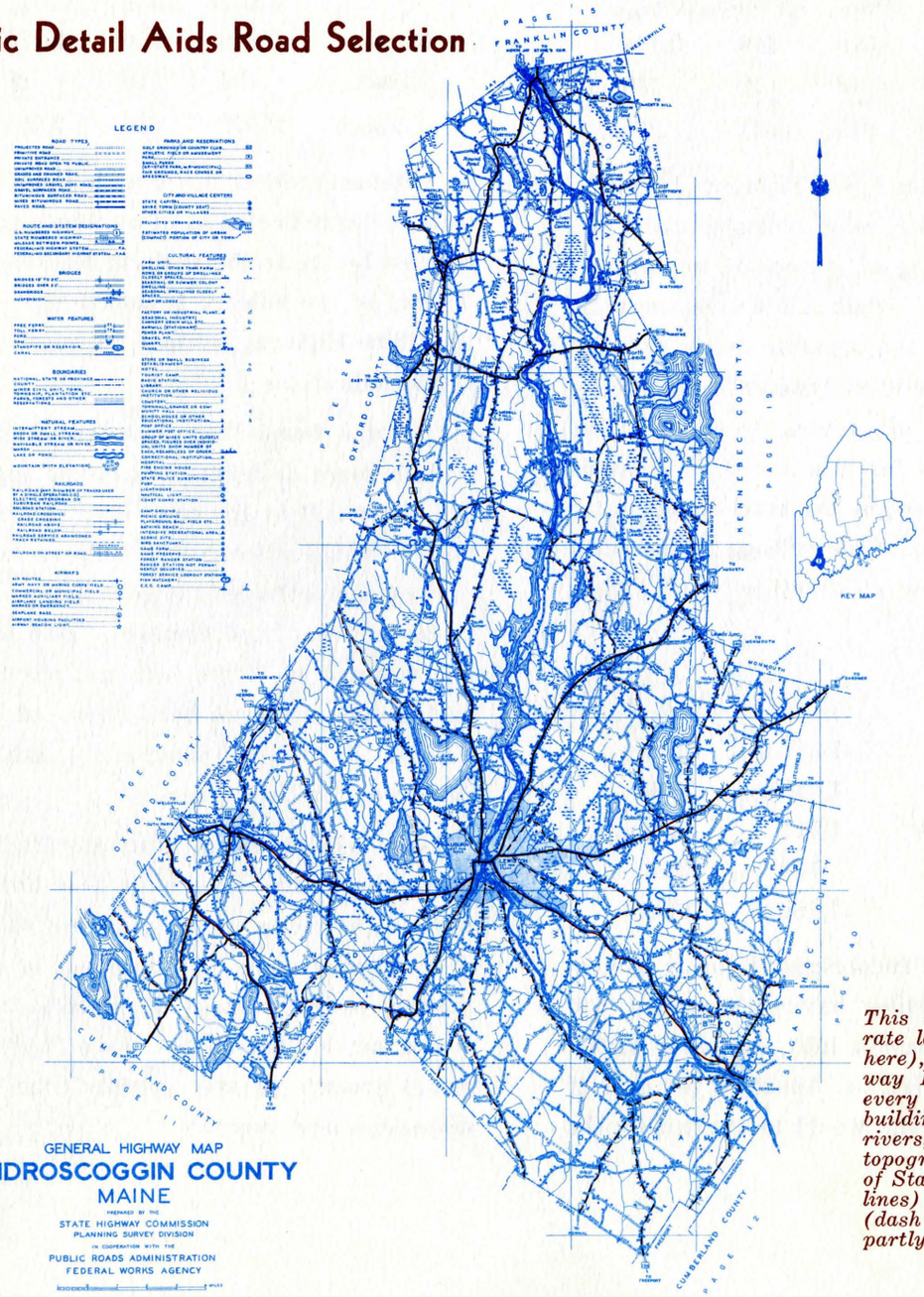
URBAN SYSTEMS

Each of the 30 urban areas containing 5,000 or more people is a focal point of highway transportation, and within each area are a number of points of special traffic interest which should be served by selected systems in the same manner as in rural areas and communities of less than 5,000.

The tabulations previously given for the recommended State Highway and State-aid Systems indicate the extent of the recommended urban systems, and an example of the selection is shown in the maps of the Biddeford-Saco area on page 36.

Each selected rural State Highway was carried through the urban areas, or to logical connections. Likewise, each State-aid route leading into the area was connected with a State Highway or with arterial streets providing similar service.

Geographic Detail Aids Road Selection



This typical example of accurate large scale maps (reduced here), prepared by the Highway Planning Division, shows every rural house and other buildings, all roads, swamps, rivers, lakes and other principal topographic features. Location of State Highways (solid brown lines) and State-aid Highways (dash brown lines) depends partly on such information.

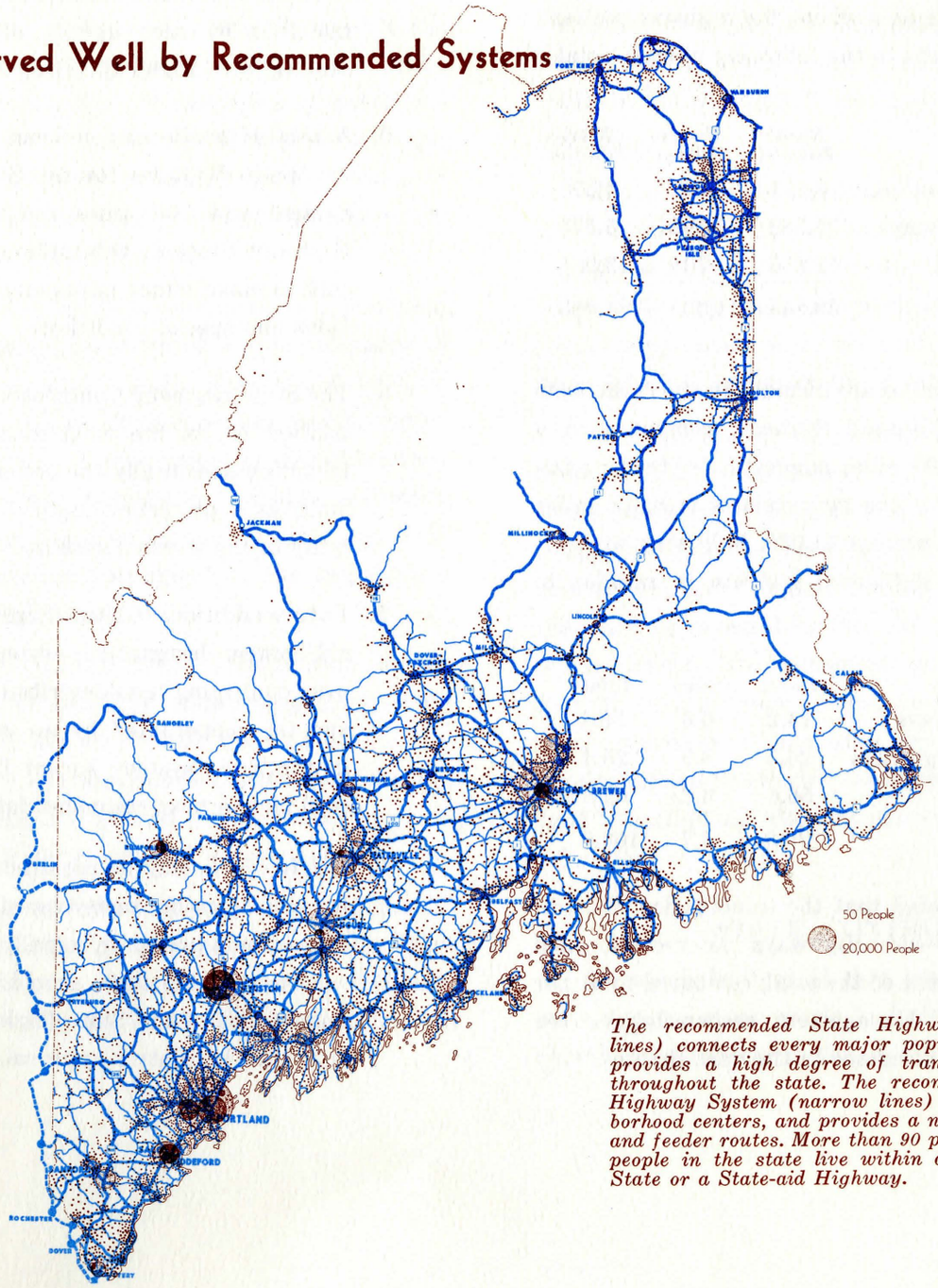
COMBINED SERVICE

In 5 counties representing a reasonable sample of the state (Androscoggin, Aroostook, Cumberland, Hancock and Kennebec), 93 per cent of all farms and dwelling units outside of places of 1,000 or more population were on or within one mile of either a State or State-aid Highway. The number ranged from 96 to 90 per cent, indicating a high degree of direct service to individuals.

The map on this page shows how the combined recommended State Highway and State-aid Systems serve the people of the state. By counties, the following tabulation shows a fairly even distribution of the number of people living in rural areas, including places of less than 2,500, per mile of State and State-aid Highways:

	People Per Mile		*People Per Mile*
Androscoggin	53	Oxford	46
Aroostook	60	Penobscot	50
Cumberland	76	Piscataquis	51
Franklin	47	Sagadahoc	68
Hancock	46	Somerset	40
Kennebec	54	Waldo	36
Knox	62	Washington	45
Lincoln	58	York	54

People Served Well by Recommended Systems



The recommended State Highway System (wide lines) connects every major population center and provides a high degree of transportation service throughout the state. The recommended State-aid Highway System (narrow lines) reaches all neighborhood centers, and provides a network of collector and feeder routes. More than 90 per cent of all rural people in the state live within a mile of either a State or a State-aid Highway.

In the 30 urban areas, similar figures range from 1,600 in Lewiston to 500 in Caribou.

In addition, use of roads for three types of services — school bus transportation, milk hauling and mail delivery — was one of the criteria for selection. Map inspection shows that nearly all of such combinations are provided for, although much of the mileage still classified as Town Ways serves one or two such purposes, providing local service to a few individuals.

MILEAGE SUMMARY

For the state as a whole, the highway reclassification plan results in the following mileage totals:

	Rural Mileage	*Urban Mileage*	*Total Mileage*
State Highways	3,111	139	3,250
State-aid Highways	5,382	196	5,578
Town Ways	12,355	700	13,055
Total	20,848	1,035	21,883

Some 8,500 miles are included in the rural State Highway and State-aid Systems, compared to a maximum of 8,900 miles suggested by traffic analysis; the total for the two systems is 8,828 miles, compared to the present 11,089. Following are percentages of the individual systems, in relation to total mileage:

	Rural	*Urban*	*Total*
State Highways	14.2	0.6	14.8
State-aid Highways	24.5	0.9	25.4
Town Ways	56.6	3.2	59.8
Total	95.3	4.7	100.0

It will be noted that the combination of rural State and State-aid Highways as recommended equals 38.7 per cent of the total, compared to 51 per cent at present. Management responsibilities for each system are discussed in the next chapter.

RECOMMENDATIONS

As a result of the reclassification study heretofore described, it is recommended that:

1. The State Highway Commission reclassify the roads and streets of the state in accord with the recommendations contained herein.

2. The State Highway Commission declare its intent to firmly fix the systems, subject to the next recommendation, to the end that a clear-cut and stabilized plan of management, financing, planning and programming of construction and maintenance may be established by each agency of government dealing with highway transportation.

3. A pool of unallocated mileage be available, limited to 50 miles for the State Highway System and 100 miles for the State-aid Highway System; this mileage to be used only to make minor adjustments for relocations and special conditions.

4. The State Highway Commission request legislation to fix the total maximum limits, including specifically the recommended pool limit, as a protection against future instability of the selected systems.

5. Future additions to State Highway or State-aid System designation, beyond pool limits, meet qualifying tests described in this report and be compensated by an equal decrease in the same system, except for cases covered by the next recommendation.

6. Roads which may be required in the future to serve major undeveloped timber and recreational areas, principally in the northwest part of the state, should be added only upon action of the State Highway Commission with legislative approval.

Chapter 5

MANAGEMENT RESPONSIBILITIES

One of the primary purposes of highway classification is to answer the question, "What agency of government should build and maintain which roads and streets?" The reclassification of all public ways, recommended in the preceding chapter, provides the basis for logical re-assignment of management responsibilities; several possible courses of action for long-range betterment of highway transportation are suggested herein.

Management includes the functions of planning, budgeting, design, construction and maintenance of the public highways, roads, streets and bridges. Responsibility for all these functions may be vested in a single agency of government or shared between two or more. The responsibility should be uniformly applied by gearing it to system classification. This permits a clear-cut assignment by the Legislature, on a firmly-fixed basis.

In similar manner, proper classification enables the allocation of available funds among the systems in ways which not only reflect their needs, but the extent of state and local interest, and apportionment of funds among the several governmental agencies in accord with their assigned responsibilities.

Since such policies — management and financing — are normally determined for relatively long periods of time, it follows that the classification plan on which they are based should also hold good for many years.

As a result of past policies, the state is now responsible for 45 per cent of all roads and streets, and 6 per cent more are designated. The trend has been steadily upward, as shown in Chapter 2, PUBLIC POLICY, which also indicated the financial implications.

Should the state eventually become responsible for 100 per cent of all public ways? Or should the existing status be fixed? Or should the towns have responsible control of those roads and streets providing predominantly local service, with a share of responsibility for the State-aid Highways?

Continuation of the present trend — that is, gradual road-by-road change — is inconsistent with sound planning of programs and their long-range financing. And the existing designations do not provide uniformly logical classification throughout the state, as revealed by this study. Accordingly, it is recommended that consideration be given to revision of present management responsibilities, and that, regardless of how they are finally resolved, reclassification be effected for purposes of planning, fund allocation and determination of standards and priorities.

STATE CONTROL

Should it be decided that the ultimate goal is state control of all roads and streets, that policy should be established, and a definite time period

fixed in which to accomplish it and arrange for the future financing of the entire network. Uncertainties in drifting towards that solution lead only to confusion. Here are reasons for and against 100 per cent state control:

FOR

1. The State Highway Department has a good organization which could be increased to do the whole job.

2. Maintenance and improvement, especially for Town Ways, might be more equalized throughout the state, based on standard policies which the State Highway Commission would decide. Planning would be on a more scientific and state-wide basis.

3. There would be an end to the questions, now continually arising, as to whether the state should "take over" a particular road or street, and as to the extent of direct responsibility for maintenance, reconstruction, improvement, bridges and snow removal. The complicated legal provisions governing such matters and their financing could be greatly streamlined. Towns could make direct contributions to the state, and accounting by one agency of government would be easier, complete and uniform.

4. Four states (Virginia, North Carolina, West Virginia and Delaware) already have nearly all roads and some streets under state control, thus establishing the precedent.

AGAINST

1. Centralizing control of all roads and streets in a single agency of government — the State Highway Commission — is not consistent with the traditional American philosophy of government which favors leaving responsibility for predominantly local problems in local hands. In New England, especially, this is characterized by the importance of the towns in many phases of government.

2. Transfer of total responsibility to the state is likely to be accompanied by transfer of the financial obligations as well. Experience in other states suggests that it might be found difficult for the state to obtain all or part of the nearly $8 million raised by the towns primarily for local road and street purposes in 1951. Thus there would be a greater tendency toward dispersion of available state-collected funds on roads of lesser state-wide importance.

3. Similarly, a large part of the time, the thought and energies of the Commission and its employees might be devoted to the numerous and varied problems of the 13,000 miles of predominantly local roads and streets. Pressure for their early improvement or better maintenance, concentrated on one agency, could result in such dispersion of effort that it could be detrimental to the principal arteries of the state.

4. From the point of view of a town's officials or its residents, a specific Town Way project might have high priority. From the state's viewpoint, however, the job might rate a low priority in relation to work elsewhere, and hence be deferred beyond the time when the town would do it if it could. On the other hand, local people and town officials should have a voice in how far to go, and when, since they have more intimate knowledge of the economy of the area and its need for road service.

5. State control is limited in 43 states to an average of 14.4 per cent of all roads and streets, ranging from 5.9 per cent (North Dakota) to 43 per cent (Pennsylvania).

SHARING OF RESPONSIBILITY

Should the decision in Maine favor retaining some measure of local control, it is necessary to consider what improvements could be made in the present plan for the benefit of highway transportation in general.

Without question the State Highway Commission should continue to have complete responsibility

for all State Highways. That is its primary function as originally conceived, and it is vastly more important today.

Under a plan of sharing responsibility for other elements of the total network, the State Highway System — the framework of the other systems — should receive predominant consideration. However, maximum cooperation and coordination between all road agencies would be essential, with the State Highway Commission taking the lead in effecting it. The large number of such agencies greatly complicates an effective plan of management which would achieve the benefits desired — especially for Town Ways.

Town Work Load Too Small for Efficiency

With counties having supervisory responsibilities only in unorganized areas, a total of 531 organized governmental units (mostly towns) divide the responsibilities for the 10,765 miles of present Town Ways. This is an average of only about 20 miles per town, with a maximum of 81 miles (excluding urban areas) and some towns having little or none (all roads now are either State or State-aid Highways).

Under the proposed reclassification, 13,000 miles of Town Ways would average about 25 miles per town, with a maximum of 90.

It is obvious that neither the present nor the proposed mileages for any single town represent a large enough work load, except in the larger cities, to warrant the exclusive ownership of much equipment or the permanent employment of engineers and highly skilled labor.

It would appear that, considering the relatively large amounts consistently raised by towns from property taxes and general funds, as shown at the end of Chapter 2, past transfer of roads to state jurisdiction may have been due more to physical inability of towns to improve and maintain them economically to satisfactory standards, than to their desire to shift the cost to the state.

With the increasing demands of traffic, it seems unlikely that individual town management can be relied upon exclusively to care for their own Town Ways. Therefore, either state control may be inevitable, or a more efficient means of handling local responsibilities should be devised and thus assure needed local financial support.

MANAGEMENT OF TOWN WAYS

In 1948, the State Highway Commission proposed consolidation of town road management through organization of town unions for that purpose, somewhat similar to the school unions. No action was taken, but the need is greater than ever for some means of achieving greater efficiency and economy.

In some states both counties and townships, as well as the state itself, cooperate actively in managing their respective systems (the counties supervising roads comparable to Maine's State-aid Highways). However, many states have adopted the "county unit" plan, in which each county handles all its roads except State Highways. This has worked well, especially where a full-time engineer is in charge, under the general policy direction of a county road commission which sees to it that all parts of the county receive proper service according to their needs.

In Maine, a "road union" of enough towns to warrant unified direction, equipment, shops and personnel could also accomplish good results and keep responsibility localized. The practical difficulties confronting the formation of such unions could be overcome, and experience with their operation would indicate improvements that should be made in the initial laws establishing them.

Although counties historically have not played a prominent part in road affairs in Maine, the counties could be organized to manage Town Ways,

as an alternative to a "road union" of towns. The smallest mileage of recommended Town Ways is 300 miles in Sagadahoc County — enough to develop a good operation plan to administer them. A county has the advantage of being an established political entity; its use would avoid many questions of organization which would confront a road union, while still being close to the people.

In either case — road union or county — a good management plan should foster a spirit of mutual cooperation among the towns acting toward the objective of better roads and streets at the least cost. Some local autonomy in these matters would undoubtedly have to give way to county or union decision; still, a larger measure of responsibility would be held locally than in gradual and ultimate transfer of total responsibility to the state.

Suggestions for Effective Operation

Should such county or union consolidation of Town Way management be considered, it is suggested that the following points are important for successful operation:

1. Policy (with respect to Town Ways) for each county or union should be determined by a small group elected or appointed for staggered terms of 3 to 6 years from the area at large, with every effort made to avoid the sectionalism which would simply pit one town against another.

2. The policy body should have no direct powers of administration, this being the duty of an administrator, preferably a registered professional engineer, who would be employed by the policy body.

3. A uniform general procedure should be prescribed by state law, defining the manner in which individual town needs would be reviewed (such as annual hearings), the methods of financing the work of the county or union, purchasing procedure, accounting and reports.

4. Cooperation of the state, through the State Highway Commission, should be made available to every county or union in the form of technical advice and assistance when requested. Furthermore, in order to assure proper coordination of state and local plans, official reports of budgets, plans and progress should be made annually to the state; and to encourage the best practices, state financial aid for employment of approved engineers might be proffered.

5. All areas of the state should be included either in respective unions having a minimum of 300 miles of Town Ways, or in county plans. A transition period of not more than 3 years should be provided in which to make the change from town to county or union management.

While the situation in Maine differs from that in other states, nevertheless a number of them have accomplished somewhat similar changes. A review of more recent legislation in some of these states would indicate other details needing consideration.

MANAGEMENT OF STATE-AID HIGHWAYS

Since the state has, for many years, supervised the State-aid Highways and developed organization and equipment for that purpose, no major change in responsibility is suggested at present, other than would be called for as a result of the recommended reclassification plan.

However, since there is a large measure of local, as well as state, interest in the State-aid System, it is suggested that means be found to encourage greater participation of local units in the problems and financing of that System.

It is even possible that, if progress is made toward establishing efficient county or road union operations, eventually the state could turn over maintenance, at least, to their supervision as each one became capable of handling it. Then certain specialized equipment, extra shop facilities and personnel would be more quickly available also for use on Town Ways when needed. In such event, of course, it would be necessary to adjust the fiscal plan to provide the necessary funds.

BRIDGES AND SNOW REMOVAL

In view of the highly technical problems of bridge design and construction, the State Highway Commission should have complete responsibility for all bridges on the State and State-aid Highway Systems, as it now does for all on the State Highways and all to which state funds have contributed on the State-aid Highways.

Reconstruction and maintenance of other bridges on State-aid Highways should not remain a town responsibility. The state should have the authority to finance construction or reconstruction of State-aid Highway bridges whenever it is necessary, with provision made in the state law for towns, cities, road unions or counties to participate in the costs. However, when adequate engineering service is available in county or road union organizations, it may be possible to turn this work over to them, also.

The state should provide technical advice and assistance of general nature in connection with bridges on Town Ways, and should approve all plans for construction.

Snow removal and ice control is an important and costly job. The state now has the responsibility for this service on 75 per cent of all roads, with considerable money provided by towns for that purpose, the bulk of their payments made for expenditure on Town Ways.

Again, this may indicate inability of the towns to do the job economically, rather than lack of willingness to help pay for it. As with other phases of Town Way management, snow removal should be a local responsibility if means can be found to do it efficiently.

URBAN STREET MANAGEMENT

Basically, there should be no difference in Maine in management responsibilities for urban street systems and those for rural road systems. However, past policies have made a definite distinction. Summing up briefly, the state does not maintain or supervise snow removal on any street on any system in the 30 urban areas (arbitrarily defined as compact places containing 5,000 people or more). The state may construct State Highways with or without town or city participation in the cost. The state handles State-aid Highway improvement in the same manner as in rural areas.

URBAN STATE HIGHWAYS

Since the urban areas are origins and destinations of a large percentage of all motor vehicle trips, they are highly important links of the entire State Highway System. Concentrated there are heavy traffic volumes, frequently on inadequate facilities. The state has obligations of state-wide interest in these areas at least equal in degree, if not in scope, to those in rural areas.

Therefore, in the state's best interests, it is recommended that complete responsibility for construction and maintenance of properly classified State Highways in urban areas be delegated to the State Highway Commission, with adequate safeguards to insure participation by the cities in planning and financing.

This cooperation is imperative because the State Highways are usually the principal streets which also serve much local traffic; and any traffic control measures, improvements or relocations will have an immediate effect upon the traffic pattern, business and other elements in the entire urban area. Financial participation in specified manner would give cities a voice in the matter and would recognize the practical ability of a compact area to do more for itself.

Maintenance and snow removal should be under state supervision, but no objection is seen to contractual arrangements with city forces to perform specified operations, if the cities are properly equipped to do them. State responsibility should

not extend to policing, street cleaning and similar strictly local problems.

STATE-AID HIGHWAYS

As pointed out in Chapter 3, SYSTEM SELECTION, arterial streets in urban areas have characteristics similar to State-aid Highways in rural areas. They combine both state and local functions of highway transportation.

It should be noted that, except in Portland, the urban limits do not define legal political units and that the limits are subject to change from time to time as the compact portions of a town expands. Thus within town boundaries today, two different management plans and fiscal responsibilities are evident. This is confusing and inconsistent.

It is suggested that as long as the state continues to maintain and improve or reconstruct State-aid Highways in rural areas, it should have the same responsibilities in the urban areas. This would include all properly classified arterial streets which should be designated State-aid Highways.

Again, as a practical matter, special provisions for town-state cooperation, coordination with other city plans, and contractual maintenance agreements could be planned in keeping with the special problems and the concentrated population.

TOWN WAYS

Town Ways in urban areas are, and should remain, the sole responsibility of the towns unless state control of the entire road and street network becomes established policy. Should county or road union management be effected, basic responsibility for the local streets in the urban areas should be transferred to such an agency, in the interest of consistency and efficiency.

However, careful coordination with the many other city services would be needed. Cities like Portland, Bangor and some others could still retain the operation by agreement with the county or union. In such cases — the exception to the general rule — special financial plans would have to be developed which would lend the strength of the urban area to the over-all county or union surrounding it, and at the same time provide proper recognition of these special arrangements.

CONCLUSIONS

The basic management question which needs to be answered is whether Maine wishes to have state-centralized control of highway affairs, or whether strong, efficient units of local road administration cooperating with the state would produce a better balance and greater benefits in the long run.

A sound highway classification plan is essential for legislative assignment of management responsibilities and for fiscal plans to maintain, reconstruct and improve the highway transportation system. The recommended reclassification furnishes a solid, factual framework for reconsideration of management and finance to gain greater efficiency and provide better service.

Reclassification is needed regardless of ultimate decisions to divide, or not to divide, the administration of the road and street network among units of government; it is still the foundation for tax policy, allocation of funds, planning, standards of design and maintenance and priority of improvement.

Highway reclassification, therefore, calls for a re-analysis of the state's highway, road and street needs, so that the financial plan can be adjusted accordingly. Even in the four years since the first over-all study, the gradual changes in road classification that have taken place are enough to warrant re-adjustment.

On the basis of a stabilized classification plan, it should now be possible to establish future highway policy more firmly and more uniformly for the betterment of motor vehicle transportation throughout the state.