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New Hampshire Rural Towns' Comparative Road Burdens and Road Services

By

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University of New Hampshire

in cooperation with

The Bureau of Agricultural Economics
United States Department of Agriculture

Durham, N. H.

Foreword

This report was written before the United States was at war. Now, everything must be subordinate to the war effort. Everything must be adjusted to a war economy. The income of the State Highway Department will be much reduced. For that reason, and for lack of labor, new projects must be postponed. A first consideration in all road planning must be the possible use of roads for military purposes.

However, it is believed that this report is still of value both for present use and for future planning. Road work will necessarily play a large part in the future readjustment to a peace economy. Clearly, it should not be used merely as made work to take up the slack in employment, but should be planned ahead to give the greatest and best return for the labor invested. To that end such considerations as are stressed in this report, especially in its first and last sections, are of great importance.

Meanwhile, one of the ever-present problems, even more crucial in war time than in peace, is that of taxation and tax adjustment. For the rural areas by far the greatest tax burden—almost the only tax directly felt—is the direct real estate tax, and by far the chief variable element in this tax is the road costs. The parts of this report dealing with the distribution of road costs, both for maintenance and for construction costs, are therefore immediately and permanently applicable, although action on some of the recommendations may not be immediately possible.

A word about the history of the work leading up to this report is in order. It grew out of the activities of the Rural Highway Committee, a subcommittee of the New Hampshire Rural Policy Committee.

In the beginning members of the Highway Committee of the Belknap County Rural Policy Committee raised questions concerning the distribution of the burden of rural highway costs. This subcommittee was instructed to study the situation and report. After some preliminary meetings, arrangements were made with the New Hampshire Agricultural Experiment Station and the Bureau of Agricultural Economics to assist in the work of the Committee, and Mr. John C. Holmes was assigned to the Committee as working investigator.

Meetings were held first in some towns of Belknap County by the local land-use committees and highway committees jointly. It was decided to gather data concerning road costs and to make an inventory of the roads in each town, divided into three classes: (1) roads most important for general use, (2) roads chiefly for local use, and (3) roads of doubtful necessity for future use. These were mapped and the mileage in each class determined.

The County Committee soon realized that the problem of costs and of road classification was a state-wide problem and should be studied on a state level. The New Hampshire Rural Policy Committee agreed with this finding, and as a consequence appointed a subcommittee on highways, continuing Mr. Holmes as investigator, and making up the Committee as follows: Curtis H. Page, Chairman; George M. Putnam, President of the New Hampshire Farm Bureau; Clifford D. Stearns, of Hinsdale;

Frederick A. Gardner, Public Relations Engineer of the State Highway Department; and H. F. Moore, representing the U. S. Public Roads Administration. The Committee requested J. Harold Johnson, Assistant Commissioner of the State Highway Department, also to join in all its meetings, and keep the Committee in constant touch with the views of the Highway Department on the problems studied. The Committee also had the valuable assistance of Professor Harry C. Woodworth, of the State Rural Policy Committee.

A detailed study was made of practically all towns in four counties of the state: Belknap, Carroll, Coos and Sullivan. Meetings were held with the local committees in fifty-six towns, and the roads in all these towns were classified and mapped and the town maps and statistics consolidated into county maps and statistics.

Tables were also made up covering the whole state with relation to the assessed valuation per mile of classified roads, the amount of the tax rates applied to road costs in 204 towns, the town expenditures per mile of classified roads in all towns, and other such pertinent statistics.

With these facts before them, the State Committee held further meetings, and agreed on the principles embodied in the present report. Incidentally, the work of the Committee was responsible for some of the legislation enacted by the 1941 Legislature, as referred to in the body of this report.

At this point Mr. W. Robert Parks was assigned by the Federal Government to assist in the work of the Committee and in the formulation of its report. He was able to consider the large body of detailed facts which had been gathered and to marshal them in relation to each other, and in collaboration with Mr. Holmes made up a good part of the report as here presented.

The work of Mr. Holmes has been invaluable to the Committee. He is an expert in fact finding and in classification of facts. He has made up the town and county maps which embody the detailed findings of the local and county committees, and has made up all the tables which form such an important part of this report. The cooperation of the State Highway Department is greatly appreciated, Mr. Johnson having sat with the Committee at most of its meetings and helped to control the sometimes impractical suggestions brought forward. The dynamic leadership in ideas of Mr. Putnam was constantly stimulating.

Certain conclusions follow necessarily from the facts assembled in this report:

1. Land-use surveys should be taken into account in planning road construction and improvements. (See No. 7 below.)

2. Local committee studies and recommendations are at least as important as mechanical traffic surveys in determining priority of improvement or construction. Traffic surveys are of value but may be very deceptive and must not be taken at their full face value in estimating the need and future use of improvement or construction. For instance, the present Route 106 now bears at least one hundred times as much traffic weight as it did before the rough and stony stretch along Rocky Pond was completed. A similar case may occur when the so-called "Sheep road" by-passing Concord is constructed. There may be many such

instances of great change in traffic use as a result of well-planned construction.

3. The tax burden for maintenance of Class V roads, in spite of recent improvement, is still grossly unequal between towns with low valuation per mile of road and those with high valuation per mile, varying at present from 0.50 to 2.79 on the assessed valuation. Further, even the high rate in some towns gives entirely inadequate service, while in more fortunate towns the low rate can give nearly perfect service. In Appendix E is a table showing that 24 towns now spend less than $100 per mile on their Class V roads, while 14 towns spend over $500 per mile. The extreme range is from $37 to $1,387.

To give the same service per mile of Class V road in Mason as in Monroe would require a road tax rate 123 times as high in Mason as in Monroe. This of course is an extreme example. But a study of the table in Appendix A will show that, taking the average of 29 towns in the low brackets of valuation per mile at about $8,000 as against 49 towns in the high brackets with an average value per mile of at least $80,000, it would require on the average at least ten times as high a road tax rate in the low-bracket towns as in the high-bracket towns for the same service. This ten to one inequality is somewhat alleviated by the Town Road Aid and the so-called "gas money" (Duncan aid), but far from sufficiently. A suggestion is made in this study for further improvement by further modification of the "Duncan Act", but this is palliation rather than reform.

4. Probably some State supervision of the use of the Duncan aid money is desirable.

5. Some reduction in the mileage of Class V roads maintained by the towns is desirable and should gradually be brought about, being applied to roads classified in the town surveys as "of doubtful necessity for future use".

6. State Aid Construction. The requirement that towns having up to five miles of Class II A ("State Aid Orange") mileage still to build cannot receive Town Road Aid until this mileage is completed is a serious hardship for many such towns, and means in many cases that their Class V roads must deteriorate until the "Orange" mileage is completed. In some cases the towns cannot afford to pay their share for such completion within many years ahead. The State must continue and must increase its generous scale of help to such towns and should in some cases, such as that of Lempster, pay the whole cost of construction.

Probably, also, the option of receiving both Town Road Aid and State Aid for construction should be extended to more towns. This extension should be based on their relatively low valuation per mile rather than on number of "State Aid Orange" miles still to be built.

7. Now that through routes are nearly completed, the planning for future construction should be based on a thorough study of its relation to restoring, conserving, and improving the agricultural and timber resources of the State, and also its recreational advantages.

CURTIS H. PAGE, *Chairman*

Rural Highway Committee of the New Hampshire Rural Policy Committee

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NEW HAMPSHIRE RURAL TOWNS' COMPARATIVE ROAD BURDENS AND ROAD SERVICES

by W. Robert Parks[1] and John C. Holmes[2]

I. NEW HAMPSHIRE FARMERS APPRAISE THEIR ROAD PROBLEMS

The rural town road plays a dynamic role in the economic, social, and political life of New Hampshire. Serving the needs of the rural people of the State are 8,117 miles of town-maintained roads. Town roads, traversing all areas in the State, make markets accessible to New Hampshire's farmers; they open rural areas to recreation seekers; they enlarge the trading areas of New Hampshire's villages and cities.

Despite its importance to rural life, the town road has been the neglected stepsister of the State trunk and secondary State aid highways which, because of their important function of serving through traffic, have necessarily received the greatest share of the State's attention. Until recent years, the financing and administration of the rural roads of New Hampshire were left completely in the hands of the 234 towns, with their wide variations in wealth, population, number of road miles, and road needs. Although today the State has accepted responsibility for helping to finance rural roads and for supervising the expenditure of a portion of the State aids, many groups in New Hampshire believe that the financial and administrative relationships between the State and towns must be further modified if town road administration is to be preserved. For the town road system still works hardships upon many rural people and gives impetus to the deterioration of numerous agricultural areas. The inadequate road system provided by many towns is considered a contributory cause to the improper use of rural land and the failure fully to utilize agricultural and recreational resources. And, as taxpayers, many rural dwellers are bearing disproportionately heavy road tax burdens.

Therefore, rural people through their Agricultural Planning Committees have sought to discover: (1) how generally the above ill effects of the rural road system are felt throughout New Hampshire;

[1] Associate Legislative Planning Analyst, Bureau of Agr. Econ., U. S. Dept. of Agr.
[2] Asst. Land Use Specialist, New Hampshire Agricultural Experiment Station.

(2) wherein the rural road system is inadequate; and (3) methods for improving rural road services and equalizing rural road tax burdens.

The present study was undertaken at the request, and under the auspices, of the State Agricultural Planning Committee. In a real sense, this bulletin and its recommendations are to be credited to that Committee, since the authors functioned as technicians within the framework of an assignment decided by that Committee.

II. IMPACT OF RURAL ROAD SYSTEM UPON RURAL NEW HAMPSHIRE

Inadequate rural road services in New Hampshire have contributed to an uneconomic use of rural land and to an incomplete realization of agricultural and recreational opportunities. This is the common opinion of New Hampshire farmers, who have watched agricultural adjustments in their towns. Their understanding of the effect of road accessibility upon the use which is made of the land is now supported by an analysis of land use maps and highway maps.

It is not due to chance that in all of the towns whose land has been classified by a local Agricultural Planning Committee almost all of the areas in which agriculture is carried on most intensely are cut by hard-surfaced State roads. Moreover, commercial farming areas, not served by a State road, are usually served by well graveled all-weather town roads, as, for examples, Areas I and II in Gilford.[1] On the other hand, a superimposing of land use maps upon highway maps reveals that a large majority of the so-called "declining areas" are those districts most inaccessible in a town.

It must be emphasized, however, that many of the declining areas are made unfit for agriculture by uncontrollable natural factors, such as a heavy, cold, wet soil, late spring and early autumn frosts, fields which are rocky and difficult to work. For example, Area IX in Gilford is "either too wet and swampy or too rocky and rough" for agriculture. Area V in Alton is so frosty that hay and a few berries are the only crops." Areas I and II in Unity are rocky and wet. The mere existence of a road cannot save agriculture in these areas, which are typical of many other districts in the State. Unless an agriculturally unproductive declining area represents potential summer or summer-winter recreational opportunity, the local roads of the area should be abandoned as rapidly as possible. Not only is the cost of public services greater than the tax yield from the area, but in the interest of the men and women struggling to eke out an existence from ungenerous soil, settlement should be discouraged.

Nevertheless, too many areas in the State are declining because they are not readily accessible. Their soils may be as fertile as any in the town, yet their agriculture is slowly dying. Young farmers,

[1] The "areas" referred to in this section are the land use areas delineated and numbered by local Agricultural Planning Committees.

buying farms, prefer settling along the paved or better graveled roads. Gradually, the population in the inaccessible area becomes old, the farms are no longer aggressively managed, buildings fall into disrepair, equipment becomes obsolete, fields close in, and eventually the area is classified by the local Agricultural Planning Committee as one which represents little or no agricultural opportunity. This process of decline—set into motion as paved roads and good graveled roads gave the advantage to other sections of the community—is a slow one. But its speed will later be accelerated.

Area I in Barnstead is considered a good commercial farming area, whereas Area II, whose soil is described by the Agricultural Planning Committee as "very similar to Area I" is a district of "formerly good farms representing opportunity not utilized now." The chief reason for the decline in agriculture in Area II is, in the eyes of the Committee, its inaccessibility. Its inaccessibility makes dairy farming impossible. This similarity between the physical conditions in the intensely farmed area which is served by good roads, and in the declining area, which is inaccessible, is repeated over and over again throughout the State.

In a few towns, such as Springfield, the agricultural resources of the whole town have largely disappeared because of a lack of hard-surfaced roads. Springfield has only 5½ miles of State aid roads and 47 miles of town roads. To reclaim the agricultural resources in Springfield, the committee believes that road improvement must be accomplished first. "The committee does not feel that agricultural loans and grants can solve the farm income problem. It believes the problem goes back to roads and markets. If improved roads and markets could be made available first, then conservation practices could be followed out."

Farmers in some localities have had more dynamic proof of the importance of roads to the prosperity of agriculture. They have seen an area in their town, in which agriculture was dying, rejuvenated by the reconditioning of a town road or the construction of a State road. The Lempster Agricultural Planning Committee volunteered the opinion that the T.R.A. road, now serving Area IV, "saved the area." The Plainfield committee believes that Area 5B could become a profitable dairy area if the proposed State-aid road were completed.

In other areas, unfortunately, deterioration in fields, outbuildings, houses and equipment had progressed too far before better roads were built. Even the best of roads could not save those areas. According to the opinion of the Alton Agricultural Planning Committee, Route 11A was built too late to save Area X, in Alton, for farming. Although in the town of Newport, "town roads are sufficiently well maintained that all areas are fairly accessible," the committee believes "that in many situations better roads came too late to prevent some decline in agriculture."

Agriculture is not the only economic enterprise of New Hampshire's rural areas whose prosperity, if not existence, depends upon road accessibility. As in most intensely farmed areas, the most popu-

lar recreational districts follow the State hard-surfaced road. The "year-round" recreational areas in Alton, Gilford, Laconia, and Bartlett are all cut by State roads. Many of the roads traversing these areas are, of course, the result rather than the cause of recreational development. There are, however, examples of the development of recreational areas as a result of the construction of a better road.

The State of New Hampshire possesses a reservoir of potential summer and winter recreational resources. Better roads are the first step in developing these resources. Because of the competition which New Hampshire agriculture receives from richer western areas, the prudence of investing too much public money in roads to make mediocre agricultural areas accessible may perhaps be questioned. New Hampshire recreation, however, is an expanding enterprise which will fully repay a capital outlay for intelligently planned roads.

The Agricultural Planning Committee in Langdon voices this entrepreneurial spirit. Area IV, in Langdon, in which agriculture is declining, is now a liability to the town. The cost of road maintenance is high compared to the tax yield. But, rather than suggesting that the roads in the area be abandoned, the committee recommends that the town invest in better roads for the area. For it sees the possibilities of the district for summer recreation.

An examination of the tax base of the towns which possess a thriving recreation industry proves the profit of recreation to the town government, not to mention its citizens as individual enterprisers. Fifty percent of the tax base of Alton lies in recreational area XI. The tax base of Gilford increased from $904,748, in 1915, to $1,726,031, in 1940, due largely to recreational development. In Bartlett, $256,000 of the $600,000 tax base is recreational property.

Although these are but a few selected examples of the effect of the institution of roads upon land use, they represent local situations which are so numerous and which point so consistently to the importance of roads to the land, that rural dwellers cannot afford to have land use considerations overlooked in the future when town and State road policies are developed.

Rural dwellers not only experience the shortcomings of the rural road system through its modification of agricultural and recreational opportunities, but also as taxpaying purchasers of road services. Whereas citizens in 42 towns pay a road tax rate of less than 50 cents on the $100 of assessed valuation; in 52 towns the road tax rate is $1.00 or over, and in 18 towns the rate ranges from $1.50 to $2.79.[2] In certain towns road taxes have become so burdensome that their residents believe that immediate relief should be afforded them.

Before suggesting modifications of road policies, however, rural people must first understand the causes of deficient road services and inequitable road taxes so that the policies they sponsor are intelligent and embrace the interests of the whole State.

[2] A detailed analysis of comparative road tax rates is given in the following sections.

III. INADEQUACIES OF RURAL ROAD SYSTEM

Inadequate road services and unequal road tax burdens arise out of (1) the financial inability of many New Hampshire towns to bear their local road costs; (2) State grant-in-aid formulae which do not sufficiently equalize the 234 towns' road burdens; (3) varying degrees of efficiency in town road administrations and the varying emphases put upon good roads by townspeople; (4) uneconomic maintenance of local roads in areas barren of agricultural or recreational opportunities; and (5) need for a new State secondary highway system which is projected upon land use as well as "through traffic" needs.

Not all of the suggested causes of deficient road services and unequal road tax burdens have been thoroughly investigated. This has been due partly to the limiting of the area of investigation by the State Agricultural Planning Committee. For example, the qualifications of the town as an administrative unit for road construction and maintenance have not been examined. The limitations of small governing units as administrative areas have been repeatedly discussed by students of government; yet they have never disproved the premise that local democratic participation gives governmental agencies a vitality for which "centralized efficiency" must be a complement rather than a substitute.

Because rural people are primarily disturbed by the failure of State aids to equalize sufficiently road taxes and road services among towns, an analysis of State aid formulae is the core of this study.

A. UNEQUAL TOWN BURDENS IN CONSTRUCTION AND MAINTENANCE OF TOWN (CLASS V) ROADS[3]

COMPARATIVE ABILITY OF TOWNS TO MAINTAIN TOWN ROADS

The chief criterion for determining a town's ability to bear its road burden is generally agreed to be the town's assessed valuation per mile of maintained road. Such a measure gives weight both to the number of road miles maintained and to the town's taxable wealth. The citizen of a town with a low valuation per mile of town road must usually bear a much heavier road tax burden than his fellow citizen in a town with a high valuation per mile of town road. Moreover, the road services he receives will generally not be so adequate as those provided citizens in towns with larger road maintenance funds resulting from greater wealth per mile of road.

[3] New Hampshire highways are divided by law (P.L. Chap. 83 Sec. 22) into six classes:
Class I includes all State highways and trunk lines. They are constructed and maintained by the State with a limited amount of Federal aid for construction.
Class II includes all completed State aided secondary highways which are State maintained and which have not been heretofore and are not hereafter included in Class I.
Class III includes uncompleted gaps of the trunk line system as authorized by Chapter 87, maintained jointly by State and towns—none in existence at present time.
Class IV includes all highways within the compact parts of towns of twenty-five hundred inhabitants and over.
Class V includes all other regularly maintained town roads.
Class VI includes all other existing public ways not regularly maintained. Towns receive no State support for these roads.
(See Table 1 for number of miles in each class.) Not included in the above classification are National and State forest highways.

New Hampshire's 204 rural towns display wide differences in their ability to bear their road burdens.[4] Valuations per mile of Class V road range from $5,800 in Mason, to $714,426 in Monroe. (See Appendix A for each town's valuation per mile of Class V road.) There are 29 towns with less than a $10,000 valuation per mile of Class V road and 60 towns with a valuation of from $10,000 to $20,000. On the other hand, there are 31 towns with a valuation of from $50,000 to $100,000 per mile of Class V road; 10 towns with a valuation of from $100,000 to $200,000; and eight towns with a valuation of over $200,000. (See Table 2.)

STATE AIDS TO CLASS V ROADS

Because of the vast differences among the 204 towns in numbers of road miles to be maintained, number of persons served by roads, and taxable wealth, the State has attempted to equalize partially town road burdens by distributing town road subsidies. State aid to town roads is divided into two categories: (1) State aid for town road construction of Class V roads, and (2) State aid for Class V road maintenance.

Town road aid. State aid for Class V road construction, commonly known as "town road aid" or TRA, is available in any year to any town or city which does not accept State aid for Class II highways and which has no uncompleted State aid orange road.[5] Towns with more than five miles of SAO road to build, however, may receive TRA and State aid for secondary construction either or both in the same year. The law provides that —

> "The basis for the apportionment as between towns for State aid for Class V highways shall be five hundred thousand dollars."[6]
>
> "Four fifths of the allotment herein provided shall be proportioned to towns and cities and unorganized places in direct proportion as the mileage of Class V roads in each town or city bears to the total mileage of Class V road in the State and one-fifth in direct proportion as the population of each town or city bears to the total population of the State."[7]
>
> "Any city or town that desires to apply for aid upon Class V roads shall raise or set aside an amount equal to twenty-five percent of the apportionment made to such city, town, or place under Section 26."[8]

The law further provides that the joint fund —

> " . . . shall be expended for the improvement and maintenance of rural post roads and/or Class V highways by the towns and cities under the supervision of and on locations approved by the highway commissioner. No city or town shall expend more than $1500 for each mile of road improved in any one year from funds provided under this act except by written permission of the commissioner."[9]
>
> "All Class V roads improved with State aid as herein provided shall be maintained by the city or town within which they are located at its expense."[10]

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[4] In this portion of the study 25 towns with compact city streets and a population of 2,500 and over and five towns having less than one mile of Class V roads have been eliminated.
[5] See p. 18 for detailed explanation of secondary system.
[6] P. L. Chap. 84 Sec. 25.
[7] P. L. Chap. 84 Sec. 26.
[8] P. L. Chap. 84 Sec. 26a.
[9] P. L. Chap. 84 Sec. 26c.
[10] P. L. Chap. 84 Sec. 26d.

TABLE 1. NEW HAMPSHIRE HIGHWAY CLASSIFICATION

State highway department classification 1 - 1 - 41		State plan		Status of maintenance 1 - 1 - 41		
				By state	By town	Not regularly maintained
Class	*Miles*		*Miles*	*Miles*	*Miles*	*Miles*
I	1422	Trunk line system	1422	1422		
*II	2115	Completed orange	1717	1717		
		Completed yellow (Prior to 1937)	398	398		
III	0	None				
IV	724	Compacts	724		724	
V	8117	Completed yellow (Subsequent 1937)	103		103	
		Projected orange	206		206	
		Projected yellow	642		642	
		Other town roads	7166		7166	
VI	1015	Town roads (Not regularly maintained)	1015			1015
All	13,393	State Total	13,393	3537	8841	1015

* For explanation of "orange" and "yellow" roads see p. 18 of this paper.
Mileage from Eighteenth Annual Report of N. H. State Highway Department for 1940.

TABLE 2. FREQUENCY DISTRIBUTION OF 204 TOWNS ACCORDING TO ASSESSED VALUATION PER MILE OF CLASS V ROAD (1940)*

* Dollars of assessed valuation per mile Class V	Number of towns
0 - 9,999	29
10,000 - 19,999	60
20,000 - 29,999	24
30,000 - 39,999	28
40,000 - 49,999	14
50,000 - 59,999	14
60,000 - 69,999	7
70,000 - 79,999	3
80,000 - 89,999	2
90,000 - 99,999	5
100,000 - 199,999	10
200,000 and over	8

* Town's total assessed valuation (1940) divided by its miles of Class V roads. Not included are 25 cities and towns with compact city streets and five towns with less than one mile of Class V roads.
Assessed valuations from Thirtieth Annual Report of N. H. State Tax Commission for 1940.
Class V mileage from official record of N. H. State Highway Department as of January 1, 1940.

"*Duncan aid.*" State aid for Class V maintenance, or Duncan aid, is available to a limited number of towns which have a relatively low valuation in relation to mileage of Class V roads. Eligibility for such aid is determined as follows:

> "In the month of July of each year the highway commissioner shall allot to each town from the funds accruing to the highway department a sum sufficient when added to the amount which might be derived by a tax of fifty cents on each one hundred dollars of assessed valuation of the preceding year to equal ninety dollars for each mile of Class V highway in such town; provided, however, that no allotment shall be made to any town in which a tax of fifty cents on each one hundred dollars of assessed valuation of the preceding year would produce an amount in excess of ninety dollars for each mile of Class V highway in such town."[11]

The above law, enacted in 1941, merely changed the basis of eligibility for Duncan aid. In 1940 this aid was based on 70 cents per $100 valuation[12] and was available to only 44 towns in the amount of $51,425.00. By the provisions of this bill the change to 50 cents per $100 valuation[13] resulted in aid becoming available to 78 towns in the amount of $104,389.60 for the year 1941 and thereafter.

The new basis results in about 63 percent or $65,633 being apportioned to 29 towns which have a valuation of less than $10,000 per mile of Class V highways, and 37 percent or $38,757 being apportioned to 49 towns having a valuation between $10,000 and $18,000 per mile of Class V highway. On the current basis no town with assessed valuation in excess of $18,000 per mile of Class V road is eligible for this aid.

EXTENT TO WHICH TOWN ROAD AID AND DUNCAN AID EQUALIZE CLASS V ROAD BURDEN

Equalization of road tax burden. If the Town Road aid and Duncan aid could effectively equalize the road burden among towns, the taxpaying citizen in one town would not be called upon to make a significantly larger contribution to support his town's roads than a citizen of any other town in the State. The road tax burden would not vary greatly from town to town.

However, under present conditions, the disparity among the 1940 road tax rates of the 204 rural New Hampshire towns is striking. The range was from four cents per $100 valuation in Monroe to $2.79 per $100 valuation in Ellsworth. (See Appendix B for 1940 road tax rates by towns.) The modal town road tax rate was 50 to 75 cents on the $100 assessed valuation. Sixty towns had a road tax rate falling within this range. Fifty towns had a rate of from 75 to 100 cents. Nine towns had a road tax rate of less than 25 cents, and 33 towns had a rate of from 25 to 50 cents. On the other end of the scale, five towns had a road tax rate of over $2.00 per $100 valuation; 13 had a road tax rate of from $1.50 to $2.00. (See Table 3 for 1940 road tax rates.)

This wide variation in town road tax rates might be due to a

[11] *Public Acts* (1941) Ch. 220, Sec. 4.
[12] Hereafter designated as "Old Duncan Aid."
[13] Hereafter designated as "New Duncan Aid."

number of fortuitous circumstances. For example, one town may levy an unusually heavy road tax in order to give its citizens superior road services. On the other hand, its neighboring town may prefer to struggle along with totally inadequate roads in order to keep its tax rate to a minimum. Such variables as the caliber of town road management, topography, road beds, drainage, road equipment, amount of snowfall, and so on necessitate higher taxes for town road construction and maintenance in some towns than in others.

When, however, the road tax rate of each of the towns is examined in light of the town's assessed valuation per mile of Class V road, the chief underlying cause for this variation in road tax rates becomes evident. (See Table 4.) The 29 towns with a valuation of less than $10,000 per mile of Class V road had an average town road tax rate in 1940 of $1.48 on the $100 valuation.[14] The 60 towns with a valuation of from $10,000 to $20,000 per mile had an average 1940 road tax rate of 94 cents on the $100 valuation. On the other extreme, towns with a valuation per mile of $100,000 to $200,000 and towns with over a $200,000 valuation per mile had average tax rates of 39 and 27 cents respectively on the $100 of assessed valuation. In general, the conclusion is justified that, in spite of added assistance given the low valuation towns under the Duncan aid in 1940, the town road tax rate showed a definite tendency to decrease as the town's assessed valuation per mile of Class V road increased. The 29 towns with an assessed valuation of less than $10,000 per mile and the 60 towns with assessed valuations between $10,000 and $20,000 per mile (with an average road tax rate of $1.48 and 94 cents respectively) bore a disproportionately heavy tax burden in support of their Class V roads. Clearly the "Duncan aid" formula used in 1940 had failed even to approximate equalizing the road tax burdens of the 204 towns.

TABLE 3. FREQUENCY DISTRIBUTION BY TOWNS ACCORDING TO TOWN ROAD TAX RATE

Cents per $100 assessed valuation	Number of towns
Under 25 cents	9
25 - 49	33
50 - 74	60
75 - 99	50
100 - 124	21
125 - 149	13
150 - 174	9
175 - 199	4
Over 200 cents	5
	204

NOTE:

Total town expenditures on Class V roads for fiscal year ended January 31st, 1940, is divided by total assessed valuation.

Town expenditures on Class V roads include (1) town's contribution to TRA allotment, (2) town maintenance, (3) general expense, (4) town construction.

Not included is capital outlay for new equipment or town's share of cooperative construction with the State on Class II roads.

Not included in above table are 25 towns or cities having Class IV compact streets and five towns having less than one mile of Class V road.

Information on town expenditures taken from 1940 Report of State Tax Commission.

[14] In the interest of readability, the term "valuation per mile of Class V road" will be abbreviated to read "valuation per mile."

TABLE 4. 1940 TOWN ROAD TAX RATE (204 TOWNS) RELATED TO ASSESSED VALUATION PER MILE OF CLASS V ROAD

Dollars of assessed valuation per mile Class V	Average road tax rate	Number of towns
	(Cents per $100 assessed valuation)	
0 - 9,999	148	29
10,000 - 19,999	94	60
20,000 - 29,999	78	24
30,000 - 39,999	63	28
40,000 - 49,999	60	14
50,000 - 59,999	64	14
60,000 - 69,999	66	7
70,000 - 79,999	60	3
80,000 - 89,999	37	2
90,000 - 99,999	32	5
100,000 - 199,999	39	10
200,000 and over	27	8

For explanation of valuation per mile of Class V Road see footnote to Table 2, page 12.
For explanation of Town Road Tax Rate see footnote to Table 3, p. 13.

It is impossible to predict accurately how the increased aid which is received under the amended "Duncan aid" formula will be used by each of the recipient 78 towns. The increased subsidy may be employed by some towns to improve their road services, while in other towns it may be used entirely for the reduction of the town road tax rate. However, if the equalizing effect of the "Duncan aid" increase is to be estimated, it must be assumed that the total expenditure for town roads will remain the same as in 1940 and that the increased aid will be used to reduce the road tax rate of the towns receiving the increased subsidy.

If the town road tax rate is thus calculated on the basis of the "New Duncan aid" formula, the average town road tax rate in towns with less than $10,000 and towns with between $10,000 and $20,000 assessed valuation per mile of Class V road will be reduced from $1.48 to $1.27 and from 94 cents to 84 cents respectively. This is a significant reduction and will undoubtedly afford needed assistance to the 78 towns with lowest valuation per mile. Even so, the contribution which the taxpaying citizen of a town with an assessed valuation of less than $20,000 per mile of Class V road would still make would be much greater than that of the taxpayer of a more fortunate town.

Equalization of road services. If in these same low valuation towns the citizen as a consumer of road services receives less from his road tax dollar than the citizen of a town with a higher valuation per mile, the citizen in the former town is doubly disadvantaged. Although road services cannot be accurately measured by road expenditures, nevertheless, the amount of money which is available for improving and maintaining each mile of road gives some indication of the type of roads maintained. To discover whether under the revised "Duncan

aid" formula there is any relationship between a town's assessed valuation per mile of Class V road and its expenditure per mile, let us assume: (1) that each town sets the same road tax rate in 1941 as in 1940; (2) that this rate produces the same revenues as in 1940; and (3) that all available State subsidies (TRA and "New Duncan aid") are added to the road revenues raised by the town. Then let us correlate each town's resulting total expenditures per mile with the town's assessed valuation per mile. It is immediately seen that, despite the additional aid afforded low valuation towns by the new Duncan aid formula, the expenditure per mile of road definitely increased with the assessed valuation per mile of Class V roads. (See Table 5.) Even if the towns with an assessed valuation of less than $20,000 per mile continue to tax themselves at the disproportionately high 1940 rates, they would still have considerably less money available in 1941 for improving and maintaining each mile of their Class V road than towns with higher valuations.

TABLE 5. ESTIMATED TOTAL EXPENDITURE PER MILE OF CLASS V ROADS RELATED TO TOWNS'. ASSESSED VALUATION PER MILE

(1) Dollars of assessed valuation per mile Class V	(2) Average dollars spent per mile Class V	(3) Number of towns
0 - 19,999	210	89
20,000 - 39,999	260	52
40,000 - 59,999	383	28
60,000 - 79,999	486	10
80,000 - 99,999	399	7
100,000 and over	697	18

NOTE:—
Column (2) is arrived at by adding the total 1940 town expenditure per mile to the total available State subsidy per mile in 1941 (under new Duncan aid) for each of the 204 towns and averaging the expenditure for each valuation group.
Towns' total expenditure on Class V Roads from Thirtieth Annual Report of N. H. State Tax Commission for 1940.
Towns' total available subsidy (under New Duncan Aid) from records compiled by N. H. State Highway Department.

It is not possible to evaluate here the actual benefit that each town derives in road services from each dollar spent on its roads. Certainly wide variation in road management, topography, road equipment, and many other factors would enable town A to provide better road services for an expenditure of $250 per mile than town B could provide for an expenditure of $300 per mile. It is not reasonable, however, to assume that the 89 towns with an assessed valuation of less than $20,000 are so favorably situated in regard to road management, topography, equipment and so on, that they can secure with an average annual expenditure of $210 per mile road services comparable to those which higher valuation towns can obtain with an expenditure of $450 per mile. Thus, the conclusion is justified that the citizen of the "typical" town with an assessed valuation of less than $20,000 per mile of Class V road is comparatively at a disadvantage both as a taxpayer and as a consumer of road services.

B. MAINTENANCE OF UNECONOMIC ROADS AND MISCLASSIFICATION OF TOWN ROADS

Agricultural planning committees in four of the ten New Hampshire counties have estimated that approximately 13 percent of their present Class V mileage is of doubtful present or future necessity.[15] (See Table 6.) Although similar estimations have not been made in the other six counties, it is reasonable to assume that somewhat comparable conditions exist in them also. On the basis of the four sample counties, it may be estimated that approximately 850 - 875 miles of the total Class V mileage within the State is of doubtful necessity to local use.

Many of these roads are decidedly uneconomical, for they keep open submarginal areas which cannot give a livelihood to their inhabitants. Social standards demand that children in families which have settled in submarginal areas be educated, and that they receive medical attention when necessary. Consequently, the town is called upon to render costly road and school transportation services to scattered settlers whose total tax contribution to the town is far less than the cost of services received from the town. The 1941 Legislature's passing of a law permitting a town to purchase isolated locations, "which are uneconomic for farm or home use," is concrete evidence of the magnitude of the town's finance problem in supplying roads and other public services to scattered settlers in extremely low value areas.[16]

Whereas the debit side of the town road ledger shows losses due

TABLE 6. ESTIMATED MILEAGE OF CLASS V ROADS ESSENTIAL FOR LOCAL SERVICE NEEDS

County	(1) 1940 mileage Class V roads	(2) SAO mileage projected 1-1-41	(3) Miles Class V after completion SAO	(4) Class V of doubtful necessity	(5) Estimated mileage Cl. V for adequate local service
Merrimack	1277.95	12.04	1265.91	126.59**	1139.32
Rockingham	895.12	2.95	892.17	89.22**	802.95
Strafford	475.11	26.21	448.90	44.89**	404.01
Belknap	498.98	26.83	472.15	55.90*	416.25
Carroll	629.02	30.89	598.13	51.67*	546.46
Hillsborough	1402.67	26.23	1376.44	137.64**	1238.80
Cheshire	809.15	17.69	791.46	79.15**	712.31
Sullivan	602.04	28.96	573.08	81.13*	491.95
Grafton	1151.71	27.29	1124.42	112.44**	1011.98
Coos	375.98	6.18	369.80	83.56*	286.24
Totals	8117.73	205.27	7912.46	862.19	7050.27

* "Doubtful necessity" mileage in four counties in which agricultural planning committees have prepared road plans.

** Mileage for six counties without road plans estimated as 10 percent of Column 3.

NOTE:—
This table includes all towns, cities, and unincorporated places or 234 minor civil divisions.

[15] Counties in which agricultural planning committees have formulated road plans are: Belknap, Carroll, Sullivan, and Coos.

[16] *Public Acts* (1941) Ch. 66.

to the maintenance of costly roads in sparsely settled, unproductive areas, the credit side shows short-term gains from the collection of State aids for certain Class V roads upon which the town spends little, if any, money for maintenance. The weight given to the mileage factor in the present formulae for distributing State aid to Class V roads is directly accountable for this gain. Mileage and assessed valuation are the principles upon which the Duncan aid is distributed. Under TRA, four-fifths of the annual amount available, $500,000, is distributed on the basis of Class V mileage and one-fifth on the basis of population. Mileage, assessed valuation, and population are undoubtedly worthy criteria for determining the distribution of road aids to towns, but the relative weight that each of these factors deserves is open to question. Nevertheless, since the legislature has chosen to emphasize Class V mileage as the chief measure of town road needs, it is necessary that this factor be made as accurate a measure as possible.

Class V roads are designed to serve local traffic and are defined by law as regularly maintained public ways. It is a well known fact, however, that many of the roads now placed in Class V are not regularly maintained by the towns. For example, a town may be listed by the State highway department as having 30 miles of Class V roads, when the town may actually spend little, if any money on three or four of these miles, which are traveled only on the rarest of occasions. Thus, the town is collecting State aid on the basis of 30 miles and attempting to maintain only 27 miles. If this situation were an uncommon one, it would be too trivial to justify any concern. This is not, however, an isolated case, but is representative of a large number of the 234 towns.

Although the State highway commissioner has the power to remove roads from Class V and place them in Class VI, he has been reluctant to exercise this discretion too freely for fear of depriving a needy town of the additional aid which this "doubtful" mileage provides. Almost without exception, the town itself is violently opposed to a reduction of its Class V mileage with its corresponding reduction of State aid. If the town can collect $100 annually for a mile of road on which it actually spends $10 or less, it has no incentive to reclassify this road of its own accord. Certainly the highway commissioner is to be commended on his desire to protect towns with heavy road burdens from acquiring even heavier ones through a reduction of their "dividend paying" mileage. Neither can the low valuation town be censured for attempting to retain the total aid which is so vital to the support of its road system. Nevertheless, if Class V mileage is to play such an important role in determining State road aids, it is imperative that this mileage not be inflated. Furthermore, in the interest of promoting proper land use, roads should not be kept even partially open in areas which are unsuitable for agricultural or recreational development. For, as long as a town keeps open a road in a low valuation district, undesirable settlement in the area is likely to continue.

C. UNEQUAL TOWN BURDENS IN THE COMPLETION OF SECONDARY (SAO MILEAGE)

The town's road responsibility is not limited to the construction and maintenance of its Class V roads. The town must also contribute to the construction of projected Class II mileage within its boundaries.

By legislative act in 1937 a secondary highway system was established in accordance with a plan prepared by the highway commissioner. This plan shows the location of all completed and projected secondary roads, and divides them into two groups: State aid orange (SAO), Class IIA; and State aid yellow (SAY), Class IIB.

The orange system represents general use roads which may properly comprise a secondary highway network. All orange roads are State maintained after completion. Projected orange roads are considered as town roads and rank as Class V until completion. In general, however, towns are not allowed to apply town road aid (State aid for Class V road construction) on any projected orange roads.

The yellow system represents certain roads which are second in priority from a general use standpoint as compared to orange roads. Yellow roads completed prior to 1937 continue to receive State maintenance; but all yellow roads built subsequent to April 1937 are town maintained, and all projected yellow roads will be town maintained after completion. Towns are permitted to apply town road aid on projected yellow roads rather than elect State aid construction for these roads. All yellow roads except those completed prior to 1937 rank as Class V for the purpose of calculating the mileage basis for State aid on town roads.

CONSTRUCTION AIDS TO STATE SECONDARY HIGHWAYS

Construction of State secondary, or Class II, highways is jointly financed by town and State. The initiative for State aid appropriations generally rests with the towns. The law provides that "If any city or town desire State aid for the purpose of constructing a section of Class II road such city or town shall raise, appropriate and/or set aside from the amount of money annually raised and appropriated for the repair of highways the following:" [17]

VALUATION	AMOUNT PER $1000 VALUATION
Less than $2,000,000	$ 1.50
2,000,000 - 2,999,999	1.125
3,000,000 - 4,999,999	.75
5,000,000 - 14,999,999	.50
15,000,000 and over	.375

The State's share of this cooperative construction cost varies according to the total assessed valuation of the town. The law provides that "The highway commissioner shall apportion from the highway

[17] P. L. Chap. 84, Sec. 19.

funds to each city or town which has so applied for State aid for each dollar so set apart by them the following amounts:" [18]

TOWN VALUATION	STATE'S SHARE
Less than $1,000,000	$2.00 (but not less than $1000)
1,000,000 - 2,999,999	1.00 (but not less than $1000)
3,000,000 - 9,999,999	.75 (but not less than $1000)
10,000,000 and over	.50 (but not less than $1000)

The highway commissioner has discretionary authority to increase the State's share of this apportionment whenever in his opinion it is advisable to do so and necessary funds are available.

The same basis of construction aids, as outlined above, applied to both projected State aid orange and projected State aid yellow roads. SAO mileage within a town, however, must be completed before that town can receive State aid for the construction of its SAY mileage.

Prior to 1941 towns have had the option of electing to receive either State aid in construction of secondary roads or State aid for Class V road construction (town road aid), but not both in the same year. This option still is available to all towns having no orange (SAO) road to build. However, in 1940 the legislature provided that towns with less than five miles of projected SAO cannot receive TRA until their total SAO mileage is completed. Towns having five miles or more SAO still to build are exempted from the above provision and may receive TRA and State aid for construction, either or both, in the same year.[19]

PROBLEMS OF COMPLETING SAO MILEAGE IN LOW VALUATION TOWNS

Under the present arrangement a town with five miles or less of uncompleted SAO mileage not only loses its TRA during the year or years it chooses to receive State aid construction to complete its SAO miles; but it also faces the prospect of losing its TRA during all of the years it cannot afford to elect State aid construction. In short, towns whose road tax burdens are already so heavy that they cannot raise their tax rate to secure the additional funds required to construct their SAO mileage, will lose their TRA. Since these towns have, in the past, been able to improve their roads only through the assistance of TRA, this permanent withdrawal of TRA funds means that their town roads must deteriorate. In the immediate future, therefore, the completion of SAO presents an even more serious financial problem to low valuation towns with projected SAO than the regular construction and maintenance of their town roads.

In total figures the SAO mileage to be completed amounted to 205.27, as of January 1, 1941. This mileage is distributed in varying amounts among 80 towns and cities. (See Appendix F for distribution according to towns' assessed valuations.) As mentioned before,

[18] P. L. Chap. 84, Sec. 21.
[19] *Public Acts* (1941) Ch. 5, Sec. 1.

towns with five miles or more to build are permitted to receive TRA and State aid for construction, either or both. These exempted towns are:

Gilmanton	15.25 miles
Sandwich	10.98 miles
Springfield	10.61 miles
Moultonboro	8.74 miles
Strafford	7.06 miles
Hillsboro	6.82 miles
Loudon	5.10 miles
Total	64.56 miles

An examination of the distribution among towns of the remaining 140.71 miles makes it apparent that the greatest financial burden will fall upon the following 13 towns:

Sharon	2.25 miles	Lempster	4.47 miles
Washington	2.04 miles	Thornton	4.41 miles
Mason	1.90 miles	New Durham	4.20 miles
Grafton	1.33 miles	Richmond	3.70 miles
Eaton	1.14 miles	Unity	3.49 miles
		Barnstead	3.40 miles
		Middleton	2.91 miles
Total	37.56 miles	Wilmot	2.31 miles

Each of the above 13 towns has an assessed valuation of less than $20,000 per mile of Class V road. The three towns with an assessed valuation of between $10,000 and $20,000 per mile of Class V roads have a total assessed valuation of less than $500,000 each; the remaining 10 towns have a valuation of less than $10,000 per mile of Class V road. (See Appendix E, groups 5 and 6.) These towns cannot complete their projected mileage without making an unreasonable financial sacrifice. At best, their contributions to SAO construction could be made only by transferring to the SAO fund money hitherto spent on their own town roads. Nor can it be accurately predicted how long such a shifting of town funds would be necessary before the entire SAO mileage could be completed.[20] Suffice it to say, however, that if the town loses its TRA and diverts its own expenditure on town roads to the SAO fund, at the end of three to five years its Class V roads will be in a sorry state of repair.

Although Gilmanton is not required by law to complete its projected SAO mileage before receiving TRA, it will serve as a good example of the time and money required when low valuation towns build SAO roads. Gilmanton had a 1940 total valuation of $675,975 and a total tax rate of over four dollars per $100 of assessed valuation. In view of its heavy tax load the State Highway Department is now constructing four of Gilmanton's 15 projected miles of SAO on the

[20] Aside from town finances, with the present premium on labor and machinery during the National Defense emergency, it is extremely doubtful if 80 separate road construction jobs could be carried on simultaneously.

favorable basis of about six to one. The total cost of this construction is approximately $67,000. In order to raise its share of the construction cost, Gilmanton floated a $10,000 bond, which will require 10 years for retirement. The town cannot afford to build any additional mileage until this debt is finally retired in 1950. At this rate, even under the favorable construction ratio of six to one, the 11 remaining miles of SAO in Gilmanton would not be completed before 1975.

The financial problem Gilmanton faces in completing its SAO roads differs from those of the other low valuation towns only in respect to the number of uncompleted miles. Lempster, Barnstead, and Unity, for example, have equally pressing road finance problems. Unlike Gilmanton, however, they must complete their projected mileage without further TRA allotments. If these towns neglect their Class V roads and tax themselves to their financial limits, they will be able to construct only about one-quarter or one-half a mile of SAO per year, under the legal State-town construction ratio.

Some of the uncompleted mileage may be useful for through traffic but of little or no value whatever to the town. The 4.47 miles of the Second New Hampshire Turnpike which lie in the town of Lempster is a good example of projected SAO mileage which is unnecessary to the town through which it passes. If this expensive mileage through the wild land of the Lempster Mountain is essential to State traffic, the State alone should assume the financial responsibility for its construction. If this mileage is of doubtful usefulness to State traffic also, it should be deleted from the Highway Plan.

IV. PROGRAM OF ACTION

A rural road system cannot be entirely satisfactory without the development of a defined policy of road projection and abandonment which encourages the wisest and fullest utilization of rural resources. Road Planning, however, is a long-term and continuing program which cannot afford immediate relief to rural people who find their road taxes exceptionally high and their road services unusually poor in comparison with those of other rural people in the State. Therefore, to meet the immediate need, this study has been largely confined to a comparison of rural towns from the standpoint of road taxes and road services, in the hope of securing immediate relief for taxpayers and better road services for the people of the disadvantaged towns. Since the differences in road taxes and road services among towns have been found to be too extreme, methods of more nearly equalizing these items are suggested. All recommendations for equalization, however, should be considered as a short-term means of lessening the present road tax and road service disparities among towns, and not as a final solution to the New Hampshire rural road problems. In no sense of the word can these short-term methods of adjustment be considered a substitute for a well planned system of rural road projection and abandonment.

REVISION OF DUNCAN AID FORMULA

The obvious purpose of the "Duncan aid" is to assist towns with low valuations per mile of Class V road to bear their road burdens, which are heavier than those of richer towns. The 1941 legislature again expressed its approval of the principle of extending financial help to the low valuation towns by revising the Duncan aid formula to provide them with greater assistance. Although the principle upon which Duncan aid is distributed is exceptionally good, neither the old nor the new distribution formula has allowed the Duncan aid to alleviate sufficiently the road burdens of towns with a valuation of less than $20,000 per mile.

As has already been explained, the new Duncan formula provides that the State will annually make available for each town a sum sufficient, when added to the amount which could be derived from a tax of 50 cents on the $100 assessed valuation, to equal $90 per mile of Class V road. This aid is entirely separate from TRA. It is recommended that the Duncan formula be revised to provide that the State make available to each town with a valuation per mile of Class V road of less than $10,000 a sum sufficient, when added to the amount which could be derived from a tax of 50 cents on the $100 assessed valuation, to equal $110 per mile of Class V road. To each town with an assessed valuation of over $10,000 per mile of Class V road the State would give a sum sufficient, when added to the amount which could be derived from a tax of 50 cents on the $100 valuation, to equal $100 per mile of Class V road.[21]

This revision of the Duncan formula means specifically that: (1) towns with an assessed valuation of less than $10,000 per mile of Class V road will receive an increase in aid of $20 per mile; (2) towns with valuation between $10,000 and $20,000 per mile will receive a $10 per mile increase in aid; and (3) the 11 towns with assessed valuations between $18,000 and $20,000 per mile will be included for the first time under the Duncan aid. (See Appendix A for list of towns receiving Duncan aid.) In view of the marked difference in tax rates and in total expenditures per mile between towns with less than $20,000 valuation and those with a greater valuation, this increase in aid to the 89 towns with assessed valuations of less than $20,000 per mile is entirely warranted. Moreover, the difference between the average road tax rates of the 29 towns with a valuation of less than $10,000 per mile and the 60 towns with valuations between $10,000 and $20,000 is significant enough to justify the $10 differential in the aid which these two groups would receive per mile.

For the purpose of analyzing further the effects of the proposed Duncan formula, a comparison of average road tax rates by towns, grouped according to their assessed valuation per mile of Class V

[21] Hereafter referred to as "proposed Duncan Aid."

road, was made on the assumption that towns receiving increased aid will spend the same total amount for maintenance of their Class V mileage that they spent in 1940, and that the additional aid will be used entirely for the reduction of their town road tax rate.[22] Under the proposed Duncan aid formula, the average road tax rate for the 29 towns under $10,000 would be reduced to $1.01 on the $100 valuation, as compared to an average road tax rate of $1.48 under the old Duncan aid and $1.27 under the new Duncan aid.[23] The average road tax rate of the 60 towns with an assessed valuation of from $10,000 to $20,000 per mile would be reduced to 77 cents on the $100 valuation, as compared to 84 cents under the new Duncan aid and 94 cents under the old Duncan aid. The 115 towns with a valuation of $20,000 and over per mile of Class V road have not received any Duncan aid under the "old" or "new" formulae, nor will they receive aid under the "proposed" formula. Therefore, the average road tax rate of these 115 towns would not be affected by the increase and would remain at 59 cents on the $100 valuation. (See Table 7.)

In short, under the old Duncan formula the average road tax rate ranged in 1940 from $1.48 on the $100 of assessed valuation in towns with a valuation less than $10,000 per mile to 59 cents in towns with an assessed valuation of over $20,000 per mile. Under the new Duncan aid the average road tax rates will range from $1.27 to 59 cents and, under the "proposed" formula, they would range from $1.01 to 59 cents. In other words, the difference in average road tax rates between towns under $10,000 valuation per mile and towns with over $20,000 was 87 cents under the old Duncan aid, is 68 cents under the new Duncan aid, and would be 42 cents under the proposed Duncan aid. (See Table 7 for analysis of proposed Duncan aid in terms of modal tax rates.)

The proposed revision of the Duncan aid formula would call for a State expenditure of approximately only $48,647 in addition to its present expenditure under the new Duncan aid formula. In comparison with the seven million dollar business which the State highway department is now annually conducting, this increase of less than 50 thousand dollars seems small indeed. This relatively small expenditure would go far, however, in lessening the road burden of the "disadvantaged" towns. To these towns it would provide a means of improving their inadequate town road services without increasing their present weighty tax burden. Moreover, the relief afforded is doubly necessary since the passage of the 1941 law which denies TRA to towns with uncompleted SAO mileage.

[22] It should be emphasized that recipient towns are not being encouraged to use this additional aid to reduce their town road tax rates. On the contrary, these low valuation towns should make every possible efffort to take advantage of this additional State aid to improve their deficient road services. The assumption of a reduced tax rate is made merely for the purpose of securing a basis for judging the degree of equalization which the proposed formula would accomplish.

[23] See Appendix C and Appendix D for tax rates by towns under "new" and "proposed" Duncan aid.

TABLE 7. ESTIMATED EFFECT ON TAX RATES OF CHANGE IN DUNCAN AID FORMULA

Town road tax rate group — c/$100 val.	Valuation per mile of Class V road									
	Towns under $10,000			$10,000 - $19,999			Over $20,000	All valuations		
	Duncan aid basis			Duncan aid basis			No Duncan aid	Duncan aid basis		
	Old	New	Prop.	Old	New	Prop.		Old	New	Prop.
Under 25c							9	9	9	9
25 - 49			5	*2*	6	10	*31*	33	37	*46*
50 - 74	1	4	4	*16*	*24*	*24*	*43*	*60*	*71*	*71*
75 - 99	4	5	*5*	*22*	*16*	*14*	24	*50*	*45*	43
100 - 124	4	*6*	*7*	10	6	8	7	21	19	*22*
125 - 149	*7*	*6*	4	5	6	*2*	1	13	13	7
150 - 174	*6*	4	3	3	1	1		9	5	4
175 - 199	3	2		1				4	*2*	
Over 200	4	2	1	*1*	1	1		5	3	2
No. of towns	29	29	29	60	60	60	115	204	204	204
Average road tax rate	1.48	1.27	1.01	.94	.84	.77	.59	.83	.76	.71
No. of towns receiving aid	29	29	29	15	49	60	0	44	78	89
Amount Duncan aid	$44,419	65,633	92,004	6,826	38,757	60,952	None	51,245	104,390	152,956

NOTE:—
Figures in italics represent towns falling within modal road tax rate.

The proposed Duncan aid formula would by no means completely equalize town road costs and road services, but it would be another important step in that direction. As a matter of fact, it is extremely doubtful if complete equalization could be accomplished by any means short of the State's taking over the construction and maintenance of all Class V roads to the complete exclusion of the towns. Although the well known merits of local self government are many, variations in costs and equality of public services are undeniably a by-product of this system. The State cannot entirely eliminate these variations without taking away practically all of the local unit's prerogatives. On the other hand, the interest of the State as a whole demands that these variations be not too extreme. The proposed amendment of the Duncan aid formula would have the desired effect of reducing the extremes in rural town road costs and services.

STATE SUPERVISION OF DUNCAN AID EXPENDITURES

That the State, with its more varied and productive revenue sources, should assist hard-pressed towns in maintaining road services through grants-in-aid is a principle which has found concrete expression in New Hampshire. If properly used by the towns, the State could spend its money in no more profitable manner. If, on the other hand, State aid merely serves to encourage inefficiency in local administration, the State is guilty of reckless expenditure of the public's money. It is no less a duty of the State to insure that the aid is correctly used than to make the aid available in the first place.

In view of the present wide variation in town road administrative organization and efficiency, uniform town efficiency in the use of State road aids can be approached only through State supervision. Town road agents, or road supervisors, range in number from one to 15 or 20 per town. Their abilities are equally variable. Whether they are elected at town meeting or are appointed by the selectmen, in general, they are relatively free from effective town supervision. From the standpoint of the State taxpayers as a whole, it is only fair to insure that the sums given to an individual town for the support of its roads should be used for that purpose alone and in the most efficient manner possible.

The principle of supervising State aids to Class V roads has been adopted under the TRA allotment fund. The town's contribution (25 percent) is paid to the State to be held, together with the State's contribution to that particular town. Use of the TRA money is strictly confined to the permanent improvement of Class V roads and is expended "under the supervision of and on locations approved by the highway commissioner." [24] Although the town may request that this money be spent on a particular stretch of road or that a road be improved in a particular manner, necessary funds for this improvement cannot be released without the approval of the division engineer. Actually, this State supervision does not deprive the town of a voice

[24] P. L. Chap. 84, Sec. 26 c.

in determining its own road policies, for the wishes of the town are always considered and usually followed. Moreover, under the general supervision of the division engineer, the actual road work is carried out under the town's own chosen road supervisors, and the laborers are usually townspeople.

Although the Duncan aid is an outright donation to low valuation towns, its use is not supervised in any manner by the State highway department. The State annually pays directly to the town its quota of Duncan aid. Aside from an annual post audit of town expenditures by the State Tax Commission and the general legal requirement that this money be spent in the support of Class V roads, the town is unrestricted in its use of Duncan aid funds.

The chief reasons for the lack of supervision of this grant are worth consideration. First, because of the comparative smallness of the total amount of the Duncan aid, the legislators may have felt that supervision would involve a needless expense. Second, since the town is only limited in the expenditure of its Duncan aid by the requirement that it must be spent in the support of town roads, the town in many cases uses this money for current road expenses so that it may reduce its own contributions for current maintenance. These miscellaneous expenditures do not lend themselves to supervision as readily as does a more standardized program of permanent road improvement, such as the TRA program.

Both of the above arguments undoubtedly have merit, but they should be examined more closely. It is true that in amount the Duncan aid is small compared to the total State expenditures for roads. Under the old Duncan formula it involved a total outlay in 1940 of only $51,245. Under the new Duncan formula aids will be increased to $104,390. The proposed Duncan formula would increase the outlay to approximately $152,756. Nevertheless, it does not follow that supervision of the Duncan aid is unnecessary. Such supervision would not involve an additional expense. A trained engineer of the State highway department is already located in each of the nine highway divisions into which the State is divided. Although the engineer's chief function is the supervision of all State highways in his division, he also supervises TRA expenditures. The office of the division engineer is ideally situated to supervise Duncan aid expenditures.

Despite the fact that a town may use its Duncan aid to reduce its own contribution for current maintenance expenses, its expenditure of the Duncan aid could be readily supervised by highway division engineers. As in the case of Town Road Aid the division engineer could maintain a close watch over expenditures of the Duncan money by withholding his approval of a particular expenditure unless it could be justified.

The money which the town raises from its own tax resources to provide for current road maintenance or for permanent road improvement would, of course, not be restricted as to amount or the uses made of it.

Supervision of a town's Duncan aid expenditures by the division

engineer should be of even greater interest to the citizens of the town itself than to the State as a whole. Towns receiving Duncan aid are those which have the highest road tax burden and are presumably in greatest need of State assistance. That townspeople receive the most possible from this money should be the town's chief concern. Through his expert appraisal of each proposed expenditure of Duncan aid, the trained highway division engineer could be of immeasurable service to the town road supervisors and, at the same time, could insure that the townspeople were getting the largest possible benefits from their State aid.

RECLASSIFICATION OF TOWN ROADS

It is recommended that the State highway commissioner take immediate steps to delete from the Class V system all mileage which, in his opinion, is not important to local use and is not now regularly maintained by the town. In so far as possible, the Commissioner should cooperate with town selectmen in deciding upon the roads which are to be removed from Class V and placed in Class VI (entirely town supported). Needless to say, each decision for reclassification should be reached only after careful consideration of the road's local usefulness. It is also suggested that the town place under gates and bars or discontinue entirely all town roads which are of little or no benefit to the town.[25]

The total TRA allotment would be unaffected by the deletion of the estimated 850 - 875 miles of "doubtful necessity" roads from the Class V system. Four hundred thousand dollars would still be distributed according to Class V mileage and $100,000 according to population. However, the allotment for each remaining Class V mile would be increased. It is impossible to predict how the total aid received by each town would be affected unless the exact mileage to be eliminated in each town were known. Undoubtedly, some of the Duncan aid towns would lose a considerable amount of State aid by this reclassification, since both of their town road aids are partially determined by their miles of Class V roads. Their loss, however, could be partially offset in three ways: (1) by the proposed modification of the Duncan aid formula; (2) by the increased TRA allotment per mile of remaining Class V road; and (3) by the town's subsequent discontinuance of useless Class VI roads wherever possible. After the policy of reclassifying Class V roads is well under way, its effect upon the aids of individual towns must be closely examined. It may then be necessary to amend further both the TRA and Duncan aid formulae.

In summary, then, Class V roads of doubtful present and future necessity should be placed in Class VI, because as long as State aid is paid on the basis of such mileage, towns will be encouraged to retain useless roads in areas unsuitable for settlement; towns whose entire Class V mileage is correctly classified will be penalized; and the State will continue to subsidize useless road mileage.

[25] In order to ascertain a town's legal liabilities to property owners in regard to road services, the opinion of the State Attorney-General should be obtained.

ALLEVIATION OF LOW VALUATION TOWNS' BURDENS IN SAO CONSTRUCTION

The raising of funds for secondary road construction has always been a strain upon the meager tax resources of low valuation towns. Since towns with less than five miles of uncompleted SAO have been denied their TRA allotments until this mileage is completed, the secondary construction problems of many of these towns will be greatly magnified. To alleviate partially the almost impossible construction burden in certain of these low valuation towns two suggestions are offered:

(1) Towns with an assessed valuation of less than $20,000 per mile of Class V road and with uncompleted SAO miles might be permitted to accept TRA and State aid for construction, either or both, within the same year. In other words, exemption from the provisions of the 1941 law depriving certain towns with uncompleted SAO road of their TRA allotment might more wisely be based upon the criterion of assessed valuation per mile of Class V road than upon the number of uncompleted SAO miles. At least three of the seven towns which are now exempted from the 1941 law because they have more than five uncompleted SAO miles are far more financially able to construct their projected mileage than any of the towns with from one to five miles to construct and with a valuation of less than $20,000 per mile of Class V road. This modification of the 1941 law would force high valuation towns, desiring to receive their TRA allotment, to complete their SAO roads. At the same time, low valuation towns would not be subjected to the hardships which the 1941 law now works upon them. Or,

(2) Towns with less than $20,000 valuation per mile of Class V road and with projected SAO mileage might receive TRA **only** if they also elected State aid for construction. This alternative revision of the 1941 law would stimulate all towns to complete their projected SAO miles, without denying to the towns which so greatly need assistance in improving their Class V roads the benefits of the TRA allotment. By a curtailment of other town services and by long-term borrowing, low-valuation towns might possibly raise for a very few years their share of both the TRA allotment and of State aid for construction.

In any case it is recommended that the Highway Commissioner continue to offer towns with an assessed valuation of less than $20,000 per mile of Class V road the most favorable financial arrangement within his discretion for the construction of their projected SAO mileage.

UTILIZATION OF RURAL RESOURCES DATA IN PROJECTING SECONDARY HIGHWAYS

The Herculean task of the New Hampshire Highway Department, like that in all states, has been to create as rapidly as was physically and financially possible an inter-city road system which could accommodate the ever increasing volume of faster and heavier traffic. In the past twenty years, the Highway Department has con-

structed or improved 1422 miles of State trunk highway and 2115 of secondary State aid highway. Today approximately only 200 miles of the State aid secondary "orange" system remain unimproved. Of course, the Highway Department will have the continuing task of ceaselessly improving the State's roads which carry the heavy, fast through traffic. Road surfaces must be made stronger, smoother, and wider; curves and grades must be made more gentle. Nevertheless, with the completion of the final 200 miles of the present projected secondary "orange" highway system, a new secondary road program for improving rural roads will be launched. First, however, the pattern of roads to be improved must be marked out.

In laying out this new road system, the Highway Department will utilize the modern measures for determining highway routes which the developing science of road projection has devised. Traffic surveys will be conducted to determine the volume, character, weight, origin and destination of traffic. School bus and postal routes will be plotted. Houses, stores, and other structures along the roadside will be mapped.[26] These criteria are invaluable in determining a primary highway system, whose chief function is to serve through traffic. Yet they are not entirely adequate in determining a secondary highway system. A secondary highway has a dual role. It, too, has the big job of accommodating through traffic. Yet it also makes markets accessible to farmers and opens up recreational areas. Thus, measures for determining through traffic needs are not adequate if used alone. They must be supplemented by data which show the present and future needs of rural dwellers. The economic basis upon which rural road needs rest—the use that can and should be made of the land—must be considered. Furthermore, rural roads, as an institution influencing economic and social development, must be weighed in determining road patterns. If minute investigations of through traffic needs are considered worth while by highway engineers, then surely land use surveys, as another measurement for determining wise road development, should be carefully made.

Rural people cannot escape from contributing to the formulation of the new secondary road policy. If they refrain from acting, they have made their decision to have a State secondary road program based entirely upon present traffic needs. Thus, they might well take a more positive part in developing a secondary road policy. Most certainly, however, this participation should not be that of particularistic pressure groups, working to secure selfish local advantages in secondary road services. The measures for determining road patterns which those interested in proper land use develop should be as scientifically objective as those developed by highway engineers. However, the values measured will be different. What are the values which rural people think it is important to the general welfare of the State to preserve? Clearly the great value is the fullest and wisest utilization of the agricultural and recreational resources to the in-

[26] This mapping is now being carried on in the State-wide highway survey, which is cooperatively conducted by the State Highway Department and the Public Roads Administration.

crease of the wealth of the State. Road accessibility, as has been pointed out, plays an important role in making these resources available. Rural people will wish, therefore, to measure the relative value of roads, not only by through traffic needs, but by their effect upon the use of these resources. How can the value of roads be measured in these terms? What shall the measure be? How can they be used?

The measure used for determining a road's usefulness will be, of course, an evaluation of the potentialities of the area or areas served by the road. Does the area served by the road represent good, fairly good, or poor agricultural opportunity from the point of view of structure and productivity of the soil, length of growing season, drainage, topography, composition of the population, and so on? Is it an area unsuited to farming? If unsuited to agriculture does it have excellent, good, or fairly good recreational resources? If it is an area lacking both agricultural and recreational wealth, should it be returned to forest? After the classification of an area has been made, its roads would then be graded by color on maps according to the present and potential agricultural and recreational resources of the districts they serve.

Thus, roads would be evaluated not only by the land use areas they are serving at the present time; but by a consideration of the potential resources of an area, a road's relative usefulness would be projected into the future. In short, roads would not be considered as rewards which are given to areas for economic and social development, but as institutions which, themselves, influence this development.

In evaluating rural roads, the needs of through traffic cannot be overlooked. Land use data can only be used to supplement the traffic data of the highway department. Therefore, when roads are colored on town maps according to the potential usefulness of the land, the roads most important to through traffic should also be charted. Knowing both present traffic and future land use needs, secondary routes can be projected which will best serve both of these needs.

TOWN DEVELOPMENT OF PRIORITIES IN LOCAL ROAD IMPROVEMENT AND MAINTENANCE

State aids to local governments must be recognized as being here to stay. Only by an adequate, but not overgenerous, distribution of State aids can town government be kept alive and vigorous. Nevertheless, a more equitable distribution of State aids to towns is not a full or real solution of rural road problems. Although State aids bring financial relief to hard-pressed towns, they do not directly further the development of town road patterns which encourage satisfactory use of the land. With the financial resources of the State limited, towns cannot expect subsidies which permit a "bigger and better" road to each citizen's door. Therefore, if residents of many towns wish to maintain or enlarge the economic bases of their community, they must, in their ingenuity and self-reliance, develop priorities in town road improvement and maintenance.

Areas which offer good or fairly good agricultural or recreational opportunity should be provided with the best road services the town can afford. The minimum standard for roads in such areas might possibly be a fifteen foot all-weather gravel road, with a twenty-one foot span from shoulder to shoulder.[27] Advantage, however, should be taken of the fact that the amount of road maintenance required to keep good agricultural areas accessible to markets varies with the type of farming carried on within the area. For example, the level of road maintenance within a dairying district must be higher than that of an area producing less perishable crops. Roads in areas unsuitable for agriculture or recreation should be abandoned as rapidly as the readjustments which must necessarily accompany abandonment can be humanely made. In many cases, towns will find it more economical to buy isolated locations in unproductive districts than to provide them with road services and educational facilities.

In establishing priorities, town governments may avail themselves of the services of local Rural Planning committees. These committees must also be responsible for encouraging their fellow townspeople to take a long-range view of how the town's economic and social life can best be served. They must urge their town governments to employ savings effected through road abandonment for improving roads in the better areas, and to resist the temptation to use all of the increases in State aids to reduce their tax burdens.

In summary, the development of priorities in road improvement and maintenance is not a grandiose scheme of running a good road to every farmer's house; nor is it one which necessarily calls for any additional expenditure on roads. What is suggested is that towns adopt and continue in the future a policy of planning the expenditure of their available road funds so as to develop their most productive rural areas. If this policy of critically evaluating roads as they relate to the wisest utilization of the land is followed by a town over a period of years, unproductive and submarginal areas will be closed up and the rural areas of the town which have greatest potentialities for production of wealth will be given the opportunity to produce to capacity.

[27] This is the standard which certain highway divisions in the State are attempting to obtain through the use of Town Road Aid funds.

APPENDIX A

Assessed Valuation Per Mile of Class V Road
(204 Towns) Arranged in Ascending Order

0 - $9,999		$10,000 - $19,999		$20,000 - $29,999	
Mason	$5,800	New Durham	$10,011	Goshen	$20,363
Lempster	5,825	Langdon	10,045	New Ipswich	20,385
Danbury	6,090	Sandown	10,289	Hopkinton	20,714
Acworth	6,431	Strafford	10,327	Orford	20,788
Dorchester	6,600	Springfield	10,459	Benton	21,157
Richmond	6,658	Nottingham	10,917	Chatham	21,652
Deering	6,680	Barrington	11,092	Merrimack	21,736
Wilmot	7,179	Lyndeborough	11,330	Enfield	22,674
Grafton	7,366	Salisbury	11,481	Brentwood	22,750
New Boston	7,380	Plainfield	11,887	Northwood	23,492
Unity	7,429	Sanbornton	12,260	Epping	23,740
Temple	8,001	Brookfield	12,377	Chesterfield	23,877
Sullivan	8,050	Alexandria	12,408	Danville	23,893
Lyman	8,206	Washington	12,522	Bridgewater	24,342
Eaton	8,415	Mont Vernon	12,744	Tamworth	24,450
Middleton	8,486	Canaan	12,991	Kensington	25,497
Barnstead	8,606	Dunbarton	13,083	Groton	25,829
Sutton	8,618	Landaff	13,098	Andover	26,575
Roxbury	8,640	Warner	13,262	Raymond	26,828
Sharon	8,861	Wentworth	13,317	Pelham	27,482
Gilmanton	8,894	Grantham	13,549	Bedford	28,546
Orange	8,906	Greenfield	13,914	Northfield	28,722
Francestown	9,168	Marlow	14,072	Antrim	29,553
Canterbury	9,170	Lyme	14,440	Newington	29,619
Loudon	9,245	Londonderry	14,760		
Weare	9,262	Candia	14,769		
Ellsworth	9,301	Lee	14,969		
Effingham	9,371	Albany	14,984		
Deerfield	9,412	Bradford	15,145		
		Westmoreland	15,570		
		Chichester	15,576		
		Fitzwilliam	15,582		
		Croyden	15,836		
		Nelson	16,091		
		Rindge	16,169		
		Gilsum	16,254		
		Dalton	16,300		
		Hancock	16,303		
		Madison	16,373		
		Webster	16,402		
		Hill	16,465		
		Auburn	16,566		
		Epsom	17,082		
		Stewartstown	17,176		
		Hollis	17,269		
		Stark	17,313		
		Cornish	17,390		
		Chester	17,827	* indicates where "New Duncan Aid" will stop.	
		*Alstead	17,874		
		Brookline	18,110		
		Sandwich	18,158	** indicates where "Proposed Duncan Aid" would stop.	
		Freedom	18,251		
		Columbia	18,837		
		Belmont	18,884		
		Amherst	19,040		
		Bath	19,217		
		Henniker	19,391		
		Madbury	19,811		
		Thornton	19,915		
		**Ossipee	19,943		

$30,000 - $39,999		$40,000 - $49,999		$50,000 - $59,999	
East Kingston	$30,185	Tuftonboro	$40,225	Holderness	$51,184
Newbury	30,194	Colebrook	40,547	Haverhill	51,378
Milan	30,351	Litchfield	40,916	Troy	51,400
Piermont	30,393	Dummer	41,466	Dublin	52,543
South Hampton	31,220	Milton	42,189	Center Harbor	52,611
New Hampton	31,438	Hudson	42,451	Hampton Falls	53,493
Hillsboro	31,572	Farmington	42,886	Newton	53,673
Wakefield	31,675	Jefferson	42,908	Hebron	54,667
Fremont	31,679	Wilton	44,096	New London	55,369
Harrisville	32,070	Gilford	44,751	Bethlehem	56,959
Bow	32,125	Moultonboro	45,776	Sunapee	57,106
Windsor	32,492	Stratham	46,074	Jackson	58,448
Campton	32,603	Franconia	48,544	Walpole	58,771
Windham	32,768	Meredith	49,397	Jaffrey	59,859
Stoddard	33,509				
Easton	34,271				
Winchester	35,535				
Clarksville	35,670				
Swanzey	36,189				
Atkinson	36,305				
Alton	36,951				
Surry	37,036				
Marlborough	37,287				
Charlestown	37,677				
Rumney	37,845				
Kingston	37,993				
Lisbon	38,690				
Pittsfield	39,426				

$60,000 - $69,999		$70,000 - $79,999		$80,000 - $89,999	
Newfields	$60,542	Durham	$70,087	Rollinsford	$81,906
Hooksett	60,689	Pittsburg	74,284	Bennington	86,167
Wolfeboro	61,572	Plaistow	78,061		
Boscawen	64,755				
Bartlett	67,470				
Whitefield	69,908				
Salem	69,960				

$90,000 - $99,999		$100,000 - $199,999		Over $200,000	
Plymouth	$90,265	Rye	$100,979	Hampton	$257,036
Ashland	92,743	Greenland	106,454	Lincoln	299,825
Hampstead	94,888	Bristol	109,296	Warren	331,067
Greenville	97,045	Seabrook	112,091	Carroll	354,388
Allenstown	97,724	Shelburne	117,040	Tilton	409,367
		North Hampton	117,430	Gorham	433,895
		Hinsdale	140,630	New Castle	552,585
		Northumberland	155,568	Monroe	714,426
		Stratford	157,844		
		Woodstock	176,049		

Town Road Tax Rates

Cents per $100 — Assessed Valuation

Ellsworth	279	Eaton	123	Dunbarton	89
Deering	220	Sandwich	120	Harrisville	89
Roxbury	208	Brentwood	117	Lyndeboro	89
Mason	208	Benton	116	Mont Vernon	88
Thornton	202	Barnstead	115	Washington	85
		Enfield	114	Sanbornton	85
Acworth	195	Webster	114	Weare	85
Dorchester	194	Canterbury	112	Gilsum	85
Brookfield	188	Bridgewater	110	Gilford	84
Wilmot	183	Effingham	109	Pittsburg	84
		Belmont	107	Marlborough	84
New Boston	172	Fitzwilliam	107	Groton	84
Loudon	164	Sunapee	107	Holderness	83
Sullivan	163	Wentworth	107	Ossipee	83
Gilmanton	163	Newbury	106	Francestown	82
New Durham	161	Candia	104	Dublin	82
Westmoreland	158	Croydon	103	Sutton	82
Orange	154	Greenfield	103	Northwood	82
Stark	153	Clarksville	102	Stewartstown	82
Unity	150	Plainfield	100	Kingston	81
		Nelson	100	Orford	81
Deerfield	146			Goshen	80
Temple	145	Rindge	99	Tamworth	80
Springfield	144	Bradford	99	Tuftonboro	80
Grafton	143	Hooksett	99	Salisbury	79
Danbury	143	Columbia	98	Northfield	78
Sandown	143	Merrimack	98	New Ipswich	79
Antrim	141	Strafford	97	Wakefield	78
Lyman	137	Richmond	96	Londonderry	78
Lyme	137	Piermont	96	Chichester	77
Sharon	132	Lee	95	Winchester	77
Lempster	129	Marlow	93	Bedford	77
Canaan	128	Milton	94	Moultonboro	77
Albany	125	Alstead	92	Grantham	75
		Bath	90	Dalton	75
		Langdon	89		
		Hopkinton	89		

APPENDIX B

1940 Road Tax Rates of 204 Towns
(Under "Old Duncan Aid")

Town Road Tax Rates (cont.)

Barrington	74	Rumney	60	Northumberland	44
Alton	73	Farmington	59	Bristol	44
Epsom	72	Andover	58	Wilton	44
Middleton	72	Durham	58	Seabrook	42
Madison	71	Danville	58	Hudson	42
Pittsfield	71	Milan	58	Greenville	41
Bartlett	71	Chatham	57	Newington	39
Nottingham	70	Dummer	57	Plaistow	38
Freedom	70	Jaffrey	56	Stratham	38
Campton	70	Surry	55	Epping	38
Walpole	69	South Hampton	54	Raymond	37
Bethlehem	69	Henniker	54	Tilton	34
Brookline	68	Hebron	54	Easton	34
Newfields	68	Woodstock	54	Hinsdale	33
Wolfeboro	67	Whitefield	53	Bow	33
Hancock	67	Madbury	53	Ashland	33
Amherst	66	Boscawen	52	Hampton	30
Stoddard	65	Pelham	52	Gorham	30
Rye	65	Kensington	52	Shelburne	28
Warner	65	Hill	51	Haverhill	27
Colebrook	65	Newton	51	Allenstown	26
Jackson	64	New Hampton	50	Bennington	25
Meredith	64	Lisbon	50		
Cornish	64	Rollingsford	50	Carroll	24
Warren	64			Litchfield	22
Hollis	63	Atkinson	49	Greenland	20
East Kingston	63	North Hampton	49	Lincoln	19
Windham	63	Salem	49	Hampstead	15
Alexandria	63	Franconia	48	New Castle	13
Landaff	63	Hillsboro	48	Windsor	13
Swanzey	63	Auburn	48	Stratford	12
Jefferson	62	Fremont	48	Monroe	4
Chesterfield	62	Center Harbor	47		
Troy	61	Charlestown	46		
Hampton Falls	61	Plymouth	46		
New London	61	Chester	46		

APPENDIX C

Estimated Road Tax Rates of 204 Towns (Under "New Duncan Aid")

NOTE: In the compilation of this table, it is assumed that the entire Duncan Aid increase will be used to reduce the 1940 road tax rates.

Town Road Tax Rates

Cents per $100 — Assessed Valuation

Ellsworth	251	Eaton	101	Northfield	78
Deering	203	Hooksett	99	Strafford	78
Thornton	202	Columbia	98	Winchester	77
Mason	192	Merrimack	98	Bedford	77
Dorchester	190	Fitzwilliam	98	Moultonboro	77
Acworth	173	Piermont	96	Richmond	76
Brookfield	164	Unity	96	Gilsum	75
Wilmot	162	Milton	94	Marlow	74
Roxbury	160	Barnstead	94	Alton	73
New Boston	154	Rindge	93	Pittsfield	71
Westmoreland	149	Wentworth	92	Bartlett	71
Stark	148	Nelson	91	Dalton	71
Gilmanton	144	Bath	90	Dunbarton	71
Sullivan	143	Stewartstown	90	Langdon	71
Antrim	141	Candia	90	Freedom	70
Loudon	140	Effingham	90	Campton	70
Orange	139	Hopkinton	89	Epsom	70
New Durham	131	Harrisville	89	Walpole	69
Lyman	129	Alstead	88	Bethlehem	69
Grafton	128	Croydon	87	Washington	69
Sandown	127	Bradford	87	Brookline	68
Lyme	125	Greenfield	86	Newfields	68
Springfield	125	Canterbury	85	Chichester	68
Deerfield	122	Gilford	84	Lyndeboro	68
Danbury	122	Pittsburg	84	Wolfeboro	67
Sandwich	120	Marlborough	84	Londonderry	67
Temple	120	Groton	84	Mont Vernon	67
Brentwood	117	Holderness	83	Amherst	66
Benton	116	Ossipee	83	Sutton	66
Enfield	114	Dublin	82	Stoddard	65
Lempster	114	Northwood	82	Rye	65
Bridgewater	110	Kingston	81	Colebrook	65
Webster	109	Orford	81	Sanbornton	65
Canaan	108	Plainfield	81	Weare	65
Belmont	107	Goshen	80	Jackson	64
Sunapee	107	Tamworth	80	Meredith	64
Sharon	107	Tuftonboro	80	Warren	64
Newbury	106	New Ipswich	79	Madison	64
Albany	106	Lee	79	East Kingston	63
Clarksville	102	Wakefield	78	Windham	63

Town Road Tax Rates (cont.)

Swanzey	63	Kensington	52	Plaistow	38
Jefferson	62	Barrington	52	Stratham	38
Chesterfield	62	Newton	51	Epping	38
Cornish	62	Middleton	51	Raymond	37
Troy	61	New Hampton	50	Tilton	34
Hampton Falls	61	Lisbon	50	Easton	34
New London	61	Rollinsford	50	Hinsdale	33
Hollis	61	Landaff	50	Bow	33
Hancock	51	Nottingham	50	Ashland	33
Rumney	60	Atkinson	49	Hampton	30
Francestown	60	North Hampton	49	Gorham	30
Farmington	59	Salem	49	Shelburne	28
Salisbury	59	Franconia	48	Haverhill	27
Andover	58	Hillsboro	48	Allenstown	26
Durham	58	Fremont	48	Bennington	25
Danville	58	Warner	48	Carroll	24
Milan	58	Center Harbor	47	Litchfield	22
Chatham	57	Auburn	47	Greenland	20
Dummer	57	Charlestown	46	Lincoln	19
Jaffrey	55	Plymouth	46	Hampstead	15
Surry	55	Hill	46	New Castle	13
Grantham	55	Northumberland	44	Windsor	13
South Hampton	54	Bristol	44	Stratford	12
Henniker	54	Wilton	44	Monroe	4
Hebron	54	Chester	44		
Woodstock	54	Seabrook	42		
Whitefield	53	Hudson	42		
Madbury	53	Alexandria	42		
Boscawen	52	Greenville	41		
Pelham	52	Newington	39		

APPENDIX D

Estimated Road Tax Rates of 204 Towns (Under "Proposed Duncan Aid")

NOTE: In the compilation of this table, it is assumed that the entire Duncan Aid increase will be used to reduce the 1940 road tax rates.

Town Road Tax Rates

Cents per $100 — Assessed Valuation

Ellsworth	225	Temple	95	Lee	72
Thornton	202	Milton	94	Barnstead	71
Deering	173	Fitzwilliam	92	Pittsfield	71
Dorchester	160	Bath	90	Bartlett	71
Mason	157	Danbury	89	Freedom	70
Brookfield	156	Hopkinton	89	Campton	70
Westmoreland	143	Harrisville	89	Unity	69
Stark	142	Rindge	87	Gilsum	69
Acworth	142	Nelson	85	Walpole	69
Antrim	141	Wentworth	85	Bethlehem	69
Roxbury	138	Sharon	84	Brookline	68
Wilmot	135	Gilford	84	Newfields	68
New Boston	127	Pittsburg	84	Effingham	68
Gilmanton	122	Marlborough	84	Strafford	68
New Durham	121	Groton	84	Wolfeboro	67
Sandwich	120	Stewartstown	84	Marlow	67
Loudon	119	Candia	83	Amherst	66
Sullivan	118	Alstead	83	Dalton	65
Lyme	118	Holderness	83	Stoddard	65
Orange	117	Ossipee	83	Rye	65
Sandown	117	Dublin	82	Colebrook	65
Brentwood	117	Northwood	82	Epsom	64
Benton	116	Kingston	81	Jackson	64
Springfield	115	Orford	81	Meredith	64
Enfield	114	Croydon	81	Warren	64
Bridgewater	110	Bradford	80	Canterbury	64
Belmont	107	Goshen	80	Dunbarton	64
Sunapee	107	Tamworth	80	East Kingston	63
Newbury	106	Tuftonboro	80	Windham	63
Lyman	105	Lempster	79	Swanzey	63
Webster	103	Greenfield	79	Jefferson	62
Clarksville	102	New Ipswich	79	Chesterfield	62
Deerfield	101	Wakefield	78	Langdon	61
Grafton	101	Northfield	78	Washington	61
Canaan	101	Eaton	77	Chichester	61
Albany	99	Winchester	77	Troy	61
Hooksett	99	Bedford	77	Hampton Falls	61
Columbia	98	Moultonboro	77	New London	61
Merrimack	98	Plainfield	73	Lyndeboro	60
Piermont	96	Alton	73	Londonderry	60

Town Road Tax Rates (cont.)

Rumney	60	Atkinson	49	Epping	38
Mont Vernon	59	North Hampton	49	Raymond	37
Farmington	59	Salem	49	Alexandria	34
Madison	58	Grantham	48	Tilton	34
Andover	58	Franconia	48	Easton	34
Durham	58	Hillsboro	48	Hinsdale	33
Danville	58	Fremont	48	Bow	33
Milan	58	Center Harbor	47	Ashland	33
Chatham	57	Richmond	46	Hampton	30
Dummer	57	Charlestown	46	Gorham	30
Sanbornton	57	Plymouth	46	Shelburne	28
Jaffrey	56	Weare	44	Middleton	27
Cornish	56	Northumberland	44	Haverhill	27
Hollis	55	Bristol	44	Allenstown	26
Hancock	55	Wilton	44	Bennington	25
Surry	55	Barrington	43	Carroll	24
South Hampton	54	Sutton	43	Litchfield	22
Henniker	54	Seabrook	42	Greenland	20
Hebron	54	Hudson	42	Lincoln	19
Woodstock	54	Landaff	42	Hampstead	15
Whitefield	53	Auburn	41	New Castle	13
Madbury	53	Nottingham	41	Windsor	13
Boscawen	52	Greenville	41	Stratford	12
Pelham	52	Warner	40	Monroe	4
Kensington	52	Hill	40		
Newton	51	Francestown	39		
New Hampton	50	Chester	39		
Lisbon	50	Newington	39		
Rollinsford	50	Plaistow	38		
Salisbury	49	Stratham	38		

APPENDIX E

Town Expenditures Per Mile of Class V Road (1940)

NOTE: (1) Total town expenditure on Class V roads for fiscal year ended January 31st, 1940, is divided by number of miles of Class V road.

(2) Does not include State Aids.

$300 - $324		$325 - $349		$350 - $374	
Kingston	308	New London	326	Clarksville	354
Marlborough	309	Boscawen	330	Jackson	364
Troy	312	Jaffrey	343	Whitefield	374
Meredith	313	Dummer	344		
Newbury	320	Moultonboro	346		
Shelburne	322				
Tuftonboro	322				
Salem	322				
Hampton Falls	324				

$375 - $399		$400 - $424		$425 - $449	
Gilford	370	Milton	400	Dublin	448
Bethlehem	390	Thornton	401		
Durham	390	Walpole	405		
		Newfields	407		
		Rollinsford	407		
		Wolfeboro	410		
		Auburn	412		
		Plymouth	415		
		Holderness	422		

$450 - $474		$475 - $499		Over $500	
Hinsdale	467	Seabrook	472	North Hampton	571
Bristol	469	Bartlett	482	Greenville	576
				Lincoln	580
				Hooksett	600
				Sunapee	610
				Pittsburg	617
				Rye	648
				Northumberland	674
				New Castle	710
				Hampton	762
				Woodstock	925
				Carroll	1019
				Gorham	1285
				Tilton	1387

APPENDIX F

Projected State-Aid Orange (SAO) Mileage of 205.27 Divided Between 80 Towns and Cities According to 1940 Valuations

Group 1 — 7 Towns Exempted from the Provisions of Senate Bill No. 10

Gilmanton	15.25 miles
Sandwich	10.98 "
Springfield	10.61 "
Moultonboro	8.74 "
Strafford	7.06 "
Hillsboro	6.82 "
Loudon	5.10 "
	64.56 "

Group 2 — 14 Towns and Cities with Valuations over $3,000,000

Manchester	3.95 miles
Conway	3.91 "
Keene	3.30 "
Jaffrey	3.04 "
Claremont	2.90 "
Concord	2.36 "
Somersworth	1.85 "
Dover	1.54 "
Rochester	1.50 "
Salem	1.16 "
Derry	1.12 "
Haverhill	.94 "
Laconia	.90 "
Wolfeboro	.81 "
	29.28 "

Group 3 — 21 Towns with Valuations $1,000,000 - $3,000,000

Enfield	4.49 miles
Weare	4.42 "
Meredith	3.74 "
Canaan	3.73 "
Milton	3.17 "
Holderness	1.96 "
Marlboro	1.67 "
Pembroke	1.64 "
Colebrook	1.49 "
Gilford	1.34 "
Tamworth	1.26 "
Rindge	1.12 "
Rollinsford	.85 "
Bethlehem	.80 "
Wakefield	.65 "
Lisbon	.58 "
Farmington	.43 "
Whitefield	.19 "
Stratford	.12 "
Sunapee	.06 "
Plymouth	.05 "
	33.76 "

Group 4 — 17 Towns with Valuations $500,000 - $1,000,000

Jefferson	4.06 miles
Hancock	3.52 "
Piermont	3.08 "
Greenfield	2.66 "
Plainfield	2.50 "
Belmont	2.20 "
Fitzwilliam	2.00 "
Barrington	1.90 "
Harrisville	1.89 "
Rumney	1.35 "
Cornish	1.30 "
Bridgewater	.71 "
Greenville	.70 "
Epping	.22 "
Stewartstown	.20 "
Columbia	.12 "
Woodstock	.05 "
	28.46 "

Group 5 — 9 Towns with Valuations under $500,000 but with Valuations over $10,000 Per Mile of Class V Road

Town	Miles SAO To Build	Valuation Per Mile of Class V (000 omitted)
Thornton	4.41	19.9
New Durham	4.20	10.0
Chatham	3.40	21.6
Benton	2.46	21.1
Washington	2.04	12.5
Goshen	1.59	20.3
Groton	1.35	25.8
Lee	.80	15.0
East Kingston	.45	30.4
	20.70	

Group 6 — 12 Towns with Valuations less than $10,000 Per Mile of Class V Road

Lempster	4.47	5.8
Richmond	3.70	6.7
Unity	3.49	7.4
Barnstead	3.40	8.6
Middleton	2.91	7.5
Sharon	2.26	8.8
Wilmot	2.31	7.2
Mason	1.90	5.8
Grafton	1.33	7.4
Eaton	1.14	8.4
Sullivan	.97	8.0
Canterbury	.63	9.2
	28.51	