

Recent Policy and Legislative Actions To Pave All Unpaved Secondary Roads in North Carolina

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North Carolina has the largest state-maintained highway system in the nation, consisting of 76,727 mi. Of this total, 59,310 mi (77 percent) is on the rural state secondary system. As of January 1989, 16,358 mi (28 percent) of the rural state secondary system remained unpaved. Between 1981 and 1988, the department was only able to pave 2,293 mi of unpaved rural state secondary roads, an average of 287 mi per year. At this rate, it would have taken 55 years to pave all the remaining unpaved rural secondary roads in the state. Faced with the inadequacy of the existing revenue source—a motor fuel tax of 1¼ cents/gal generating about \$68 million annually—for all types of secondary road paving, the 1989 North Carolina General Assembly created the North Carolina Highway Trust Fund, which is designed to provide \$9.2 billion of additional funding for new primary and secondary highway and bridge construction throughout the state over a 13½-year period. The policy decisions and legislative actions behind North Carolina's secondary road paving program and the manner in which candidate projects are ordered by priority are explored. The discussion should be of interest to all state and county highway agencies responsible for low-volume road paving and maintenance.

North Carolina's secondary road system evolved from a limited network of county roads that the state helped the counties plan and design in the years during and immediately following World War I. In 1921, public demands for better roads resulted in the state's taking over 5,200 mi of county roads and levying a 1-cent/gal fuel tax to maintain them.

During the period 1921 through 1927, North Carolina became known as "The Good Roads State," when the approval of \$115 million in bonds financed the construction of a system of hard-surfaced roads connecting each of the 100 county seats. The nationwide depression of 1931 rendered the counties financially unable to maintain their roads, so the general assembly voted to assume responsibility for all county roads, with the exception of city streets. This added approximately 47,000 mi to the state highway system, bringing the total primary and secondary mileage to 57,000 by 1934.

In 1934, the motor fuel tax was at the 6-cents/gal level, where it would stay until 1949, when it was raised by 1 cent to pay debt service on \$200 million of exclusive secondary road bonds. At that time, however, there was no dedicated revenue for secondary road paving from the motor fuel tax.

As a result of actions by (a) the 1951 general assembly's authorizing the state to take over those city streets that were part of the state highway system and dedicating ½ cent of the

motor fuel tax to be given to the cities for off-system street improvements, and (b) the 1971 general assembly's raising the dedicated amount from ½ to 1 cent/gal, the annual appropriation for secondary road paving was finally tied to the motor fuel tax by statute, being set at 1 cent/gal, the same as the appropriation for the cities. By 1971, the state highway system comprised just over 74,000 mi (of which 59,000 mi was rural secondary roads), and the motor fuel tax was 9 cents/gal.

In 1981, the amount of the motor fuel tax dedicated to secondary road paving was increased to 1⅜ cents; this was further raised to 1¾ cents in 1986. Because 1 cent of motor fuel tax collected in North Carolina generates about \$40 million in revenues, the secondary road paving program received an allocation of \$68 million in 1988.

The initial dedication of 1 cent/gal for secondary road paving in 1971 was followed by legislative action in 1973 to establish a fair and objective method of determining paving priorities and allocating funds to geographic areas (that is, counties).

Figure 1 shows how the paving program has been able to reduce the number of unpaved miles of secondary roads from over 45,000 in 1935 to just under 16,000 in 1990. The slight annual increase in the combined total of unpaved and paved miles reflects the inclusion of paved rural subdivision streets that meet state design standards.

RATING UNPAVED SECONDARY ROADS

North Carolina General Statute (NCGS) 136-44.5 requires the Department of Transportation to make a study each calendar year to determine the number of miles of unpaved state-maintained roads in each county and in the state. The amount of secondary road paving funds (C_i) allocated to County i is calculated as the product of the statewide secondary road construction appropriation (S) and the ratio of the county's unpaved secondary road mileage (M_{ci}) and the statewide total unpaved secondary road mileage (M_s).

$$C_i = S \times \frac{M_{ci}}{M_s} \quad (1)$$

NCGS 136-44.7 further stipulates that "Projects on the annual construction program for each county shall be rated according to their priority based upon the secondary road criteria and standards which shall be uniform throughout the state. . . ."

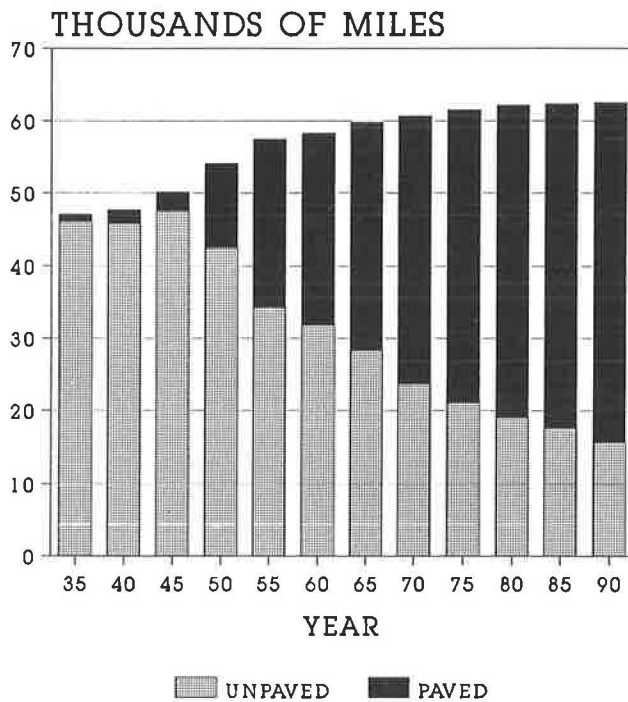


FIGURE 1 Secondary road mileage.

A rating is obtained for each unpaved secondary road in each county by summing the scores obtained from evaluating the following land use, traffic, and general route characteristics:

Land Use (total score divided by mileage)

- Homes (6 points/year-round home, 3 points/seasonal home);
- Schools (10 points/school);
- Churches (10 points/church);
- Businesses (5 points/business);
- Industries (5 points/industry); and
- Recreational facilities (5 points/public or nonprofit).

Traffic

- School bus route (10 points); and
- Average annual daily traffic volume (value).

General Route

- Value of road as a county thoroughfare route (10 points maximum).

A priority list is developed for each county, and paving is scheduled according to the order of projects on the list.

This system worked well during the 1970s and early 1980s. However, by the mid-1980s, the department recognized that the success of the allocation program had created inequalities. For instance, in a number of counties, the unpaved mileage had been reduced to a level that the funds allocated to those counties were insufficient to cover the cost of finishing the paving job.

Also, in some cases, counties with low population densities or low construction costs, or both, have had more miles paved per unit expenditure than other counties with high population densities or high construction costs, or both. The result is that relatively low-volume secondary roads have been paved in some counties, whereas relatively high-volume secondary roads remain unpaved in other counties.

To compound these inequalities, the expansion of suburban and rural residential development along secondary roads has caused traffic congestion and safety problems for which widening offers the only solution. The recognition of these inequalities prompted the 1987 general assembly to include secondary road construction needs along with primary system construction needs when it created the joint legislative highway study commission and asked for recommendations to be made to the 1989 general assembly.

HIGHWAY STUDY COMMISSION

The highway study commission was created by the 1987 general assembly for the purpose of

1. Reviewing and validating present and future highway funding needs,
2. Evaluating the economic impact of the highway system on the state and its various regions,
3. Reviewing and developing recommendations to ensure that the highway funds are allocated to meet the identified needs and address the overall growth and economic goals of the state, and
4. Recommending both short-range and long-range funding solutions with particular emphasis on the separation of general fund and highway fund revenue bases and sources.

The study commission was composed of 15 members, including 5 members appointed by the president of the senate, five appointed by the speaker of the house, and five appointed by the governor. The appointees—nine were legislators, three were local elected officials, and three were from the private business sector—represented 30 rural counties and 7 urbanized counties out of a statewide total of 100 counties.

The study commission held its first meeting in November 1987, and its 20th and last meeting in February 1989. During this 16-month period, the Department of Transportation was afforded ample opportunity to brief the commission on the construction and maintenance needs both of primary and secondary highways. In addition, the commission heard from other state agencies, highway departments in other states, and a number of interest groups representing municipal and county governments, consulting engineering and construction firms, as well as the general public (at four special meetings held out of Raleigh).

Early in the commission's deliberations, the Department of Transportation provided the commission with a statement of highway needs, which revealed unmet needs of \$12 billion for primary highway construction and \$1 billion for maintenance through 2000. The secondary road program was shown to have backlog needs of almost \$1.5 billion, with additional needs through 2000 amounting to about \$1.5 billion, of which only \$0.75 billion could be expected to be accomplished under

the existing program. This amount left a total of \$2.25 billion in secondary road paving needs through 2000—and still there would be unpaved secondary roads in North Carolina.

Faced with this uncomfortable prospect, and the political expediency to satisfy both rural and urban interests, the commission asked the Department of Transportation to provide its members with two stratifications of unpaved secondary road mileage: those above and below 100 vehicles per day (vpd), and those above and below 50 vpd.

Out of a total of 16,932 unpaved secondary road miles, it was determined that 3,534 (20 percent) were carrying in excess of an average of 100 vpd. When the criterion was dropped to 50 vpd, the number of miles exceeding it was found to be 9,514 (56 percent). When the commission learned that using the 100-vpd criterion for establishing a priority paving program would mean that some counties would be excluded from such a program because none of their unpaved secondary roads carried 100 vpd or more, the commission chose the 50-vpd criterion. This choice would result in all counties sharing (to different degrees, admittedly) in any priority paving program that would be subsequently enacted into law.

The final recommendations of the commission were four-fold: (a) to complete 1,830 mi of multilane construction on the designated 3,600-mi North Carolina Intrastate System; (b) to construct multilane connectors or loops in 7 of the state's 15 urbanized areas; (c) to pave all secondary roads carrying 50 vpd or more within 10 years, and the remaining miles within a subsequent 6-year period; and (d) to increase funds available for projects in the Transportation Improvement Program.

The cost of accomplishing these recommendations was estimated to be a minimum of \$8.6 billion over a 12-year period, and a financing plan involving the creation of the North Carolina highway trust fund, with revenues generated by a fuel tax increase and a tax on motor vehicle title transfers, was recommended.

THE LEGISLATURE

Within days of the final meeting of the highway study commission, the senate co-chairman introduced a bill into the senate (S290) calling for the highway study commission's recommendations to be implemented by raising the motor fuel tax by 3 cents/gal to 17 cents/gal plus raising the wholesale motor fuel tax from 3 to 7 percent, and collecting a 2 percent fee on all motor vehicle title transfers. Of the total amount accumulated in the highway trust fund each year, 65.05 percent would be used to design and construct the North Carolina Intrastate System; 24.06 percent for urban loops; 6.5 percent to supplement the regular secondary road appropriations to each county; and 9.39 percent to supplement the Transportation Improvement Program. The 1¼ cents/gal distributed to municipalities from the highway fund would be replaced by an appropriation equivalent to 9 percent of net highway fund revenues.

Simultaneously, a bill (H399) was introduced into the house of representatives by the house co-chairman of the highway study commission. The two bills were essentially the same, with differences only existing in the amount and type of legislative oversight of the Department of Transportation imple-

mentation of the program. However, as both bills made their way through various committees in each chamber, the provisions diverged. Also, the issue of a shortfall in general fund revenues was introduced into the debate, with the result that the financing provisions of the ratified bill (H399) were very different from those in the introduced versions.

Five months after the initial introduction of the highway trust fund bill, a compromise came out of a house/senate conference committee and was ratified. The largest public works program ever to be undertaken by a single governmental agency of North Carolina had been given the green light.

The highway trust fund program receives the following revenues (shown in Figure 2):

1. A highway use tax on motor vehicle title transfers. The tax equals 3 percent of the motor vehicle retail price (less any trade-in value) for new vehicles, or of the book value for used vehicles. It replaced the 2 percent sales tax collected on motor vehicle sales, which went into the general fund;
2. 25 percent of all revenues generated by the 17 cent/gal and 7 percent wholesale motor fuel taxes (initially equivalent to 20.9 cents/gal);
3. Fee increases for title certificates and other motor vehicle registration and driver licensing services;
4. All funds not needed to repay highway bonds after 1995; and
5. All interest and income earned by the highway trust fund.

As a result of the general fund shortfall, the sum of \$636 million in highway use tax revenues is scheduled to be transferred from the highway trust fund to the general fund in the FY 1989 to 1991 biennium, after which the annual amount transferred is reduced to \$170 million, which is the equivalent of the 2 percent sales tax that was repealed.

Once received, the net revenues (after the general fund transfers have been made) are allocated in the following manner:

1. Intrastate system—61.95 percent;
2. Urban connector and loops—25.05 percent;
3. Secondary roads—6.5 percent; and
4. Aid to municipalities—6.5 percent.

Secondary roads also receive \$15 of the \$30 increase in the title transfer fee.

The new formula for annually allocating secondary road paving funds has two components. One involves the allocation of \$68 million (a hold-harmless amount). The other involves the allocation of the 6.5 percent and one-half of the title transfer fee (the secondary roads supplement) portions of the trust funds.

Therefore, the new dollar allocation (C_i) for County i is calculated as follows:

$$C_i = \left(68,000,000 \times \frac{M_{ci}}{M_s} \right) + \left(\text{Supplement} \times \frac{M_{ci50}}{M_{s50}} \right) \quad (2)$$

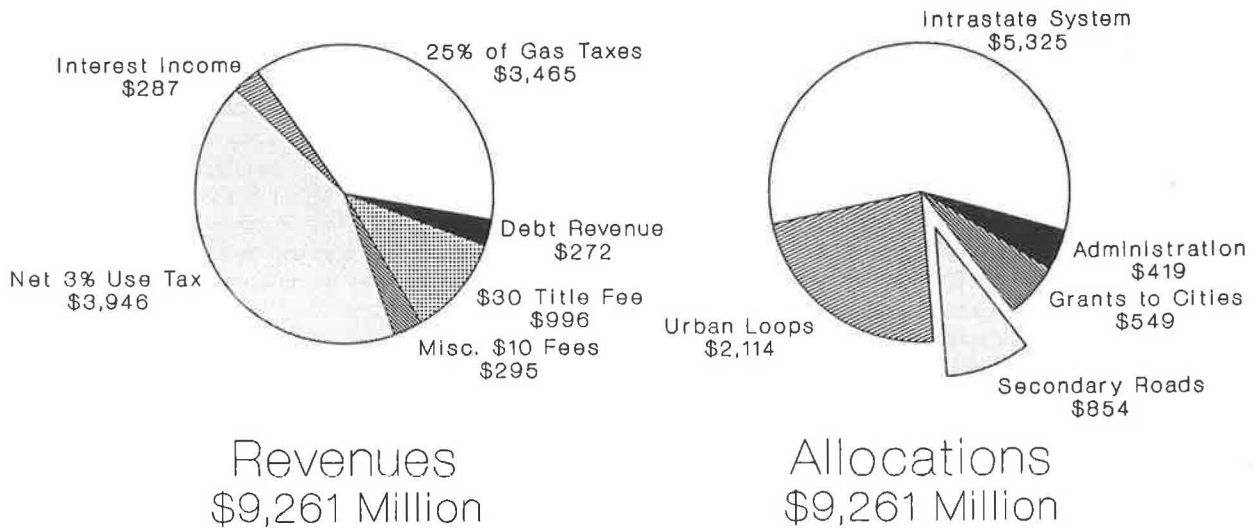


FIGURE 2 North Carolina highway trust fund revenues and allocations.

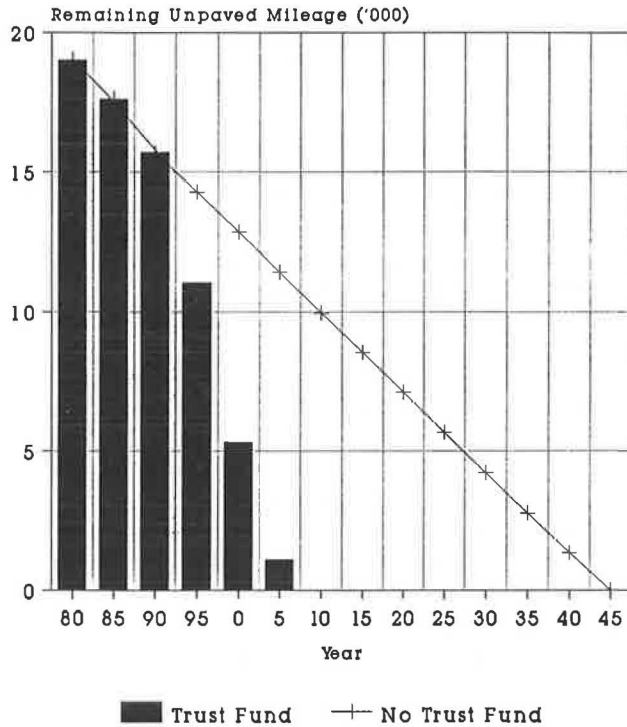


FIGURE 3 Unpaved secondary mileage comparison.

plement is reduced by the amount necessary to bring the coefficient of the first term in the equation up to \$68 million. In the more likely event that the tax generates more than \$68 million, then the excess is added to the supplement for allocation on the basis of the second term in the equation.

PAVING UNPAVED SECONDARY ROADS

The highway trust fund program is estimated to generate a secondary roads supplemental paving fund of over \$850 million through FY 2000–2001, to which will be added approximately \$840 million from the motor fuel tax revenue dedicated to secondary road improvements. This \$1.69 billion expenditure will result in the paving of almost 10,000 mi of secondary roads with traffic volumes exceeding 50 vpd by FY 2000–2001.

An expenditure of \$490 million from unsupplemented secondary road motor fuel revenues during the subsequent 6 years will complete the paving of all secondary roads with traffic volumes below 50 vpd. Unpaved roads in North Carolina will have been paved within the space of 17 years, as opposed to the 55 years it would otherwise have taken with existing funding sources.

Figure 3 shows the accelerated rate by which the unpaved mileage is reduced as a result of the trust fund program, and compares it with the rate that would have otherwise existed.

where

- M_{ci} = unpaved SR miles in County i ,
- M_s = unpaved SR miles statewide,
- M_{ci50} = unpaved SR miles, 50+ vpd, in County i , and
- M_{s50} = unpaved SR miles, 50+ vpd, statewide.

In the unlikely, though possible, event that the 1¼ cents/gal motor fuel tax generates less than \$68 million, then the sup-

CONCLUSIONS

The paving of low-volume secondary roads in North Carolina has been highly political since the establishment of a system of state-maintained roads over 75 years ago. Over the years, the politicization of paving decisions has been reduced through the dedication, starting in 1971, of a specified amount of the

motor fuel tax specifically to be spent on paving secondary roads and, more significant, the introduction of the priority rating system and the allocation formula in 1973.

However, no allocation formula can be expected to remain equitable indefinitely, especially when the funds get distributed on the basis of remaining unpaved mileage, which is decreasing annually. So, the decision by the 1989 general assembly to create a supplemental paving fund to finally pave all remaining unpaved secondary roads within a specified time period, concentrating first on those with relatively higher volumes, was welcomed by both those whose responsibility it is to pave and maintain secondary roads and those citizens who

live on unpaved roads. These citizens, before the new funding, had no expectation whatever of their road being paved in their lifetimes.

Now, these same citizens will soon be able to drive on paved roads from their homes to the new North Carolina Intrastate System, which is designed to reach to within 10 mi of 96 percent of all the citizens of North Carolina. The increased accessibility to employment, retail and commercial, and recreational opportunities created by the combination of a completely paved secondary road system and an extensive multilane primary road system will result in a stronger and more diversified economy for North Carolina.