

*Innovative Financing Methods for Local Roads in the  
Midwest and Mountain-Plains States*

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# **INNOVATIVE FINANCING METHODS FOR LOCAL ROADS IN THE MIDWEST AND MOUNTAIN-PLAINS STATES**

Jill Hough, Ayman Smadi, and John Bitzan

## **ABSTRACT**

The need for federal, state, and local road funding is a national problem. Due to changing trends, i.e., population shifts, changes in travel patterns, local governments have many challenges to overcome to maintain their extensive road networks. Typically, local governments have relied on fuel taxes, property taxes, vehicle registration fees, and mill levies to finance road maintenance and improvements. However, traditional funding sources are no longer adequate. There is a great need for counties to explore innovative methods that increase revenue and/or decrease costs. This study describes eight innovative financing methods, e.g., rural improvement districts, and 14 cost reducing strategies, e.g., sharing equipment, that local governments in Iowa, Minnesota, Montana, North Dakota, South Dakota, Utah, and Wyoming currently are using. County road officials identified these methods through a mail questionnaire and rated key criteria, e.g., ease of collection, etc. which should be used to evaluate each method before implementing them.

Two of the innovative financing methods which are not widely used at the present time but may have potential for more use in the future are rural improvement districts / special assessment districts and the wheel tax. Advantages and disadvantages to these methods and other innovative financing methods are discussed in this report. Cost reducing strategies, e.g., use of chemical additives, etc. are important for counties to consider. Reducing costs is the result of managing services and resources

more efficiently. County road officials reported methods they are currently using to reduce costs within their county.

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## CHAPTER 1

### INTRODUCTION

The lack of road funding is a national problem. According to studies by the Bureau of Transportation Statistics, state and local governments' expenditures on roads are greater than the amount they collect in transportation revenues. In 1992, states generated \$39 billion in road revenues and spent \$46.5 billion after grant transfers for road services. Likewise, local governments spent \$54.4 billion, but only collected \$15.3 billion in revenues (Wooster). As evident from these statistics, additional funds are needed by the federal, state, and local governments just to maintain current roadway conditions. Moreover, due to the continuing trend of reduced budgets, there is a growing backlog of roadway needs.

Historically, states developed extensive road networks to support the agrarian lifestyle. Typically roads were built every mile to provide farm access. Changes in the agricultural sector are changing the demands placed on the rural road systems. First, the trend toward larger farms reduces the need for access roads. Second, with the increased farm size and the move to more productivity there has been an increase in equipment size. The larger and heavier equipment requires wider and stronger rural roads. Third, several rural families earn off-farm income either seasonally or all year-round, which increases commuter traffic on rural roads. As the purpose of rural trips changes, the demands for improved maintenance increase. Fourth, changes in railroad regulation has allowed the abandonment of rail lines more easily. Since 1980, more than 33,000 miles of rail have been abandoned nation wide (Bitzan, et al.). Commodities and other goods otherwise moved by rail may be diverted to truck or barge where applicable. The increased truck use causes additional wear and tear

on the roadway. Many rural roads were not designed for the density and truck configuration of this traffic. Changes in available funding may make it even more difficult in the future to maintain the extensive road network that has been built to serve the public.

The trends of highway revenue shortfalls and increased intensity of use of many rural roads suggest that an adequate future rural road system will depend on increased funding and/or decreased road costs. Future road costs may be reduced by consolidating local and county road services, reducing the number of roads maintained through closure or minimum maintenance and/or changing road services. Because of the trend of fiscal restraint at the national level, it appears that increasing and/or maintaining future funding largely will depend on developing innovative financing methods. This study examines innovative financing methods used by local governments in eight states. States included in the study are Colorado, Iowa, Minnesota, Montana, North Dakota, South Dakota, Utah, and Wyoming.

### **Federal, State, and Local Revenue Sources**

Highway finances come from several sources. Federal and state road revenues largely come from gasoline taxes and other indirect user fees such as taxes on other motor fuels, excise taxes on automobile registrations, and taxes on tires. Some states also are generating revenue from the use of tolls. Local governments are more reliant upon property taxes and general revenues. Bonds are another form of revenue for state and local government.

Debates have centered on the extent to which user fees, especially gasoline taxes, should be used for road improvements and the extent they should be used for other transportation uses. In 1973,

a law was passed allowing federal highway dollars to be “traded-in” for transit projects. The federal gasoline tax was increased for the first time in many years in 1982 and some of the money was set aside explicitly for transit. Most recently, in 1990 and 1993, the federal gasoline tax was increased for deficit reduction instead of infrastructure improvements. The federal government now imposes an 18.4 cents/gallon tax on gasoline, which is distributed as follows: 10 cents goes to highway improvements, 6.8 cents is devoted to deficit reduction, 1.5 cents goes to transit, and .1 cent goes to a fund for the repair of leaking underground storage tanks (Luberoff).

The federal law currently governing all highway expenditure, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 mandated that all states set aside about 2 percent of available federal funds between 1992 and 1997 for non-highway related enhancements, such as bike paths. New transportation policy is being written and it is uncertain whether mandates for non-highway expenditures would be changed.

One of the important features of the federal transportation policy is the designation of revenues to each state. Potential changes in the new transportation policy could hinder recipient states (states that receive more federal dollars than what they pay in) as a decline in revenue would be difficult to recapture. States with low population densities but high number of miles of road make up the large portion of recipient states. Donor states (states which contribute more than what they receive in federal dollars) are lobbying to change the funding formula so they would receive more of what they paid in. A loss of federal revenue in states, such as North Dakota, relying heavily on federal transportation dollars would increase the difficulties of sustaining the current maintenance levels on its roads.

Changes in federal allocations would significantly impact revenues available for state use. States may need to develop a method to analyze and prioritize their road systems. Reductions in state revenues would greatly impact the revenues available for local road systems, and greatly increase the need for local innovative financing and cost reduction methods.

### **OBJECTIVES OF THE STUDY**

The primary objective of this study is to identify and examine potential revenue generating methods that could be used to increase the revenues available for road maintenance at the local level. In addition, strategies that can be used to decrease costs also are examined. The specific tasks to achieve the objective are the following:

1. Survey road superintendents in the Mountain Plains States of Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming, as well as the Midwestern states of Minnesota and Iowa to identify innovative financing methods being used at the local level.
2. Evaluate innovative financing methods states are using, based upon road officials perceptions.
3. Recommend potential methods that counties may implement to increase their revenue or decrease their costs for the local road system.

### **REPORT ORGANIZATION**

The remainder of this report is divided into three parts. A description of the research method used to identify innovative financing methods and cost reducing strategies used in the MPC and Midwest states is explained in Chapter 2. The innovative financing methods and cost reducing strategies identified eight states are described and evaluated in Chapter 3. Finally, the summary, conclusions, and recommendations are presented in Chapter 4.



## **CHAPTER 2**

### **RESEARCH METHODS**

There are several financing methods used to generate revenue for the road infrastructure. Much of the research conducted on innovative financing has focused on state roads or methods that would be applicable to urbanized areas. Innovative financing methods used for urban areas, e.g., toll roads, may not be applicable for the rural road systems due to the low traffic levels on these roads. Since local innovative financing methods is the focus of this study little attention will be devoted to federal and state financing. To conduct this study, primary data were collected through a mail survey instrument sent to county road officials in eight states. They include: Colorado, Iowa, Minnesota, Montana, North Dakota, South Dakota, Utah, and Wyoming. The focus of this chapter is to describe the research approach taken to conduct this study. Actual budget data also were collected from the state Departments of Transportation. These data consisted of dollars that counties collect and use for the road and infrastructure budgets. A weighted average for each method used to collect revenue was calculated to compare the counties reliance upon each revenue source.

#### **Survey Instrument Design**

An innovative financing survey was sent to the county engineers or road supervisors in each county. County road officials were asked to identify the funding sources they currently use to finance rural road construction and maintenance in the county and indicate the percentage contribution the source makes to the overall budget, e.g., fuel tax contributes 60 percent. Road officials also were

asked to rate the revenue sources based on five criteria, which should be considered when selecting and implementing a new method to generate revenue. The five criterion include revenue certainty, inflation sensitivity, revenue potential, ease of collection, public acceptance, and user equity.

**Ease of collection** - Is the collection cost high? i.e., toll collection is more costly to administer than fuel tax. If administration costs are high, the revenue generated may not be worth the extra cost of administering the new method.

**Revenue certainty** - Is the amount of revenue produced easy to predict? Consistency is important because roads and infrastructure must be regularly maintained. Will the revenue generated be adequate to fund a program or make significant contributions to a program? If it is not guaranteed revenue, it cannot be used to fund a program, because if there is a shortfall the program may have to be eliminated or funding may have to be taken from another existing program.

**Inflation sensitive** - Does the revenue increase automatically with inflation? Flat fees do not adjust with inflation unless the legislation attaches or associates the fee to an inflation index, automatically adjusting the fee as inflation fluctuates. If a method does not adjust with inflation, as inflation increases the value of the revenue generated from the tax declines. A percentage base tax or fee adjusts as inflation occurs.

**Public acceptance** - Does the public accept the funding source implemented? If the source is not acceptable, it may not ever be implemented at the local level.

**User equity** - Does the tax or fee distribute the costs of the use of the transportation system in proportion to the benefits received by users? Does a person receive a value equal to the price paid?



Road officials rated each criterion based on a three-point scale. The rating scale was 1= NO; 2 = SOMEWHAT; 3 = YES. It should be emphasized that the results of the rating system reflect the perceptions of the road officials and may differ from the real effects of each criterion or factor. After rating the revenue source, road officials were asked to explain how the funding source was implemented and how it could be improved or expanded.

Road officials also were asked to identify if there were other sources that would generate additional revenue (that were not currently implemented). There also was a section designated to cost reductions. Road officials were asked to explain strategies they have used to reduce costs, such as consolidating equipment use among counties.

### **Mailings**

The Local Technical Assistance Program (LTAP) administrators from each state, with the exception of Montana, assisted in the mail survey procedure. The Montana Department of Transportation Secondary Road official assisted in distributing surveys to the Montana county road officials.

A total, 470 questionnaires were mailed to the county engineers or the county road supervisors. Table 2.1 illustrates the number of surveys mailed and the response rate from each state. In all, 177 questionnaires were returned for a response rate of 38 percent. North Dakota and Iowa had the highest response rates, 49 and 42, respectively.

**TABLE 2.1. Response Rate, Survey of Midwest and Mountain-Plains County Road Officials**

<b>State</b>	<b>Number Sent</b>	<b>Number Returned</b>	<b>Response Rate (%)</b>
<b>Colorado</b>	<b>63</b>	<b>22</b>	<b>35</b>
<b>Iowa</b>	<b>98</b>	<b>44</b>	<b>45</b>
<b>Minnesota</b>	<b>85</b>	<b>36</b>	<b>42</b>
<b>Montana</b>	<b>56</b>	<b>22</b>	<b>39</b>
<b>North Dakota</b>	<b>53</b>	<b>26</b>	<b>49</b>
<b>South Dakota</b>	<b>65</b>	<b>13</b>	<b>20</b>
<b>Utah</b>	<b>28</b>	<b>8</b>	<b>29</b>
<b>Wyoming</b>	<b>22</b>	<b>6</b>	<b>27</b>
<b>TOTAL</b>	<b>470</b>	<b>177</b>	<b>38</b>

Budgetary data from the state DOT's were collected so a weighted average of each funding source could be calculated. This weighted average gives an overall view of how much the revenue source actually contributed to the overall county budgets throughout the state. However, Montana Department of Transportation does not keep account of revenue generated by counties, so their numbers are excluded from the weighted average calculations.

## CHAPTER 3

### INNOVATIVE FINANCING METHODS AND COST REDUCING STRATEGIES

Innovative financing methods and cost reducing strategies identified by county road officials from eight states are the focus of this chapter. The main source for gathering this information was through a mail questionnaire distributed to county engineers and road superintendents in Colorado, Iowa, Minnesota, Montana, North Dakota, South Dakota, Utah, and Wyoming. Respondents reported each revenue generating method they implement and ones they have considered implementing. Therefore, both traditional or common financing methods used in the past, and innovative revenue generating methods are included. However, most emphasis is placed on innovative financing ideas. In addition, currently used and potential cost reducing strategies initiated in each county are identified.

### REVENUE SOURCES

Traditional sources of funding are forecast to fall far short of the estimated costs of maintaining and improving transportation infrastructure. Increasing the traditional sources is not enough, given resistance to higher taxes, and the desire to balance the budget by the year 2002 (FHWA).<sup>1</sup> A cursory look at the traditional funding sources is provided before focusing on the innovative financing methods reported by county road officials in the mail questionnaire.

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<sup>1</sup>Human, William A., ed. *Innovative Financing*. Federal Highway Administration, United States Department of Transportation, Washington, D.C. Vol 2, No. 3, June 1997.

Traditional and innovative financing methods can be categorized into two broad groups: user and non-user revenues. User revenues are comprised from fees and taxes placed on items closely associated with the ownership and operation of a motor vehicle. Motor fuel taxes, registration fees, driver license fees, weight-distance taxes, titling taxes, and others are typical user taxes. Whereas, sales and use taxes, mineral royalties, severance taxes, and property taxes are typical non-user revenue sources, which are collected through mechanisms not related to highways or motor vehicles. In terms of equity, it is more favorable to collect user based revenues so those receiving the benefit also pay for it.

User based fees are more likely to be accepted by the public. However, the public is usually not in favor of increasing or implementing new taxes. It is important for county officials to increase the public's awareness of the need for increased financing to maintain the road system.

### **Traditional Revenue Sources**

Four traditional revenue sources were identified in the responses as contributing significantly to county road budgets. They include: property taxes, fuel taxes, vehicle registration fees, and a mill levy (Table 3.1). There are strengths and weaknesses to each of these traditional methods.

#### ***Property Tax***

Counties in each of the eight states included in the survey designate funds received from property taxes to the road budget. A property tax is the collection of a tax based on

**TABLE 3.1. Traditional County Road Revenue Sources**

<b>Methods</b>	<b>States Using</b>	<b># of Resp.</b>	<b>Simple average % of each county's Budget*</b>	<b>Weighted Average % of budgets**</b>
Property Tax	CO, IA, MN, MT, ND, SD, UT, WY	154	32.6	25.6
Fuel Tax	CO, IA, MN, MT, ND, UT, WY	102	40.0	16.6
Vehicle Registration	CO, MN, MT, ND, SD, WY	33	14.8	12.7
Mill Levy	CO, MN, MT, ND	22	32.0	10.0

\* Represents the average contribution to county budgets based on survey responses.

\*\* Represents the average contribution to county budgets based on numbers received from state departments of transportation.

assessments of real property holdings. Several counties designate a certain percentage of their property tax collections to the county road budget. On average, property taxes comprise 25.6 percent of the road budgets of counties in the eight state region. The major strength of using property tax dollars to finance the local roads is the stability of the collection. Property taxes are fairly revenue certain, as property holdings stay fairly constant from year to year. In addition, since property taxes are based on a percentage of the assessed value of the property, they keep pace with inflation. The major weakness of relying on the property tax for road revenue is that it reduces the money available for other county programs.



### ***Fuel Tax***

Counties in seven of the eight states reported the use of fuel taxes to finance roads (Table 3.1). South Dakota was the only state where counties could not impose a fuel tax to generate revenue. On average, the counties in the seven other states relied on fuel taxes to make up 16.6 percent of their road budget. The major advantage of county fuel taxes as a source of revenue is stability. In addition, administration of a county fuel tax requires no or little additional administrative expense. Furthermore, it is viewed as a user supported tax. One major weakness of county fuel taxes is that revenues generated from these taxes generally decline in real terms over time, as they are based on gallons of fuel consumed rather than value.

### ***Vehicle Registration***

Vehicle registration is a fee imposed on the owners and operators of vehicles in their state. Counties in six of the eight states surveyed reported the use of vehicle registration revenue. Counties in Iowa and Utah did not report the use of vehicle registration. In all, 33 counties reported the use of vehicle registration fees contributing to the road budget. On average, vehicle registration revenue makes up almost 13 percent of county road budgets in the eight states (Table 3.1). The major strengths of receiving revenue from vehicle registration are the stable source of funds, the minimal additional administrative expense, and its perceived status as a user based tax. The major weakness is its insensitivity to inflation.

### ***Mill Levy***

The mill levy is essentially an additional property tax. Some counties will implement a mill levy to fund a particular project, i.e., bridge replacement. Counties in Colorado, Minnesota, Montana, and North Dakota identified the use of a mill levy to finance projects related to roads. On average, counties in the eight states rely on the mill levy to generate 10 percent of their road revenues. The major strength of a mill levy is that the burden is placed on the rural road user who will be using the road most. The major weakness of a mill levy is that it is an additional property tax that also takes funds away from other county programs.

### **Innovative Revenues Sources**

Nine innovative financing methods or potential methods were identified through the mail questionnaire. Of these methods, four were identified as making significant contributions to the road budgets of the counties implementing them. The level of significance was derived from their ability to account for more than five percent of a particular county's budget. The four innovative methods include: sales tax, special ownership tax, wheel tax, and rural improvement districts. A more detailed description and discussion of these four methods is provided below.

### ***Sales Tax***

Nearly 11 percent of the county road officials responding to the questionnaire acknowledged the use of a county sales tax to generate revenues for the road system. Counties in Colorado, Iowa, North Dakota, South Dakota, and Utah reported current reliance on the county sales tax as a revenue



source. Nearly all states have a state-wide sales tax, which they use to generate revenue primarily to fund education, public welfare, and highway maintenance and construction. As approved by the legislature, counties can administer a county sales tax if residents in that county approve a political measure to allow the tax. Nineteen counties reported they have implemented a county-wide sales tax, which on average contributes to 14 percent of their county road budgets (Table 3.2). However, when the averages are weighted by the revenues generated in each county, they make up 3.5 percent of county road budgets (Table 3.2). The reason for the difference in the percentage of sales tax contributions to the budgets (presented in Table 3.2) is that counties making up a very small portion of state revenues were the ones that used these methods.

Major advantages of the sales tax include:

- (1) it can provide a fairly consistent source of revenue;
- (2) it is inflation sensitive; and
- (3) it is relatively easy to administer.

A consistent revenue source is important since road maintenance and improvement needs are continuous. Inflation sensitivity is also key. Sales tax are administered on a percentage basis, therefore as inflation causes the price of goods to increase, the sales tax collected also increases - as long as the quantity of the good purchased remains constant. The ease of administering a county sales tax is the result of its ability to be piggybacked on to the state sales tax. Generally, the state will charge a small administrative fee for collecting and redistributing the county tax back to the county in which it was received.

A disadvantage to implementing a county sales tax is that a sales tax may not be equitable. In general, user charges, e.g. fuel taxes, are considered equitable because the beneficiary is often the

person paying the fee. A county sales tax may not be equitable since rural road users are not necessarily those who purchase the taxed items.

### ***Special Ownership Tax***

A special ownership tax is a fee imposed on the owners or operators of specific items. Counties in Colorado, South Dakota, and Utah reported the use of a special ownership tax to generate revenue for financing their road systems. Of the nine responses, special ownership taxes comprise approximately seven percent of their road budgets (Table 3.2). However on average, they only comprise 1.8 percent of county road budgets in all eight states as calculated with data from the department of transportation (Table 3.2). Different items could receive the special ownership tax. For example, counties in South Dakota have placed a special tax on mobile home registration. Fifteen percent of the revenue collected is sent to the state for administration fees while the other 85 percent remains in the county where the mobile home is registered.<sup>2</sup>

Some of the advantages of a special ownership tax are:

- (1) revenue certainty exists;
- (2) inflation sensitivity; and
- (3) ease of collection

Revenue certainty does exist as long as there is a demand for the product or item being taxed. However, the revenue potential will vary from county to county depending on the population base purchasing the item with the special tax. A special ownership tax based on a certain percentage of the

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<sup>2</sup>Chuck Fergan, South Dakota Department of Transportation, Dept. Of Finance, Pierre, Telephone Interview, June 6, 1997.

purchase price would be inflation sensitive. A flat fee would not be inflation sensitive. Furthermore, a percentage based tax placed on the special items at the time of purchase would enable the revenue to be collected with any sales tax that may be placed on the item, therefore easing the collection and minimizing administrative expenses of the special ownership tax.

The main disadvantage of a special ownership tax is that they are likely to be unpopular with the individuals purchasing the special items, e.g., those owning or purchasing mobile home may oppose a mobile home registration tax. The equity of a special ownership tax should be considered. Items that are not “user related” must be scrutinized closely to ensure that the tax is not regressive in nature imposing greater tax on the poor than on those with wealth.

### ***Wheel Tax***

South Dakota counties were the only ones reporting the use of the wheel tax to generate revenue for the road fund. Counties responding to the survey indicated that on average the wheel tax makes up 14 percent of their road budget, with some counties financing up to 35 percent of their road budgets from this tax (Table 3.2). A weighted average of nearly 17 percent of the county road budget is funded by the wheel tax (Table 3.2).

Counties in South Dakota do not receive portions of a state fuel tax, nor can they currently implement a local gas tax, thereby increasing the importance of the wheel tax. State law provides that counties may charge up to four dollars per tire per vehicle up to a maximum of four wheels, setting a maximum of \$16 for all vehicles. The wheel tax is collected at the local level annually during the time residents purchase their vehicle license. Legislation states that the first two dollars for each wheel tax

goes toward road and bridge funds. If counties elect to implement the other two dollars per wheel, the revenue is used for a reduction of property taxes. The additional revenue is placed in the general fund to reduce the amount of property taxes used to fund road maintenance (Fergan).

The advantage of a wheel tax is the secure revenue source. There is revenue certainty since everyone who registers vehicles pays a wheel tax on the vehicle being licenced. One hundred percent of the respondents indicated that the wheel tax was at least somewhat revenue certain (Table 3.2).

Disadvantages of the wheel tax include:

- (1) it is not inflation sensitive;
- (2) somewhat controversial; and
- (3) questions about user equity.

A wheel tax is not inflation sensitive because it is a flat based fee. It could be made inflation sensitive if the fee were tied to one of the inflation indicators. The wheel tax is somewhat controversial. Eighty percent of the respondents indicated that the public accepted the wheel tax within their county (Table 3.2). However, some counties in South Dakota developed a referendum and voted against the wheel tax thereby defeating its implementation (Fergan). There are some problems with the user equity of the wheel tax. None of the respondents indicated the wheel tax was equitable (Table 3.2). Some respondents believe the wheel tax would be more equitable if the maximum of \$16 were removed. Currently, all vehicles, including trucks, are paying the same maximum of up to \$16 dollars. If the maximum were removed, 18-wheel trucks would pay \$144 rather than \$16. Furthermore, some county officials would like to see the wheel tax imposed on all wheels including tractor trailers and farm wagons. Removing the maximum, raising the fee, or applying the wheel tax to all wheels would be potential ways to expand the tax revenue dollars.

### ***Rural Improvement Districts / Special Assessment Districts***

As rural developments and subdivisions are constructed, there is a greater demand for road services. To finance these services, the subdivisions may be assessed a fee. In Montana, Rural improvement districts are being used to finance road improvements and maintenance that are not in the county road budgets.<sup>3</sup> Similarly, Cass County in North Dakota reported the use of a special assessment district fees to raise money to provide service to rural subdivisions for projects that will cost more than \$12,000.

In Montana and North Dakota, each district is created through a petition process. Montana state law requires that 51 percent of the residents in the subdivision must be in favor of the assessed fee. The petition is then presented to the county commission where they rule on its acceptance. Cass County in North Dakota requires that 60 percent of the landowners in the district support the special assessment fee. The Cass County Commission Policy Manual specifies that petitioners must contract with an engineer registered by the state of North Dakota to prepare the improvements' plans and specifications. The contracted engineer must consult with Cass County Engineer to assure appropriate standards and specifications for the improvements. An amount equal to \$1,000 plus three percent of the total project costs (but never to exceed \$10,000) must be added to the project cost to cover administrative expense for the county. Plans and specifications must be submitted to the Cass County Engineer for his consideration and approval.

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<sup>3</sup> Gary Larson, Secondary Roads Personnel for the Montana Department of Transportation, Phone Interview June 13, 1997.

One Montana and one North Dakota road official were the only respondents to report the use of this type of funding method (Table 3.2). Currently, this method finances 9.1 percent of the road budgets within these two counties. This method has good merit. However, since only two road officials within two states reported its use, it is difficult to judge this method's overall effectiveness.

It was reported that the special assessment district works well if the group receiving the benefits are clearly defined. However, the revenue is not certain because the public has the option of protesting and preventing funding. Overall, the method was viewed as favorable by the Cass County Engineer. On the other hand, the Montana road official viewed rural improvement districts as relatively revenue certain. Essentially, all of the costs involved in servicing the particular district would be totaled and charged to the residents living in the subdivision (district). This charge should be recalculated annually to adjust for any variances in the services anticipated. For example, years with heavy annual snow fall may require more frequent snow plowing, therefore increasing the snow removal costs. Likewise, years with low snow fall would require less snow removal and therefore would reduce the fees.

Advantages to both the rural improvement district and the special assessment district include:

- (1) ease of collection, and
- (2) it is an equitable tax.

TABLE 3.2. Combined Innovated Financing Methods

Methods	States Using	# of Resp.	Simple Avg. of % county Budget	Wt. Ave. % of budgets	Revenue Certainty			Inflation Sensitive			Revenue Potential		
					No	Some	Yes	No	Some	Yes	No	Some	Yes
Sales Tax	CO, IA, ND, SD, UT	19	14.0	3.50	5	37	58	11	41	47	22	50	29
Special Ownership Tax	CO, SD, UT	9	6.8	1.80	0	78	22	33	44	23	45	22	33
Wheel Tax	SD	5	14.7	16.68	0	60	40	80	20	0	0	20	80
Rural Improvement / Special Assessment	MT, ND	2	9.1	.70*	50	50	0	0	50	50	0	0	100

\*Weighted averages were calculated with data from the state departments of transportation. Counties in Montana do not all report county revenues to the state, therefore, the weighted averages may not represent the state of Montana accurately.

TABLE 3.2. Combined Innovated Financing Methods Continued

Methods	States Using	# of Resp.	Simple Avg. of % County Budget	Wt. Ave. % of Budgets	Ease of Collection			Public Acceptance			User Equity		
					No	Some	Yes	No	Some	Yes	No	Some	Yes
Sales Tax	CO, IA, ND, SD, UT	19	14.0	3.50	27	21	52	5	37	58	31	42	27
Special Ownership Tax	CO, SD, UT	9	6.8	1.80	11	22	67	11	34	55	11	45	44

Wheel Tax	SD	5	14.7	16.68	20	40	40	20	60
Rural Improvement / Special Assessment	MT, ND	2	9.1	.70	50	0	50	0	50

Administering the fee can vary by district. An easy way to collect the fees is to piggyback them on the property taxes. This method of collection would be preferable to assigning someone in the subdivision to be responsible for collecting the revenue and paying the maintenance bills as they occur. In addition, it is an equitable tax in that those who will benefit from the improvements will be charged for them. The main disadvantage of a rural improvement tax or special assessment fee may be the opposition received from some of the residents of these districts.

### **Potential Revenue Generating Methods**

Five other potential innovative methods used to generate revenues for roads were identified in the road official's questionnaire. Some of the methods are used in multiple counties and states, however, the contribution to the road budget is less than 5 percent in each county. Some of the methods identified have special features and are not applicable to all counties in all states. The five potential methods include: severance tax, bonds, cost participation, fines, and a telephone tax.

#### ***Severance Tax***

A severance tax is based on the extraction of minerals, which compensate the county for extra wear and tear on its roads. There is high revenue potential in areas with extraction of minerals. If a county can find a market for their mineral or product, there is potential for implementing a severance



tax. Minerals such as coal, oil, and even gravel are items that are being taxed in counties of the eight states surveyed.

The major strengths of a severance tax are:

- (1) user equity and
- (2) low administration cost.

A severance tax places the burden of payment on the heavy vehicles, which in reality actually contribute significantly to the damage of roads. However, the tax may not be based upon proportional use of the road. Also, a severance tax has a low administration cost. The tax can be imposed, at the time the mineral is purchased, similar to a sales tax.

Two major weaknesses of this type of tax exist. A severance tax only applies to certain counties. Not all counties have minerals that can be extracted and sold. In addition, the demand and supply of these minerals may be seasonal or sporadic, therefore removing revenue certainty.

### ***Bond***

Bonds also were one of the revenue sources identified by county road officials. A bond is a written promise to pay a specified sum of money, called the face value (or par value) at a specified date or dates in the future, together with periodic interest at a specified rate (Strawder). The payment is guaranteed by the county government and secured by its general revenues. A few counties reported the use of bonds however, the revenue generated contributed to less than 5 percent of their road budget.

The major strengths of bonds are their stable revenue source and the county's ability to maintain control over their road program while financing improvements. However, there are two main weaknesses to using bonds. Bonds reduce the flexibility of future revenue. Counties are committed to the future projects they are financing with bonds. Also, counties using bonds will increase their interest payments, which reduces monies available for other projects.

### ***Cost Participation***

One county official from Minnesota did report the use of cost participating. It was indicated that a county board adopts projects and agrees with other agencies to pay toward total costs. For example, counties may contract with municipalities to help cover the cost of work completed by counties, e.g., proper drainage or fixing storm sewers. Because municipalities would share in the benefit of some of the improved maintenance, they also share some of the costs. The use of cost participating may be an excellent future approach for counties to continue the implementation of road improvements.

### ***Traffic Violations***

Some counties are directing the funds received from traffic violations such as "driving under the influence," to the county road budget. The major strength with this method is the low administration fee. The fee/fine is paid to the county and can be placed in the roads budget. The major weakness of relying on fees and fines is that there is no revenue certainty. Furthermore, smaller counties with low population densities may seldom receive revenue from fines such as DUI.

### ***Telephone Tax***

One county in South Dakota reported the use of a telephone tax to help support their county road budget. A city owned telephone company contributes a certain percentage of the tax it collects to the county road fund. There is no statewide statute enforcing this contribution. There is some revenue certainty as long as a certain percentage is allocated to the roads fund. However, because the telephone tax is not under legislation, the changes could be made to redirect the generated revenue to other avenues.

### **Cost Reducing Strategies**

Reducing costs is another strategy county road officials may consider to increase road funds. Reducing costs is the result of managing services and resources more efficiently. Since each county only has an allotted amount of revenues to meet the demands placed on the system, any cost savings would leave more funds for further uses. County road officials were asked to list and explain any cost reducing strategies they are implementing and any potential cost reducing strategies worth investigating. In all, counties listed 14 strategies to reduce costs. The responses may be categorized into service or management strategies.

### ***Service Strategies***

Eight of the cost reduction suggestions were categorized as service strategies, e.g., reduce maintenance. Two of the service strategies, the use of chip seal and use of soil stabilizers involve the

use of additives/products on the roads (Table 3.3). A chip seal typically consists of a single application of an emulsified asphalt. After the emulsion is applied, it is immediately covered with a layer of uniform size aggregate. A pneumatic-tired (rubber) roller is used to embed the aggregate into the asphalt emulsion. A chip seal can provide a durable, low cost, all weather surface if constructed properly (Kercher).

The use of soil stabilizers may be an effective surface treatment alternative for certain gravel and dirt roads. The additives are mixed with existing surface material to provide bonding and sealing properties. Some of the chemical additives actually harden unpaved road surfaces to yield an effect similar to paving and may help reduce maintenance costs. Road surfaces treated with these additives would endure damage from traffic and weathering.

Other service strategies include: reducing level of maintenance, decreasing the width of roads, closing roads and bridges, and converting paved roads back to gravel (Table 3.3). All these strategies relate to actual reductions in road services. Reducing the level of maintenance, i.e., blading, may be possible on roads with very low traffic volumes. However, adequate maintenance must be performed so passengers are not subjected to hazardous road surfaces. Some counties are reducing road maintenance to the point of declaring minimum maintenance roads for roads with occasional or intermittent travel.<sup>4</sup> Furthermore, some counties may be able to reduce the width of their roads, which

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<sup>4</sup>See Welte, Peter, Jill Hough, and Ayman Smadi. *Legal Implications to Closing or Reducing Maintenance on Low Volume Roads in North Dakota*. MPC Report 97-69, Mountain Plains Consortium, North Dakota State University, 1997. for North Dakota's proper procedures to declare a minimum maintenance road.

would reduce the amount of materials, e.g. gravel needed on the surface. The safety of motorists and vehicles must be considered to ensure that adequate operating conditions are provided.

Some counties are even taking reductions in maintenance one step further by closing roads and/or bridges. Originally, roads were built approximately one mile apart to provide access to farms. Shifts in the agricultural industry to fewer and larger farms and shifts in overall traffic patterns have reduced the need for the extensive road network that counties and townships are required to maintain. Road closures and bridge closures can significantly reduce the road budget requirements. However, counties or townships implementing road or bridge closures must be certain to follow the appropriate procedures to avoid potential tort liability cases (Welte, Hough, and Smadi).

Converting paved roads back to gravel roads is another possible service strategy counties may implement to reduce their costs. Before selecting such a strategy, counties must evaluate the costs of a paved road versus the costs of a gravel road. A life-cycle cost analysis is recommended in which the maintenance costs and the user costs are calculated. The traffic volume on the road will greatly affect the costs of maintaining the road and the benefits received from a certain type of road. Roads with higher traffic levels would be more likely to justify the continuation of a paved road than roads with low traffic.

User costs may be considered in a life-cycle cost analysis. These costs include vehicle operating costs, opportunity costs due to travel time and delays, and accident costs. User costs are typically higher on gravel roads than on paved roads due to lost travel time from moving at slower speeds and the increased vehicle maintenance costs due to wear and tear on the vehicle. In a North

Dakota case study analysis, user costs were found to significantly increase the total gravel road costs.

However, only roads with high traffic volumes (greater than 300 average daily traffic) justified paving.<sup>5</sup>

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<sup>5</sup>Hough, Jill, Ayman Smadi, and Lance Schulz. *Gravel Shortage Options*. MPC Report 96-65, Mountain Plains Consortium, North Dakota State University, 1996.

TABLE 3.3. Current Strategies Used to Reduce Costs

<b>Service Strategies</b>	<b>Management Strategies</b>
Chip seal	Consolidate use of equipment
Use of soil stabilizers	Reduce number of employees
Reduce level of maintenance	Share county engineers
Blade roads less	Improve management practices
Shorten width of road	Joint projects between cities and counties
Close roads	Require cost benefit analysis for each project
Close bridges	
Convert paved roads back to gravel	

***Management Strategies***

Careful management of resources is another way counties can reduce costs. Sharing equipment and reducing the number of employees were mentioned in the surveys. Counties working together and sharing equipment can reduce costs. The purchase of road equipment can be an expensive investment, particularly for equipment that is used only on a seasonal basis (e.g. snow plows). The drawback to consolidating the use of equipment or jointly purchasing equipment is the loss of control. Contracts and agreements are needed in case both counties or entities want to use the same piece of equipment at the same time. These arrangements will enable a good working relationship between entities.

Reducing the number of employees, sharing county engineers, or reducing the management in the Departments of Transportation require changes in resource allocation or specialization of employment positions. If a position can be reduced while the same amount of work is completed, counties will benefit, however, employee morale must be monitored so to keep a positive work

environment. Counties reducing the number of employees may begin to contract out more jobs. Use of contract employees may lighten the managerial burden or save money that would otherwise have to be paid in employee benefits and salaries.

Smaller counties with fewer responsibilities may be able to share a county engineer. Each county alone may not have enough resources to support an individual county engineer. However, two counties sharing an engineer can mutually benefit from the expertise of a trained county engineer while keeping their costs to a minimum.

Joint projects between cities and counties is another potential method to reduce costs. Work done to roads that would benefit both the county and the city could justify joint contracts between the two entities including sharing the costs.

County road officials also indicated that requiring a detailed benefit cost analysis for each project could reduce county costs. Counties must collect and maintain detailed data to perform any benefit cost analysis. A project level benefit costs analysis will help counties select the most effective alternative strategy and therefore may save the county significant resources.



## CHAPTER 4

### CONCLUSIONS

The lack of road funding is a national problem. Counties have extensive road networks but lack the funds to maintain these roads to current roadway conditions. County road officials from Colorado, Iowa, Minnesota, Montana, North Dakota, South Dakota, Utah, and Wyoming were surveyed to identify innovative financing and cost reducing strategies they currently are using to address the road budget problems.

As counties identified their funding sources, each method was categorized as traditional or innovative. Most of the counties use the traditional local funding sources of property taxes, fuel taxes, vehicle registration, and mill levy. Yet, nine innovative methods or potential financing methods were identified. Each of these nine methods have similar attributes of the traditional methods. All of the methods discussed have advantages and disadvantages that counties must consider when determining what financing methods to implement.

Counties must carefully consider key criteria before implementing any new financing methods. The important factors to consider include: ease of collection, revenue certainty, inflation sensitivity, public acceptance, and user equity. Public acceptance or approval is a major issue counties must address before they implement a new financing method. It is important that the public is more aware of the need for increased financing to maintain their road system. Furthermore, the public must be informed about the options which could be used to generate the needed revenues. As the public is made aware of their options, they will be able to make more informed decisions about raising revenues

through the different forms of taxes. Some of these methods will require a formal vote to implement the funding source into legislation.

Four innovative financing methods were recognized to contribute significantly to the overall county road budgets. These four innovative methods include a county-wide sales tax, a special ownership tax, a wheel tax, and a rural improvement district tax. Each of these methods would be relatively easy to administer and collect. However, public opposition may prevent any of them from being enacted into legislation.

Currently, the wheel tax and the rural improvement district tax are not widely used. Only South Dakota counties reported the use of the wheel tax. South Dakota counties cannot implement a county fuel tax so they rely on the wheel tax to generate enough revenue for road improvements. The main criticism with the wheel tax is that it does not fairly tax the users of the road since each vehicle is taxed the same regardless of the weight or miles traveled. The wheel tax is a method that counties can consider implementing to generate additional road revenue.

One county in Montana reported the use of the rural improvement district and one county in North Dakota reported the use of a special assessment district. These methods are similar and may become more popular as counties become more urbanized through the development of additional subdivision. The development of these subdivisions places additional demands on any county's limited road budget. Most counties do not have the financial resources to increase maintenance on the rural subdivision roads as residents may demand. Therefore, a rural improvement district / special assessment district tax would enable a county to provide the services residents of the subdivision may

require. Before a rural improvement district or special assessment district tax can be implemented, at least 50 percent of the residents must be in favor of it.

Five other potential non-traditional revenue generating methods were identified. They included severance tax, bond, traffic violation fines, cost participation, and a telephone tax. Implementing a severance tax is an attempt to claim revenues from sources that add extra wear and tear to the road system. Counties should closely examine if they have minerals or other products that justify implementation of a severance tax. Although bonds have been used frequently by governmental agencies to generate revenues, according to the survey responses, they do not appear to be widely used at the county level. However, bonds seem to be gaining popularity. A problem with bonds is that counties lose flexibility with future funds because of their future commitment to pay the recipients back. As local government's budgets remain in jeopardy, other agencies may need to cover a certain percentage of the costs of the services they receive. The collection of traffic violation fines is too uncertain for counties to rely on them as a steady source of income. The use of a telephone tax is a non-user based tax and does not benefit the individuals paying the tax therefore, it is more desirable to find sources through which the users of the road pay for the services and improvements they receive.

Cost reducing strategies are equally important for counties to consider increasing road funds. Reducing costs is the result of managing services and resources more efficiently. County road officials identified 14 cost reducing strategies in the questionnaire. Using chemical additives, reducing maintenance, and closing roads were some of the service strategies identified. As long as the chemical additives are used correctly, they may help to preserve the road longer, thereby requiring less

maintenance during the year. If county road officials decide to reduce maintenance or close certain roads with low traffic volumes, it is imperative they follow proper procedures to avoid tort liability.

Management strategies to reduce costs also were identified. Consolidating the use of equipment or sharing county engineers were strategies some counties are currently using. Reducing the number of employees and conducting joint projects between counties and cities were among the strategies identified. In addition, the use of benefit cost analysis may help reduce costs by eliminating those projects which do not meet cost-effectiveness requirements. Road officials need to keep detailed data on road segments in order to conduct the analysis.

As more counties find new ways to combat the funding shortage, it is important that county road officials be informed on financing strategies being used in other counties or other states. The Federal Highway Administration (FHWA) publishes an Innovative Financing Newsletter. For a subscription to this newsletter, contact:

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### **Need for Further Research**

The need for additional funding at the local level is a continual problem. It may be beneficial to conduct a national study applying the lessons learned from this study to determine how the local governments in the other states are financing their road budgets.

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