



# RESEARCH

2007-16

## A Synthesis of Research and Resources on Local Road and Bridge Funding for Local Public Works Officials



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## Technical Report Documentation Page

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# A Synthesis of Research and Resources on Local Road and Bridge Funding for Local Public Works Officials



March, 2007

Prepared by Bonestroo  
For the Minnesota Local Road Research Board



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# Introduction

Each year, literally thousands of books, articles, reports, policy studies, data bases and analytical tools are published or prepared by practitioners, analysts, and academics all over the world on the subject of local road finance. All of this research is conducted with one primary purpose in mind: to share information, data, and experience with people interested in addressing their own jurisdictional transportation infrastructure needs. While these resources are available through a variety of formats, their sheer volume can be daunting for a local official hoping to benefit from the research.

This project, sponsored by Mn/DOT's Research Services Section, is an effort to identify the most relevant, useful, and applicable research on local transportation finance issues for local government practitioners in Minnesota. The editor, working with staff of the Mn/DOT Library, has reviewed hundreds of documents and other resources in an effort to identify those that have the most potential to directly assist local officials through better understanding of current and alternative funding policies, better awareness of existing analytical tools and other resources, and greater familiarity with available funding sources and procedures.

The editors recognize that the resources identified on this list cannot be all inclusive, and will be missing certain items that others would consider relevant and critical. We suggest that this report should be considered a flexible document that can add or subtract items as conditions and circumstances change over time.

To simplify the task for users, resources identified in this report have been listed under the broad and topical categories listed below.

Under the broad category of "Funding System / Options":

1. Existing Funding System
2. Existing Federal and State Funding Options
3. New ("Innovative") Funding Strategies

Under the broad category of "Advocacy Tools":

4. Advocacy Reports
5. Infrastructure Condition Reports
6. Local Needs Assessment Studies
7. Historical Revenue and Expenditure Trends
8. Analytical Tools

Under the broad category of "Benefits of Local Transportation Infrastructure Investments":

9. Benefits of Local Transportation Infrastructure Investments
10. Minnesota Academic Studies
11. Funding Reform Initiatives

Each resource identified contains the author or organization who prepared the resource document, along with a citation or other useful information to assist the user in gaining access to the information. In addition, we provide an abstract or brief description of each resource in which we also describe how the resource might be of specific value to Minnesota local officials. In the section in which existing funding sources are identified, we have also included contact information to get additional details on the program.

Finally, some of the resources identified in this study suggest (either directly or indirectly) the potential need for additional research. To facilitate additional discussion on potential research ideas, the editor recommends consideration of the items contained in a gray box, as shown in the first recommendation, below.

**Potential additional research: Mn/DOT's Research Services Section and the LRRB should evaluate the effectiveness of this document in terms of its usefulness to local officials, and consider updating it on a semi-regular basis, perhaps once every two years.**

# I. FUNDING SYSTEM / OPTIONS

## 1. Existing Funding System

An abundance of work has been conducted in recent years by Mn/DOT and others to provide information for policy leaders, the media and interested citizens intended simply to answer the question, “How is state and local transportation infrastructure funded in Minnesota?” Because many of these documents cover the same ground, this report identifies just some of the most recently published resources. These will be useful for persons interested in familiarizing themselves with the fundamentals of transportation funding in Minnesota.

✚ **County State Aid Highway (CSAH) Apportionment Data Annual Reports; Municipal State Aid (MSA) Apportionment Data; and Municipal Screening Board Data annual reports.**

Minnesota Department of Transportation State Aid for Local Transportation Division. Go to <http://www.dot.state.mn.us/stateaid/>.

Abstract: Mn/DOT’s State Aid for Local Transportation Division manages state aid programs to finance local bridges, the County State Aid Highway system, and the Municipal State Aid system. There are scores of useful documents and other resources on their website, but a notable resource is their annual reports on apportionment data for the two large state aid programs for roads that they oversee, the CSAH Apportionment Data annual report and the MSA Apportionment Data annual report. These reports, along with other supporting and related resources such as the Municipal Screening Board Data, are very useful to anyone seeking information on how these aid systems work.

✚ **Funding Minnesota's Network of Local Roads and Bridges**

Minnesota Department of Transportation, State Aid for Local Transportation Division. 2002. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: This publication is a concise brochure that clearly explains in layman’s terms how the state and local transportation system is funded in Minnesota. This brochure can be distributed at local hearings or other public meetings addressing local transportation funding.

✚ **Minnesota Transportation Financing – Background and Resource Review**

Minnesota Department of Transportation. June 28, 2004. This “white paper” is available through the Mn/DOT library. (651) 366-3791

Abstract: This publication provides a reasonably detailed level of information on state and local road and bridge funding issues in Minnesota, including existing highway user funds, the mechanics of federal highway funds, bonding, and other less traditional funding sources. It also covers other “current” issues related to state and

local road funding such as taxes on alternative fuels, the effect of funding from the sale of new hybrid vehicles, and Mn/DOT efforts to “streamline” project delivery.

✚ **Legislative Study of State Funding for Local Road Improvements.**

Minnesota Department of Transportation State Aid for Local Transportation Division. 2002.

Abstract: The 2001 Minnesota Legislature directed Mn/DOT to conduct this study of alternative methods of funding needed local road improvements. This report provides excellent background information on the existing local road funding system, available revenue sources, and most importantly a recommendation for a new state program called the Local Road Improvement Program, which was implemented in 2002.

✚ **Funding Street Construction and Maintenance in Minnesota Cities – Providing the tools to help cities preserve their road and bridge capital assets**

The Transportation Policy Institute. January 2003.

Abstract: The report contains information on municipal road and bridge funding in Minnesota’s 854 cities. This report was prepared to provide information to policy makers and citizens of the state on the workings of road and bridge infrastructure investment in Minnesota cities. The report has two stated objectives: 1) to provide a resource for policy makers, city officials, citizens, the news media and others on issues related to city road and bridge infrastructure and funding, and 2) to propose seven specific legislative strategies to address the funding challenges identified in the report.

✚ **The Fuel Tax and Alternatives for Transportation Funding.**

Transportation Research Board of the National Academies – Special Report 285. 2006. This report is available through the Mn/DOT library, (651) 366-3791. Or go to <http://onlinepubs.trb.org/onlinepubs/sr/sr285.pdf>

Abstract: This resource represents one of the most current and best national documents covering a broad spectrum of issues related to local road and bridge finance. Chapter 2 includes a description of present federal, state and local highway and transit finance arrangements, funding sources, and trends in finance practices. The chapter considers whether the viability of the present finance system is threatened by trends in reliance on user fees, legislative adjustments to fees, or revenue yield.

## **2. Existing Federal and State Funding Options**

Although most funding for city and county road and bridge construction in Minnesota comes from local “own source” revenues, there are a wide variety of funding sources from federal, state, and regional entities. These programs are typically competitive, “grants-in-aid” style programs that provide funding for a specific program or project category. Not surprisingly, the complexity and sheer magnitude of the available funding sources makes it difficult for most local officials to know the full range of options available to them. This section provides basic information about where to go to find

critical information on program descriptions, eligible projects, information on program timing and application schedules, and contact information on these programs.

**Potential additional research:** Prepare a manual or searchable data base incorporating information on local road and bridge funding sources, and update the data base regularly to provide access to the most current information on these revenue sources on an ongoing basis.

## ***Federal Funding Sources***

The current federal transportation finance act known as SAFETEA-LU designates many federal funding sources available to meet state and local transportation infrastructure needs, including improving safety, reducing traffic congestion, improving efficiency in freight movement, and increasing intermodal connectivity. This section of the report is intended to provide some very brief background information on some of the programs that are available to local units of government, and contact information to learn more about applying for these funds.

### **Surface Transportation Program (STP)**

#### Summary / Contact Information

The Surface Transportation Program provides flexible funding that may be used by states and localities for projects on any Federal-aid highway, including the National Highway System and bridge projects on any public road. Most, but not all, of these funds are used for improvements to the state trunk highway system. In the 7-county metro area, the best contact is the Metropolitan Council – see [www.metrocouncil.org](http://www.metrocouncil.org); in Greater Minnesota, the best contact is the Mn/DOT District Engineer, whose contact information is available at <http://www.dot.state.mn.us/>. (The link will take you to the Mn/DOT home page, then click on the appropriate district on the Minnesota map labeled “District Offices” on the left side of the page.)

### **Transportation Enhancements (TE)**

#### Summary / Contact Information

The Transportation Enhancements Program typically provides funding for projects and programs that “enhance” existing transportation infrastructure. These can include bike and pedestrian facilities, landscaping and other scenic improvements, and historic preservation. In the 7-county metro area, the best contact is the Metropolitan Council – see [www.metrocouncil.org](http://www.metrocouncil.org); in Greater Minnesota, the best contact is the Mn/DOT District Engineer, whose contact information is available at <http://www.dot.state.mn.us/>. (The link will take you to the Mn/DOT home page, then click on the appropriate district on the Minnesota map labeled “District Offices” on the left side of the page.)

## ***State Funding Sources***

The State of Minnesota provides resources to its local governments through various state aid programs (most notably the County State Aid Highway program for counties, and the

Municipal State Aid program for cities over 5,000 population). Information on these programs is available by visiting the Mn/DOT State Aid for Transportation Division website at <http://www.dot.state.mn.us/stateaid/>. Other state administered programs that might be of interest to local officials are described below.

#### **Municipal (or Cooperative) Agreement Program**

##### Summary / Contact Information:

This program provides funding to construction projects that are initiated and administered by local units of government and provide a benefit to both the local community and the trunk highway system. These funds are intended to pay for a portion of the construction costs of the project. Mn/DOT's participation in these projects is based on eligibility as determined in Mn/DOT's "Cost Participation Policy". Applications for funding through this program are typically submitted in mid-October each year in the metropolitan area. In Greater Minnesota, these funds may be applied for at anytime of the year. Go to:

<http://www.dot.state.mn.us/metro/stateaid/cooperat.html>.

#### **Local Road Improvement Program**

##### Summary / Contact Information:

This program provides state bonding funds to provide funding assistance to local agencies to finance construction, reconstruction, or reconditioning projects on locally owned road systems. The program is a competitive grant program, typically rewarding funds to projects that provide a regional benefit to the transportation network. Depending on appropriation levels determined by the state legislature, the program can provide grants to cities from three accounts, representing three project types: 1) the Trunk Highway Corridor Projects Account, 2) the Routes of Regional Significance Account, and 3) the Rural Road Safety Account. The contact person at Mn/DOT is Patti Loken (651) 366-3803. Go to

[http://www.dot.state.mn.us/stateaid/res\\_local\\_road\\_improvement.html](http://www.dot.state.mn.us/stateaid/res_local_road_improvement.html).

#### **Local Bridge Replacement Program**

##### Summary / Contact Information:

Mn/DOT State Aid for Local Transportation administers this program which provides state general obligation bond funds for local bridge replacement and rehabilitation costs. The contact person at Mn/DOT is Patti Loken (651) 366-3803. Go to:

[http://www.dot.state.mn.us/stateaid/res\\_local\\_bridge\\_replacement.html](http://www.dot.state.mn.us/stateaid/res_local_bridge_replacement.html).

#### **Comprehensive Highway Safety Plan (CHSP)**

##### Summary / Contact Information:

The Mn/DOT Office of Traffic, Security and Operations administers this program which provides grants to assist counties in conducting road safety audits and for paying the costs of constructing safety projects or funding activities to reduce the number of fatal and severe crashes on local roads. Go to:

<http://www.dot.state.mn.us/trafficeng/safety/chsp/2006county.html>

## **Railroad Grade Crossing Safety Program**

### Summary / Contact Information

Mn/DOT's Office of Freight and Commercial Vehicle Operations (OFCVO), Rail Section administers this program which works with local governments to identify possible railroad grade crossing safety projects for inclusion in the State Transportation Improvement Program (STIP). The contact person at Mn/DOT's Office of Freight and Commercial Vehicle Operations is Julie Carr. (651) 366-3651. Go to: [www.dot.state.mn.us/ofrw/PDF/Rail\\_safety.pdf](http://www.dot.state.mn.us/ofrw/PDF/Rail_safety.pdf)

## **Greater Minnesota Business Development Infrastructure Grant**

### Summary / Contact Information

This project is administered by the Minnesota Department of Employment and Economic Development (DEED). This program allows cities outside the seven-county metro area to apply for grants for up to 50 percent of the capital costs of any public infrastructure necessary to expand or retain jobs in the area, increase the tax base, or expand or create new economic development. Street improvement projects which support economic development projects including manufacturing, technology, warehousing and distribution, research and development, and agricultural processing. Go to: <http://www.deed.state.mn.us/community/BDInf/>.

**Potential additional research:** Conduct an evaluation of the effectiveness of specific programs. How were the funds used? What safety and mobility benefits resulted from funded projects? How could the program be improved?

## **3. New (“Innovative”) Funding Strategies**

It is essential that local officials have current and complete information on all of the revenue options available to them, including less “traditional” resources. The resources listed below describe some of these resources that may not currently be in wide use throughout Minnesota, but that may become more prevalent in the future. Some of the funding sources discussed in these publications are not currently authorized by the state legislature for local use, so understanding the capability of these programs as applied elsewhere may help local officials to develop strategies to promote these tools.

### ***General Local Road Funding***

-  **Proceedings of the Conference on Evaluating Alternative Local Transportation Financing Techniques.** Transportation Research Board Special Report No. 208 Publisher: Transportation Research Board. 1985. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: Although this document is dated, it remains a very good resource for people interested in learning more about many of the tried and true resources available for local road and bridge funding, as well as financial planning strategies to

get the most value of available funds. The materials were provided at a conference on local transportation finance to an audience of local officials, planners, transportation managers, and financing specialists. Its purpose was to consider the issues associated with evaluating alternative financing techniques. The conference's major topics were: (1) financial planning and its relationship to the urban transportation planning process; (2) revenue sources for financing local transportation; (3) financial planning techniques; and (4) packaging and implementing the financial plan. Some traditional alternative financing sources are user fees, nonuser fees, special benefit fees, private financing, debt financing, private property utilization, special revenues, and enhancing the revenue picture (e.g., contracting services, budget indexing, terminating exemptions, and cash flow management). The report contains a series of presentations reviewing real world examples of successful financing techniques applied in cities around the country.

## ***Rural Road Financing***

- ✚ **Innovative Financing Methods for Local Roads in the Midwest and Mountain-Plains States.** Hough, J.A., Smadi, and Bitzan. North Dakota State University, Upper Great Plains Transportation Institute, Fargo, ND. 1997. This publication is available through the Mn/DOT library. (651) 366-3791.

Abstract: Typically, local governments have relied on fuel taxes, property taxes, vehicle registration fees, and mill levies to finance road maintenance and improvements, but these 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 have used. Advantages and disadvantages to rural improvement districts/special assessment districts and the wheelage tax are discussed in this report.

- ✚ **Rural Road Financing Strategies – Two New Models Applied to North Dakota Counties.** Bitzan, Tolliver, and Zink. Mountain-Plains Consortium, North Dakota State University. 1992. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: The quality of rural roads and bridges is deteriorating rapidly, and the migration of rural residents to urban counties is resulting in a lower tax base in rural areas. Local officials face a choice of increasing local finances for the maintenance and rehabilitation of rural roads and bridges, consolidating road services with other localities, or abandoning and reducing maintenance of some roads and bridges. This study examines consolidation of road services by local governments, and explores the optimal mix of roads for rural counties. It may be useful to those interested in analyzing the economic impact of road and bridge infrastructure in rural areas of the state.

 **Financing and Maintaining Low Volume Roads in the Midwestern United States.**

Walzer and Chicoine. Transportation Research Record Vol. 1 No. 1106. 1987.

Abstract: Although this report is dated, it contains some very good information with respect to the challenges faced today by road and bridge engineers in rural Minnesota. The report discusses challenges associated with maintaining the roads and bridges that are needed to serve rural regions and the agricultural industry, including heavier and larger farming equipment, which has placed greater load-bearing requirements on low-volume roads and bridges. Weakened property tax bases and shrinking federal and state intergovernmental assistance are resulting in stringent fiscal conditions for responsible local rural governments. Four issues are examined in this paper: 1) the uses of rural roads by the farm sector; 2) the condition of roads and bridges, 3) the principal revenue sources that fund rural roads and bridges; and 4) policy options to address the rebuilding of rural road systems. A key conclusion of the report is that many local rural governments do not have the fiscal capacity to make needed improvements without financial help from states and the federal government, which is true today. This publication is available through the Mn/DOT library. (651) 366-3791

## ***Local Option Tax Authority***

 **Local Option Transportation Taxes in the United States. Part Two: State-by-State Findings.**

Goldman, T., Corbett and Wachs. University of California, Berkeley, Institute of Transportation Studies. Berkeley, CA. 2002-2003. This publication is available through the Mn/DOT library, (651) 366-3791.

Abstract: This study examines the extent to which states have authorized local governments to levy "local option taxes" to generate additional funding for local transportation needs. The purpose of the study is to generate a baseline of knowledge on "local option transportation taxes" in all fifty states, including the relevant legislative authority for these taxes, the extent to which local areas have adopted them, and the roles they play within their states' overall transportation finance frameworks. The report presents findings for each state in three sections: 1) a descriptive summary of the role of local option taxes in the state's system of transportation finance; 2) a table detailing the laws governing local option taxes in each state; 3) a table detailing the available data on local tax rates, revenues, and uses.

 **A Quiet Revolution in Transportation Finance: The Rise of Local Option Transportation Taxes.**

Goldman, T., and Wachs. Eno Transportation Foundation, Washington, D.C. Transportation Quarterly. 2003. This publication is available through the Mn/DOT library, (651) 366-3791.

Abstract: During the 20th century, the United States built a partnership for financing surface transportation infrastructure that included local, state and federal

expenditures, and relied heavily on user charges to cover the costs of these investments. This paper examines recent changes in the nature of this partnership that are significant, but rarely noted. Policymakers are passing down fiscal responsibility from federal and state to local governments, by increasingly authorizing the use of local option transportation taxes. This trend substitutes general taxes for user fees and charges, and shifts decisions about major transportation projects into the electoral and legislative arena.

## ***Bonding***

- ✚ **Highway Bonds: An Emerging Option for Increasing Highway Financing.**  
Howard, T. Federal Highway Administration. "Public Roads" Vol. 58 No. 4. 1995.  
Go to <http://www.tfhrc.gov/pubrds/pubrds.htm>

Abstract: An urgent need for investment in transportation capital infrastructure improvements is encouraging transportation officials at the state and local levels to explore various financing options. Bond issuance is an option that has gained significantly in popularity as more traditional, user based resources have diminished relative to needs. This article teaches the basic concepts of highway bond issuance in a question-and-answer format. This article examines appropriateness of highway bond financing – along with other available financing options – to determine the revenue potential, equity, efficiency, and political acceptability. This article will be of benefit to local officials who are interested in learning more about the various bonding tools and implications of their usage.

**Potential additional research:** To what extent are local units of government relying on borrowing to finance local road and bridge construction? What impact is the trend in local borrowing having on the level of funding available for ongoing maintenance and other road and bridge expenditures?

## ***Developer Fees***

- ✚ **Development Impact Fees for Minnesota? A Review of Principles and National Practices.**

Adams, John. Report #3 in the Transportation and Regional Growth Series.  
University of Minnesota Center for Transportation Studies. 2003.

Abstract: This report explores the social, economic, and legal bases for imposing development impact fees, a type of development exaction imposed by local governments in some states. It introduces the concept of charging for infrastructure and outlines the basic issues. It describes the history of financing public improvements, leading to the imposition of impact fees. The report outlines the advantages and disadvantages of using impact fees as a financing mechanism in which new growth pays its own way. Methods of calculating impact fees are explained and examples of fee usage around the country are included, including cases from the Twin Cities of Minneapolis and St. Paul.

- ✚ **An Innovative Approach to Transportation Infrastructure Financing.**

Tadi, R R., and Murthy. International Road Federation. Washington, DC. 2004. Go to <http://www.irfnet.org/>.

Abstract: The developer fee concept has been successfully used in many states across the United States to fund various transportation related infrastructure construction projects. The main objective of this paper is to present a unique approach used in calculating transportation related infrastructure fee for two U.S. cities, Fontana and Montclair in California. This paper may be useful to analysts attempting to derive a “fair” schedule of developer fees justifiable by forecasting of future traffic generation, and projected costs of mitigation required to maintain level of service in the area due to the anticipated development. The results of extensive modeling and mitigation studies conducted in setting up the developer fee program are described in this paper.

## ***Street Utility***

 **An Assessment of the Street Utility in Six Minnesota Cities.** Transportation Policy Institute. Saint Paul, Minnesota. 2004. This publication is available through the Mn/DOT library. (651) 366-3791.

Abstract: A policy recommendation from a 2003 Transportation Policy Institute report entitled *Funding Street Construction and Maintenance in Minnesota's Cities* was that the legislature should grant authority to Minnesota cities to establish a “street utility” to generate additional revenue to finance a portion of their local road maintenance costs. The authorization of a street utility would allow cities to generate revenue by assessing a fee to property owners based on the anticipated traffic generated by their specific land use. This report provides the findings from an assessment of the potential financial impact of a street utility on property owners in six representative Minnesota cities if a street utility were enacted. The report provides information on how to derive an estimate of the impact of a hypothetical street utility in these cities, which can be applied to other cities.

## II. ADVOCACY TOOLS

### 4. Advocacy Reports

Many local officials and other transportation advocates rely on transportation infrastructure funding information to create their own reports, which are then used to educate and persuade policy makers of the need for additional funding or expanded local revenue generating authority. The reports listed below are examples of this type of resource, which may be useful to local officials to generate ideas, as models for their own reports, or simply to better understand the issues addressed in the reports.

#### **The End of the Road: Challenges of Funding Minnesota's Local Road and Bridge Network.**

Prepared by Bonestroo on behalf of the City Engineers Association of Minnesota, the American Public Works Association – Minnesota Chapter, the League of Minnesota Cities, and the Minnesota County Engineers Association. 2007. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: This report is a bound PowerPoint presentation and is intended to address the most commonly asked questions concerning the challenges Minnesota's county and city governments address in adequately financing their state aid and local road and bridge systems. The report provides answers to the following questions: What does the local road network consist of?; What is the state's historic role in financing local roads?; How has the function of the local road network changed over time?; What are the key challenges to sufficiently funding the local road system?; How large is the funding gap?; What have been the implications of the funding shortfall on road conditions?; How have local governments responded?; How has the state responded?; and What must be done to address these needs?

#### **Minnesota's Transportation System: Our Future is Riding On It**

The Minnesota Transportation Alliance. 2007. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: This report, prepared by one of the leading advocacy groups promoting additional state and local transportation funding in Minnesota, focuses on many of the issues concerning the impact of the funding shortfall in terms of congestion, roadway safety, pavement condition, and economic impacts. One section that local officials would find useful is a summary of state and local funding initiatives that are underway in other states around the country.

#### **Managing Growth in Scott County: Challenge or Opportunity? – An Examination of Scott County's Transportation Project Needs and Programming Strategies for 2020 and Beyond**

Bonestroo. June 2006. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: This report is an initiative of Scott County Association for Leadership and Efficiency (SCALE), and represents a multi-jurisdictional effort to develop a long-range transportation vision for the County that efficiently manages the high level of

population growth and development that will occur in the County. The project was conducted in coordination with the Scott County's 2030 Comprehensive Plan update in October and November of 2005. Its focus: to consider what Scott County's transportation network should look like by 2020 and 2030, and to identify specific implementation strategies on how to get there. This resource would be useful for other local governments considering their own long range transportation planning strategies.

 **Funding Street Construction and Maintenance in Minnesota Cities – Providing the tools to help cities preserve their road and bridge capital assets**

The Transportation Policy Institute. January 2003. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: The report contains information on municipal road and bridge funding in Minnesota's 854 cities. This report was prepared to provide information to policy makers and citizens of the state on the workings of road and bridge infrastructure investment in Minnesota cities. The report has two stated objectives: 1) to provide a resource for policy makers, city officials, citizens, the news media and others on issues related to city road and bridge infrastructure and funding, and 2) to propose seven specific legislative strategies to address the funding challenges identified in the report.

 **Funding a Balanced Roadway Construction Program in Lake County**

The Transportation Policy Institute. 2001. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: This report was prepared at the request of the Lake County Highway Department who sought information on road and bridge infrastructure needs within their own county. The report was used to educate citizens, County Board members and others on the existing road and bridge infrastructure, how it is currently funded and the unfunded needs that exist on the County's 366 mile and 141 bridge transportation network. The report contains an estimate of the County's funding shortfall, using a life cycle cost analysis methodology. This methodology may be duplicated in other jurisdictions to derive an estimate of unfunded needs.

 **Minnesota Road Transportation Needs Assessment Study – Annual Reports**

The Transportation Policy Institute for the Highway Construction Industry Council. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: Each of the annual reports published in the years 2000 through 2004 provide useful background information on the state and local transportation funding system, and an assessment of the unfunded needs on each system is derived and reported. Each annual report focuses on specific issues (including funding options) that were significant during that timeframe, as the Minnesota Legislature was considering various policy options.

## 5. Infrastructure Condition Reports

Reporting on the condition of local road and bridge infrastructure is often an effective means of evaluating local transportation needs. Local officials must have access to this information in order to effectively make the case for additional resources. The Government Accounting Standards Board Rule 34 (GASB 34) was established primarily as an accounting requirement to quantify the value (and depreciation) of capital infrastructure. As a result, many analysts and practitioners conduct infrastructure conditions studies in order to communicate the value of these investments to the taxpayer. The resources identified below offer information and data on both a national scale as well as more localized reports.

### ***National / General Perspective***

#### **✚ Status of the Nation's Highways, Bridges and Transit: Conditions and Performance Annual Studies**

Federal Highway Administration. Most recent study for 2004. Go to <http://www.fhwa.dot.gov/policy/2004cpr/es01.htm>.

Abstract: USDOT submits biennial reports to Congress that project the effects of alternative levels of highway capital spending (for all levels of government) on highway performance and highway user costs (travel time, vehicle operating costs, and accident costs). The USDOT *Conditions and Performance* studies indicate that the direct benefits to highway users of additional capital spending for highway system preservation and expansion would exceed the cost to the government and that spending would have to expand to a level substantially greater than present spending before highway agencies ran out of worthwhile projects. The main body of the report is organized into five major sections: I) "Description of Current System," includes the core retrospective analyses in the report, including chapters on the role of highways and transit, system and usage characteristics, physical conditions, operational performance, safety performance, and finance; II) "Investment/Performance Analysis," includes the core prospective analyses of the report, focusing on two 20-year scenarios for highways, bridges, and transit systems; III) "Special Topics; IV) "Supplemental Analyses of System Components," ; and V) "Afterword: A View to the Future," identifies potential areas for improvement in the data and analytical tools used to produce the analyses contained in this report, as well as describing ongoing research activities.

#### **✚ An Assessment of our National Infrastructure Strategy.**

Edward C Gully. Carlisle Barracks, Pennsylvania. U.S. Army War College. 2006  
This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: The purpose of this paper is to evaluate our existing national infrastructure investment strategy. It reports on the condition of the nation's infrastructure, asserting that the American Society of Civil Engineers recently graded the overall condition of the nation's infrastructure as a "D", down from a "D+" just four years ago. This resource might be useful to analysts looking to place the nation's unfunded transportation infrastructure needs in context.

✚ **Annual Urban Mobility Report Series.**

Texas Transportation Institute, Texas A&M University. Shrank, David, and Tim Lomax. Go to <http://mobility.tamu.edu>.

Abstract: This report series is the most widely referenced resource on issues related to urban congestion issues in the 75 largest U.S. metropolitan areas. The data in this series date back to the early 1980s, comparing congestion data for the Twin Cities metropolitan area to the 75 largest urban areas in the nation. Recent reports in the series also identify and evaluate the effect of a number of congestion relief strategies.

✚ **Rural Roads and Bridges: A Comprehensive Analysis.**

Deller and Walzer. Agricultural Marketing Service, Washington, DC. 1997; published by the U.S. Department of Agriculture. This publication is available through the Mn/DOT library. (651) 366-3791; or go to <http://www.usroads.com/journals/rmej/9805/rm980503.htm> for partial posting of this report.

Abstract: This report analyzes the condition and financing of local transportation networks and updates the national database, identifies current conditions, issues and patterns. The report is organized into six chapters: 1. details the status and condition of both county and town maintained roads and bridges; 2. examines the condition and surface of local roads in rural areas; 3. examines the condition of local bridges; 4. examines financing issues, including sources of revenue used to maintain roads and bridges and the amounts spent providing those services; 5. discusses a broad range of concerns and policy issues facing county and town road officials and 6. summarizes the findings of this study, examines policy issues that local transportation administrators face and suggests a set of possible policy options which might be initiated.

## ***Truck Size and Weight***

✚ **Minnesota Truck Size and Weight Project – Final Report**

Cambridge Systematics. 2006. Go to: [http://www.dot.state.mn.us/information/truckstudy/FR2\\_mndot\\_trucksizeweight\\_complete.pdf](http://www.dot.state.mn.us/information/truckstudy/FR2_mndot_trucksizeweight_complete.pdf)

Abstract: This report summarizes the approach, findings, and recommendations of the Minnesota Truck Size and Weight Project led by Mn/DOT in cooperation with other public and private stakeholders. The purpose of the project is to assess changes to Minnesota's Truck Size and Weight laws that would benefit the Minnesota economy while protecting roadway infrastructure and safety. This report contains substantial data relating to the impact on heavy commercial vehicles on Minnesota's state and local road network.

✚ **Cost/Benefit Study: Spring Load Restrictions**

Voller, Vaughan and Erland Lukanen, David Levinson, Mihai Marasteanu, Xi Zou, Michael Corbett, Ning Li, Maryam Hashami, Brian Smalkoski, Ioana Margineanu for the Local Road Research Board. March 2005. Go to:

<http://www.lrrb.org/pdf/200515.pdf>.

Abstract: While spring load restrictions serve to extend the useful life of the road, they also add significant burdens to truckers who are forced to re-route their vehicles and/or increase the number of trips in order to adhere to the policies. This study assesses the economic impact of lifting all vehicle restrictions during the spring thaw period. Economic benefits of lifting the bans include reduced cost to carriers; potential costs include reduced pavement life. The principal conclusion of the report is that if the policy is changed to relax spring load restrictions, the costs of additional damage could be recovered from those who use the roads. Recovering those costs could take the form of annual fees, appropriate fuel taxes and/or user charges paid by vehicle operators.

✚ **2000 Spring Load Restrictions Task Force (Minnesota) – Legislative Report.**

By the 2000 Spring Load Restrictions Task Force. February 6, 2001.

Abstract: The objectives of this study were to analyze the current status of spring load restrictions in Minnesota and to explore their economic impacts. The report contains findings and recommendations related to the roadway design and engineering aspects of heavy commercial vehicles, financial impacts, health and safety impacts, enforcement considerations, and regulations and mandates.

✚ **Lies, Damn Lies, and Traffic Forecasting**

Timm, Dr. David H. and Dr. David Newcomb. Hot Mix Asphalt Technology. July August 2002. This publication is available through the Mn/DOT library, (651) 366-3791.

Abstract: In order to design roadways to the appropriate pavement durability, the designer must be able to predict the types and weights of vehicles that will use the roadway over its lifespan. In the past, this has been accomplished using equivalency factors to determine the number of Equivalent Single Axle Loads (ESALs). But as new design methods known as “mechanistic-empirical” or M-E become more common, there is a new push toward using “load spectra”, which uses axle weight data as opposed to load equivalency factors to predict roadway design needs. The use of load spectra as a design tool is gaining support because it takes full advantage of the ability to compute actual pavement stress under specific loading conditions, which is more flexible than the ESALs analysis. This article focuses on changes in traffic characterization from an ESALs based system to a system based on forecasted axle loads.

✚ **1997 Federal Highway Cost Allocation Study – Summary Report.**

Federal Highway Administration. 1997. This report is available through the Mn/DOT library, (651) 366-3791.

Abstract: This report is a study intended to provide information on the costs that various vehicle sizes and weights impose on road and bridge infrastructure. The idea behind the report is that it might be possible to create a more equitable revenue system if vehicles were charged a road user tax that more accurately reflected the costs to repair or maintain road and bridge infrastructure resulting from damage imposed by each class of vehicle. This information might be useful to an analyst interested in pursuing additional information related to finance reform based on vehicle usage, which is especially relevant on local rural roads and other roadways with significant commercial vehicle use.

## **Minnesota Bridges**

### **✚ Minnesota Bridges annual report**

Mn/DOT office of Bridges and Structures – Bridge Management Unit. Go to <http://www.dot.state.mn.us/bridge/>

Abstract: This is a comprehensive analysis of the condition of Minnesota's bridge inventory for all bridges over 10 feet in length for all route systems (Interstate, Trunk Highway, county, city and township). This resource is very useful for analysts looking for historical data on the age, condition, and estimated improvement costs on all state and local bridges in Minnesota.

### **✚ Local Roads Bridge Management Manual.**

George J Giummarra. 2000. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: This resource provides guidelines to good practice for the management of bridge assets, condition assessment, maintenance and repair, and evaluation of major rehabilitation treatments.

## **6. Local “Needs Assessment” Studies**

To build a case for additional funding for local transportation infrastructure, some local officials have made attempts to derive an estimate of their transportation infrastructure needs. This category identifies some of the studies and other tools that have been developed in recent years to report on the level of unfunded needs in the state's local transportation infrastructure.

### **✚ Powerpoint presentation of county roadway needs, 50 year lifecycle.**

Isakson, Greg. Goodhue County Engineer. March 14, 2001 and updates. This publication is available by contacting Greg Isakson at (651)385-3025.

Abstract: Goodhue County Engineer Greg Isakson established a methodology to estimate the unfunded needs on the state's 30,000 mile County State Aid Highway (CSAH) system and the 15,000 mile county road system. This resource will be useful for anyone interested in information on unfunded needs on the county roadway system in Minnesota or to use Isakson's methodology to estimate unfunded needs in another local jurisdiction.

✚ **Le Sueur County Highway Department 50 Year Life Cycle Cost Analysis for State Aid Highways and County Roads.**

Pettis, Darrell. Le Sueur County Engineer. 2001. This resource is available by contacting Darrell Pettis at (507) 357-2251.

Abstract: This document contains a methodology and derivation of Le Sueur County's 50 Year Life Cycle Costs compared to available funding for both the county's state aid highway system and its county road system. The methodology compares the cost of 1 re-grade and pavement treatment and two overlay treatments over a 50 year period compared with anticipated state aid, federal aid, and locally generated revenue over the same time period. This resource would be very useful for others wishing to duplicate the methodology in their own jurisdictions.

✚ **Funding a Balanced Roadway Construction Program in Lake County**

The Transportation Policy Institute. 2001. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: This report was prepared at the request of the Lake County Highway Department who sought information on road and bridge infrastructure needs within their own county. The report was used to educate citizens, County Board members and others on the existing road and bridge infrastructure, how it is currently funded and the unfunded needs that exist on the County's 366 mile and 141 bridge transportation network. The report contains an estimate of the County's funding shortfall, using a life cycle cost analysis methodology. This methodology may be duplicated in other jurisdictions to derive an estimate of unfunded needs.

✚ **Mn/DOT Office of Transportation Data & Analysis**

Go to <http://www.dot.state.mn.us/tda/html/traffic.html>

Abstract: The Mn/DOT Office of Transportation Data & Analysis website is a very useful source of information for local officials looking for traffic data for specific road segments (mostly, but not exclusively, on CSAH and other arterial systems) such as vehicle miles traveled, lane miles by system, heavy commercial average daily traffic, etc. The site also provides information on methods of forecasting traffic on the state and local road system in Minnesota.

✚ **Minnesota Road Transportation Needs Assessment Study – Annual Reports (1998-2003)**

The Transportation Policy Institute for the Highway Construction Industry Council. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: Each of the annual reports published in the years 2000 through 2004 provide useful background information on the state and local transportation funding system, and an assessment of the unfunded needs on each system is derived and reported. Each annual report focuses on specific issues (including funding options) that were significant during that timeframe, as the Minnesota Legislature was considering various policy options.

**✚ Funding Street Construction and Maintenance in Minnesota Cities – Providing the tools to help cities preserve their road and bridge capital assets**

The Transportation Policy Institute. January 2003. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: The report contains information on municipal road and bridge funding in Minnesota's 854 cities. This report was prepared to provide information to policy makers and citizens of the state on the workings of road and bridge infrastructure investment in Minnesota cities. The report has two stated objectives: 1) to provide a resource for policy makers, city officials, citizens, the news media and others on issues related to city road and bridge infrastructure and funding, and 2) to propose seven specific legislative strategies to address the funding challenges identified in the report.

**✚ Needs Assessment for Local Roads and Streets.** Purdue University Indiana LTAP Center. 2001. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: The objective of this study was to investigate the needs of and resources available to local public agencies to construct and maintain their transportation infrastructure. Components of the infrastructure included in the study are roads, bridges and culverts, traffic and traffic safety, and operational and administrative costs. The results of the study indicate that there exists a significant shortfall in funding in most of these areas.

**✚ Deriving Unfunded Needs in Minnesota Cities.** Transportation Policy Institute. July 13 2004. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: This document is a PowerPoint presentation that demonstrates a methodology for computing an estimate of the unfunded needs in a specific local jurisdiction or for a group of jurisdictions. The methodology involves deriving a life cycle cost based on a specific construction and maintenance schedule, and comparing the existing available funding with the annualized life cycle costs of the road and bridges within that jurisdiction or group of jurisdictions.

**✚ Local Transportation Needs and Funding Report.** Ohio Legislative Budget Office. September 1, 2000. This publication is available through the Mn/DOT library. (651) 366-3791

Abstract: This study was requested in 1999 by the Ohio General Assembly and provides the following: 1) an examination of local government needs, presenting various measures of needs and available resources, 2) identification of potential alternative funding sources, 3) an analysis of the distribution of local revenues from federal, state and local resources, 4) a response to the issue of the adequacy of current funding levels, 5) an overview of existing state funding law pertaining to local road and bridge infrastructure. This might be useful for analysts seeking to duplicate a similar effort in their own jurisdictions, or to learn more about how these issues were addressed in Ohio.

**Potential additional research:** Mn/DOT periodically prepares an estimate of unfunded needs on the trunk highway system. Some local officials – whose work is included in this synthesis of funding reports and research – have made an effort to estimate needs on their own jurisdiction (e.g. Darrell Pettis in Le Sueur County) or for a larger classification of roadways statewide (e.g. Greg Isakson in Goodhue County of the entire CSAH and county road systems). Mn/DOT and the LRRB might consider conducting a study to annually or semi-annually derive an estimate of the unfunded needs on all local road networks based on a standard life cycle and maintenance schedule.

## 7. Historical Revenue and Spending Trends

Local officials often need accurate and up-to-date historical information on local transportation revenue and spending. The resources identified below provide some of the best data on local government transportation finance, system usage, and other related data.

### **Minnesota Construction Cost Index Data**

Nancy Sannes, an Estimates Engineer maintains the data and will provide the quarterly updates via mail. She can be reached at (651) 296-0807. The data is not currently available on-line.

Abstract: The Mn/DOT Office of Technical Support – Estimating Unit maintains quarterly data on the Minnesota Construction Cost Index, the best resource on transportation infrastructure construction costs in Minnesota. The data provides historical cost information dating back 30 years or more for the key construction cost inputs: excavation, steel, concrete, and bituminous.

### **Highway Statistics Series of the FHWA Office of Highway Policy Information**

Most easily accessible online at <http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm>, this resource serves as a clearinghouse for national and state specific data related to road and bridge funding and spending.

Abstract: The Highway Statistics Series consists of annual reports containing analyzed statistical data on motor fuel; motor vehicles; driver licensing; highway-user taxation; State and local government highway finance; highway mileage, roadway use, and many other statistics. This data set is probably the best resource for analysts seeking to draw comparisons between states on road and bridge statistical data. This data is presented in tabular format as well as selected charts and has been published each year since 1945.

✚ **Various annual reports on budgets, revenues, and expenditures of Minnesota cities and counties, Minnesota Office of the State Auditor.**

These reports are available online at

<http://www.osa.state.mn.us/default.aspx?type=rpt>, or they can be obtained in hard copy by contacting the Office of the State Auditor at (651) 296-2551.

Abstract: This is a very useful resource for people looking for reliable data on the revenues and spending for road and bridges in any specific Minnesota local government. Local governments are required to submit this information annually to the State Auditor. Summary reports can be examined which may be useful for analysts trying to identify spending or revenue trends for roads and bridges or any other category over time.

✚ **National Bridge Inventory (NBI) compiled by the Federal Highway Administration (FHWA).**

The Bridge Technology unit at FHWA maintains state and national data on the nation's bridges. Go to <http://www.fhwa.dot.gov/bridge/britab.htm> online.

Abstract: The website referenced above provides data on all bridges in the United States and for each individual state. This data can be useful for state-to-state comparisons or to examine historical trends related to bridge conditions, maintenance demands, etc.

✚ **Financing Local Road Construction: Small Markets Make Big Business**

American Road & Transportation Builders Assn., Washington, DC. 2002. This report is available through the Mn/DOT library, (651) 366-3791.

Abstract: This report provides useful information for people seeking to understand the “big picture” of local government road and bridge spending. The report focuses on the road construction capital outlays made by the tens of thousands of local government across the country. The report examines several issues, including: (1) How much money do local governments spend on capital outlays each year? (2) How much of that money is dedicated for the purchase of right-of-way? (3) Are there any trends in the level of local capital outlays? (4) Are there any regional differences in the level of local capital outlays? (5) How do local governments finance their capital outlays? The report also reviews expenditures on road maintenance. The information is slightly dated, but provides very useful historical trends on local road funding on a national scale.

✚ **State Transportation Statistics – Annual Report**

Bureau of Transportation Statistics, Washington, D.C. Go to [http://www.bts.gov/publications/state\\_transportation\\_profiles/](http://www.bts.gov/publications/state_transportation_profiles/).

Abstract: The federal Bureau of Transportation Statistics provides information on transportation-related revenues and expenditures of the federal, state and local governments for all modes of transportation. The data contained in this data base are useful in addressing various questions pertaining to government transportation finance. How much revenue do federal, state and local governments generate from

transportation? How much do federal, state and local governments spend on transportation? What are the trends in federal, state and local transportation revenues and expenditures? What are the sources and trends of transportation revenues?

## 8. Analytical Tools

The distribution and availability of local road and bridge funding is generally influenced by legislative action or other variables that can be difficult to project. State and local transportation officials and others have found it useful to design analytical tools to simplify and standardize the task of evaluating the impacts of various legislative proposals relating to local transportation funding. The tools listed below are available to local governments throughout the state to assist them in evaluating the merits of specific legislative proposals.

### **Local Transportation Funding Simulation Model – 2007 estimated state aid assuming various motor fuels tax rate, vehicle registration fee revenue, and motor vehicle sales tax revenue**

The Minnesota Transportation Alliance. Go to:

<http://www.transportationalliance.com/>

Abstract: The Minnesota Transportation Alliance has ownership of a simulation model designed initially by the Transportation Policy Institute in 2002, and then by Bonestroo in 2007 that estimates the impact on CSAH and MSA apportionments through changes in the tax structure affecting the Highway User Tax Distribution Fund. This resource is useful for people wanting to know the implications for their state aid-eligible city or county on pending legislation.

Potential additional research: Policy analysts inside and outside state and local government have developed a myriad of simulation models and other analytical tools that have proven useful to policy leaders seeking to understand the implications of various funding options and funding strategies. Mn/DOT and the LRRB could issue a Request for Proposals for local officials and others to develop and share these analytical tools with other local governments.

### III. FUNDING POLICY RESEARCH

#### 9. Benefits of Local Transportation Infrastructure Investments

In this era of scarce public resources, and “bare bones” local budgets, local road and bridge officials and transportation advocates must have resources to give transportation infrastructure an edge as it competes for funding with other worthy governmental priorities. The resources identified below can be used to assist in identifying and quantifying the benefits that result from an adequately funded local transportation network.

-  **Research Scoping Study: Economic Benefits from Transportation Investments**  
Keen, David, Robert Felsberg, Todd Pickton, and Janet Clements. Colorado Dept. of Transportation.; Division of Transportation Development. 2006. Go to <http://www.dot.state.co.us/publications/PDFFiles/econbenefit.pdf>.

Abstract: This study reviews over 50 studies examining the benefits of transportation investment in different parts of the country. Many of the studies reviewed are statewide analyses of the economic benefits of transportation improvements. In many cases, the study team for this report interviewed the lead study sponsor, state Department of Transportation (DOT) staff, and study researchers about each study’s purpose, methodology and perceived success. The literature review and interviews helped reveal what questions were being asked in other economic benefits studies; methods used to answer the questions; how study sponsors used the research results; and how the messages were received by the target audiences. The study team also examined National Cooperative Highway Research Program (NCHRP) research that specifically provided guidance about communicating the economic benefits of transportation investments. The study team also held seven focus groups with target audiences throughout Colorado to identify benefits of greatest interest and the best ways of communicating economic benefits of transportation investments. The focus groups were also used to test key messages from transportation benefits, which revealed that focusing on personalized benefits (including reduced accidents and injuries, gas savings, higher personal income, employment growth, faster commutes, and business cost savings) have the greatest potential impact.

Potential additional research: Conduct a statewide study of the economic benefits of transportation investments on the local road network in Minnesota. A similar project could be done on a smaller scale, examining the economic impact on local transportation investments along and near a specific corridor.

-  **Minnesota Motor Vehicle Crash Facts – Annual Report**  
Minnesota Department of Public Safety - Office of Traffic Safety

Abstract: This 100 page report is published annually, and is the best resource in Minnesota for data related to crashes on Minnesota state and local roadways. The

report provides information on where accidents occurred, the likely causes of accidents, the economic costs of accidents and much other useful information.

## 10. Minnesota Academic Studies

Resources included under this category primarily consist of general transportation studies and reports focusing on transportation and regional growth issues, tax incidence of local road taxes, etc. These articles will be of interest to people seeking information in greater depth on some of the policy implications that underlie local road funding policy.

### **Paying for Minnesota Roads: A Tax Policy Assessment.**

Ryan, Barry and Tom Stinson. Department of Applied Economics, University of Minnesota, St Paul, Minnesota. 2003. Go to <http://www.lrrb.gen.mn.us/pdf/200404.pdf>.

Abstract: This report is an economic analysis of the costs and spending on the local road network in Minnesota. The report reviews the funding of local roads in Minnesota. State and local road funding is supported primarily with motor fuels excise taxes, vehicle registration and sales taxes, local property taxes, and state property tax relief. The average Minnesota household pays about \$600 annually for roads, but this estimate varies widely with household characteristics. The report suggests that replacing travel-dependent taxes for fixed or hidden charges could improve the tax system efficiency, and potentially distribute the road tax burden more fairly.

### **Transportation and Regional Growth – Market Choices and Fair Prices: Research Suggests Surprising Answers to Regional Growth Dilemmas.**

Johnson, Curtis. Center for Transportation Studies, University of Minnesota. January 2003. Go to: <http://www.cts.umn.edu/trg/publications/pdfreport/TRGrpt17.pdf>

Abstract: The Transportation and Regional Growth study is a series of reports designed to analyze the relationship between transportation and land use in the Twin Cities region and lay out policy alternatives. The study includes a synthesis on 16 policy reports.

### **Minnesota's State Road Taxes in 2030. Will revenues keep pace with inflation?**

Ryan, Barry and Tom Stinson. University of Minnesota Department of Applied Economics. Go to <http://www.lrrb.org/pdf/200526.pdf>.

Abstract: This report forecasts potential revenue from three statewide road taxes: the motor fuels tax, the vehicle registration fee, and the motor vehicle sales tax, under three different economic scenarios: 1) optimistic, 2) trend, and 3) pessimistic. The stated goal of the research was to identify policy trends, strengths, and weaknesses of the funding system as a baseline for understanding future road funding challenges. This report will be useful for local officials interested in learning how transportation is affected by long term trends in tax policy.

- ✚ **The Distribution of Transportation Costs in the Twin Cities Region.**  
Anderson, David, and Gerard McCullough (2003), Transportation and Regional Growth Study, Center for Transportation Studies, University of Minnesota, Report 15. Go to [http://www.cts.umn.edu/trg/research/reports/TRG\\_15.html](http://www.cts.umn.edu/trg/research/reports/TRG_15.html).

Abstract: The purpose of this report is to determine the cost incidence of transportation in the Twin Cities region for the years 1998 and 2020. It identifies who bears the governmental, internal, and external costs of transportation. Costs are analyzed for 78 subregions in the metro area, and for nine income/vehicle ownership groups. This study might be helpful to others considering conducting their own transportation cost incidence study.

- ✚ **Road Finance Alternatives : An Analysis of Metro-area Road Taxes**  
Ryan, Barry and Thomas Stinson. Report #9 in the Transportation and Regional Growth Series University of Minnesota, Center for Transportation Studies 2002. Go to [http://www.cts.umn.edu/trg/research/reports/TRG\\_09.html](http://www.cts.umn.edu/trg/research/reports/TRG_09.html).

Abstract: This article is included in the University of Minnesota's Transportation and Regional Growth Series. The article provides an analysis of the tax burden for typical Twin Cities metro area households to support transportation infrastructure investments. The study finds that the total tax burden for the region was nearly \$1 billion (in 1996), with two-thirds of the revenue coming from sources that are fixed or hidden from the road user's perspective. Tax alternatives that favor use-related charges can send travelers a clearer price signal, ultimately encouraging more efficient travel behavior. Tax policy might have an effect on housing location decisions at the rural-urban fringe, where farmland development premiums are still small. The article also concludes that tax policy will need to change in order to keep pace with higher construction costs.

- ✚ **Local road tax options : Is Minnesota really that different?**  
Ryan, Barry. Department of Applied Economics, University of Minnesota. 2006. Go to <http://www.lrrb.org/PDF/200617.pdf>

Abstract: Local governments in the U.S. use a variety of tax mechanisms to fund local roads. Twelve options are examined in this report related to property access, vehicle use or local economic activity. The most frequent local levies are property taxes, special assessments, vehicle registration taxes, motor fuel taxes and local sales taxes. The overall mix of local road funding also varies widely by state and region. Nebraska, Wisconsin and Kansas have local road revenues most like Minnesota, while local roads funding in New Hampshire, Florida and Nevada is the least similar. The benefits of any individual road tax must be judged in the context of the larger state and local tax system.

- ✚ **1997 Federal Highway Cost Allocation Study – Summary Report.**  
Federal Highway Administration. 1997. This report is available through the Mn/DOT library, (651) 366-3791.

Abstract: This report is a study intended to provide information on the costs that various vehicle sizes and weights impose on road and bridge infrastructure. The idea behind the report is that it might be possible to create a more equitable revenue system if vehicles were charged a road user tax that more accurately reflected the costs to repair or maintain road and bridge infrastructure resulting from damage imposed by each class of vehicle. This information might be useful to an analyst interested in pursuing additional information related to finance reform based on vehicle usage, which is especially relevant on local rural roads and other roadways with significant commercial vehicle use.

## 11. Funding Reform Initiatives

Some local government officials are interested in learning more about more extreme local funding reform initiatives that have been implemented or considered in other jurisdictions. In particular, the concept of “user based fees” has become popular with policy analysts and academic researchers. The resources identified and described below address these leading edge alternatives often classified under the broad title of local road finance “reform”.

### **Transportation Research Board of the National Academies – Special Report 285. The Fuel Tax and Alternatives for Transportation Funding**

Transportation Research Board of the National Academies – Special Report 285. 2006. This report is available through the Mn/DOT library, (651) 366-3791. Or go to <http://onlinepubs.trb.org/onlinepubs/sr/sr285.pdf>

Abstract: The final section of Chapter 2 examines developments that may affect the viability of the finance system. These include trends in the share of highway user fee revenues applied to purposes other than highways, adjustments of user tax rates to allow for inflation and changes in costs, devolution of transportation responsibilities to local governments, reliance on revenues other than user fees, and revenue adequacy and stability. Chapter 4 of this report reviews projections of energy prices, motor vehicle technology, and fuel economy and considers the likelihood of future government interventions to regulate fuel consumption or pollutant emissions that could affect transportation revenue sources. Chapter 5 identifies and summarizes a variety of mileage and fee based finance reform proposals, including road use metering and toll road expansion. Chapter 6 identifies and describes several kinds of finance reform measures that do not depend on developing major new revenue sources or on fundamentally altering institutional arrangements, including measures to increase existing available resources, measures to improve pricing, and measures to direct current spending more efficiently.

### **Oregon’s Mileage Fee Concept and Road User Fee Pilot Program - Report to the 73rd Oregon Legislative Assembly on Proposed Alternatives to the Current System of Taxing Highway Use Through Motor Vehicle Fuel Taxes.**

Whitty, James, and Betsy Imholt. Oregon Department of Transportation. June 2005. This document is available through the Mn/DOT library, (651) 366-3791.

Abstract: The state of Oregon is a leader in identifying a potential replacement for the gas tax, which will become less effective in generating revenue to support road

construction and maintenance as the existing fuel base tax as more cars are manufactured with greater fuel efficiency. The 2001 Oregon Legislative Assembly established the Road User Fee Task Force to offer recommendations on replacing the gas tax and determined that a new road revenue system based on a properly designed per-mile charge would be an effective solution. As administrator of the task force, the Oregon Department of Transportation determined that a per mile charge could be collected efficiently (through modern technology) and inexpensively. The task force agreed and concluded the per-mile charge to be a real, practical alternative to the current road revenue system. This document reports what the task force and ODOT have learned since issuance of its first report to the 2003 Oregon Legislative Assembly. The report has several purposes. 1) A case is made for developing a new funding mechanism for our road system, an ultimate replacement for the gasoline tax; 2) The Oregon mileage fee concept is fully described for the first time in print; and 3) The report lays out numerous policy choices for alternative mileage fee configurations.

✚ **A New Approach to Assessing Road User Charges.**

Forkenbrock, D. J., and J. G. Kuhl. Public Policy Center, University of Iowa. 2002.

Abstract: Greater fuel efficiency cars and other vehicle propulsion technologies are likely to jeopardize current revenues for transportation infrastructure at some point in the future. This report concludes that the best method for generating revenues in a more fair and efficient manner is on the basis of actual miles traveled. The report concludes that this type of system would be flexible and efficient, allowing for varying user charges by jurisdiction, class of vehicle, type of road facility, and time of day. This report describes the technologies that are or will soon be available to make this type of funding system possible.

✚ **Cement and Pork Don't Mix.**

Puentes, R . Article in MetroView. 2004., Brookings, May 10.

Abstract: This report calls for a realignment in decision making and revenue raising authority from the states and to local units of government. The report argues that the federal government should provide financial incentives for states to transform metropolitan planning organizations (which are creatures of federal transportation programs) into regional infrastructure authorities, with taxation, programming, and spending power, and to tie state decisions more closely to the priorities of metropolitan governments.

✚ **Financing Local Roads: Current Problems and New Paradigm.** Forkenbrock, David. Public Policy Center, University of Iowa, Iowa City. Transportation Research Board. Journal of the Transportation Research Board No. 1960. 2005.

Abstract: In this report, several possible policy directions to increase the role of direct road user charges to finance state and local transportation infrastructure are evaluated. A mileage-based user charge is found to have considerable potential both as a financing mechanism and as a means for implementing road pricing. Among the policies that can be supported are congestion pricing, privately operated tollways, use of environmentally friendly vehicles, and improved travel demand analyses.