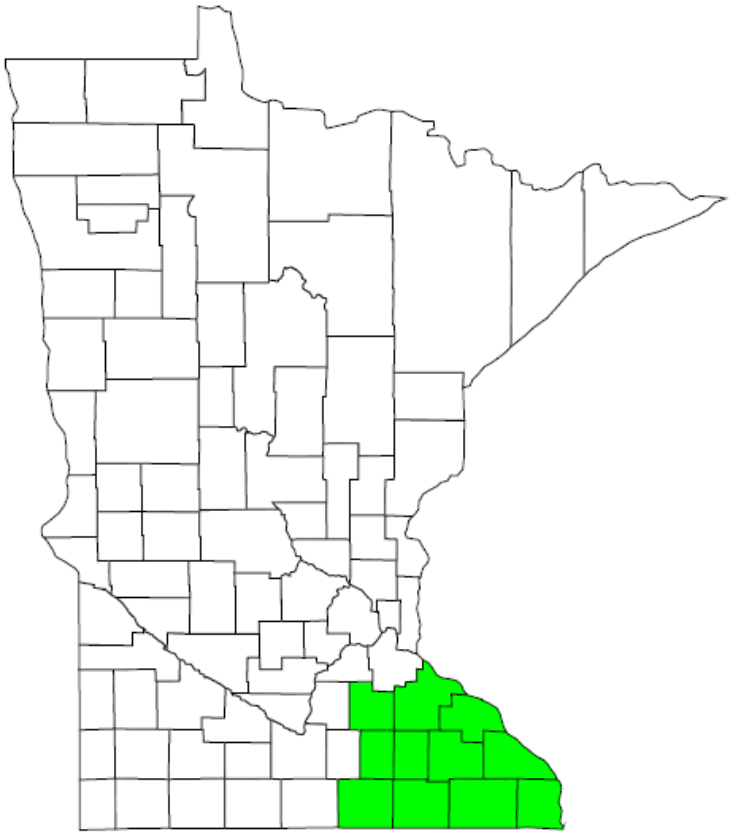
Southeast Minnesota Regional Freight Study

Local Road Demands and Transportation Funding



Minnesota Department of Transportation

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CDM Smith

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Heavy Loads and Roadway Impacts

The information presented in the profile of commodity movements for Southeastern Minnesota showed that for both inbound and outbound commodities, the largest movements by weight were *Nonmetallic Minerals* and *Farm Products* **(Exhibit 1)**.

Exhibit 1: Top Five Originating and Terminating Commodities in SE Minnesota by Tons

Originating	Tons		Terminating	Tons
Nonmetallic Minerals	7,727,737		Nonmetallic Minerals	4,098,433
Farm Products	7,168,910		Farm Products	3,816,132
Food or Kindred Products	2,438,933		Food or Kindred Products	774,712
Clay, Concrete, Glass or Stone	1,533,564		Petroleum or Coal Products	764,988
Chemicals Or Allied Products	377,007		Chemicals or Allied Products	729,155
All Others	1,249,974		*All Others*	1,408,734
TOTAL	**20,496,125**		**TOTAL**	**11,592,154**

Source: 2007 TRANSEARCH®

Together, just these two commodity groups; *Nonmetallic Minerals* and *Farm Products* account for 71 percent of the total tonnage of freight moving into and out-of the Southeastern Minnesota Region. However, by value these two commodity groups make up less that 15 percent of the total freight moving in and out of the region.

Nonmetallic Minerals and *Farm Products* are also both heavy commodity groups and their production most often requires the use of trucks on local highways from the initial point of production to at least the first point of handling or processing. In Minnesota, regulations also allow trucks hauling raw or unprocessed agricultural products special weight limits summarized as follows:

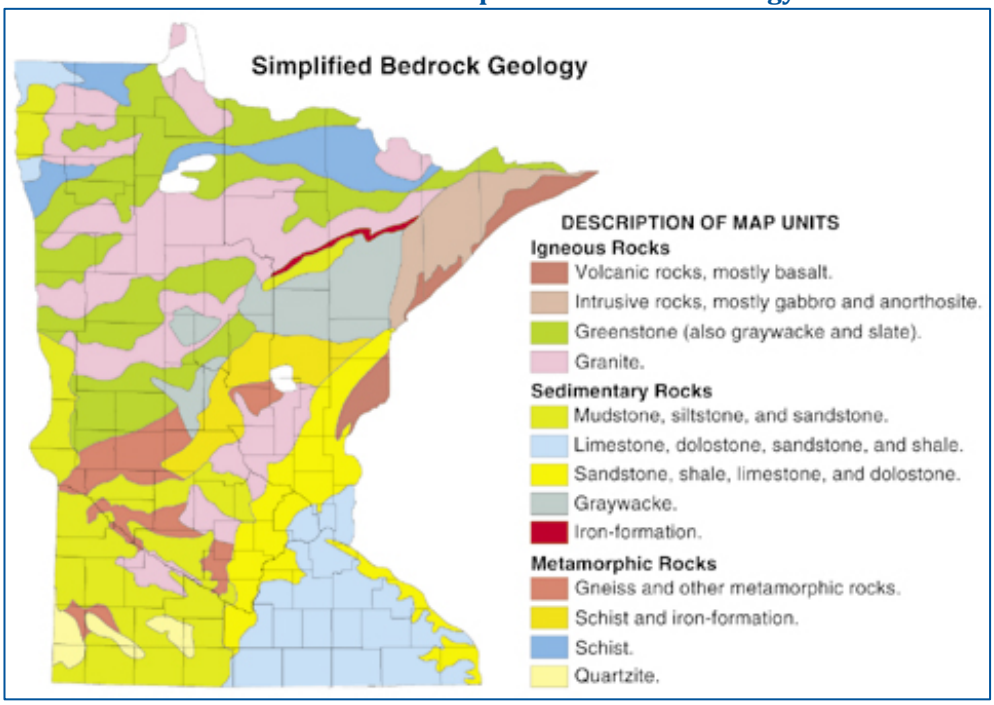
Farm products: six-axle 169.865, subd. 1 [2008]	90,000 lbs. gross vehicle weight on six-axle (or more) vehicles	Vehicles transporting raw or unprocessed agricultural products
Farm products: seven-axle 169.865, subd. 2 [2008]	97,000 lbs. gross vehicle weight on seven-axle (or more) vehicles	Vehicles transporting raw or unprocessed agricultural products

Source: MN House Research, Motor Vehicle Size and Weight Regulations, October 2009

Currently, the are no special provisions in Minnesota law allowing heavier vehicle configurations for hauling aggregates or other mined materials, but both *Nonmetallic Minerals* and *Farm Products* are products prone to "weigh-out" in terms of vehicle hauling capacity as opposed to "cube out." As a result, both of these broad commodity groups are likely to result in higher than average pavement and bridge wear.

The commodity classification of *Nonmetallic Minerals* includes salt, calcium phosphates (including limestone), dolomite, sulfur, clay, abrasive stones, and gypsum. (This commodity class does not include silica sand, which will be discussed more, later in this section). The map in **Exhibit 2** shows that limestone bedrock underlies nearly all of the Southeastern Minnesota study area.

Exhibit 2: General Map of Minnesota's Geology



Source: Minnesota Geological Survey, University of Minnesota (http://www.mngs.umn.edu/)

The particular limestone found across South Central and Southeastern Minnesota is often referred to as "Kasota Limestone." Kasota Limestone is rich in dolomite and magnesium, making it resistant to weathering and valuable in building construction. A Minnesota Department of Natural Resources (DNR) survey conducted in 1990 identified 165 active limestone mining operations in 34 counties across an area spanning from the Mississippi River south of the Twin Cities, west to Mankato.

In addition to the heavy commodities being produced within the Southeastern Region, a previous freight study examining the Southwestern region of the state (MnDOT District 7) found that *Farm Products* produced in that highly agricultural dependent area frequently move on and through facilities in Southeastern Minnesota. The following excerpts are taken from the final report of that effort:[1]

> *If current agricultural trends continue, freight traffic in Southwest Minnesota will potentially grow by 200 percent by 2030, or double the statewide rate. Better crop genetics and improved management practices, including crop rotation, improved chemical management of soils and fertilizers, pesticides and herbicides, less damaging cultivation and soil compaction, and aggressive plant spacing have steadily improved per-acre yields. The result is more agricultural freight traffic on the freight system, particularly trucks...The following key roadways are significant freight corridors due to their importance to the region's and State's economy: MN 60 from Iowa to Mankato (for ethanol plants and shuttle elevators); US 14 from South Dakota to I-35 and US 169 from Mankato to the Twin Cities (for grain, port access); and I-90 through the region (for national connections)….* (pg. ii)

[1] Southwest Minnesota Regional Freight Study, Final Report; Minnesota Department of Transportation, Sept. 2007.

> *The Ports of Red Wing and Winona on the Mississippi River also serve District 7. Historically, much of the export grain traffic from the Districts' eastern third moves by truck to elevators of these ports. Fertilizers including lime and urea are also imported to District 7 customers from barges through these cities. (pg. 10)*

It is also notable that the Southwestern Minnesota Regional Freight Study identified a trend in modern farm operations towards the use of 5-axle semi-tractor trailers for hauling grain and other materials such as fertilizer. The study noted that large equipment creates potential weight issues, as well as transportation challenges to safe operation in rural areas: An analysis of Minnesota truck registrations estimated that in 2007, approximately 50 percent of heavy commercial vehicles were registered to farm or agricultural businesses, while just 10 years before, single unit two- and three-axle straight trucks were the most common vehicles used for moving products between the farm and elevator. Further, the study noted that over a ten year period, grain transported off the farm in five-axle semi-tractor trailer trucks had increased from 30 percent to over 60 percent.

Silica Sand: A Potential New Growth Industry for Southeastern Minnesota

A new economic development opportunity has been creating headlines in Southeastern Minnesota: Sand. The Mississippi River Valley in the southeastern corner of the state has an abundance of sand deposits that happen to hold large grains of round silica sand making them highly suitable for mining operations that use the hydraulic fracturing process. Mining companies are interested in developing sites in this area and then transporting silica sand for use in extracting oil and natural gas from shale formations. Since shale oil and gas extraction has been growing at a rapid pace in several regions of the U.S., silica sand mining presents a significant economic development opportunity for the Southeastern Region; however, it also presents one more heavy commodity that will require large volumes of trucks using local road systems to bring the sand from mining sites to processing sites and/or rail or barge loading facilities.

Due to community concerns over environment and potential roadway impacts, most of the counties in Southeastern Minnesota with significant silica sand deposits have issued moratoriums on new mining operations to allow time for studies that will help these counties better understand the environmental and infrastructure impacts from increased mining activities. Many of the existing county moratoriums are set to expire in the near term. As these moratoriums end, it is expected that mining companies will quickly file permits to transport sand throughout the region.

To better understand the current issues associated with silica sand mining operations, thirteen counties were contacted in southeastern Minnesota to discuss sand transportation policy and constraints. Findings are summarized below. The silica sand mining industry in Wisconsin is more developed than it is in Minnesota. Other pertinent studies and ordinances used by Wisconsin to regulate sand transportation were also identified.

Existing County Regulations and Ordinances

Exhibit 3 summarizes the results of discussions with the 13 counties in Southeastern Minnesota. When possible, copies of studies and ordinances from county engineers were obtained.

Exhibit 3: Summary of Silica Sand Hauling Constraints

County	Designated sand hauling routes	Known conditional use permits for sand hauling	Surcharge or funding mechanisms under consideration	Study of truck traffic generated by mining	Other studies on frac sand hauling
Dakota	No routes are designated yet. The county has many sand/rock hauling routes in the county and there is little concern for expanded traffic	No conditional use permits have been issued for sand mines	No funding mechanism has been identified	No special studies are in progress	No special studies
Dodge	No routes are yet designated	No conditional use permits have been issued for sand mines	No funding mechanism has been identified	No special studies are in progress	No special studies
Fillmore	No routes are designated. Fillmore County plans on drafting and ordinance before the moratorium expires in February 2013. This ordinance may require traffic studies to justify restrictions in traffic	No permits have been issued for sand mines	No funding mechanism has been identified	No special studies are in progress	No special studies
Freeborn	No routes are yet designated	Mining constraints will be identified on the conditional use permit	No funding mechanism has been identified	No special studies are in progress	No special studies
Goodhue	No routes are yet designated	No conditional use permits have been issued for sand mines	Considering several requirements: 1) agree to repair damage that is clearly caused by haul operations; or, 2) agree to fix roads prior to hauling	Goodhue publishes information/ studies from their mining community online	Goodhue publishes information/ studies from their mining community online
Houston	No routes are yet designated, but some are expected with completion of traffic studies required as part of the permitting process	All existing mines have conditional use permits. A use permit is expected if new mines are approved	The county is considering a fee per ton-mile traveled. No amount has yet been identified	Houston County publishes studies on their website	Houston County publishes studies on their website

County	Designated sand hauling routes	Known conditional use permits for sand hauling	Surcharge or funding mechanisms under consideration	Study of truck traffic generated by mining	Other studies on frac sand hauling
Mower	No routes are yet designated	All existing high-traffic industries have required conditional use permits (e.g., wind farms). A use permit is expected if a new mine is approved	A funding mechanism for repair of road damage would be included in a conditional use permit. This may be modeled after the Wabasha County fees	No special studies are in progress	No special studies
Olmsted	No special designations yet	No permits have yet been issued. A draft ordinance was prepared to require various studies as part of the permitting process	Olmsted County is waiting to see how other counties handle surcharging or funding companies based on use	No special studies are in progress	No special studies
Rice	No mines are expected in the county. The sand is too deep	No mines are expected	No mines are expected	No mines are expected	No mines are expected
Scott	Several sites are currently in development (Merrium Junction Sites). The County expects all new mines to be located along a rail corridor, so road impact is minimal	Several mines are in development or already permitted. Great Plains Sand has a 200 acre site. Hunt Global has a 1,000 acre site	The County expects all new mines to be located along a rail corridor, so road impact is minimal. No road repair funding mechanisms have been discussed yet	Traffic impact studies have been completed for the two Merrium Junction Sites. MnDOT has been involved with these studies	Traffic impact studies have been completed for the two Merrium Junction Sites. MnDOT has been involved with the studies
Steele	No mines are expected in the County. The sand is too deep	No mines are expected	No mines are expected	No mines are expected	No mines are expected
Wabasha	The County's moratorium was recently extended for one more year. There is an expected ordinance that will be approved soon that may identify restrictions/ studies	No conditional use permits have been issued for sand mines	A fee to mitigate damage caused by silica truck sand hauling is expected. This fee structure may be modeled after Winona County. The County would like to be uniformly expanded across jurisdictional boundaries (i.e., state, county, township)	No special studies are in progress	No special studies

County	Designated sand hauling routes	Known conditional use permits for sand hauling	Surcharge or funding mechanisms under consideration	Study of truck traffic generated by mining	Other studies on frac sand hauling
Winona	Three mines are currently in development but no restricted roads have been identified	No permits have been issued	The County will assess a fee of $0.219 per ton-mile. This fee will be used for road restoration	Information is available on the county website	Information is available on the county website
Wisconsin	No restrictions were found beyond seasonal restrictions	Superior Silica Sands, EOG Resources, Chippewa Sand Company	Wisconsin relies on use surcharge and repair agreements to find repairs of prematurely damaged roads	N/A	Many studies have been completed

Summary of Known and Proposed Mining Sites

Thirteen counties were contacted to better identify known and proposed mining sites. Seven have no plans for developing mines; five either have existing mines or active plans to develop mines. Goodhue County was contacted to collect general information about mining in the county, but the contact was unavailable to answer follow-up questions regarding mine locations.

- Dakota County has no active sand mines and no intention to develop new mines.
- Dodge County has no active sand mines and no intention to develop new mines.
- Fillmore County has an active silica sand mine in Hope Township and one proposed sand mine in Pilot Mound Township.
- Freeborn County has no active sand mines and no intention to develop new mines.
- Houston County has four known sand miens, but county staff was unable to verify the specific locations in the county. The county also has plans for three proposed mines at currently unknown locations.
- Mower County has no active sand mines and no intention to develop new mines.
- Olmsted County has one active mine in the Elmira/Orion Township area. The county has one proposed mine in Dover Township.
- Rice County has no active mines and no intention to develop new mines.
- Scott County has one sand mine in the permitting phase along State Highway 169 in Sand Creek Township. The county has a second, proposed sand mine along State Highway 169 and Highway 41.
- Steele County has no active mines and no intention to develop new mines.

- Wabasha County has no active mines and no intention to develop new mines.
- Winona County has one active mine in the City of Winona along Trunk Highway 14 and has no proposed mines at this time.

Exhibit 4 shows the approximate location of known and proposed mining sites.

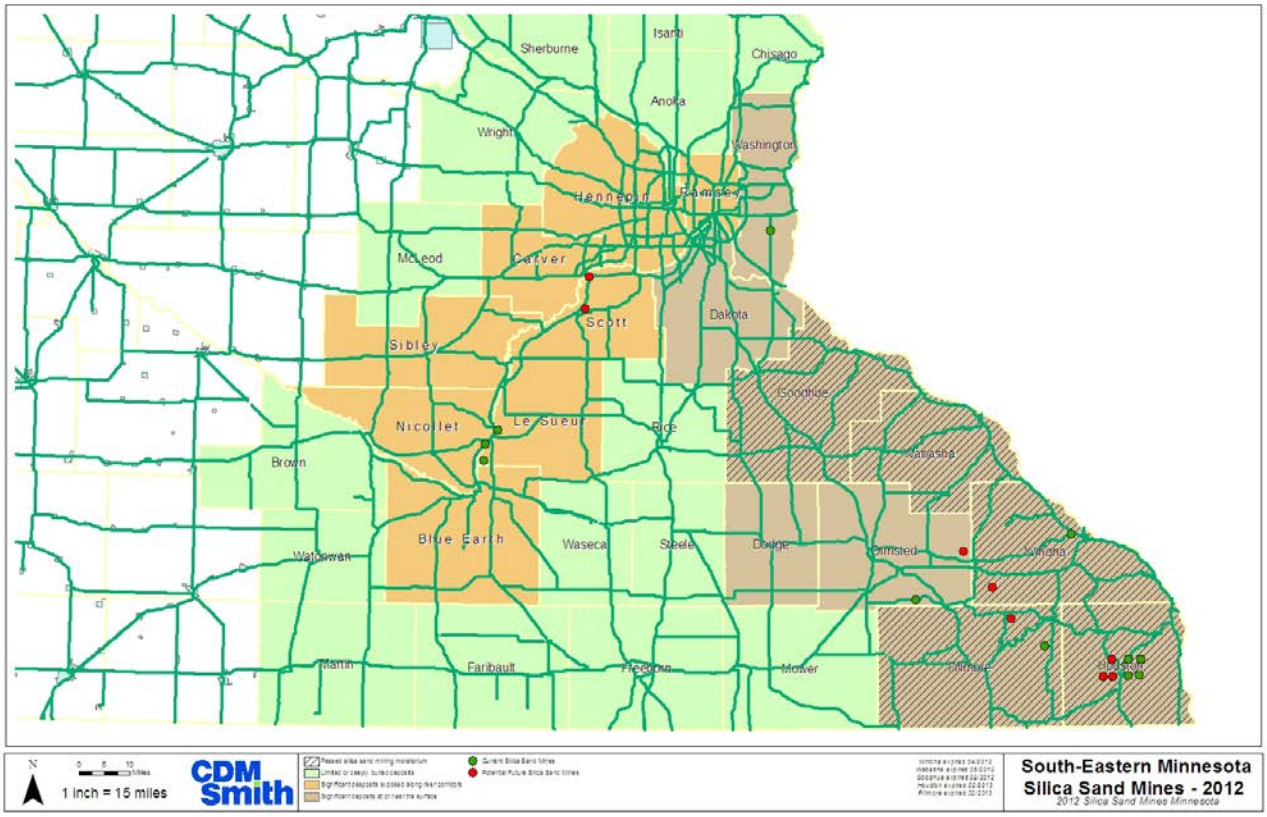


Exhibit 4: Existing and Proposed Mine Sites in Southeastern Minnesota

Summary of County Regulations on Silica Sand Mining

Several common trends were discovered during discussions with county engineers. These trends include:

- Most county engineers identified Winona County as a leader in making silica sand mining policy. Several counties favor Winona County's approach of charging sand haulers a $0.219 per ton-mile fee to use county roads. Many counties are waiting to observe and evaluate the impact of Winona County's fee structure.
- Most counties agree that requiring mines to complete a transportation impact study is essential to developing a case-by-case strategy for increased sand hauling traffic. Results of the study serve as a basis for identifying use restrictions and fee structures.

- All counties expressed a desire to work with MnDOT in developing a unified policy for transporting silica sand across jurisdictional boundaries. Several county engineers are under the impression that MnDOT is less concerned with increased silica sand traffic, as state roads are designated to more robust standards.
- Goodhue, Houston, Wabasha and Winona Counties have indicated that mines have recently contacted the county and expressed interest in developing sites.
- Rice and Steele County do not expect silica mines to develop in their counties. Silica sand deposits in these counties are too deep to economically mine.

Transportation Funding: Maintaining Local Roads

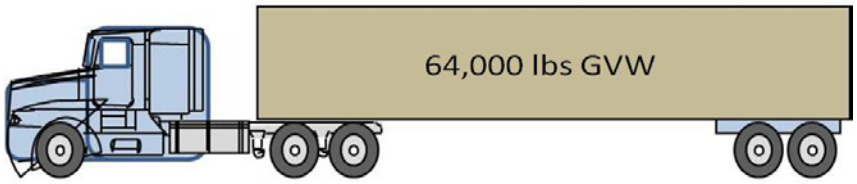
Every year government agencies spend billions of dollars in pavement construction and rehabilitation. Pavements are typically designed to last without major rehabilitation for 20 to 30 years. Pavement consumption, or the wear and tear on a road that leads to rutting and cracking, is driven primarily by heavy axle loads; however, environmental conditions such as freeze-thaw cycles also impact pavement deterioration. Nonetheless, the key input to designing a roadway to last an extended period of time is the number of axle loads the pavement will encounter over its design life. Large truck operations, especially heavy vehicle loads can accelerate pavement stress and deterioration on roadways and shorten the life span of bridges. Generally, highway pavements are impacted by axle and axle group loads directly in contact with the pavement (i.e., the load footprint as opposed to the overall gross vehicle weight). Over time, the accumulated strains (the pavement deformation from all the axle loads) deteriorate pavement condition, eventually resulting in cracking of both rigid and flexible pavements and permanent deformation or rutting in flexible pavements.

Pavement Performance Basics

A common metric for examining the relationship between heavy vehicles and pavement wear is the "equivalent standard axle load" (ESAL) originally developed through extensive pavement tests in the 1950s. While newer methods have been developed for pavement design practices, the ESAL metric continues to be widely used to explain the impact of various vehicle axle loads on pavement wear. Using an ESAL approach, the damage or "consumption" of pavement from different vehicle loads are normalized by relating the damage to a standard reference axle weight (18,000 lb. single axle load). The factors can be pavement performance-based (pavement life) or pavement response-based (pavement strain). ESAL factors provide a means of readily assessing the relative damage resulting from loaded commercial vehicles on pavements. The values are calculated to standardize the measurement pavement wear from a wide variety of trucks, carrying a wide range of loads.

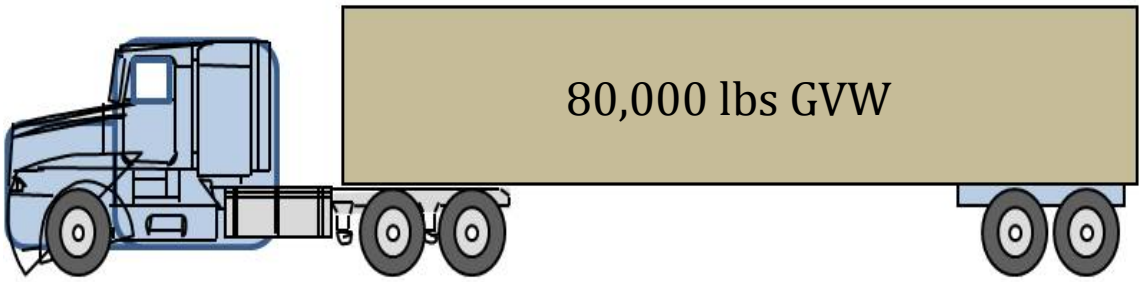
When referring to the pavement consumed by a vehicle with two or more axles, the term load equivalency factor (LEF) is used to represent the additive ESALs from each axle or axle group in a vehicle configuration under a given load. In the U.S., pavement design guidelines developed by the American Association of State Highway and Transportation Officials (AASHTO) provide ESAL equations for the two primary pavement types (asphalt or flexible, and concrete or rigid). Many variations of the basic ESAL metrics are also provided to account for pavement thickness and sub-base structure. For the purpose of illustrating how changing axle loads impact pavement wear, **Exhibits 5-A** through **5-C**, provide ESAL and LEF for a rigid pavement for various vehicle load configurations on a standard 5-axle tractor semitrailer combination.

Exhibit 5-A: Partially Loaded 5-Axle Tractor Semi-trailer (Class 9 Vehicle)



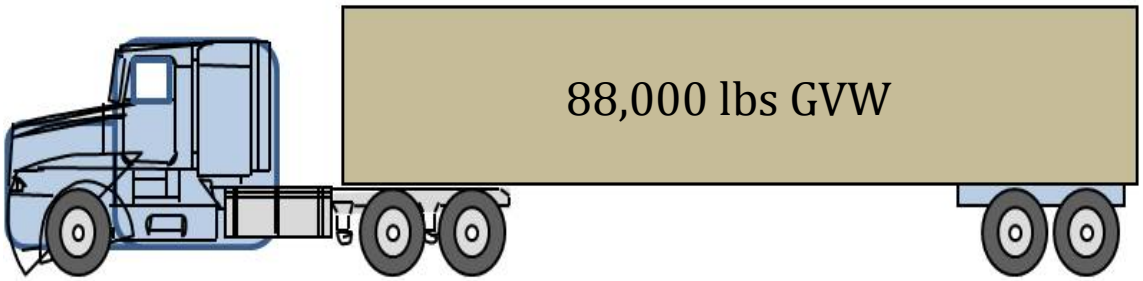
Axle Weight	12,000 lbs	26,000 lbs	26,000 lbs	LEF
Rigid ESALs	0.6	.364	.364	**Total ESAL = 1.3**

Exhibit 5-B: Typical 5-Axle Tractor Semi-trailer (Class 9 Vehicle)



Axle Weight	12,000 lbs	34,000 lbs	34,000 lbs	LEF
Rigid ESALs	0.6	1.1	1.1	**Total ESAL = 2.8**

Exhibit 5-C: Heavy 5-Axle Tractor Semi-trailer (Class 9 Vehicle)



Axle Weight	12,000 lbs	38,000 lbs	38,000 lbs	LEF
Rigid ESALs	0.6	1.7	1.7	**Total ESAL = 4.0**

The exhibits above illustrate that as the weight of axle groups goes up, the resulting ESAL increases exponentially. In this illustration, a 10 percent overload results in 43 percent more pavement wear. Overweight, illegal loads have large impacts on road wear, and are not effectively restricted from local and county roads in most cases due to insufficient or ineffective enforcement in many jurisdictions. County governments have the authority to post weight limits on their roads and enforce them, but the

reality is that they often have neither the funds for enforcement, nor the data on heavy commercial vehicle traffic counts and road strength to make accurate decisions on properly managing the system.

Local Road Funding

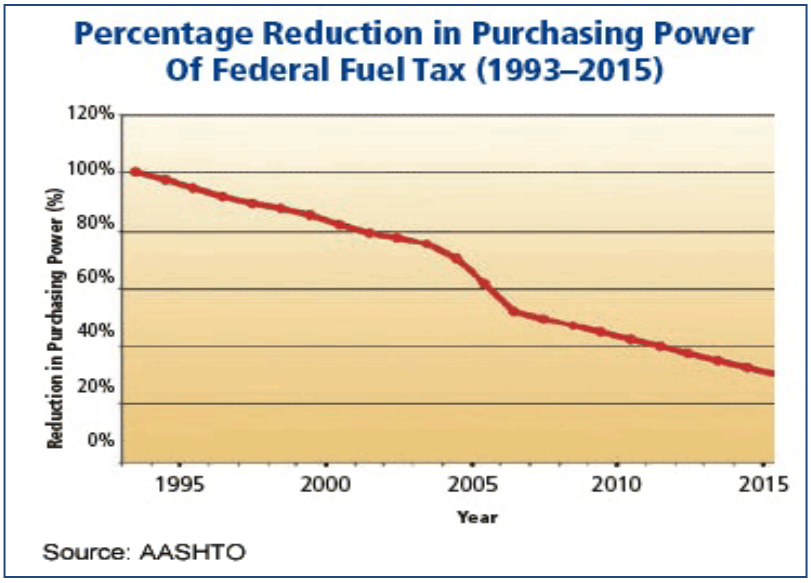
The issue of transportation funding is a complex subject that at the federal level has been the topic of extensive examinations by the Government Accounting Office (GAO), the Congressional Budget Office (CBO), and The National Academy of Sciences, as well as two congressionally appointed bodies: 1) the National Surface Transportation Policy and Revenue Study Commission; and, 2) the National Surface Transportation Infrastructure Financing Commission. Leading up to the congressional reauthorization that recently passed, all of the noted studies came to essentially the same conclusion as expressed by the congressionally appointed Transportation Policy and Revenue Commission:

> *"The Nation is underinvesting in all modes of transportation. Unless the relative market share for other modes – including rail, bus, and water – grows, even significant increases in highway capacity cannot meet the scale of future projected demand… The declining performance of the surface transportation network – as a result of both inadequate capacity and inefficient management – will choke economic progress, preventing the U.S. economy from growing to its full potential. It is not an overstatement to say that the Nation's potential for the creation of wealth will depend in great part on the success of its freight efficiency."*[2]

In a nutshell, the conclusion reached by all of the commissions and special studies requested by Congress boil down to increasing demands versus declining purchasing power. The federal excise tax on fuel in the U.S. is 18.4¢ per gallon on gasoline and 24.4¢ per gallon on diesel fuel. Federal fuel taxes were last increased in 1993, and are not indexed to inflation. Conversely, the cost of highway construction materials like steel, concrete and asphalt have all gone up since the 1990's, as has the fuel efficiency of cars in recent years. As a result, drivers pay less per mile driven, and federal fuel taxes have experienced a significant loss in purchasing power. The graphic in **Exhibit 6** illustrates this decline.

Exhibit 6: Decline in Purchasing Power of Federal Fuel Taxes

[2] National Surface Transportation Policy and Revenue Study Commission, Volume 1, pg. 4 *http://transportationfortomorrow.com/about/commissioners.htm*

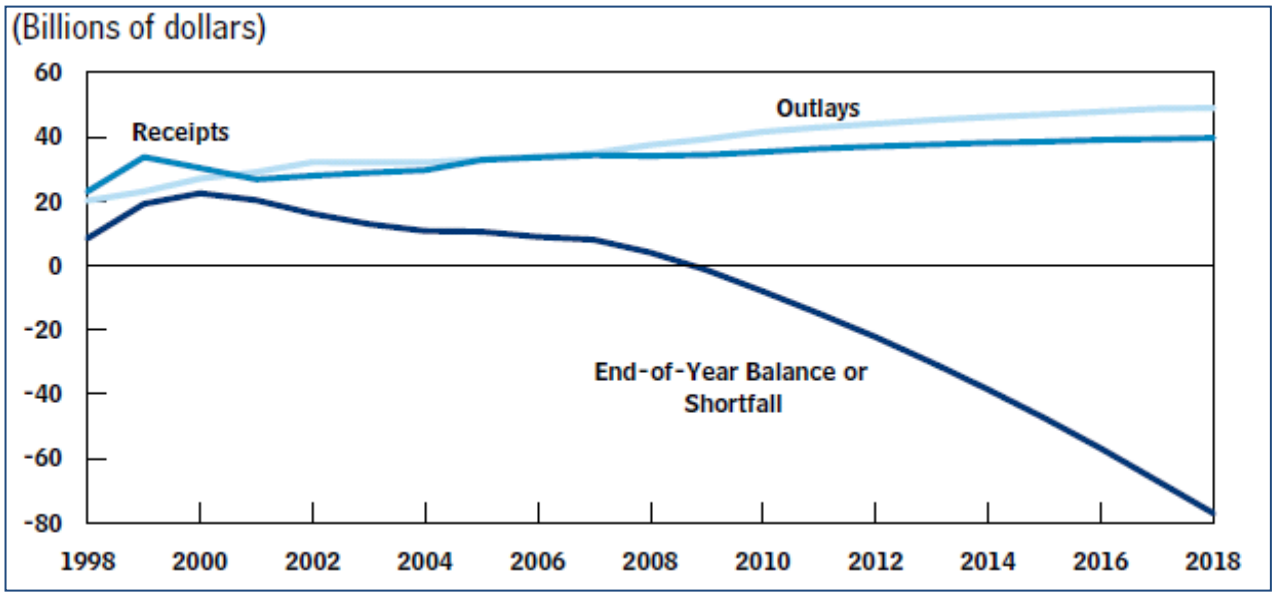


It should also be noted that current spending from the federal Highway Trust Fund (HTF) is exceeding account receipts, resulting in federal deficit spending on transportation.

The graphic in **Exhibit 7** shows the projected Highway Trust Fund deficit projected by the Congressional Budget Office (CBO). The graphic shows outlays exceeding receipts starting in 2008 (which in fact occurred); however, to maintain a positive balance in the trust fund, Congress has transferred revenues from the General Fund on three occasional recently: FY 2008 - $8.017 billion transferred in September (Public Law 110-318); FY 2009 - $7 billion transferred in August (Public Law 111-46); and, FY 2010 - $14.7 billion transferred in April (Public Law 111-147).[3] MAP-21 recently authorized the transfer of another $18.8 billion from the General Fund to the Highway Trust Fund.

Exhibit 7: Actual and Projected Highway Account Receipts, Outlays, and Balances or Shortfalls (1998-2018)

[3] *Source: FHWA: http://www.fhwa.dot.gov/highwaytrustfund/index.htm*



Source: Congressional Budget Office

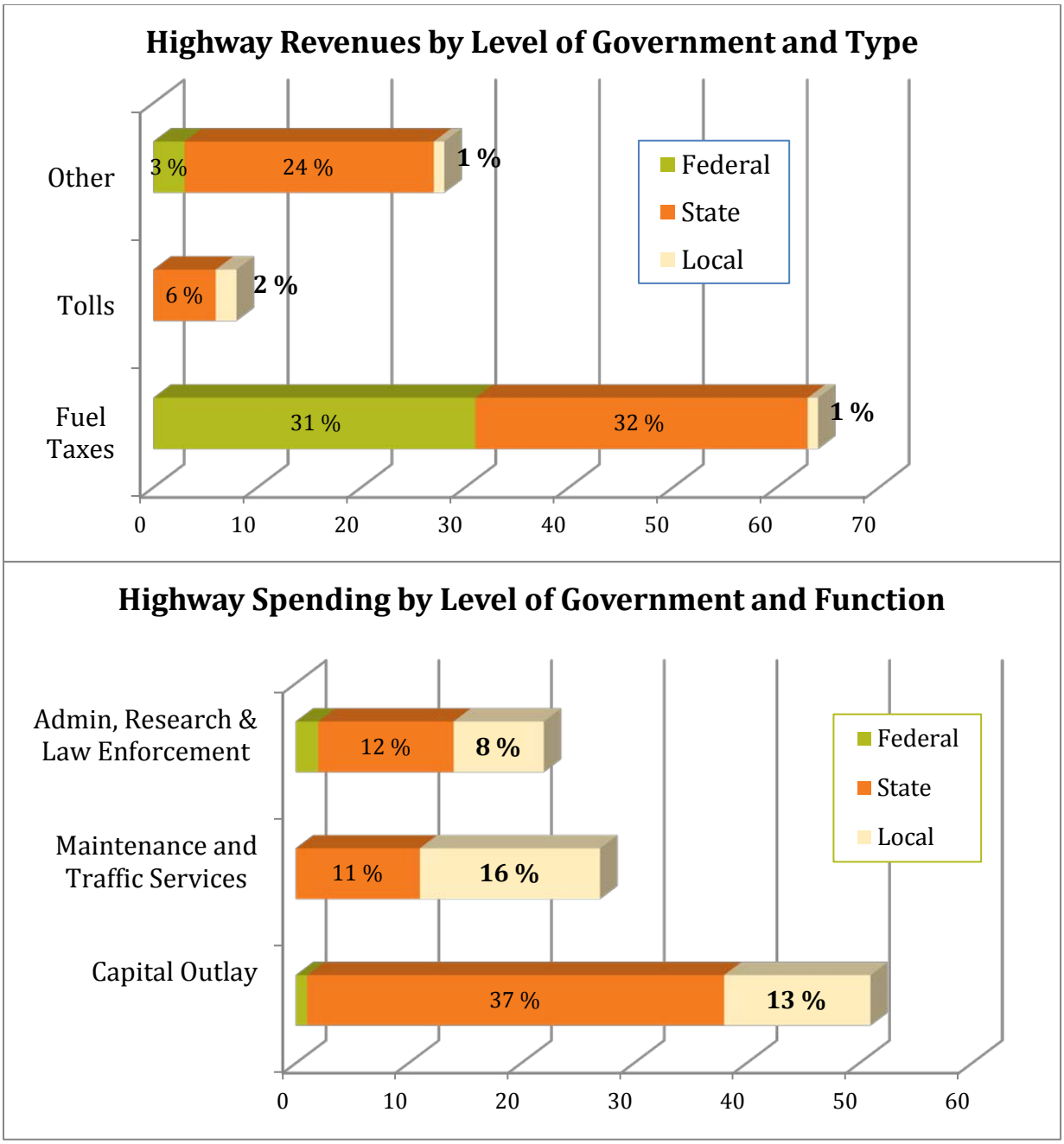
For the short term, the National Surface Transportation Infrastructure Financing Commission recommended a 10¢ per gallon increase in federal fuel taxes as part of the next transportation reauthorization bill, and suggested federal fuel taxes be indexed to inflation. The Commission also recommended a longer term transition to mileage-based user taxes, indicating that fuel taxes were not sustainable in the long term due to the emphasis on greater fuel economy and alternative fuels.[4] The Commission noted that facility level tolling and pricing were strong state and local revenue options. However, with the recent passage of the Moving Ahead for Progress in the 21st Century (MAP-21), Congress once again deferred the funding issue.

Local Road Funding

Currently in the U.S., local governments collect only about 4 percent of all highway user revenues, yet account for about 37 percent of all highway spending (**Exhibit 8**). Currently, about 22 percent of all highway expenditures go toward "Administration, Research, and Law Enforcement."

Exhibit 8: Highway Revenue and Highway Spending by Level of Government

[4] Richard Simon*; Commission recommends federal gas tax increase;* Los Angeles Times, Feb. 27, 2009.

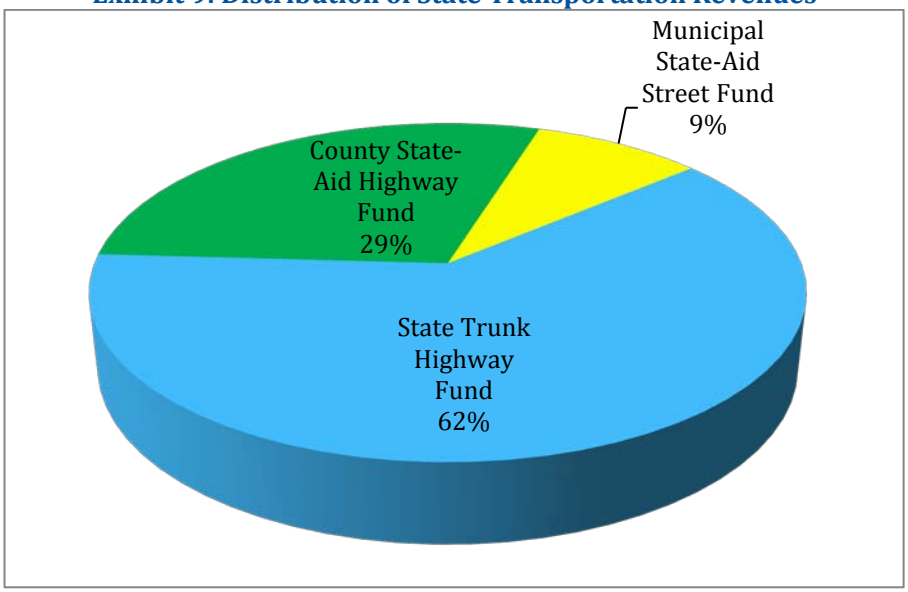


Infrastructure funding programs, especially at the federal and state levels, tend to dedicate funds to a single mode of transportation. As a result, few tools are available to analyze the costs and benefits that cut across modes of transportation. In addition, revenue mechanisms have not been developed to address system-wide multimodal improvement needs.

Minnesota has made some progress towards generating new revenue to invest in our transportation systems. In 2008, the Minnesota Legislature passed a bill gradually increasing state fuel taxes from 20¢ per gallon to 28.5¢ per gallon, with the last increase taking effect in July 2012.

In Minnesota, federal and state motor fuel taxes provide roughly 50 percent of the state's total transportation funding. The remaining funds come from registration taxes (tab fees) and the motor vehicle sales tax. State transportation revenues are distributed as shown in the pie chart in **Exhibit 9**.

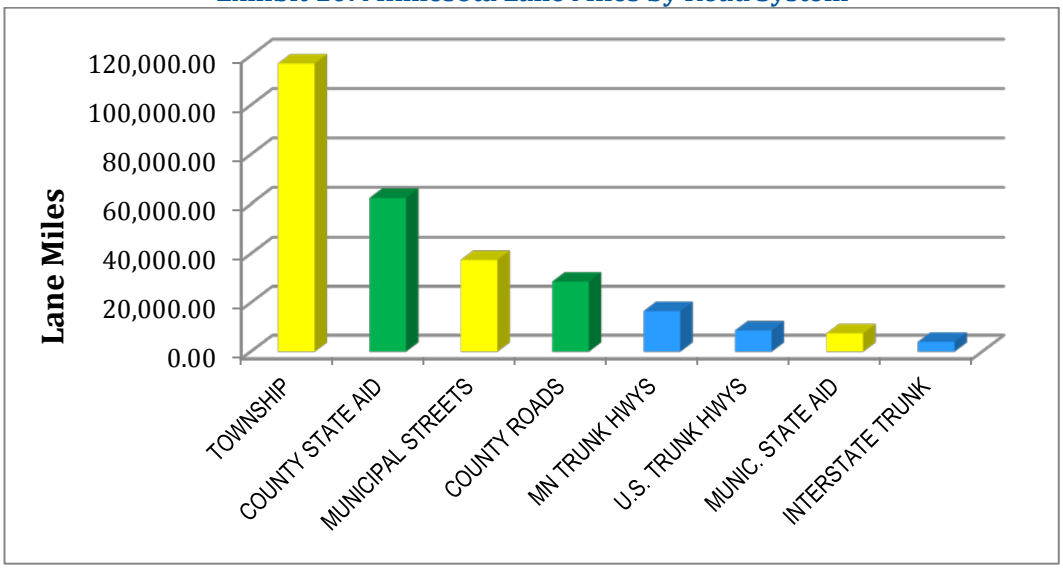
Exhibit 9: Distribution of State Transportation Revenues



Source: MN House Research, Short Subjects – Matt Burress, January 2011. Graphic by CDM Smith

A significant challenge remains however for local and county governments, because while local governments see the minority of transportation revenues from the state, they are responsible for a majority of lane miles in the state.

Exhibit 10: Minnesota Lane Miles by Road System



Midwestern Diesel Fuel Taxes

State fuel taxes paid in Midwestern states vary considerably, and the table in **Exhibit 11** shows the base state excise tax rates on diesel for Minnesota and surrounding states. The base rate for Minnesota is 28.5¢ per gallon (cpg), which is lower only than Wisconsin. The table also shows other state taxes applied to diesel sales such as sales taxes and underground storage tank (UST) fees. When all fees are considered, Minnesota's total diesel fuel taxes of 28.60 cpg ranked behind Illinois, Indiana, Michigan, Ohio, and Wisconsin.

Exhibit 11: State Imposed Diesel Fuel Tax Rates in Select Midwestern States

	Figures in cents per (CPG)			UST = Underground Storage Tank
State	Diesel Excise Tax	Other State Fuel Taxes	Total State Diesel Taxes	Notes
Illinois	21.50	21.50	43.00	Other taxes include statewide sales tax of 6.25% computed on retail price less state and federal excise taxes, and 1.1 cpg for UST fund
Indiana	16.00	32.20	48.20	Includes statewide sales tax of 7.0% computed on retail price less state and federal excise tazes, and 1.0 cpg inspection fee, and an 11 cpg surcharge paid quarterly
Iowa	22.50	1.00	23.50	Other fees include 1.0 cpg UST fee. The Iowa Legislature is currently considering an 8.0 cpg increase in its base tax rate
Kansas	26.00	1.00	27.00	Other taxes include 1.0 cpg environmental fee
Michigan	15.00	22.30	37.30	Other taxes include 6% sales tax and 0.875 cpg for environmental regulation fee for refined petroleum fund
Minnesota	28.50	0.10	28.60	Other taxes column includes an inspection fee of 0.1 cpg and will at (at times) include a clean up fee of 2 cpg depending upon the level of environmental fund
Missouri	17.00	0.30	17.30	Missouri also collects two additional fees on all sales of fuel – an agriculture inspection fee in the amount of 2.5 cents per 50 gallons (.0005 per gallon) and the transport load fee in the amount of $20 per 8,000 gallons (.0025 per gallon) – of around 0.3 cpg
Nebraska	26.20	0.30	26.50	Other taxes include 0.3 cpg release prevention fee for diesel and other fuels
North Dakota	23.00	0.00	23.00	A special excise tax of 2% is imposed on al sales of special fuel (diesel or LPG) that are exempted from the volume tax if the fuel is sold for use in the state
Ohio	28.00	0.00	28.00	
South Dakota	22.00	2.00	24.00	Other taxes include 2 cpg Tank Inspection Fee
Wisconsin	30.90	2.00	32.90	Other taxes include 2 cpg UST fee on gasoline and diesel

Source: American Petroleum Institute (eff. 7/1/2012): http://www.api.org/Oil-and-Natural-Gas-Overview/Industry-Economics/Fuel-Taxes.aspx

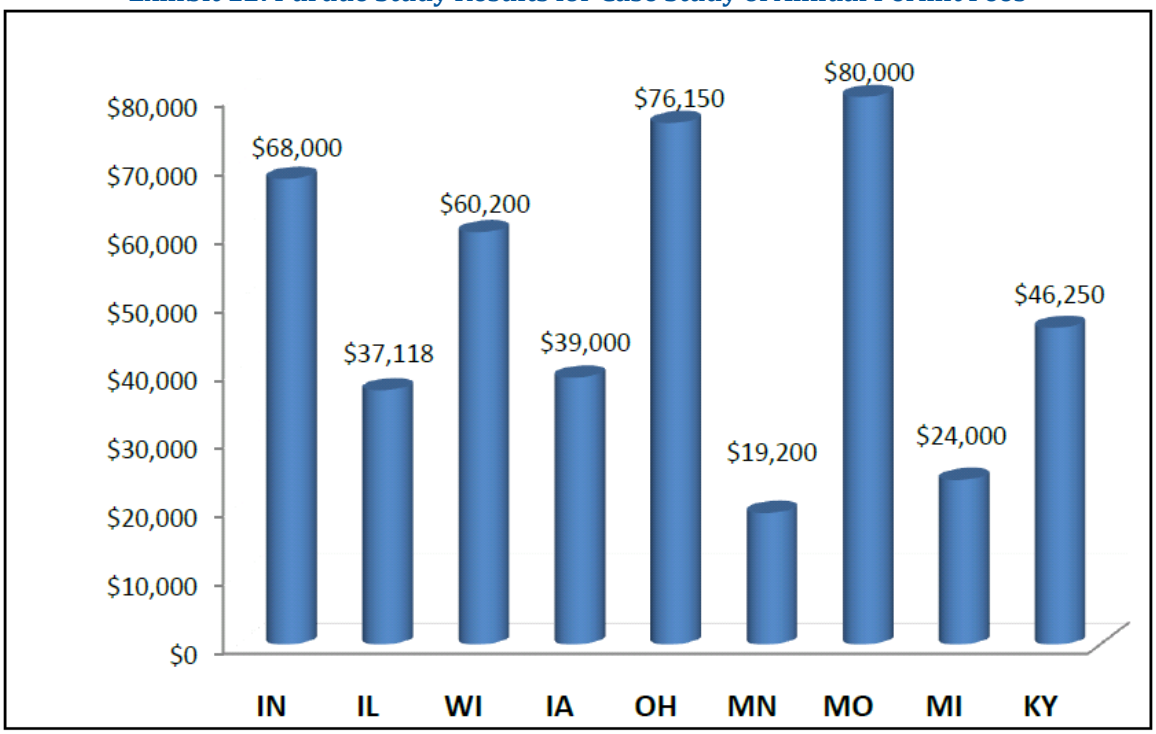
Midwestern Overweight Permit Fees

In 2010, the University of Purdue undertook an extensive review of truck permitting practices and the fees associated with overweight truck permits in Indiana, compared to other states in the Midwest.[5] The study found that differences in permit fee structures between the states make it difficult to compare practices and fees on so called apples-to-apples comparison. As a result, the study's authors compared permitting fees among the states using several weight and permit application scenarios.

Case Study 1: Annual Blanket Permit or Annualized Multiple Trip Permits

This scenario compared a hypothetical trucking operation running a fleet of 200 trucks across a range of size and weight categories. The vehicles in the hypothetical fleet were then assumed to operate 600 miles per year in the comparison states. Some states in the study region do not offer annual or "blanket" permits, and in those cases the cost was associated with purchasing multiple trip permits. **Exhibit 12** shows the cost comparison for Case Study 1. As the chart in Exhibit 11 demonstrates, annual permit fees in Minnesota are in the bottom one-third among the nine comparison states in the Midwest.

Exhibit 12: Purdue Study Results for Case Study of Annual Permit Fees



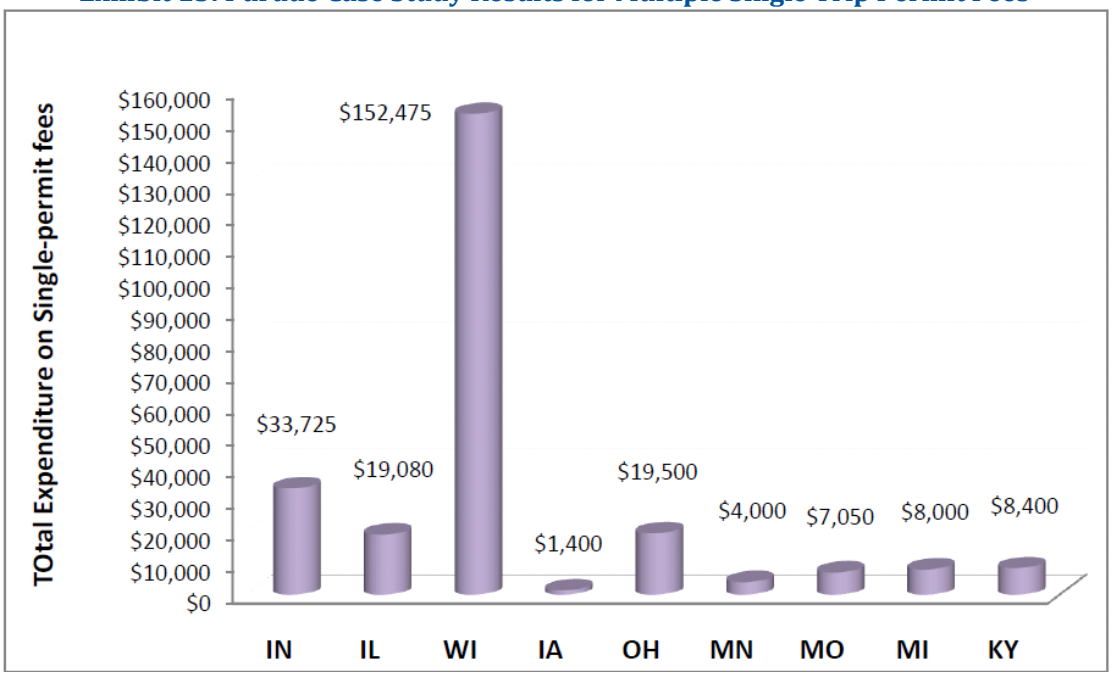
Case Study 2: Multiple Single-Trip Permits

In the second case study, the researchers examined the costs associated with purchasing multiple single trip permits from state permitting agencies. The results of Case Study 2 are shown in **Exhibit 13**. Under this scenario, Minnesota falls in at the low end. If the high (Wisconsin) and low (Iowa)

[5] Bilal, M. K., M. Irfan, A. Ahmed, S. Labi, and K. C. Sinha. *A Synthesis of Overweight Truck Permitting*. Publication FHWA/IN/JTRP-2010/12. Joint Transportation Research Program, Indiana Department of Transportation and Purdue University, West Lafayette, Indiana, 2010.

single trip permit fee states are removed, the remaining seven states have annual fees associated with the hypothetical truck fleet ranging from $4,000/year in Minnesota to $33,725 in Indiana.

Exhibit 13: Purdue Case Study Results for Multiple Single Trip Permit Fees



Administrative Costs Associated with Various Fee Collection Programs

One of the often cited benefits of existing federal and state fuel taxes as a source of highway revenue is their very low administrative costs. Research regarding the costs associated with oversize/overweight (OS/OW) permitting programs however, have found at times that the fees collected through permits cover only the administrative costs of the programs:

> *"Permit fees are usually set up to primarily recover the cost of administering the permit program, and several states are in the process of revising the permit fee structures to include the cost responsibility of trucks into the pricing framework. However, full cost recovery is least likely to be implemented because permits are usually issued to promote local industries and thus it is difficult to charge permit fees that are commensurate with full cost recovery."*[1]

An extensive analysis in Texas some years ago estimated that overweight vehicles moving under permit in the state contributed to $62.8 million in annual pavement damage. At the time, TxDOT was issuing 290,000 permits each year with an estimated administrative cost of $2.5 million. The same year, the sale of permits generated total revenues of $8.0 million. In the case of Texas, the administrative costs of the permit system represented 31 percent of total revenue, and the net revenue contributed less than 10 percent of the estimated pavement consumption.[2]

Permit programs, depending upon how they are administered, can also impose significant costs upon the motor carriers required to obtain permits, especially when the process is manual.

An often heard criticism of toll collection systems, such as was proposed for collecting fees under the inland port authority concept, is that the administrative costs associated with tolls are much higher than for fuel taxes or general sales taxes. The trucking industry often cites the cost of fuel and sales taxes as having; "*a 2-4 percent administrative cost, as compared to up to 25 percent administrative costs from a toll."*[3] However, as tolling systems become more automated their administrative costs are dramatically falling. In addition, most of the studies previously cited conclude that fuel taxes are not

sustainable in the long run due to alternative fuels, higher mpg, and the political resistance to index these fuel taxes to the costs of road maintenance (e.g., politicians have been unwilling to raise fuel taxes on the trucking industry, even though the American Trucking Association has supported higher taxes if dedicated to roadways for many years). It is also true that federal cost allocation studies have found that at least some truck classes have historically not paid fees equivalent to the damage they incur.[4]

> *Although under the current distribution of Federal-aid highway program expenditures the overall Federal user fee structure is more equitable than it was in 1982, inequities remain both across different vehicle classes and among vehicles within the same class. Many of the heaviest trucks continue to pay less than their share of highway costs while many light trucks, pickups, and vans pay more than their share of highway costs. At any given weight, trucks with more axles generally have lower cost reliability and pay a larger share of their highway cost responsibility than trucks with fewer axles.*

Case Studies for Freight Financing

One of the continuing issues facing multimodal transportation development at all levels of government is the lack of dedicated funding programs to support freight infrastructure. At the federal level the most recent reauthorization bill; *Moving Ahead for Progress in the 21st Century* (MAP-21) fell short of creating a national freight program, but does provide more flexibility to state and local governments to finance freight projects.

It is likely that local governments will continue to be called on to administer a large and possibly increasing share of transportation infrastructure spending. Currently, local governments on average administer 37 percent of all highway spending, while collecting only 4 percent of all highway revenues. Again, on average local governments spend about 8 percent of their highway revenues on administrative and enforcement functions. Local governments traditionally have focused on administering transportation spending on roadways within their jurisdiction. In many places, there is no effective model or structure for multi-jurisdictional governance. Freight projects often impact multiple jurisdictions and are at a scale larger than can be addressed by the authority vested in any one unit of local government. In addition, freight projects often involve private sector stakeholders without a history of working cooperatively with state and local government on transportation funding decisions. It is likely that moving forward local governments will need to look at financing mechanisms favoring public-private partnerships which leverage federal grant and loan programs through matching funds.

Local Road Funding Alternatives

- **Charge per-use fees:** Winona County is a leader in making silica sand mining policy. Several counties favor Winona County's approach of charging sand haulers a $0.219 per ton-mile to use county roads. Many counties are waiting to observe and evaluate the impact of Winona County's fee structure.
- **User based fees:** Strategically locate weigh-in-motion (WIM) scales along key truck routes to move toward a more equitable weight-distance user fee system.
- **Haul rate fee:** Charge a blanket "haul rate" fee for the entire frac mining project.
- **Quantify and charge for damage:** Quantify and charge for damage by calculating the number of Equivalent Single Axle Loads (ESALs) mining activity will take out of the roads intended life.

Calculate the amount of damage to asphalt-surfaced roads by mining development and sand haulers.

- **Assessments:** Conduct pre- and post-mining condition assessments of the roads. This information will allow the counties to charge for the actual cost incurred to return the road to the previous (or agreed upon) condition.
- **Aggregate Material Removal Production Tax:** Per Minnesota Statutes 2001; 298.75. Aggregate tax; per ton, or per cubic yard charge: 21.5 cents per cubic yard or 15 cents per ton. Note: a county that received this tax is prohibited from imposing any additional host community fees on aggregate production within that county.
- **Transportation Impact Study:** Require mines to complete a transportation impact study to develop a case-by-case strategy for increased sand hauling traffic. Results of the study will serve as a basis for identifying use restrictions and fee structures.
- **Toll roads:** Build toll roads to the mines.

References

[1] Edward Fepke, Deepak Gopalakrishna and John Woodrooffe, *Performance-Based Oversize and Overweight Permitting System,* Transportation Research Record, Volume 1966 / 2006, pages 118-125. Online Feb. 2007.
[2] Dan Middleton, Arturo Villarreal and Joseph Blaschke; *Evaluation of Oversize/Overweight Permit Policy and Fee Structure.* Texas Transportation Institute, November 1988. pg. 62-63.
[3]Jeremy Truitt, *Toll proposed for I-70.* The Maneater. January 27, 2012. Quote attributed to Tom Crawford, Missouri Trucking Association. Online at: *http://www.themaneater.com/stories/2012/1/27/proposed-changes-i-70-could-raise-cost-travel-miss/*
[4] USDOT, FHWA, 1997 Federal Highway Cost Allocation Study, Final Report.