ILLINOIS GENERAL ASSEMBLY

LEGISLATIVE RESEARCH UNIT

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RAIL INFRASTRUCTURE FUNDING SOURCES

You asked for information on revenue sources that have been or could be used to finance rail infrastructure investments. We describe below sources that have been used for rail projects in the U.S., followed by sources that have been used elsewhere or proposed for use in the U.S.

American Projects

We found two kinds of federal grants; several kinds of state and local taxes; and three types of user fees that have been used to fund U.S. rail infrastructure projects. Appendix A to this letter lists such funding sources by type, with examples of projects funded by each type. We describe below each of these funding sources and give examples of projects they funded.

Federal Grants

CMAQ program

A program called Congestion Mitigation and Air Quality Improvement (CMAQ) was created in 1991 to fund transportation projects to improve air quality or relieve congestion.[1] Funds are apportioned to states by a formula based on population and severity of ozone and carbon monoxide pollution; each state chooses which projects to fund.[2] The Chicago Metropolitan Agency for Planning (which replaced the Northeastern Illinois Planning Commission[3]) selects CMAQ projects for that region. The Chicago area has received nearly $1 billion in CMAQ funding since federal fiscal year 1992.[4]

In 1998, a project to improve rail access to the Bensenville rail yard got $2.1 million in CMAQ funding; the Canadian Pacific Railway contributed $32.9 million.[5]

In an example from other states, the Delaware Valley Regional Planning Commission (an interstate agency that coordinates planning in the Delaware River area) offers CMAQ funds every 2-3 years to public and private entities in Pennsylvania and New Jersey. The Commission chooses projects in each state to be funded by the state's CMAQ awards; funds are offered on a competitive basis.[6] Recent rail projects include a new loading facility, new tracks to an intermodal facility, and terminal gate improvement.[7]

GARVEEs

States can borrow money through Grant Anticipation Revenue Vehicles (GARVEEs) to fund federally approved infrastructure projects. This involves issuing bonds to be financed with a state's future federal highway funds, which are paid when bond payments are due. Although this does not represent additional funding, GARVEEs allow a state to fund construction projects in advance, possibly resulting in lower costs due to inflation savings.[8]

The Freight Rail Improvement Project (FRIP) in Rhode Island was a project to construct 22 miles of freight track alongside tracks owned by Amtrak.[9] The track connects the state-owned Port of Davisville to national markets.[10] Completed in 2006, the project used several funding sources. The state sold $42.5 million in GARVEEs and $8.5 million in motor fuel bonds to fund construction; there was also $55 million in federal appropriations.[11]

State and Local Taxes

State motor fuel taxes

Rhode Island's FRIP (mentioned in the preceding paragraph) used funding including bonds to be repaid with part of the state's motor fuel tax. That tax is 30¢ per gallon, of which 2¢ is dedicated to repay the bonds.[12] The motor fuel tax bonds provide the state's 20% match for federal funds raised by selling GARVEEs.

FRIP was one of five major Rhode Island construction projects funded by GARVEEs and motor fuel tax bonds. For these projects, Rhode Island planned to sell a total of $548.2 million in GARVEE and $119.9 million in motor fuel tax bonds (totaling $668.1 million). Motor fuel taxes used to pay debt service are expected to be $7 million in fiscal year 2009.[13]

Local taxes

Nevada's Reno Area Transportation Corridor (ReTRAC) program was a project to dig a trench 33 feet under existing tracks to separate the tracks from automobile traffic in downtown Reno. The project, completed in 2006, put railroad tracks in the 2.3 miles of trench, with 11 bridges for automobiles and pedestrians to cross it.[14] The $280 million project was funded by a combination of federal, city, and private funds. Federal grants (earmarks) totaled $21.3 million and federal loans totaled $50.5 million; the city contributed $79.6 million and used $111.5 million in city revenue bonds; and the Union Pacific Railroad contributed $17 million.[15]

The city's debt (federal loans and city bonds) from this project is being repaid through a combination of local taxes and other revenue sources:

(1) A sales tax of one-eight percent.

(2) A 1% hotel occupancy tax.

(3) Lease income from Union Pacific.

(4) Taxes from a special assessment district.[16]

User-Related Fees

The Transportation Research Board (TRB) is a division of the National Research Council—a nonprofit organization jointly administered by the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. In 2003 the TRB reviewed selected projects for improving access to cargo hub and intermodal facilities, seeking to identify effective strategies and funding sources. Its report said that only two of the projects used "project-specific user fees:" the Alameda Corridor, and the Columbia Slough Railroad Bridge.[17] We describe below those two projects and the Las Vegas Monorail expansion, which was funded by fares.

Container Charge

The 20-mile Alameda Corridor was completed in 2006 by the Alameda Corridor Transportation Authority, a regional authority for Long Beach and Los Angeles. Its freight-only tracks connect the ports of Long Beach and Los Angeles to the transcontinental rail network in Los Angeles.[18]

The $2.4 billion project was funded with $864 million in federal, state, and local grants and $1.6 billion in debt. The debt is being paid using container fees on cargo transported

into or out of the region[19]—currently $37.34 per loaded container and $9.46 per empty container.[20] Because the project improved freight travel in the region, shippers must pay for all cargo shipped by rail into or out of the region, even if not on Corridor tracks.[21]

The Corridor has not had its intended effects on shipping in the region. Around 40 to 50 trains a day run on its tracks (a third of capacity); and the Corridor handled only 26% of the ports' total volume in 2004 (half its designed capacity).[22] News articles report that shippers are sending cargo on trucks (often to different shipping hubs) because trucks incur no additional fee and are more convenient than rail lines, which put limits on where cargo can go and how it can be handled.[23]

Track leasing

Oregon's Columbia Slough Bridge to Intermodal Lines was a 1997 project to build a bridge over the Columbia Slough and connect the Port of Portland with inland rail yards, replacing use of trucks to transport cargo to those yards.[24]

The $6 million project was funded with $2.1 million in federal demonstration grants; $900,000 in CMAQ grants; and $3 million from the Port of Portland. The Port pays its share of the costs by charging the Burlington Northern Santa Fe and Union Pacific Railroads to use the track. The railroads pay the port $53 per year for each railcar they use on the track. This agreement is for 15 years, and the railroads must pay for at least 10,000 railcars per year.[25] The TRB stated:

> The Rail bridge project has improved rail service to the port. It also produced truck and locomotive traffic switching needed to support expected growth in freight movements.[26]

Rider fees

The Las Vegas Monorail was claimed by its developers to be the nation's "first modern-era urban rapid transit system to be funded without public tax revenues." Financed by the non-profit Las Vegas Monorail Company, it was an expansion of a previously free, two-stop monorail between Bally's and MGM casinos.[27]

The 3.9-mile expansion was completed in 2004, financed with $650 million in tax-exempt industrial development bonds, to be repaid with revenues from fares.[28] The fare, initially $2.50, has increased in stages to $5.00.[29]

The monorail did not have its intended effect on Las Vegas transportation. It was to have served over 52,000 riders a day, but averaged only 22,000 in the last quarter of 2007. This could be attributed to problems including poor quality of the line (it has closed several times for repairs); its limited number of stops (it does not connect with the airport or other high-traffic areas of the city); and the high fare.[30] Despite an increase of nearly 1 million riders in 2007, the monorail has yet to break even; the company has been using reserve funds to cover shortfalls. Both Moody's and Fitch Ratings recently downgraded bonds used to finance the project, predicting that the Company will default on the loans by 2010.[31]

Limitations of User Fees

The disappointing results of the Alameda and Las Vegas projects illustrate the dangers of relying on user fees alone to fund infrastructure. But success for each of these projects would require users to switch modes of transportation, so they may not be the best tests of a user fee's effectiveness versus other funding sources. A better test of user fees, because it does not require switching transportation modes, may be toll highways.

A 2006 TRB report compared projected revenues to actual revenues of 26 toll highways in their first 5 years. Appendix B reports that information. Of the 26 projects, 17 (65.4%) never surpassed 85% of projected revenues in any year; only 4 (15.4%) surpassed 85% in all 5 years. The full report can be downloaded at:

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_364.pdf

If user fees are the preferred long-term funding source, it may be necessary to use a combination of funding sources to build projects and finance operations until they can be supported by user fees.[32]

Funding Sources Not Used in U.S.

We found two types of revenue sources not now being used in the U.S. to fund rail infrastructure: (1) charging all travelers, regardless of mode of transportation, to use a route, and (2) pollution taxes that require payments in proportion to pollution created.

Charging by Route Rather Than Transportation Mode

This idea involves charging all motorists, shippers, and commuters to use all highways, railroads, and waterways along a particular transportation corridor or leading into a particular urban area, with proceeds used to fund railroad expansion. Opponents question the equity of this approach, arguing that it is unfair to make motorists and truckers pay for improvements to a mode of transportation they do not use. Supporters reply that such cross-subsidies have occurred before in U.S. transportation funding. Until 1962, U.S. rail and bus passengers indirectly subsidized development of airport infrastructure. (They paid a tax on their tickets, with proceeds going to general revenues—part of which were used to support expansion of airports until air travel got a dedicated fund of its own in 1970.[33]) Another point in favor of this idea is that shifting traffic from highways to railroads could alleviate congestion for those who continue using highways.

A number of possibilities exist for imposing a tax on all travel (or on all freight transportation). Many of these seem to draw on ideas offered in an enclosed 1951 essay by Milton Friedman and Daniel Boorstin, "How to plan and pay for the safe and adequate highways we need."[34]

Charging all commuters

One approach would be imposing moderate passenger fees on commuter rail users, while charging motorists for the privilege of driving downtown. One common way to do the latter—used in Singapore since 1975 and more recently in 15 European cities—is charging each driver a high daily rate to enter a downtown area, with proceeds used to improve roads, strengthen public transportation, or finance related improvements.[35] Another possibility is adding a tax on downtown parking. Either approach could reduce congestion and increase transit ridership, while ensuring that those who must drive can quickly get to their destinations and find parking.[36]

A recent agreement between the State of Virginia and the Metropolitan Washington Airports Authority (MWAA) would use toll revenue from the Dulles Toll Road to finance a long-needed expansion of the Washington Metrorail system.[37] Under this agreement, the MWAA would operate, maintain, and improve the toll road for 50 years, using toll revenue to pay off remaining debt on the road and finance part of the state's share of the $4 billion needed to extend metrorail service to it.[38] (This project has been stalled by resistance from federal transportation officials, although recent reports suggest that a compromise may be near.[39])

Shippers pay

For long-range freight, one idea is to charge both highway and rail vehicles by the ton. Table 1 shows the total value, tons, and ton-miles of goods starting or ending in Illinois in 2002 using the four main modes of freight transportation. (Except where metric tons are specified, a "ton" in this letter means 2,000 pounds. A metric ton is approximately 2,205 pounds.)

Table 1: Freight Starting or Terminating in Illinois by Transportation Mode (2002)

Mode	*Value shipped (billions)*	*Tons shipped (millions)*	*Ton-miles (billions)*
Truck	$501.5	608.6	107.1
Rail	24.5	162.8	42.4
Water	5.4	51.5	45.8
Air	10.2	0.214	0.2
Totals	**$691.7**	**932.2**	**301.1**

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, "2002 Commodity Flow Survey: Geographic Area Series: Shipment Characteristics by Origin State by Mode by Destination State" (downloaded from Census Bureau American Factfinder Internet site).

A 2006 report by the Illinois Department of Transportation said that a heavy truck causes thousands of times as much damage to the state's roads as a car or other personal vehicle.[40] Because existing fuel tax and truck registration fees do not cover the estimated $2.1 billion in annual pavement repair and replacement costs due to trucks, a significant portion of the cost of trucking is subsidized by drivers of lighter vehicles, and state taxpayers generally.[41] Table 2 on the next page shows numbers of vehicle-miles traveled in Illinois by each vehicle type in 2004; estimated resulting pavement damage; and estimated annual damage per vehicle based on estimated average annual mileage. It is worth noting that although trucks traveled only 10.4% of total vehicle miles in Illinois in 2004, they caused over 90% of highway damage. Passenger cars, pickup trucks, vans, and recreational vehicles traveled 88.7% of total vehicle miles but caused less than 2% of the damage.

Table 2: Estimated Annual Use of and Damage to Illinois Roads by Vehicle Class (2004)

Vehicle type	*Vehicle-miles traveled (millions)*	*Est. pavement damage (millions)*	*% of all vehicle-miles*	*% of total damage*	*Estimated damage per vehicle*
6-tire truck, single frame	2,313	$381	2.1%	18.6%	$ 4,110
Tandem truck, single frame	1,529	331	1.4	16.1	5,400
3-axle tractor-trailer	1,497	204	1.4	9.9	5,430
4-axle tractor-trailer	90	15	0.1	0.7	6,480
5-axle tractor-trailer	5,349	870	4.9	42.4	13,010
6+-axle tractor-trailer	587	57	0.5	2.8	7,750
Total, heavy trucks	**11,365**	**$1,858**	**10.4**	**90.5%**	-
Buses	919	157	0.8	7.6	3,405
Cars & other light vehicles	96,627	39	88.7	1.9	6

Note: Totals may not add exactly due to rounding.

Source: LRU calculations from Illinois Department of Transportation, "Truck Size and Weight Report" (April 2006, provided by David Lippert, Engineer of Materials and Physical Research, Illinois Department of Transportation, Springfield, March 25, 2008), pp. 7-8.

If all highway vehicles were charged the same amount per pound of axle (or wheel) weight for using highways, trucks would pay amounts more accurately reflecting the wear they cause to road surfaces. The added cost of shipping by truck might allow rail companies to compete with the trucking industry even while charging a user fee to cover infrastructure development.

Other fees

One possible revenue source would be to create "high occupancy toll" lanes, which enable persons driving alone to use lanes reserved for high-occupancy vehicles if they pay a toll. Another would be to create "truck-only toll" lanes, which would be built to withstand more weight and would be restricted to trucks paying tolls.[42]

Another idea, which Oregon has pilot-tested in recent years, is using a GPS tracking device and a special odometer to tax motorists per mile they drive on state highways rather than per gallon of fuel they buy.[43] Although the Oregon Department of Transportation declared that the program would be feasible for large-scale implementation, it has been criticized by environmentalists and privacy advocates.[44]

Pilot programs

The U.S. Department of Transportation's Value Pricing Project has financed a number of feasibility studies and pilot projects involving congestion fees. Recent quarterly reports for the Project are available at this site:

http://ops.fhwa.dot.gov/tolling_pricing/value_pricing/pubs_reports/quarterlyreport/index.htm

Carbon Taxes

Another potential revenue source is charging an amount per ton of carbon dioxide or carbon emitted.[45] This would involve taxing gasoline, diesel fuel, and other fuels based on their carbon content, and potentially also taxing electricity. The New York-based Carbon Tax Center (a nonprofit organization formed as a project of the Environmental Law and Policy Center of the Midwest) advocates a national carbon tax to be applied further upstream—when fuel is extracted from the ground or imported into the country—but states could not effectively tax carbon at these points.[46]

Finland adopted a carbon tax in 1990; its current rate is €18.05 per metric ton of carbon dioxide, or €66.2 per metric ton of carbon (at a recent exchange rate, $25.73 per ton of carbon dioxide or $94.36 per ton of carbon).[47] Carbon taxes have also been adopted in Denmark, the Netherlands, Norway, and Sweden.[48]

Two Canadian provinces have also adopted carbon taxes. Quebec imposed a relatively low tax on hydrocarbons (petroleum, natural gas, and coal) in 2007; at recent exchange rates the gasoline tax is 3.1¢ U.S. per gallon.[49] In February 2008, British Columbia's finance minister announced a revenue-neutral carbon tax of $10 Canadian per metric ton (U.S. $8.90 per 2,000-lb. ton) of carbon, to rise annually by $5 per metric ton to $30 (U.S. $26.73 per 2,000-lb. ton) in 2012 but with offsetting reductions in other taxes.[50]

Table 3 on the next page shows estimated emissions of Illinois transportation modes in 2005, and estimates proceeds of a tax of $37 per metric ton on carbon (the initial rate proposed by the Carbon Tax Center). For convenience it shows emissions expressed both in weight of both carbon dioxide (CO_2) and elemental carbon, each in metric tons, since the rate of the Center's proposed tax is stated in dollars per metric ton of carbon.

Table 3: Carbon Emissions of Illinois Transportation Sector (2005) and Projected Proceeds of Carbon Tax at $37 Per Metric Ton

	Emissions (1,000s of metric tons)		*Tax proceeds (millions)*
	CO_2	*Carbon*	
Highway*	57,499	15,697	$580.8
Gasoline & gasohol	*45,796*	*12,502*	*462.6*
Diesel fuel	*11,494*	*3,138*	*116.1*
Aviation	13,872	3,787	140.1
Marine	1,179	322	11.9
Off-highway machinery†	2,690	734	27.2
Railroad	590	161	6.0
Other sources	733	200	7.4
Totals	**76,563**	**20,902**	**773.4**

Notes

Some columns do not add to totals due to rounding.

* Gasoline and diesel fuel data are based on state motor fuel tax receipts. These numbers do not correspond exactly with highway totals, since some fuels on which motor fuel tax is paid are used off highways.

† "Off-highway" use includes construction (earth-moving equipment, cranes, stationary generators, air compressors, etc.), logging, scrap and junk yards, refrigeration units on trucks, etc.

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We hope this information is helpful. Please let us know if we can be of further assistance.

Sincerely,

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TB:JCE:ag

Enclosure

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Notes

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Appendix A: Funding Sources for U.S. Rail Infrastructure Projects

Type	*Description*	*Examples*
Federal grants	Congestion Mitigation and Air Quality Improvement (CMAQ) grants	A 1998 project to improve the Bensenville, Illinois rail yard was funded with $2.1 million in CMAQ funds and $32.9 million in private funds. The Delaware Valley Regional Planning Commission offers CMAQ funds through a competitive bidding process every 2 or 3 years.
	Grant Anticipation Revenue Vehicles (GARVEEs)	Rhode Island's Freight Rail Improvement Program involved selling $42.5 million in GARVEEs and $8.5 million in state motor fuel bonds.
User fees	Container charges	The $2.4 billion Alameda Corridor project was financed with $1.6 billion in bonds and loans being repaid from charges on every railcar in the region.
	Track leasing	The $6 million project to build a bridge across the Columbia Slough (near the Port of Portland in Oregon) was funded with $3 million from the Port. The Port is funding its contribution by leasing the tracks to BNSF and Union Pacific for $53 per car per year (with a minimum of 10,000 cars per year) for 15 years.
	Rider fees	The $650 million expansion of the Las Vegas Monorail was financed by bonds being repaid from rider fees (the monorail previously was free).
State or local taxes	Local taxes	The $280 million Reno Transportation Rail Access Corridor (ReTRAC) was financed with $111.5 million in revenue bonds from the city of Reno, which are being repaid from four sources: (1) A sales tax of 0.125%. (2) 1% hotel-occupancy tax. (3) Lease income from Union Pacific. (4) Taxes from a special assessment district downtown.
	Motor fuel bonds	Rhode Island issued $119.9 million in bonds to provide the required match for GARVEEs; the bonds are used for several infrastructure projects (including the FRIP) and are repaid with 2¢ of each 30¢ per gallon of the state gasoline tax.

Sources: As cited in accompanying letter.

Appendix B: Toll Highway Revenues as Percent of Projected Revenues (ranked highest to lowest)

State	*Toll highway*	*Year(s) of opening*	*Year after opening*					*Average over years shown*
			1	*2*	*3*	*4*	*5*	
GA	State Road 400	1993	117.0%	133.1%	139.8%	145.8%	141.8%	135.5%
TX	George Bush Expressway	1998	152.2	91.8	n.a.	n.a.	n.a.	122.0*
IL	**Illinois North-South Tollway**	1989	94.7	104.3	112.5	116.9	115.3	108.7
FL	Coctawhatchee Bay Bridge	1993	79.8	95.5	108.9	113.2	116.7	102.8
CA	Foothill North	1995	86.5	92.3	99.3	n.a.	n.a.	92.7*
CA	Foothill Eastern	1999	119.1	79.0	79.2	n.a.	n.a.	92.4*
TX	Dallas North Tollway	1986 & 1987	73.9	91.3	94.7	99.3	99.0	91.6
FL	Central Florida Greenway, North Segment	1989	96.8	85.7	81.4	69.6	77.1	82.1
TX	Sam Houston Toll Road	1988 & 1990	64.9	79.7	81.0	83.2	78.0	77.4
FL	Polk Turnpike	1999	81.0	67.5	n.a.	n.a.	n.a.	74.3*
CO	E-470	1999	61.8	59.6	n.a.	95.4	n.a.	72.3*
FL	Seminole Expressway	1994	45.6	58.0	70.7	78.4	70.1	64.6
CO	Northwest Parkway	2004	60.5	56.0	n.a.	n.a.	n.a.	58.3*
FL	Veterans' Expressway	1994	50.1	52.9	62.5	65.0	56.8	57.5
OK	Creek Turnpike	1992	49.0	55.0	56.8	59.2	65.5	57.1
CA	San Joaquin Hills	1996	31.6	47.5	51.5	52.9	54.1	47.5
FL	Garcon Point Bridge	1999	32.6	54.8	50.5	47.1	48.7	46.7
VA	Pocahontas Parkway	2002	41.6	40.4	50.8	n.a.	n.a.	44.3*
FL	Central Florida Greenway South Segment	1990	34.1	36.2	36.0	50.0	n.a.	39.1*
FL	Osceola County Parkway	1995	13.0	50.7	38.5	40.4	n.a.	35.8*

Appendix B: Toll Highway Revenues as Percent of Projected Revenues (ranked highest to lowest) (cont'd)

State	*Toll highway*	*Year(s) of opening*	*Year after opening* 1	2	3	4	5	*Average over years shown*
FL	Central Florida Greenway Southern Connector	1993	27.5	36.6	n.a.	n.a.	n.a.	32.1*
FL	Sawgrass Expressway	1986	17.8	23.4	32.0	37.1	38.4	29.7
SC	Greenville Connector	2001	29.6	n.a.	n.a.	n.a.	n.a.	29.6*
OK	John Kilpatrick Turnpike	1991	18.0	26.4	29.3	31.4	34.7	28.0
VA	Dulles Greenway	1995	20.1	24.9	23.6	25.8	35.4	26.0
TX	Hardy Toll Road	1988	29.2	27.7	23.8	22.8	22.3	25.2
Averages by year since opening*†		-	**54.3%**	**57.5%**	**59.2%**	**60.5%**	**60.9%**	**56.4%**

Notes

"n.a." means the information is not available.

* Average based on years having data; may be distorted by missing data for some years.

† Average percentages by year are as reported by state or local authorities based on their budgets and revenue projections; any comparisons among them cannot be precise.

Source: Transportation Research Board, *Estimating Toll Road Demand and Revenue: A Synthesis of Highway Practice* (2006, downloaded from Transportation Research Board Internet site), p. 21.