Cato Handbook for Policymakers

CATO INSTITUTE

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24. Surface Transportation Policy

Congress should

- eliminate federal highway, transit, and other surface transportation programs; and
- devolve to the states and local areas full responsibility for highways and transit.

Failing that, Congress should

- fund state highways in block grants based on each state's land area, population, and road mileage;
- fund regional transit in block grants based on each metropolitan area's population and transit fare revenues;
- eliminate any conditions on the use of those funds, such as air pollution mandates or requirements for long-range planning;
- eliminate ''flexible funds,'' that is, funds that can be spent on either highways or transit;
- encourage states and local areas to rely more heavily on user fees to fund all forms of transportation; and
- ensure that any efforts to save energy or reduce greenhouse gas emissions are cost-effective, that is, that state and local governments only invest in projects that can be shown to reduce energy consumption or greenhouse gas emissions at a lower cost than alternative projects.

The Importance of Effective Transportation Policy

Efficient transportation literally provides the wheels that keep the American economy moving. More than 11 percent of our gross domestic product

consists of expenditures on personal or for-hire transportation. But without that 11 percent, much of the rest of our economy would grind to a halt as people could not get to work and manufacturers could not get raw materials or deliver their products to consumers.

In 1956, Congress decided to build an Interstate Highway System. Although this system took longer and cost more to build than originally predicted, it led to an extraordinary improvement in American mobility. For example, although interstates make up only 6 percent of state rural highway networks, they provide more than 20 percent of all intercity auto traffic and more than half of all intercity truck traffic.

The key to the success of the Interstate Highway System is that it was a user-pay system, funded exclusively by federal and state gasoline taxes and other highway user fees. This user-pay system helped ensure that interstate highways were built only where they were needed and helped keep construction costs from becoming excessive.

In recent decades, Congress has increasingly departed from user-pay systems, and instead requires users of some forms of transportation—primarily auto drivers—to pay for other forms of transportation—primarily public transit. In addition to being unjust, this policy has led to excessive construction costs and the selection of transportation projects whose costs far outweigh their benefits. One symptom of this misallocation of funds is the growing congestion in America's urban areas.

Proponents of urban transit and intercity high-speed rail are using concerns about energy and global warming to promote the diversion of even more highway user fees to their favored forms of transportation. Yet as will be shown later, these alternative forms of transportation are unlikely to save energy or significantly reduce greenhouse gas emissions.

Brief History

The Federal-Aid Highway Act of 1956 created the Highway Trust Fund to support the construction of the Interstate Highway System, and dedicated a 3-cent-per-gallon federal gasoline tax and other driving-related taxes to that fund. One problem with this law is that a cents-per-gallon gas tax does not automatically adjust for inflation. Congress raised the tax from 3 cents to 4 cents per gallon in 1959, but did not raise it again until 1983. Inflation, combined with higher-than-expected costs of construction, particularly in the 2,300 miles of urban roads that Congress added to the system in 1956, delayed completion of the Interstate System from the original projected date of 1969 to around 1991.

As the Interstate Highway System neared completion in the 1980s, Congress could have phased out the gasoline tax, or at least reduced it to an amount sufficient to maintain the existing system. Instead, the distribution of highway revenues became increasingly politicized. For example, Congress first included earmarks in a transportation bill in 1982. Since then, the number of earmarks has grown exponentially: from 10 in 1982 to 152 in 1987, 538 in 1991, 1,850 in 1998, and 6,373 in 2005. The 2005 earmarks totaled almost 10 percent of the entire six-year authorization.

Further politicization began in 1983 when Congress first diverted highway user fees to mass transit. Even more diversions were permitted in the 1991 Intermodal Surface Transportation Efficiency Act. Among other things, ISTEA allowed metropolitan areas to treat some federal funds as ''flexible,'' that is, spendable on either highways or transit.

Another ISTEA program, New Starts, encouraged transit agencies to build high-cost alternatives to bus transit. Cities that built light rail or other rail projects collected billions in federal funds, while cities satisfied with bus service received a much smaller share of federal transit grants. This circumstance led more cities to propose rail. In turn, it generated a huge rail transit lobby consisting of rail engineering and design firms, railcar manufacturers, and rail contractors.

Technical vs. Behavioral Tools

Passage of the Clean Air Act of 1970 led to a debate that continues to this day: Are technical tools such as catalytic converters or behavioral tools such as disincentives to the automobile the best way to reduce the environmental effects of driving?

Nearly 40 years of experience have shown that technical solutions to air pollution and other auto-related problems can be phenomenally successful. Between 1970 and 2002, U.S. driving increased by 157 percent. Yet thanks largely to catalytic converters and other technical improvements, total auto emissions of carbon monoxide, nitrogen oxides, particulates, and volatile organic compounds declined by more than 50 percent.

In contrast, experience has shown that behavioral tools are extremely costly yet almost completely ineffective at reducing the environmental effects of driving. For example, between 1992 and 2006, federal, state, and local governments spent more than $160 billion (in 2008 dollars) on transit capital improvements—more than one-third of the inflation-adjusted cost of the entire Interstate Highway System. Two-thirds of these transit capital funds, or nearly $110 billion, were spent on rail transit.

In exchange for this huge cost, transit usage grew by less than 15 percent compared with a 45 percent increase in urban driving over the same period. While transit carried about 50 billion passenger miles of travel in 2006, urban interstates alone carried more than three-quarters of a trillion passenger miles.

Despite the mammoth investment in rail transit, transit's share of urban travel declined from 2.0 percent in 1990 to 1.5 percent in 2006. The biggest declines were in urban areas with rail transit, partly because rail transit is so costly that transit agencies are often forced to neglect the bus systems that carry most of their transit patrons.

Nor have land-use policies aimed at creating more compact urban areas proved successful. A 1974 urban-growth boundary compacted the San Jose urbanized area from less than 3,800 people per square mile in 1974 to more than 6,000 today. San Jose also built a 40-mile light-rail system. Yet transit's share of travel declined from 1.2 percent of passenger miles in 1982 (the earliest year for which data are available) to 0.9 percent in 2006, whereas transit's share of commuting trivially increased from 3.1 percent in 1980 to 3.3 percent today.

Similarly dismal results can be found in most other regions that used urban-growth boundaries to become more compact while investing heavily in rail transit. In Portland, Oregon, transit's share of commuting declined from 9.8 percent in 1980 to 7.6 percent today; in San Diego, from 3.5 percent to 3.1 percent; in Sacramento, from 4.1 percent to 2.4 percent; and in Denver, from 6.4 percent to 4.3 percent. Meanwhile, per capita miles of driving have increased in virtually every urban area.

Based on the results, the debate between technical and behavioral tools should be over. Yet Cato's review of long-range transportation plans for the nation's 70 largest metropolitan areas found that one-third of the plans relied primarily on behavioral tools to solve transportation problems, and another one-fifth relied partially on such tools.

The Importance of User Fees

The collapse of the I-35W bridge in Minneapolis led to calls for increased gas taxes to rebuild infrastructure. In fact, preliminary reports indicate that a design flaw, rather than lack of maintenance, may have caused the collapse. But even if more money is needed for highway infrastructure, it would be better to provide that money by ending diversions of federal and state gas taxes to nonhighway activities.

Even better would be a more sensible system of paying for infrastructure out of user fees. Gasoline taxes are not indexed to inflation and fail to account for increases in automobile fuel-efficiency. Road tolls make more sense because they provide transport agencies with accurate information about where people want to go and transport users with accurate information about how much it costs to provide road systems.

User fees such as gas taxes, highway tolls, and transit fares are a fair and equitable way of paying for transportation facilities because they ensure that the people who get the benefits are the ones who pay the costs. User fees also provide signals to users and producers about the costs and value of transportation facilities and services.

Nationally, gas taxes, tolls, and other highway user fees cover 85 to 90 percent of the cost of building, maintaining, and operating highways, roads, and streets. In contrast, transit fares cover only 28 percent of the cost of building and operating the nation's transit systems. On one hand, this means that transit riders have little sense of the real cost of their mode of travel. On the other hand, dependence on taxes encourages many transit agencies to build expensive urban monuments that please politicians, construction companies, and other powerful interests rather than provide high-quality, economical services to actual transit users.

Contrary to popular belief, transit can be funded by user fees. Atlantic City, New Jersey, has a private jitney system that runs 24 hours a day (more than most public transit systems) and is funded entirely by transit fares. In San Juan, Puerto Rico, privately owned jitneys called *públicos* carry more people than the public bus and rail systems combined, yet they are funded entirely by transit fares. Unfortunately, such private transit service is illegal in most cities in the 50 states.

Federal support for transportation, including transit, should be based on performance standards. For example, federal transit funds should be distributed to metropolitan areas based on a formula that includes the transit revenues earned by local systems. That would give transit agencies incentives to boost ridership rather than build urban monuments.

Energy and Greenhouse Gases

Rising gas prices and concerns about greenhouse gases have stimulated calls for the federal government to support more rail transit lines in urban areas and construct a large-scale intercity high-speed rail system. There are two important questions to ask about these policies (or any other

programs designed to save energy and reduce greenhouse gas emissions): Do they really work? and If so, are they worth the cost?

The second question is particularly pertinent. McKinsey & Company says that, by 2030, the U.S. can reduce its total greenhouse gas production to well below current levels by investing in technologies that cost less—sometimes substantially less—than $50 per ton of abated carbon dioxide–equivalent emissions. Any program that reduces greenhouse gas emissions at a cost of more than $50 per ton diverts resources away from programs that are more efficient.

Rail Transport Is Not the Answer

A close look at rail transport reveals that it rarely saves energy or reduces greenhouse gas emissions. To the extent that a particular rail line can do so, however, it will cost substantially more than $50 per ton.

This is partly because urban transit and intercity rail are both much more expensive and much more heavily subsidized than flying or driving (Figure 24.1).

The tremendous expense of rail transportation buys few environmental benefits. Contrary to recent media reports, rail transit is not attracting many people out of their cars even in the face of high gas prices. While urban auto usage in the first quarter of 2008 declined by 15.4 billion passenger miles from 2007, transit ridership grew by only about 450 million passenger miles. Transit thus accounted for only about 3 percent of the decline in driving.

Table 24.1
Costs and Subsidies in Cents per Passenger Mile

Mode	Cost	Subsidy
Air	13	0.1
Autos	23	0.5
Amtrak	56	22.0
Transit	85	61.0

SOURCES: *National Transportation Statistics 2008* (Washington: Bureau of Transportation Statistics, 2008), Tables 1-37, 3-07, 3-16, 3-27a, and 3-29a; 2006 National Transit Database, (Federal Transit Administration, 2007) ''Capital Use,'' ''Operating Expenses,'' and ''Fares'' spreadsheets; *National Economic Accounts* (Washington: National Bureau of Economic Analysis, 2008), Table 2.5.5; *Highway Statistics 2006* (Washington: Federal Highway Administration, 2008), Table HF10; *2006 Annual Report* (Washington: Amtrak, 2007).

NOTE: Subsidies include federal, state, and local support.

Moreover, the biggest decline in driving was in March, but in that month, transit ridership actually declined from March 2007. Transit is clearly not making a difference for most people who are affected by high fuel prices. This is because, even after decades of huge subsidies, transit systems cannot take people where they want to go, when they want to go there—which is especially a problem for inflexible rail systems.

Although rail advocates often lament that the United States is not more like Europe, huge subsidies to European rail transport have not worked there either. Nations in the European Union spend about five times as much as the United States subsidizing urban transit and intercity rail. In 2000, 84.4 percent of U.S. travel was by auto and only 0.6 percent by urban or intercity rail. In Europe, 79.2 percent of travel was by auto and 6.3 percent was by rail. These facts suggest that a quintupling of rail and transit subsidies will, at best, get less than 6 percent of travelers out of their cars and onto trains. Moreover, despite the subsidies, the percentage of European travel by rail is declining, whereas percentages of travel by auto and flying are both increasing. European planners project that the share of travel by rail and bus will continue to decline through 2030.

Even if spending billions on rail transport could attract significant numbers of people out of their cars, it would not save energy or reduce greenhouse gas emissions. Despite the apparent efficiency of steel wheels on steel rails, rail transport is very energy intensive, partly because rail vehicles are, for safety reasons, very heavy.

The Department of Energy reports that the average car on the road today consumes about 3,400 British Thermal Units (BTUs) per passenger mile. Under the Energy Independence and Security Act of 2007, that consumption is expected to decline to just 2,500 BTUs per passenger mile by 2035.

In contrast, urban transit buses use about 4,300 BTUs per passenger mile, about as much as the average sport-utility vehicle. Rail transit uses 2,800 BTUs and Amtrak uses 2,700 BTUs per passenger mile—less than today's average auto but more than the projected usage of an average auto in 2035. Although the rapid turnover of the nation's auto fleet allows auto efficiencies to quickly increase, the long-term nature of rail transit investments means that systems that are inefficient today will remain inefficient for many decades to come. People who ride transit to avoid high gas prices aren't really saving energy; they are merely passing on their energy costs to someone else.

Even when rail operations save some energy, that savings is mitigated by two related energy costs. First, the energy cost of building rail transit

is huge. Planners projected that the energy cost of building one light-rail line in Portland, Oregon, would be 172 times the annual energy savings from operating that line. Although highway construction also uses energy, highways are so much more heavily used that the cost per passenger mile is much lower.

Second, new rail transit lines do not replace buses so much as they lead transit agencies to reroute buses into feeder buses serving the rail lines. When taken as a whole, the bus-plus-rail systems often end up consuming more energy, per passenger mile, than the bus systems alone.

Nor does rail transit cost-effectively reduce greenhouse gas emissions. When the electricity needed to power rail transit is generated by fossil fuels, as it is in, for example, Baltimore, Cleveland, Denver, Miami, and Washington, D.C., rail transit often generates more greenhouse gases per passenger mile than the average sport-utility vehicle.

Rail operations generate minimal greenhouse gases where electricity comes from renewable sources, as in the Pacific Northwest. But, once again, this reduction is mitigated by the construction cost. For example, the greenhouse gas emissions from building a proposed light-rail line in Seattle are equal to 45 years of operational savings from that light rail. Cities in such areas would do better installing electric trolley buses than rail transit.

At best, then, the cost of saving a ton of greenhouse gas emissions by building new rail lines is very high. Reducing emissions through rail transit, when it reduces them at all, costs thousands or tens of thousands of dollars per ton. In contrast, making cars more fuel-efficient by using materials that are more lightweight or by improving traffic signal coordination can actually save money for every ton of greenhouse gases abated. Any policies aimed at reducing greenhouse gas emissions should ensure that investments are cost-effective.

Conclusion

Because transportation is so vital to American life, it is important to make transportation investments where they will do the most toward enhancing mobility. The best way to ensure that is to rely on user-pay systems.

There is little reason why a true user-pay system should require federal involvement. But to the extent that Congress remains involved in transportation issues, it should promote user-pay systems at the state and local level and take steps to ensure that state and local use of federal transporta-

tion funds is cost-effective. This means, among other things, distributing funds based on performance standards, eliminating earmarks, and streamlining transportation planning.

Suggested Readings

O'Toole, Randal. ''A Desire Named Streetcar: How Federal Subsidies Encourage Wasteful Local Transit Systems.'' Cato Policy Analysis no. 559, January 5, 2006.

_____. ''Does Rail Transit Save Energy or Reduce Greenhouse Gas Emissions?'' Cato Policy Analysis no. 615, April 14, 2008.

_____. ''Roadmap to Gridlock: The Failure of Long-Range Metropolitan Transportation Planning.'' Cato Policy Analysis no. 617, May 27, 2008.

_____. ''Rails Won't Save America.'' Cato Briefing Paper no. 107, October 7, 2008.

Taylor, Jerry, and Peter Van Doren. ''Don't Increase Federal Gasoline Taxes—Abolish Them.'' Cato Policy Analysis no. 598, August 7, 2007.

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