

THE INNOVATIVE DOT

Focus Area 1: Revenue Sources

Focus Area 1: Revenue Sources

The era when fuel taxes alone could cover robust highway construction and maintenance programs is over. Even then, non-highway modes often struggled for support. Funding transportation out of general revenue is problematic, both because it is subject to changing budget priorities and because it underprices transportation, creating excess demand.

State departments of transportation (DOTs) need new sources of dedicated revenues, preferably tied to user fees in cases where excess demand—which is both economically and environmentally costly—can be curtailed through the market-style discipline that such fees impose. User fees may also appeal to stakeholders’ sense of fairness, making them more politically palatable than “subsidies” from general tax revenues.

In this section:

- Identify Mechanisms for Funding Non-Roadway Transportation
- Implement Value Capture
- Establish a Next-Generation User Fee

Pictured: Special assessment districts have been used to fund the new New York Avenue Metro transit station in Washington, D.C. See *“Implement Value Capture”* to learn more.

FOCUS AREA 1: REVENUE SOURCES

Identify Mechanisms for Funding Non-Roadway Transportation

The Opportunity

Transportation is about more than building and maintaining roads. The movement of people, goods, and services also requires substantial non-roadway facilities, including marine and river ports and waterways, airports, freight rail systems, passenger rail and public transportation systems, and bicycle and pedestrian facilities. These facilities require funding and financing sufficient to meet the expanding demands of a 21st century economy:

- The U.S. DOT projects that, between 2001 and 2020, total freight moved through U.S. ports will increase by more than 50 percent, and the volume of international container traffic will more than double.¹
- Total mainline air carrier and regional enplanements are forecast to increase from 731 million in 2011 to 1.23 billion in 2032, an average annual rate of 2.5 percent.²
- Demand for freight rail transportation is projected to nearly double by 2035—from 19.3 billion tons in 2007 to 37.2 billion tons in 2035.³
- During Fiscal Year 2011 (October 2010-September 2011), Amtrak carried 30.2 million passengers, the largest annual total in its history and the eighth annual ridership record in the last nine years.⁴
- From 1995 through 2010, public transportation ridership increased by 31 percent—a growth rate higher than the 17 percent increase in the U.S. population and higher than the 24 percent growth in the use of the nation’s highways over the same period.⁵
- The number of Americans using a bicycle as the primary means of getting to work grew 43 percent between 2000 and 2008.⁶

Partnering with other government agencies and the private sector to provide the optimal mix of transportation facilities, regardless of mode, in order to further the state’s economic and quality of life goals is central to the mission of state DOTs. Funding is a part of this responsibility.

1 American Association of Port Authorities. (2008, July). *U.S. Public Port Facts*. Retrieved 9/12/2013 from <http://www.aapa-ports.org/files/PDFs/facts.pdf>.

2 Federal Aviation Administration. (2012, March). *Fact Sheet—FAA Forecast*. Retrieved 9/12/2013 from http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=13395.

3 Cambridge Systematics, Inc. (2007, September). *National Rail Freight Infrastructure Capacity & Investment Study*. Association of American Railroads. Retrieved 8/23/12 from http://www.camsys.com/pubs/AAR_Nat_%20Rail_Cap_Study.pdf.

4 Amtrak. (2012, June). “Amtrak National Fact Sheet: FY 2011.” Retrieved 9/12/2013 from <http://www.amtrak.com/ccurl/358/145/Amtrak-National-Fact-Sheet-FY2011-Final-v2.pdf>.

5 American Public Transportation Association. (2012). “Public Transportation Benefits.” Retrieved 9/12/2013 from <http://www.apta.com/mediacenter/ptbenefits/Pages/default.aspx>.

6 League of American Bicyclists. *American Community Survey Bicycle Commuting Trends 2000-2008*. Retrieved 9/1/2013 from http://www.bikeleague.org/resources/reports/pdfs/acs_commuting_trends.pdf.

Funding Mechanisms

States use a wide range of tools to fund non-roadway improvements. The funding sources and mechanisms can be grouped into five primary categories:

- **General Income/Consumption Taxes:** Revenues from broad-based taxes on residents and business. These include:
 - Payroll tax
 - Sales tax
 - Property tax
 - Income tax
 - “Sin” tax (tobacco, alcohol, lottery revenue)
 - Capital gains infrastructure tax
 - Real estate transfer tax

- **Activity-Based User Fees:** Revenues from charges on the users of transportation facilities and services, including:
 - Gas and other fuel taxes
 - Fare-box revenue
 - Tolling
 - Carbon fees/taxes
 - Weight-mile fees
 - Vehicle miles traveled (VMT) fees
 - Tire and battery fees
 - Passenger facility charges
 - Facility or right-of-way leasing
 - Terminal use fees (land fees, berthing fees)
 - Parking space taxes
 - Energy use taxes
 - Hotel/motel taxes
 - Rental car taxes
 - Bicycle user fees
 - Mobile source emission credits

- **Administrative Fees/Fines:** Revenues derived by public agencies (e.g., states or cities) through their authorization, administration, and enforcement activities. These include:
 - Motor vehicle registration fees
 - Driver’s license fees
 - Vehicle transfer fees
 - Identification card (non-license) fees
 - Dedicated traffic violation revenue
 - Utility or franchise fees

- **Value Capture:** Revenue derived by mechanisms that capture the value created by transportation facilities and services. Value capture mechanisms include:
 - Land value tax
 - Tax increment financing
 - Benefit assessment districts
 - Transportation utility fees
 - Sponsorships, advertising, and naming rights
 - Systems development charges

- **Joint Participation/Public-Private Partnerships:** Contractual agreements between public and private entities for the direct provision of transportation facilities or services. These include:
 - Business improvement districts
 - Joint development
 - Negotiated exactions
 - Urban service boundary expansion windfall taxes

Transportation for America⁷ and the AASHTO Center for Excellence in Project Finance⁸ each tracked recent proposals in a total of more than 20 states. In 2013, Maryland and Virginia both approved inflation-adjusted fuel tax increases (not restricted to highway funding). Virginia also approved additional fees on hybrid vehicles and raised its sales tax, committing a portion to transit. Both states will commit Internet sales tax revenues to transportation projects if Congress passes the necessary provisions. The Pennsylvania Senate Transportation Committee recommends additional fees on vehicle registration, licensing, and traffic violations, while committing 25 percent of revenues to transit and multimodal programs. The Wisconsin Transportation Finance and Policy Commission recommends mileage-based registration fees, among many other measures, and the State of Washington is considering legislation that would impose a \$25 fee on premium bicycles to help fund its complete streets program.

Implementation

In pursuing new funding sources on specific projects, an agency must take early steps to align all interested stakeholders. For example, North Carolina has pursued a promising value capture approach for funding extensions to Charlotte's Red Line commuter rail, but faced resistance from some municipalities and encountered logistical issues related to using existing freight lines. A transit funding working group continues to explore a range of funding options for the project.

When considering funding sources, the following evaluation metrics can be applied as a basis for further screening and prioritization:

- **Funding Potential:** How large is the funding base? Is it expanding or declining? Is it stable or volatile?
- **Ease of Implementation:** Does it require a new entity? Is it flexible across modes? Are collection and enforcement easy?
- **Economic Effects:** How does it affect behavior in target sectors? Is there a strong nexus between the funding source and the type of projects it supports? Is it equitable (i.e., by income, geography, and sector)?
- **Political Feasibility:** Are key stakeholders, or the public at large, likely to support or oppose it? Does it require a popular vote? Representative vote? Administrative action? Constitutional change? Are "champions" in place?

7 Transportation for America. *Tracking State Transportation Funding Plans*. Retrieved 11/14/13 from <http://t4america.org/resources/state-plans-tracker/>.

8 AASHTO Center for Excellence in Project Finance. (2013). "State Transportation Funding Proposals in 2013." Retrieved 12/10/13 from http://www.transportation-finance.org/pdf/featured_documents/state%20transportation%20funding%20proposals%202013_11_25.pdf.

A typical initiative to implement a new or expanded funding source would include the following elements:

1. **Educate the public.** As with any other new initiative, messaging and transparency are key to winning support. People want to know how the new burden will expand economic growth, serve existing and future populations, stabilize their households and protect them from unanticipated risk. The public wants to see communities that support economic development, accommodate older adults, help its children thrive, and promote public health.
2. **Build alliances.** In times of contracting budgets, there is fierce competition for funds and great need from other public goods such as education, health services, and economic stimulus. These are natural allies of transportation advocates, and caution is necessary to ensure that competition for funds and activism to establish new revenue sources do not alienate these crucial partners.
3. **Create a fiscal impact statement.** Voters want to know what they are getting for their additional dollars, and legislators want to see the full costs of administering any new fees compared to the proceeds expected. Fiscal impact statements lay bare the effect of any new measure on the state's bottom line and across related programs.
4. **Obtain legislative approval and/or enabling legislation.** New funding sources, such as a local sales tax or a new fee, often require state approval. Investigation of a new tool, such as the mobility fees in Florida, by a DOT typically requires legislative approval in order to spend staff time and money on research. Some tools, such as parking pricing, do not require state approval if executed at the municipal level.

In many cases, strategies that increase the dedication of existing revenues or seek out new funding sources also require state-level legislation. The authority to increase the sales tax at the city or county level, for example, requires legislation granting that power to localities. Some states, like North Carolina⁹, already have such legislation in place, but others do not. Even in states that have enabling legislation, wording might limit that legislation to a county or a transit district. Access to larger pots of money, such as casino funds, or a tool affecting residents statewide, such as an increase on vehicle registration fees, also requires state approval.

To be successful, proposals to change fee or tax rates must be transparent about the purpose of the change and about which projects will be funded. Efforts that make processes easier for planners and developers, such as replacing San Francisco's transit impact development fee with a sustainability fee, which involves less paperwork, tend to be looked upon favorably.¹⁰

Funding sources like sales taxes have the benefit of being relatively stable—they may increase and decrease with economic conditions, but they are not prone to the more volatile ups and downs of sources like casino spending, which people are quick to cut when budgets are tight.

5. **Ensure reporting and accountability.** The value of a dedicated funding stream lies in the fact that it is typically more difficult to poach from than a fee that goes into the general fund. The agency must be able to show that it achieved the projects promised by the fiscal impact

9 North Carolina State Legislature (2009 April). *House Bill 148 (DRH50064-LBx-22G)*, Retrieved 9/12/2013 from <http://www.ncleg.net/Sessions/2009/Bills/House/HTML/H148v0.html>.

10 San Francisco Planning Department. *Transportation Sustainability Program* website. (Updated 2012, June 21). Retrieved 8/1/12 from <http://www.sf-planning.org/index.aspx?page=3035#tsf>.

statement. Los Angeles, for example, maintains a web site that tracks the progress of all the projects promised when its sales tax was increased.¹¹

Case Studies

Los Angeles County: Measure R

California law allows counties and cities to levy an additional one percent sales tax with local voter approval, a very common method of raising funds throughout the state's jurisdictions. Los Angeles County has used this taxing authority to embark on a major transformation of its infrastructure through investments in numerous rail and busway projects.

In 2008, the county approved the third tax increase for transit in the last 20 years. Measure R passed by a super majority (required for tax increases), with 67 percent. This half-cent increase in the sales tax, from 8.25 to 8.75 percent, is expected to raise \$40 billion over the next 30 years for transit and highway projects and create 210,000 new jobs. These funds for Metro (the operating name of the Los Angeles Metropolitan Transportation Authority) will be used as follows: 35 percent for new rail and bus rapid transit, 20 percent for carpool lanes and highway improvements, 20 percent for bus operations, 15 percent for local projects, five percent for rail operations, three percent for Metrolink, and two percent for Metro Rail. The tax is expected to cost the average person \$25 per year, according to the Los Angeles Economic Development Corporation.¹²

This tax increase builds upon Proposition A, passed in 1982, which was the first dedicated sales tax in the county for transit and rail line construction,¹³ and Proposition C a decade later, which provided an additional half-cent tax for transportation. Metro is unique in that it plans and builds highways as well as transit, and Proposition C included rubber-tired projects and highway projects in the funding.¹⁴

The need for accountability has increased over time. Propositions A and C needed just a simple majority to pass; in contrast, 2008's Measure R required 66 percent. For Proposition A, Metro simply proposed building transit. By the time Proposition C appeared on the ballot, people were more watchful and Metro had to promise specific projects. To pass Measure R, Metro had to tell voters exactly what they were going to get. Investments had to be spread out over the entire county, which encompasses 86 cities besides Los Angeles. In fact, some of the opposition to Measure R came from Metro board members, who felt Los Angeles was dominating the future revenue streams, so Metro staff had to work carefully to include projects throughout the county in the Measure R package. Metro created a very specific project budget, then enhanced transparency through a website tracking tool and an independent oversight panel of retired judges.

In some ways, Measure R also allowed more flexibility. Legislators and the public recognized that a growing system needs operating money as well, and Measure R is the first to allow revenues to go toward operations, too. Given the chronic congestion and pollution, "If you promise to fix transportation, people will vote for it," stated Doug Failing, Executive Director of Highway Project Delivery at Metro.

11 Los Angeles County Metropolitan Transportation Authority (2012, August). "Measure R Project Tracker" website. Retrieved 8/20/12 from http://www.metro.net/projects/progress_tracker/.

12 Los Angeles County Metropolitan Transportation Authority (2012, August). "Measure R." Retrieved 8/5/12, from <http://www.metro.net/projects/measurer/>.

13 Los Angeles County Metropolitan Transportation Authority (2012, August). "Proposition A: Proposition A Answered Mobility Challenges in LA." Retrieved 8/5/12 from http://www.metro.net/projects/measurer/proposition_a/.

14 Los Angeles County Metropolitan Transportation Authority (2012, August). "Proposition C: The Impact of Proposition C." Retrieved 8/5/12 from <http://www.metro.net/projects/measurer/proposition-c/>.

Neither Metro nor California's state DOT, CalTrans, was allowed to advocate for a measure; they may only educate. However, it was significant that the state did not oppose Measure R. The support of the Chamber of Commerce and labor unions representing unemployed and underemployed construction workers was crucial in passing Measure R, as was clear messaging.

The 30/10 plan requires an enormous infusion of cash and relies on two primary federal programs: the Transportation Infrastructure and Financial Innovation Act (TIFIA) and qualified transportation infrastructure bonds. The other mechanism for funding 30/10 is qualified transportation infrastructure bonds. Existing federal law includes elements for qualified bonds in a number of areas; groups like Metro, with their own funding sources, can use that bonding authority to buy down the interest rate. Unfortunately, the recession in 2009 hurt aspects of the 30/10 plan and new estimates predict the measure will net \$34-\$36 billion, meaning certain elements in the plan such as planned rail stations might be cut.

In November 2012, a ballot measure to accelerate Measure R through further taxation failed narrowly by less than one percentage point short of the two-thirds approval needed. Nonetheless, the success and high level of public support for Measure R are instructive.¹⁵ Metro built a strong coalition of support by winning over key players (business and labor representatives) and providing a detailed list of the projects that the sales tax increase would support. Metro also builds on the current momentum surrounding its transit projects, and has jumped on a huge chance to provide the voters with more immediate change. The city has reached out to and allied with many other mayors to build infrastructure, create jobs, and pump life into the economy.¹⁶

Oregon: Lottery-Backed Bonds for Non-Highway Projects

Oregon's constitution stipulates that gas tax funds must go to the road system. Federal highway funds in the state, meanwhile, go toward roads, and federal transit funds are distributed to transit districts. The state's funding structure thus leaves out freight and passenger rail, airports, marine facilities, and bicycle and pedestrian projects, which have historically relied on a patchwork of funding streams from federal and local sources.

A coalition of ports, railroads, and airports developed a program called Connect Oregon to create a new funding stream for non-highway projects using lottery-backed bonds that the state was already enabled to issue. This program was proposed in 2005, championed by the then-governor, and passed by the legislature, which recognized the need for new, steady funding for modes other than roads.

Oregon is currently under the fifth authorization by the legislature to use these bonds to fund air, marine, rail, transit, and multimodal projects. Phase I and II of Connect Oregon yielded \$200 million, which allowed several projects to be fast-tracked. In total, 69 projects were funded. Each of the five regions of the state gets at least ten percent of the funds as long as the region proposes qualified projects.¹⁷ The legislature approved \$95 million for Connect Oregon III and \$40 million for Connect Oregon IV through HB 5036.¹⁸ In 2013, the legislature opened the program to bicycle and pedestrian projects and approved \$42 million for Connect Oregon V. The Oregon DOT received 108 proposals

15 Los Angeles Times (2012, November). "Measure J, L.A. County transportation tax extension, fails." Los Angeles Time Local website. Retrieved 11/20/2013 at <http://latimesblogs.latimes.com/lanow/2012/11/measure-j-la-county-transit-tax-extension-fails.html>.

16 Interview with Los Angeles Metro Executive Director of Highway Projects. (2012, March).

17 Oregon Department of Transportation (2008, July). *Connect Oregon: Moving Goods, Moving People, Moving the Economy Report*. Retrieved 3/26/12, from <http://www.oregon.gov/ODOT/TD/TP/docs/CO/Brochure.pdf>.

18 Oregon State Legislature. (2011, July) HB 5036: Retrieved 9/12/2013 from <http://legiscan.com/OR/text/HB5036/id/342957>.

totaling \$129 million, with bicycle and pedestrian projects accounting for \$47.5 million.¹⁹

The enabling legislation stipulates that projects eligible for Connect Oregon funds cannot be eligible for highway funds. Projects must generally be shovel-ready, with no major barriers to implementation, as Connect Oregon is a construction grant program rather than a planning program. Also, projects need not be identified in regional or local studies for selection. In some cases, grantees have used Connect Oregon to cover local matches to leverage federal funds. For example, the Federal Aviation Administration's (FAA) Airport Improvement Program requires a ten percent local match. Many of Oregon's rural airports cannot afford to make that match, so they use Connect Oregon funds.

Stakeholders heavily drive the project selection process. Oregon DOT staff members complete an initial screening, and then a mode-specific committee evaluates the project. The committee's input is sent out to regional committees, comprised of local officials and stakeholders, who add a layer of community input, and representatives from the committees are gathered for a consensus-building process.

Since many of the projects in Connect Oregon were not included in the State Transportation Improvement Program (STIP), the Connect Oregon selection process is not specifically related to the STIP selection process. A major criterion for project selection is a proven economic benefit to the state, because the lottery program is an economic development tool. Thus, there must be a proven nexus between the lottery-backed bonds and the projects they are funding.

Colorado: Route 36 Multimodal Corridor

Colorado DOT (CDOT) is pursuing its first public private partnership (PPP) to make improvements to US route 36 between Denver and Boulder, which include provisions for bus rapid transit (BRT), a commuter bicycle path, and at least one pedestrian overpass, in addition to roadway improvements. In 2009, the state approved the creation of a new division of the CDOT—the High Performance Transportation Enterprise—with explicit authority to enter into contracts with private entities and manage PPPs. CDOT entered a first phase of the US 36 project alone. Facing declining revenues from state and federal gas taxes and hoping to complete the project at a faster pace, the agency has entered a PPP to complete the six-mile second phase.

Key strengths of this plan include the legislation's clear intent to fund multimodal components, the alignment of state and local priorities, and the inclusion of specific performance standards for transit and bikeway elements to guide the project. The PPP agreement consists of CDOT, the Denver Regional Transit District, local governments, and a private consortium that will build, manage, and maintain the corridor infrastructure for 50 years. Each member contributed funds for construction of the project; CDOT leveraged two loans administered through the federal Transportation Infrastructure Finance and Innovation Act (TIFIA). Neither RTD nor local governments are equity stakeholders, but both will advise on the use of surplus toll revenues—those exceeding the contractually guaranteed return-on-investment plus loan repayment—which are slated for transit enhancement or transportation demand management (TDM) programs.²⁰

19 Esteve, H. (2013, December 4). "Bicycle, pedestrian project vie for biggest chunk of Connect Oregon money." *The Oregonian*. Retrieved 12/10/13 from http://www.oregonlive.com/politics/index.ssf/2013/12/bicycle_pedestrian_projects_vi.html.

20 Colorado Department of Transportation. (2013). "US 36 Managed Lane/Bus Rapid Transit Project Phase II." . Retrieved 10/09/2013 from <http://www.coloradodot.info/projects/US36ExpressLanes/88th-to-foothills-pkwy>.

Georgia: Transportation Investment Act

Georgia's Transportation Investment Act (TIA), passed in 2010, designates 12 special regions throughout the state and enables them to vote for a one percent sales tax (TSPLOST) to fund local and regional transportation projects. The program took effect on January 1, 2013, and is slated to last for 10 years. In regions that voted for the TSPLOST, 75 percent of revenues go toward regional projects within each region designated by Georgia DOT (GDOT) and 25% goes toward local projects, which may include pedestrian, bicycle, transit, and other multimodal projects. During the implementation process, GDOT conducted a series of Regional Transportation Roundtable events (a minimum of two events per region) in order to educate the public about the program and build consensus around which regional projects should be included in the final approved investment list. GDOT also engaged in a public education campaign involving interviews, meetings, and media.²¹

Public opinion was largely split on the TSPLOST leading up to the referendum. The program faced opposition from both transit advocates and opponents, along with those distrustful of government spending plans.²² Ultimately, the TSPLOST passed in three regions, while many other regions rejected the measure by fewer than 20 percentage points.²³ GDOT has launched a website providing information on all activities related to the TIA, including a program overview and details regarding collected revenues and designated projects. The funds are committed to a variety of projects including capacity improvements, bridge repairs, road maintenance, and a smaller number of transit, bicycle, and pedestrian improvements.²⁴ Since voting against the TSPLOST, many counties have begun to explore local options for funding transportation projects that meet their specific needs, rather than being tied to regional plans.

Resources

General

Cambridge Systematics, Inc., KFH Group, Inc., McCollom Management Consulting, Inc., & Hemily, B. (2009). Transit Cooperative Research Board Report 129: Local and Regional Funding Mechanisms for Public Transportation. Transportation Research Board of the National Academies: Washington, DC http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_129.pdf.

This report describes a number of mechanisms for funding public transportation and evaluates each against a set of criteria including revenue potential, ease of administration, volatility, and equity impacts. It also provides case studies from around the country.

Smith, G.C. (2008, December) Legal Research Digest 28:Use of Fees or Alternatives to Fund Transit. Transit Cooperative Research Program. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_lrd_28.pdf.

This report describes the legal ramifications of implementing various user fees.

21 Valdosta-Lowndes Metropolitan Planning Organization. (2013, January). "Georgia's Transportation Investment Act: Lessons Learned." Presented at Transportation Research Board annual meeting. Available at <http://www.slideshare.net/VMPO/georgias-transportation-investment-act>.

22 "Voters Reject Transportation Tax." (2012, August 1). Atlanta Journal-Constitution. Retrieved 11/26/13 from <http://www.ajc.com/news/news/state-regional-govt-politics/voters-reject-transportation-tax/nQXfq/>.

23 "TSPLOST Results Are In." (2012, August 1). Georgia Public Broadcasting. Retrieved 11/26/13 from <http://www.gpb.org/news/2012/08/01/tsplost-results-are-in>.

24 Official webpage of the Transportation Investment Act of 2010: <http://www.ga-tia.com/index.aspx>.

Case Studies

Cambridge Systematics, Inc. (2005, May 5). Funding the Oregon Transportation Plan: Final Report. Prepared for the Oregon Department of Transportation. <http://cms.oregon.gov/ODOT/TD/TP/docs/otp/funding.pdf>.

This report provides an overview of various mechanisms for funding non-roadway transportation, including their advantages, disadvantages, and applicability in Oregon.

Florida Department of Transportation. (2009, December). Joint Report on the Mobility Fee Methodology Study. <http://www.dot.state.fl.us/intermodal/mobility/MobilityFee.pdf>

This report describes the current impact fee (concurrency), drawbacks, and ways of implementing a new mobility fee.

Oregon Rail Funding Research and Task Force. (2011). Technical Memorandum: Oregon Potential Rail Funding Sources Technical Analysis. http://cms.oregon.gov/ODOT/RAIL/docs/rail_funding_tf/oregon_potential_rail_funding_sources_technical_analysis_6-17-11.pdf

This memorandum provides an analysis of potential funding sources for rail transportation in Oregon.

Pennsylvania Transportation Funding and Reform Commission. (2006, November). Investing in Our Future: Addressing Pennsylvania's Transportation Funding Crisis. <http://www.crcog.net/vertical/Sites/{6AD7E2DC-ECE4-41CD-B8E1-BAC6A6336348}/uploads/{59ECCB15-4C48-4941-B26D-99CC1B88233B}.pdf>

This report analyzes the funding need for highways, bridges, and transit in Pennsylvania and provides recommendations for addressing funding gaps.

Rufolo, A. M., Bertini, R. L., Kimpel, T. (2001, September). Alternatives to the Motor Fuel Tax: Final Report SR 561. Prepared for the Oregon Department of Transportation. <http://cms.oregon.gov/ODOT/hwy/oipp/docs/561report.pdf>

This report provides an analysis of alternatives to reliance on motor fuel tax revenues to fund transportation.

FOCUS AREA 1: REVENUE SOURCES

Implement Value Capture

The Opportunity

Transportation improvements add value to adjacent lands and play an important role in location choices made by employers, employees, and—more generally—the traveling public. While transportation improvements have traditionally been provided as a public good, ever-shrinking transportation budgets have made this an unsustainable arrangement. As traditional funding methods become less tenable, DOTs can develop policies that encourage investment by the specific businesses or neighborhoods that would benefit from improved transportation facilities.

New transportation improvements such as transit stations, roadway networks, or interchanges add value to nearby properties, but while anyone can use these new facilities, all users do not share equally in the added value they produce. In addition, the value dividend is not the same for all properties. Commercial property values tend to increase more dramatically than residential, and properties closer to a transportation facility increase in value more than those farther away.

Value capture offers an equitable means of recouping value from the private sector in proportion to the benefit received from transportation improvements. Applied correctly, value capture is narrow and targeted. It is generally not only palatable to, but often supported by, private property owners because they receive a direct and tangible benefit from their investment. Recapturing and reinvesting value back into the transportation system maintains and even enhances the value of local private land.²⁵

Entrepreneurial state DOTs and local agencies DOTs using value capture mechanisms have been able to increase their self-sufficiency, stabilize their budgets, and reduce their demands for traditional funding resources, making them available for other public investments.

What Is It?

There are a number of ways to capture the value of transportation infrastructure and services in order to encourage reinvestment. Value capture strategies can apply to specific properties, to localized districts, or to a general area.

District-based value capture mechanisms include:

- Tax increment financing (TIF)
- Transportation benefit districts and/or special assessment districts

Common project-based value capture strategies include:

- Joint development or air rights development
- Exactions
- Development impact fees (DIF)

25 Levinson, D. M. & Istrate, E. (2011, April) "Access for Value: Financing Transportation Through Land Value Capture." Brookings Institution Metropolitan Policy Program. Retrieved 9/12/2013 from <http://www.brookings.edu/research/papers/2011/04/28-transportation-funding-levinson-istrate>.

General area value capture strategies include:

- Land value or split rate taxes
- Transportation utility fees (TUF)

Tax increment financing anticipates additional tax revenues from rising property values associated with new transportation infrastructure and borrows against the expected increase to provide up-front financing for the transportation project. Capturing this incremental increase is usually accomplished through the issuance of bonds at the beginning of a project. TIF districts are premised on the “but for” notion—enhanced development value, and the resulting higher tax proceeds, would not be possible “but for” the provision of the enhanced transportation. TIFs generally expire over a period of years or a few decades.

Transportation benefit districts or special assessment districts apply a special fee on properties located near a new transportation project or service based on the benefit they receive from their proximity. Special assessment districts have been used to fund modern streetcars in Portland and a new infill metro transit station in Washington, DC.²⁶ While special assessments can cover the whole cost of new investments, they most often cover all or part of the state or local portion of a project. A major advantage is that, unlike TIFs, these districts can run indefinitely, supporting not just construction but also operation of the system.

Joint development and air rights are publicly- or authority-controlled properties above, below, or adjacent to a piece of infrastructure or right of way that are sold or leased to developers; proceeds are reinvested in the transit or transportation system. Some states or transit authorities have created special accounts to manage revenues from these properties to ensure they are used for asset maintenance or alternative transportation investments. Many large fixed rail transit systems such as Metro in Washington, D.C. or BART in San Francisco have well-established joint development programs, and Boston’s central artery project (“The Big Dig”) resulted in several air rights projects.²⁷

Exactions are contributions negotiated with individual development projects. They are typically used for specific on-site improvements to an area being developed, such as the dedication of rights of way and the construction of new roadway networks, new traffic signals, sidewalks, and intermodal stations. Exactions are often in-kind contributions, but may be fees or contributions paid to the locality.

Development impact fees, sometimes known as development excise taxes, are fees to pay for the new or expanded transportation facilities or services necessary to support a new development. They are often used with Adequate Public Facility Ordinances (APFOs) or concurrency requirements, but do not require them. More than half of U.S. states use DIFs,²⁸ but they are most prevalent in fast-growing areas and have been utilized extensively in California, Texas, and Florida. DIFs are generally applied at the county or municipal level. They are similar to development exactions, except that the transportation improvements they support are commonly located outside of the specific property.

Land value taxes are a different way of calculating property taxes. Whereas typical property taxes lump together the value of both land and buildings, land value taxes focus only on the value of the

26 American Association of State Highway and Transportation Officials. Center for Excellence in Project Finance. “New York Avenue-Florida Avenue-Galludet University Metro Station: A Case Study.” Retrieved 8/2/12 from http://www.transportation-finance.org/pdf/funding_financing/funding/local_funding/New_York_Avenue_Case_Study.pdf.

27 Bechtel Corporation (2008, January). “Boston Central Artery/Tunnel.” Archived signature projects webpage. Retrieved 9/12/2013 from http://www.bechtel.com/boston_central_artery.html.

28 Transportation Cooperative Research Program. (2008, December). *Legal Research Digest 28: Use of Fees or Alternatives to Fund Transit*. Retrieved 8/2/12 from http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_lrd_28.pdf.

land's location. A related method, known as a split rate tax, provides separate taxing rates for the land and the buildings on it. The value of the land is determined primarily by its access to transportation and proximity to major destinations and amenities, regardless of whether the property is occupied by a small one-story retail establishment or a multi-story mixed-use development. This tax structure encourages land owners to develop the land. Land value taxes are calculated based on the benefit provided by the transportation network, whether the property actually uses the transport amenity or not. Although in wide use in several Asian and Eastern European nations, Pennsylvania is the only U.S. state with extensive experience using a split rate tax formula.

Transportation utility fees. For most states, fuel taxes alone are insufficient to fully fund state transportation budgets, so many states also tap into general revenue to provide and maintain transportation services and assets. Transportation utility fees replace this general revenue drawdown with a “utility fee,” a fee for service based on estimated use. This approach treats transportation the same as any other public utility—water, gas or electric, or sewer. Widely used in Oregon, transportation utility fees are deposited in a unique and protected account separate from general revenue funds. TUFs are based on use; because commercial uses tend to impose greater impacts on transportation networks than residential uses, TUFs shift the burden of supporting the transportation network from the residential base to commercial and industrial businesses. All properties that are transportation users—including nontaxable properties such as nonprofit institutions—must pay the utility fee.

Implementation

There are several important factors to consider when evaluating which value capture methods to use. Many methods involve one-time-only payments and thus may not be appropriate for long-term support of transportation infrastructure or transit services. Land value taxes and transportation utility fees are applied area-wide and thus create the largest base, but because they involve structural changes, it can be more difficult to gain support for them. Transportation benefit districts, TIF districts, and air rights are geographically narrower in area, but benefit districts and TIFs provide important project-specific funding and air rights can be a long-lasting source of funding.

Because these tools work in direct proportion to land uses and development decisions controlled at the local level, value capture mechanisms are typically applied by local rather than state governments. State enabling statutes, however, are generally required.

Some value capture tools can be used as capital financing to develop a new transportation asset, while others are only applicable after the transportation service—and its associated benefits—are in place. More than one value capture tool can be used, even for the same property. Parcel-based, district-based, and generally-applied value capture mechanisms each have their own unique implementation requirements, but all must follow some general implementation steps:

1. **Pass or modify authorizing legislation.** Most financing strategies require specific authorizing legislation that articulates who can implement such tools and for what purposes. Many states have already adopted legislation authorizing value capture tools, but the majority of them have not specifically authorized DOTs or transit authorities to levy such taxes or fees to fund transportation. Furthermore, some state authorizing legislation specifically precludes transportation as an authorized use of such proceeds, so it may be necessary to carefully review state authorizing legislation and make the appropriate changes.
2. **Identify a taxing authority.** Any tax requires separate oversight and accountability in order to protect it from abuse and maintain public trust. Authorizing legislation typically identifies the specific taxing authority that will oversee the tax and distribute funds, but it is important to

review existing taxing structures and determine the most effective taxing authority.

3. **Demonstrate the logical/rational nexus.** Rational nexus is a legal term for the link that is required between the services provided to a property and development and the fee rate. It is a significant consideration for development impact fees and exactions, but important to other value capture tools as well.
4. **Develop partnerships and common priorities with regions and localities.** Most value capture tools are applied at the local level, so local entities determine the use of value capture funding. Close partnership and coordination can ensure that state and local priorities align and funding is deployed in ways that maximize state resources and advance overall state priorities. In addition, the state can provide incentives for the local use of value capture strategies.
5. **Develop a consistent method for value calculation, application, and enforcement.** All value capture mechanisms rely on a consistent and reliable value calculation. Transportation professionals should expect challenges to this calculation and make sure that their methodology is consistent, academically sound, and defensible. Value capture measurement may account for pre- and post-project property values, rental rates, new developments, business retention rates, or increases in taxable sales. Benefits are typically assessed by increased value, frontage, land area, zones, or a distance factor. For assessment districts, properties can be charged a flat fee or on a per-square-foot or unit cost. Some jurisdictions have found it helpful to commission a specific study or analysis to develop the calculation approach. This study should outline any exemptions or discounts to the fee or tax and the process for granting them.
6. **Develop a phasing strategy.** Since they involve structural changes to taxes and fees, land value taxes and conversion to transportation utility fees are best phased in over a period of time to mitigate the impact of varying taxing rates and allow property owners adequate time to plan for the new rate.

Case Studies

Dallas-Fort Worth Region: Cotton Belt Innovative Financing Initiative

In 2009, Fort Worth's Transit Authority and Dallas Area Regional Transit explored how a public-private partnership could fund a light rail connection between the two systems and searched for a firm to design, build, operate, maintain, and finance the system. They also sought the help of the local metropolitan planning organization, the North Central Texas Council of Governments (NCTCOG), to identify new funding structures to supplement an insufficient level of federal funds.²⁹

NCTCOG developed a new value capture program called the Innovative Financing Initiative (iFi) to partially fund the 62-mile transit link, which was named the Cotton Belt Corridor. Beginning in 2011, iFi conducted community and stakeholder outreach and began to explore value capture tools such as land value taxes and shared profits from development along the corridor. Potential land value taxes included city, county, sales, hotel, and transit-oriented development taxes. Assuming tax revenue is shared equally between the locality and the Cotton Belt Corridor, iFi found that these value capture tools could provide long-term funding over the next 40 years.³⁰

29 Fishman, E. (2012, January). "Lessons Learned from Public-Private Transportation Projects in Texas." K&L Gates LLP for the National Council for Public Private Partnerships. Retrieved 11/21/2013 from <http://ncppp.org.previewdns.com/wp-content/uploads/2013/03/Pres-Austin-Fishman-0112.pdf>.

30 North Central Texas Council of Governments. (2011, December). *Innovative Finance Initiative: Cotton Belt Corridor*.

San Francisco: Transbay Terminal

The planned Transbay Terminal in San Francisco, California, demonstrates how to leverage multiple value capture mechanisms. The project will link more than a dozen transit systems in the Bay Area, including planned high speed rail, commuter rail, Muni, and other local transit services, improving the city's accessibility to the entire west coast and conveying unique benefits to the immediate surrounding neighborhood.

San Francisco is a rapidly growing city, anticipated to expand its job base by over 44 percent in the next 25 years.³¹ In addition to dramatically expanding transit access and efficiency for the city, Transbay Terminal will add more than 2,600 new housing units and over 1.2 million square feet of commercial use.³²

To fund the nearly \$5 billion project, the city is using several value capture tools, including a tax increment financing district, that will yield \$1.4 billion over 45 years, with \$171 million to be used to repay a TIFIA construction loan. The city is also proposing to establish a special assessment district and impose development impact fees.³³

Washington, DC: Special Assessment for Infill Transit

In the late 1990s, the area in DC currently known as NoMa (“North of Massachusetts Avenue”), which surrounds the intersection of New York Avenue and Florida Avenue, remained underdeveloped. Located just north of the U.S. Capitol and blocks from the central business district, the area primarily housed nightclubs, surface parking lots, abandoned industrial buildings, and waste transfer sites. Although the city's popular Red Line subway ran through the middle of the site, it did not stop there. The closest metro stations were roughly one mile away.

After years of decline, the area began to see growth in the late 1990s, and large parcels of underutilized property near the Capitol attracted the attention of the city and private developers. The city targeted the area as a prime location to create new technology jobs and high-end housing. The local business community envisioned substantial new office space, signature residential developments, and destination retail in a new, modern, and environmentally sustainable community in the heart of the city.

Both the city and private developers recognized that achieving this vision would require premium transportation access, particularly from premium transit. The city determined that building a metro station would cost over \$100 million—money neither the city nor the transit agency had available to spend in the austere times of the late 1990s. Local private sector property owners recognized that access to a metro station could provide tremendous value to their properties and improve their ability to attract major employers such as the federal government. A group of property owners in the area proposed a special assessment district, essentially agreeing to tax themselves for the next 30 years in order to help finance the new facility. The special levy was an addition to the typical property tax and raised roughly a quarter of the funds necessary for the New York Avenue station, which opened in 2004.

Retrieved 8/2/12 from: <http://www.nctcog.org/trans/spd/transitrail/ctnblt/CottonBelt-iFi-FinalReport.pdf>.

31 Seifel Consulting Inc. (2008, May). *Downtown San Francisco: Market Demand, Growth Projections and Capacity Analysis*. Table V-1, pp. IV-5. Retrieved 8/20/12 from http://www.sf-planning.org/ftp/CDG/docs/transit_center/R_TransitCenter_051308_Final.pdf.

32 Nichols, C. M. (2012, January). “Value Capture Case Studies: San Francisco’s Transbay Transit Center.” Metropolitan Planning Council. Retrieved 8/2/12 from <http://www.metroplanning.org/news-events/article/6315/>.

33 *Ibid.*

Today the area has created thousands of new jobs and housing units. Over the coming decades, it will add millions of dollars to the District's tax base, expanding general fund resources over and above repayment of the initial transportation investment.³⁴

The New York Avenue/NoMa case is instructive in a number of ways. Not only does it demonstrate the willingness of the private sector to contribute to transport investments, but it also highlights the need to be inclusive. In the 1990s, the residential portions of NoMa were predominantly low income, minority households. Inclusionary housing policies in the District were designed to retain these populations through redevelopment, but there was wide-spread suspicion of the special assessment and its impact on lower income residents. Honest communication was critical in overcoming this obstacle. In the end, a broad-based coalition testified in favor of the legislation and the proposed value capture.³⁵

Resources

Center for Transit-Oriented Development website. CTOD Papers and Publications. <http://www.ctod.org/ctod-research.php>.

CTOD's website provides a number of resources for further information on value capture.

Levinson, D., & Istrate, E. (2011, April). Access for Value: Financing Transportation Through Land Value Capture. Brookings Metropolitan Policy Program. <http://www.brookings.edu/research/papers/2011/04/28-transportation-funding-levinson-istrate>.

This paper provides an overview of the impact of transportation access on land value and strategies for recouping that value for reinvestment.

Smith, J. J., Gihring, T. A., & Litman, T. (2011). Financing Transit Through Value Capture: An Annotated Bibliography. Victoria Transport Policy Institute. <http://www.vtpi.org/smith.pdf>.

This report provides a compilation of existing research on value capture.

U.S. Government Accountability Office. (2010, July). Public Transportation: Federal Role in Value Capture Strategies for Transit is Limited, but Additional Guidance Could Help Clarify Policies. <http://www.gao.gov/new.items/d10781.pdf>.

This report surveys transit agencies to identify common barriers to implementing value capture and provides recommendations on how the federal government can better support—and reform policies that hinder—value capture.

Case Studies

Cleary, R. & Tarr, J. (2012, February). NoMa: The Neighborhood That Transit Built. Urban Land Institute. <http://urbanland.uli.org/Articles/2012/Jan/MacCleeryNOMA>.

This article provides more detail on the role value capture has played in the NoMa neighborhood in Washington, DC.

34 PB Consulting *New York Avenue – Florida Avenue-Gallaudet University Metro Station: A Case Study*. American Association of State Highway and Transportation Officials Center for Excellence in Project Finance website Retrieved 8/16/12 from http://www.transportation-finance.org/pdf/funding_financing/funding/local_funding/New_York_Avenue_Case_Study.pdf.

35 MacCleery, R. & Tarr, J. (2012, February). "Noma: The Neighborhood that Built Transit." *Urban Land Magazine website*. Retrieved 8/16/12 from <http://urbanland.uli.org/Articles/2012/Jan/MacCleeryNOMA>.

Fishman, E. (2012, January). Lessons Learned from Public-Private Transportation Projects in Texas. http://www.ncppp.org/publications/TX_1201/Fishman_TX1201.pdf.

This public presentation by K & L Gates provides information on the public-private partnerships in North Central Texas described in the case study above.

Levinson, D., Zhao, Z., & Lari, A. (2009, June). Value Capture for Transportation Finance: Report to the Minnesota Legislature. University of Minnesota Center for Transportation Studies. <http://www.cts.umn.edu/Publications/ResearchReports/pdfdownload.pl?id=1160>.

This report provides an assessment of value capture policies and an evaluation of applicability based on efficiency, equity, sustainability, and feasibility.

Newberg, S. (2011, March). A Value-Capture Strategy for Transportation in Texas. <http://urbanland.uli.org/Articles/2011/Mar/NewbergTexas>.

This report describes the Urban Land Institute's coverage of the iFi program recently developed by NCTCOG.

North Central Texas Council of Governments. (2011, December). Innovative Finance Initiative: Cotton Belt Corridor. <http://www.nctcog.org/trans/spd/transitrail/CtnBltt/CottonBelt-iFi-FinalReport.pdf>.

This Phase 1 Final Report on the iFi program discusses the modeling of potential land value capture in the corridor.

South African Cities Network. Creating and Capturing Value Around Transport Nodes. http://ndp.treasury.gov.za/TTRI/Township%20Renewal%20Sourcebook/TTRI%20Case%20Studies/Case%20Study_Creating%20and%20Capturing%20Value%20around%20Transport%20Nodes_2011.pdf.

This report provides good case studies of development around U.S. transit stations.

FOCUS AREA 1: REVENUE SOURCES

Establish a Next-Generation User Fee

The Opportunity

In the past, state and local governments relied heavily on federal and state fuel taxes to fund transportation. However, in most states and at the federal level, fuel taxes are not indexed to inflation, so they lose value every year. In addition, as vehicle miles traveled trend downward, drivers adopt alternative fuel vehicles, and fuel economy continues to improve, gas tax revenues will decline further.

Responding to this looming revenue creation shortfall, many states are considering moving toward tolls and/or VMT charges to maintain roads and improve transportation infrastructure. A VMT fee, commonly known as a mileage-based user fee, or MBUF, is a distance-based tax levied on miles driven whose revenues can be used to fund transportation system costs. With an MBUF, vehicle operators—both personal and commercial—are charged a per-mile fee instead of, or in addition to, the gas tax. The following provides information on strategies to successfully move toward implementing this new type of user fee.

What Is It?

In many ways, MBUFs do a better job than fuel taxes at matching users' road use to the tax they pay for road maintenance and construction. In other words, because mileage driven better reflects the wear and tear a vehicle imposes on a transportation system, charging by the mile more efficiently allocates the costs to road users. An MBUF has the potential to replace fuel tax as the primary source of funds for transportation systems. Estimates show that implementing a one-cent-per-mile fee nationally would raise \$32.4 billion per year.³⁶ Systems for billing such charges are under development, but collection systems for transponder-based tolling show that, for most motorists, this can be done automatically and at low cost.

Minnesota's Mileage-Based User Fee Policy Task Force identifies two primary objectives for implementing such a fee: 1) using MBUFs to promote equity by ensuring that drivers pay for the damage they cause to the roadway, regardless of fuel used; and 2) generating sufficient transportation funds through an MBUF instead of relying on the increasingly ineffective fuel tax. Additionally, the group identifies two supplementary long-term objectives related to the MBUF's potential to manage demand: 1) protecting the environment by reducing vehicle emissions, and 2) improving transportation system performance, thus reducing the need for capacity expansion.³⁷ On this point, a Minnesota Transportation Institute study reached the following conclusions about the policy's effect in changing travel behavior:

- Charging higher fees for peak-hour travel and for travel in designated congested areas could effectively reduce congestion where it is the worst. The VMT reduction during peak-hour travel and in more congested zones will be greatest for drivers who live in denser, mixed-use neighborhoods.
- Compared to the current motor fuel tax system, a system based on mileage traveled will strengthen the effects urban form has on travel behavior. Switching to an MBUF policy

36 American Association of State Highway and Transportation Officials. Center for Excellence in Project Finance. "VMT Fees." Retrieved 8/2/12 from http://www.transportation-finance.org/funding_financing/funding/proposed_funding_sources/vmt_fees.aspx.

37 Minnesota Mileage-Based User Fee Task Force. (2011, December). "Report of Minnesota's Mileage-Based User Fee Policy Task Force." Retrieved 3/21/12 from <http://www.dot.state.mn.us/mileagebaseduserfee/pdf/mbufpolicytaskforcereport.pdf>.

would therefore improve the ability of planners to use land use planning to moderate single occupancy vehicle travel demand. This would be accomplished mainly by shifting solo driving trips to carpooling or more sustainable modes such as transit, bike, or pedestrian.

- An MBUF policy's impact on travel behavior depends on how it is implemented. If fees are paid relatively rarely compared to the current fuel tax, the effect on travel behavior will be weaker because the charges are less apparent. On the other hand, if fees are paid regularly—for instance, every time the driver refuels—the effect would be stronger.³⁸

Implementation

State DOTs have yet to fully implement an MBUF charging program, but lessons learned from various pilot programs provide direction for the successful implementation of an MBUF program. There are also several existing fee collection systems that can provide lessons on how to structure an MBUF, such as the fees paid by commercial vehicles through the International Registration Plan.

The Minnesota MBUF Policy Task Force provided a list of concerns associated with implementing a policy of mileage-based fees.³⁹

- **Cost:** Implementing the new policy may be administratively expensive compared to implementing a fuel tax. One report estimates that the administrative costs of collecting MBUFs would total up to six percent of total revenues, compared to the cost of collecting the fuel tax, which equals less than one percent of revenues.⁴⁰ However, the MBUF pilot suggests that costs might be lower than originally estimated, particularly if the system uses readily available technologies and infrastructure.
- **Privacy:** Many citizens feel that using technology to monitor their travel behavior is an invasion of their privacy.
- **Jurisdictional issues⁴¹:** There are technological limitations associated with implementing an MBUF policy across state boundaries. How to charge out-of-state drivers using an in-state roadway is one example. In the absence of a federal mileage-based fee, it may be overly complex to have varying state-by-state fees, which is how the fuel tax is currently structured. It is therefore recommended that, when exploring mileage-based fees or conducting pilot studies, states work in partnership with contiguous states to work out regional approaches to implementing MBUF charges. Coordination among states may also lower the administrative costs of implementing an MBUF strategy.
- **Acceptance:** Many policy decision-makers and citizens know little about MBUFs. Addressing their shared concerns would be a necessary step in receiving more widespread acceptance of a mileage-based fee.

38 Mineta Transportation Institute. (2011, March). "The Intersection of Urban Form and Mileage Fees: Findings from the Oregon Road User Fee Pilot Program." Retrieved 3/21/12 from http://transweb.sjsu.edu/PDFs/research/2909_10-04.pdf.

39 Humphrey School of Public Affairs at the University of Minnesota (2011, December). *Report of Minnesota's Mileage-Based User Fee Policy Task Force*. Retrieved 3/21/12 from <http://www.dot.state.mn.us/mileagebaseduserfee/pdf/mbufpolicytaskforcereport.pdf>.

40 The I-95 Corridor Coalition. (2012, April). *Concept of Operations for the Administration of Mileage-Based User Fees in a Multistate Environment*. Retrieved 8/2/12 from http://i95coalition.org/i95/Portals/0/Public_Files/pm/reports/I-95CC%20ConOps%20for%20Administration%20of%20MBUF%20in%20a%20Multistate%20Environment%202012_04.pdf.

41 *Ibid.*

- **Use of revenues:** State legislation typically specifies how revenues from fuel taxes must be distributed, but no state has determined how to use proceeds from a mileage-based fee. Flexibility in program funding to support multimodal options is essential, and states will need to address revenue allocation prior to any program implementation.⁴²

A study by the University of Iowa Public Policy Center, which conducted a four-year national evaluation of mileage-based road user charges, came to several conclusions that address some of the concerns stated above. The study's results showed that support for the charge increased considerably when drivers became more familiar with the program. Initially, 42 percent of participants held a favorable view of the policy; ten months later, 70 percent held a positive view.⁴³ Because perceptions are positively affected by exposure, policymakers should stress public awareness and education in order to gain the most public support for an MBUF before attempting to push forward with legislation.

Case Studies

Oregon: Road User Fee Program

Oregon conducted a pilot program in 2006 and 2007, along with a follow-up study in 2011 and 2012, to test the feasibility of using electronically collected data from volunteer vehicles to implement a mileage-based fee system. In the earlier pilot, 285 vehicles were outfitted with an electronic device that monitored the number of miles driven in predefined zones. In addition, some participants were charged higher fees in specific congestion pricing zones and during peak travel times. The device generated an electronic receipt using global positioning system (GPS) signals that were sent to specially-equipped gas pumps when the vehicles were refueled. At the pump, the standard fuel tax was deducted from the amount owed by the driver, and the owed mileage-based fees were added back. In the end, the test demonstrated that mileage fees were effective for collecting revenues without eroding fuel efficiency and that the system was relatively easy to administer.⁴⁴

A study by the Mineta Transportation Institute analyzing the results from Oregon's pilot program further assessed the impact implementing the policy had on travel behavior. Four primary impacts were observed:

1. Participants who were charged a higher fee during peak commute times did, in fact, reduce their peak-time travel more than participants who were charged the same per-mile fee at all times.
2. Participants who were charged more for driving in designated congestion zones reduced their miles driven in these areas more than participants who were charged the same per-mile fee for all areas.
3. Households in higher density, mixed-use neighborhoods reduced peak-period VMT more than similar households in lower density neighborhoods when paying a peak-period fee

42 Humphrey School of Public Affairs at the University of Minnesota (2011, December). *Report of Minnesota's Mileage-Based User Fee Policy Task Force*. (2011, December). Retrieved 3/21/12 from <http://www.dot.state.mn.us/mileagebaseduserfee/pdf/mbufpolicytaskforcereport.pdf>.

43 Hanley, P. F., & Kuhl, J. G. (2011, December). "National Evaluation of Mileage-Based Charges for Drivers." *Transportation Research Record: Journal of the Transportation Research Board*: 10-18. doi:10.3141/2221-02. Retrieved from <http://ppc.uiowa.edu/publications/national-evaluation-mileage-based-charges-drivers>.

44 Chalker, J., Achterman, G., & O'Neal, D. (2009, January). Letter to Senator Maria Cantwell. TOLLROADSNews website. Retrieved 3/21/12 from <http://www.tollroadsnews.com/sites/default/files/WestOnVMT.pdf>.

but, surprisingly, increased VMT when paying a flat per-mile fee. The authors attribute these findings to some combination of more nearby destinations and more travel options in dense neighborhoods, but conflicting incentives due to the elimination of gas taxes.

4. Surprisingly, the lower fee rates during off-peak hours and in areas outside congestion zones resulted in little or no increase in the level of VMT. The study noted, however, that this may be a result of Portland's Urban Growth Boundary, which limits development—and therefore destinations—outside the designated congestion zone.⁴⁵

The state conducted a smaller and shorter follow-up study in 2012-2013 to better understand unanswered questions from the first pilot. The second, two-phase study tested different mechanisms for collecting and reporting mileage data and included a survey of user preferences and concerns.⁴⁶ The study also addressed equity concerns among urban versus rural drivers and low- versus high-efficiency vehicles.⁴⁷ The findings helped address the political feasibility of implementing a statewide program to replace the fuel tax.

In 2013, the Oregon legislature authorized a formal Road Usage Charge Program (RUCP) based on the pilot program model. The RUCP, which limits the number of low-efficiency vehicles allowed in the program, will offer a fuel tax alternative for 5,000 voluntary participants. The legislation requires Oregon DOT (ODOT) to account for any concerns related to accuracy, privacy, security, and compliance auditing. For example, at least one data collection option must not include vehicle location technology. ODOT is pursuing public private partnerships to fund the program and is planning for launch in mid-2015.⁴⁸

Washington State Pilot Program

This study, conducted in 2005 and 2006, had similar findings as Oregon's. Managed by the Puget Sound Regional Council (PSRC), the study put GPS meters in 275 volunteer vehicles and electronically deducted mileage fees from a prepaid driver account based on time traveled, distance traveled, and roads used. The PSRC program raised transportation funds without revenue erosion from fuel efficiency, and was able to minimize administrative and infrastructure costs by using GPS technology.⁴⁹

Minnesota Pilot Program

Minnesota began a pilot program in 2011 with the intent of "identifying and evaluating issues for potential implementation of [mileage-based user fees]" in the state. According to the Minnesota DOT, the MBUF Policy Study, like other pilot studies, was spurred by the desire to bridge the transportation funding gap caused by decreasing fuel tax revenues. In 2007, the state legislature approved \$5 million from the Trunk Highway Fund⁵⁰ to be allocated to the pilot program.

45 Mineta Transportation Institute. (2011, March). *The Intersection of Urban Form and Mileage Fees: Findings from the Oregon Road User Fee Pilot Program*. Retrieved 3/21/12 from http://transweb.sjsu.edu/PDFs/research/2909_10-04.pdf.

46 Whitty, J. (editor). (2013, February). *Road Usage Pilot Program Preliminary Findings*. Retrieved 11/11/13 at http://www.oregon.gov/ODOT/HWY/RUFPP/docs/RUCPilotPrelimFind_Feb13.pdf.

47 Whitty, J. (editor). (2013, January). *Report on Impacts of Road Usage Charges in Rural, Urban and Mixed Communities* Retrieved 11/11/2013 from http://www.oregon.gov/ODOT/HWY/RUFPP/docs/FINAL_Report_Impacts_RoadUserCharges_Rural_Urban_Mixed_Counties_Jan_2013.pdf.

48 Oregon DOT (2013). "Road Usage Charge Overview." Road Usage Charge Program webpage. Retrieved on October 14, 2013 at http://www.oregon.gov/ODOT/HWY/RUFPP/Pages/ruc_overview.aspx.

49 Chalker, J., Achterman, G., & O'Neal, D. (2009, January). *Letter to Senator Maria Cantwell*. TOLLROADSnews website. Retrieved 3/21/12 from <http://www.tollroadsnews.com/sites/default/files/WestOnVMT.pdf>.

50 Humphrey School of Public Affairs at the University of Minnesota (2011, December) *Report of Minnesota's Mileage-Based User Fee Policy Task Force*. Retrieved 3/21/12 from <http://www.dot.state.mn.us/mileagebaseduserfee/pdf/mbufpolicytaskforcereport.pdf>.

Unlike Oregon and Washington, which used in-vehicle GPS devices to monitor travel behavior, the Minnesota study had volunteers using GPS capabilities in smart phones to provide travel behavior for particular trips.⁵¹ The volunteers either opted into the smart phone-based mileage tracking or used their odometer instead. The study incentivized the use of smart phone technology with a reduced per-mile charge. Using existing infrastructure and available cell phone technologies, the program offered smart phone users the ability to log on to a web-based application to verify the accuracy of their mileage and to ask questions of program support staff. Preliminary findings suggest that the program achieved a high rate of user acceptance.⁵² A final report for the study is expected to be available in 2012.

Resources

Chalker, J., Achterman, G., & O’Neal, D. (2009, January 16). Letter to Senator Maria Cantwell. <http://www.tollroadsnews.com/sites/default/files/WestOnVMT.pdf>.

This letter requests, on the part of three state DOTs, that Congress authorize a national study on the utility of a VMT charge, arguing that study results from tests conducted in individual states show the validity of the VMT charge, particularly as the effectiveness of the gas tax wanes.

I-95 Coalition. “Cost drivers and preliminary cost estimates for VMT-based charges administrative requirements.”

http://i95coalition.org/i95/Portals/0/Public_Files/pm/reports/Working%20Document%20Excerpt%20-%20Section%206%20Cost%20Drivers%20and%20Preliminary%20Cost%20Estimates.pdf.

This document identifies the cost drivers impacting institutional and administrative requirements for implementing multistate VMT charges. The memo includes preliminary estimates of the potential administrative costs of VMT-based charges.

Mineta Transportation Institute. (2011, March). The Intersection of Urban Form and Mileage Fees: Findings from the Oregon Road User Fee Pilot Program. http://transweb.sjsu.edu/PDFs/research/2909_10-04.pdf.

This report analyzes data from the 2006-2007 Oregon Road User Fee Pilot Program to assess if and how urban form variables correlate with travel behavior changes. The study found that a mileage fee program charging a high rate during the peak hour is likely to strengthen the underlying influence of urban form on travel behavior. This finding suggests that switching from fuel taxes to mileage taxes would reinforce the use of land-use planning as a policy tool to shift some travel from solo driving trips to more sustainable modes.

Minnesota Department of Transportation. (2011, December). Report of Minnesota’s Mileage-Based User Fee Policy Task Force. <http://www.dot.state.mn.us/mileagebaseduserfee/pdf/mbufpolicytaskforcereport.pdf>.

The task force discussed and evaluated the MBUF concept and related issues, determined benefits and concerns, considered potential system design options and preferences, and formulated policy objectives and recommendations. The task force focused on policy, rather

51 American Association of State Highway and Transportation Officials. (2011, April 22). “Mn/DOT to Test Technology for Potential VMT Fee.” AASHTO Journal. Retrieved 3/21/12 from <http://www.aashtojournal.org/Pages/042211minnesota.aspx>.

52 Battelle, Ben Pierce (2012 April 10) *Preliminary Results from the MnDOT Mileage-Based User Fee Demonstration*. Presentation. Retrieved from http://www.ssti.us/wp/wp-content/uploads/2012/05/Pierce_SSTI-Community-of-Practice-MRFT-Presentation-4_23_2012.pdf.

than operational or technological recommendations.

“Preliminary Results from the MnDOT Mileage-Based User Fee Demonstration.” Presented by Ben Pierce, Battelle. (2012, April 10). http://www.ssti.us/wp/wp-content/uploads/2012/05/Pierce_SSTI-Community-of-Practice-MRFT-Presentation-4_23_2012.pdf.

This PowerPoint presentation describes the logistics, challenges, technology, and preliminary results of the Minnesota VMT trial.