NCRRP

REPORT 1

NATIONAL COOPERATIVE RAIL RESEARCH PROGRAM

Sponsored by the Federal Railroad Administration

Alternative Funding and Financing Mechanisms for Passenger and Freight Rail Projects

Report Summary

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

NATIONAL COOPERATIVE RAIL RESEARCH PROGRAM

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Alternative Funding and Financing Mechanisms for Passenger and Freight Rail Projects

Report Summary

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Ottawa, ON, Canada

IN ASSOCIATION WITH

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Public Policy Considerations in Paying for Rail Projects and Services that Have a Funding Gap

Purpose of this Report Summary

The final report of the National Cooperative Rail Research Program's Project 07-01 is a Guidebook on alternative funding and financing mechanisms for passenger and freight rail projects. The Guidebook, which provides a technical "toolbox" of methods that can be used to help fund and finance rail projects and services, is intended primarily for public officials seeking to identify means of paying for rail projects and services.

This report summary highlights the broader and more significant issue of how to pay for rail projects and services that have a funding gap and the policy considerations associated with bridging that gap.

NCRRP Report 1 and this associated report summary were prepared for the National Cooperative Rail Research Program by CPCS in association with Harral Winner Thompson Sharp Klein, Inc.; Thompson, Galenson and Associates, LLC; First Class Partnerships Limited; and Portscape Inc.

Background

Most public surface transportation infrastructure and services in the United States do not, on their own, generate sufficient revenue to cover their full costs and are dependent on public funding contributions. For example, a recent report noted that the combined contribution of the federal government, states, and localities to the country's highways and transit systems was on the order of $207 billion per year.[1] Similarly, most public rail projects and services, including intercity passenger rail, commuter rail, and corridor improvement projects, also require public funding contributions to be financially viable.

Many Rail Projects and Services Have a Funding Gap

Rail projects and services are highly capital intensive—this is as true in the United States as it is anywhere else in the world. The financial dynamics of rail projects and services and how these are paid for are influenced by a range of factors, including markets and industry structure, but the most significant is the extent to which revenues associated with a railroad's assets and services cover their full cost.

[1]The PEW Charitable Trusts, Intergovernmental Challenges in Surface Transportation Funding, September 2014.

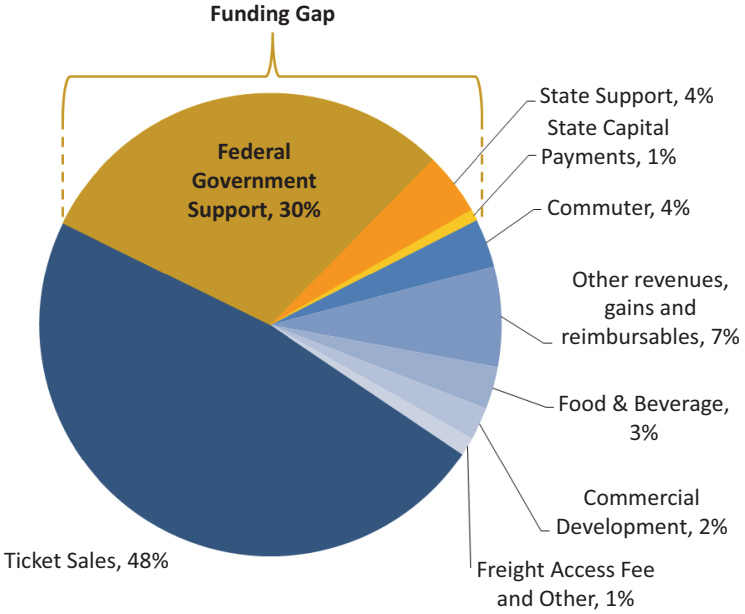
Since deregulation of the U.S. freight railroad industry by the Staggers Rail Act of 1980, most private U.S. freight railroads have generated sufficient revenue from their operations to cover their capital, operating, and maintenance costs and to make a profit. In 2013, for example, U.S. Class I freight railroads generated $13.4 billion in profits and invested more than $25 billion in railroad assets. These investments have been financed based on expected future operating profits, using a range of financing mechanisms.

By contrast, all passenger rail operations in the United States have a funding gap—that is, revenues generated by these services do not cover their full costs. For example, since its establishment in the 1970s, Amtrak's operating revenues from intercity passenger rail service have never covered operating costs, let alone made any contribution toward capital investment; operating losses between 2008 and 2012 ranged between $1.1–$ 1.3 billion annually, with a total cost since establishment of $68.5 billion (2013$) (Figure 1). Similarly, as shown in Figures 2 and 3, none of the publicly owned commuter rail systems in the United States covers its operating expenses from passenger revenues; cost recovery from operations varies from 6% to 63%, with few operations covering more than 50% of their operating costs.

Some short-line freight railroad projects and services and most corridor improvement projects, such as Chicago's CREATE project, also have a funding gap. The funding gap of the CREATE project, for example, is currently more than $2.5 billion.

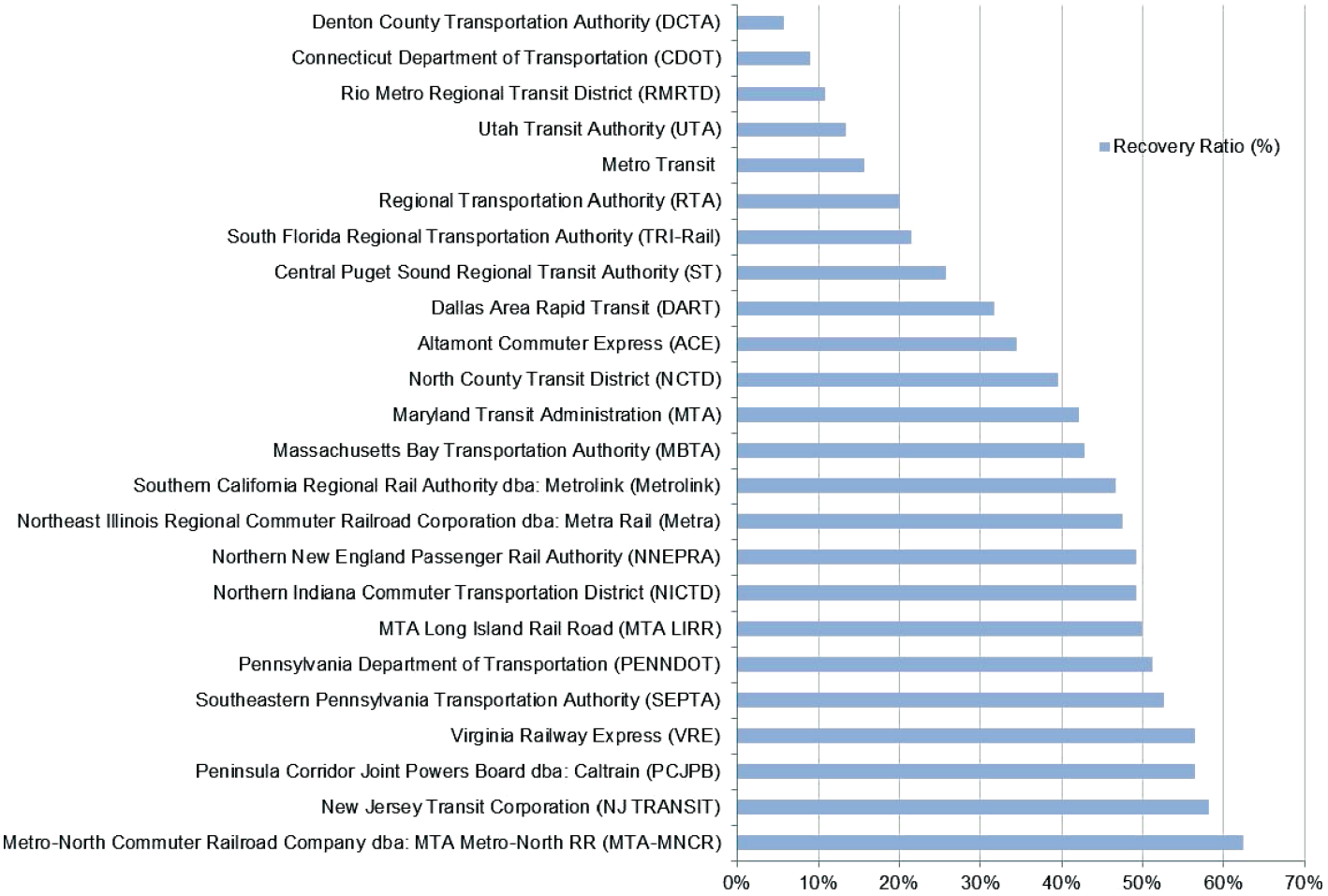
The list of planned rail projects in the United States is long. Many of these projects—intercity passenger rail projects including high-speed rail, commuter rail projects, some short-line freight railroad projects and most rail corridor improvement projects—have a funding gap. To realize these projects and services, the funding gap will need to be addressed.

The question is: how to address the funding gap?



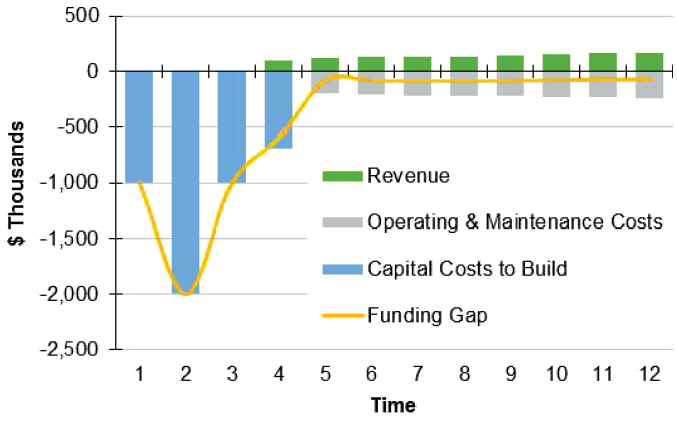
Source: CPCS Analysis of Amtrak Annual Report, 2012
[Latest available at the time of writing]

Figure 1. Amtrak operating revenue sources, 2012.



Source: CPCS analysis of Federal Transit Administrations' 2012, National Transit Database (NTD).

Figure 2. Commuter rail systems and ratio of cost recovery from operating revenues, 2012.



Source: CPCS Team (Hypothetical Numbers)

Figure 3. Illustrative annual cash flow for typical rail project and service with a funding gap.

Funding vs. Financing

The terms funding and financing are often confused, but they refer to very different things.

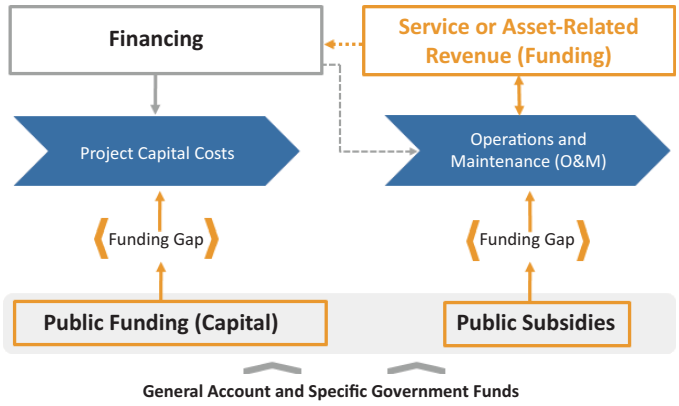
Funding refers to the sources of revenue that can be used to pay for a project or service. Sources of funding include, but are not limited to, revenue streams, current or future, from the delivery of rail transportation services (whether freight or passenger); ancillary revenues or non-repayable capital grants or operating subsidies funded from various forms of taxes; and fees or user charges.

Financing refers to financial mechanisms or tools to access money to pay for a project or service generally before the project generates the necessary revenue to pay for the investments. Financing mechanisms include various forms of debt, equity, and capital leases. Financing is typically used when the time profile of a project's revenues doesn't correspond to the cash needs of the project. The use of financing mechanisms, unlike funding, generally creates a future financial obligation to the entity providing the financing.

There is no such thing as a financing solution to a funding problem; rather, short of reducing the cost of a project or service, the only solution to a funding gap is to find other sources of revenue. To be viable, rail projects or services with a funding gap require public funding—typically in the form of grants or other capital contributions (for capital investments) and/or operating subsidies (for ongoing operations and maintenance costs) (see Figure 4). Grants and subsidies are funding vehicles—that is, a revenue source for a project—but the money used to provide grants and subsidies must come from somewhere. Typical sources of money for grants and subsidies include user charges and taxes.

The Case for Public Funding Contributions for Rail Projects: Net Public Benefits

Rail projects and services that have a funding gap can't be financed privately, although there may be a strong public benefits rationale for investing in these projects or services. Rail projects and services that have a funding gap, including passenger, short line, and rail corridor improvements, can provide a range of public benefits including, but not limited to, increased mobility and accessibility, safety enhancements, regional economic development, reduced emissions, congestion, wear and tear on roads, noise impacts, and reduced or deferred need for new public investment in highway and airport capacity.



Source: CPCS

Figure 4. Simplified representation of rail project funding and financing.

However, given that public benefits are generally measured—when they can be—in economic rather than in financial terms and accrue to society at large rather than to private investors, these projects do not attract private money. Rather, public funding, in one form or another, is required for these projects to be financially feasible; when funding sources are committed, private money can often be used to finance the project.

This is not to suggest that all rail projects that generate public benefits warrant public investment, nor is a positive assessment of project or service benefits, on its own, necessarily sufficient to justify public funding for a rail project. Other considerations, including availability of funding and competing funding priorities (which include priorities across a broad range of sectors, not limited to transportation) must also be weighed.

The question is: when are public funding contributions for rail projects and services appropriate?

The Challenge: Measuring the Full Range of Benefits and Costs

Addressing the aforementioned question is difficult and often highly politicized. In the current U.S. context, the approach to measuring the full range of public benefits and costs associated with transportation projects and services is not comprehensive and often inconsistent. As one senior rail finance expert noted:

> In the U.S., we don't have a good way of defining public benefits and paying for them—and we don't have a very good way of defining public costs and making whoever causes them pay.

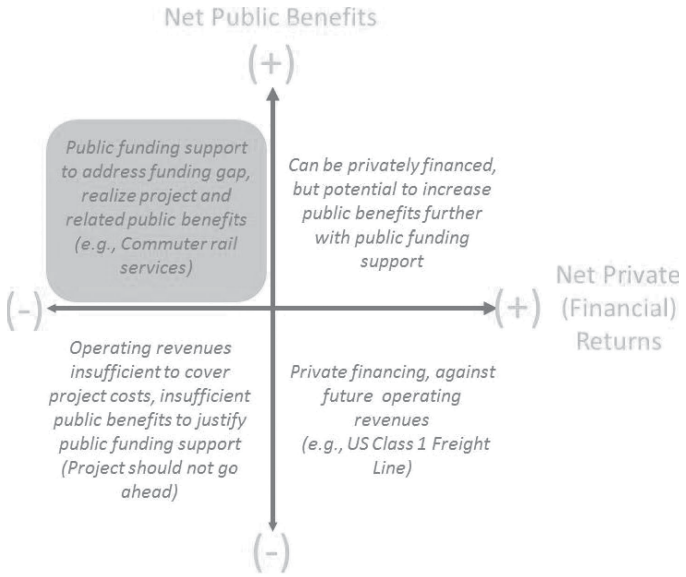
There is both a need (1) to more fully evaluate the range of benefits and costs of rail projects to support public funding decisions and (2) to develop policies to support and guide public funding for rail projects. A more robust, consistent, and systematic framework would help in assessing the full potential benefits and costs of rail projects. This framework and related resources should be supported by credible, evidence-based research, as well as actual long-term benefits of rail projects following implementation. These benefits will constitute and important input to future benefit-cost analyses.

Justifying Public Funding for Rail Projects

The extent to which a rail project or service is expected to have a net public benefit is a useful starting point for assessing the rationale for public funding and financing support. An initial question is the extent to which the full public benefits associated with a rail project and/or services are greater than the full costs of the project and/or services (including all forms of capital grants and support, land use, increased excess capacity, and so forth). In other words, does the project and/or service generate a net public benefit?

Figures 5 and 6 provide a basis for identifying and evaluating opportunities for the use of public funding and financing mechanisms, both in terms of when these are most appropriate (Figure 5) and how they can be used to achieve specific outcomes (Figure 6). Rail projects or services in the bottom left quadrant, with neither a positive public benefit nor a positive financial return (i.e., profit), do not make sense to undertake. Generally speaking, these projects should not be funded by the public sector (and won't be financed privately).

Projects or services in the upper left quadrant can generate net public benefits, but require some kind of public support to be financially viable—otherwise, such projects can't be financed. Public funding contributions for such projects could be justified, as could concessional (low-cost) public lending. This would be typical for rail commuter service where tariffs are kept too low for

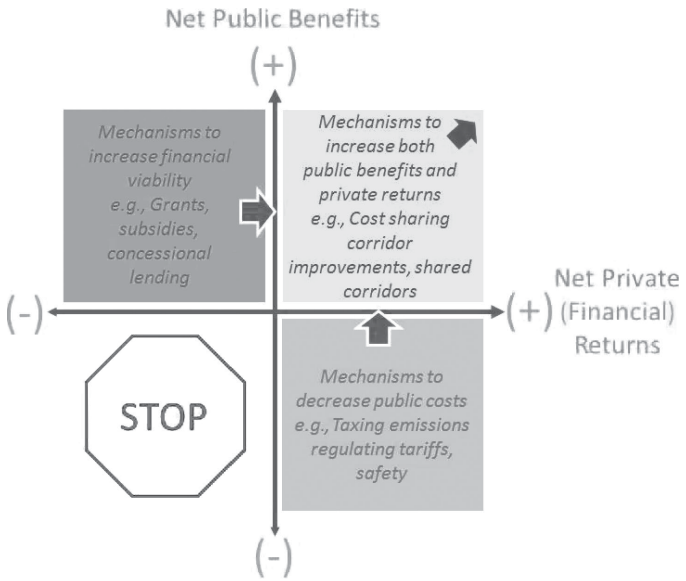


Source: CPCS

Figure 5. Net public benefits vs. net private (financial) returns.

the service to be profitable, but public benefits are worth enough to cover the operating losses generated by the project.

Projects or services in the bottom right quadrant, which provide a positive net financial return, are commercially viable and can be financed privately, without any public financial support. At the same time, there may be a rationale for public intervention to minimize any dis-benefits (external costs) of such projects and services for the general public. This would typically happen where the operation is profitable, but creates effects such as noise, for which the public should be compensated in some way (by the entity gaining financially from the project).



Source: CPCS

Figure 6. Use funding and financing mechanisms to increase public benefits, financial viability, or both.

Lastly, projects or services in the upper right quadrant can generate both net public benefits and positive financial returns. Such projects or services can attract private financing, but may warrant public funding support or other intervention, if such support could increase the net public benefits.

Where Will the Money Come From?

The rationale for public funding for rail projects that have a funding gap is one thing; coming up with the funds to pay for these projects is another. *NCRRP Report 1: Alternative Funding and Financing Mechanisms for Passenger and Freight Rail Projects* identifies over two dozen of the most likely alternative funding and financing mechanisms that can help pay for rail projects and services. *NCRRP Report 1* provides detail on each funding and financing mechanism including example case studies, a discussion of their applicability in the U.S. context, enabling requirements, and barriers to their implementation. These funding and financing mechanisms are summarized in Figure 7. The magnitude of funding potential of each funding mechanism is also noted (with $ representing low funding potential and $$$ representing high funding potential). As used in Figure 7, the criteria used in estimating funding potential are as follows:

- Low funding potential ($): funding sources that contribute less than 5% of transportation revenue.
- Medium funding potential ($$): sources contributing from 5% to 20% of transportation revenue.
- High funding potential ($$$): funding sources that can contribute more than 20% of transportation revenue.

These are necessarily estimates, and the potential for any particular funding source depends on circumstances.

Other potential sources of funding that could be used for rail projects include lotteries and casinos and new taxes on things such as hydraulic fracturing (fracking) projects or fast foods. For any such revenue mechanism to be an effective and sustainable way to fund rail projects and services, the revenue stream should be dedicated, in whole or in part, to the rail projects and services in question.

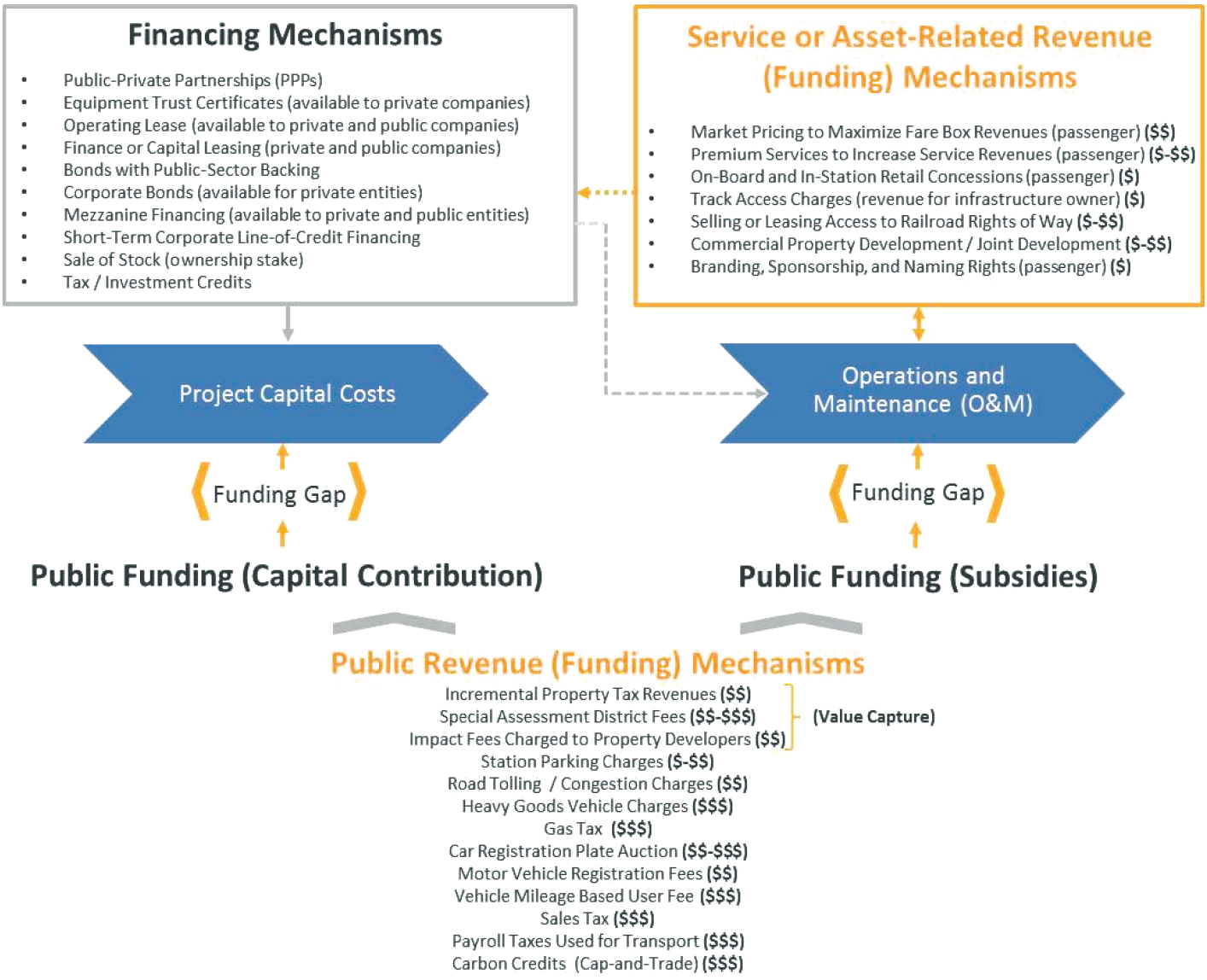
Potential Application of Alternative Funding and Financing Mechanisms

To illustrate how alternative financing and revenue mechanisms could be used, the team assessed the potential application of these alternative mechanisms on five case studies for U.S. rail projects in planning or early development and all with a funding gap:

- California High-Speed Rail (High-Speed Rail)
- Amtrak Virginia (I-81/US-29 Corridor) (Intercity Passenger Rail)
- Virginia Rail Express (Commuter Service)
- Chicago CREATE (Shared Corridor)
- New Orleans Rail Gateway (Shared Corridor).

These case studies, presented in detail in *NCRRP Report 1*, provide examples of very different projects, but many of the lessons are similar:

- If a project has a funding gap after seeking all other available sources of revenue, there is likely no way around the need for public funding if the project is to be financially viable.
- Public revenue (funding) mechanisms can raise significantly more money to pay for rail projects than can revenue mechanisms from the rail project or from the assets and/or services themselves, but there are more barriers (often political) to obtaining such funding.
- For passenger projects, general taxation offers the greatest magnitude of funding potential.



Source: CPCS

Figure 7. Alternative funding and financing mechanisms for rail projects.

Generally speaking, the magnitude of funding potential from public revenue mechanisms, including taxes and user charges, is far greater than the revenues that can be generated solely from a rail asset or service—largely because these mechanisms can be applied more broadly to a larger potential revenue base.

Relatively modest increases to sales taxes, the gas tax, and/or other broad-based charges, if dedicated to rail investments, could, in many cases, be sufficient to pay for rail projects or services. For example, the state of Virginia recently increased the state sales tax by 0.3%, of which 0.125% was allocated to its Intercity Passenger Rail Operating and Capital Fund, representing an increase in rail funding of 86%. Other sources of funding with significant potential include heavy goods vehicle charges, motor vehicle registration fees, and vehicle-mileage-based user fees.

These funding models are not new and are used in many parts of the world to fund rail projects. For example, Germany generates over $6 billion per year from a distance-based

charge on heavy goods vehicles, of which $1.4 billion invested in rail. The United Kingdom generates over $10 billion per year from motor vehicle registration fees, of which a portion is dedicated to rail. The Paris Region generates over $4 billion per year from payroll taxes used for transport. These funding mechanisms are seldom used in the U.S. context, in large part because of the political challenges associated with increasing taxes and imposing user charges. Nevertheless, if it is expected that a particular rail project and/or set of services will generate a net public benefit warranting public funding support, then the use of public funding mechanisms, including taxes and user charges, may be the only way to realize the project or service. Without the use of these mechanisms, many of these projects or services simply won't happen.

No single funding or financing tool is likely to be sufficient for a large rail project because of the amounts of money required. In many cases, multiple tools may be necessary. Many of the mechanisms identified in *NCRRP Report 1* are underutilized or not used at all, which suggests there is considerable scope for increasing the use of a wider range of mechanisms to realize rail projects and services in the United States.

The Role of Public Policy

A clear policy can help justify the use of specific revenue-generating mechanisms that have the dual effect of (1) causing changes in behavior that support specific policy outcomes (e.g., modal shift from road to rail to reduce road congestion) and (2) raising revenue that can be used to fund the rail project and service. Such revenue mechanisms can also be used to internalize the external costs generated from non-rail modes of transport (See Figure 8).

Encourage use of cars?

- Subsidize use of roads by cars (via public funding of roads)
- Maintain/expand highway capacity

Encourage use of rail?

- Build rail projects
- Subsidize low rail fares and high frequency
- Increase road/air user charges
- Integrate rail in transport plans

Figure 8. What transportation future is policy striving toward on major corridors in the United States?

Conclusion

There is no "silver bullet" financing model or a new and previously unknown source of revenue that can be accessed to fully fund and finance rail projects that have a funding gap.

This research project and the resulting *NCRRP Report 1* identify and describe the potential importance of several alternative funding and financing mechanisms that can be combined to realize passenger and freight rail projects and services where traditional funding sources, on their own, are insufficient. In general, if projects can be properly structured, an abundance of knowledgeable private financing institutions and of private capital are ready to invest in rail projects. What is lacking is a way to fund those projects. *NCRRP Report 1* also identifies other opportunities and strategies for promoting the realization of rail projects and services that have a funding gap.

Using these mechanisms and approaches requires careful consideration and hard decisions—to raise money from the public, to allocate scarce public resources to rail projects and services, and potentially to disrupt the status quo in the funding and provision of rail services. Many of these decisions may be politically sensitive. Nevertheless, if the general premise is that a rail project or service is worthwhile and delivers value—a net benefit—then there could be a strong justification for making such decisions.

Summary of Alternative Funding and Financing Mechanisms for Rail Projects and Services

Beyond the more typical or traditional sources of funding and financing for rail projects and services, *NCRRP Report 1* identifies alternative funding and financing mechanisms that can be used to pay for freight and passenger rail projects, including operating costs (opex) and capital costs (capex). These mechanisms are summarized in the subsequent tables.

In Tables 1 through 3, the criteria used in estimating funding potential are as follows:

- Low funding potential ($): funding sources that contribute less than 5% of transportation revenue.
- Medium funding potential ($$): sources contributing from 5% to 20% of transportation revenue.
- High funding potential ($$$): funding sources that can contribute more than 20% of transportation revenue.

These are necessarily estimates, and the potential for any particular funding source depends on circumstances.

Table 1. Alternative service or asset-related, revenue-generating (funding) mechanisms.

Service or Asset-Related, Revenue-Generating Mechanisms	Freight	Passenger	Capex	Opex	Magnitude of Funding Potential ($=low, $$$=high)
Market Pricing to Maximize Fare Box Revenues		✓	✓	✓	**$$** (potential to increase revenue ~ 10% to 20%)
Premium Services to Increase Service Revenues		✓	✓	✓	**$-$$** (potential to increase revenue ~ 5% to 10%)
On-Board and In-Station Retail Concessions			✓	✓	**$** (potential to increase revenue ~3%)
Track Access Charges	✓	✓	✓	✓	**$** (potential to recover marginal cost +)
Selling or Leasing Access to Railroad Rights of Way (The operator and the owner may be different, which is often true of passenger operators. The benefits go to the owner.)	✓	✓		✓	**$-$$** (based in large part on the value of the land adjacent to the right-of-way corridor)
Commercial Property Development/Joint Development	✓	✓	✓	✓	**$-$$** (extent of revenues depends on the size and type of the development)
Branding, Sponsorship, and Naming Rights		✓	✓	✓	**$** (e.g., from $200,000 to $2m per year per rail station in major urban areas. Not often used in US context)

Table 2. Alternative public revenue (funding) mechanisms.

Public Revenue (Funding) Mechanisms	Freight	Passenger	Capex	Opex	Magnitude of Funding Potential ($=low, $$$=high)
Incremental Property Tax Revenues (for Tax Increment Financing)	✓	✓	✓		**$$** (depends on the actual increase in property values generated by project – will vary considerably by case)
Special Assessment District (SAD) Fees		✓	✓		**$$-$$$** (contribution varies depending on the overall capex requirements for the project and the benefits expected to be generated by the project)
Impact Fees Charged to Property Developers		✓	✓	✓	**$$** (highest in strong real estate markets)
Station Parking Charges		✓	✓	✓	**$-$$** (potential to generate 5% to 10% in additional revenue)
Road Tolling/Congestion Charging	✓	✓	✓	✓	**$$** (more typically used to fund transit but can be applied locally for joint road/rail facilities)
Heavy Goods Vehicle (Truck) Charges	✓		✓	✓	**$$$** (depends on level of charges and amount of traffic – European examples in the $ billions)
Gas Tax	✓	✓	✓	✓	**$$$** (total funding potential very large – in UK, £26 billion [$40 billion] each year, 1.7% of GDP)
Car Registration Plate Auction		✓	✓	✓	**$$-$$$** (funding potential very large)
Motor Vehicle Registration Fees		✓	✓	✓	**$$$** (in UK, £6 billion [$10 billion] each year from motor vehicle registration fees)

(continued on next page)

Table 2. (Continued).

Public Revenue (Funding) Mechanisms	Freight	Passenger	Capex	Opex	Magnitude of Funding Potential ($=low, $$$=high)
Vehicle Mileage-Based User Fee	✓	✓	✓	✓	**$$$** (for example, a 1-cent per mile tax would yield about $30 billion/year in US, with a typical driver paying about $120 per year per vehicle)
Payroll Taxes Used for Transport		✓	✓	✓	**$$$** (depends on the extent of the program: geographic size of the taxation zone, tax rate, etc. In the Paris Region, generates about $4 billion per year)
Sales Tax	✓	✓	✓	✓	**$$$** (total funding potential very large; sometimes a share of sales taxes is assigned to transport projects and can be used to improve rail and road improvement projects from a general fund)
Carbon Tax or Credits (Cap-and-Trade)	✓	✓	✓	✓	**$$$** (in California, 1 cent/gallon would yield around $170 million/year and 20 cents/gallon would finance the entire HSR program without any other sources)

Table 3. Financing mechanisms.

Financing Mechanisms	Freight	Passenger	Capex	Opex	Magnitude of Financing Potential and Cost
Public-Private Partnerships (PPPs)	✓	✓	✓	✓	Can finance entire project if future revenue streams are sufficient and predictable.
Equipment Trust Certificates (available to private companies)	✓	✓	✓		Amounts available range from about $20 million to $200 million, with interest rates equivalent to a federal rate plus 2% to 5%.
Operating Lease Certificates (available to private and public companies)	✓	✓	✓	✓	Could range from $1 million to billions, cost varies by asset: Market prices – annual lease usually 10% to 25% of new asset price per year.
Finance or Capital Leasing (private and public companies)	✓	✓	✓	✓	Finance leases depend on the creditworthiness of the lessee and can be used to finance many different types of assets.
Bonds with Public-Sector Backing		✓	✓		Could be significant. Cost typically 25% to 30% below prime rate.
Corporate Bonds (available for private entities)	✓		✓		$25 million to $1 billion+. Federal Rate +1% to +5%; interest taxable to recipients.
Mezzanine Financing (available to both private and public companies/authorities)	✓	✓	✓	✓	$100s of millions for large railroads; $10 million to $100 million for smaller ones. Prime; Prime +1%–5%.
Short-Term Corporate Line-of-Credit Financing	✓		✓	✓	$20 million to $100 million. Prime rate to prime rate +5%; initiation charge.
Sale of Stock (ownership stake)	✓	✓	✓	✓	$100s of millions for large railroads; $10 million to $100 million for smaller ones. Cost typically in range of 12% to 20%.
Tax/Investment Credits	✓		✓		Varies significantly on a case-by-case basis and on state and federal tax codes.