Cost-Allocation Methods for Commuter, Intercity, and Freight Rail Operations on Shared-Use Rail Systems and Corridors

DETAILS

30 pages | | PAPERBACK

ISBN 978-0-309-42934-4 | DOI 10.17226/23195

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February 2007

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

Subject Areas: IA Planning and Administration, VI Public Transit, and VII Rail

Responsible Senior Program Officer: Christopher W. Jenks

Research Results Digest 313

COST-ALLOCATION METHODS FOR COMMUTER, INTERCITY, AND FREIGHT RAIL OPERATIONS ON SHARED-USE RAIL SYSTEMS AND CORRIDORS

This digest presents the results of NCHRP Project 20-65 (Task 12), "Cost-Allocation Methods for Commuter, Intercity and Freight Operations on Shared-Use Rail Systems and Corridors." The research was conducted by AECOM Consult, Inc.

CONTENTS

This digest will be valuable to states and local public transportation agencies that are planning to initiate commuter rail or intercity passenger rail service within a shared-use corridor in the near future. The digest summarizes current shared-use rail arrangements; highlights both the allocation of operating and maintenance costs and the arrangements for making infrastructure improvements; identifies the cost-allocation methodologies, capital investment strategies, and other associated issues that warrant additional analysis and refinement; identifies opportunities for potential outreach and buy-in efforts among system stakeholders; and identifies future research topics that can highlight key issues and cover a broad spectrum of ownership configuration, geography, service speeds and density, and infrastructure improvement programs.

SUMMARY

A convergence of trends in the U.S. railroad industry—strong growth in both passenger and freight demand, a need for increased investment in rail infrastructure to keep up with demand, and a willingness on the part of governments to invest in and occasionally even purchase freight rail corridors—has heightened the importance of negotiations over access rights in shared-use corridors. Too often, however, these negotiations are hampered by the lack of a common framework for understanding operations and cost allocations in a shared-used corridor. Thus, the objectives of this digest are to identify the critical issues that need to be addressed in shared-use corridor negotiations, to review a sample of access agreements to see how those parties dealt with the critical issues, and to identify promising methodological approaches and outreach efforts.

While the mechanics of the typical cost-allocation approaches (attributable, avoidable, variable, etc.) are generally well understood, the larger process of cost allocation is more complicated than simply selecting a cost-allocation method and signing an access agreement. The parties in these negotiations—private freight railroads, Amtrak, public commuter rail agencies, state departments of transportation (DOTs), and local governments—bring resources and needs to the table that must be addressed. In particular, a review of the literature demonstrates the importance of the following issues:

- The infrastructure needs for both passenger and freight rail—especially

for increased capacity—are tremendous, and the cost of capital for such investments in the private sector can be prohibitive. The involvement of the government (both federal and state) in providing funding for capital investment is desirable, but private railroads are also wary of the requirements that could accompany such funding. The frequent inclusion of such political considerations in these negotiations often explains the wide variation in practices and the difficulty in finding an acceptable standard approach in resolving these issues.

- Except for Amtrak (see below), there is no defined formula for developing access agreements and cost-allocation methods between passenger rail agencies and freight railroads. A formulaic or "cookie-cutter" approach is not useful because the characteristics of each situation, such as physical constraints and freight traffic density, create unique negotiating environments.
- In the special case of Amtrak, the Rail Passenger Service Act of 1970 granted the national rail passenger service carrier statutory right of access to freight railroad-owned corridors for its nationwide system. The Northeast Corridor was subsequently conveyed to Amtrak, which now owns and operates it. Under this enabling legislation, Amtrak is required only to compensate the owning freight railroads for the "incremental costs" associated with accommodating intercity passenger services over their lines. However, the statute allowed for the owning freight railroad to charge more than "incremental costs" if the service provided to Amtrak is of higher quality that justifies the higher allocation amount.[1] These provisions are applied to both intercity and commuter rail passenger transportation provided by or for Amtrak. These stipulations provide a distinct advantage to Amtrak when negotiating with freight railroads over operating access and the basis for reimbursement, when compared with regional or local commuter operators, who must negotiate with the owning freight railroad or transit authority access rights and cost-reimbursement approaches on a case-by-case basis.
- Agreements are needed on both near-term operational concerns (such as dispatching) and long-term capital investment concerns. This can be a key issue in negotiations, especially if track owners maintain their rights-of-way to higher or lower standards than other users may need.
- Pricing may shift dramatically when shared corridors reach capacity and when owning railroads seek to recover not only allocated operating and maintenance costs, but also the opportunity cost of the capacity granted to the tenant. In the current environment of strong traffic growth, capacity is usually an issue from the outset, and future capacity needs must be anticipated.
- With business growing and capacity at a premium, privately owned host railroads are unwilling to cross-subsidize tenant railroads or put their franchise at risk in order to accommodate access by tenants.

Experience shows that owners and tenants not only must agree on operational control and a basic charge for access and maintenance, but also must create a framework to control current and future capital investments to allow for service expansions. Above all, this need for a framework suggests a need for flexibility, so that negotiators can tailor their agreements to the specific conditions, institutional arrangements, and operating characteristics in each shared-use corridor. In particular, it is important to recognize that rather than zero-sum negotiations between adversaries, these shared-use arrangements should be viewed as public-private partnerships between private railroads and public-sector transportation providers.

A review of existing passenger and freight access agreements (outside the realm of Amtrak-operated passenger services) clearly demonstrates this need for flexibility. As the state-of-the-practice review in Section 5 demonstrates, widely different approaches have been taken with respect to access charges, control over dispatching and maintenance, capital investments, and even corridor ownership. The chief executive officer (CEO) of a major commuter rail system offered these lessons learned for public agencies embarking on rail access negotiations:

[1] 1970 Rail Passenger Service Act. Title 49 U.S.C.A.—Transportation Subtitle V—Rail Programs, Part C—Passenger Transportation, Chapter 243—Amtrak—§24308(a)(2)(B).

- Agencies should not demand an avoidable cost approach in their access contracts. Though an avoidable cost approach may appear cheaper, it will increase the likelihood of poor service within the shared-used corridor.
- When negotiating with an owning railroad, public officials should assume that the commuter operations will be a success. The commuter rail authority should look at 10–15 years of growth, know the costs associated with that service growth, and account for it in the contract negotiations.
- In general, the access agreements should be written with the assumption that none of the current parties' representatives will be around when the next major expansion or change in service is contemplated. This assumption will force the negotiators into clear explanations of the rights and responsibilities of each user of the shared corridor.
- With respect to reliability and on-time performance for the tenant, the access agreement should contain dispatching protocols and performance metrics that can be realistically implemented by dispatchers in the corridor and easily tracked by both the owner and the tenant.

Access negotiations are likely to be most fruitful and result in an equitable cost-sharing agreement when each party recognizes the needs of the other. For example, a new commuter rail system hoping to simply purchase existing capacity on a busy freight corridor may encounter high access charges or low on-time performance, and in some cases access may even be infeasible due to the potential negative impacts of passenger service on freight traffic. However, if the commuter rail provider is backed by a state DOT or other agency that has the authority and the funding capacity to initiate major capital investments to increase both passenger and freight rail capacity in the corridor, then negotiations are likely to be substantially more productive and the final outcome more attractive to both parties. In the case of Amtrak, unique statutory provisions for accessing freight rail lines and reimbursement of costs give Amtrak an advantage in negotiations compared with public agency sponsors of rail passenger services, if Amtrak is the operator of the state-supported intercity or commuter rail passenger services.

Continued discussion and analysis of these topics is necessary within the rail industry so that both private freight railroads and public-sector passenger rail supporters become comfortable with the idea of public-private partnerships for both access and capacity improvement in key rail corridors. One possible outreach effort would be to use this report as the basis for a colloquium on equitable cost allocation among rail industry stakeholders.

SECTION 1: INTRODUCTION

1.1 Background

Shared-use rail systems and corridors play a crucial role in the daily movement of goods and people throughout the United States. In these shared-use corridors, freight rail operates directly alongside commuter or intercity passenger trains. This mixing of traffic classes presents a range of complex operational and financial issues relating to safety, liability, reliability, pricing, and infrastructure investment. While these issues are not new—passengers and freight have shared rights-of-way since the earliest days of the railroad industry—a number of trends are converging that have made the allocation of costs and capacity on shared-use rail systems a critical public policy issue:

- **Freight rail capacity is at a premium:** Since the passage of the Staggers Rail Act in 1980, the freight rail industry has undergone a major rationalization as firms have merged, labor forces have been reduced, and miles of unproductive right-of-way have been abandoned. As a result, the industry has seen a significant improvement in its efficiency and its profitability. Now this rationalized rail network is approaching or even reaching capacity in many of its corridors, and the combination of continued growth in freight traffic and customer demand for improved reliability will necessitate significant rail investments in the years ahead.
- **Passenger rail travel is growing strongly:** In addition to the freight rail rationalization described above, private-sector railroads relinquished their commuter and intercity passenger services in the years following WWII as these services became unprofitable in the face of growing automobile and airline travel. Passenger services that have survived require significant public-sector financial support. Yet, after a transition period in the 1970s and

1980s, commuter rail ridership has been growing strongly (from 314 million passenger trips in 1992 to 423 million passenger trips in 2005), and state and local governments are showing increasing interest in commuter rail. Similarly, despite a stagnant market for long-distance train service, ridership on Amtrak's corridor services[2] rose 26% between 1998 and 2003. As roadways become more congested and high fuel prices make rail travel more attractive, the demand for commuter and intercity rail is expected to continue to grow.

- **Ownership of rail right-of-way varies widely:** The changes in both the passenger and freight rail industries created a situation where the actual ownership of the right-of-way in critical rail corridors can vary. While private freight railroads own the vast majority of the rail network in the country, key shared-use corridors in some urban areas are owned by the public sector, and this approach can be used to guarantee access and performance for passenger rail. In addition to Amtrak's ownership of the Northeast Corridor, many commuter rail authorities (such as New Jersey Transit and Metrolink in southern California) own the tracks over which their trains run, and state governments (such as Florida and North Carolina) also now own key rail corridors.
- **Government oversight of rail is fragmented:** The federal government currently does not play a role in access negotiations between commuter and freight railroads. The federal agencies have responsibility for different aspects of rail transportation. The Federal Railroad Administration (FRA) primarily focuses on ensuring safe operation of railroads; the Federal Transit Administration (FTA) provides funding to transit projects, including commuter rail; and the Surface Transportation Board (STB) is responsible for the economic regulation of railroads. These agencies do not have the authority or responsibility for commuter rail access issues and do not currently act to facilitate negotiations or resolve impasses between commuter and freight railroads regarding access to rights-of-way.

The net result of these converging trends is that negotiations over access to shared corridors, while still being completed successfully, have become increasingly complex, especially in the area of cost allocation. The need for a well-defined framework for resolving these issues has been further heightened by recent Congressional proposals that call for states and freight railroads to reach "arm's length" agreements (i.e., agreements where all parties are properly represented, are negotiating in good faith for their own best interests, and are willing but not obligated to enter into the agreement) regarding access, infrastructure improvements, maintenance costs, and other issues before federal passenger project funding will be provided. Yet standardized methods for cost allocation and other shared-use operational issues are not uniformly accepted and often do not exist. Thus, negotiations over access can be long and frustrating, which can significantly delay the implementation of important rail projects.

1.2 Objectives

This digest is intended for a general readership, but its immediate audience is state and local public transportation agencies that are planning to initiate commuter rail or intercity passenger rail service within a shared-use corridor in the near future. The digest will examine existing cost-allocation methods and other critical operational issues for commuter, intercity, and freight rail services operating on shared-use systems and corridors. The digest will meet four specific objectives:

- The digest will assess current and proposed shared-use rail arrangements and will highlight both the allocation of operating and maintenance costs and the arrangements for making infrastructure improvements.
- The digest will identify the cost-allocation methods, capital investment strategies, and other associated issues that warrant additional analysis and refinement.
- The digest will emphasize opportunities for potential outreach and buy-in efforts among system stakeholders.
- The digest will investigate and identify future case studies that can highlight key issues and cover a broad spectrum of ownership configu-

[2] "Corridor service" generally refers to trips of less than 500 miles with higher frequencies and only "seat" service, while "long-distance service" refers to trips of more than 500 miles with lower frequencies and both "seat" and "sleeper" service.

ration, geography, service speeds and density, and infrastructure improvement programs.

1.3 Digest Structure

The digest is presented in six sections. Following this introductory section, the remainder of the digest is organized as follows:

- **Section 2: Railroad Costs and Allocation Methods.** This section serves as a brief primer on railroad costs and a reference for the remainder of the digest. It provides an overview of typical railroad costs (both operating and capital) and describes a set of established methods for allocating these costs to different users.
- **Section 3: Literature Review: Current Issues in Rail Cost Allocation.** This section reviews selected reports and presentations on shared-use cost allocation. Key economic and public policy issues in the literature are highlighted in order to provide a framework for understanding later specific examples.
- **Section 4: Critical Cost-Allocation Areas.** This section examines the specific cost-allocation areas that are likely to be subject to negotiation in any shared-use access agreement. In each area, underlying principles are delineated and possible cost-allocation approaches are described when there is flexibility in the approaches that can be used and agreed to by the negotiating parties.
- **Section 5: State-of-the-Practice Review and Case Study.** This section describes the access agreements in a set of representative shared-use rail corridors. These corridors represent a broad range of ownership configurations, cost-allocation methods, service mixtures, and approaches to infrastructure investment. Each corridor is intended to highlight a particular approach to the critical areas described in Section 4. A "mini" case study of Metrolink in California is presented in this section in order to showcase the type of information that can potentially be gleaned from future case studies.
- **Section 6: Review and Outreach Efforts.** This final section synthesizes the information presented in the previous sections by highlighting the most promising cost-allocation methods and describing strategies for successful outreach and buy-in among stakeholders.

SECTION 2: RAILROAD COSTS AND ALLOCATION METHODS

2.1 Operating Costs

The operation of a freight or passenger railroad is highly complex, requiring the coordination of people, information, and physical assets across large distances. As a result, the details of a typical railroad's cost structure will depend heavily on specific factors of geography, technology, and the markets which it serves. However, the major operating cost categories can generally be delineated by either function or object class, or each of these approaches can be valuable when determining a cost allocation method in a shared-use corridor.

2.1.1 Costs by Function

Railroad operating costs can be usefully broken down into four major functional categories:

- **Transportation:** Transportation (or vehicle operations) is typically the largest of the four categories and includes such costs as road crews, yard crews, station staff, train control, and fuel and power.
- **Maintenance of Equipment:** This category covers the repair and maintenance of locomotives, coaches, freight cars, and other support equipment.
- **Maintenance of Way and Structures:** The repair and maintenance of track, signals, communication systems, buildings, and other structures are included in this functional category.
- **General and Administrative:** This category includes the many management support functions that are required to operate a railroad, including accounting, marketing, human resources, and legal functions.

Figure 1 shows a breakdown of operating costs into these four functional categories for 20 U.S. commuter railroads in FY 2003, as well as a similar breakdown for Amtrak's costs in FY 2005. As noted above, transportation expenses constitute the largest functional area, but each of the other three areas is significant as well.[3]

[3]Commuter rail data taken from the USDOT National Transit Database (2003), Form F-30. Amtrak data taken from Amtrak's September 2005 Monthly Performance Report.

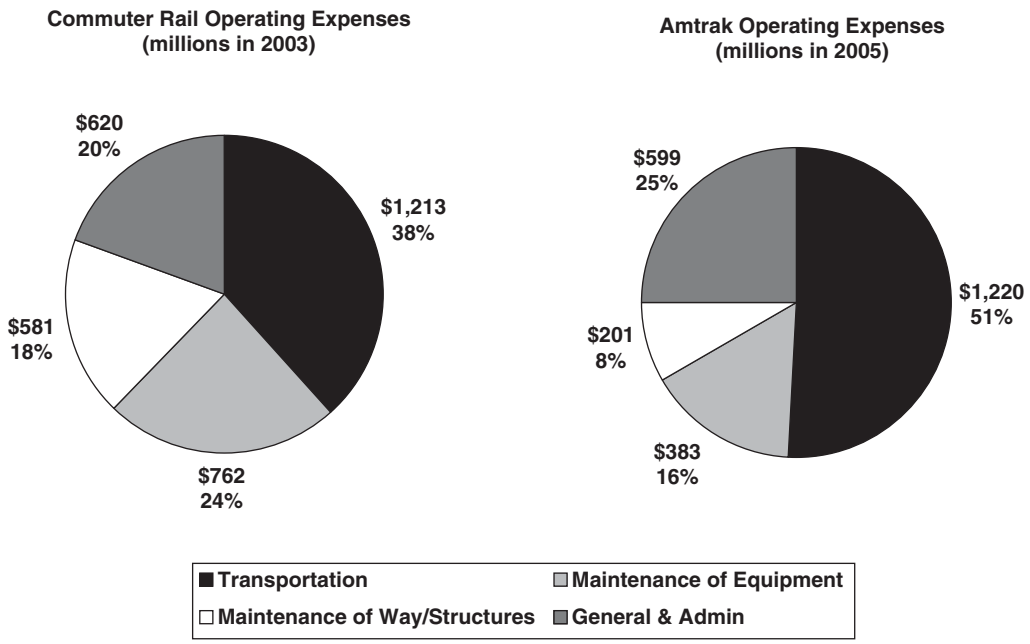

Figure 1 Commuter rail costs by function.

2.1.2 Costs by Object Class

Operating costs can also be delineated by object class, and a similar four-part categorization by object class is useful:

- **Labor:** The majority of passenger rail expenses fall into this category. Labor costs are directly influenced by baseline wage rates, the strength of union representation among the workforce, and work rules. Labor is also a significant fraction of the operating cost for freight railroads, but not to the same degree as in passenger service, which requires significant employee interface with travelers.
- **Fuel and Power:** This category includes both diesel fuel and electric power, which is used on many commuter rail lines.
- **Materials and Supplies:** All the materials needed for maintenance of way and maintenance of equipment, as well as lubricants, office supplies, and tools, fall in this category.
- **Other Expenses:** This broad category can include equipment rentals, purchased services, insurance, interest, depreciation, and other indirect expenses.

Figure 2 shows a breakdown of operating costs into these four categories for the same set of 20 U.S. commuter railroads in 2003 and for Amtrak in 2005. Labor expenses dominate for both, accounting for 61% of Amtrak's operating costs and 70% of the commuter railroads' costs.[4]

2.2 Capital Costs

Railroad capital costs are somewhat more difficult to categorize than operating costs. Some capital investments will go toward the rehabilitation or replacement of right-of-way and vehicles, while other investments may increase the class of track in a corridor or even increase traffic capacity by adding a siding, a station, or new vehicles to the fleet. Rather than object class or function, the key considerations for a railroad with respect to capital are *depreciation* and *return on investment.* The latter measure is especially critical in negotiations over capital investments in shared-use rail corridors.

Depreciation is a significant expense for privately owned railroads. Depreciation is an accounting technique for amortizing the original cost of a fixed asset over its expected useful life. In the United States, depreciation expenses can generally be deducted from taxable earnings even though they do not require

[4]Commuter rail data taken from the USDOT National Transit Database (2003), Form F-30. Amtrak data taken from Amtrak's 2005 Consolidated Financial Statements.

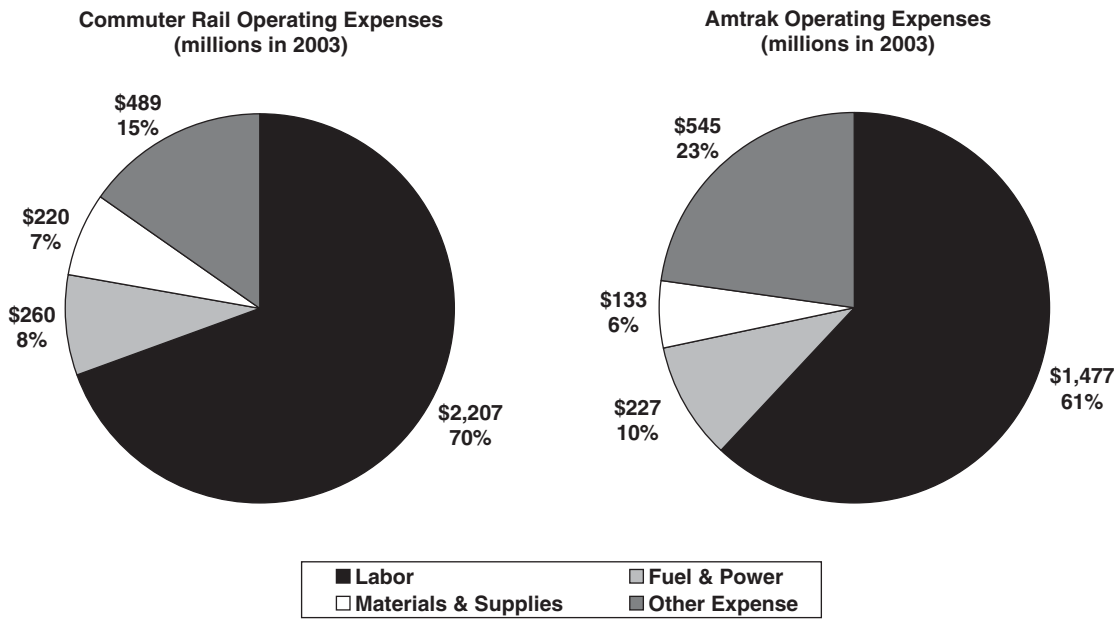

Figure 2 Commuter rail costs by object class.

actual cash outlays, and this can have a significant positive effect on a company's after-tax earnings.

Return on investment, rather than being an accounting technique like depreciation, is a critical evaluation measure for long-term economic success. A railroad generally has many potential capital investments competing for a limited pool of funding. Most owning railroads will have a minimum internal rate of return (or "hurdle rate") that capital investments must achieve before they will be approved and implemented. If the capital investments that are required or desired by a tenant railroad (such as additional passing tracks or upgrades in track class to support passenger rail on freight-owned right-of-way) do not meet this hurdle rate, an owning railroad may demand to be held harmless, both operationally and financially, before it will even consider allowing such investments to take place. However, the calculation of this return on investment can be subject to significant uncertainty, including the total amount of investment required (and the source of the funds), the impact of the investment on track capacity, and the ultimate effect of the new capacity on the operations of both the owning and tenant railroads. All of these issues are likely to be raised in negotiations over access to shared-use corridors.

2.3 Cost-Allocation Methods

As noted above, the United States has a long history of rail operations in shared-use corridors. Over time, a number of different approaches have been developed for allocating costs in these corridors to different users. We can identify at least three primary methods for allocating railroad operating and maintenance costs, as well as a smaller set of secondary options:

- **Avoidable Cost:** This method assigns to secondary users only those costs that could be directly avoided if the user were not served. It tends to put a relatively larger cost burden on the primary user and is often used when secondary users consume only a marginal amount of the corridor capacity. This method is also referred to as "incremental cost." This method is stipulated by the enabling legislation for Amtrak in determining the basis for reimbursing freight railroads over which Amtrak services were provided.[5]
- **Attributable Cost:** This method assigns to a particular user both the avoidable costs and a proportion of the common costs (using a common base unit such as train-miles, passenger-miles, or share of avoidable costs). "Fully allocated costs" are a form of attributable cost allocation that leads to all organizational costs

[5]1970 Rail Passenger Service Act. Title 49 U.S.C.A.—Transportation Subtitle V—Rail Programs, Part C—Passenger Transportation, Chapter 243—Amtrak—§24308(a)(2)(B).

being assigned to rail service. This method makes it difficult to identify nondirect expenses and to choose an acceptable base unit.

- **Variable Cost:** This method distributes the total cost of services in proportion to the use of the service as measured by train-miles, ton-miles, passenger-miles, or another other measure of output. Again, the selection of a base unit for allocation can be difficult.
- **Other, Secondary Options:** Other methods for dealing with common operating costs include fixed allocations (i.e., negotiated set fees) for general and administrative (G&A) and certain maintenance expenses, zero allocations (i.e., no charge for certain costs), and surcharge rates (applied to direct costs of labor, fuel, materials, etc.) to arrive at costs for general overhead functions.

Regardless of the particular allocation method chosen, following are the keys to creating a successful access pricing agreement:

- An initial agreement among all parties about the characterization of all the operating costs into *direct* and *indirect (common)* and also *variable* and *fixed.*
- An ability to track the costs in a way that flows directly into the pricing calculations, that does not require significant resources, and that can be confirmed by all interested parties.

It is also important to recognize that a single contract may use more than one cost-allocation method. In one study reviewed in Section 3, Peat Marwick states the following:

> For example, transportation and maintenance-of-equipment costs may be allocated on an avoidable cost basis, since many costs within these categories can be directly related to specific services. Maintenance-of-way costs might be allocated on a variable cost method, using gross-ton miles of service as a base unit. Several administrative and capital costs might be paid as a negotiated lump sum (i.e., a management fee in addition to negotiated capital improvements). The result is a tailored approach to cost allocation.[6]

The allocation of capital costs in a shared-use corridor is generally more difficult than the allocation of operating costs. Some agreements call for a tenant railroad to pay the monetary equivalent of the depreciation and foregone return on investment (in lieu of actually making capital contributions), while other agreements lay out a specific joint capital program between the owner and the tenant railroad. Capital cost allocation agreements often tend to be highly specific and apply only to the particular corridor at issue.

In the case of Amtrak, the Rail Passenger Service Act of 1970 granted the national rail passenger service carrier statutory right of access to existing freight corridors included in its nationwide system, except for the Northeast Corridor, which was conveyed to Amtrak. Under this enabling legislation, Amtrak is required only to compensate the owning freight railroads for the "incremental costs" associated with accommodating intercity passenger services over their lines. However, the statute allowed for the owning freight railroad to charge more than "incremental costs" if the service provided to Amtrak is of higher quality that justifies the higher allocation amount. These provisions are applied to both intercity and commuter rail passenger transportation provided by or for Amtrak.

These stipulations provide a distinct advantage to Amtrak when negotiating with freight railroads over operating access and the basis for reimbursement, when compared with regional or local commuter operators, who must negotiate with the owning freight railroad or transit authority access rights and cost-reimbursement approaches on a case-by-case basis.

SECTION 3: LITERATURE REVIEW: CURRENT ISSUES IN RAIL COST ALLOCATION

The literature reviewed in this section focuses on broad cost-allocation methods, current policy issues in U.S. railroading, and the economic interests of passenger and freight railroads in an era of growth and constrained capacity. The main points in each study are highlighted below, and then a final summary of key current issues is provided at the end of this section.

This section is not comprehensive on the subject of railroad cost allocation. For example, there is a large existing literature on technical issues in railroad costing and railroad capacity modeling, both of which will often be relevant to negotiations in a particular corridor. These issues are not specifically addressed here, but could be included in an expanded literature review.

[6]Peat Marwick, "Analysis of Commuter Rail Costs and Cost Allocation Methods," DOT Transportation Systems Center, 1983.

3.1 DOT Transportation Systems Center, "Analysis of Commuter Rail Costs and Cost Allocation Methods," Peat Marwick, 1983

This study is more than two decades old, but it lays out a framework for analyzing passenger rail costs and cost-allocation strategies that is still directly relevant today. In addition to summarizing the various methods for allocating operating costs (as in the previous section of this digest), it made the following key points:

- The choice of cost-allocation method is a major facet of the operating agreement negotiations.
- The outcome of access negotiations highly depends on the operating characteristics of the system and on the strength of the bargaining positions of those involved in the negotiations.
- The selection of cost-allocation techniques is influenced by the relative scope of the commuter rail service in comparison with other rail services sharing the facilities.
- Avoidable cost techniques are usually the most advantageous to a commuter operating agency, in that the commuter service is normally the secondary user of the facilities and thus is responsible for a smaller amount of common costs than if expenses were split with an attributable or variable cost-allocation method.
- Contracts specifying avoidable costs are more difficult to obtain and are usually acceptable to freight railroads only when the commuter rail portion of traffic is quite small in relation to other rail traffic.
- Attributable and variable cost allocation methods are much more likely to be acceptable to owning railroads.
- When commuter rail is the dominant user of a facility, an agency should be prepared to deal with railroads desiring an avoidable cost allocation method, with freight service as the secondary service.
- The choice between avoidable, attributable, or variable cost allocation methods, as well as fixed payments or other compensation techniques, is influenced by the availability of data.
- If negotiations do not reveal cost advantages for any particular method, the appropriate technique is whatever method requires the least additional effort to implement and maintain.
- Seldom is any one cost-allocation method used exclusively in an operating agreement. Most agreements use combinations of the major cost-allocation methods.

3.2 AASHTO/SCORT, *Intercity Passenger Rail Transportation,* January 2003

This report addresses the public benefits and investment needs of intercity passenger rail transportation. Cost allocation is not the report's primary focus, but the report highlights the particular importance of passenger rail service in regional corridors (as opposed to traditional long-distance service), and it makes clear the tremendous capital investment that is needed in these corridors if passenger rail and freight rail are to operate successfully. The report made the following points:

- Ridership on Amtrak's state-supported corridor routes grew by more than 26% during the 5 years between 1998 and 2003. Over this same period, Amtrak long-distance routes actually experienced a 3% decline in ridership.
- Intercity travel within corridors is significant and growing. This travel is also increasingly multimodal—different geographic markets and travelers are served by a range of other modes of travel, including air, auto, and rail.
- Projected corridor investment needs are as follows:
  - Next 6 Years: $17.0 billion
  - 7–20 Years: $42.9 billion
  - Total: $59.9 billion
- The breakout of capital needs by near-term and long-term horizons is important because it underscores the fact that a number of states have projects that are ready for implementation, with the planning, engineering, and environmental work completed.
- What is needed now is a strong federal funding partnership. The user fee or trust fund financing mechanisms for the other modes of passenger transportation provide a secure, long-term, dedicated source of funding. A similar financing system is needed for intercity passenger rail.
- The private market cost of capital is prohibitive for both freight and passenger railroads. A dedicated national source of capital funding for passenger rail must not compromise existing transportation funding.

3.3 Government Accountability Office, *Information and Guidance Could Help Facilitate Commuter and Freight Rail Access Negotiations,* Report GAO-04-240, 2004

Because of the continued importance of both freight and passenger rail to the nation's economy and the capacity constraints facing the railroad industry, the Government Accounting Office (GAO) was asked to examine (a) the challenges that commuter rail agencies and freight railroads face when negotiating and sharing rights-of-way, (b) the actions that help facilitate mutually beneficial arrangements between commuter rail agencies and freight railroads, and (c) the role that the federal government plays in negotiations between commuter rail agencies and freight railroads. Among the study's most relevant findings were the following:

- Reaching agreement on compensation, capacity, and liability issues presents the most problems when negotiating agreements, according to both commuter rail and freight railroad officials.
- Freight railroads generally do not want to allow commuter rail service on their rights-of-way unless the freight railroads are protected from the potential liability associated with passenger rail accidents.
  - Freight railroads typically require that the commuter rail agency contractually indemnify the freight railroad from any liability in the event of a passenger accident and procure a certain level of insurance coverage to guarantee the ability to pay the entire allocation of damages.
  - Accepting these liability terms can be problematic for the commuter rail agencies.
- Recognizing the freight railroad's potential exposure to liability when hosting passenger trains on their rights-of-way, Congress enacted the Amtrak Reform and Accountability Act of 1997 (ARAA), which limited aggregate overall damages and permitted providers of rail transportation to enter into indemnification agreements allocating financial responsibility for passenger accidents.
  - Discussions with officials from commuter rail agencies and freight railroads found some confusion as to whether the liability cap established in the ARAA applied to commuter rail agencies.
  - The GAO has concluded that the liability cap does apply.
- In addition to negotiation challenges, there are operational challenges. The most commonly cited problems were associated with dispatching the trains (i.e., controlling the movement of trains) and maintaining the rights-of-way.
- There is no defined formula for developing mutually beneficial arrangements between commuter rail agencies and freight railroads. A "cookie cutter" approach is not possible because every situation is unique. The characteristics of the rights-of-way, such as freight traffic density and the physical constraints of each rail line, create unique negotiating environments.
- Officials from commuter rail agencies and freight railroads identified conditions or actions that can help facilitate mutually beneficial arrangements between commuter rail agencies and freight railroads. Most frequently cited were
  - Understanding each other's position,
  - Identifying and using incentives to leverage cooperation,
  - Securing adequate and flexible funding to improve capacity and infrastructure, and
  - Establishing good communication between both parties.
- The federal government currently does not play a role in access negotiations between commuter and freight railroads. Three federal agencies—the FTA, FRA, and STB—have responsibility for different aspects of rail transportation.
  - The FRA primarily focuses on ensuring safe operation of railroads.
  - The FTA's primary role is providing funding to transit projects, including commuter rail.
  - The STB is responsible for the economic regulation of railroads.

  These agencies do not have the authority or responsibility for commuter rail access issues and do not currently act to facilitate negotiations or resolve impasses between commuter rail agencies and freight railroads regarding access to freight-owned rights-of-way.
  - Most commuter rail agencies would like the federal government to play a more active role, such as serving as a mediator.

– Freight railroads do not want the federal government involved, except for ensuring the adequacy of funding for commuter rail projects.

3.4 New Jersey Institute of Technology, *Survey of Transit and Rail Freight Interaction,* Report FHWA-NJ-2004-002, 2004

This study, commissioned by the Federal Highway Administration (FHWA), surveyed 59 transit entities in North America to identify the best practices and key factors that contribute to the successful interaction between transit agencies and freight railroads. The findings most relevant to this study included the following:

- According to the American Public Transportation Association (APTA), all of the 18 existing and 38 proposed commuter rail services in the United States operate on shared tracks with freight railroads.
- Of the 21 existing commuter rail systems in North America (18 in the United States and 3 in Canada), 17 systems share tracks with both mainline and local freight railroad, while only 2 commuter rail systems share tracks with exclusively mainline freight and only 1 commuter rail system shares tracks with exclusively local freight. One commuter rail system shares yard operation with a freight railroad.
- Nine of the 21 commuter rail services in North America are dispatched by freight railroads. Five are dispatched by transit agencies, 4 by third parties, and the remaining 3 are dispatched by freight railroad and transit agencies independently.
- Eight commuter rail systems have different dispatching protocols during peak and off-peak periods, and 13 commuter systems do not have such differences. Those that have different dispatching protocols during the peak and off-peak periods mentioned three situations that are considered.
  – Transit will enjoy less priority during the off-peak periods,
  – Freight is not allowed to operate at all during the peak periods, or
  – Commuter systems do not operate at all during the off-peak periods.
- The survey inquired whether any incentive plans are used for freight railroad cooperation. Nine of the commuter rail systems have such plans, and 12 do not. In most cases, if transit agencies own the railroad, there is no need for such an incentive plan.
- Among the 21 commuter rail systems, 11 non-owning users get access to their corridors through trackage rights. The other access methods include property lease, easement, and operating contracts.
- Five commuter rail systems responded regarding the cost of access. Among the five corridors, three have mixed ownership by freight and transit or state departments of transportation, and two are owned exclusively by freight railroads. The access cost ranges from $15 million to $212 million because of different access arrangements and the sizes of the commuter rail operations.

3.5 TRB Annual Meeting, Session 484: Costing Shared-Use Rail Infrastructure, January 2006

The presentations of this session at the 2006 TRB Annual Meeting highlighted a number of critical economic and public policy issues that are currently of great interest for railroads operating in shared-use corridors. The following sections present the highlights of this session.[7]

3.5.1 "Why Rail Infrastructure—Specifically Dual Use Infrastructure—Is So Difficult to Cost," Randolph R. Resor, Vice President, Costing and Economic Analysis Zeta-Tech Associates, Inc.

- A key source of conflict: track owners may maintain track to higher or lower standards than other users want or need.
- If track is near or at capacity, the prices charged may be significantly higher than if the track has plenty of capacity.
- Major technical costing issues include the following:

[7]Two additional presentations that were given at this session (one by Karen Rae of the Virginia Department of Rail and Public Transportation and one by Randall Wade of the Wisconsin DOT) are not summarized herein. However, these two presentations were among the sources used in the state-of-the-practice review in Section 5.

  - The shape of the cost/density curve: How do maintenance costs change as traffic is added to a rail line, and is the relationship linear or nonlinear?
  - The importance of axle load and speed: How do heavy axle loads and operating speeds affect the share maintenance costs assigned to each class of traffic?
- As traffic increases, fixed costs can be spread out over a larger base, but marginal costs will increase.
  - Can price be set at marginal cost and cover all costs? If not, are public subsidies available?
  - If subsidies are not available and full costs must be recovered from fees, will certain classes of traffic be priced out?
- Three policy questions regarding weight, speed, and capacity:
  - How should regular track maintenance ("wear and tear") costs be allocated? Not all ton-miles are equal—axle loads and operating speeds make a difference as well.
  - Does it make sense to mix high- and low-speed services on the same corridor? What are the perspectives of freight, a local passenger, and a high-speed passenger? And if costs are significantly higher to maintain higher speed classifications, but some traffic classes cannot take advantage of that speed, should these traffic classes be forced to pay for it?
  - All trains consume line capacity, and more capacity is required as the speed differential (between fastest and slowest trains) increases. How should the cost of that capacity be allocated?

3.5.2 *"Improving Coexistence from a Freight Railroad Perspective," D. J. Mitchell, Burlington Northern Santa Fe Railway*

- The Burlington Northern Santa Fe Railway (BNSF) has two overarching principles regarding passenger service on its railroad:
  - The BNSF will not put its franchise at risk.
  - The BNSF will not cross-subsidize passenger service with freight revenues.
- Franchise risk includes such critical areas as track maintenance, speed differentials, terminal operations (including pocket tracks), and ensuring the possibility of future freight growth.
- Areas where cross-subsidization is a concern include liability, insurance, and indemnification; reliability; and key cost drivers (such as locomotives, fuel, maintenance-of-way, rolling stock, joint facilities, and overhead).

3.5.3 *"Improving Coexistence from an Intercity Passenger Railroad Perspective," Paul Vilter, National Railroad Passenger Corporation (Amtrak)*

- There is a range of host environments for Amtrak:
  - *Unconstrained:* There is little competing traffic, and good on-time performance (OTP) is relatively easy to achieve.
  - *Performing:* There is significant traffic, but the host railroad management still produces good Amtrak OTP.
  - *Nonperforming:* There is significant traffic, and the host railroad impedes Amtrak OTP.
  - *Severe or Breakdown:* There is congestion so severe that the host railroad reliability is impaired along with Amtrak.
- Selecting the best "solution" depends on the host environment:
  - If the environment is unconstrained, performing, or nonperforming, then OTP can be improved using performance incentives and focused daily management.
  - If the environment is nonperforming or severe or breakdown, then capacity investment and possibly even legislation or litigation may be required.
  - Host infrastructure alone will not guarantee good OTP. Once the capital investment is in place, the tenant railroad can lose its leverage.

3.6 Summary of Key Current Issues

The literature review identified a wide range of issues facing passenger and freight railroads attempting to operate in shared-use corridors. The following issues appeared repeatedly and are likely to arise in negotiation over corridor access:

- The infrastructure needs for both passenger and freight rail—especially for increased capacity—are tremendous. Freight railroads already have significant capital investment requirements, and they cannot be expected to di-

vert their limited funding to projects that only benefit passenger services. Thus, the involvement of federal, state, and local governments in funding investments in passenger service is needed, and while private railroads may be wary of the requirements that can accompany public funding, such public-private partnerships hold promise as a potentially successful tool.

- There is no defined formula for developing access agreements and cost-allocation methods between passenger rail agencies and freight railroads, and a "cookie cutter" approach is not possible because each situation is unique. The characteristics of the rights-of-way, such as freight traffic density and the physical constraints of each rail line, create unique negotiating environments, and the relative strengths of each party in the negotiation will shape the ultimate agreement.
- Agreements are needed on both near-term operational concerns (such as dispatching) and long-term capital investment concerns. This can be a key issue in negotiations, especially if track owners maintain their rights-of-way to higher or lower standards than other users may need.
- Pricing may shift dramatically as shared corridors reach capacity and owning railroads seek to recover not only allocated operating and maintenance costs, but also the opportunity cost of the capacity granted to the tenant. In the current environment of strong traffic growth, capacity is usually an issue from the outset, and future capacity needs must be anticipated.
- With business growing and capacity at a premium, privately owned host railroads are unwilling to cross-subsidize tenant railroads or put their franchise at risk in order to accommodate access by tenants.

SECTION 4: CRITICAL COST-ALLOCATION AREAS

4.1 Introduction

The preceding sections have laid out the basic approaches to cost allocation and identified some of the prominent economic and policy issues currently facing rail operations in shared-use corridors. This section will now examine the critical areas of the cost-allocation problem in greater detail. Section 5 will follow with real-world examples of how owning and tenant railroads have addressed these issues.

As noted above, most access contracts involving shared-use railroad rights-of-way use a mix of cost-allocation methods according to the nature of the cost items and the relationships (operational, financial, and political) between the owning and tenant railroads. Following are the various dimensions that need to be understood by all parties to the shared-use contracts to guide their negotiating strategies and their choice of cost-allocation approaches:

- Ownership of track right-of-way
  - Private (Class I or regional railroad)
  - Public transit agency
  - State
- Extent of freight operations and overall use of track capacity.
- Relative use of right-of-way—portion of day used by freight versus passenger rail
  - High-volume heavy freight
  - High-volume container (premium service) freight—more difficult to move schedule
  - Local pick-up and delivery—periodic freight that is easier to adjust
  - Intercity passenger (Amtrak)—depends on established schedule
  - Peak-hour commuter service levels
  - Full-day commuter service
- Track geometry requirements
  - Track classification and weight
  - Right-of-way clearance (plate number)—especially at stations
  - Bridge clearance—height and width
  - Double track or single track
  - Signal and communications/control system (block versus automatic train control [ATC])
- Tort liability of parties to contract
  - Insurance
  - Self-insurance
  - Preventive approaches
- Relative functional requirements
  - Maintenance-of-way—frequency and extent
  - Dispatching and train control
  - Equipment maintenance
  - Track improvements
  - Signal and communications improvements
- Contract characteristics
  - Type of contract
    - Trackage rights agreement
    - Operating agreement

        - Sale and leaseback
    - Duration of contract
    - Roles, responsibilities, risks
- Type of cost categories considered
    - Capital—fixed facilities, equipment
        - Replacement
        - Rehabilitation
        - Improvement
        - Depreciation
    - Maintenance
        - Right-of-way
        - Equipment
        - Fixed facilities
        - Inspection
    - Operations—dispatching/train control
    - Signals and communications
    - General and overhead
- Nature of costs—allocation basis
    - Direct and indirect
    - Fixed and variable
    - Avoidable and required
    - Attributable and general
    - Administrative and overhead
    - Depreciation costs
- Type of cost accounting used
    - STB chart of accounts
    - FTA chart of accounts

4.2 Key Issues Between Freight Rail and Passenger Rail Services

Previous sections have discussed the potential differences between freight and passenger rail (both operations and capital investment needs) in very general terms. It is important now to outline these key issues more specifically:

- **Weight Limits and Speeds:** Class I freight railroads require heavier track weight limits than intercity or commuter rail passenger service, but intercity and commuter rail typically need (or desire) faster train speed limits. These approaches to rail infrastructure are fundamentally different, and they will affect the relative responsibility of track class upgrades or maintenance (i.e., which mode causes what improvement or track condition to be maintained).
- **Track and Bridge Clearances:** This issue is critical to both freight and passenger rail, given the use of double-stack container trains by Class I railroads and double-deck passenger coaches by intercity and commuter railroads. In the right situation, track and bridge clearances may be a joint need for both freight and passenger rail and an area of consensus rather than conflict.
- **Differences in Operational Requirements:** The different operational requirements for freight and passenger rail may impede the optimal performance of an owning freight railroad, which may in turn lead the freight to require a greater allocation of costs to the tenant passenger operator for accessing the rail line. In addition to obvious differences between freight and passenger services in operating speeds and stopping patterns, three areas are of particular concern with regard to safety and performance:
    - *Signal systems:* Commuter rail providers often employ higher-standard signal systems to achieve the high safety levels required for passenger operations. Implementing these systems on the freight railroads is expensive because it requires installing locomotive-borne equipment that would otherwise not be required.
    - *Temporal separation:* In some cases, freight trains are prohibited during peak passenger-hours to maximize commuter train safety and reliability on heavily used commuter rail lines. Such restrictions can increase travel times and decrease reliability, which in turn can reduce the marketability and growth potential of the freight railroads using these lines.
    - *Platform clearance limitations:* Many commuter rail lines have high-level passenger platforms at the stations to facilitate the safe and timely boarding and alighting of passengers and to satisfy requirements of the Americans with Disabilities Act. The reduced freight railroad clearances caused by these platforms can inhibit the operation of wider-plate freight trains, even when passenger trains are not running.

4.3 Critical Considerations in Allocating Costs for Shared-Use Rail Lines

After an owning railroad has determined that the rail services to be offered by the prospective tenant are feasible and would not threaten the owner's core operations, the parties can enter into contract negotiations. There are five critical cost areas that need to be addressed in these contract negotiations, and each

requires a different approach. Key questions and comments within each area are outlined.

4.3.1 Operations and Routine Maintenance

The most important factors that will affect the choice of cost-allocation approach include which entity owns the rail line, what portion of the line's available capacity is used by the owning entity, how this relative use is expected to change in the future, and the owner's flexibility in providing access to the line during particular operating windows.

- **Basic Corridor Access:** Assuming that the shared-use operation is safely feasible, and the host railroad is amenable to a shared-use operation, how much should the tenant rail service operator pay for the ability to operate a particular type and schedule of service in the corridor? A number of related issues are included in this question:
  - What is the basis of payment for these services (car-miles, train-miles, trains, ton-miles, or another factor such as the portion of total capacity of the rail line or a mix of these factors)?
  - What is the method for determining the unit cost based on (a) the cost items included in the operations and maintenance functional category of costs and (b) the unit of activity upon which it will be allocated?
  - How is inflation taken into account when estimating the long-term unit costs of service?
  - What are the expectations, plans, or commitments for expanding the passenger rail schedule in the future in terms of service frequency, train size, passenger capacity, and operating windows?
  - How do plans for expanding passenger rail schedules impact the cost-effectiveness of freight operations, and to what extend do schedule changes impact the ability of each rail service to meet the needs of their respective customers?
- **Operational Control:** How will control over services within the corridor be shared among the various users? This question also includes a number of related issues:
  - Is the tenant railroad free to provide its own engineers and conductors (either directly or under contract) or can the owning railroad dictate who will operate the services?
  - Who controls dispatching within the shared rail corridor? (Typically, dispatching is controlled by the owning railroad, but this is not universally the case.)
  - Are there limitations on service for either the owner or the tenant during certain periods (e.g., during morning and evening peak commuter periods)? Will priority be given to particular services in certain periods? Will exclusive access be provided to a certain rail service during certain periods?
  - Does the owning railroad require no diminution of its services before it will grant access, and what impact does that have on the tenant's operations? Does this suggest the use of avoidable cost allocation for various operating cost factors?
- **Routine Maintenance and Repair:** In addition to direct operating costs, the costs of routine maintenance and repair must be assigned to corridor users. This assignment must consider the following issues:
  - Who performs ordinary maintenance and repair on equipment, right-of-way, and signal and communications devices along the right-of-way?
  - Is there an explicit maintenance schedule, or is maintenance solely at the discretion of the owning railroad? Are there differences in maintenance requirements between the various rail operations, and do such differences suggest which cost-allocation strategy to apply?
  - How are maintenance costs calculated and then allocated between the different users of the corridor (based on car-miles, ton-miles, train-miles, trains, or other factors)?
- **Liability and Insurance:** Liability is a paramount concern for owning railroads, who do not want to face additional legal exposure arising from accidents that may occur from a tenant's operations. This concern is especially critical when high-speed commuter or intercity services are operated over freight-owned rights-of-way. Negotiations over liability and insurance must deal with many issues, including the following:
  - What type and amount of insurance is required for the tenant by the owning railroad?
  - How is liability determined and allocated for accidents involving passenger trains?

– What are the possible environmental liabilities arising from a tenant's passenger or freight service?
– What are the impacts of recent requirements for terrorism insurance?

4.3.2 Performance Incentives and Congestion Costs

As noted earlier, both passenger and freight traffic are growing strongly across the United States, and performance in shared-use corridors is becoming a critical concern for railroads. Beyond basic cost recovery, access contracts are likely to focus on performance and congestion.

- **Performance Incentives:** Are there financial penalties or incentives in the contract relative to dispatching, on-time performance, average travel times (overall average operating speed of trains by type), or line closure time due to maintenance or repair efforts by the entity responsible for the rail corridor?
- **Congestion Costs:** As a corridor approaches capacity, does pricing change to reflect the opportunity cost to the owning railroad of giving up a slot to the tenant?
- **Avoided Costs:** If shared-use rail lines are able to promote multimodal transportation service options and forestall the need for expensive new highway alignment or reconstruction (by removing more line-haul trucks from the corridor and relieving highway congestion), can the avoided costs associated with not adding extra highway capacity instead be invested in the passenger and freight rail providers in the corridor?

4.3.3 Expanding Operations

Passenger rail operators in many metropolitan areas are looking to expand their services in response to growing demand by commuters who are looking for alternatives to crowded roadways. Such an expansion will be costly if the passenger operator must employ additional locomotives, coaches, and labor, but when the operations are over freight-owned tracks, the service expansion can be even more difficult. An increased frequency of existing rail services can sometimes be accommodated by an amendment to an existing contract, with the additional costs allocated on the same bases as before. However, if the service expansion is significant or if the corridor is near capacity, the additional service may require a new contract with a new set of negotiations. The following issues should be considered in negotiating the most appropriate method of allocating the additional costs resulting from the increase in service frequency:

- Under what conditions can additional frequency be added to existing rail services in the shared corridor?
- How will the increased frequency of rail services of one type affect the services provided by other providers on the same line, particularly if the operating capacity of the line has not been increased through capital expansion or improved service operations and coordination?
- What, if any, infrastructure or capacity improvements will be required before this additional service can be initiated? How will the costs for these capital improvements be allocated among the users?
- How will the costs of operating trains benefiting from the improved service frequency be allocated relative to the existing service—incrementally or on a fully allocated basis?

4.3.4 Major Capital Investments

As traffic continues to grow and corridor capacity becomes increasingly valuable, many owning railroads have determined that they simply cannot accommodate any additional tenant traffic without significant investments in the right-of-way. At the same time, many tenant passenger railroads want additional corridor infrastructure in order to improve speed and reliability. The negotiations over these investments can be arduous and involve different views on technical specifications, the impact on capacity, and the allocation of ongoing costs.

- **Track Class and Clearance Upgrades:** Freight and passenger users must jointly determine the appropriate track class rating that is required to support optimal operating speeds along the rail corridor. Bi-level commuter and intercity passenger rail consists may require greater clearance heights than freight operations do, unless the freight service includes double-stack freight card or multilevel auto carriers. There may also be a need for additional clearance width, and this need is

greatly complicated when there are raised platforms that provide direct (i.e., single-level) access to commuter or intercity passengers. Upgrades of this type made on behalf of one user may or may not benefit the operations of the other users in the corridor.

- **Capacity Expansion:** Removing congestion bottlenecks—through such measures as adding lines to provide new capacity or installing more advanced signal and communications systems—can provide more efficient use of available rail corridor capacity. As with clearance upgrades, all users of a corridor whose capacity is increased may benefit from the resulting increase in productivity, even if the capacity investment was being driven by a single user.
- **Allocating Initial Costs and Ongoing Maintenance:** The allocation of capital improvement costs can be based on the relative benefits that the improvements provide to the operators that use the rail line. This allocation may depend on the reasons for making the capital improvements, the extent to which each type of rail service uses the improved rail line, and the relative productivity benefits that each rail service derives from the improvements. All users are likely to benefit from capacity expansion (although some will benefit only indirectly), while not all users are likely to benefit from track class upgrades. Users that benefit can be allocated the incremental costs of the capital improvements based on the relative level of productivity benefits they receive from the improvement.

  The ongoing maintenance costs within the shared corridor will also be altered because of the capital improvements. An increase in track class, for example, will require increased expenditures to maintain the new level of performance. In some cases, costs may decrease in the years immediately following a capacity improvement and then increase in later years as the facility matures and rail traffic grows. The resulting maintenance costs can be allocated based on the factors noted above—namely, the relative use of the rail line by service type as measured by train-miles, ton-miles, passenger-miles, trains, car-miles, or some other usage-based indicator that best reflects the extent of use of each service type using the shared rail line.

  There are a variety of modeling techniques (such as the RAILSIM and Rail Traffic Controller [RTC] models) currently used by the freight railroads to analyze the costs and benefits (particularly operating and maintenance cost savings and service improvements) of capital improvements used to eliminate bottlenecks and expand the effective operating capacity of existing rail lines. If the models and/or their results are made available by the railroads or their consultants to the public agency sponsoring rail passenger service over the modeled lines, then modeling approaches by either the passenger rail or the freight railroads could expedite the achievement of a mutually acceptable allocation of capital improvement costs resulting from the shared use of freight railroad lines. However, these models may be confidential and contain data that freight railroads do not wish to make public, so the negotiations over such sharing of information can be difficult.

4.3.5 Funding and Financing

Finally, corridor access agreements hinge not only on technical questions of allocation formulas, but also on the various sources of funding for the passenger rail services (e.g., passenger fares and local, state, and federal funding) and whether government will invest public funds in privately owned freight infrastructure. Ultimately, the magnitude of the costs to be allocated among the users of a shared corridor will depend on the sources of funding and financing that help offset the costs of improvements in the corridor. That is, to the extent that capital improvement costs are provided by a third party (such as the USDOT, a state DOT, a local municipality or region, or the private sector), the level of remaining costs that must be allocated among the operators who benefit from the improvement will be reduced.

In the case of passenger rail services on freight-owned mixed service, there are fundamentally different concerns between passenger rail service providers (who are concerned about capital investment, on-time performance, and safety) and freight railroads (who are concerned about schedule flexibility to serve customers when needed and tort liability). When the needs of all operators are better served by the improvement, there will be greater support for the project and a greater likelihood of achieving an acceptable division of costs. However,

accessing third-party sources for needed capital improvements—particularly when funding comes from the public sector while the infrastructure being improved is owned by a private railroad—can be difficult, as the public often feels that a private owner of rail right-of-way should bear the full burden of the project cost. Projects involving the use of public funding to improve private railroad infrastructure can benefit significantly from the support of a senior-level political champion, who can muster up both the financial resources and the public support needed to overcome opponents of using public funds to improve private railroads. This political champion must fully understand the direct benefits of the improvement project to the public and private users of the shared-use rail line, as well as the indirect benefits of reducing auto and truck demand on overly congested parallel highway facilities.

4.4 Conclusion

At the root of the issues described in this section are a need for flexibility and a need to recognize opportunities for mutual benefit. Negotiators must tailor their agreements to the specific conditions, institutional arrangements, and operating characteristics of each shared-use corridor. In addition, rather than zero-sum negotiations between adversaries, shared-use arrangements should be viewed as public-private partnerships between private railroads and public-sector transportation providers. Benefits must be perceived by all parties to the shared-use arrangement.

SECTION 5: STATE-OF-THE-PRACTICE REVIEW AND CASE STUDY

This section examines the state of the practice in both shared-use access agreements and cost-allocation strategies and provides concrete examples of the critical issues raised in previous sections. A complete review of all shared-use rail corridors and access agreements in the United States is beyond the scope of this report, and much of the key information in such agreements is proprietary. Thus, a set of representative agreements—covering a broad spectrum of ownership configurations, geographies, service speeds, density, and infrastructure improvement programs—will be briefly reviewed, with the goal that each example will highlight one approach to a subset of the crucial issues. These brief reviews will then be followed by a mini case study of Metrolink in California. The case study offers useful lessons in negotiating for access and allocating operating and capital costs for service.

5.1 Conventional Amtrak Access Agreements

5.1.1 System Background

The Rail Passenger Service Act of 1970 created Amtrak to take over the operation and funding of the nation's unprofitable passenger rail network from the private railroads. At the time, intercity passenger rail was losing millions of riders to private automobile and the airlines, and many political observers expected Amtrak to last only a few years before quietly folding and ending the era of passenger rail in the United States. Instead, Amtrak has survived, and in FY 2005 it served 25.4 million passengers on its 21,000-mile nationwide route network. Amtrak earned approximately $1.9 billion in revenues during FY 2005, which covered approximately 64% of its operating costs (including depreciation).

Amtrak operates as both an owner and a tenant on its network. A few years after Amtrak's formation as an operating entity, ownership of the heavily traveled Northeast Corridor line between Boston and Washington, D.C., was transferred from the bankrupt Penn Central Railroad to Amtrak as part of the formation of Conrail. This 363-mile corridor is the busiest railroad line in the country, with over 1,700 trains (including two major freight operators, five short lines, and eight commuter services) operating on some portion of the corridor on an average weekday. Yet the Northeast Corridor accounts for only 30% of the miles traveled by Amtrak trains. For the remaining 70% of its train miles, Amtrak operates as a tenant on "host" railroads. Amtrak operates more than 23 different hosts, ranging from privately owned freight railroads to state agencies and local governments.

5.1.2 Access and Cost Allocation

Amtrak's relationships with the freight and commuter railroads that host it, as well as with those it hosts on the Northeast Corridor, have been described by industry observers as essentially noncommercial. That is, when determining access rights and the allocation of the costs associated with that access, legislation is primary and cost theory is only secondary. Given the original purpose for which Amtrak was formed (i.e., to relieve struggling private railroads of

a business line that was unprofitable but that was viewed as being in the national interest), such a non-commercial relationship is unsurprising. However, in the current environment of growth and constrained capacity, as rail operators across the spectrum seek greater efficiencies and return on investment, this non-commercial relationship is showing signs of strain.

On the Northeast Corridor, where Amtrak is the owning or host railroad, the successors to Conrail (which was jointly acquired and then divided between CSX and Norfolk Southern in 1999) must pay fully allocated costs to Amtrak for access to the Northeast Corridor. However, these freight operators have statutory trackage rights in the corridor, and the statutory trackage rights cannot be abrogated by Amtrak. Similarly, certain older commuter rail operators (generally those that were in operation prior to the creation of Amtrak) also have statutory access rights to the Northeast Corridor. These older commuter rail operators must pay only avoidable costs in order to access Amtrak's right-of-way. However, recent legislative efforts have been made to require these commuter rail operators (especially New Jersey Transit and Long Island Rail Road) to pay substantial additional capital and maintenance charges to Amtrak, and these proposals have been met with significant resistance. Newer commuter rail operators have no such access rights and generally must pay fully allocated costs to Amtrak.

In general, it has proven quite difficult to allocate costs on the Northeast Corridor in a method that is seen as fair by all parties. In addition to the very complex mix of traffic types (high-speed intercity passenger, medium-speed commuter, and low-speed local freight, as well as some through freight), the corridor has tremendous track, tunnel, and bridge capital rehabilitation needs that have been identified by such groups as the I-95 Corridor Coalition. These investments will cost billions of dollars to complete, yet none of the users (including Amtrak) have the funds available to complete such projects.

When operating off the Northeast Corridor and the other, smaller Amtrak-owned corridors (i.e., when Amtrak is the tenant), Amtrak has statutory access rights over freight railroads and reimburses only the incremental costs associated with Amtrak access, in accordance with the Rail Passenger Service Act of 1970 (RPSA). The RPSA specifically grants Amtrak the right to use tracks, facilities, and services of freight railroads at the incremental cost level (plus incentive payments). This use has led Amtrak to paying avoidable maintenance costs, as well as the cost of capital improvements for increased or new service. On some route segments (such as segments on the New York to Albany route), Amtrak has paid for the high maintenance costs of improvements made solely for the benefit of passenger rail.

When Amtrak (or its state partners) has started new service in recent years, it has generally been required to pay for significant capital improvements to the host railroads in exchange for additional frequencies or new route segments. These funds have been used for such investments as the lengthening of passing sidings, installation of double or triple track, and improvement of signaling systems. Recent examples include investments made in the Capitol Corridor in Northern California, and on the Amtrak Cascades route in the Pacific Northwest. In the case of the Amtrak Cascades service, the Washington State DOT included eight projects totaling $95 million in its 2005 Transportation Partnership Funding Package. Some of these projects, including installation of high-speed crossovers and passing sidings, are specifically tied to future frequency increases. Such capital investments have played a critical role in access to new routes and have allowed speed increases and frequency increases.

Amtrak's access to host railroads comes with very little operational control (although the RPSA grants Amtrak preference over freight railroads in regard to track use). In an effort to improve speed and reliability, Amtrak's contracts with its host railroads include incentive and penalty payments for on-time performance. In FY 2005, actual incentive payments totaled more than $17 million and covered more than 25 million train miles, although on-time performance varied widely across the hosts.

5.2 Wisconsin State Passenger Rail Initiatives

5.2.1 System Background

Wisconsin is currently served by two intercity passenger rail routes, both of which are operated by Amtrak and originate in Chicago.[8] The Empire Builder is one of Amtrak's long-distance trains, running from Chicago to Milwaukee and then westward across the state to La Crosse and to Minneapolis and

[8]Kenosha, Wisconsin, is also reached by Metra commuter rail service, which serves metropolitan Chicago.

Seattle. The Hiawatha Service is one of the most well-traveled corridor services in the Amtrak network outside of the Northeast Corridor and California. It runs between Chicago and Milwaukee on Canadian Pacific Railway right-of-way. In FY 2004, the Hiawatha Service carried over 546,000 passengers, with an on-time performance of 92%, and the Amtrak station in Milwaukee (which was purchased by the state) is undergoing a major redevelopment into a transportation hub and gateway to downtown. The state also opened the Milwaukee Airport Rail Station (MARS) on the Hiawatha line in January 2005. MARS is one of only four stations in the country providing direct Amtrak service to a major airport (the others are Newark-Liberty, Baltimore-Washington, and Burbank), and it has proven to be a major success—it already accounts for approximately 10% of the ridership in the Hiawatha Corridor.

Wisconsin is also positioning itself for the long term as a member of the Midwest Regional Rail Initiative (MWRRI), which is an implementation plan for a 3,000-mile, high-speed rail network with a hub in Chicago. The state has already completed both the environmental assessment and the preliminary engineering for 110-mph service between Milwaukee and Madison and has received a "Finding of No Significant Impact" from the FRA for the study.

5.2.2 Access and Cost Allocation

Wisconsin is at the forefront among states that have fostered cooperative relationships with private-sector railroads and that have developed innovative funding mechanisms to allocate the costs for operations and capital improvements across a wide base of public and private supporters. Highlights of this approach include the following:

- The Hiawatha Corridor service is funded jointly by the states of Wisconsin and Illinois. Amtrak covers the fixed costs associated with the route (interest, depreciation, and overhead), while the states must cover the variable costs. The Hiawatha agreement calls for Wisconsin to pay 75% of variable costs and Illinois to pay the remaining 25%.
- The strong growth in Hiawatha ridership came about in part because of the innovative use of a $500,000 federal Congestion Mitigation and Air Quality (CMAQ) grant that supported targeted advertising in Chicago and Milwaukee.
- The rehabilitation of the downtown Milwaukee station will cost more than $20 million by the time it is completed in 2007, and the funding will come from a mix of federal, state, city, and private funds.
- The state of Wisconsin has already purchased 33 miles of right-of-way between Milwaukee and Madison in support of the MWRRI project, and the state of Wisconsin and Canadian Pacific Railway recently spent $2 million on a joint project to test positive train control (PTC) in the corridor, which is necessary for high-speed rail.
- Finally, Wisconsin DOT has been looking closely at the incremental costs associated with the MWRRI and raising the speed rating on portions of the network to 110 mph. The investigation has considered the following:
  - *Track maintenance costs:* What are the maintenance cost impacts of moving from existing Class 3 freight operations to Class 4 (80-mph) and Class 6 (110-mph) passenger operations? This consideration includes both ordinary annual maintenance (inspections, emergency repairs, grinding, etc.) and cyclical 5-year capital maintenance (replacement programs for ties, ballast, and rail).
  - *Reimbursable costs:* These costs include dispatch, police, and overhead and are assumed to be rolled up into a per-train-mile charge.
  - *Capacity improvements:* These improvements require creating and calibrating a capacity model, examining the impact (up to 20 years in the future) of the introduction of the passenger services, and determining what improvements are needed to maintain or improve current delay levels and ensure a benefit to the owning railroad. The initial estimate of capital investments needed for the full MWRRI is $6.6 billion, or over $2 million per track-mile.

5.3 Empire Corridor (New York State)

5.3.1 Corridor Background

The Empire Corridor runs approximately 320 miles east to west between Albany and Buffalo, New York. Amtrak currently operates its Empire Service trains from New York City north to Albany and then west to Buffalo and Niagara Falls, so the

entire route is also often considered the Empire Corridor. The Empire Service offers yet another example of the popularity of state-supported Amtrak corridor routes—over 1 million passengers were carried on the Empire Service in FY 2005.

New York State (NYS) has been a long-time supporter of corridor rail services. In the 1970s, the state passed transportation bond acts that supported the introduction of high-speed (110-mph) passenger service between New York City and Albany (this section of the corridor is now owned by CSX). The state's long-term goal is to upgrade the entire Empire Corridor to 125-mph capability and to operate a dedicated fleet of gas-turbine–powered trains on the route. Achieving this goal will require significant capital investment in right-of-way, vehicles, and signaling systems (for example, the route west of Schenectady is currently limited to 79-mph service).

5.3.2 Access and Cost Allocation

NYS has been at the forefront of encouraging cooperative approaches to capital investment. Thirty years after the transportation bonds noted above, in 2001, NYS embarked on a successful partnership with Amtrak and the FRA to rebuild the seven RTL-III Turboliner train sets that were originally purchased to provide the NYC-Albany high-speed service. Fifty percent of the cost of rebuilding the first two train sets was covered by the FRA, and 50% of the cost of rebuilding the other five sets was covered by Amtrak. Amtrak and NYS were then able to use the rebuilt train sets to test 125-mph service to Albany.

The state's long-term investment plans for high-speed rail in the Empire Corridor are much more significant and involve important partnerships with Amtrak and CSX. Table 1, adapted from the NYS Senate High-Speed Rail Task Force, shows the operational and capital improvements planned for the Empire Corridor through 2015. Of particular note is the planned purchase in 2009 of some CSX right-of-way. The cumulative required investment to achieve this plan (in 2005 dollars) is expected to be at least $1.8 billion.

5.4 Virginia Railway Express

5.4.1 System Background

Virginia Railway Express (VRE) provides commuter rail service for travelers in suburban northern Virginia into Alexandria, Virginia; Arlington, Virginia; and downtown Washington, D.C. VRE was initiated in 1992 and is a partnership between two county-level transportation commissions and the state of Virginia. It was initiated in response to concerns about growing congestion in the I-95 and I-66 highway corridors leading into Washington. VRE trains operate in the morning and evening peak hours along two separate rights-of-way. Trains coming from Fredericksburg, Virginia, in the south (parallel to I-95) operate along 45 miles of CSX mainline tracks, while trains coming from Manassas, Virginia, in the west (parallel to I-66) operate along 27 miles of right-of-way owned by Norfolk Southern. The two routes merge in Alexandria and run the remaining 9.1 miles over tracks owned by CSX, Conrail, and Amtrak. Trains terminate at Washington Union Station, the southern end of Amtrak's Northeast Corridor.

VRE's initial ridership was approximately 7,000 passengers per day, and by 1998 it had decreased to 6,000 per day. Since then, however, ridership has grown strongly, peaking at almost 16,000 riders per day in 2005. VRE trains and parking lots are close to capacity now, but ridership has actually decreased recently in response to significant service disruptions along the CSX/Fredericksburg line. In general, the on-time performance on the less congested Norfolk Southern/Manassas line has been in the range of 85–95%, while the CSX/Fredericksburg line has had lower and more variable on-time performance (though improvements have been made in recent months).

5.4.2 Access and Cost Allocation

Although VRE is similar in some respects to other East Coast commuter railroads, it does not enjoy a statutory right-of-access and avoidable cost pricing like older commuter operators adjoining the Amtrak Northeast Corridor. Thus, VRE pays significantly higher rates to access the CSX and Norfolk Southern rights-of-way as well as Amtrak's Union Station. Fees paid to CSX and Norfolk Southern are on a negotiated, per-train-mile basis, and there are no incentive or penalty payments for on-time performance in the access agreement. Similarly, access payments to Amtrak for Union Station access have been based on a fully allocated cost model, with different cost categories allocated based on different units (train movements, passengers, etc.). Costs also increased after CSX demanded a $500,000-increase

Table 1 Empire Corridor high-speed rail program

Program Phase	A 2006	B 2009	C 2013	D 2014	E 2015
NYC to Albany	Initial express train	Additional express train—2 hrs	New service to Schenectady & Saratoga Springs	3 nonstop express trains	Double current service to 23 daily trains
	New agreement w/ Amtrak	Purchase CSXT right-of-way	Stations, parking & access	New operations and service schedule	Achieve 95% on-time performance (OTP)
		Track, signal capacity			
Albany to Buffalo/ Niagara Falls	New agreement w/ CSXT	Remove key bottlenecks	Additional service to Syracuse	New sidings and crossover tracks, grade crossings	Additional service between Buffalo and Albany
		Improve OTP to 70%	Initiate station improvements		Achieve 90% OTP
Equipment	Additional refurbished cars		20 "New York Car" trainsets		
Annual Ridership (million)	**1.14**	**1.33**	**1.90**	**2.47**	**2.96**

Note: CSXT = the AAR reporting mark for CSX Transportation.

in VRE's insurance trust fund, largely to pay for increased terrorism insurance. Train and engine crews, as well as maintenance, are provided under contract with Amtrak, although VRE hopes eventually to have the ability to hire a third-party company to perform operations.

VRE's ability to increase train frequency is constrained by a memorandum of understanding (MOU) between VRE, CSX, and the Virginia Department of Rail and Public Transportation. This MOU sets out a capital improvement schedule for the entire CSX corridor from Richmond to Washington, D.C. The main bottleneck is a single-track bridge over the Quantico River. Construction of a second two-track bridge, at a cost of $26 million, was initiated in 2004 and should be completed in 2007. Another set of capacity improvements—adding third tracks and improving crossovers—is also scheduled to be finished in 2007. The costs for these capital improvements are being shared by CSX, the local counties, and the Commonwealth of Virginia. Only after these MOU projects are completed can VRE contemplate expanding its services in that corridor. (There are also midday storage constraints at Union Station that must be alleviated before the schedule can be expanded.)

5.5 Sound Transit (Washington State)

5.5.1 System Background

Sound Transit was created in 1993 by the Washington state legislature with a mandate to operate regional public transportation that connected major employment and population centers in metropolitan Seattle (King, Pierce, and Snohomish Counties). The three counties formally approved entry into the transit authority in 1993 and followed with a vote in 1996 to support the transit operations with dedicated local taxes. In addition to its Sounder commuter rail trains, the authority operates express buses, light rail, and park-and-ride lots. The Sounder commuter trains operate during the morning and evening peak hours between King Street Station in Seattle and Tacoma (south of downtown) and Everett (north of downtown). Sound Transit also has an agreement with Amtrak on the Everett-Seattle route allowing commuters to ride Amtrak's Cascades service using Sound Transit fare passes.

5.5.2 Access and Cost Allocation

Sound Transit provides most of its transit services through contracts (with private-sector operators or the

county-level transportation agencies) rather than directly with its own employees. Thus, the ownership and operation of the Sounders are complex. The Sounder trains operate over tracks owned by the BNSF, but Sound Transit owns the passenger stations and provides security at those stations. The BNSF also operates the Sounder services (i.e., provides the train and engine crews) and provides direct dispatching for Sounder trains. However, Amtrak has been selected as the contractor to provide routine maintenance for the Sounder services.

The Washington State DOT (WSDOT) and Sound Transit have been aggressive in partnering with Amtrak and with the BNSF to improve both commuter and intercity rail passenger service in metropolitan Seattle. Two initiatives stand out in particular:

- *Perpetual operating easements:* In exchange for payments over 4 years totaling $258 million, Sound Transit purchased easements from the BNSF that guarantee access for the Sounder commuter trains between Seattle and Everett in perpetuity. The funds will be used on a defined set of capital investment projects that will add capacity and eliminate bottlenecks on the right-of-way, thereby benefiting both freight and passenger service.
- *Tacoma-to-Lakewood track and facilities:* Sound Transit services to the south currently terminate in Tacoma, and Amtrak Cascades intercity services must use a BNSF mainline track in the area of Pt. Defiance (west of Tacoma) that has heavy curves and single-track tunnels. However, Sound Transit recently purchased two line segments from the BNSF that extend southwest from Tacoma into Lakewood and then reconnect with the BNSF mainline in Nisqually (while granting the BNSF an exclusive freight easement on those segments). Sound Transit and WSDOT are now working cooperatively to upgrade the track class and capacity in this corridor. Sound Transit has allocated $136 million for track, signal, and grade crossing improvements, as well as commuter train layover tracks, while WSDOT has allocated approximately $60 million to support the bypass construction. If construction is completed on schedule in 2009, Sound Transit can begin Lakewood commuter service while Amtrak Cascades trains can reduce their scheduled travel time by 6 minutes while avoiding a persistent source of delays and improving safety (by avoiding interaction with freight trains).

5.6 South Florida Rail Corridor (Florida DOT)

5.6.1 Corridor Background

The Florida DOT purchased the South Florida Rail Corridor from CSX in 1988 for $264 million. This 81-mile corridor connects Miami with West Palm Beach and currently serves CSX freight trains, South Florida Regional Transportation Authority (SFRTA, or Tri-Rail) commuter trains, and Amtrak intercity trains.

5.6.2 Access and Cost Allocation

SFRTA is a legally separate organization from the Florida DOT (FDOT), but the DOT acts as a "patron" to SFRTA and provides it with significant amounts of operating and capital funding, as well as insurance coverage. As such, SFRTA is relatively unconstrained in its commuter rail operations. SFRTA contracts with a third-party operator (Herzog) for train operations and routine maintenance, pays no access charges for using the FDOT rail corridor, and has broad latitude in changing or expanding its service schedule. CSX retained trackage rights when it sold the corridor, but its trains must operate during non-peak-hour periods. CSX was also retained by FDOT to continue providing dispatching services in the corridor. However, there is a push within FDOT and SFRTA to reclaim control over dispatching in order to ensure improved commuter rail reliability. SFRTA is now completing a major double-tracking project within the corridor. The project was funded partly by the state but largely by the federal government as mitigation for work on the parallel I-95 highway corridor. When this double tracking is completed later in 2006, it is expected that SFRTA will initiate an effort to take over dispatching control from CSX.

5.7 North Carolina Railroad Corridor

5.7.1 Corridor Background

The North Carolina Railroad (NCRR) Corridor is a 317-mile, shared-used rail corridor running from Morehead City on the Atlantic coast northwest through Raleigh and Greensboro and then turning

southwest and terminating in Charlotte. Norfolk Southern freight trains currently constitute the majority of the traffic on the corridor, but Amtrak also operates two passenger trains on the corridor—the Carolinian (daily service between Charlotte and New York City) and the Piedmont (service between Charlotte and Raleigh). Plans for mass transit service along the NCRR right-of-way are in various stages of development in Charlotte, the Triangle (Raleigh-Durham-Chapel Hill), and the Triad (Greensboro-High Point-Winston-Salem). The NCRR is actually a real estate investment trust (REIT), with all the voting stock being held by the state of North Carolina. As a REIT, the NCRR also owns a number of industrial sites and property redevelopment projects.

5.7.2 Access and Cost Allocation

The state of North Carolina bought out the remaining private shares of the NCRR in 1998 and became its sole owner. In 1999, the NCRR and Norfolk Southern negotiated a trackage rights agreement that guaranteed Norfolk Southern exclusive freight access to the corridor for 15 years, with the option to renew for another 30 years. The base fee for this access was $11 million annually in 2000, with annual adjustments based on inflation. Norfolk Southern is responsible for all routine maintenance on the corridor, as well as maintenance to any capital improvements that the NCRR makes to support freight operations (though not passenger service). The NCRR and Norfolk Southern have also formally agreed to a Capital Improvement schedule through 2012, of which the NCRR's share is almost $90 million.

The NCRR and the state DOT have also undertaken a $50 million set of capital improvements that will be made in the corridor to support passenger rail. Working in conjunction with Norfolk Southern, these improvements include speed upgrades, bridge replacements, grade separations, and new double track and sidings. The long-term goal for the state is inclusion in a regional high-speed network connecting Charlotte with Atlanta and Washington, D.C., but achieving this goal will require billions of dollars of funding that have not yet been identified.

5.8 California Passenger Rail System 20-Year Improvement Plan

Private freight railroads have been notably hesitant in the past to get involved in infrastructure projects with state and local governments, fearing an excess of administrative requirements, a long timeframe, and uncertainty of funding. By the same token, state and local governments have been hesitant to invest in freight railroad infrastructure, seeing the privately owned and profit-seeking freights as being responsible for their own investments and upkeep. As highway congestion has worsened and rail capacity as become increasingly valuable, however, government agencies and private-sector railroads have made steps toward overcoming this mutual concern and have begun fashioning partnerships which produce net benefits for both parties.

The state of California is a leading practitioner in this area. In conjunction with the BNSF, Union Pacific, commuter rail authorities, and regional planning agencies, Caltrans and Amtrak developed the report, *California Passenger Rail System 20-Year Improvement Plan.* The goal of this plan was to produce a blueprint for statewide transportation improvements that would result in faster and more convenient passenger and freight rail service. As part of that blueprint, the group identified investment decisions in the immediate term (up to 3 years), near term (4 to 8 years), and long term (9 to 20 years) for four major corridors in California (descriptions are taken from the report):

- *Capitol Corridor:* This corridor connects the San Jose, Oakland/San Francisco, Sacramento, Roseville, and Auburn regions. Service provided on this corridor includes Amtrak intercity service (operated in partnership with the Capitol Corridor Joint Powers Authority and Caltrans) and Altamont Commuter Express (ACE) service.
- *Pacific Surfliner Corridor:* This corridor connects the San Diego, Los Angeles, Santa Barbara, and San Luis Obispo regions. Service provided on this corridor includes Amtrak intercity service (operated in partnership with Caltrans) as well as Metrolink and Coaster commuter services.
- *San Joaquin Valley Corridor:* This corridor connects the Oakland/San Francisco, Sacramento, Stockton, Bakersfield, and Los Angeles regions with Amtrak intercity service operated in partnership with Caltrans.
- *Coast Corridor:* This corridor connects the San Francisco Bay Area, Salinas, San Luis Obispo, Santa Barbara, and the Los Angeles regions. Service provided on the corridor includes

Amtrak intercity (Coast Starlight) service, Caltrain, and Metrolink commuter services.

In total, the report outlines $10.1 billion in current-dollar investments that are needed over a 20-year horizon. And the efforts in California have not stopped at simply identifying investment needs and then hoping for the funding to automatically appear. In March of 2006, the BNSF announced that, in response to increased returns on its capital investment and continued growth in demand for rail freight transportation, it would invest more than $100 million from its 2006 capital program to expand its rail capacity in California. These investments will include a $26 million intermodal facility expansion, a $16 million mainline track expansion, a $9 million truck parking expansion, and continued work on a third main line in Cajon. Despite these investments, however, the BNSF's infrastructure needs are outpacing its ability to raise sufficient funds in the private capital markets. In recognition of this challenge, Caltrans is considering a $155 million allocation of funds to support new overpasses and a third main line between Los Angeles and Fullerton. This consideration is only one example of the expanding and ongoing partnership between the state and the private sector.

5.9 Keystone Corridor (Pennsylvania)

5.9.1 Corridor Background

The 349-mile Keystone Corridor runs east-west across southern Pennsylvania, connecting Pittsburgh, Harrisburg, and Philadelphia. (In some contexts, only the 104-mile portion between Harrisburg and Philadelphia is referred to as the Keystone Corridor.) The corridor was initially owned by the Pennsylvania Railroad and has a long history as one of the most well-traveled corridors in the country for both freight and passenger travel—the famous *Broadway Limited* from New York to Chicago once ran through this corridor. The eastern part of the corridor (from Philadelphia west to Paoli and then later to Harrisburg) was fully electrified by the 1930s, along with the Northeast Corridor. Between Pittsburgh and Harrisburg, the right-of-way is owned by Norfolk Southern, while the eastern part of the corridor was acquired by Amtrak in 1976 following the Penn Central bankruptcy. As part of the TEA-21 legislation, the corridor was designated by the FRA as a high-speed corridor, and the goal was to introduce 110-mph service between Harrisburg and Philadelphia.

The corridor continues to serve a wide mix of freight and passenger traffic. Two Amtrak services currently run in the corridor. The Pennsylvanian is a once-a-day service connecting New York City with Pittsburgh, which allows long-distance riders to connect with the Capitol Limited and travel to Chicago and points west. The Keystone service, meanwhile, serves regional travelers and offers 10 daily trips in each direction between Harrisburg and Philadelphia, with some trains continuing to New York City. The Southeastern Pennsylvania Transportation Authority's (SEPTA's) R5 commuter rail service operates in the corridor (as far west as Thorndale), and Norfolk Southern operates freight rail service on its own right-of-way and has trackage rights on the Amtrak-owned right-of-way.

5.9.2 Access and Cost Allocation

The Commonwealth of Pennsylvania has a long history of subsidizing Amtrak's passenger rail operations in the Keystone Corridor. Since 1971, Pennsylvania has provided operating support for various Amtrak services, and the level of support has risen steadily over the years (in FY 2003, the subsidy was approximately $5.3 million). Beyond just operating support, however, the Commonwealth has also worked in conjunction with Amtrak, the FRA, and the FTA to make capital investments in the corridor, and the nearly completed Keystone Corridor Improvement Plan is a prime example.

The Keystone Corridor Improvement Plan was initiated in 2001 but was then halted because of financial difficulties at Amtrak. A $20 million capital program was initiated the following year, but the major push came in 2004. Amtrak and the Commonwealth announced a joint investment program to complete a $145 million upgrade of the corridor. This upgrade includes new rail, track bed, signals, and refurbished rail cars. Upon its completion in October 2006, the upgrade will allow for Amtrak to convert from diesel to electric locomotives on the Keystone service, allowing trains to run at a top speed of 110 mph and reducing the trip time from Harrisburg to Philadelphia by 12 to 30 minutes. This reduction of trip time, in turn, will allow Amtrak to add three extra round trips on the Keystone using existing equipment, and it will also eliminate the current delay in Philadelphia for changing locomotives before continuing to New York. The capital funding for this upgrade consisted of direct funding from the

Pennsylvania DOT ($14.5 million), a grant from the FTA ($58.2 million), and an Amtrak investment ($72.8 million). Further investments in the corridor west of Harrisburg are now being considered.

5.10 "Mini" Case Study: Metrolink (California)

5.10.1 Background

In 1991, the Southern California Regional Rail Authority (SCRRA) was formed as a joint powers authority between the Orange County Transportation Authority (OCTA), the Los Angeles County Metropolitan Transportation Authority (LACMTA), the Riverside County Transportation Commission (RCTC), the San Bernardino Associated Governments (SANBAG), and the Ventura County Transportation Commission (VCTC). SCRRA took the operating name of Metrolink and began providing commuter rail service in southern California in October 1992. These commuter rail services are funded by the county transportation authorities and by the state of California. Metrolink is now one of the fastest-growing commuter railroads in the country, with 56 stations on 7 lines within the metropolitan Los Angeles area. In May 2006, Metrolink served 1 million riders, which was an 8% increase in ridership over May 2005 and was its highest monthly ridership total ever. The Metrolink route map is shown in Figure 3.

5.10.2 Approach to Infrastructure and Cost Allocation

The problem that plagues many new commuter rail operators is the disadvantageous position they find themselves in when attempting to negotiate corridor access from private freight railroads. If the commuter railroad has no statutory access rights and no ownership interest in the right-of-way, then the owning railroad will have significant leverage over the tenant in the area of pricing and will also have little incentive to guarantee reliability or make investments that benefit the passenger rail. The situation in southern California could have followed this pattern, because the private freight railroads—the Union Pacific, the Southern Pacific (now part of the Union Pacific), and the Atchison, Topeka & Santa Fe (now part of the BNSF)—were carrying significant amounts of freight traffic in both north-south corridors within California and east-west corridors connecting to the ports of Los Angeles and Long Beach, and these freight railroads were under no obligation to offer favorable access terms to Metrolink.

Instead, Metrolink came to the negotiating table and offered approximately $1 billion in public funds to purchase existing rights-of-way from the freight railroads. The freight railroads were in need of a cash infusion to fund much-needed infrastructure projects on their systems, and ultimately a deal was struck. Naturally, Metrolink was not going to use all the capacity on its new lines, so the freights received exclusive trackage rights over the tracks they had previously owned. But the balance of power between the freights and Metrolink was now much more even. Metrolink was able to negotiate favorable access agreements for the use of rights-of-way that were still owned by the freights, and Metrolink now possessed both carrots (public funds for infrastructure improvements) and sticks (ownership control of key rail corridors) that it could use in its continuing negotiations to expand the scope and frequency of its commuter rail services.

The overall approach taken by Metrolink has proven very successful. Of course, this success does not mean that every detail of the access negotiations that were worked out in the early 1990s has stood the test of time. Two brief examples (from Metrolink's perspective) can illustrate how some decisions were successful while others needed to be revisited:

- *Ordinary maintenance on right-of-way purchased from Santa Fe:* As part of the trackage rights agreements over the rights-of-way it had previously owned, Santa Fe was expected to pay for ordinary track maintenance expenses that it incurred. Rather than design an allocation system that would require the annual collection and verification of significant amounts of cost data, the parties agreed that they would simply estimate the average amount that Santa Fe had expended on ordinary maintenance over the previous decade. This estimation would serve as the baseline figure for a lump sum payment that Santa Fe would make annually, and this lump sum would then be inflated annually according to an agreed-upon price indicator. Both parties felt that this approach was an equitable sharing of costs, and it avoided a complicated and potentially contentious cost-allocation problem.
- *Heavy-axle-load freight cars:* Metrolink did not initially negotiate any constraints on higher-

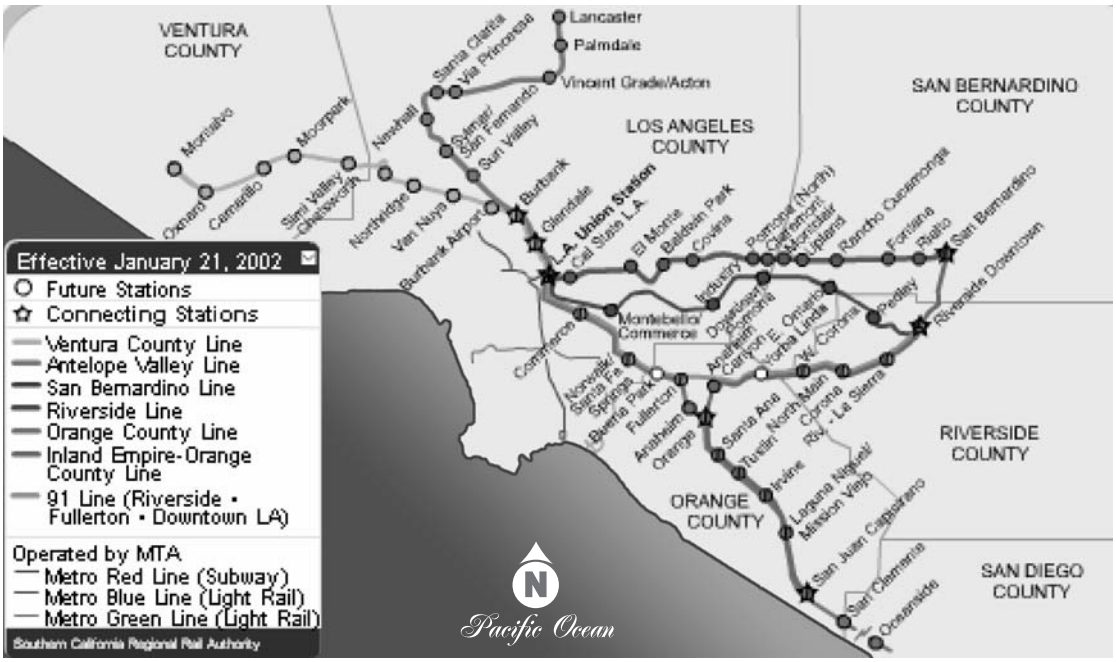

Figure 3 Metrolink route map.

tonnage freight cars (e.g., 286,000-pound cars). Thus, Metrolink had no ability to restrict the use of these cars by the freight railroads or to recover the additional maintenance costs that these cars imposed on the right-of-way.

5.10.3 Lessons Learned by Metrolink

The Metrolink CEO offered the following guidance to elected officials and transportation agencies looking to operate new commuter rail service:

- Agencies should not demand an avoidable cost approach in their access contracts. Though an avoidable cost approach may appear cheaper, it will increase the likelihood of poor service within the shared-used corridor.
- When negotiating with an owning railroad, public officials should assume that the commuter operations will be a success. The commuter rail authority should look at 10–15 years of growth, know the costs associated with that service growth, and account for it in the contract negotiations.
- In general, the access agreements should be written with the assumption that none of the current parties' representatives will be around when the next major expansion or change in service is contemplated. This assumption will force the negotiators into clear explanations of the rights and responsibilities of each user of the shared corridor.
- With respect to reliability and on-time performance for the tenant, both parties should avoid language that assumes that an average dispatcher has reviewed and understood the access agreement. Instead, the agreement must recognize the day-to-day realties of dispatching in a busy corridor.

While the first point (regarding avoidable costs) may not be applicable to Amtrak and state-supported services operated by Amtrak, the remaining guidance is equally relevant for intercity passenger service.

SECTION 6: REVIEW AND OUTREACH EFFORTS

6.1 Review

This study has demonstrated the broad diversity of issues that can arise between users on shared rail lines. These issues can make arriving at an equitable cost-allocation strategy both challenging and potentially unfeasible. Key factors that would need to be recognized in any attempt to produce a prototype or

model cost-allocation strategy for shared-use rail lines are the following:

- Ownership of the rail line and related facilities,
- Predominant use of rail line in terms of types of service and projected changes,
- Compatibility of rail operations and services among users sharing the rail line,
- Amount of excess capacity available on the rail line,
- Flexibility of owning entity to adjust its operating schedule to accommodate other users,
- Compatibility of the line's physical characteristics for each user group (weight limits, clearance limits, speed limits, signal system, accessibility, etc.),
- Relative requirements and responsibilities for certain functions (maintenance-of-way, maintenance-of-equipment, dispatching, signals and communications, and track improvement),
- Types of cost considered relevant to the access agreement, and
- The nature (i.e., STB-based or FTA-based) of the chart of accounts used by each operating entity.

Another key consideration is the availability of the data needed to support the choice of cost-allocation approach. As is shown in the literature and practice reviews of actual shared-use rail contracts, there are many types of approaches used by different host and tenant railroad service operators, and within each contract there are typically several cost-allocation approaches used depending on the nature and relative responsibility for certain types of costs.

According to the experiences described in the practice review, the most promising approaches to shared access in a corridor appear to occur under the following conditions:

- Cost-allocation methods are as simple as possible and require a minimum of data collection and analysis.
- The tenant railroad has leverage in the negotiations with the owning railroad.
- The state or local government is willing to use public funds on infrastructure investments, even if the investment may benefit a private railroad.
- Both parties are willing to take a long-term view of passenger and freight traffic growth in the corridor and explicitly incorporate those views into the access contracts.
- The access agreements are written so that later generations of management can understand and modify the arrangements without the relationship becoming adversarial.

What this study has demonstrated is that any effort to develop a common framework for allocating costs equitably among the shared users of a rail corridor needs to be flexible about the factors listed above. Specific cost-allocation methods may be appropriate to only specific ownership, user, and cost category dimensions. A common framework for cost allocation on shared-use rail systems may take the form of a menu of cost-allocation methods that are aligned with these various dimensions. With such a menu, prospective parties to shared-use rail corridor contracts can understand and agree on which approach is most appropriate from an equity and cost-coverage perspective.

6.2 Buy-In and Outreach Efforts

To gain buy-in to the concepts raised by this study, this digest should be distributed to the various stakeholders involved in the provision of rail services on shared-use facilities across the nation to solicit comments and suggestions. The comments and suggestions could then be made available as an addendum to this digest. By soliciting and sharing feedback on this digest, researchers could assist agencies currently or about to be negotiating a shared-use rail access agreement, as well as agencies that will be considering these issues in the future.

Another buy-in strategy is the development of a wide-ranging series of case studies that would compare and contrast how existing shared-use rail contracts are structured and the various cost-allocation approaches used in each contract by cost category. The case study results could be summarized to show any commonalities between the dimensions of the shared-use arrangement, the contract agreements, and the cost-allocation approaches used by cost type. This series of case studies would provide a useful and credible source of information on the diversity of cost-allocation approaches used and any commonalities that suggest a basic framework to help develop an acceptable agreement. It is not expected that a single cost-allocation approach will be appropriate in all cases, but a menu of choices may serve as the most useful result. If these agreements can be structured as public-private partnerships, the nego-

tiation and contract administration processes can be greatly facilitated to result in a more flexible and equitable arrangement. Distribution of the resulting case studies and summary to stakeholders in the public transit and railroad communities and other interested parties could serve as a useful form of outreach and extension of the results of this study.

Another outreach strategy would be to use this digest to form the basis for a colloquium on the equitable allocation of the costs of sharing rail line capacity among a number of users. The colloquium could include representatives from the major stakeholder groups in the freight railroad, Amtrak, commuter rail, and transit communities, as well as the FRA, the FTA, and interested state and local transportation agencies (including highway transportation agencies that may be impacted by these agreements, especially if the result is more container traffic being rerouted back to the highways). The colloquium could be supported by several white papers prepared by noted experts in the field of cost allocation, and the white papers could address some of the legal, institutional, and technical issues associated with the equitable allocation of costs on shared-use rail lines. The colloquium could involve speakers, panels, and open discussion periods guided by facilitators to stimulate input from the participants interested in different aspects of the topic. The results could be taped and assembled into a colloquium report that would include the white papers, speaker notes, and summaries of the discussion points made during the participant discussion periods (possibly through facilitated roundtable discussions).

6.3 Conclusion

A convergence of trends in the U.S. railroad industry—strong growth in both passenger and freight demand, a need for increased investment in rail infrastructure to keep up with demand, and a willingness on the part of governments to invest in and occasionally even purchase freight rail corridors—has heightened the importance of negotiations over access rights in shared-use corridors. Too often, however, such negotiations are hampered by the lack of a common framework for understanding operations and cost allocations in a shared-use corridor.

Unfortunately, the issue is not as simple as selecting a particular cost-allocation method (attributable, avoidable, or variable) and then signing an access agreement. The parties in these negotiations—private freight railroads, Amtrak, public commuter rail agencies, state DOTs, and local governments—each bring resources and needs to the table that must be addressed. Privately owned freight railroads cannot cross-subsidize public passenger services or put their franchise at risk, while passenger operators often require substantial infrastructure investments that may or may not benefit a freight operator.

Two lessons can be drawn from the wide range of potential conflicts outlined in Section 4 and the similarly wide range of contract structures and allocation methods described in Section 5.

First, except when Amtrak is the tenant operator of state-supported regional or local rail passenger services, there simply cannot be a "cookie cutter" approach to shared-corridor access negotiations. Differences in ownership, geography, technology, and legislative history must be taken into account in a successful access agreement. Negotiating parties should be flexible. They should be willing to mix and match any number of allocation methods across the various cost centers in the corridor in order to achieve a workable and reasonable agreement.

Second, access negotiations are likely to be most fruitful and result in an equitable cost-sharing agreement when each party recognizes the needs of the other. For example, a new commuter rail system hoping to simply purchase existing capacity on a busy freight corridor may encounter high access charges or low on-time performance, and in some cases access may even be infeasible due to the potential negative impacts of passenger service on freight traffic. However, if the commuter rail provider is backed by a state DOT or other agency that has the authority and the funding capacity to initiate major capital investments to increase both passenger and freight rail capacity in the corridor, then negotiations are likely to be substantially more productive and the final outcome more attractive to both parties. Given its unique statutory provisions for accessing freight rail lines and reimbursement of costs, Amtrak has an advantage in negotiations compared to public agency sponsors of rail passenger services, if it is the operator of the state-supported intercity or commuter rail passenger services.

Continued discussion and analysis of these topics is necessary within the rail industry so that both private freight railroads and public-sector passenger rail supporters become comfortable with the idea of public-private partnerships for both access and capacity improvement in key rail corridors.

These digests are issued in order to increase awareness of research results emanating from projects in the Cooperative Research Programs (CRP). Persons wanting to pursue the project subject matter in greater depth should contact the CRP Staff, Transportation Research Board of the National Academies, 500 Fifth Street, NW, Washington, DC 20001.

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