Commission Briefing Paper 2D-02
Conditions and Performance of the Intercity Passenger Rail System

Prepared by: Cambridge Systematics
Date: February 22, 2007

Introduction

This paper is part of a series of briefing papers to be prepared for the National Surface Transportation Policy and Revenue Study Commission authorized in Section 1909 of SAFETEA-LU. The papers are intended to synthesize the state-of-the-practice consensus on the issues that are relevant to the Commission's charge outlined in Section 1909, and will serve as background material in developing the analyses to be presented in the final report of the Commission.

This paper presents information on the conditions and performance of the intercity passenger-rail system and services provided by the National Railroad Passenger Corporation, or Amtrak. It does not address intercity passenger rail services provided by the Alaska Railroad, or passenger services provided by the nation's many commuter rail and transit systems except as such services may operate over Amtrak-owned trackage.

Background and Key Findings

The nation's intercity passenger rail system is operated primarily by Amtrak, which provides service to 46 states and Washington D.C. over a 22,000-mile network. Amtrak owns only around 650 miles of this network; most is in the Northeast Corridor (NEC) between Washington D.C. and Boston. The NEC is in need of significant capital improvement and has a deferred investment backlog approaching $4 billion. Elsewhere, Amtrak operates over the nation's freight rail network, and provides a modal alternative for many communities that are poorly served by air or bus. Although Amtrak ridership is growing steadily and reached record levels in 2005, Amtrak annual revenues have consistently fallen short of its expenditures, requiring Federal investments to bridge the gap. For fiscal years 2004 to 2006, Amtrak requested $1.8 billion annually and received an average Federal appropriation of $1.24 billion annually. In FY 06, Amtrak received an appropriation of $1.315 billion: $500 million for capital; $495 million for operations; $280 million for debt service; and $40 million for "efficiency incentive" grants. The Amtrak-owned NEC accounts for the majority of Amtrak's capital requirements. Amtrak's best-performing services in terms of annual operating cost recovery are its shorter-distance corridors that benefit from state funding support, and its NEC spine (Boston-Washington) service (which is not state supported). Other corridors not receiving state support and long-distance services require higher levels of federal operating support. Over the past several years, there have been numerous studies and proposals dealing with the structural reform of Amtrak, but several fundamental questions are unresolved. What is the nation's vision for the future of intercity passenger rail? To achieve this vision, what are the appropriate roles for different public and private stakeholders? Ultimately, what do we want and what are we willing to pay to achieve it?

Role of Passenger Rail

The U.S. rail system was developed in the mid 1800's and from its advent was the most important means of providing intercity passenger travel. Railroads linked major U.S. cities on the East Coast with emerging cities on the Great Lakes and Mississippi River systems, and ultimately linked the east and west and Gulf coasts. Intercity passenger rail mileage peaked in the period 1941 to 1945, reaching more than 65 billion annual passenger miles. But with the emergence of the interstate highway system and efficient passenger air travel, the role of intercity rail declined significantly. In 2005, rail handled less than six-billion passenger miles, representing around one percent of all intercity passenger miles. Intercity rail remains important in certain corridors, where it is highly competitive with highway or air travel, and where it provides an important modal choice and travel opportunity, but it plays a fundamentally different role in the 21st century than it did in the 19th and 20th. What that role will be in the future remains to be resolved, and may depend primarily on policy and investment choices by Federal, state, and regional governments, and possibly by the private sector.

Passenger Rail System and Use

The National Railroad Passenger Corporation – also known as Amtrak – is the nation's primary provider of intercity rail passenger services. Historically, these services were provided by the nation's private railroads, but were unprofitable. The legislative history (House Report No. 91-1580) states that losses on intercity passenger trains had reached 40% of the railroad industry's net profits in 1969. In response, and to ensure the provision of services without endangering the solvency of the private railroad industry, the Rail Passenger Service Act of 1970 created Amtrak, a quasi-governmental entity, whose preferred stock is entirely owned by the Federal government. Some common stock is held by three freight railroads and the successor corporation of a fourth.

Amtrak's continuing mission, as defined in the Amtrak Reform and Accountability act of 1997, is to operate "a national passenger rail transportation system which ties together existing and emergent regional rail passenger service and other intermodal passenger service."[1]

Amtrak currently provides services to 46 states and Washington D.C., with a workforce of over 18,600 employees. It operates over a 22,000-mile network. However, despite the size of its operating network, Amtrak actually owns only around 650-route-miles; most of this is along the Northeast Corridor (NEC) between Washington D.C. and Boston.

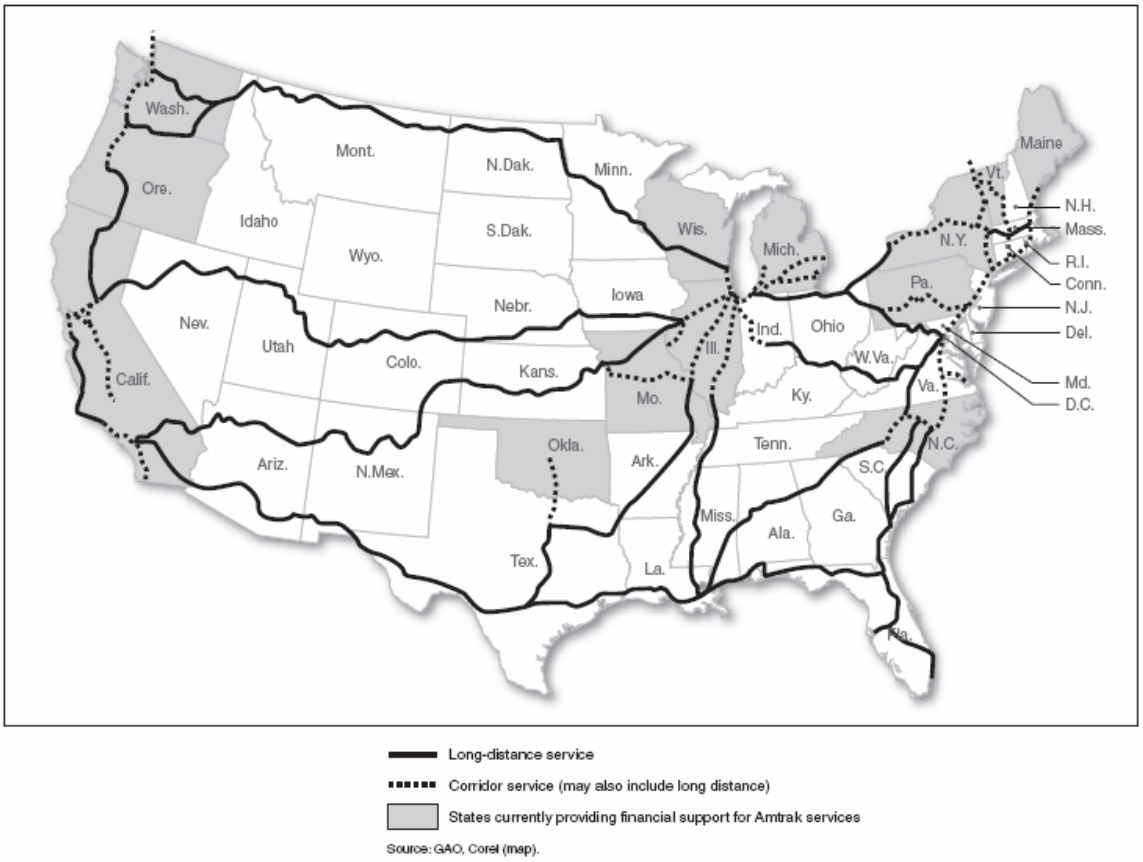
- The NEC spine consists of 457-route-miles between Washington D.C. and Boston, with service to Baltimore, Wilmington, Delaware, Philadelphia, New York City, Stamford, Connecticut, Providence, Rhode Island, and other intervening points. Amtrak owns most of the NEC, except for two segments (New Rochelle, New York to New Haven, Connecticut and the Rhode Island State line to Boston). On its portions of the NEC spine, Amtrak hosts services by five freight railroads and nine publicly operated commuter rail services accommodating around 750,000 passengers per day. Amtrak operates some of these commuter systems under contract. The NEC spine as well as the Philadelphia-Harrisburg line are fully electrified (allowing electric engines) and almost fully grade-

[1] Intercity Passenger Rail: National Policy and Strategies Needed to Maximize Public Benefits from Federal Expenditures, United States Government Accountability Office, November 2006.

separated. Amtrak controls train dispatch operations and maintenance for the entire NEC spine except the portion between New Rochelle, NY and New Haven, CT.

- Other than the NEC spine, the connecting Philadelphia-Harrisburg and New Haven-Springfield lines, and around 100-miles in Michigan, Amtrak operates almost exclusively over privately-owned freight railroad systems, under terms established by the Rail Passenger Service Act and applicable operating agreements. Under Federal law, Amtrak trains – which are relatively few in number compared to freight traffic – are to receive schedule precedence, but the freight railroads actually control the dispatch of traffic and may not consistently give priority to Amtrak trains, which is one reason Amtrak's on time performance off the NEC has declined in recent years. The freight railroads also are responsible for track maintenance. Amtrak operations outside of the NEC spine and Philadelphia-Harrisburg line utilize diesel engines.

Figure 1. Amtrak Route Map, FY 2005[2]



Amtrak operates 42 intercity passenger rail routes, which can be classified into: the NEC spine; 26 other shorter-distance corridor routes (generally less than 500 miles); and 15 long-distance routes (generally more than 750 miles with an overnight component).[3]

Condition of the Passenger Rail System

[2] Since then, New Orleans-Jacksonville service has been suspended and Texas has provided operating support.
[3] Amtrak Monthly Performance Report for September 2006.

Evaluating the condition of the passenger rail system actually involves three separate issues: the condition of Amtrak's rolling stock (its engines and passenger cars); the condition of the NEC; and the condition of the freight railroads that host Amtrak operations.

- **Rolling Stock –** When Amtrak took over the responsibility of providing the nation's intercity passenger rail service, it inherited passenger equipment from the freight railroads; the average age of this equipment was 22 years. Amtrak has spent extensively to repair, modernize, and replace its equipment. The Acela fleet entered service in 2000, but the majority of Amtrak's other equipment was manufactured between 1975 and 1982. Amtrak reports a strong correlation between rolling stock and ridership. In California, for example, the acquisition of new rolling stock permitted more frequent and attractive service, leading to increased ridership. Amtrak has not secured any new long-distance rolling stock since the Superliner IIs were acquired in 1990s, and the combination of retirements of older equipment and attrition due to accidents, etc. has limited seat availability.

- **Condition of the NEC –** Portions of the NEC route were built in the mid-1800s. The electric traction system and much of the key infrastructure date from the early 1900s. There has, of course, been substantial investment in the route since then, but the NEC still suffers from antiquated bridges and tunnels, as well as other chokepoints in need of repair or substantial improvement to handle intercity passenger, commuter rail, and freight rail services. Its condition is adequate for present utilization, but not for future utilization, with further aging and/or increased levels of passenger and freight demand. Deferred capital maintenance costs to upgrade the NEC have been estimated at between $3.8 billion and $5.5 billion.[4] Annual capital costs are estimated by Amtrak at $350 million.

- **Condition of the National Rail System –** As discussed in the companion briefing paper on the condition and performance of the freight rail system, there is no national rail-conditions database comparable to the FHWA's Highway Performance Monitoring System database, and therefore no uniform and comprehensive data for assessment of the physical condition and capacity of the national rail system. The freight rail paper provides a map showing the location of known major choke points and congested areas. The map is based on best professional judgment, not uniform empirical data.[5] The individual railroads maintain information on their own properties, but this data is mostly confidential business data and a modest amount of information is available publicly. The general consensus of the industry is that the overall condition of the Class I rail system is good, but that the condition of the Class II and Class III lines varies. In particular, there is concern about the weight-bearing capacity of short-line rail lines and bridges as the Class I railroads shift to heavier, most cost-effective railcars, especially unit train cars used to carry grains and other high-density commodities.

[4] GAO, November 2006, op cit. and Office of the Inspector General, letter of May 3, 2002.
[5] See Commission Briefing Paper 2D-01, "Conditions and Performance of the Freight Rail System."

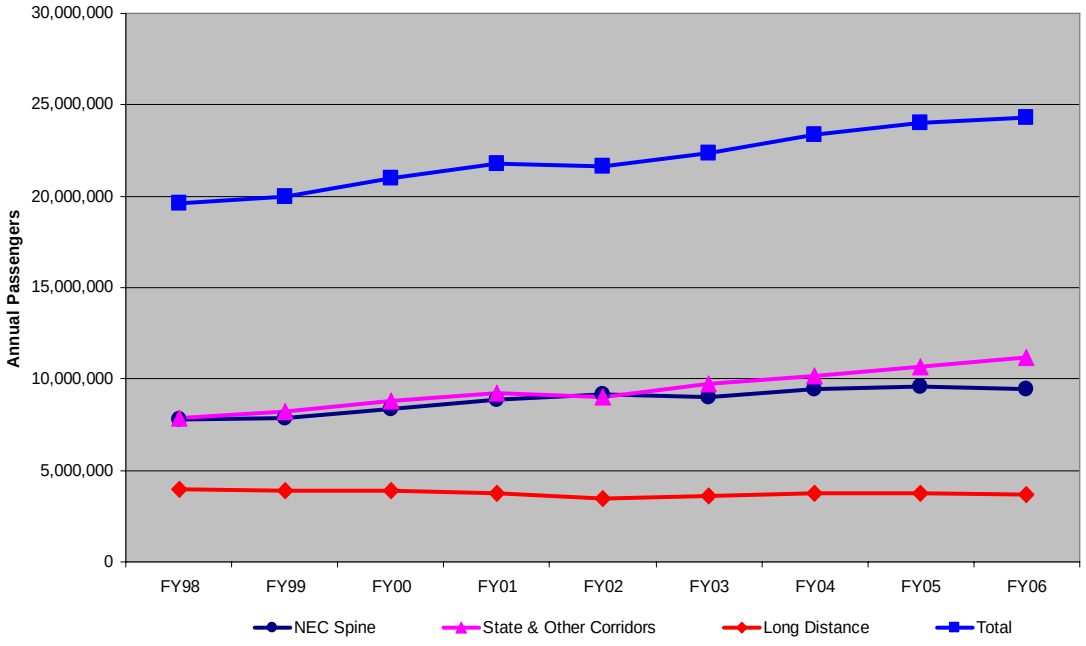
Performance of the Passenger Rail System

There are several important measures of system performance, including:

- **Contribution to the U.S. Transportation System –** As previously noted, U.S. intercity rail passenger mileage peaked in the period 1941 to 1945, with over 65 billion annual passenger miles. With the development of the nation's interstate highway and aviation systems, intercity rail passenger mileage declined gradually. In 2000, intercity rail accounted for less than one percent of intercity passenger miles.[6] Amtrak hit a low of around 4.6 billion passenger miles in 1980. Since then, the figure has rebounded slightly; the figure in 2006 was 5.4 billion.[7] However, Amtrak service continues to represent an important modal choice for higher-density travel corridors, and for communities and users with limited modal options.

- **Ridership –** Over the past two decades, Amtrak's annual ridership has increased slightly, from 21.5 million passengers in 1988 to 24.3 million in 2006. Around 39 percent of current Amtrak ridership – 9.4 million passengers – is from NEC spine service. Around 46 percent of current Amtrak ridership – 11.1 million passengers – is on other shorter-distance corridors, with 35 percent on state-supported corridors. State-supported corridors have been Amtrak's fastest-growing services, increasing by 42 percent from 2002 to 2006. Around 15 percent of ridership – 3.7 million passengers – is from long-distance services, but nearly half of Amtrak's passenger miles are from the long-distance services.[8]

Figure 2. Annual Amtrak Ridership by Service, FY 1998-2006



Source: Data provided by Amtrak.

[6] Eno Foundation.
[7] National Rail Passenger Association web site.
[8] Data provided by Amtrak and the Federal Railroad Administration.

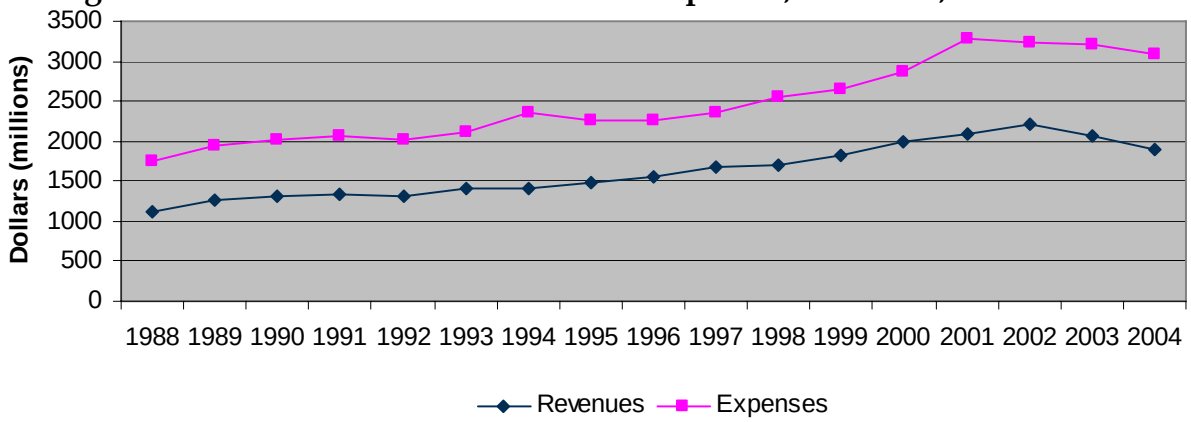
- **Competitiveness –** Amtrak competes primarily with car and bus on shorter-distance routes, and with air on longer-distance routes. On the NEC spine, Amtrak's market share of air/rail travel between New York City and Washington D.C. is 54 percent, and its share of air/rail travel between New York City and Boston is 35 percent. Outside of the NEC spine, the busiest routes were both state-supported corridors in California. In 2006, the Pacific Surfliner service running between Santa Barbara and San Diego via Los Angeles carried nearly 2.7 million passengers while the Capitols Service operating between Sacramento and San Jose carried nearly 1.3 million passengers. The Federal Railroad Administration has designated 10 potential high-speed rail corridors where improvements could potentially result in services more competitive with other modes.

- **On-Time Performance –** Between 1988 and 2000, Amtrak on-time performance on all routes less than 400-miles has varied between 76 percent and 82 percent. For routes of 400 miles or more, on-time performance (OTP) varied between 47 percent and 61 percent; the primary source of delay on longer-distance routes has been attributed to freight rail operations.[9] However, in recent years OTP has declined, particularly on long distance and other routes outside of the Northeast Corridor. In 2006, Amtrak's overall OTP was less than 70 percent, with long-distance OTP at 30 percent.

- **Financial Performance –** In 2006, Amtrak achieved record ticket revenue of $1.37 billion and record total revenue of $2.1 billion – and received more than $260 million in state capital and operating revenue support – but expenses exceeded revenues, and a Federal appropriation of $1.24 billion was required to fill the gap.[10] This is consistent with financial performance in prior years. Between 1988 and 2004 Amtrak recovered only 60 percent to 71 percent of its expenses. The GAO report of November 2006 finds that "Long-distance routes operate with substantial financial losses and consume a disproportionate amount of Federal operating subsidies … accounting for approximately 80 percent of Amtrak's total reported [operating] loss [for fiscal-year 2005] …"[11] Amtrak's NEC and its shorter distance corridors receiving state support account for less loss, and are substantially closer to covering their operating costs without federal support. However, the Amtrak-owned NEC also accounts for the largest share of Amtrak's capital funding needs.

[9] National Association of Railroad Passengers web site. [If you want to cite official data, this statement is also supported by Amtrak's monthly performance reports.]
[10] GAO, November 2006, op cit, and the Federal Railroad Administration.
[11] GAO, November 2006, op cit.

Figure 3. Annual Amtrak Revenues and Expenses, 1998-2004, Current Dollars



Source: National Association of Railroad Passengers

Long-Term Sustainability – Amtrak has received federal funding in every year since its 1971 inception. For fiscal years 2004 to 2006, Amtrak requested $1.8 billion annually and received an average Federal appropriation of $1.24 billion annually.[12] The GAO report of November 2006 summarizes the key issue as follows: "Given high annual deficits, deferred capital spending, and debt obligations, the current levels of Federal subsidies are likely insufficient to maintain the existing level of passenger rail service being provided by Amtrak. Since Amtrak's authorizing legislation expired in 2003, Federal funding for intercity passenger rail has been far below what Amtrak and others have estimated is needed to sustain and stabilize the current system … $1.4 billion would be required in fiscal-year 2007 just to maintain the currently configured system in a steady state, without addressing the backlog of infrastructure projects or investing in new corridor development."[13] We have not seen forecasts of funding shortfalls into the future, but we can reasonably project that comparable subsidy needs would continue into the future, absent fundamental changes. Some of these opportunities are described below.

Research Needs

Many different stakeholders have studied Amtrak, researched facts, analyzed alternatives, and formulated recommendations. There is a substantial body of research, but the problem is that the choices are difficult ones:

- **Status Quo –** Ask Amtrak to maintain current service levels with current levels of inadequate Federal funding. This maximizes services and minimizes costs, but builds a backlog of unmet investment needs that must be addressed, sooner or later.
- **Funding-Based –** Set a fixed target level of Federal funding and give Amtrak the flexibility to adjust services accordingly. This minimizes Federal investment and Amtrak losses, but means that lower-profit services – that may be desirable for certain purposes or to certain stakeholders – may be lost. Discontinuance of routes would also trigger labor protection costs that would have to be funded.

[12] GAO, November 2006, op cit.
[13] GAO, November 2006, op cit.

- **Service-Based –** Set a fixed mission for the services Amtrak is to provide, and fully fund losses associated with those services. This maximizes Amtrak services, but would require thoughtful planning and possibly increases in Federal support.
- **Reform-Based –** These involve a variety of strategies: directing Amtrak to reevaluate lower-performing services, splitting Amtrak into three separate functional entities, acquiring and then partially privatizing Amtrak's primary asset (the NEC), etc. The various proposals aim to manage both Federal funding and provision of services, and draw from "lessons learned" in other countries.

CONSOLIDATED COMMENTS FROM MEMBERS OF THE BLUE RIBBON PANEL OF TRANSPORTATION EXPERTS - PAPER 2D-02

One reviewer commented as follows:

Development of the U.S. rail system began in the mid-1800s, but continued from that point forward. Track mileage peaked around 1915, but "development" continues to this day as railroads match their asset base with transportation demand.

The vast majority of freight railroad-related Amtrak delays are caused by congestion on the corridors over which Amtrak operates — not by freight railroads' failure to grant Amtrak priority access. (For a variety of reasons — including quality of track and directness between origin and destination points — the freight tracks on which Amtrak operates are typically among the most desirable from a freight railroad perspective in terms of freight-carrying potential.)

It is important to fully clarify the relationship between Amtrak and freight railroads. For example, before Amtrak was created, freight railroads were losing hundreds of millions of dollars per year on passenger service that the government forced them to operate. When Congress created Amtrak, freight railroads were allowed to exit the passenger business in exchange for special, non-compensatory terms covering Amtrak's future use of freight-owned tracks and a significant capital infusion to Amtrak. In addition, while Amtrak pays fees to freight railroads to cover some of the costs associated with Amtrak's use of freight-owned tracks, these fees do not come close to covering the full costs freight railroads incur in hosting Amtrak trains. The result is a major ongoing "subsidy" by freight railroads to Amtrak. Finally, because of the generally higher speed at which they operate and the preferential treatment they enjoy, Amtrak trains typically occupy a larger "slot" than a typical freight train, thereby consuming disproportionate capacity.

Another reviewer commented as follows:

- Intercity Passenger Rail mileage peaked during WWII; with more than 65 Billion annual passenger miles.
- In 2005, rail handled less than 6 Billion passenger miles.
- Between 1988 and 2004, AMTRAK recovered only 60%-71% of its expenses.

- AMTRAK's on time performance is affected by railroad companies scheduling AMTRAK's use on the railroad tracks. AMTRAK only owns railroad tracks a fraction of the rail lines that it operates on.

- AMTRAK operates 42 intercity passenger rail routes, including: NEC spine, 26 shorter distance corridor routes (less than 500 miles), and 15 long distance routes (more than 750 miles).