Chapter 5

U.S. PASSENGER RAIL HISTORY AND CURRENT CORRIDOR ACTIVITY

Contents

Table

List of Figures

Chapter 5
U.S. PASSENGER RAIL HISTORY AND CURRENT CORRIDOR ACTIVITY

SUMMARY

Interest in high-speed corridor development is emerging at both the local and national level. Feasibility studies of varying detail have been undertaken for corridors in California, Nevada, Wisconsin, Ohio, Illinois, Florida, and New York, and other studies are being discussed and initiated for Texas and Pennsylvania. Many of these studies have been conducted and funded by potential technology suppliers and developers, both foreign and U.S. —some with Federal and State assistance. Various technology options—including the Japanese bullet train (Shinkansen), the French TGV (Train a Grand Vitesse), the British HST (high-speed train), the West German and Japanese maglev (currently under development) —have been discussed in these studies.

Reasons for new corridor development are as diverse as the regions in which they are being proposed. For southern California, one of the most rapidly growing areas in the country, the system is seen as a means of alleviating the already staggering traffic congestion and the long-term demands for a fixed guideway transit infrastructure. For the Las Vegas-Los Angeles corridor, maglev is being proposed as the transportation system of tomorrow, a draw for tourists who might wish to take a new "transportation experience," and a potential spur to the development of Las Vegas. For Florida, a system is seen as a backup for any future energy crises that may threaten the State's tourist economy, and, as in Nevada, as a tourist attraction. In the Midwest, a new rail system has been advocated as a potential remedy to the economic problems of a region in transition.

Private initiatives to implement high-speed rail are in different planning stages in California, Florida, Michigan, New York, Vermont, Wisconsin, Ohio, Texas, Pennsylvania, and Nevada. In addition, a Midwest High-Speed Rail Compact made up of States interested in high-speed rail development also has been formed. These corridor efforts are being promoted, in part, by potential U.S. and foreign developers, suppliers of the technology, State and local government officials, and private companies interested in passenger rail service (see fig. 8).

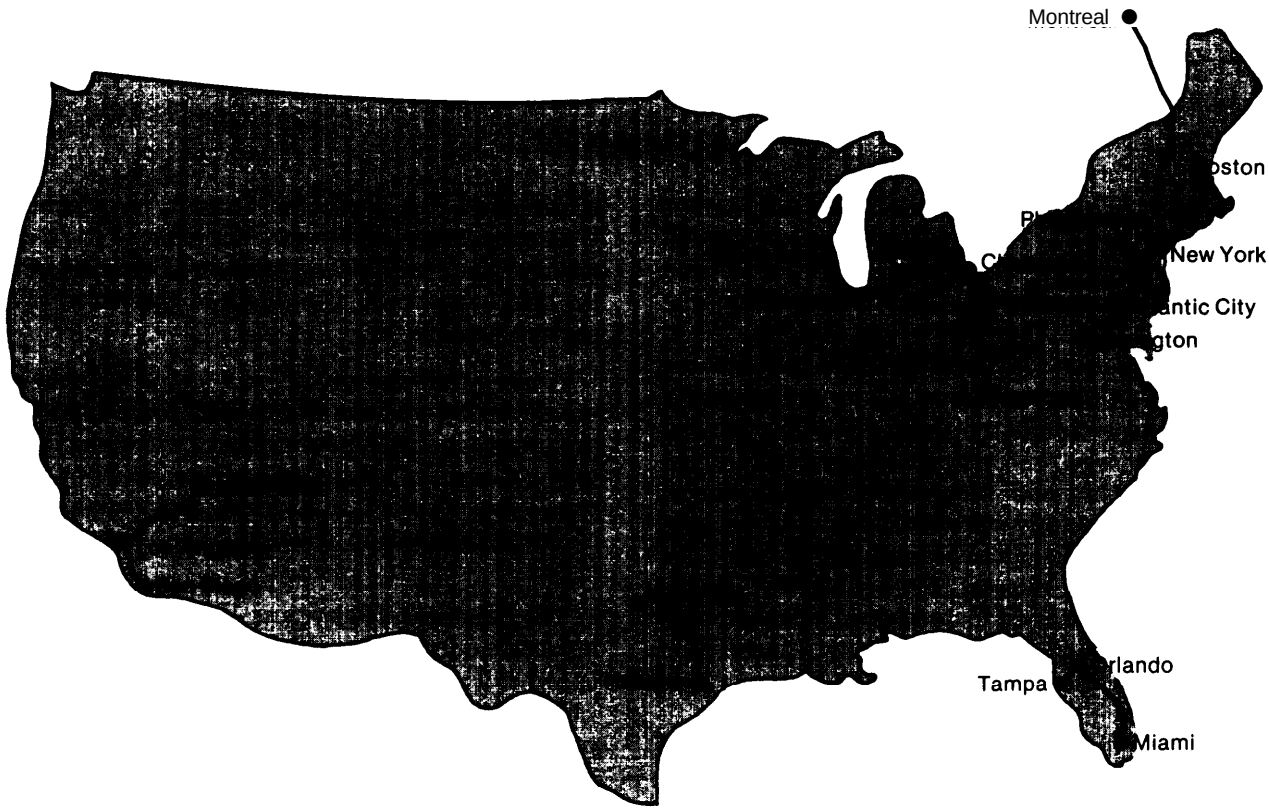
Among the reasons for high-speed rail service advanced by various States and private parties are improving transport capacity, relieving highway congestion, attracting tourists, spurring economic development, and serving as a backup form of transportation in the event of future energy crises.

The American High Speed Rail Corp. (AHSR), a private corporation, plans to construct a high-speed rail system between Los Angeles and San Diego. Ridership and revenue forecasts on the project have been conducted and engineering feasibility work is being undertaken by the Japanese.

In the proposed New York and Florida corridors, preliminary technical feasibility studies are being conducted by French, Canadian, and Japaese firms. However, results of these studies are not available to the public. Demand and economic analyses have not yet been conducted.

In Nevada and Wisconsin, studies conducted by potential suppliers of maglev technology have concluded that maglev is an appropriate, cost effective new transportation technology for the Las Vegas-Los Angeles and Milwaukee-Chicago corridors. The city of Las Vegas is actively seeking venture capital for the proposed Las Vegas to Los Angeles line and an additional feasibility study is being undertaken by the Department of Transportation as a result of recent congressional action. However, neither of the two maglev technologies currently under development in West Germany and Japan has been tested yet for operational feasibility under conditions that reflect revenue service. The West German system is undergoing testing that is scheduled for completion in late 1985.

Figure 8.—Raii Corridors Under Consideration by State and Locai Governments and Private Sector Groups



SOURCE: Off Ice of Technology Assessment.

The Michigan Department of Transportation has undertaken a series of studies on several Michigan corridors, examining alternatives that include upgrading existing lines and service and introducing frequent high-speed trains. These studies concluded that development of such services could reduce travel times, costs, and energy consumption in southern Michigan (particularly for a Chicago to Detroit line). The State sees the introduction of high-speed rail service as offering improved mobility and economic opportunities.

A proposed high-speed system in Ohio was to be financed by a one percent State sales tax. A referendum on the sales tax was defeated in 1982, although proponents believe the system is still a possibility for the State.

Other States, including Pennsylvania and Texas, have indicated an interest in high-speed rail corridors. Pennsylvania has established a Rail Commission to study the prospects. Texas has held statewide hearings. However, Texas has not conducted engineering or economic feasibility studies. Pennsylvania is undertaking initial study efforts.

In addition to high-speed initiatives, a number of corridors are being examined for upgrading service, although not necessarily to speeds of 125 mph and above. Atlantic City-Philadelphia and Buffalo-Albany are among these corridors. A corridor "fact sheet" describing each corridor is shown in table 11.

Table 11.—Corridor Fact Sheet

Corridor	Proposer	Technology option	Estimated capital cost	Proposed funding institutional arrangement	Studied by
Los Angeles-San Diego	American High Speed Rail Corp. (AHSR)	130-mile system, new equipment, entirely new track, partly on existing right-of-way, Japanese technology	$3 billion (1983 $) inflated over construction time of 1984-88	Private/foreign investment-private rail operation. Private investment: 75% domestic, 25% foreign, Industrial development bonds/tax free authorized by State	Fluor Corp. Proj. Engineers, Japanese National Railways _Technology Corp. (engineering study), A. D. Little (market feasibility), First Boston Corp. (financial advisors)
Los Angeles-Las Vegas	City of Las Vegas	230-mile, totally new single guideway maglev system (West German or Japanese)	$1.9 billion (1982 $)	Tax-free bonds, private funding, public incentives (guaranteed loans, etc.) Public/private ownership	Budd Co. /Thyssen Henschel; Bechtel Corp.; Transrapid International; Transtech International
Florida corridor(s): Tampa-Orlando-Miami	AHSR, State Rail Committee appointed by Governor	Undecided	Unknown	Anticipated private funding	Japanese National Railways Technology Corp. (preliminary engineering), AHSR
Montreal-New York	Mayor of Montreal with New York cooperation	French TGV-type system	Unknown	Unknown	French manufacturers–preliminary engineering study/Canadians
Northeast Corridor: Washington-New York; New York-Boston	Completion of upgrading anticipated for 1986 Federal investment $2.19 billion			Route-shared/commuter, freight passenger service. Maximum speed: 120 mph along selected sections of the route	
Ohio	Ohio Rail Transportation Authority	500-mile network, TGV-type system, technology not chosen	$5.7 B (1978 $) +2.5 B $8.2 B	1 % State sales tax was defeated in 1982 referendum–no subsequent action on proposal	Dalton, Dalton, Newport
Pennsylvania	State legislature authorized 3-year Rail Study Commission	350-mile route Philadelphia-Pittsburg	Unknown	Unknown	Rail Committee authorized to spend up to $6 million on study over 3-year period
Chicago-Milwaukee	Cong. Henry S. Reuss; Gov. Dreyfus; Milwaukee County Executive William O'Donnell; Wisconsin Electric Power Co	79-mile system between Chicago-Milwaukee and two airports, Maglev system	$1.2 billion	Unknown	Budd Co. /Thyssen Henschel
Chicago-Detroit	Michigan State DOT	279 miles upgrading existing line/ possible new system	$2.5 million per route mile	Public/private	Transmark Worldwide Co.; General Motors System Center; Michigan State University

[a]Additional announcements have been made regarding interest in a possible Texas corridor

SOURCE Office of Technology Assessment

RECENT HISTORY

The 1960's witnessed two major trends in U.S. passenger rail transportation:

- the promotion of advanced ground transport research and development (R&D), reflected in the passage of the High-Speed Ground Transportation Act of 1965 (HSGTA), which for a decade was intended to spur technology development in the public sector; and
- the transfer of the declining passenger rail industry from the private to public domain, culminating in 1970 with the passage of the National Railroad Passenger Act (NRPA).

The Northeast Corridor Transportation Project, started in 1963, foreshadowed HSGTA and eventually attempted to use some HSGTA developments to reverse declining rail ridership trends, and to show the continued value of rail in the most heavily populated U.S. corridor.

HSGTA came at a time when the U.S. space program had created an atmosphere of technological optimism and a national desire to apply scientific knowledge and expertise to domestic problems. The act resulted in a decade of research, development, and demonstration programs in state-of-the-art and advanced fixed guideway ground transportation technologies. Efforts included a wide range of research in new technologies such as tracked air cushion vehicles and magnetic levitation (maglev), demonstration of the Metroliner cars and turbotrains on the Northeast Corridor (NEC), and NEC ridership data-gathering efforts. At about the same time, Congress authorized a comprehensive study of improved trains in the NEC. Continued funding of the act into the 1970's led to the construction and development of the Pueblo test site in Colorado for advanced ground transport testing.

Various rail technology options were studied for the NEC in the late 1960's and early 1970's. By 1971, a report was released by the U.S. Department of Transportation (DOT) recommending improved high-speed rail service for the NEC and calling for a definite investment plan by 1976. Later cost overruns and project reevaluation resulted in improved service to a maximum speed of *120* mph on sections of the NEC, rather than to higher speeds that had been anticipated. Also, in 1973, DOT released a High Speed Ground Transportation Alternatives Study which reviewed additional interurban corridors in the context of potential economic viability and technology applicability. The report recommended continued R&D, and cautioned against any corridor implementation without thorough cost analyses.[1] However, the Southwest Coast Corridor (SWC) of San Diego-Los Angeles ranked second to the NEC in potential for improved rail service.

The second change that occurred in the *1960's* and culminated in *1970* was the evolution of passenger rail service from private operation to public ownership. The decline in intercity rail ridership in the 1950's—brought on by the introduction of the interstate highway system, the national airport system, increasing auto ownership, and a decline of local transit services, meant growing deficits in passenger rail services. As a result, railroads petitioned throughout the 196o's to abandon passenger service. In 1970, Congress enacted the NRPA creating the National Railroad Passenger Corp. (Amtrak) as the quasi-public operator for intercity rail passenger services in this country.

In the mid-1970's, Federal attention in passenger rail transportation concentrated on establishing and monitoring the rehabilitation of the NEC and overseeing the newly created Amtrak. National passenger rail policy in the years since has sought to reconcile the conflicting objectives of reducing operating deficits and at the same time providing national rail transportation services. The original Amtrak charter called for a profitmaking basis of operation. Congress currently requires Amtrak to maintain a national route system, to follow a prescribed formula for determining route profitability, and to meet a mandatory revenue-to-cost ratio of better than *50* percent for the railroad by the mid-1980's. Amtrak's goal is to cover all short-term avoidable costs with revenues by 1985.

[1] U.S. Department of Transportation, "High Speed Ground Transportation Alternatives Study," January 1973, pp. 1-10.

In 1980-81, Amtrak and DOT, in response to section 1003 of the Rail Passenger Service Act, undertook a study of 25 passenger rail corridors to determine the effects of corridor upgrading on deficit reductions. Corridors were evaluated on the basis of ridership potential, energy savings, and cost effectiveness—with cost effectiveness measured as dollars of public expenditure per passenger-mile and per gallon of gasoline saved, for both capital and operating investments.[2] Amtrak did not agree that both capital and operating costs should be used to measure cost effectiveness. However, DOT officials maintained that the language of the legislation required such measurements. Although the study did not analyze high-speed (125 mph rail or higher), it did analyze the potential for upgrading service to 79 and 110 mph and increasing service frequency. The study provided a rank ordering of the corridors likely to lose the least money with higher speeds and frequency. None of the corridors analyzed were expected to show operating profits once the service was improved, nor were they expected to pay back the costs of improvements. However, several corridors showed an improved financial operating picture. Again, the Los Angeles-San Diego corridor compared favorably with the Washington-New York segment of the NEC on the basis of avoidable loss per passenger-mile and a public expenditure per passenger-mile.

Today, U.S. intercity passenger rail accounts for less than 1 percent of intercity revenue miles. Amtrak operates approximately 240 daily trains over 24,000 miles of track (most of which is owned by the freight railroads) with approximately 1,600 vehicles serving 525 stations. Annual ridership has grown from 15,800,000 in 1972 to 19 million in 1982, with ridership surges during the energy crisis years of 1974, 1979, and 1980.[3] Federal subsidy to Amtrak was $735 million in 1982.

[2] U.S. Department of Transportation and Amtrak, "Rail Passenger Corridors, Final Evaluation," April 1981.

[3] Responses to OTA questions from W. Graham Claytor, Jr., President, National Rail Passenger Corp. (Amtrak), Feb. 10, 1983.

U.S. HIGH-SPEED RAIL PROPOSALS

Following are brief descriptions of the activities to date on each of the U.S. corridors for which fixed-guideway systems operating at speeds of 125 mph or above are being contemplated. This section discusses the feasibility data (ridership and revenue forecasts) generated to date, and raises additional questions that may be addressed by the communities and their leaders—local, State, and Federal—who may decide further courses of action.

The descriptions are not exhaustive. OTA has not undertaken independent analyses of ridership and revenue forecasts. The purpose of the section that follows is to review the current state of these projects and to raise some of the questions that bear on their feasibility. *

California: Los Angeles to San Diego (SWC)

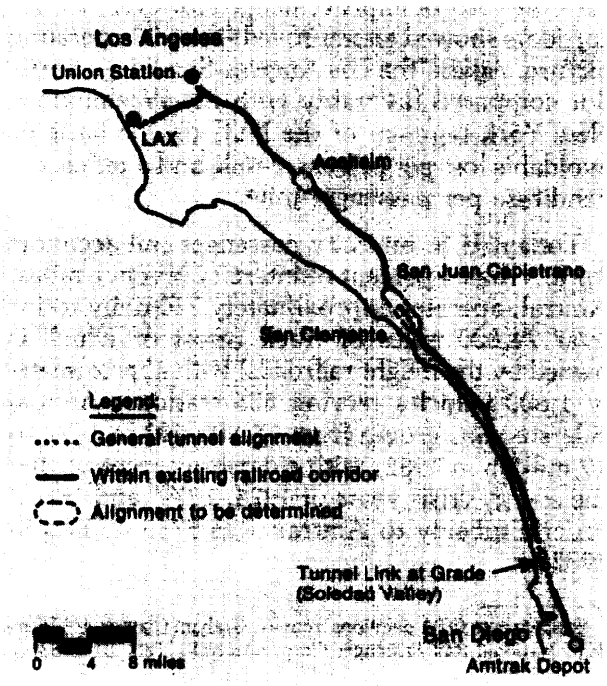
One of the most serious proposals for high-speed rail in the United States has been made by AHSR for the 131-mile SWC with a segment linking Los Angeles airport to downtown (see fig. 9). Next to the NEC, the SWC historically has been regarded as the most likely candidate for possible passenger rail improvements.[1] The SWC also has been the subject of a number of studies by the California State Department of Transportation.

In April 1982, AHSR, a private corporation headed by Alan Boyd, then President of Amtrak,

* Information contained in the following sections was obtained in the first seven months of 1983. While specific Rail Plans are subject to change, the questions raised for each corridor are fundamental to the policy discussion.

[1] U.S. Department of Transportation, "High Speed Ground Transportation Alternatives Study," January 1973, pp. 1-10; U.S. Department of Transportation and Amtrak, "Rail Passenger Corridors, Final Evaluation," April 1981.

Figure 9.—Los Angeles-San Diego Proposed Route



SOURCE: American High Speed Rail Corp.

announced plans to construct a high-speed rail system between Los Angeles and San Diego. The First Boston Corp. was retained as the company's financial investment advisor. The Fluor Corp. has been retained as project engineer. AHSR's ridership and revenue forecast studies have been conducted by Arthur D. Little Co., and its engineering feasibility work is being undertaken by the Japanese National Railroad Technology Corp., a consulting arm of the Japanese National Railways. AHSR has deemed the complete ridership and revenue forecasts as proprietary for investment financing reasons and has declined to make these or the engineering cost analyses available to the public or OTA. Information used in this discussion has been extracted from summary documents and interviews with AHSR officials.

Initially, AHSR estimated that the overall capital cost of the system would be $2 billion. More recent estimates add $1.1 billion for inflation provisions, plus interest during construction, for a total cost of approximately $3.1 billion. The planned 5-year construction phase is scheduled to begin in 1984 with completion by 1989. Operating expenses for the first full year of operation (1989) are estimated at $200 million and revenues at $575 million. The Bank of Tokyo Trust Co. has agreed to raise *25* percent of the original *$2* billion in capital. The remaining is to be raised in the private investment market.

In the summer of 1982, the California Legislature passed a law allowing potential rail companies to apply for up to $1.25 billion in tax-free bonds and exempting certain actions such as the granting of rights-of-way from environmental review by the State Public Utilities Commission. Review and approval must be obtained by the State Treasurer and State Rail Passenger Financing Commission, established for the purpose of issuing the bonds. AHSR officials indicated that a complete environmental review in compliance with both Federal and State environmental protection standards will be undertaken.

AHSR's original plan called for using the Interstate Highway right-of-way to construct, for $2 billion, ***new*** grade-separated tracks over which it hoped to run modified Japanese bullet train sets of eight cars each at average speeds of 125 mph and top speeds of 160 mph. Nonstop travel time from Los Angeles to San Diego was estimated at 59 minutes, with a 15- to 20-minute run scheduled from downtown Los Angeles to the airports More recently, AHSR indicated that it intends to build new track along the existing railroad rights-of-way, sections of which are owned by the Atchison, Topeka, and Sante Fe Railroad, and by the Southern Pacific Railroad. A significant portion of new right-of-way still would be required, since plans call for saving time by cutting through the mountains into San Diego and for better access into Los Angeles. A small portion of Interstate 5 right-of-way is also needed.

The AHSR proposal calls for 16 miles (12 percent) of tunnel, 50 miles (38 percent) of elevated grade-separated viaduct guideway, and 65.5 miles (50 **percent)** cut-and-fill grade. According to AHSR, the greatest proportion of tunneling will use direct bore techniques.

'Information regarding AHSR plans was drawn from the summary reports on "Engineering and Construction" and "Market Study," published by American High Speed Rail Corp., March 1983, as well as by conversation with AHSP staff.

AHSR reportedly expects to carry, on 86 trains, 100,000 persons daily (36.5 million passengers annually) with trains running at 30- and 10-minute frequencies. The ridership projections represent over 12 percent of the total automobile, rail, air, and bus trips made daily in the region, according to AHSR data, with more than 20 million trips diverted from the automobile. By contrast, Amtrak currently carries 3,000 passengers daily (about 1 million passengers annually) on seven round trips between Los Angeles and San Diego. [b] Current Amtrak service provides for departures every other hour.

AHSR assumes that by 1988 traffic on Interstate 5 will become so congested that highway travel time between San Diego and Los Angeles will increase to 3½ hours from the present 2½hours. AHSR ridership estimates also were calculated on the basis of total trips generated in areas within a 5- to 10-mile radius of the station locations, assuming six or seven stations. *

Current demographic characteristics of the SWC indicate a population of approximately 10 million people, with 1990 projections at 12.6 million. Using AHSR ridership figures of 36.5 million passengers annually, the data indicates that on the average every person would take at least 3.7 rail trips annually.

A number of unanswered questions remain about the current proposal: Would local travelers use high-speed rail? At what fare? Does AHSR intend the high-speed rail line as a commuter transit system as well as an intercity system? If so, how do these plans mesh with current city of Los Angeles plans for a transit system? Are the projected construction costs reasonable given the anticipated tunneling and viaducts required? Is there a sufficient local transit infrastructure to feed the high-speed rail link? Will the highways become so congested that people will divert to rail, or are there alternatives available that may be less costly than a completely new rail system? What effects will a high-speed service have on the air and bus market? What will happen to Amtrak's service if AHSR plans to use existing rights-of-way to construct its bullet train route? Legally, Amtrak maintains sole licensing responsibility for passenger rail service in the United States. In an interview with OTA, Amtrak President W. Graham Claytor, Jr., indicated that Amtrak has negotiated an agreement so that AHSR can provide high-speed rail in the same corridor as long as it is reimbursed for its lost revenues and receives a percentage of the profits.

California and Nevada: Las Vegas to Los Angeles

The mayor of Las Vegas has proposed a superspeed (250 mph) maglev ground transportation system between Los Angeles and Las Vegas. On January 27, 1983, the city of Las Vegas, in conjunction with the Clark County Board of Commissioners, the Las Vegas Convention and Visitors Authority, and the State of Nevada, released a feasibility study of the system. The study was prepared by the Budd Co., a potential supplier of maglev equipment—assisted by Bechtel Corp., Transrapid International, * and Transtech International, Inc. ** The study recommends construction of a 230-mile route from the Ontario airport outside Los Angeles, through the Cajon Pass, and into Union Plaza in Las Vegas. The route parallels Interstate 15 much of the way and would require little land acquisition since most of the proposed right-of-way is on Federal or State-owned property, assuming such property is made available.

The study recommends that the system be implemented by a joint public-private enterprise, in order to "permit utilization of available Federal tax incentives, encourage funding from a variety of sources, and result in a broader ownership base." [7] However, it also indicates that the system

[b] Responses to OTA questions from Amtrak, February 1983.

● Some OTA workshop participants believe that, for intercity travel, the base travel level used by AHSR to determine projected ridership may have been too large, because local trips were calculated in AHSR assumptions. Participants suggested that fare costs and overall trip time constraints for local trips may preclude people from using the 160 mph system to travel locally or for commuting. If local trips are included, as AHSR brochures suggest, then larger theoretical amounts of travel result.

*Transrapid International is an association of firms including Messerschmidt-Boelkow-Blohm (MBB), Krauss Maffei, and Thyssen Henschel, who are responsible for the development of the maglev system in the Federal Republic of West Germany. Thyssen Henschel owns the Budd Co., located in the United States.

**A $150,000 DOT grant was also used in the initial feasibility effort.

[7] *Executive Summary, Las Vegas to Los Angeles High Speed/Super Speed Transportation System Feasibility Study, 1983,* p. 25.

can be built by the private sector. According to the study, a 20-percent return on equity would be possible if the system could attract 2.6 million passengers annually at a projected round trip fare of $65 (1980 values). Today, nearly 12 million people visit Las Vegas each year. Residents of the Los Angeles area account for approximately 3.6 million visitors, or about 30 percent of the total, most of whom travel to Las Vegas by car. The study projects that between 1.9 million to 2.7 million people, or over half of the ridership, could be induced to try the new mode.[8] The proposal calls for the line to originate near the Ontario airport, which is approximately a 45-minute drive for patrons living in Los Angeles and the surrounding coastal communities.

Even with these ridership projections, the study states that "this is probably not a high enough return to attract equity investors in view of the perceived risks associated with the project and the fact that positive returns to equity investors are several years into the future. "[9] Financial analysis reveals that, for private ownership, operating income would be negative from 1983-96. Return on equity investment varies considerably from year to year and changes from negative to positive to negative, respectively, until 1999, when an increasing return is realized each year.

The results are similar for public ownership, although the years are slightly different due to an assumption that interest rates on capital costs would be 10 percent rather than 13 percent as in the case of private ownership. In public ownership, positive cash flow would occur 2 years after startup of operations (1992) and increase substantially thereafter.

In both cases, ridership would grow more slowly than net income and cash flow, because as the study assumes, fares would increase by 7 percent annually while debt costs would remain fixed. At the same time, operating costs are estimated to be very low. Excluding interest, operating costs are projected to be $55.2 million in 1991, while revenues from fares and food concessions are projected to be $395.2 million—a ratio of 14 percent. By 1991, the study also assumes the 1980 ridership will have increased to 3.1 million.

[8] Ibid.
[9] Ibid.

The total cost of the project is estimated to be $1.8 billion. Construction (guideway) and electrification costs are estimated $1.2 billion ($5.12 million per mile). Single-track operation is planned, limiting construction costs. Until cost verification and operational feasibility testing have been completed for the West German and Japanese systems, questions regarding maglev operating and capital costs for this, or any corridor, cannot be answered fully.

Florida: Tampa to Orlando to Miami

Florida has been interested in high-speed rail since the energy crisis of 1973-74 cut into the State's tourism revenues. Florida's flat terrain, low population densities between major coastal cities, and high tourism provide some advantages for high-speed rail systems. In addition, the population is one of the fastest growing in the country. Florida expects to attract *35* million to **40** million tourists in 1983.[10] However, while Florida's population and tourist levels indicate some potential for generating rail ridership at levels that may cover operating costs, most visitors to Florida now come by automobile, and many travel as part of a group (family or otherwise). Modal splits are currently estimated as 86 percent by automobile, 11 percent by air, 3 percent by bus and rail.

In April 1982, Florida established a High-Speed Rail Committee to investigate the potential application for the technology in the State. About the same time, AHSR announced its interest in a Tampa-Orlando-Miami corridor. The Japanese National Railways Technology Corp. and AHSR are conducting preliminary engineering and marketing studies of that corridor. Initial State efforts are concentrated on examining the feasibility of establishing a 255-mile high-speed rail route between Tampa and Miami via Orlando. No technology has been chosen yet for the route, though the State believes it must be a proven technology in order to attract investment.

The State Department of Transportation has provided topographic data for Japanese engineers, conducting the preliminary engineering study of the area, and the State DOT has also examined the feasibility of using median strips of the Florida

[10] Information provided by Florida Department of Transportation.

Turnpike for a high-speed rail corridor. However, highway curvature may limit the amount of right-of-way that could be used for this purpose, although the State assumes public-owned rights-of-way will be made available. To date, Florida has not conducted a study to estimate ridership or determine economic feasibility.

A number of questions exist concerning this corridor: Are sufficient transit infrastructures available (or planned) to feed the rail system? Would tourists, many of whom now come in by car from out of State, switch modes once in Florida? Could other tourists be induced to ride the train with the current cost, service, and convenience factors provided by competing modes? Would private capital be sufficient to cover a project of that magnitude? Are there transportation alternatives that might better meet the State's needs?

Michigan: Chicago to Detroit

The Michigan Department of Transportation (MDOT) has conducted several studies of corridors within the State, analyzing options for upgrading and for introducing high-speed rail service. MDOT considers the Chicago-Detroit corridor to offer the most significant potential. The improved service offered by the proposed route, and the potential for improved economic and employment opportunities, are seen as the chief reasons for the new or improved rail service.

The Chicago-Detroit corridor has a number of the features necessary for a high-speed rail route, including a route distance of 279 miles, and a corridor population of 12,5 million people. State rail officials view the corridor as having travel affinity between the two cities, especially for business and for the connecting links to Canada's most populated corridor. Amtrak currently operates daily trains between Chicago and Detroit.

Feasibility studies of the corridor have been conducted by Transportation Systems and Market Research Ltd. (TRANSMARK), a British consulting firm. Ridership of 4.6 million to 6 million intercity passengers annually for the year 2000 was projected for the corridor with intermediate feeder routes extending to Lansing and Grand Rapids. It is expected that most of the travel will be diversion from other modes (77 percent), with only 15 percent of new induced demand. Service assumed 125-mph speeds. The analysis examined the option for upgrading service, using available technology, to achieve the 125-mph speeds. Additional work is being conducted to determine rights-of-way that may permit speeds up to 160 mph. The upgrading options suggest a cost of $2.5 million per mile is necessary to achieve the 125-mph speeds .11

The MDOT studies suggest that revenue from the Chicago-Detroit corridor may not be sufficient to support total operating, maintenance, and investment costs and offer a return on investment. However, they believe nearly sufficient revenues will be generated to cover operating costs. MDOT believes some form of public sector incentive or stimulus is necessary to generate private sector participation. Key questions remain about the projected financing options that could be used for such a project.

Midwest High-Speed Rail Compact

In 1980, the State Legislatures of Michigan, Illinois, Indiana, Ohio, and Pennsylvania established the High-Speed Rail Compact to foster the potential economic development, employment, and transport benefits that might result in the Midwest from new rail service. The Compact called for the Governors of each State to appoint two representatives. The Compact meets twice a year to exchange information on new rail developments and to foster interest at State, regional, and Federal levels in high-speed rail projects.

New York: Montreal to New York City (State Rail Plans)

The State of New York has undertaken perhaps the most comprehensive passenger rail upgrading program of any State in the Union. In the late 1960's, the State DOT began looking at foreign passenger rail activity in France and Japan. In the early 1970's, the State undertook a conceptual

[11] Information provided by Michigan Department of Transportation.

study designed to analyze high-speed rail in several corridors. In 1974, $50 million of a $250 million State bond issue was devoted to upgrading passenger rail rights-of-way. Another bond issue for which additional moneys were allocated to rail was passed in 1979. Using a phased approach with rail bond funds (State initiated), this effort has brought over 94 miles of the New York City-Albany-Niagara Falls passenger corridor to speeds up to 110 mph. An additional 42 miles of route are due to be similarly posted for high speeds in the near future. According to State rail officials, the State's incremental approach to rail improvement is designed to build a ridership base while ascertaining the revenue increases that result from the capital improvements the State has made. The State has invested about $80 million in track improvements. One project currently under study for a high-speed rail system is the Montreal-New York City corridor. The projected corridor is a cooperative effort between the mayor of Montreal and the States of New York and Vermont. To date, a preliminary engineering feasibility study of an advanced French TGV-type system has been conducted, funded by Montreal. New York DOT provided technical assistance to the study. The study has not yet been released.

The next phase, which New York and Vermont are discussing with Canada, includes economic feasibility studies and patronage forecasts. Since the project would be a joint venture, both New York and Vermont have requested that Montreal obtain a formal commitment with the Province of Quebec supporting the project, since Quebec will be affected by the route. Approximately 40 miles of the route would be in Canada, while the remaining portions (330 miles) of the system would be in Vermont and New York.[12]

Northeast Corridor

Due to its population densities and transit systems, the corridor with the greatest potential market for high-speed rail is the NEC (Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, and the District of Columbia). Because of this potential, Congress enacted legislation to purchase the right-of-way in the corridor from Conrail* and to improve the roadbed to permit higher speed passenger train travel. The Northeast Corridor Improvement Project (NECIP) was authorized in 1976, and some construction began in 1977. Completion is scheduled for 1986, and funding authorized for the corridor totals $2.5 billion.

The NECIP investment will permit Amtrak passenger trains to reach speeds of 120 to 125 mph. Current best schedules permit maximum speed of 110 mph with an average 80 mph. Speeds up to 120 mph on selected sections of the corridor now have been approved. Twenty-six round trips daily are offered between New York City and Washington, D.C. In 1982, ridership for the corridor was 10.5 million people. The U.S. DOT estimates that approximately 80 percent of those passengers travel on the 224-mile sector between Washington and New York. Fastest trip time between New York City and Washington currently is 2 hours 49 minutes; upon completion of the project, best nonstop trip time is expected to be 2 hours 40 minutes. Additional incremental improvements to reduce trip times could be made with additional investment. At this time, however, there are no plans by the current administration for further investments beyond the $2.19 billion already allocated, until the current project is completed. According to DOT officials, the average cost per mile for NEC upgrading has been $4.5 million to $5 million with an additional $2.5 million per mile for electrification.[13]

Ohio

In 1980, the Ohio Rail Transportation Authority (ORTA) released the results of a high-speed rail study with the recommendation that a high-speed rail network be established to connect major cities of Ohio via three main corridors. The plan called for new grade-separated track and signals/communication facilities to permit operating speeds of 150 mph. The type of equipment to be operated on these tracks (TGV, bullet train, or APT) was left to further study, but costs were based on TGV equipment costs and capabilities. It was projected that it would take up to 15 years to acquire the land, complete construction, and begin operations.

[12] Information provided by the New York State Department of Transportation.

● Consolidated Rail Corp.

[13] Riego Mongini, Northeast Corridor Improvement Project, Intercity Programs Office, Federal Railroad Administration.

Capital costs of the basic 500-mile network were estimated to be $5.7 billion (1978 dollars) ($11.4 million per mile). The additional Toledo-Detroit and Youngstown-Pittsburgh segments were estimated to cost an additional $2.5 billion. In current dollars, the total cost for the basic network is $14.6 billion .14

Construction of the network was to be financed from a l-percent increase in the State sales tax. The tax referendum for the construction of such a system was defeated by Ohio voters in the November 1982 election by a 3:1 margin. Proponents argue that the defeat signaled opposition to the financing mechanism more than to the concept itself.

Impetus for the proposal was twofold: to provide energy-efficient intercity transportation (the system was to be electric-powered allowing use of Ohio coal as a source of energy) and to serve as a catalyst for economic revitalization.

Total ridership over the system was projected to reach 8.7 million passengers by the year 2000. Passenger trips would be spread out over 500 miles of rail network, with the average trip length (for the Ohio passengers) expected to be *109* miles. [15]

Ohio's rail service today consists of Amtrak's Lakeshore Ltd. & Broadway Ltd., and Cardinal trains running east-west through Ohio to Chicago. There is no north-south rail service, nor does Ohio now have any 403 (b)* rail service. Rail ridership is expected to be generated by diverting travelers from the automobile to the train as fuel prices increase and as population grows.

In the proposed Ohio network, where distances are short, as from Cleveland to Akron, rail would not be able to compete as successfully as other modes and is projected to get only 5 percent of the market. On the longest segment, from Cleveland to Cincinnati, the rail mode is projected to capture *58* percent of the traffic is projected to be diversion from the automobile. In 1977, approximately 74 percent of all traffic between these two cities moved by auto; by 2000, proponents of the network estimate automobile share of the market would have dropped to only 27 percent.

The network is projected to generate a profit; the operating ratio in 2000 is projected to be 69 percent. Operating income (before taxes) is expected to be $47.6 million which, if used for such a purpose, could support a debt load of only $470 million at 10-percent interest rates. The projected profits from the railroad do not appear to equal the construction costs of the network. For this reason, an increase in the State sales tax of 1 percent was proposed as a financing mechanism.

On a unit basis, operating costs are estimated to be 11 cents per passenger-mile. This compares with current air costs in the range of 10 to 15 cents per passenger-mile for travel in short (200-mile) corridors.

Although not defined as high-speed rail, the Ohio Association of Railroad Passengers recently has proposed the establishment of a 110-mph service on a 1,650-mile network within the State. The Association claims this would cost *$2.4* billion in contrast to the ORTA proposal of $11.5 billion for 526 route-miles.[16]

Pennsylvania

The Pennsylvania Legislature formed a High-Speed Rail Commission in 1982 to study high-speed passenger rail feasibility in the State. Prior to legislative approval of the Commission, the Milrite (Make Industry and Labor Right in Today's Economy) Commission, a group of business, labor, and political leaders convened to investigate the subject. On the basis of their findings, the Legislature approved a $6 million authorization for the State's High-Speed Rail Commission. The original Milrite study looked at a 351-mile route between Philadelphia and Pittsburgh. The High-Speed Rail Commission is authorized for 5

[14] Information on the Ohio plan was obtained from Ohio Rail Transportation Authority documents on the "Ohio High Speed Intercity Rail Passenger Program," published July 1980, with Dalton, Dalton & Newport as project consultants.

[15] Ibid.

● 403 (b) service is a State-Federal matching program for provision of passenger rail services. The States provide 45 percent of the operating funds and 50 percent of capital costs in the first year of operation. After that, the State provides 65 percent of the operating costs annually and the Federal Government provides 35 percent.

[16] Information provided by the National Railroad passenger Association.

years. A request for proposals to study the corridor has been issued. A 2-year study effort is being conducted.[17]

Wisconsin: Chicago to Milwaukee

An 80-mile maglev system has been proposed between Chicago and Milwaukee, at a cost of $1.2 billion ($15 million per mile). One goal of the route would be to divert air travelers from Chicago's O'Hare International Airport to Mitchell field, located outside Milwaukee, alleviating congestion at O'Hare.

Amtrak currently serves the Chicago-Milwaukee market with three daily trains round trip. Service was formerly six trains daily but was cut in 1981. Ridership in 1980 on the Amtrak between Chicago and Milwaukee was about 311,000 people, an increase of 100,000 over the decade. The operating deficit of the route was $6.2 million for the 1979-80 period. A feasibility study of the maglev proposal was undertaken by the Budd Co., a potential supplier of the maglev system. Annual operating costs for 24 daily round trips with seven 400-passenger trains are estimated at $13 million. At this cost, the Budd study concluded that such a system was "technically feasible, assuming the round-trip fare is $40.00, and an annual ridership of 2.5 million passengers is attracted. "[18]

An actual ridership forecast, however, was not part of the feasibility study. The theoretical $2.5 million break-even ridership described in the Budd study represents 30 percent of the present Milwaukee-Chicago traffic. The projected fare of 25 cents per mile is substantially higher than the automobile costs.

In 1981, the Wisconsin DOT issued a study that concluded the large public investment in capital improvements to existing service, and the continuing operating subsidies necessary for new passenger train services in existing and new corridors could not be justified in the near future. Further, the study indicated that if Amtrak service were ever discontinued, alternatives including bus service to existing Amtrak service are available to provide adequate, comparable, cost-effective and energy-efficient service to the public. While this study did not examine high-speed or maglev applications in the proposed corridor, it did indicate that the Wisconsin DOT does not seek to implement any new rail corridors unless financial feasibility can be shown and public benefit justified.[19]

Texas

Texas State legislators and AHSR have indicated interest in a high-speed rail system for sections of the State. Recently, the Texas Railroad Transportation Co., formed in July 1983, announced plans for a high-speed rail system between Dallas and Houston using French equipment and bankrupt Rock Island Railroad rights-of-way. While general hearings have been conducted in the State, feasibility studies have not yet been undertaken by either the State or the interested corporations.

Other Corridor Plans

The Atlantic City-Philadelphia corridor has been the subject of several studies. Recent Federal legislation authorized $3o million to restore rail service on what was badly deteriorated track. While not anticipated as high-speed, the service is intended to provide relief on the congested routes between Atlantic City and Philadelphia by allowing for "chartered trains" and six round trips daily for commuters and others. In the DOT/Amtrak "Emerging Corridors" study—not a high-speed analysis—the Philadelphia-Atlantic City Corridor was reported to have a favorable performance for system upgrading in terms of ridership projections and the annual public expenditure cost per incremental passenger-mile. [20]

In addition to the New Jersey plans for upgrading service, significant improvements have been made on the New York-Albany-Buffalo corridor.

[17] Information provided by Robert Casey, Pennsylvania High-Speed Rail Commission.

[18] Information drawn from the "Final Report: Milwaukee to Chicago Maglev System Feasibility Study," by the Budd Technical Center, Dec. 10, 1982.

[19] Wisconsin Transportation Planning Program, "Rail Passenger Services Study," Wisconsin Department of Transportation, August 1981.

[20] "Rail Passenger Corridors: Final Evaluation, " U.S. Department of Transportation and Amtrak, April 1981, p. vii.