Chapter 4

SOCIAL AND INSTITUTIONAL FACTORS

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Considerations other than economic efficiency also must be taken into account in a decision to construct high-speed rail. This chapter discusses the social and institutional factors likely to influence decisions on potential high-speed rail corridors in the United States. Following is a brief summary of the main points made in this chapter.

SUMMARY

Given the uncertainties surrounding the ability of high-speed passenger rail to pay for itself from operating revenues, its introduction into any U.S. corridors probably will hinge on whether the projected public long-term benefits are sufficient to justify governmental support. Short-term benefits, such as employment during construction, typically will accrue to developers and will occur irrespective of ridership levels achieved by the system.

The public benefits often cited for high-speed rail service include: increased mobility, reduced highway and airport ground congestion, energy efficiency and security, and economic development and employment. In addition to these explicit reasons, national pride and a desire for continued and updated rail service also are reasons that appear to influence public opinion in favor of high-speed services. "If other countries can provide such service successfully, then why can't the United States?" is a question frequently raised.

However, as indicated elsewhere in this report, foreign high-speed rail systems typically were implemented in densely populated corridors, and, in France and Japan, along corridors where existing capacity had been reached.

Costs to be considered are not solely economic in character but include environmental concerns, adverse effects on competing modes and services, and questions of regional equity.

Some benefits cited can be quantified. Others are a matter of subjective judgment. Some costs, particularly those associated with economic efficiency of the system can be projected, while others are more difficult to quantify. Some claimed benefits, such as energy efficiency and reduction in highway and airport congestion, when taken individually appear marginal. However, when all benefits, tangible and intangible, are taken into account, a given region or locality may well wish to implement a high-speed system—be it rail or magnetic levitation (maglev). With the exception of improved mobility, all factors cited as long-term benefits for a high-speed system will be contingent on the actual ridership a system attracts. Short-term benefits, such as employment during construction, typically will accrue to developers and will occur irrespective of ridership levels achieved by the system.

The social costs of introducing high-speed rail service may be high. If the venture cannot pay for itself, continual subsidies in addition to high capital costs may be required. If a system is to be federally subsidized, political disputes may well occur over which State should host it, and at issue would be the appropriate criteria for selection of a site.

The need to work out some sort of joint use or lease/purchase agreement with existing private railroads is a prerequisite to the implementation of any high-speed rail project using existing track. Because of the high construction costs for an entirely new right-of-way, it could be very advantageous, where possible, to use existing rights-of-way. With the exception of the Northeast Corridor (NEC) and several isolated segments elsewhere, however, all railroad rights-of-way are privately owned.

The National Railroad Passenger Corp. (Amtrak) has statutory authority to provide intercity passenger rail service in the United States. Therefore, licensing agreements must be reached before any private company can begin intercity rail service over Amtrak routes. Amtrak has indicated that it does not view high-speed service as a substitute for its own passenger service. Thus, Amtrak intends to continue operating in corridors where high-speed service could exist and expects to be reimbursed for any operating losses attributable to competition lost to the high-speed rail service. However, some questions have been raised regarding Amtrak's statutory authority and the applicability of licensing in those corridors where Amtrak service is not presently provided.

If high-speed intercity service is provided in the United States, existing equipment specifications and track standards will require revision to incorporate speed, weight, and design modifications. Questions concerning shared v. dedicated rights-of-way will have to be resolved.

SOCIAL FACTORS

Public Sentiment Favoring Modern Rail Services

Polls reveal that a majority of Americans wish to preserve rail service as a transportation option, even when subsidy is required.[1] Some advocates of high-speed rail in this country regard it as a matter of national pride. "If other industrialized nations can afford to have high-speed rail travel, why can't the United States?" they ask. Those who believe that our country's status as the technological world leader should be preserved and promoted may well support the introduction of high-speed rail. Others question whether implementation of rail, considered by many as a mature technology, is advisable.

Energy Savings Considerations

The energy crisis that emerged in 1973 triggered many efforts to curb the Nation's use of petroleum resources and to lessen dependence on foreign oil. Among the alternatives examined was upgrading intercity rail service to higher speeds so that, as fuel prices continued to increase, travelers increasingly would turn to rail and reduce less fuel-efficient automobile travel.

As required by section 1003 of the Rail Passenger Service Act, the U.S. Department of Transportation (DOT) and Amtrak made estimates of the degree to which ridership might increase if fuel prices increased significantly and train service were improved substantially. Although projections indicated that ridership would increase under these circumstances, DOT's overall conclusion was that "energy impacts of rail corridor development are at best insignificant."[2] Although Amtrak believed the energy savings would be much higher than DOT estimated, it agreed that any energy savings were an incidental benefit of corridor service and could not serve as the sole or major justification for upgrading service.[3]

Any significant energy savings are likely to occur only if substantial displacement of automobile use occurs which means current U.S. transportation patterns would have to change.

Increased Mobility and Transport Alternatives

Increased mobility and improved transport system capacity are important reasons for implementing high-speed rail, particularly in regions of the country experiencing population growth.

As discussed in other chapters, high ridership levels are made possible by the capacities typically offered by high-speed trains with frequent service. For example, the original Tokyo-Osaka line attracted 85 million riders in 1970. The total line, extending from Tokyo to Hakata attracted a high ridership in 1975 of 157 million passengers.

[1] Louis Harris & Associates, "The Continuing Mandate to Improve Intercity Rail Passenger Travel," summary, for Amtrak, 1978.

[2] Federal Railroad Administration and National Railroad Passenger Corp., *Rail Passenger Corridors, Final Evaluation* (Washington, D. C.: U.S. Department of Transportation, April 1981), transmittal letter to The Hon. George Bush, President of the Senate, from Drew Lewis, Secretary of Transportation.

[3] Ibid.

In the United States the market for intercity passenger rail has been eroded by the introduction and extensive use of air and automobile technologies. If rail is to attract the ridership necessary to sustain at least operating costs at the very minimum, it must compete with other transport modes in the private sectors. Some would argue that the loss of ridership and the potential service losses of these other modes, were high-speed rail to be successful, should be considered a public cost, particularly if the new rail service receives Government support. Others argue that other modes are already subsidized, and rail deserves parity in treatment. While rail proponents strongly disagree with the report, a recent analysis by the Congressional Budget Office indicates that for 1978, "the federal government spent $2.50 for each dollar collected in fares or state and local subsidies for passenger rail service. By comparison, for each $1.00 that motorists or air travelers spent, the federal government spent 0.2 cents and 5.o cents, respectively. "[4]

Crucial to evaluating increased mobility are answers to questions related to: What are near- and long-term transport systems capacities and needs for a given region? What are the likely tradeoffs among transport options? Are conditions on a corridor such that people would use the rail system if implemented?

Recently, high-speed rail has been proposed in corridors where current heavy use is straining capacity of intercity highways, where long-term additional capacity needs are foreseen, and where the building of additional highways runs up against land-use or availability constraints. The extent to which high-speed rail could be expected to alleviate highway congestion depends on the following factors:

- the degree to which the congestion is or will remain unsolvable by other means,
- the degree to which automobile drivers will choose to ride the train to avoid the highway,
- the degree to which there is room to install high-speed rail, and
- the degree to which it may provide service to potentially offset long-term capacity needs for a region.

To evaluate these factors, current traffic patterns and future alternatives must be understood first. Studies indicate that congestion on the Interstate Highway Systems results more from commuter traffic than from intercity travel. Therefore, the issue is whether commuters making relatively short daily trips could be induced to use high-speed rail for commuting, whether the corridor service is convenient for other urban area trips and whether high-speed trains are the appropriate technology for such a service. Current U.S. intercity rail service typically is not designed as a commuter or transit system. Studies and experiments by transit agencies trying to woo commuters show that most people will discontinue using their automobile only under severe parking restriations. [5]Some rail proponents now suggest that the trend toward longer term ownership and use of older vehicles may begin to alter people's choices for intercity travel modes.

To evaluate the impact of high-speed rail on long-term capacity and congestion problems, answers are required to the following questions: What is the projected population growth of the area? What regional plans exist for development of the area, and to what extent are the long-term transportation options being evaluated? What factors are likely to shift that would encourage eventual diversion to any proposed rail system?

Other questions regarding tradeoffs between highway and rail include: How many drivers use the highway to make the full intercity trip? Would drivers be willing to pay more to arrive at their destination quicker (recognizing that, if so, they might prefer taking the plane)? Would the station location and transit service availability at their destination affect their decision? Is high-speed rail an appropriate application of technology to alleviate commuter or urban congestion?

[4]"Federal Subsidies for Rail Passenger Service: An Assessment of Amtrak" (Washington, D. C.: U.S. Congress, Congressional Budget Office, July 1982), p. 13.

[5]OECD Road Research Group, *Road Research, Transport Choices for Urban Passenger (Measures and Models)* (Paris: Organisation for Economic Cooperation and Development, September 1980).

Alleviating Airport Congestion

High-speed rail also has been proposed for corridors where heavy demand is straining airport ground capacity. The extent to which high-speed rail would alleviate this type of airport congestion depends on several factors:

- the degree to which the high-speed rail route matches the destinations of air travelers,
- the degree to which the congestion is unsolvable by other means, and
- the degree to which air travelers can be induced to select the train over the airplane.

In the early 1970's, a major argument for high-speed rail in the NEC was that-New York City could avoid building a fourth airport, which at the time appeared inevitable. Yet today, even though the NEC still does not permit high-speed rail service of the sort then contemplated, New York City is no longer seeking to build a fourth airport. The prognosis changed because: 1) New York's forecasted growth in air travel did not materialize, 2) larger planes and more efficient air traffic control systems allowed the existing airports to handle more traffic without building new facilities, and 3) the problems of finding a suitable airport site proved more difficult than planners imagined.

With the exception of the NEC and southern California, it does not appear that high-speed rail service would have an appreciable effect on airport ground congestion. The travel patterns for other large hub airports that now have, or are soon expected to have, severe congestion (e.g., Chicago's O'Hare, Atlanta's Hartsfield, and Denver's Stapleton) are not such that high-speed rail would be an appropriate substitute for air. These airports are served by a hub-and-spoke pattern of air routes, and much of the congestion results from passengers transferring between flights. High-speed rail, which works best when there is a high volume of origin-destination traffic along a corridor, would not compete effectively in most hub-and-spoke markets.[6] If an airport is to also serve as a high-speed rail station, frequency of service from the airport must be a major consideration.

[6] *Airport and Air Traffic Control System* **(Washington, D. C.: U.S. Congress, Office of Technology Assessment, OTA-STI-175, January 1982).**

Promotion of Tourism

Regions of the country where tourism is vital to the economy are looking at high-speed rail for two reasons:

1. to maintain access for tourists should other forms of transportation become constrained, and
2. to increase tourist travel by building a high-speed rail system so technologically advanced that the rail trip itself will serve as an attraction and inducement.

Whether high-speed rail itself can lure additional tourists to a given location is uncertain. Estimating the degree to which technology may induce demand is difficult since it is not always possible to predict with certainty the desires of tourists. Understanding how and why tourists currently come to the location in question, together with surveys to determine the likelihood of their using high-speed rail or other advanced ground technologies, would contribute to the analysis. Typically, tourists prefer to travel by car because they wish to visit widely scattered sights, and, families frequently travel with much luggage. The auto provides flexibility not offered by public modes of transportation.

Regional Development

High-speed rail systems also are being proposed on the grounds that they would stimulate economic development and employment in a region, generating new development along the route as did the Erie Canal and the railroads in the l9th century. Historically, regional development has followed new transportation development because transportation provided a new, more efficient means of reaching an area. Questions concerning high-speed rail include whether it meets a need that is not already being met and whether this need is significant enough to bring about the sort of economic development contemplated by proposers. At best, quantification of regional impact in terms of employment or development will be difficult. However, proponent's consider such development a strong reason for implementing high-speed rail systems. While economic development might occur, tradeoffs such as high-speed rail competition with air, automobile, and bus for passengers must also be examined. The regional benefits of economic development around a corridor must be analyzed against the possibility that the region or Nation eventually may have to support operating losses if the rail system does not prove profitable or if ridership levels projected do not materialize.

Passenger Safety and Comfort

If high-speed rail or maglev were to be introduced in the United States, certain existing regulations regarding passenger safety and comfort would need review, and certification of new technologies would be necessary. The following is a brief discussion of the regulatory questions which would need to be addressed.

Speed Limits

Currently the only high-speed trains (120 mph or more) in the United States, operate on sections of the NEC. Elsewhere, speed limits are generally 79 mph; speeds of 90 mph are permitted on small sections of track, and New York State now has trains operating at 110 mph on portions of its rail network. On many lines, lower speeds often are in effect because of track conditions or traffic mix. Limitations on speed usually are set for safety reasons. Restrictions on speed of passenger trains through curves is also based on passenger comfort, although the trains themselves could negotiate the curves safely at higher speeds. Speed limitations that would affect implementation of high-speed rail cover such items as track conditions, signaling requirements, and maximum speed through curves.

Track Conditions. —Federal Railroad Administration (FRA) track safety standards specify that the maximum allowable operating speed for passenger trains is 110 mph on Class 6 track, * and lower speed must be observed on track of lower categories. Both French National Railways (SNCF) and British Railways (BR) have trains designed to run safely at much higher speeds on track designed originally for 100-mph operation. France's TGV has a technical design speed approaching 200 mph, and BR says that its high-speed trains and advanced passenger trains could operate safely at 150 mph. Japan can operate its equipment at 160 mph. In any case, the U.S. signaling requirements change according to the maximum speeds permitted.

Signaling Requirements. -FRA's existing signaling requirements limit train speed to 79 mph unless signals are displayed in the engineman's cab or intermittent inductive train stop equipment is in use. Some experts believe that above 125 mph, fully automatic train control should be part of the signaling system. Fully automatic control causes problems where high-speed passenger, commuter, and freight trains of widely different braking characteristics use the same tracks. BR and SNCF have increased the train speed for a given signal spacing by using more sophisticated braking systems, which can reduce the distance required to stop the train. New York State has petitioned FRA to review its signaling requirements for purposes of upgrading speeds to 90 or 95 mph on certain track segments. This matter is pending, although an earlier request for complete review of cab signaling requirements was denied.

Maximum Speed Through Curves. -Speed limits through curves depend on the radius of curvature and the superelevation of the outer rail. When a train negotiates a curve, centrifugal force causes more of the total weight to be transferred onto the outer rail, and passengers are pulled toward the side of the seat nearer the outside of the curve. Thus, speed through curves is determined by the need to avoid or mitigate the following:

- outward weight shifts that could cause the vehicles overturn;
- overload on the outer rail so that it is displaced, and the train derails;
- discomfort to the passengers from excessive centrifugal forces; and
- maintenance costs caused by these forces on the rail.

The lateral component of centrifugal force can be reduced by banking the track (superelevation). Very high superelevation (as on auto racetracks) would permit much higher speeds for passenger

● Class 6 track is defined as "a track that meets all of the requirements prescribed in Part 213 (Track Safety Standards, Code of Federal Regulations, 49 Transportation), with a maximum allowable operating speed for passenger trains of 110 mph. "

trains; however, if the track is also used for heavy, slow-moving freight trains, the weight of the train on the inner rail would be excessive and rapid wear and damage would result. Thus, superelevation in the United States is limited by Federal regulation to 6 inches. *

Safety and Strength Requirements of Passenger Equipment

Concerned about the possibility of collisions among dissimilar types of equipment, U.S. practice is to prescribe vehicle strengths for passenger equipment that are higher than those in Europe. As a result, U.S. passenger railcars are far heavier. Power requirements to move these heavier vehicles are correspondingly greater as is wear on the track. European rail practice suggests that the U.S. specifications used for railcar equipment strength may, in fact, be counterproductive in a collision. Data to support the European experience were not analyzed for this report. However, such practices as well as energy savings from lighter weight equipment might well be investigated for possible adoption in the United States. Questions of shared v. dedicated rights-of-way no doubt would be raised in the context of this issue assuming that heavier freight equipment would be operated on the same line with the new, lighter weight designs in passenger equipment.

Safety Issues at the Highway/Rail Interface (Grade Crossings)

For safety reasons, any proposed high-speed system should avoid crossing highways at grade level. Grade crossing fatalities, though declining, represent the highest fatality category for rail in the United States.[7] (In Europe, however, French and British trains traveling at 100 to 125 mph routinely cross highways at grade with gates, warning sounds, and closed circuit television.) New York State has some nongrade separated rail crossings with special sensors for warning automobile traffic of approaching trains. Location of the grade crossing and type of equipment may dictate optimum grade crossing systems for high-speed rails. Rail grade crossings may represent a significant public concern in any implementation plan for a high-speed system, according to State transportation officials.

Safety Certification of High-Speed Rail Technology for Operational Use

For the most part, high-speed rail technology consists of tried and tested "off-the-shelf" technology. Two exceptions, which require separate consideration, are tilt-body equipment and maglev.

Tilt-body equipment, in varying degrees, is an important feature of the British, Canadian, Swiss, Italian, and Swedish efforts to develop high-speed rail systems. The tilt-body is intended to enable trains to travel faster through curves without sacrificing passenger comfort. The car "tilts" to counteract centrifugal force and maintain passenger comfort while the train traverses curves at high-speeds. Not all tilt-body equipment has been tested on an operational basis. At present none of the tilt-body developments is free from technical problems. There have yet to be satisfactory commercial ventures due to high maintenance costs. Use in this country-if operational and economic feasibility is proved-will depend on relax-

*The speed through a curve at which the passenger feels no lateral forces (the "balancing speed") is calculated by the following formula:

$$V = \sqrt{\frac{Ea}{0.007D}}$$

where V = balancing speed (miles per hour)
Ea = actual elevation of the outside rail (inches)
D = digress of curvature

Passenger trains generally travel around curves at speeds higher than the balancing speed. Most foreign railroads permit a passenger train to travel around a curve at a speed as though superelevation were 6 inches higher than actual ("6 inches of unbalanced superelevation"). The formula then becomes:

$$V\ max = \sqrt{\frac{Ea + 6}{0.0007D}}$$

In the United States, Federal regulations limit the speed of trains through curves to 3 inches of unbalanced superelevation. The formula is:

$$V\ max = \sqrt{\frac{Ea + 3}{0.0007D}}$$

This limitation, however, is based on comfort rather than safety criteria: witness the fact that foreign trains successfully negotiate curves with 6 inches of unbalanced superelevation. The regulation thus means that U.S. passenger trains are required to slow down expressly for curves and thus lose running time (Steve Ditmeyer, Chief of Research, Burlington Northern Railroad).

[7] *An Evaluation of Railroad Safety* (Washington, D. C.: U.S. Congress, Office of Technology Assessment, OTA-T-61, May 1978).

ation of the 3-inch unbalance rule and standards set for equipment reliability, safety, and comfort.

Maglev for high-speed operation is so new that it has yet to be proved to be an operational large-scale people mover for revenue service. Developers and prospective buyers are beginning to raise questions about which U.S. Government institutions should certify the systems and when they should be certified.

As indicated in previous chapters, maglev systems are being developed in West Germany and Japan. Because of differences in the technology, the West German system is further along in development than the Japanese. Tests of the West German system are scheduled to begin in 1983 at the West German Emsland Test Facility in Lower Saxony. At the earliest, results are projected to be available in late 1985. However, in light of ongoing. development efforts in both countries it may be prudent for U.S. transportation agencies to remain as informed as possible about the technology status.

Environmental Concerns

Land Use: Assembling Rights-of-Way

For purposes of this report, high-speed rail has been defined as trains that travel at 125 mph or greater. While it is possible (by substantially limiting freight travel), to mix freight with passenger trains traveling at this rate of speed, high-speed rail is often likely to involve separate dedicated tracks, if not dedicated rights-of-way. Freight traffic aside, high-speed rail could be instituted on existing U.S. rights-of-way, although most corridors would require modification including upgrading of track, elimination of existing curves, and signaling improvements. Reaction of public and private groups to proposals to do so will depend on the impacts, benefits, and costs of the changes that have to be made. Land-use issues would be subject to negotiation.

Proposals calling for the construction of entirely new rights-of-way, or for any transportation alternative, will require public agreement on land-use questions. The degree to which local governments, institutions, environmentalists, individuals, or other citizen groups will support the implementation of high-speed rail probably will be influenced by projections of demand for the service, by the amount of urban land and areas of natural beauty through which the line must travel, and by the perceived need to reduce congestion elsewhere. These basic concerns will not differ among most transportation alternatives studied.

The French avoided high capital costs and environmental opposition in building the TGV by using the existing line into and out of Paris. The population density of Western Europe indicates that the problems of building a new rail line between Paris-Lyon were made much easier by the relatively low density of population between the cities. In England, and elsewhere in Europe, choosing an acceptable alinement would be exceedingly difficult, if not impossible. In the United States, the NEC and portions of Los Angeles are as densely populated as much of England; Ohio and Florida are more similar to France (but without any cities on the Paris scale of population); Nevada has a far lower populaton density than anywhere in Europe.

In sum, assembly of urban land parcels in a line sufficiently straight to permit genuine high-speed rail service is a legally complicated and costly undertaking. The irony of the land-use issue is that high-speed rail promises to be most successful in corridors where there are many people to ride it, yet these very same densities make the establishment of new high-speed rail lines exceedingly difficult and costly.

Noise, Vibration, and Visual Barriers

Japan's bullet train, in operation nearly 20 years, initially produced severe noise and vibration due to the materials used in track construction. These problems have been mitigated for the most part by cushioning tracks on viaducts and erecting sound proof barriers along the right of way. The extent to which such problems exist and the measures necessary to satisfy residents of large urban areas through which the train would go probably depend on the type of high-speed rail system in question and the measures taken to overcome any problems. The noise generated by various rail systems tends to differ slightly due to the way it is measured.[8]

Any train traveling at high speed will induce vibrations, particularly on viaducts and bridges.

‘Current noise measurements for selected systems indicate the following:
- Amtrak AEM7 locomotives @ 108 mph —89dB @ 100 ft from track,
- TGV @ 160 mph—95 dB @ 82 ft from track, and
- Japanese National Railways (JNR) (on embankment) @ 130 mph—85 dB @ 62 ft from track.

Amtrak Specification #NL 77-8, IPEEP Report on SNCF, JNR Staff.

Maglev systems are theoretically quieter than high-speed rail. Noise levels of the West German maglev will be tested at Emsland.

In addition to noise, visual effects of viaducts and elevated track may also raise environmental concern and affect route designation. However, any transportation alternative is going to raise environmental questions, and the strength of specific environmental objections cannot be known without analysis on a corridor-specific basis.

INSTITUTIONAL FACTORS

Amtrak

Amtrak currently has statutory authority to provide intercity passenger rail service in the United States.[9] Although some questions exist about whether such authority extends only to routes over which Amtrak trains now operate or to any proposed route, implementation of high-speed passenger rail today cannot be accomplished without prior agreement with Amtrak.[10] If Amtrak is not the operator of the proposed high-speed system, a number of institutional questions must be addressed. Will high-speed service conflict with any Amtrak trains? How would a competing system affect Amtrak’s finances? Would the existence of profitable high-speed rail service in the United States put pressure on Amtrak to provide high-speed rail service in the corridors it serves, and what would the effect be?

Private Railroad Companies

A second institutional consideration is that most railroad track in America is owned by private railroads. Introducing high-speed rail in most corridors, therefore, would require some sort of lease/purchase agreement with existing owners. If the high-speed system requires a dedicated track, acquisition of an existing right-of-way may hinge on whether there is a practical alternative route to handle the freight now being carried on the line. Competitive reasons may also severely limit the degree to which private railroads would share their freight lines. It is possible, however, to work out some agreements. In some cases, lightly used or abandoned lines for the high-speed rail rights-of-way may provide an alternative to be explored. New York State, as an example, upgraded lightly used Conrail line from Class 4* to Class 6 at a cost of about $200,000 a mile.[11]

Local Governments

Where construction of a high-speed rail system can be shown to attract enough ridership, site-specific concerns will have to be taken into account by local governments as well as developers. For example, to make best use of their high-speed, trains should not make frequent stops. Local governments may base decisions to compete for a stop on whether the system is expected to be self-sufficient, whether demands will be made on them to improve the station surroundings, and on whether local development may occur as a result of a station. For example, parking lots large enough to permit riders to “park and ride” may be required before owners will agree to an intermediate stop. By the same token, if the system draws many riders, local governments and private entrepreneurs may wish to develop the area around the station.

[9]Rail Passenger Service Act of 1970.
[10]John D. Heffner, “The Legal Obstacles for Initiating Intercity Rail Passenger Service Outside Amtrak,” paper, Apr. 28, 1983.

*Class 4 track limits passenger and freight train speeds to 80 and 60 mph respectively.
[11]Information provided by Gordon Peters, New York State Department of Transportation.

In most instances in which high-speed rail may be contemplated, local transit is assumed necessary to feed riders into the intercity service, as illustrated in many European and Japanese cities. Proponents of the high-speed rail system in question may locate stations to maximize ridership for both systems. If local transit systems are inadequate, the potential of high-speed rail proposals may be reduced. Or, if demand for the high-speed intercity service is strong enough, there could be pressures on the city and the Federal Government to strengthen the local transit systems.

SOURCES OF FUNDING

Reaction to high-speed rail proposals also will depend on the sources of funding. Broadly speaking, there are four funding possibilities:

- Federal support,
- State support,
- private support, and
- a combination of private and public support (State or Federal).

Federal Support

Potential use of Federal money may range from direct subsidy to land grants or loan guarantees. Federal support of any kind raises a number of issues. Is the proposed system cost effective? If not, does use of Federal funds for high-speed rail fit into national priorities? Are there alternative options for service that will cost the public less? If Federal support is used for high-speed rail, how will that affect the financial situation of other modes and Amtrak?

Another issue likely to arise is the fairness of using Federal money to establish high-speed rail service in one or two locations or corridors and not on a broad national basis. Whether a consensus can be reached on such an issue probably will depend on how much Federal money is involved, and whether only an initial expense or a sustained subsidy is required. Also relevant is the willingness of a region in which the rail service is being contemplated to invest its own resources to ensure success, and the political support from the given region.

Federal money also could precipitate opposition by groups that stand to lose from the use of high-speed rail. Among these are proponents of traditional train service and competitors of high-speed rail. Not all rail advocates are proponents of high-speed rail. Some feel that the establishment of high-speed rail could lead to the decline of Amtrak and existing long-distance rail service. There is also a belief that if Federal investment were to occur, the logical next step is upgrading existing service. If Federal money is used, however, some worry that Amtrak's budget for existing service will be cut in proportion to Federal money spent on high-speed service or that, at the least, attention will be diverted from the broader question of national rail service.

Opposition to the use of Federal funds for high-speed rail is also likely to come from bus companies and airlines offering competing service. The bus companies have testified repeatedly in Amtrak hearings that they regard the subsidization of train service with Federal money to be anti-competitive and unfair. The airlines may feel likewise. On the other hand, Amtrak previously has argued that other transportation modes are subsidized, through infrastructure programs and the like. As previously indicated, recent Congressional Budget Office analysis show passenger rail receives greater subsidies than other intercity travel modes.

In short, the use of Federal money for high-speed rail raises three questions: 1) is the money being spent to best ensure an efficient national transportation system, 2) who should benefit from a corridor development if it is to be federally funded, and 3) is it in the long-term interests of the country to develop a high-speed rail irrespective of the short-term costs and possible subsidy?

State Support

Use of State money raises issues similar to that of Federal money but on a State level. If the proposition is not expected to pay for itself, one can certainly expect outcry from others competing for State funds.

Private Money

Use of private money presupposes that the high-speed rail venture is expected to be self-sufficient and operated for the benefit of investors in the project. If money for such a venture is to be raised in the private capital markets, the borrowing company will have to be a creditworthy. Even if the equity is financed by venture capitalists, there typically will be substantial amounts of debt which would be raised publicly or in private placements. In either situation, the creditworthiness of the company will be evaluated. Underwriters will have to certify that the prospectus is not unrealistic or misleading.

However a new venture is financed, any private group interested in providing high-speed rail service along routes Amtrak now operates must obtain a license from Amtrak. Amtrak has indicated that it is willing to grant a license only if the private group is willing to reimburse Amtrak for reduced passenger revenues attributable to competition from the new high-speed rail system.[12] Amtrak currently loses money on most of its routes. Its short-term avoidable costs are likely to increase with further loss of riders (unless service levels are decreased substantially or the route is dropped from Amtrak's route system).

[12] OTA interview with W. Graham Claytor, Jr., President of Amtrack, Feb. 10, 1983.