Chapter 4
GENERAL ASSUMPTIONS

The key assumptions affecting the results of this study fall into three categories: financial, economic, and transportation-related. This chapter presents all three groups of general assumptions.

FINANCIAL ASSUMPTIONS

In assessing the potential of HSGT, the study made a series of financial assumptions consistent with Federal practices. While internal financial thresholds may differ for each of the partners in any HSGT project, the following assumptions provide a consistent means of comparing the various cases, technologies, and illustrative corridors:

- **Planning period—**This is the period from the year 2000[1] to 2040 in which operations and continuing investments occur.
- **Monetary values—**Unless otherwise labeled, monetary values are 1993 constant dollars and are present values as of the beginning of the assumed first year of operation in 2000.
- **Discount rate—**The study applied a ten percent discount rate (real) to the revenues, operating expenses, and continuing investments projected for the HSGT entity, which is presumed to be a private firm.[2] Initial investments, assumed to pertain to the public sector, incorporate the Office of Management and Budget's discount rate of seven percent (real), as do the monetized values of all benefits except for those measured by system revenues.
- **Salvage value—**No salvage value (residual value of the investment at the end of 2040) was added to the cases' present value.
- **Construction period—**This period consists of the three years prior to 2000 (two years for vehicles). Initial construction activities were assumed to be evenly spread over the construction period, and the reported investments are the present values as of the year 2000 of the costs incurred in prior years (i.e., they are inflated at a rate of seven percent from the year of incurrence).

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[1] The year 2000 was used for analytical purposes only, in order to keep the cases comparable; achievable startup dates would vary widely by technology and corridor.

[2] See also under "The HSGT Operating Entity," page 4-12.

- **Cash basis—**The projections deal with cash inflows and outflows and treat plant and equipment replacements as continuing investments in the year incurred. This treatment recognizes phenomena of the type that would have been addressed in an annual allowance for depreciation had such an allowance been included in operating expenses.
- **Taxes—**The study assumed that the HSGT entity, as a member of a private/public partnership, would not be liable for property taxes on HSGT facilities and equipment, and would have no requirement for cash payment of income taxes related to its HSGT operations during the study period.

NATIONAL TRENDS

Population and income growth serve as the two key exogenous demographic parameters shaping the demand for transportation. This study used forecasts from the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce on a metropolitan-area-specific rather than a national-average basis to best reflect the demographics of each corridor. Underlying these metropolitan-area forecasts, however, are the BEA forecasts for nationwide annual compounded growth rates, as shown in Table 4-1.

Table 4-1
Underlying Population and Income Growth Rates from BEA

Time period	Population growth rate[3]	Income growth rate[4]
1993-2000	0.99%	2.27%
2000-2010	0.84%	1.92%
2010-2020	0.82%	1.60%
2020-2030	0.71%	1.54%
2030-2040	0.60%	1.47%

[3] Population growth rate derived from: Bureau of Economic Analysis, *BEA Regional Projections to 2045*, Diskette #61-95-40-201, July 1995; Bureau of the Census, *Population Projections of the United States, by Age, Sex, Race, and Hispanic Origin: 1993-2050*, November 1993, p. xii.
[4] Income growth rate derived using total personal income data from Bureau of Economic Analysis, op. cit.

THE TRANSPORTATION ENVIRONMENT

This section reviews the scope of intercity passenger transportation covered in the study and characterizes the established non-HSGT modes as they are envisioned during the planning period.

Scope of Transportation

In analyzing transportation by all modes in the illustrative corridors, this study examined city-pair markets in which HSGT could compete with air and/or auto on door-to-door travel time. Hence, the study concentrated primarily on city-pairs approximately 100 to 500 miles in length. The data base for the study therefore omitted trips under 50 miles as well as trips restricted to a single metropolitan statistical area (MSA) or consolidated metropolitan statistical area (CMSA); such trips would have more in common with mass transit than with intercity travel, or would be so heavily weighted toward access rather than line-haul time as to dilute the time savings effected by HSGT. In short, this is an intercity, not a transit study.

Trends in Other Modes

The projected shape of the transportation world in the absence of HSGT (a condition termed "baseline") profoundly affected the study results. This section accordingly summarizes the assumed and derived trends in the intercity passenger transport world.

Fuel Availability and Price

Petroleum-based fuels were assumed to be in constant supply over the projection period: no repetition of the gasoline shortages of 1973 and 1979 was foreseen. Moreover, real fuel prices were assumed to remain constant through 2040, although the Department of Energy recently predicted increases in energy fuel prices[5] due to shrinking resources, capital investments in more efficient technology, and more stringent environmental regulations. Any assumed increases in energy prices would have favorably affected the projections for HSGT, both by raising the fare levels of competing, energy-intensive modes and by giving most HSGT options a relative advantage in unit operating expenses for energy. Instead of showing improved HSGT results on the basis of a world commodity

[5] Energy Information Administration, *Annual Energy Outlook 1994: With Projections to 2010*, DOE/EIA-0383(94), pp. 2 and 30-39. The crude oil prices are expected to have an average annual growth rate of 1 percent; natural gas prices are expected to rise at an annual rate of 3.3 percent; and coal prices increase at a moderate annual rate of 1 percent. The electricity price is forecast to increase at an average annual rate of 0.3 percent.

market that has been unpredictable in the past,[6] this study found it more judicious to assume an unchanging energy environment.

Fares and Perceived Costs

Fares for all existing modes (perceived costs in the case of auto) were assumed to remain constant, in real terms, over the planning period. Thus, the projections in this report do not incorporate the effects of "fare wars"—characterized by marked fluctuations in tariffs and predatory pricing—that might occur among modes upon the introduction of HSGT service in a given corridor.[7]

Fares for public modes reflected a statistical analysis of actual 1993 traffic records, which yielded typical fares for business and non-business trip purposes. For auto, the study assigned a higher perceived cost to business travel ($0.16 per passenger-mile) than to non-business travel ($0.08 per passenger-mile). The former reflected the full cost of auto ownership (including depreciation and insurance), while the latter treated intercity travel as an incremental "out-of-pocket" expense and omitted ownership costs.

Frequencies

Frequencies for existing modes were assumed to grow at the following rates per decade:

Mode:	**Air**	**Auto**	**Conventional rail**	**Bus**
10-year rate of growth:	Based on traffic growth less any diversions to HSGT	Not applicable (infinite frequency)	10%	10%

Travel Times

With the exception of the congestion and capacity effects described below, trip times in the existing modes were assumed to remain constant over the planning period.

Growth in Demand

Table 4-2 shows the projected annual growth rates, by period, in baseline travel demand for the existing modes. These are averages, across all the illustrative corridors, of growth rates developed for this study. Comparing the baseline growth rates with available

[6] Forecasters failed to predict the oil crisis of the 1970s, for example.
[7] Chapter 8 contains a sensitivity analysis and other information on the extent of low-fare air service.

FAA and FHWA forecasts, Table 4-3 and Table 4-4 demonstrate that this analysis incorporates much less growth in other modes than is foreseen nationwide by the relevant agencies. For example, assumed air traffic growth to the year 2000 is about one third less than FAA's projection, and assumed auto growth is about one quarter less than FHWA's.

Table 4-2
Average Baseline Growth Projections for Existing Modes in CFS Corridors

Period	Projected Annual Growth Rates by Mode in Each "Decennial" Period				
	Air O/D	**Air Transfer**	**Auto**	**Rail**	**Bus**
1993-2000	2.36%	2.06%	1.85%	2.03%	1.79%
2000-2010	2.23%	2.23%	1.85%	1.96%	1.90%
2010-2020	1.83%	1.86%	1.56%	1.67%	1.58%
2020-2030	1.87%	1.90%	1.58%	1.72%	1.59%
2030-2040	1.87%	1.90%	1.58%	1.72%	1.59%

Table 4-3
Comparison of Available FAA Forecasts
With Air Baseline
(Average Annual Growth Rates During Period)

Period	Air Baseline for This Study[8]	FAA Nationwide[9]
1993-2000	2.36%	3.5%
2000-2010	2.23%	2.9%
2010-2020	1.83%	2.3%
2020-2030	1.87%	—
2030-2040	1.87%	—

Table 4-4
Comparison of Available FHWA Forecasts
With Auto Baseline
(Average Annual Growth Rates During Period)

Period	Auto Baseline for This Study[10]	FHWA Nationwide[11]
1993-2000	1.85%	2.5%
2000-2010	1.85%	—
2010-2020	1.56%	—
2020-2030	1.58%	—
2030-2040	1.58%	—

[8] This is the average growth in air origin/destination traffic within the illustrative corridors for this study.
[9] Derived from Federal Aviation Administration, *FAA Aviation Forecasts, Fiscal Years 1994-2005*, FAA-APO-94-1, March 1994, p. I-9; Office of Aviation Policy, Plans and Management Analysis, *FAA Long-Range Aviation Forecasts: Fiscal Years 2005-2020*, FAA-APO-94-7, July 1994, p. 9.
[10] This is the average growth in auto intercity traffic within the illustrative corridors for this study.
[11] Forecast using total vehicle miles traveled. Data from: Report of the Secretary of Transportation to the U.S. Congress, *The Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance*, 1993, p. 158.

Congestion and Capacity Effects

As demonstrated in Chapter 2, the air and auto modes in recent decades have exhibited inexorably growing demand, with which capacity has not kept pace. In projecting conditions for air and auto, this study has assumed that, although some of the capacity additions identified by the Department for other modes[12] will come about, discrepancies between travel volumes and infrastructure growth will continue to widen, with some congestion-driven increases in automobile trip times, urban access times to stations of all public modes (including HSGT itself), and air schedules. Delay estimates were developed for each Metropolitan Statistical Area or Consolidated Metropolitan Statistical Area on the basis of site-specific highway congestion[13] and airport studies. In addition to affecting somewhat the characteristics of the various modes for demand estimation purposes,[14] the projected increases in auto and air congestion provided a starting point for estimating public benefits of HSGT (see Chapter 6).

HSGT System Concept Assumptions

This section describes the technological, operational, fare-setting, and institutional assumptions for the HSGT systems modeled in the study.

Technologies

Vehicles and Performance

Table 4-5 presents the assumed specifications for the eight technological options already enumerated in Chapter 3.

Three main categories of motive power were assumed: non-electrified,[15] electrified,[16] and linear electric (Maglev) propulsion. The study assumed that non-electrified Accelerail technologies through 125F would use Diesel locomotives.[17]

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[12] Federal Aviation Administration, *1994 Aviation Capacity Enhancement Plan*, DOT/FAA/ASC-94-1, October 1994, pp. 7-1 to 7-4; Report of the Secretary of Transportation to the U.S. Congress, *The Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance*, Chapters 3 and 4.
[13] Texas Transportation Institute (TTI), *Trends in Urban Roadway Congestion—1982 to 1991, Volume 1: Annual Report*, Research Report 1131-6, College Station: TTI, September 1994.
[14] While altering total trip times, the recognition of congestion effects over the planning period did not significantly change the relative competitive positions of the modes in key city pairs.
[15] That is, the prime energy source is on the train (rather than at an off-train electric generating station). Since the prime mover is an on-board **fossil**-fueled heat engine, these non-electrified options are designated as "F" in speed regimes for which electrified ("E") options are also studied.
[16] That is, powered by a remote generating station.
[17] In reality, Diesel locomotives ordinarily transfer their power to the axles by means of electricity (hence the more accurate term "Diesel-electric"), and gas turbine engines can use a similar means of power transfer.

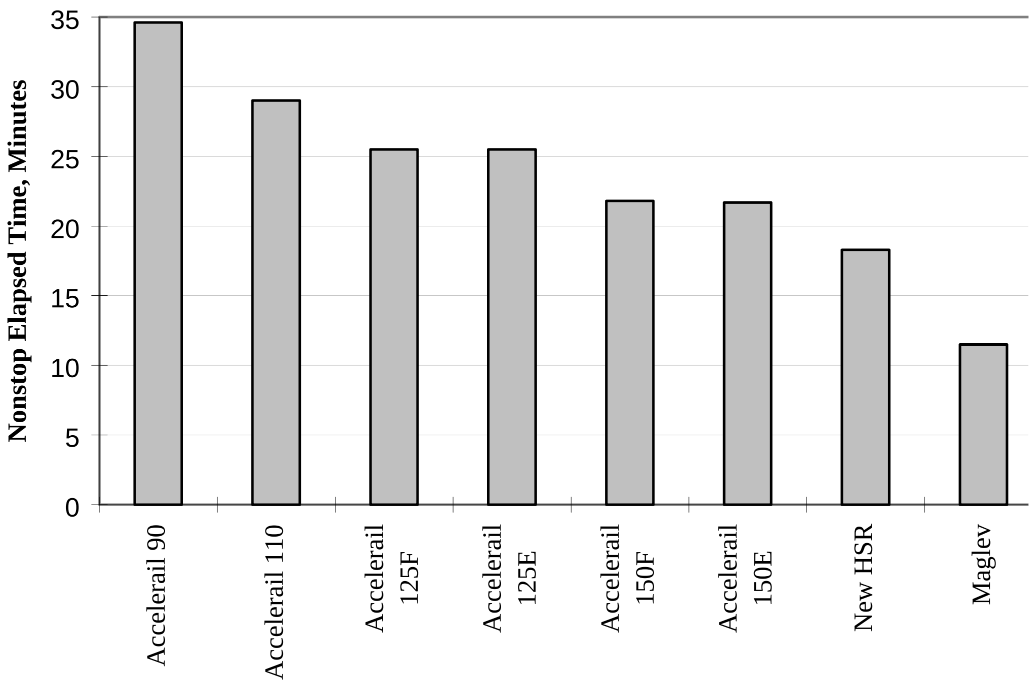
Table 4-5
Summary of Technologies

Technology (Top Speed, Propulsion, Horsepower (hp))	Con-sist[18]	Weight	Seats	Weight/seat	Hp/ton	Acceleration[19]	Comments[20]
Accelerail							
90 (Non-Electrified) 3500 hp	1-4	346 ton 1-4 trainset (130 ton locomotive)	264	1.31 ton/seat	10.1	0-90 2.7 min.	Based on P-40 (AMD103) with X-2000 type Coaches
110 (Non-Electrified) 4000 hp (min.)	1-4	346 ton 1-4 trainset (130 ton locomotive)	264	1.31 ton/seat	11.6	0-110 4.0 min.	Based on modified Diesel with X-2000 type Coaches
125F (Non-Electrified) 5200 hp (min.)	1-4	326 ton 1-4 trainset (110 ton locomotive)	264	1.23 ton/seat	16.0	0-125 3.88 min.	Based on advanced Diesel (110t) with X-2000 type coach
125E (Electrified) 7000 hp/locomotive	1-4	316 ton 1-4 trainset (100 ton locomotive)	264	1.2 ton/seat	22.2	0-125 2.7 min.	Based on AEM-7 with X-2000 type Coaches
150F (Non-Electrified) 7000 hp/locomotive	1-4	316 ton 1-4 trainset (100 ton locomotive)	264	1.2 ton/seat	22.2	0-150 4.1 min.	Based on Advanced Turbo/Diesel Flywheel combination
150E (Electrified) 7200 hp/locomotive	1-4	306 ton 1-4 trainset (90 ton locomotive)	264	1.16 ton/seat	23.5	0-150 2.9 min.	Based on improved AEM-7 with X-2000 type Coaches
New HSR							
200 (Electrified) [21] 6000 hp/power car	1-8-1 (1-6-1)	460 ton 1-8-1 (1-6-1 390t) (73 ton power car)	388 284	1.19 ton/seat 1.37 ton/seat	26.1 30.8	0-200 5.7 min.	Based on TGV-A 1-8-1
Maglev							
300 (Maglev—Linear electric) [22] 12000 hp/car	2 car 4 car	45 ton nose (65/85 seats) 45 ton middle (105 seats)	150 325	0.6 ton/seat (2) 0.5 ton/seat (4)	150 150	0-300 1.5 min.	Based on U.S. Maglev with ride comfort limit 0.16g acceleration

[18] "1-4" means one locomotive (or power car) and 4 coaches.
[19] In number of minutes from zero to top speed in miles per hour.
[20] References to existing equipment are solely for the purpose of conveying to readers the generic type of vehicles envisioned and do not imply endorsement of specific products or manufacturers. It is assumed that all equipment actually operated over HSGT corridors will fully comply with all then-applicable Federal safety regulations.
[21] The choice between the 1-8-1 and the 1-6-1 consist was made on a corridor-specific basis reflecting demand, load factors, and frequencies.
[22] The choice between the 2-and 4-car consist was made on a corridor-specific basis reflecting demand, load factors, and frequencies.

Accelerail 150F was posited as a performance goal for technology development in the Federal Railroad Administration's Next-Generation High-Speed Rail Program, and as such could make use of a variety of motive power innovations now under investigation. New HSR and electrified Accelerail options would require the construction of catenaries (overhead wires) and support systems to distribute power to the HSGT trains. Maglev would operate via linear electric motors providing noncontacting propulsion and would require its own guideway system.

Figure 4-1
Nonstop Elapsed Time by Technology Over a 50-Mile Straight Course



Thus, the six Accelerail options, New HSR, and Maglev represent a gradual performance progression from currently available Diesel and electric locomotives to advanced prime mover and electric motive power, and to the 300 mph performance of linear induction motors and frictionless magnetic suspension. Portraying this progression, Figure 4-1 shows that Maglev completes a 50-mile simulated course (nonstop on straight track) in one-third the trip time of Accelerail 90.

Alignments and Station Locations

To create as realistic a scenario as possible for HSGT service, the study made general assumptions about alignments and station locations which allowed for evaluation of HSGT from a national perspective.[23]

With respect to alignments:

- **Accelerail** options were assumed to follow existing Amtrak routes or, if no direct Amtrak route presently exists, the most direct freight railroad mainline.
- Except in major urban areas where upgraded freight or commuter railroads could provide expeditious access to terminals, **New HSR** was provided with new alignments that would be as direct as possible within the constraints of cost-effectiveness. In the New York City area, with its ever-burgeoning commuter demands over existing routes, completely new alignments were posited.[24]
- **Maglev** was assumed to occupy new alignments that would be as direct as possible within the constraints of cost-effectiveness.

Obviously, future detailed studies of individual corridors will address a wider variety of potential alignments than this nationwide study, with its many cases, could treat. From such advanced work, better alignment possibilities will doubtless emerge. With respect to Accelerail, Amtrak's existing route structure may not everywhere provide the optimal available base for future passenger operations. Moreover, for each New HSR and Maglev corridor, multiple analytical iterations—involving alternative routes, trip times, demands, revenues, and costs—may be prerequisite to fully informed decisions on the economics of railway location.

With regard to station locations:

- Each major city was assumed to have a station in the **city center**, except where alignment considerations dictated otherwise (e.g., Albany/ Rensselaer was retained in the Accelerail options for the Empire Corridor).

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[23] Site-specific planning for HSGT systems will, of course, reflect detailed knowledge of regional, State, and local facts, needs, and concerns that were beyond the scope of this report.
[24] This, too, would be subject to very complex and expensive study at the local level.

- Additional **"Beltway"-type stations** were provided in major metropolitan areas to reduce access times and expand HSGT's market reach to the suburbs.
- For analytical purposes only, the study eliminated existing stations that served fewer than 20,000 passengers per year. Certain other stations were assumed to be consolidated with larger, nearby stations that could provide adequate service. The ultimate decisions on station locations will, of course, rest with the private/public HSGT partnerships.
- In accordance with the intent of ISTEA to create a seamless transportation network, the study actively sought to incorporate new airport stations along corridors. New HSR and Maglev alignments were specifically designed to serve important airports wherever HSGT trip-time goals permitted; Accelerail cases also included airport stations wherever existing rail alignments passed through or adjacent to airport properties.[25]

Operating Assumptions

Line-haul trip times reflect the simulated performance of the technological options, as specified in Table 4-5, over the applicable alignments for each illustrative corridor. Trip times for origin-destination markets also reflect dwell time for stops at intermediate points (adjusted for a likely service mix of non-stop or limited stop trains), and a five percent pad commonly used in developing transportation schedules to compensate for operational uncertainties, disruptions, and the like. Line-haul times for HSGT were assumed to show no change over the planning period.

Train frequencies resulted from iteration: they were specified as inputs to the demand model, compared with ridership results throughout the planning period, and adjusted to adhere to an assumed maximum 60 percent load factor[26] for the busiest link in each corridor. Under no circumstances, however, were departure frequencies allowed to fall below six daily.

Express service was assumed to be provided where warranted, particularly in the highest-density markets. Thus, not all trains would stop at all stations.

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[25] In the Chicago Hub, O'Hare Airport would be such an important traffic generator that Accelerail service was assumed to extend to it from both Detroit and St. Louis, through Union Station.
[26] This 60 percent would be an average over the entire year and acknowledges that the busiest link will be saturated at peak times.

Turnaround times. The minimum turnaround time at terminals for trainsets in active service was assumed to be a half-hour.

Fare-Setting

HSGT fares were normally set to maximize net revenue to the HSGT operator. For major city-pair markets in each corridor, the analysis identified HSGT's prime competitor mode (the potential source of most HSGT revenues), set HSGT fares as percentages of the prime competitor's fares (e.g., "75 percent of air"), developed demand results for a spectrum of possible fare levels, and selected the fare that would provide the highest operating surplus. Fares for smaller markets were derived from those for major markets.

In shorter rail corridors (under 150 miles) in which Amtrak currently provides relatively high frequencies and generates significant rail traffic,[27] conventional rail would be the prime "competitor"; normal fare-setting procedures would have raised HSGT fares to more than double the 1993 fare levels in real terms. While future revenues would have been maximized, ridership would have fallen below the expected growth for conventional Amtrak service. It is unlikely that State and local governments would consent to invest in options that more than double fares and carry fewer riders than Amtrak does today. As a result, in these few markets, this study capped HSGT fares at 180 percent of Amtrak's 1993 fares.

Table 4-6 summarizes the basic fare-setting assumptions by corridor and technology. As with the other modes, [28] HSGT fares were assumed to remain constant throughout the planning period.

Institutional Assumptions

Some of the HSGT options—particularly those involving Accelerail-type technologies—may entail ownership/operation structures with more than one participant. For the sake of simplicity, the study characterized the two main participants[29] as an independent HSGT entity and a generic, large (Class I) freight railroad. This section characterizes the projected HSGT entity and describes the assumed relationships between the owning/operating partners.

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[27] For example, San Diego-Los Angeles.
[28] See under "Fares and Perceived Costs," page 4-4.
[29] This institutional categorization deals with the operating entities and omits the important relationships with the public sponsors and other public and private partners in HSGT.

Table 4-6
Fare Setting for the HSGT Cases

Corridor	**Fares by Option Expressed as Percentages of Primary Competing Mode** (R = Rail, A = Air) (Shading indicates that the case was not analyzed for inclusion in this report.)							
	Accelerail 90	**Accelerail 110**	**Accelerail 125F**	**Accelerail 125E**	**Accelerail 150F**	**Accelerail 150E**	**New HSR**	**Maglev**
California North/South	85 (A)	85 (A)	85 (A)	85 (A)	85 (A)	85 (A)	90 (A)	110 (A)
California South	150 (R)	155 (R)	155 (R)	155 (R)			160 (R)	165 (R)
Chicago Hub Network	same as spokes (shown below)							
Chicago - Detroit	145 (R)	170 (R)	70 (A)	70 (A)	75 (A)	75 (A)	95 (A)	130 (A)
Chicago - St. Louis	125 (R)	140 (R)	80 (A)	80 (A)	80 (A)	80 (A)	95 (A)	125 (A)
Florida	130 (R)	140 (R)	70 (A)	70 (A)			85 (A)	105 (A)
Northeast Corridor							70 (A)	75 (A)
Pacific Northwest Corridor	45 (A)	55 (A)	55 (A)	55 (A)			70 (A)	85 (A)
Texas Triangle	75 (A)	75 (A)	75 (A)	75 (A)	80 (A)	80 (A)	95 (A)	125 (A)
Empire Corridor [30]			30 (A)				45 (A)	45 (A)
Southeast Corridor[30]		30 (A)					45 (A)	45 (A)

The HSGT Operating Entity

The entity that operates HSGT services was assumed to be a private, for-profit concern specifically set up to efficiently and effectively manage a single corridor—or group of related corridors[31]—with the focused management, marketing prowess, operational responsiveness, efficient procedures, and customer-service orientation characteristic of a very successful, entrepreneurial small business. In reality, such an entity could be a highly independent, market-oriented, compact, aggressive subsidiary or business unit of a larger private or mixed private/public company (such as Amtrak), or a State, regional, or local government-sponsored authority.

[30] Treated as an extension of the Northeast Corridor; see Chapter 8. Percentages shown are for trips wholly within the extensions; trips involving Northeast Corridor service will carry higher percentages.
[31] E.g., the Chicago Hub network as considered in this report.

Owner/Operator Paradigms

To best reflect the scope of the HSGT entity's ownership and operating responsibilities, the study developed—and applied to identifiable segments of each corridor—three basic institutional paradigms[32]:

- "TENANT"—The entire segment is owned and maintained by the freight railroad; the HSGT entity, as tenant, reimburses the landlord railroad for the incremental expenses occasioned by the presence of HSGT, plus a management fee.[33] This is the most common paradigm for the Accelerail options.
- "LANDLORD"—The HSGT entity owns and maintains the track in the segment, charging the freight railroad (or a commuter rail service) for its use. In this study, the "landlord" paradigm applies only where a route segment currently belongs to an intercity railroad passenger operator.[34]
- "NEW RIGHT-OF-WAY"—The entire segment is owned and maintained by HSGT for its exclusive use. This paradigm applies to Maglev lines in their entirely, and to the bulk of New HSR route mileage.[35]

Cooperation with Freight Railroads

Successful implementation of the "tenant" paradigm requires, and this report assumes, the cooperation of the freight railroad landlord. The Department recognizes that the freight railroads—in pursuing their self-evident business interests, which serve the Nation's critical freight transportation needs—have thus far adopted widely varying policies toward HSGT development.[36] However, the potential benefits of HSGT to freight railroads in site-specific instances, and the current cooperation of the railroad companies in development of the Southeast and Pacific Northwest corridors, offer both theoretical and practical justification for assuming carrier cooperation in the Accelerail options.

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[32] The operating expense model applies these paradigms on a route segment basis. Thus, for example, the Chicago-Detroit corridor, now partially owned by Amtrak, has both a "Tenant" and a "Landlord" segment.

[33] See Chapter 5. The main incremental expenses are maintenance of way and dispatching. The management fee is 20 percent on labor and 3 percent on materials.

[34] For example, in the Chicago—Detroit corridor, the "landlord" paradigm applies to the segment currently owned by Amtrak and the "tenant" paradigm applies elsewhere.

[35] But see earlier in this chapter regarding assumptions for New HSR approaches to major cities.

[36] See, for example, Daniel L. Roth, "Incremental High-Speed Rail Issues," in *Transportation Quarterly*, Vol. 49, No. 2, Spring 1995, p. 66. These carrier views were expressed at a November 1994 FRA public meeting on this study, as well as at subsequent conferences on freight railroads and HSGT sponsored by *Railway Age.*

Accordingly, the study includes the following assumptions affecting the relationships between HSGT entities and freight railroads:

- **Assumption: Liability.** Currently, liability represents a challenge to be met in HSGT development. An equitable assignment of responsibility for HSGT liability claims will be a prerequisite to effecting the "tenant"-type institutional paradigm. The study assumed that these liability issues would be resolved and estimated the HSGT entity's liability expenses on a speed-adjusted passenger-mile basis reflecting the experience of other passenger transport providers. It should be noted that this is an extremely controversial issue with freight railroads and this assumption may underestimate final costs.
- **Assumption: Right-of-way.** The analysis assumed that existing freight railroad rights-of-way would remain the property of the current owners and that access to these rights-of-way would be available for Accelerail (and for New HSR where necessary).[37]
- **Assumption: Investment programs.** The HSGT entity and its non-railroad partners would bear the entire capital costs of the requisite improvements to the freight railroad.[38] These improvements would include sufficient capacity to accommodate reliably both freight traffic (including a one-fifth increase in train frequencies) and the superimposed HSGT traffic.

  In addition, as described in Chapter 5, the HSGT project would include the capital cost of making an assumed proportion of the freight railroad's locomotive fleet compatible with the train control system. Any differences between the costs assumed herein for locomotive compatibility, those identified by the railroad, and those which the other HSGT partners would be willing to absorb, would fall under the rubric of items left to negotiation (see below).
- **Assumption: Payments to the freight railroad.** The payment for incremental purchased services (described above under the "tenant"

[37] Although a State may, in specific instances, wish to negotiate the purchase of Accelerail right-of-way from a willing freight railroad, the case studies in this report did not incorporate such an eventuality.
[38] This assumption prevails even though the freight railroad operation may also stand to gain from some HSGT project elements. As noted below, any tangible benefits of Accelerail to the freight railroad would inevitably enter into the latter's partnership negotiations and financial arrangements with the public HSGT sponsors and the HSGT entity.

paradigm) would be the **only** major operating expense due from the HSGT entity to the freight railroad landlord.

- **Items left to negotiation.** This nationwide analysis relegated a number of items to detailed negotiations between the railroads, the HSGT entities, and other project partners. Examples of these items include:
  - — Valuation of the benefits to the railroad from construction of HSGT improvements;
  - — Resolution of any differences over the responsibility for freight locomotive fleet compatibility with HSGT;
  - — Any trackage rights payments (i.e., rentals and profits over and above purchased services and management fees);
  - — Any line purchase or relocation costs resulting from detailed studies and negotiations;
  - — Any incentive payments for on-time performance (in keeping with Amtrak precedents);
  - — Resolution mechanisms for operating conflicts; and
  - — Valuation of fully allocated costs associated with increased usage of freight infrastructure.