

Chapter 9

CONCLUSIONS

The study results suggest that States should consider HSGT along with other options for improving intercity passenger transportation.

SYSTEM REQUIREMENTS AND PERFORMANCE

HSGT can cost from less than \$2 million to \$50 million per route-mile to build. The less expensive options—upgraded existing railroads with 90-150 mph maximum speeds—can, in some corridors, represent affordable travel improvements that would expand the range of transportation choices. With top speeds up to 200-300 mph, the costlier options can provide very fast, reliable, and comfortable transportation service, as in a Maglev timing of just over an hour between midtown Manhattan and downtown Boston.

In the design and application of all HSGT technologies, the Department regards safety as paramount. Evolving safety research and regulation could thus influence the capital cost structure for Accelerail, New HSR, and Maglev. Similarly, research and development in other facets of railroad and Maglev system design could reduce the investment levels for HSGT technologies. As the effects of these regulatory advances and technology development efforts become known, they will enter at the State level into the conceptual and detailed design of specific HSGT infrastructure and equipment investments.

HSGT could develop appreciable ridership. For example, by the year 2020 in the most heavily trafficked corridors (California North/South and the Northeast Corridor), New HSR and Maglev could exceed by as much as a factor of four Amtrak's current Northeast Corridor travel volumes. Likewise, Accelerail in California, the Chicago Hub Network, and Texas could approach or exceed existing Northeast Corridor patronage levels by 2020.

Because HSGT is capital-intensive, requiring a significant fixed investment to connect specific city-pairs, its success calls for the highest possible concentration of traffic and revenue over as few route-miles as possible, so as to raise travel volumes and lower unit costs. The study results bear out this fundamental dictum of HSGT planning: the Chicago Hub Network is greater than its parts, in sum or individually, due to more intensive and efficient use of the route structure¹; in Texas, New HSR performs much better than the less-costly but twice-as-lengthy Accelerail 150; and the Southeast and Empire Corridor

¹ For example, the Chicago Hub Network is projected to generate traffic levels that are one third to one half again as high as the sum of the individual corridors between Chicago and Detroit, Milwaukee, and St. Louis. Furthermore, the Chicago Hub Accelerail 110 case would cover about two-fifths of its initial investment requirement from operating surpluses—double the coverage in the Detroit and St. Louis corridors considered separately.

projections profit from more intensive use of the Northeast Corridor.² Thus route alignment, networking, and extension options merit careful consideration in detailed corridor studies.

In no corridor is HSGT projected to be commercially feasible, i.e., cover both its capital and operating costs. However, in most of the illustrative cases, HSGT is projected to function on a self-sustaining basis—independent of public subsidies—once the initial investment is in place and paid for. This finding assumes the cooperation of the freight railroads (for Accelerail cases primarily), and the HSGT entity’s ability to achieve a more efficient operation than that which characterized Amtrak prior to its recent restructuring.

Beyond covering future operating and maintenance expenses and continuing investment needs, revenues in most of the illustrative cases could cover a portion of the initial investment. For most corridors, the percentage of the investment that can be so covered peaks with the Accelerail 110 option. Still, cases across the technological spectrum show promise of financing, from operations, noticeable portions (one fifth to one half) of their initial capital costs. In this regard, Accelerail 90 in California South, and New High-Speed Rail and Maglev in the Northeast Corridor, show the best performance: their surpluses are projected to cover, respectively, more than two-fifths, two-fifths, and one-half of their initial investment costs at the normative discount rates applied in this report.³ Even higher coverage rates characterize the projections for Accelerail in the Southeast and Empire extensions of the Northeast Corridor, as described in Chapter 8.

Although the projections of system performance do not meet the traditional private-sector criterion for “commercial feasibility,”⁴ they may provide a basis for private/public partnerships depending on the size of the initial investment required, detailed cash flow and other analyses, the financing capacities of the prospective partners, and the impetus afforded the partners by each project’s perceived benefits and costs.

COMPARISON OF BENEFITS AND COSTS

Commercial feasibility in the traditional sense may provide too narrow a perspective on the worth of HSGT. Thus, in addition to demonstrating operating surpluses, an HSGT case is deemed to have partnership potential only if its total benefits also exceed its total costs. Moreover, in performing definitive feasibility studies of HSGT systems, policy makers and the public may regard it as essential to compare not just total benefits with total costs, but also the benefits and costs accruing to the public at large. The report, therefore,

² Further detailed studies would be necessary to confirm the applicability of this principle in specific locations.

³ See Figure 7-24.

⁴ The sole possible exception is Accelerail 110 in the Southeast Corridor, for reasons explained in Chapter 8. Much further examination would be required to verify preliminary suggestions that such an extension might be self-financing when its effects on Northeast Corridor operating economics are fully recognized.

broadens the evaluation of HSGT by comparing total benefits with total costs, and benefits to the public at large with publicly-borne costs.

HSGT's total benefits exceed total costs in most of the illustrative cases. Each HSGT technology would have one or more corridors that provide a favorable ratio of total benefits to total costs: New HSR, for example, is projected to have partnership potential⁵ in four of nine applicable illustrative corridors,⁶ and Maglev in two of nine. On the basis of total costs and benefits, each illustrative corridor would have one or more HSGT technologies that would meet the threshold conditions for partnership potential.⁷ The more heavily traveled corridors would generally show partnership potential over a broader spectrum of technologies.

HSGT's projected benefits to the public at large are less than its publicly-borne costs in some three-quarters of the illustrative cases. These shortfalls demonstrate the extent to which HSGT may be regarded as providing, in effect, for the subsidization of HSGT system users. Publicly-borne costs are projected to exceed benefits to the public at large in all corridors for Maglev, New HSR, and Accelerail 150. Benefits to the public at large consistently exceed costs only for Accelerail 90 and 110. However, cases in which public benefits do not exceed public costs need not be ruled out for consideration by States or private concerns. In such cases, prospective transfer effects, mobility concerns, and environmental factors may justify further consideration, even though such impacts did not enter into the benefit/cost calculation for this analysis.⁸

In a given corridor, the less expensive Accelerail technologies, relying on upgraded existing rail lines and freight railroad cooperation, could typically provide higher ratios of benefits to costs (both in total and for the public) than New HSR and Maglev. Accelerail's potential for HSGT at a modest initial investment cost validates the Department's Next-

⁵See Chapter 3.

⁶That is, corridors other than the extensions to the Northeast Corridor analyzed in Chapter 8.

⁷As defined in this report, "partnership potential" is the apparent capacity of an HSGT corridor to draw the private and public sectors together in planning, negotiations, and, conceivably, project implementation. To exhibit partnership potential, the projections for an HSGT technology in a particular corridor must satisfy at least the following two conditions: First, private enterprise must be able to run the corridor—once built and paid for—as a completely self-sustaining entity; in other words, the case must generate a projected surplus after continuing investments. Second, the total benefits of an HSGT corridor must equal or exceed its total costs. This report uses "partnership potential" as an indicator of the aggregate financial and economic impacts of HSGT alternatives in a set of illustrative corridors. Detailed State studies of individual corridors would benefit from additional evaluation measures as well as site-specific investigations and data. Thus, while "partnership potential" may offer useful insights in assessing the likelihood of HSGT development by State and local governments and their private partners, it does not constitute an express or implied criterion for Federal approval or funding. For further particulars on "partnership potential," the reader is referred to Chapters 3 and 6.

⁸See Chapter 6.

Generation High-Speed Rail technology development program—which supports use of existing railroads—and confirms several States’ decisions to implement Accelerail options.

IMPORTANCE OF PARTNERSHIPS AND STATE ROLES

Successful private/public partnerships are essential to the construction and implementation of all HSGT systems. While necessarily varying among corridors and technologies, the potential for such partnerships will be strongest where self-sustaining operations can attract a private HSGT entity, where the benefits provide the State with a convincing rationale for the public investment, and where a State regards HSGT as a preferred approach to enhancing intercity travel mobility in an intermodal setting.

The States have specialized knowledge of local conditions and priorities, and the very nature of corridor planning also calls for detailed consideration of a full range of transport alternatives from a State and local perspective. Where public policy considerations dictate, States may also wish to pursue an examination of the incidence of benefits and costs in conjunction with their detailed corridor studies.