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HIGH-SPEED RAIL IN THE MIDWEST UNITED STATES: POTENTIAL FOR SUCCESS

# HIGH-SPEED RAIL IN THE MIDWEST UNITED STATES: POTENTIAL FOR SUCCESS

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## Abstract

This paper assesses the potential for successful provision of high-speed rail (HSR) in the Midwestern United States, and concludes by identifying major lessons that other states and regions in the United States interested in developing HSR can draw from Midwest's experience. These lessons include development of a vision for national HSR; identification of a dedicated federal source of funding for HSR; securing strong local political leadership; involvement of private railroads; development of consensus on the benefits of HSR; ensuring that the state and local governments are ready to commit their share; and development of synergistic relationships with the airline, and local transit companies.

**Keywords:** High Speed Rail; Midwestern USA, Incremental HSR; Chicago HUB

## 1. Introduction

In general, the development of high speed rail (HSR) has taken two approaches – namely, new HSR, and incremental HSR. While the new HSR typically is on new right-of-ways (ROW) and aims at speeds in excess of 320 kilometers per hour, the incremental HSR utilizes existing ROW to incrementally increase the train speeds to about 240 kilometers per hour. The HSR systems in Europe and Asia tend to adopt new HSR, while the HSR-related efforts in the United States have typically adopted the incremental approach (C. de Cerreno, Evans and Permut, 2005).

While HSR as an intercity mode of transportation has been successful in Japan, France and Germany, its development in the United States has been largely unsuccessful. In the United States, High Speed Ground Transportation Act (HSGT) of 1965 authorized studies aimed at developing HSR. Since then several regions have made efforts to provide HSR. These include the Northeast, Midwest, Pacific

Northwest, and the Gulf Coast regions. Additionally, several states including California, Florida, and Texas are trying, or in the past have tried, to deploy HSR. However, the only instance where HSR has met with any success is the Northeast Corridor (linking Washington, District of Columbia with Boston, Massachusetts) where in some stretches the speeds touch 240 kilometers per hour. However even in this corridor the average speeds are usually much lower (C. de Cerreno and Mathur, 2006)<sup>1</sup>.

There are several obstacles – institutional, financial, and political – to the success of HSR in the United States. Dunn and Perl (1996) examining the institutional and political barriers to HSR in North America identify the weak federal policies as a key factor, and argue for the development of a distributive formula that would ensure the buy-in of a wide range of stakeholders. Furthermore, Aggarwala (1996), deliberating on the future of HSR in the United States, urges the HSR advocates to not look up to the Interstate Highway funding as the model for federal investment in HSR. Instead the author exhorts the individual states to take a pioneering role in the development of HSR and coalition building aimed towards garnering public attention and support for state-level HSR projects.

This paper, through an in-depth study of the Midwestern United States HSR-related efforts, aims to explore the potential for success of HSR in this region. Midwestern HSR is a suitable case study for the following reasons: a) The Midwest is currently actively planning for a regional HSR system, and in few instances HSR-related infrastructure improvements are underway; b) A coalition of Midwestern states have come together to plan for and develop the HSR system. However the region's hope for the development of HSR relies heavily on the possibility of securing federal financial assistance; and c) The region by the virtue of its geographic size, and involvement of multiple states, provides an opportunity to explore the institutional, political and organizational structures required for the successful development of HSR. It is hoped that the lessons learned by the Midwest would also be instructive to the other on-going and future state- and regional-level HSR efforts in the United States.

The remainder of this paper is divided into five sections. The first section reviews the literature. The second section summarizes the measures identified by the literature and the Federal Railroad Administration (FRA) for analyzing the potential for success of HSR projects in the United States. The third section reviews Midwest's HSR-related efforts. The fourth section assesses the potential for success of HSR in the Midwest. The last section identifies the lessons other states/regions in the United States can learn from the Midwest's experience.

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<sup>1</sup> For example, the average speed on the Boston-New York leg of the corridor is only 130 kilometers per hour.

## 2. LITERATURE REVIEW

The existing literature has critically examined several dimensions of HSR systems that are in operation or under various planning and development stages outside the United States. These dimensions include: comparison of HSR with air transport; market potential and economic viability of HSR; ownerships and operation of HSR; local community opposition to HSR; financing of HSR; and the land-use impacts of HSR.

Janic (2003) conducted a comparative evaluation of performance of HSR and air passenger transport across the environmental dimension and found HSR to have significantly less negative environmental impacts compared to air transport. Hensher (1997) examined the demand for HSR along the Sydney-Canberra corridor in Australia. Froidh (2005) found replacing older rail service with HSR along the Sveland corridor in Sweden led to 700% increase in train ridership, and 500% increase in railway's mode share. Examining the factors likely to make the Taiwan HSR project economically viable, Bowe and Lee (2004) found the "ability of the management to be flexible in the face of unexpected market developments" (Bowe and Lee, 2004, p. 96) to be a major factor. Similarly Chang, et al. (2000) found flexible planning of stop-schedules to be the key factor.

Focusing on the organizational structure of the ownership and operation of HSR, Wong, et al. (2002) compared three different management/ownership models for HSR along the Beijing-Shanghai corridor in China. The three models include: a) the existing model where three different entities own and run the railway service; b) the "split mode" where the entities operating and owning the infrastructure are different; and c) the "aggregate mode" where a single entity owns the infrastructure and operates the train service. The study found the third model to be most advantageous for the study area and called for the creation of a new corporate entity to own and operate HSR along the Beijing-Shanghai corridor.

Examining the response of local community towards HSR, Schaap (1996) found that residents living close to HSR lines have a very negative attitude towards HSR. He also found that the extent of nuisance associated with HSR is perceived differently by the residents and the government. For example, significant difference in opinion exists between the two regarding the noise-related nuisance of HSR. The author suggests several strategies to counter local resident opposition to HSR, including: proactive involvement of the residents in the decision-making process; highlighting the advantages of HSR to the local community; and government compensation to the local residents for the negative externalities associated with HSR.

Exploring various financing models for the further development of HSR in the European Union (EU), Roll and Verbeke (1996) found public-private partnership to be the most effective. The authors identified the larger socio-economic benefits that go beyond the simple financial gains to be the best justification for such a financing scheme for HSR.

Kim (2000) examining the economic and land use impact of the then proposed Seoul-Pusan HSR corridor in South Korea, found that the population would remain concentrated in and around Seoul while the HSR would lead to a dispersal of employment opportunities. Similar economic impacts of HSR were found by Thompson (1994) and Bonnafous (1987). Thompson (1994) found that the French TGV increased the economic competitiveness of the fringe areas compared to the core areas. Along the same lines, Bonnafous (1987) found that the TGV gave a boost to the local economies.

While a substantial body of published literature has examined the various aspects of HSR outside the United States, research focusing on HSR in the United States has been rather sparse. Most of the literature comprises of market/feasibility studies and environmental impact studies conducted by various state agencies interested in the development of HSR (for example, see Taylor and Leavitt, 1997).

### 3. MEASURES OF SUCCESS FOR HSR-RELATED EFFORTS IN THE UNITED STATES

A typical HSR effort, by virtue of its size (both geographic and economic) is bound to be a major capital project, and a result of very involved policy-making. Perl (2002) and McBeth and Clemens (2001) highlight the need for very clear identification of the vision and goals a policy is meant to achieve. Furthermore, Perl (2002) identifies several other criteria to specifically gauge the success of HSR-related efforts. These include: a) clear identification of funding sources and strategies – including identification of sources and magnitude of funding from the federal- and state-level, and through public-private partnerships; b) clear identification of the roles of various internal and external stakeholders; and c) extensive public outreach. Additionally, the Federal Railroad Administration (FRA) has identified several measures related to the system requirements and performance of HSR. These include: a) magnitude of initial capital investment; b) travel demand levels; c) anticipated revenues, and operating expenses; d) generation of ancillary activities; e) user's consumer surplus; f) benefit to the public at large; and g) partnership potential. The last measure estimates the capacity of the HSR-related effort to draw the private and public sector together in planning, negotiations, and conceivably, project implementation.

#### 4. HSR IN THE MIDWEST: THE CHICAGO HUB AND THE MIDWEST REGIONAL RAIL INITIATIVE (MWRRI)

The Midwestern states have adopted a multi-pronged approach for providing HSR. Efforts are on-going at the both the regional- and state-level. The regional-level efforts focus more on planning and advocating for HSR, while few states are also implementing HSR-enabling capital projects. This section would examine the federal-, regional- and state-level HSR efforts.

##### *The Federal- and Regional-level HSR Efforts*

To a very large extent the HSR efforts in the Midwestern USA are shaped by the region's geography. Chicago is the major city in this region and is also the region's financial center. Within its 1,000-kilometer radius are other major Midwestern cities of St. Louis (in the state of Missouri), Detroit (in the state of Michigan), Milwaukee (in the state of Wisconsin), and Minneapolis/St. Paul (in the state of Minnesota). Therefore, Illinois, Michigan, Wisconsin and Minnesota – the states in which the majority of these major cities lie – have been more proactive in planning for HSR. Second, the state of Ohio, which forms the eastern boundary of the Midwestern USA, through its Ohio Rail Hub Plan, continues to examine the possibility of linking Ohio to the Midwestern HSR to the west, to the Northeast Corridor, Keystone Corridor and Empire Corridor to the east, and to the Canadian rail network (Via Rail) to the north.

##### *The Chicago Hub, the MWRRI and the Midwest Regional Rail System (MWRRS) Plan*

From 1970s through the 1980s, several local and regional efforts were made to explore the potential of HSR in the Midwest. These efforts often included preparation of technical and financial feasibility studies and conceptual plans. However the real impetus to HSR efforts came when in 1991 the federal government, under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), designated Chicago Hub as one of the five federally designated HSR corridors. These four corridors included the California, Florida, Pacific Northwest, and Southeast corridors. Originally, three lines – Chicago-Detroit, Chicago-St. Louis, and Chicago-Milwaukee –were designated part of the Chicago Hub. However between 1998 and 2000 the Chicago Hub was further extended to connect the cities of Minneapolis/St. Paul, Toledo, Cleveland, Indianapolis, and Cincinnati. At present the Chicago Hub consists of eight lines covering 3,700 kilometers of track.

Primarily as a result of the impetus provided by the federal designation of the Chicago Hub as a HSR corridor, the politician and DOT officials of the Midwestern USA renewed their efforts aimed at planning

and advocating for HSR. The Midwest Interstate Passenger Rail Commission (MIPRC), which is a compact consisting of pro-HSR legislators of fourteen Midwestern states, advocates for the provision of HSR. Similarly, a consortium of state department of transportation (DOT) officials of the Midwestern states came together to form the Midwest Regional Rail Initiative (MWRRI). The MWRRI was instrumental in the development of the Midwest Regional Rail System (MWRRS) plan, a business plan for HSR in the Midwest.

### ***The MWRRS Plan***

The MWRRS Plan elements include the following:

- Use of 4,800 kilometers of existing rail ROW that is largely owned by private freight railroads and to a much smaller extent by Amtrak and Metra (a commuter rail serving the nine-county region of northeastern Illinois);
- Operation of a hub and spoke passenger rail system with Chicago at the center (see Figure 1);
- Introduction of high-speed trains operating at speeds up to 175 kilometers per hour connecting major Midwestern cities; and
- Provision of multimodal connections to improve system access (Transportation Economics & Management Systems, Inc, 2004, p. 5) which includes networks of 145 kilometers per hour and 125 kilometers per hour rail lines, and feeder bus routes linking passengers to the 175 kilometers per hour lines.

The majority of the lines identified in the MWRRS plan are part of the federally-designated Chicago Hub.

While the MWRRS plan estimates that the HSR system would be able to garner funds to meet its operating expenses, it calls for 80/20 share of the federal and state funds to meet the system's capital funding needs. These needs, phased over 10-year period, total \$7.7 billion (in 2002 dollars) of which \$1.1 billion is for train sets and other train-related equipment, and the remaining \$6.6 billion is for the HSR infrastructure. The plan notes that the 10-year phased implementation that would eventually cover a nine-state region would require flexible management and institutional structures. These flexible structures, the plan notes, would facilitate multi-state co-ordination, and help forge cooperative

relationships with the private railroad companies that own most of the ROW. Some of the potential institutional structures identified in the plan include ad hoc multi state committees, committees established by multi-state agreement, or a joint-powers authority established through legislative action. Lastly, the plan exhorts the participating states to be “funding ready.” The activities that the states may perform include conducting environmental impact assessments and preliminary engineering studies; advocacy for the 80/20 federal/state share; and gaining federal funding to conduct system-wide environmental review to satisfy National Environmental Policy Act (NEPA) and to “position the MWRRS project for receipt of federal grant funds and Transportation Infrastructure Finance and Innovation Act (TIFIA) loans” (Transportation Economics & Management Systems, Inc, 2004, p. 24).



FIGURE 1: MAP OF PROPOSED MIDWEST REGIONAL RAIL SYSTEM

Source: Midwest Regional Rail System: A Transportation Network for the 21<sup>st</sup> Century, Executive Report, 2004

**State-level HSR Efforts**

The HSR efforts made by the nine Midwestern states involved in the MWRRS plan have been uneven at the best. The states, based upon their level of involvement, can be grouped into three categories.



The first group includes Illinois, Michigan, and Wisconsin - states that are not only actively planning for HSR, but have also implemented projects that would benefit HSR. For example, Illinois has funded Union Pacific Railroad (UP) to upgrade the 190-kilometer track of the Chicago- St. Louis line between Springfield, Illinois, and Dwight, Illinois, from FRA Class IV (125 kilometers per hour limit) to Class VI (175 kilometers per hour limit) (Midwest Interstate Passenger Rail Commission, 2004). Similarly, Michigan is funding engineering and safety studies on the Chicago-Detroit line aimed at allowing speeds up to 175 kilometers per hour (Federal Railroad Administration, 2006). Finally, Wisconsin has completed at least two projects that would benefit HSR. First, it conducted environmental assessment and preliminary engineering studies on the Milwaukee-Madison line for 175 kilometers per hour service. Second, it spent \$6.5 million on passenger rail station project at the General Mitchell International Airport in Milwaukee. This station is a proposed HSR station in the MWRRS plan.

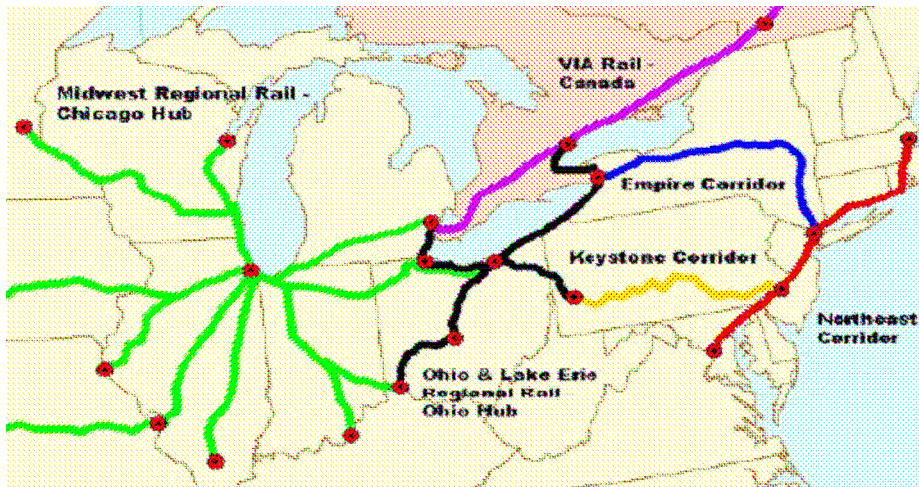


FIGURE 2: OHIO RAIL HUB

Source: ENGAGE Communications, Ohio Hub Passenger & Freight Rail Study: Public and Agency Involvement Report, prepared for The Ohio Rail Development Commission, August 2005, p. 18

The three states in the second group have conducted preliminary planning studies. However, they have not implemented HSR-related capital projects. These states include Ohio, Indiana and Missouri. Among these three states, Ohio, is much further along in planning for HSR than the rest of the states. As noted earlier, Ohio has prepared the Ohio Rail Hub plan, formally called *The Ohio & Lake Erie Regional Rail Ohio Hub Study*. The plan seeks to link Midwestern HSR with the rail network to the east and north through a 1375-kilometer system consisting of four intercity rail corridors (see Figure 2). The corridors would be as follows:

1. Cleveland-Columbus-Dayton-Cincinnati (included in the Chicago Hub)



2. Cleveland-Toledo-Detroit (the Toledo-Detroit portion is included in the Chicago Hub and MWRR)
3. Cleveland-Pittsburgh
4. Cleveland-Buffalo-Niagara Falls-Toronto ( see Figure 3)

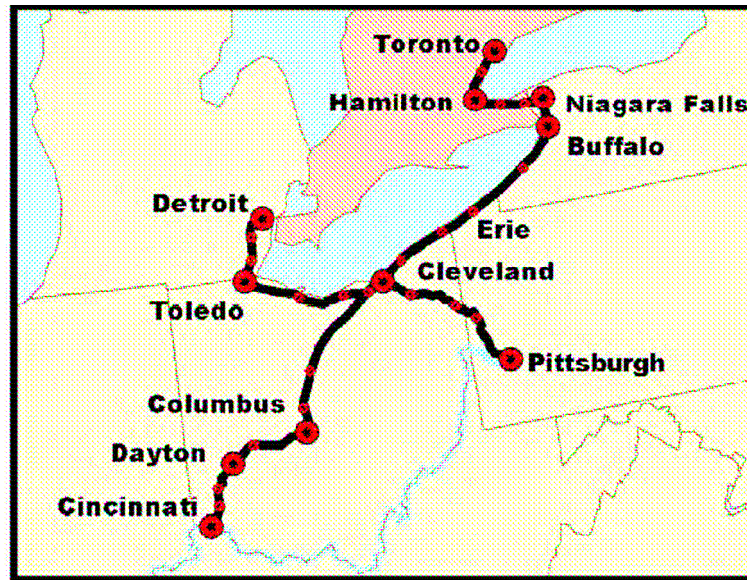


FIGURE 3: OHIO RAIL HUB LINES

Source: Transportation Economics & Management Systems, Inc. and HNTB, Inc., The Ohio & Lake Erie Regional Rail—Ohio Hub Study: Draft Technical Memorandum and Business Plan, Executive Summary, prepared for The Ohio Rail Development Commission and the Michigan, New York and Pennsylvania Departments of Transportation, October 2004, p. 1.

Like the MWRRS plan, the Ohio Hub Plan also assumes a 20/80 state and federal financing share and notes that the “implementation is contingent upon establishing a national program with funding for federal funding for freight and passenger rail improvement projects” (Ohio Rail Development Commission, 2004).

The other two states of Indiana and Missouri have conducted some preliminary planning studies. However, they have not conducted advanced planning or engineering studies, nor have they made any HSR-related physical improvements. The kinds of studies conducted by these two states include public outreach and alternate route studies conducted by Indiana (Midwest Interstate Rail Commission, 2004); and the rail line capacity study conducted by Missouri for the St. Louis to Kansas City line.

The third group of states includes Minnesota, Iowa and Nebraska. These states, apart from participating in the MWRRRI meetings, have not conducted any significant HSR-related planning, advocacy or physical improvements.

## 5. ASSESSMENT OF THE POTENTIAL FOR SUCCESS OF HSR IN THE MIDWEST

This section evaluates the HSR plans of the Midwestern USA based upon the Midwestern states' ability to: a) clearly identify and articulate their goals; b) identify funding sources; and c) identify the roles of important stakeholders.

### *The Goals*

The MWRRS and the Ohio Hub plans reflect the overarching goals of the Midwestern states. These goals are: increase connectivity, reduce trip times, and improve system access through multimodal access. The Midwestern states have worked towards a vision of regional HSR system. To realize this vision the region has come together to collectively plan for HSR. These efforts at regional cooperation were made both at the political level (resulting in MIPRC) and at the technical/staff level (resulting in MWRRRI and the MWRRS plan). The vision of a regional HSR should help in obtaining broad-based support for HSR. This support, in turn, can help in attracting national attention. However, the critics point out a couple of shortcomings of this vision. These shortcomings are:

- High project cost – The vision for regional HSR comes with a very high price tag. The present cost of funding the MWRRS and the Ohio Hub plans is \$7.7 billion (year 2002 estimates) and \$3.2 billion, respectively. This high cost is a big stumbling block in obtaining funding for these plans (J. Bennett, personal communication, October 5, 2005). Magnitude of initial capital investment is also a criteria identified by the FRA.
- Suspect ridership estimates – Some of the HSR lines identified in the plans (for example, Chicago-St. Louis) are logical choices as high-speed lines. However, several other lines included in the plans may not be good candidates for HSR since they are unlikely to achieve the projected ridership. Experts feel that instead of pushing forward the entire regional HSR plan, the Midwestern states would be better served by identifying the most promising city-pairs and demonstrating the feasibility of HSR by actually running high-speed trains on these corridors. This demonstration will help in garnering support for HSR in the Midwest, and will also bring the cost of the project down (D. Galloway, personal communication, December 16, 2005; M. Travis, personal communication, March 31, 2006).

### ***Benefits of HSR***

Apart from the revenue generated by the proposed HSR service, several other benefits could potentially accrue. For example, the HSR system would provide transportation alternatives to riders, result in greater mobility, and increase the surrounding real estate prices. These spill over benefits are identified in the Midwestern HSR studies, and are also used by the FRA as one of the criteria to assess the potential for success of HSR.

However, significant disagreements exist regarding the magnitude of these spill over benefits (J. Schwalbauch, personal communication, November 10, 2005) as well as regarding the ridership numbers estimated by the MWRRS plan (J. Berman, personal communication, November 8, 2005).

### ***Funding***

The Midwestern HSR, up until now, has struggled to secure substantive funding – public or private – for its HSR plans. The federal government typically requires a 50/50 state and federal match, and has used this ratio while funding Midwestern HSR projects through the FRA. However, the MWRRS plan is based upon 80/20 federal and state match. This mismatch between the desired (80/20) and the available (50/50) funding ratio is one of the biggest stumbling blocks for the Midwestern HSR. Further, the federal government does not typically provide operating subsidies to transportation projects. However the Midwestern HSR will need operating subsidies during the initial period. Further, several states face significant opposition from their internal constituents even for the states' share of the funding. This problem is compounded by the fact that the MWRRS plan is primarily a technical document prepared for the state DOT officials, and does not have the firm commitment of Midwestern states' political leadership's for the 20% states' share.

The Midwest's attempts to secure private funding for HSR efforts have been equally unsuccessful. Except for couple of instances where private funding has been secured for station improvements or for testing new train control technology, substantive private funding is not forthcoming.

### ***Stakeholders***

Dunn and Perl (1996) have identified the buy-in of stakeholders as a major determinant for the success of HSR. Apart from the state and local governments, the other important stakeholders include the federal government (by itself and through FRA and Amtrak), the private railroad companies, the airline industry and the automobile industry. Detailed examination of the roles of these stakeholders is provided below.

***Federal Government, FRA & Amtrak***

The federal government plays two very important roles – of funder and regulator – in the provision of HSR. Through FRA, the federal government has been involved in formulating engineering standards, funding HSR-related research and development, and creating regulations that govern the design- and operations-related aspects of HSR.

The federal role in the rail operation has been primarily through Amtrak. Amtrak relies extensively on the federal government for its operating and capital funding needs. The critical role played by both the FRA and Amtrak is evident in the Northeast Corridor, where the FRA was involved in the engineering aspects, and Amtrak, who also owned the ROW, was the conduit for federal funding. Amtrak operates the train service on this corridor.

In the case of Midwestern HSR, Amtrak's role has been very limited for primarily two reasons. First, Amtrak is unsure about the funding that it receives from the federal government. Second, except for the 153-kilometer section in Michigan from near Chicago to Kalamazoo, Michigan, Amtrak does not own any other rail ROW in the Midwest. This lack of ROW ownership has limited Amtrak's ability to proactively plan for HSR in the Midwest.

On a positive note, Amtrak could potentially play a very important role in the Midwestern HSR because currently it is the only intercity passenger train operator in the Midwest, and due to this fact is one of the foremost contenders likely to operate HSR in the Midwest. Further, it already has working relationship with the owners of the rail ROW – the freight railroad companies – on which it currently operates the passenger rail service.

***Private Railroad Companies***

As is the case in the entire USA, in the Midwest too private freight railroad companies own or lease almost all the rail lines. The USA freight industry is in a growth phase. Therefore most of these lines are heavily congested. Hence the private railroad companies are very apprehensive of HSR plans, especially if the plans, such as the MWRRS, include operating high speed trains on their ROW. The Midwest can learn from California where recently (in November 2008) the residents passed a bond measure that would fund purchase of land for separate ROW and for the construction of new HSR rail lines.

Further, private railroad companies compete for limited federal rail funding. Historically, passenger rail was not funded, and most of the limited rail funding went to freight rails. This trend is still seen in the

way federal funds are allocated. In Missouri, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) has money allocated for UP to eliminate highway crossings, but nothing specifically is set aside for the MWRRS (J. Hey, personal communication, December 16, 2005).

### ***Airline Industry***

HSR and the airline industry have been the traditional adversaries because over the medium distances of 500 to 1,000 kilometers, HSR and air travel compete for the same ridership. For example, fears from Southwest Airlines halted the HSR effort in Texas. In fact, Southwest Airlines was initially an investor and an advocate of HSR in Texas. However, when travel times became comparable, it felt threatened and withdrew support.

In the case of Midwestern HSR, fortunately, the fear of the major airport of the region – Chicago O'Hare Airport – losing its business to HSR is minimal because a large majority of passengers that use Chicago O' hare Airport travel from one part of the country to another, not from one Midwestern city to another. Hence the HSR would not directly compete with the traditional customer base of the O'Hare airport.

Furthermore, the airport is presently heavily congested. Any plans to reduce its congestion should be welcomed by the City of Chicago which owns and operates the airport.

Moreover, there are opportunities to develop synergistic relationships between the two modes. A case in point is the General Mitchell International Airport in Milwaukee. The airport will have a HSR station. The rail station will increase the regional connectivity of the airport, thereby inducing greater demand for air travel.

### ***Automobile Lobby***

The automobile lobby typically opposes large investments of public dollars (federal, state or local public dollars) in mass transportation systems, especially if they think those funds could have gone towards maintenance and expansion of highways. In the case of Midwestern USA, up until now this lobby has not opposed HSR plans. However, this silence does not mean acceptance of HSR by the automobile lobby but rather is an indication that the automobile lobby, at the moment, does not consider HSR a serious threat (R. Harnish, personal communication, November 14, 2005).

## 6. LESSONS APPLICABLE TO OTHER HSR-RELATED EFFORTS IN THE UNITED STATES

Examination of the Midwest's HSR related-efforts highlight several lessons that the Midwest, and other states and regions interested in developing HSR can learn. These include:

### ***a) Institutionalized vision for national HSR, and dedicated federal funding***

A vision for national HSR coupled with a dedicated source of federal funding, similar to the one for highways, is critical to the development of HSR in the United States. Most of the HSR efforts are likely to fail in absence of such a vision and federal funding source.

### ***b) Need for strong local political leadership***

Any HSR would need very strong local political leadership to succeed. The leadership should be able to effectively lobby for the federal and state dollars, garner broad-based public support for HSR, and develop consensus among the disparate stakeholders.

### ***c) Involve private railroads from the beginning***

Most of the rail ROW in the United States is owned or leased by private railroad companies. If the proposed HSR runs on the ROW owned by the private railroads, it is absolutely critical to involve the private railroads in the HSR-related efforts from the initial stages.

### ***d) Develop a clear consensus on the benefits of HSR***

The consensus will help in garnering broad-based support for HSR, and would unite the proponents around a common set of benefits.

### ***e) Conduct extensive public outreach***

Provision of HSR is ultimately as much a political decision as technical. Hence garnering public support through extensive outreach is critical to the success of HSR.

### ***f) Ensure that the state and local governments are ready to commit their share of funding***

A HSR plan developed on the assumption that the local share of funding will somehow materialize once the federal funding is secured, runs the risk of not taken seriously. Hence it is critical to secure firm funding commitment from the involved state and local governments.



**g) Develop synergistic relationships with airline, bus, and other local transit companies**

HSR will have better chances of success if road and air travel industry see it as an ally rather than a competitor. Hence HSR projects that forge synergistic relationships with other travel modes are more likely to be successful.

## 7. CONCLUSIONS

This paper first provided an overview of HSR. It then identified the measures of success for HSR-related efforts in the United States. Next, through in-depth study of Midwest's HSR-related efforts, it analyzed the potential for success of HSR in that region. In the end the paper identified major lessons that other states and regions interested in developing HSR can draw from Midwest's experience.

This paper is limited to the study of Midwest's HSR efforts. Future research, by way of comparative analysis of HSR-related experiences of the Midwest and other regions of the United States, can identify common themes. These common themes could provide the framework for discussing the future of HSR in the United States.

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