

Preface

High-speed rail is clearly very popular and extensively prevalent in several other countries from Europe and Asia especially China, which has exhibited unprecedented growth in the short time since its high-speed rail inception. Similarly, in the U.S. too, high-speed rail will provide a cost-effective alternative to highway and airline transportation bringing with it significant savings of travel time, improved travel experience, and enhanced traveler productivity in many travel corridors in the United States. The pressures for such a solution continue to mount due to numerous emerging factors such as:

- Growing population density and its impact on transportation infrastructure
- Increasing congestion on highways and at airports
- Increased fuel cost impact on highway and airline travel
- Mounting costs for highway construction and maintenance
- Decreasing fuel tax revenues to fund highway trust funds and political stalemate to address the issue
- Limited availability of or exorbitant cost to acquire more property for highway expansion
- Increased significance of weather-related disruptions of existing transportation modes
- Increasing costs for highway tolls and downtown parking fees
- Growing demand for improved travel access directly to urban core business districts
- Increasing burden of non-productive work time spent in highway and airport congestion
- Need to develop more environmental-friendly transportation alternatives.

All these point to the importance of considering the viability of high-speed rail as a beneficial social, environmental, and economic alternative to highway and air travel. It may be time for all stakeholders in California, Indiana/Midwest as well as the rest of the USA to consider seriously other alternatives to supplement travel by

road and air. Based on a recent state/regional focus group study's findings (Selladurai, 2013) as well as several other studies, there is clearly a need for a research publication like this, which documents the case for high-speed rail as a viable option to supplement road travel in California, Indiana, Midwest, and the US. This book, "Emerging Challenges and Opportunities of High Speed Rail on Business and Society," is certainly a comprehensive reference resource appropriate for such a time as this, and we believe that it would make a major contribution toward facilitating/strengthening the promotion, support, and implementation of the high-speed rail vision into reality. Recent, current, ongoing and future planned high-speed rail related developments especially in California, Florida, and Minnesota and other rail corridors provide us a wonderful snapshot of future things to come! High Speed Rail would certainly be the "LINK" to the future!

The purposes of "Emerging Challenges and Opportunities of High Speed Rail on Business and Society," are to:

- Provide a forum for discussing and sharing high quality research and analyses by scholars and practitioners from all over the world on topics related to high-speed rail.
- Present a variety of basic and practical research studies for stimulating further research related to high-speed rail.
- Integrate and synthesize interdisciplinary, theoretical, and practical research studies related to high-speed rail.
- Formulate and present conceptual models for research on high-speed rail and situations.
- Serve as a catalyst for policy makers, decision-makers, and high-speed rail stakeholders including academicians, developers, business and organizational leaders, managers, professionals, and employees in public and private organizations to help formulate and implement plans for high-speed rail as a viable transportation option in the U.S.

Policy makers, academicians, researchers, advanced-level students, technology developers, private companies and investors, and government officials at federal, state, and local levels will find this text useful in furthering their research exposure to pertinent topics in high speed rail transportation and assisting in furthering their own research efforts in this field. Also, this publication would educate and influence business, corporate, and other organizational leaders, managers, and employees of various types of organizations about the need, impact, formulation, and implementation plans for high-speed rail in transportation.

"Emerging Challenges and Opportunities of High Speed Rail on Business and Society," makes a significant contribution to the growing vision of high-speed

rail. It brings together interesting perspectives from leaders, scholars, and experts about high-speed rail in various countries of the world including Canada, Europe, Asia, and the U.S. Although several chapters are of scholarly nature coming from academicians, the topics discussed are of keen interest and high value to a variety of leaders, managers, and practitioners from all types of organizations. It integrates top quality research on high-speed rail from variety of situations and settings into a single source.

The book provides a wide array of interesting and timely topics in the area of high-speed rail, and it would be a valuable primary reference source for graduate students and undergraduate students interested in high-speed rail and transportation.

“Emerging Challenges and Opportunities of High Speed Rail on Business and Society,” focuses on three main areas of high-speed rail. The first section focuses on current developments and implementation plans in high-speed rail especially in California. The second section looks at various issues, challenges, and opportunities in high-speed rail development. These include the market size and potential of high-speed rail corridors in the Midwest; the tremendous benefits of high-speed rail and the huge negative implications of not developing high-speed rail as found extensively in most of the rest of the world; and the operational issues related to high-speed rail. Further, it includes the safety issues and concerns; the airlines-high-speed rail collaboration model; the blended approach model; and the potential of high-speed rail in Canada. The third section provides for us an overview of the past, present, and future implications of high-speed rail in the United States.

In the opening chapter, “California High-Speed Rail: A Transformative Investment in California’s Future,” Jeff Morales focuses on the status of high-speed rail in California. He discusses how California has started construction on the first true high-speed rail system in the United States. The CEO of the California High-Speed Rail Authority describes how the state’s historic investment in new high-speed rail infrastructure will benefit Californians. He discusses the many benefits that include job creation, statewide modernization of existing local rail lines, short and long-term reductions in greenhouse gas emissions, preservation of agricultural land and environmentally sensitive habitats, advanced clean and green construction practices and technologies, a commitment to 100% renewable energy use, and assistance to partner cities on transit-oriented planning for high-speed rail station areas.

Continuing in similar fashion, in the next chapter “California’s “Fast-Track” to High-Speed Rail: The Early Challenges and Ultimate Success of the California High-Speed Rail Project,” California High-Speed Rail Authority leaders and transportation experts, Rod Diridon and Ben Tripousis, highlight the development of high-speed rail development over the past several years. For over 50 years, after both public and private studies confirmed California’s need for high-speed rail, nothing happened. The rest of the US had a similarly disappointing experience

when attempting to break into the rapidly growing family of nations with operating high-speed trains. Yet, over the past year, California has contracted over \$2.5 billion in high-speed rail civil work, is preparing RFPs for three times that amount, and has secured commitments for nearly \$25 billion in additional federal and state funding over the next 30 years. Private investors are lining up for the nation's first high-speed rail public-private partnership to complete this \$68 billion, 540 mile project. This chapter describes the unprecedented technical excellence, political courage, and visionary voter support that created that high-speed rail breakthrough for California and the nation.

In the next chapter, "Comparing the Size of the Market in Potential High Speed Rail Corridors of the Midwest: A Gravity Model Approach," Professor Joseph Schwieterman evaluates the size and potential of several travel markets in the Midwest. He contends that transportation planners in the Midwest are advancing an agenda for high-speed rail while simultaneously investing in numerous corridors that have different strengths and weaknesses. To assist in establishing priorities, his chapter compares the size of the travel markets in seven of these Midwestern corridors. Using a technique known as the gravity model, it demonstrates that the corridors linking Chicago to Cincinnati and Detroit likely exceed the others based on total passenger traffic, and, along with the Chicago-Twin Cities route, rank at the top with respect to the passenger-miles of travel. The routes to Cleveland, St. Louis, and other locales compare less favorably. The top corridors, while shown to be only a fraction of the size of the California and Northeast Corridor routes, are found to be appreciably larger than most of the country's proposed high-speed rail corridors, suggesting they have considerable potential for rail-passenger development.

Eric Peterson, a transportation policy consultant, in this subsequent chapter, "Benefits Forgone: The Cost of Not Building Higher Performing Passenger Rail" emphasizes the tremendous benefits of high-speed rail. He points out that by conservative, reliable, objective, and preliminary estimates, the United States could generate at least \$660 million annually – \$26.4 billion over four decades – by building and operating faster, more frequent, more dependable, and more highly integrated passenger rail service in four corridors: The Northeast; the Chicago Hub; California; and the Northwest. Numerous studies by a variety of national and international organizations and government agencies suggest that the actual cost of building and/or improving passenger rail service lines is significantly less than the cost per mile of other modal alternatives. In fact, in many corridors, passenger rail is the only feasible option for adding capacity, given the practical constraints facing aviation and highway expansion. Further, by integrating improved, higher speed intercity passenger rail service into the existing transportation system, major issues of congestion, mobility and economic inequality can be addressed.

Further, transportation consultant experts Francis Banko and Jackson Xue discuss some other significant challenges and opportunities for high-speed rail development in their chapter, “Emerging Challenges and Opportunities for U.S. High-Speed Rail Development.” They recommend that as we explore various U.S. high-speed rail initiatives, the country can look towards its European and Asian counterparts for best practices and lessons learned from their decades of high-speed rail design and operations. These experiences gained may be applicable towards projects such as the Texas Central Railway (with envisioned revenue service start of 2020) and the California High-Speed Rail Project (with envisioned revenue service start of 2022). In their chapter, they address the events of 2009 that have brought domestic high-speed rail to the forefront of U.S. rail transportation. This includes the new FRA Tier I and proposed Tier III criteria, challenges associated with each FRA tier of operation, overseas interoperability efforts, snapshots of international experiences (from policy and technological perspectives), the holistic system-based approach to safety, ongoing efforts of the FRA Engineering Task Force, and additional challenges and opportunities moving forward.

The next chapter focuses on another important, timely topic namely security. In his chapter, “Safety of Domestic High Speed Passenger Rail Operations: Safety is Good Business,” Steve Laffey examines safety related issues to high and higher speed inter-city passenger rail operations. Generally, most risk related to rail travel is associated with collisions between on-track equipment and vehicles and pedestrians at level crossings. A larger amount of fatalities, but not necessarily systemic risk, is due to trespassing on the rail right-of-way. A third aspect of risk related to rail operations lies in rail-to-rail collisions and derailments, some of which may be catastrophic. A discussion of safety programs implemented by the rail industry at national and international levels concludes the chapter.

In continuing to look at opportunities and challenges, authors Peggy Lee, George VandeWerken, and Raj Selladurai have developed an airline-high-speed rail collaboration model in their chapter, “Exploring the Airline-High Speed Rail Collaboration Model: Efficient Service and Mutual Benefits.” They have shown that short-haul airline passenger traffic (less than 500 miles) is decreasing nationwide. This decline may be attributed to legacy airlines’ rising costs (especially fuel), increased airport congestion, and increased travel time due to post-September 2001 TSA security screening. Previous studies tend to look at the substitution of high-speed rail and other transportation modes for air travel, especially as travel times shorten. Substitution usually takes the form of collaboration or competition between competing modes and competing carriers. The authors in this chapter present an alternative view – with a discussion of the proposition that air carriers may benefit more from collaborative arrangements that allow them to “own” at least a portion of the intermodal passenger experience rather than shifting or transferring passengers to

competitive non-air modes. They believe that this proposal has merit and is worth consideration, and then the chapter concludes with a research agenda designed to test the proposition empirically.

Further, Rick Harnish, the Midwest High Speed Rail Association director, explores the significant issue of track structure use for rail systems in the U.S. In his chapter, “Blended Approach: Efficient Track Structure for High Speed Rail,” the author contends that a common misconception exists that high-speed rail is a stand-alone system, separate from the conventional network. In fact, only Taiwan’s system is completely separate. All other systems use the “blended approach” in which trains use a combination of high-speed and conventional tracks in a single journey. It is similar to cars and buses using both Interstate Highways and local roads in a single trip. Each nation’s railroad has taken a different approach to developing its high-speed networks in response to diverse needs. The common thread is that by implementing individual projects as a series of building blocks towards a long-term plan, immediate improvements can be enjoyed while working towards a very powerful system. He then looks at various countries’ track system including Japan, France, Germany, England, Spain, and others as well as makes some recommendations for high-speed rail in the U.S. He concludes that for high-speed rail to develop in the United States, a comprehensive blended approach will be needed, with initial focus placed on a few key segments.

Next, we move outside our boundaries to explore the potential of high-speed rail for our nearest northern neighbor, the country of Canada. Professors Jaydeep Balakrishnan, Tianyuan Zhu, and Peter Wallis in their chapter, “High Speed Rail in Canada: Feasibility Studies, Influential Factors and International Comparisons,” state that High Speed Rail (HSR) is gaining popularity around the world for a variety of reasons. However, North America lags behind and in particular Canada, where there is no HSR. There has been discussion of implementing HSR in Canada since the 1970s in two possible corridors (one in central Canada and the other in Alberta). In this chapter, the feasibility studies that have been done on both corridors are discussed. In this respect the focus is on the recent studies, from different sources including the Alberta Legislature, Ontario and Quebec Governments, consulting companies, and a non-profit transportation institute. The factors that influence the viability of HSR are discussed and reference is made to HSR implementations in other countries that could inform the development of HSR in Canada. On a positive note, it appears that the Ontario government plans to move ahead with HSR in part of the central Canadian corridor.

In the third, final section of the book, authors Raj Selladurai and George VandeWerken begin by exploring the current and future state of high-speed rail. In their chapter, “High Speed Rail: Study, Report, and Future Considerations” they discuss the recent Southwest states’ multi-state planning collaborative study, which

the Federal Railroad Administration initiated, coordinated, and released in 2015. It highlights the process, planning context, conclusions, recommendations, and implications, which may serve as a reference model for future studies in other regions of the United States. The chapter then looks at the momentum of high-speed rail in the U.S especially in California and explores some of the implications of high-speed rail for the nation in the future.

Then, Dorothy Hagan, City of Fort Wayne, Indiana summarizes the status of high-speed rail in Northeast Indiana. In her chapter, “Progress through Partnerships: Northeast Indiana Passenger Rail Association,” she provides a brief history of the development of the Northeast Indiana Passenger Rail Association (NIPRA). She presents an overview of two studies utilized by NIPRA to develop its preferred rail corridor through Fort Wayne. She discusses the partnerships that were developed at the local level across the corridor; the study completed to provide a business case for the corridor; discussions on coordination and fundraising efforts by NIPRA and the City of Fort Wayne staff, including a Federal Railroad Administration (FRA) grant application; and the next steps for NIPRA and corridor partners.

In the next chapter, Dennis Hodges, a pioneer of high-speed rail with the Indiana Passenger Rail Alliance, looks at the vision and potential reality of high-speed rail. This chapter, “High Speed Rail: Are we there yet?” addresses a vision of what was, is, and can be. Japan is already 65 years into its passenger rail improvements and modifications. France is just over 35 years and China is eight (8) years into its passenger rail improvements and modifications. Why cannot the United States see the economic and environmental reasons for doing the same in this country? This chapter discusses that and more. The author has attempted to parcel out the whys, what’s and where’s as to how the United States became so parochial when it comes to passenger rail transportation; why it is so reticent towards moving forward, and what can be done to change the current political and social attitude and climate.

Finally, the authors conclude the book with the chapter, “High Speed Rail: Suggestions for Case Studies, Research Questions, and Topics. Here the authors Raj Selladurai and George VandeWerken focus on some suggestions for case studies, research questions, and topics related to high-speed rail especially for use in the academic and professional settings. They recommend that the students, professionals, policy makers, and all high-speed rail stakeholders would benefit from these resources, which would facilitate them to make significant contributions to the development of high-speed rail in the U.S. Further, a focus on these would help stimulate more exploring, thinking, discussing, and researching into innovative ideas, plans, and strategies toward the formulation, implementation, and evaluation of high-speed rail for the U.S. for several years in the future.

We believe that our book, “Emerging Challenges and Opportunities for U.S. High-Speed Rail Development” is a new (one of very few), unique, significant resource

currently available in the market. It would be a useful resource toward developing policies, decision-making, formulation, and implementation of high-speed rail in the U.S in the present time and in the future. Several innovative visionaries, thinkers, organizational leaders, consultants, and scholars in transportation and high-speed rail related area have presented their recommendations in this book, which would facilitate change a vision into reality. High Speed Rail is certainly the “LINK” to the future for the United States and the world!

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REFERENCE

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