THE GREAT TRAIN ROBBERY: HOW STATUTORY CONSTRUCTION MAY HAVE DERAILED AN AMERICAN HIGH SPEED RAIL SYSTEM

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I. INTRODUCTION

The United States (U.S.) has seen an increased interest in mass transportation recently. The interest could be attributed to the increased cost of solo travel, individual environmental concerns, a growing trend of working during travel, or a combination of those factors with any number of additional unknown factors. For whatever reasons, the general public seems less enamored with automobiles and more intent on shared travel. One expression of this interest has been in the current movement toward high speed rail.

Passenger rail service has been relegated to mediocrity for eighty or more years, but recent attempts to speed-up the service in busy markets have shown modest returns in ridership levels.[1] The increase in ridership is especially impressive when one considers how little the recent improvements have actually changed the rail service provided to U.S. passengers. Travelers in Japan and Europe have been enjoying high-speed rail service for decades, while, even considering AMTRAK's Acela service, the U.S. is providing rail service, which is more similar to the service that was provided a century ago.[2]

It may seem illogical to suggest that the U.S.'s best opportunity in over forty years to catch-up to Japanese and European rail infrastructure is during one of the worst recessions this country has ever seen; however, recent legislation is attempting to do just that. This Note will address the effectiveness of the recent legislation within the context of the purpose and vision of an American high speed rail system.

Part II of the Note provides a background for the subsequent analysis. First, a brief history of passenger rail is presented. That account is followed by a discussion of the development of high speed rail throughout the world. Then those portions of the American Recovery and Reinvestment Act of 2009 (ARRA), which apply to the development of high speed rail, are identified.

In Part III, the Note analyzes ARRA's ability to jumpstart the creation of a U.S. high speed rail system. It begins by addressing the threshold question of why the U.S. would benefit from the development of high speed rail. Then, the analysis focuses on the operation of a potential American high speed rail by addressing three obstacles, or perhaps better said, three unanswered questions,

1. *See, e.g.*, Aaron Smith, *Visionaries See U.S. High Speed Rail; Critics See Subsidies*, CNNMONEY.COM (July 2, 2009, 12:54 PM), http://money.cnn.com/2009/06/10/news/economy/high_speed_rail/index.htm (discussing how the Acela Amtrak line in the Northeast corridor rose 6.3% in 2008 from 2007).

2. Robert Malone, *The World's Fastest Trains*, FORBES.COM (May 23, 2007, 10:00AM), http://www.forbes.com/2007/05/23/japan-france-trains-biz-logistics-cx_rm_0523trains.html.

of high speed rail. After those issues have been discussed the analysis will turn to discuss if ARRA funding begins to create a U.S. high speed rail system, while remaining true to the purposes and vision of the high speed rail system.

The analysis of Part III leads to a recommendation in Part IV that Congress construct future high speed rail legislation to ensure that traditional rail systems are prevented from receiving high speed rail funds and that the Department of Transportation create a Federal High Speed Rail Administration to better serve the unique needs of an American high speed rail system.

II. BACKGROUND

A. History of Passenger Rail

The golden age of American passenger rail service began with the completion of the transcontinental railroad in 1869.[3] Although railroads had existed in the U.S. since the 1830s,[4] it was not until the 1850s–60s that passenger service was extended beyond limited regional service.[5] This expansion of the areas served by railroads led passenger rail ridership to a peak share of 95% of all U.S. intercity travel in the mid 1890s.[6] The trend of passenger rail dominance continued with track expansion and total passenger miles reaching all-time highs in 1916 and 1920, respectively.[7] However, those achievements marked the beginning of five decades of passenger rail mediocrity.

Between 1920 and 1970, automobile and airplane travel combined to overcome the prior dominance of passenger rail.[8] During that span, it became common practice for rail companies to subsidize insolvent passenger operations through their freight operations.[9] By the mid-1960s, even freight profits could not subsidize the passenger rail losses sustained by some of the nation's largest rail companies and they were forced to discontinue passenger service or go bankrupt.[10]

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3. JOHN F. STOVER, AMERICAN RAILROADS 267 (The Univ. of Chicago Press 1961).

4. *Id.* at 264.

5. *See id.* at 20 (describing the American railroad system in 1840 as a "thin, broken network stretching along the Atlantic coast"); *see also id.* at 265–67 (chronicling important dates in rail history, including the creation of the Union Pacific Railroad and expansion of railroads from the East Coast to Chicago and St. Louis).

6. Steven A. Morrison, *The Value of Amtrak*, 33 J.L. & ECON 361, 361 (1990).

7. *Id.*

8. *Id.*; Research and Innovative Tech. Admin., Bureau of Transp. Statistics, *Table 1-37: U.S. Passenger Miles*, http://www.bts.gov/publications/national_transportation_statistics/html/table_01_37.html (last visited Mar. 8, 2011).

9. *See, e.g.*, Morrison, *supra* note 6, at 361 (indicating that railroads were reporting significant losses due to their passenger rail operations). Interestingly, rail freight was not plagued by the issues of passenger rail and it continues to be a highly used form of freight transportation in America. Research and Innovative Tech. Admin., Bureau of Transp. Statistics, *Figure 3 Modal Shares of U.S. Commercial Freight Shipments by Value, Weight, and Ton-Miles: 1993, 1997, and 2002*, http://www.bts.gov/publications/freight_shipments_in_america/html/figure_03_table.html (last visited Mar. 8, 2011).

10. *See generally* Morrison, *supra* note 6, at 361–62 (explaining that railroads were not covering the direct costs of passenger operations by the late 1950's and noting the Penn Central bankruptcy).

Congress, in an attempt to address the problems created by the loss of a major national transportation system, passed the Rail Passenger Service Act of 1970.[11] The Act provided for the creation of the National Railroad Passenger Corporation, better known as Amtrak.[12] The new corporation was a "for-profit, quasi-public enterprise,"[13] which would allow railroads to effectively abandon their existing rail passenger service to Amtrak for the donation of equipment, money, or pledges of continued financial support.[14] Since its inception, Amtrak has been America's largest provider of passenger rail service[15] (albeit requiring significant government subsidies to offset continuous financial losses)[16] and has recently even seen upward trends in ridership in key regions.[17]

In contrast to America's passenger rail decline, Europe and Japan have experienced relative success in the industry. Total ridership in Europe originally followed the same trend as America; however, after World War II, Europe and America's passenger rail industries took distinctly different paths.[18] European rail ridership lost some ground to the automobile and air travel, but not nearly to the extent of the United States.[19] Similarly, in Japan, passenger rail remained in demand after World War II.[20] In fact, the thirty year period after World War II proved to be critical for passenger rail in both Europe and Japan, since it bridged the gap between traditional passenger rail and high speed rail.

B. High Speed Rail

Throughout the second half of the twentieth century and continuing to the present, several forms of high speed rail have evolved. The three primary systems are the enhanced steel wheel,[21] maglev, and tilting trains.[22] Enhanced

11. Rail Passenger Service Act of 1970, Pub. L. No. 91–518, 84 Stat. 1327, 1327 (1970).

12. *Id.* at § 301.

13. Morrison, *supra* note 6, at 362.

14. Rail Passenger Service Act of 1970 § 401. The Act prohibited all railroads from discontinuing any intercity passenger service before 1975 unless they contracted with Amtrak to first assume operation of the discontinued service. *Id*. at § 404.

15. *See* GEORGE W. HILTON, AMTRAK: THE NATIONAL RAILROAD PASSENGER CORPORATION 16 (Am. Enter. Inst. for Pub. Policy Research 1980) (noting that railroads were not required to participate in the creation of Amtrak if they chose to continue operating passenger service which some did for a short period before joining Amtrak later). Today all intercity passenger rail service is operated by either Amtrak or the Alaska Railroad, which was originally owned and operated by the federal government until it was sold to the State of Alaska in 1985. FEDERAL RAILROAD ADMINISTRATION, http://www.fra.dot.gov/Pages/5.shtml (last visited Mar. 8, 2011).

16. Morrison, *supra* note 6, at 362.

17. Smith, *supra* note 1.

18. HILTON, *supra* note 15, at 4–5; GEROLD AMBROSIUS & WILLIAM H. HUBBARD, A SOCIAL AND ECONOMIC HISTORY OF TWENTIETH-CENTURY EUROPE 226 (Harvard Univ. Press 1989).

19. AMBROSIUS & HUBBARD, *supra* note 18.

20. Mitsuhide Imashiro, *Japanese Railway History 9: Dawn of Japanese National Railways*, 10 JAPAN RY. & TRANSP. REV. 46, 48 (1997).

21. "Enhanced steel wheel" is a term created for purposes of this Note. It refers to high speed rail systems that use improved application of standard gauge rail technology, but excludes tilting train technology.

22. Kamaal R. Zaidi, *High Speed Rail Transit: Developing the Case for Alternative Transportation Schemes in the Context of Innovative and Sustainable Global Transportation Law and Policy*, 26 TEMP. J. SCI. TECH. & ENVTL. L. 301, 305–06 (2007).

steel wheel is the most popular of the three among active rail networks.[23] It includes several of the world's largest high speed rail systems, including the French Train à Grande Vitesse (TGV) and the Japanese Shinkansen.[24] The "enhanced steel wheel" term is derived from the various technological innovations that have allowed trains with generally traditional rail technologies to achieve high speeds.[25] For instance, the TGV uses electrical power, articulated trainsets,[26] and advanced aerodynamics to achieve the fastest scheduled rail operations in the world (such as top average speeds of 180 miles per hour (mph)).[27] Both the TGV and Shinkansen have been operational in their respective countries for decades[28] and both remain profitable overall.[29]

Operationally, maglev is much younger than enhanced steel wheel projects.[30] The technology behind it was actually developed in the U.S. over forty years ago.[31] Maglev trains operate using static magnets affixed to the train, which create an electromagnetic field against the rail to lift and propel the train.[32] Despite the U.S.'s head start with maglev, it was other countries that set out to develop commercial maglev lines.[33] China and Japan both have maglev lines in operation, which act to supplement their existing rail networks.[34] Maglev has yet to be used as the primary component of a passenger rail network, most likely because of the high cost of construction,[35] safety concerns,[36] and public uneasiness about the unanticipated environmental effects of creating magnetic fields throughout the rail lines.[37] It is a shame,

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23. *See id.* at 313–24 (discussing rail networks in different countries); UIC HIGH SPEED DEPARTMENT, INTERNATIONAL UNION OF RAILWAYS, MILES OF HIGH SPEED LINES IN THE WORLD (2011), *available at* http://www.uic.org/IMG/pdf/20110111_b1_resume_miles_of_hs_lines_in_the_world.pdf (same).

24. *See* UIC HIGH SPEED DEPARTMENT, *supra* note 23 (showing the relative size of various countries' high speed rail systems).

25. *See supra* note 21.

26. An articulated trainset is a collection of train cars which are permanently affixed to one another unlike the style common in the U.S.A. where individual cars are attached to other cars by front and rear couplings. *See* ALSTOM, ARTICULATED TRAINSETS: GUARANTEEING COMFORT AND SAFETY, *available at* http://www.alstom.com/assetmanagement/DownloadAsset.aspx?ID=9bba28cd-6439-4f4c-897c-a43dd79bd174&version=e9a9c8bd9d0e4361b017481c6e63703f1.pdf (comparing articulated trainsets to non-articulated trainsets).

27. *See* Richard D. Cudahy, *High-Speed Rail on the "Fast Track"*, INFRASTRUCTURE, Summer 2009, at 3 (claiming the TGV "provided regularly scheduled passenger service at speeds over 180 mph").

28. JOSEPH VRANICH, SUPER-TRAINS: SOLUTIONS TO AMERICA'S TRANSPORTATION GRIDLOCK 24, 25, 76–77 (St. Martin's Press 1991).

29. *Id.* at 34–35, 80–81. It may also be of note that both systems have lines that essentially subsidize others. *Id.*

30. The world's first commercial maglev train, "MAGLEV", began operating in 1984 over a quarter mile distance in Birmingham, England. David Scott, *At Last, Maglev Goes Public: Britain's Flying Train*, POPULAR SCI., Oct. 1984, at 76.

31. VRANICH, *supra* note 28, at 115.

32. Zaidi, *supra* note 22, at 306.

33. VRANICH, *supra* note 28, at 98–112.

34. Hans Greimel, *Japan Invests in Trains Despite Crash*, WASH. POST (Sept. 25, 2006, 9:15 AM), http://www.washingtonpost.com/wp-dyn/content/article/2006/09/25/AR2006092500300.html.

35. Federal Railroad Administration, U.S. Department of Transportation, Report to Congress: Costs and Benefits of Magnetic Levitation 11–13 (2005).

36. Reuters, *Human Error to Blame for German "Maglev" Train Crash*, USA Today (Oct. 4, 2006, 11:46 AM), http://www.usatoday.com/tech/news/2006-10-04-maglev-train-crash_x.htm.

37. JOHN A. VOLPE NATIONAL TRANSPORTATION SYSTEMS CENTER, U.S. DEPARTMENT OF TRANSPORTATION, FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT: MAGLEV DEPLOYMENT

because maglev has the potential to easily surpass the rail speed records held by enhanced steel wheel trains.[38]

Tilting trains are so named because the specially designed axle-less wheels that they use allow the train to adjust for centrifugal force without affecting the passengers.[39] This distinction allows these trains to take curves, including banked curves, at much higher speeds than other steel wheel trains.[40] Thus, tilting trains can incorporate the enhanced propulsion of systems like the TGV or Shinkansen, increasing the overall operational speed of the trains and not just the top speed along straights. To date, Spain has been the largest proponent of tilting train technology and so the technology has become synonymous with the name Talgo, the system's Spanish manufacturer.[41] Talgo's, first operational tilting train went in to use in Spain in 1980.[42] Since then, advancements have allowed Talgo trains to reach operational speeds of over 200 miles an hour.[43]

Notwithstanding the exciting advancements that have occurred within all three technologies, the United States federal government has not generally shown a great deal of interest in developing any of them within America's borders. However, that indifference to high speed rail appears to be at an end.

C. ARRA and High Speed Rail

In 2009, Congress passed President Obama's American Recovery and Reinvestment Act (ARRA).[44] The Act consists of supplemental appropriations for, among other things, "infrastructure investment," as well as, "energy efficiency and science."[45] Title XII of ARRA addresses the supplemental appropriations for transportation and specifically grants $8 billion for passenger rail capital projects[46] with priority given to high speed rail development projects.[47] This level of investment in high speed rail is unprecedented in the United States.[48] Only four months before the enactment of ARRA, Congress passed the Passenger Rail Investment and Improvement Act of 2008, which lowered the annual appropriation for high speed rail planning and technology improvements from $100 million to $60 million.[49]

PROGRAM: VOLUME 1 §3.16 (2001).

38. *See* Kazuo Sawada, *Railway Technology Today 12: Magnetic Levitation (Maglev) Technologies*, JAPAN RAILWAY & TRANSP. REV., Oct. 2000, at 58 (discussing both the inherent limitations of conventional high speed rail design and successful tests of Maglev train technology).

39. Zaidi, *supra* note 22, at 307.

40. Zaidi, *supra* note 22, at 307.

41. Zaidi, *supra* note 22, at 307.

42. Talgo, Chronological History of Talgo, July 15, 1980, http://www.talgo.com/index.php/en/nuestra.php (follow link on top to "80") (last visited Mar. 8, 2011).

43. Chronological History of Talgo, TALGO, http://www.talgo.com/index.php/en/nuestra.php (follow link on top to "07", then follow link on bottom to "Dec. 23") (last visited Mar. 8, 2011).

44. American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115, 115 (2009).

45. *Id.*

46. *Id.* at 208; 49 U.S.C. § 24401(2)(A)–(B) (2000).

47. Pub. L. No. 111-5, 123 Stat. 115, 208.

48. *See, e.g.*, 49 U.S.C. § 26104(a) (2008) (authorizing $324 million in appropriations for high speed rail planning and improvements for the years 1996-2001).

49. Passenger Rail Investment and Improvement Act of 2008, Pub. L. No. 110–432 Div. B § 1, 122 Stat.

Given the unparalleled size of ARRA's high speed rail appropriation, the federal government's history of overlooking passenger rail, and the current breakthroughs in technology, it appears that the time is right for the United States to truly enter the world of high speed rail.

III. ANALYSIS

An analysis of whether ARRA funding is the best way to realize the benefits and vision of U.S. high speed rail ("HSR") requires the discussion of two foundational questions: First, in what ways would America benefit from high speed rail? Second, to capitalize on those particular benefits, how should an American high speed rail system operate in order to compete with air and automobile travel? Answering these questions will entail a discussion of the infrastructure required to allow such operation and the cost of the infrastructure and operation, and will lead to this Note's analysis and conclusions regarding AARA's flaws.

A. How Would America Benefit From High Speed Rail?

Just as it is impossible to know exactly what factors are fueling the interest in American high speed rail, it is also impossible to predict every possible benefit that high speed rail will bring with it. In fact, the debate is still raging whether or not high speed rail will create a net benefit for the U.S. at all.[50] Nonetheless, there is still an underlying rule by which all benefit must be derived: America can only benefit from high speed rail, if enough people actually ride on the new system.

Every debate about the reward from, or viability of, high speed rail centers around the same question: will enough people choose to ride high speed rail when other forms of transportation are available? Responses to the threshold ridership question vary drastically even among reasonable individuals, who are both intelligent and knowledgeable in the subject matter. Some have supported their answers with statistical analysis,[51] while others analogize high speed rail to historical precedents.[52] This Note will not presume to answer the question of ridership levels, when so many thoughtful articles and reports already address the subject thoroughly. Instead, the Note presumes sustainable ridership levels, in order to evaluate the benefits that a viable U.S. high speed rail system would create.[53]

American transportation will become more efficient, if high speed rail is

4907, 4960 (2008).

50. *See generally* Randal O'Toole, HIGH-SPEED RAIL: THE WRONG ROAD FOR AMERICA, CATO INSTITUTE (2010) (arguing that high speed rail costs will outweigh its benefits).

51. Mehdi Morshed, RECENT QUESTIONS ABOUT RIDERSHIP AND REVENUE FORECASTS, CALIFORNIA HIGH-SPEED RAIL (2010), *available at* http://cahighspeedrail.ca.gov/images/chsr/20100304074000_Recent_questions_about_ridership_and_revenue_forecasts.pdf.

52. David Grossman, *The case for high speed rail in America*, USA TODAY (Aug. 22, 2008), *available at* http://www.usatoday.com/travel/columnist/grossman/2008-08-22-high-speed-rail_N.htm.

53. In Part III.B, the Note will not presume ridership, but instead will analyze the operational form that a U.S. high speed rail system must take in order to be a viable transportation alternative.

used. Of the three major forms of land transportation (automobile, airplane, and passenger rail), traditional passenger rail already expends the least amount of energy per passenger mile[54] and, despite moving two to three times faster, high speed rail is actually more energy efficient than traditional passenger rail.[55] Also, with every passenger mile serviced by high speed rail, the other forms of transportation service less passenger miles.[56] It is estimated that a high speed rail network would annually reduce automobile travel by 29 million trips and reduce air travel by approximately 500,000 flights.[57] For automobile travel, less cars on the road, means less wasted energy spent in traffic and for air travel, this means less wasted energy through delays. In other words, less transportation congestion and, thus, increased efficiency across all modes of intercity passenger travel.

A high speed rail network would reduce the U.S.'s negative impact on the environment. As recently as 2006, the U.S. emitted 5,902.75 million metric tons of carbon dioxide (CO2) annually,[58] placing the U.S. second, behind China, among the world's countries in total annual CO2 emissions.[59] Moreover, the U.S. placed second, behind Australia, in per capita CO2 emissions among countries with a population of more than 10 million.[60] As the largest CO2 emitter among end-use sectors,[61] transportation constitutes approximately one-third of all CO2 emissions in the U.S.[62] High speed rail employs "green" technologies that consume one-third less energy per passenger mile than automobile travel.[63] Also, high speed rail would transport passengers closer to their city center destinations, thereby, reducing unneeded energy consumption by additional travel to and from airports.[64] It is estimated that a high speed rail network would result in an annual reduction of 6 billion pounds of CO2 emissions for the U.S.[65] These statistics have led several

54. TONY DUTZIK ET AL., U.S. PIRG EDUCATION FUND, THE RIGHT TRACK: BUILDING A 21ST CENTURY HIGH-SPEED RAIL SYSTEM FOR AMERICA 2 (2010).

55. *Id.* at 15.

56. *Id.*

57. *Id.* at 10.

58. U.S. ENERGY INFORMATION ADMINISTRATION, H.1CO2 WORLD CARBON DIOXIDE EMISSIONS FROM THE CONSUMPTION AND FLARING OF FOSSIL FUELS (MILLION METRIC TONS OF CARBON DIOXIDE), 1980–2006 (Department of Energy 2006), *available at* http://www.eia.doe.gov/emeu/iea/carbon.html.

59. Actually, the U.S. emits more CO2 than most continents, most notably Europe. *Id.*; UNION OF CONCERNED SCIENTISTS, *Each Country's Share of CO2 Emissions*, (Aug. 20, 2010), http://www.ucsusa.org/global_warming/science_and_impacts/science/each-countrys-share-of-co2.html.

60. The threshold of ten million citizens eliminates ten or so countries which have higher per capita emissions, but do not even place in the top thirty countries for total output. U.S. ENERGY INFORMATION ADMINISTRATION, H.1CCO2 WORLD PER CAPITA CARBON DIOXIDE EMISSIONS FROM THE CONSUMPTION AND FLARING OF FOSSIL FUELS (METRIC TONS OF CARBON DIOXIDE), 1980-2006 (Department of Energy 2006), *available at* http://www.eia.doe.gov/emeu/iea/carbon.html.

61. U.S. DEP'T OF ENERGY, U.S. ENERGY INFO. ADMIN.: U.S. CARBON DIOXIDE EMISSIONS FROM ENERGY SOURCES 2008 *FLASH* ESTIMATE 7 (2009), *available at* http://www.eia.doe.gov/oiaf/1605/flash/pdf/flash.pdf.

62. Research and Innovative Tech. Admin., *Table 4–49: U.S. Carbon Dioxide Emissions from Energy Use by Sector*, BUREAU OF TRANSP. STATISTICS, http://www.bts.gov/publications/national_transportation_statistics/html/table_04_49.html (last visited Mar. 8, 2011).

63. FED. RAILROAD ADMIN., A VISION FOR HIGH-SPEED RAIL IN AMERICA: HIGHLIGHTS OF STRATEGIC PLAN 1 (2009), *available at* http://www.fra.dot.gov/Downloads/RRdev/hsrspfacts.pdf.

64. DUTZIK ET AL., *supra* note 54, at 11.

65. FED. RAILROAD ADMIN., *supra* note 63, at 1; DUTZIK ET AL., *supra* note 54, at 16.

environmental groups, such as the Center for Clean Air Policy[66] and the Sierra Club[67] to endorse a U.S. high speed rail system.

High speed rail will also boost the economy immediately and help stabilize the economy in the future. The construction of high speed rail is estimated to create 1.6 million U.S. jobs.[68] Still, that number could grow significantly if, as has been proposed by some, the U.S. contracts with American companies to build the high speed rail trainsets.[69] Beyond the immediate creation of jobs, passenger rail is predicted to reduce America's dependence on foreign oil imports.[70] That reduction could also be augmented if the high speed rail system employs electric propulsion in lieu of the traditional diesel propulsion of passenger rail.[71]

Thus, the U.S. would benefit from a viable high speed rail system through increased efficiency, reduced environmental impact, and economic growth and stabilization.

B. How Should an American High Speed Rail Operate?

Beyond the benefits created through ridership, many will still consider high speed rail a failure, if it is not self-sustaining or profitable. Critics and proponents alike do not want to see high speed rail suffer the same fate of commercial passenger rail in the 1960s, and, in order to avoid that fate, it must be self-sustaining in our capitalist economy. Thus, for purposes of this part the Note will consider both ridership (also referred to as competitive ability) and its attendant benefits and financial feasibility/profitability of operations. Thus, the criteria of competitiveness and profitability will serve to outline a vision of a successful high speed rail system.

Under those two criteria, several aspects of a possible high speed rail system will be considered: First, what should be the system requirements of the network? Second, where should service be provided? Finally, how much financial investment will be required for the system described by questions one and two? The answers to these questions will frame the subsequent critical analysis of the current ARRA program.

1. What Should Be the System Requirements of any Federally Funded HSR Program?

As discussed in the background section of this Note, there are three

66. CENTER FOR CLEAN AIR POLICY & CENTER FOR NEIGHBORHOOD TECHNOLOGY, HIGH SPEED RAIL AND GREENHOUSE GAS EMISSIONS IN THE U.S. 1 (2006), *available at* http://www.cnt.org/repository/HighSpeedRailEmissions.pdf.

67. Press Release, Sierra Club, Billions for High-Speed Rail to Help Rebuild and Restore America, Cut Pollution and Oil Dependence, *available at* http://action.sierraclub.org/site/MessageViewer?em_id=156261.0.

68. DUTZIK ET AL., *supra* note 54, at 13.

69. Grand Rapids Press, *Granholm Makes Pitch to White House to Build Cars For High-Speed Rail Lines*, MLIVE (June 03, 2009), http://www.mlive.com/politics/index.ssf/2009/06/granholm_makes_pitch_to_white.html.

70. DUTZIK ET AL., *supra* note 54, at 10–11.

71. DUTZIK ET AL., *supra* note 54, at 10–11.

equally impressive forms of high speed rail technology: enhanced steel wheel, maglev, and tilting trains.[72] Each form can be superior to the other two under the right circumstances and the determination of which form to use in America requires fact-specific analysis by administrators and engineers. Instead of focusing on the form, it is necessary to begin by addressing the performance standards that will be required of a high speed rail system, in order to guide administrators and engineers in their analysis.

It has been stated that for passenger rail to be functionally viable it must present a practical replacement of air or automobile travel for passengers. Air travel is generally the fastest mode of transportation; however, airports are often far removed from city centers, airport security can be frustrating, and passenger conditions on airplanes are generally less than comfortable.[73] Automobiles, on the other hand, can easily enter city centers and they are possibly more comfortable than air travel; but, they cannot come anywhere near matching the speed of air travel.[74] If passenger rail is to succeed it must find a way to take most of the good of both modes, while leaving the bad behind.

Studies show that high speed rail operating at an average speed of more than 150 mph can compete favorably with air travel over distances of 500 miles or less.[75] However, no high speed rail system has averaged 150 mph or more without the use of dedicated rail lines.[76] Furthermore, high speed trains are obligated to remain on their tracks, apparently eliminating the possibility of beneficial flexibility of automobiles, so station locations must be chosen with precision to maximize appeal to the passenger.[77] As a general rule, location appeal will be maximized by placing stations as near as possible to city centers.[78] Thus, for a high speed rail system to lure passengers from other transportation modes it will need to operate mainly on dedicated tracks between city centers and average 150 mph or more.

At the present, there is no system in America that meets all these criteria. It is claimed that Amtrak's Acela service in the northeast corridor is high speed rail, but the operation can hardly be called high speed by any reasonable standard.[79] Although the Acela trains are designed to reach speeds of 150 mph, average speed over the route section between Boston and New York is less than 60 mph.[80] An achievement barely distinguishable from that of the twentieth century limited, which served the route between New York and

72. *See supra* Part II(B) (dealing with high speed rail technologies).

73. VRANICH, *supra* note 28, at vi–vii.

74. VRANICH, *supra* note 28, at vi–vii.

75. DUTZIK ET AL., *supra* note 54, at 11.

76. DUTZIK ET AL., *supra* note 54, at 58.

77. DUTZIK ET AL., *supra* note 54, at 58.

78. In urban settings, business centers, centers for the arts, historic sites, and sports arenas all tend to emanate from a central location. *See generally* DUTZIK ET AL., *supra* note 54, at 11 (describing some of the urban amenities of major U.S. cities).

79. *High-Speed and Intercity Passenger Rail*, DEP. TRANSPORT., FEDERAL RAILROAD ADMIN., http://www.fra.dot.gov/rpd/passenger/31.shtml (last visited Mar. 10, 2011).

80. Malone, *supra* note 2.

Chicago beginning more than a century ago.[81]

The confusion over what is high speed rail cannot, however, be attributed to Amtrak and its Acela claims alone. High speed rail is an evolving technology,[82] and, therefore, its definition cannot be static, thus, using any speed achievement as definitional parameter will be essentially arbitrary. Thirty years ago any train breaking top speed at 150 mph could be considered high speed.[83] Today, some operational trains average more than 170 mph and rail speed records have surpassed the 300 mph threshold.[84] Even Congress appears unable to settle on a definition of high speed rail.[85]

By requiring high speed rail systems to operate on dedicated tracks between city centers, averaging at least 150 mph, Congress can set high speed rail service up for success, while introducing high speed rail to America at modern industry standards.

2. Where Should High Speed Rail Lines Service?

This question is partly answered in the previous section: high speed rail should serve city centers. However, the question remains of which cities or regions to serve. High speed rail pundits generally take one of two positions on the matter. First, the majority of analysts support a corridor system in which high speed rail is restricted to routes that currently see heavy rail passenger traffic.[86] Many in this majority rely on the recent history of U.S. passenger rail as a relatable case study.[87] The second group proposes a comprehensive national system, which will serve both high traffic areas and provide a viable national alternative to passengers disenfranchised by air travel.[88]

In a country, where Amtrak, a for-profit public corporation, has never been profitable without substantial government assistance, it is understandable that critics want to avoid creating an unprofitable high speed rail system.[89] Reasonable individuals agree that Amtrak has been a financial failure; however, there remain positive lessons within the overall system failure.[90] The northwest corridor has been profitable for Amtrak since the start of the

81. Malone, *supra* note 2.

82. *See supra* § IIB.

83. Yasuo Wakuda, *Japanese Railway History 10: Railway Modernization and Shinkansen*, JAP. RAILWAY & TRANSP. REV., Apr. 1997, at 62–63.

84. Cudahy, *supra* note 27, at 3.

85. Congress has used three distinct definitions for high speed rail in the U.S. Code. 26 U.S.C. § 142(i)(1) (2006); 49 U.S.C. § 26105(2)(a) (2006); 49 U.S.C. § 26106(b)(4) (2006).

86. *See, e.g.*, *Program Investment Map*, DEP. TRANSPORT., FEDERAL RAILROAD ADMIN., http://www.fra.dot.gov/rpd/passenger/2243.shtml [hereinafter *Program Investment Map*] (proposing a project of rails connecting major populated areas) (last visited Mar. 10, 2011).

87. *See, e.g.*, DUTZIK ET AL., *supra* note 54, at 7 (noting that passenger rail already works well in the Northeastern United States).

88. *See, e.g.*, *US High Speed Rail Network*, US HIGH SPEED RAIL ASS'N, http://www.ushsr.com/hsrnetwork.html (proposing a high speed national system to be completed by 2030) (last visited Mar. 10, 2011).

89. Smith, *supra* note 1.

90. Smith, *supra* note 1.

underachieving Acela service.[91] Thus, some corridors are primed for profitability despite mediocre service,[92] but that is where the value of comparisons to Amtrak seems to end. Amtrak has never endeavored to operate high speed rail outside the Acela attempt.[93] The better comparison may be the French TGV system, which has operated high speed rail since 1989.[94]

France's transportation needs are comparable to those of the U.S. in several ways. If France were a state of the U.S., it would rank eleventh in population density and compare reasonably with Pennsylvania and Illinois (the states that would immediately precede and follow France in the population density rankings).[95] And, while Paris compares well with the largest cities in the U.S., Lyon, France's third largest city, would rank somewhere in the low thirties if it were a U.S. city.[96] The TGV is a profitable, comprehensive high speed rail system;[97] however, the profitability is not due to profitability of every corridor serviced by TGV.[98] Instead, the more profitable routes essentially subsidize the unprofitable routes.[99] Thus, it would seem that America can also operate both individually profitable high speed rail corridors and a profitable comprehensive system.

Therefore, with the plausibility of a profitable comprehensive system and the ancillary benefits such a system would provide, it would be premature to limit the planning of an American high speed rail system to only those rail corridors anticipated to be individually profitable. On the contrary, the facts suggest that planning and construction should originate in high traffic corridors, but then be extended to lower traffic corridors as ridership demand evolves.

3. How Much Financial Investment Will U.S. HSR Require?

President Obama has noted that the $8 billion ARRA grant is intended as a down payment on high speed rail.[100] This initial investment is to be followed

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91. Smith, *supra* note 1.

92. Congress has already determined which corridors to implement HSR. 23 U.S.C. § 104(d)(2)(B) (2006).

93. Smith, *supra* note 1.

94. VRANICH, *supra* note 28, at 25.

95. In 2000, France had a population density of 95.5 people per square kilometer (or 247.4 people per square mile). *International Data Base, Totally Midyear Population, Area, Density Table*, U.S. CENSUS BUREAU, http://www.census.gov/ipc/www/idb/region.php (last visited Mar. 8, 2011). In 2000, Pennsylvania had a population density of 274 people per square mile and Illinois had a population density of 223.4 people per square mile. U.S. CENSUS BUREAU, TABLE 13. STATE POPULATION – RANK, PERCENT CHANGE, AND POPULATION DENSITY: 1980 TO 2009 (2011), *available at* http://www.census.gov/compendia/statab/2011/tables/11s0013.pdf.

96. UNITED NATIONS STATISTICS DIVISION, POPULATION OF CAPITAL CITIES AND CITIES OF 100 000 OR MORE INHABITANTS: LATEST AVAILABLE YEAR, 1986–2005 62, *available at* http://unstats.un.org/unsd/demographic/products/dyb/dyb2005/Table08.pdf; U.S. CENSUS BUREAU, CITIES WITH 100,000 OR MORE POPULATION IN 2000 RANKED BY POPULATION, 2000 IN RANK ORDER, *available at* http://www.census.gov/statab/ccdb/cit1020r.txt.

97. VRANICH, *supra* note 28, at 34–36; The Economist, *Face Value: Mr High-Speed Europe*, ECONOMIST, Feb. 23, 2008, at 85.

98. *Mr High-speed*, *supra* note 97, at 85.

99. *Mr High-speed*, *supra* note 97, at 85.

100. *Program Investment Map*, *supra* note 86, at 12.

by $1 billion annually to continue funding of planning and projects.[101] Standing alone, these figures are vast; however, when compared with the $1.8 trillion the federal government has spent on air and highway travel since 1960, the figures are minimal.[102] In fact, when projected over an equal period of time, they are nearly identical to the 3% of federal funding for intercity passenger travel that passenger rail has traditionally received.[103] This minimal funding demonstrates a traditional dilemma faced by passenger rail: it does not receive the funding required to make it successful. If a high speed rail system is meant to compete with air and automobile travel, it will cost significantly more than the amounts allocated by ARRA and the President's proposed continued investment.

Not surprisingly, estimates of the cost of high speed rail infrastructure construction vary widely.[104] Some estimate the total cost of developing high speed rail in the east and the west coast will be approximately $800 billion based on the cost of Spain's high speed rail system.[105] Under that same comparison, a comprehensive U.S. system would cost approximately $1.5 trillion.[106] Another estimate has the California corridor alone costing $33 to $37 billion.[107] That route comprises 8% of the track miles anticipated for a corridor system,[108] so a rough estimate would place the entire corridor system cost at $370–$460 billion.

Another simple estimate can be calculated by multiplying the route length by cost per track mile. Dedicated lines (for enhanced steel wheel or tilting train systems) cost between $30–$50 million per mile to construct.[109] When multiplied by the 8,439 mile length of the proposed corridor system,[110] the dedicated lines of a corridor system would cost approximately $253–$422 billion to construct. And, that estimate does not include the costs of either articulated trainsets, which run $40 to 50 million each or new high speed rail stations.[111]

Given the above analysis, it is safe to say that a U.S. high speed rail network of heavy traffic corridors would cost anywhere from $400–$800 billion.

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101. *Program Investment Map*, *supra* note 86, at 12.
102. *Program Investment Map*, *supra* note 86, at 1.
103. *Program Investment Map*, *supra* note 86, at 5.
104. Because estimates rely on varying system configurations, the costs will be normalized according to track miles for the purpose of this note.
105. Jebediah Reed, *How Much Would it Cost to Have a High Speed Rail Network Like Spain's?*, THE INFRASTRUCTURIST (Mar. 17, 2009, 3:24 PM), http://www.infrastructurist.com/2009/03/17/how-much-would-it-cost-to-have-high-speed-rail-network-like-spains/. In its March 2009 report to Congress on High Speed Passenger Rail, the Government Accountability Office also relied on Spain's high speed rail system as a comparable network when evaluating projected costs of American high speed rail. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-317, HIGH SPEED PASSENGER RAIL: FUTURE DEVELOPMENT WILL DEPEND ON ADDRESSING FINANCIAL AND OTHER CHALLENGES AND ESTABLISHING A CLEAR FEDERAL ROLE 22–23 (2009).
106. Reed, *supra* note 105.
107. O'Toole, *supra* note 50, at 1.
108. O'Toole, *supra* note 50, at 4.
109. Malone, *supra* note 2.
110. O'Toole, *supra* note 50, at 4.
111. Malone, *supra* note 2.

C. Does ARRA Fund a System Which Holds True to the Purposes and Vision of High Speed Rail?

ARRA high speed rail funding represents the largest single federal funding allocation for passenger rail in U.S. history.[112] Distribution of the $8 billion allocated by ARRA was subject to interested applicants submitting a pre-application to the FRA by July 10, 2009.[113] In total, 259 grant applications were submitted by 37 states and the District of Columbia, requesting almost $57 billion total.[114] On Jan. 28, 2010, President Obama announced the recipients of ARRA high speed rail funds.[115] The ARRA funds were distributed throughout four regions, including several large metropolitan areas.[116] The announcement was met with the praise of high speed rail advocates and criticism of high speed rail detractors, much in the same way as the debate proceeded prior to the announcement. However, the announcement may have created more questions than answers for those who follow the development of high speed rail closely. The ARRA awards left some of the predetermined high speed rail corridors conspicuously absent and identified only two of the thirty awards as high speed rail projects.[117]

Three of the questions raised by the fulfillment of the ARRA funding process will be addressed here: first, do ARRA's statutory requirements correspond with the vision for U.S. high speed rail? Second, was ARRA even the right avenue for funding high speed rail in the first place? Finally, is the amount allocated by ARRA for high speed rail sufficiently consequential in the development of high speed rail?

1. Do ARRA's Statutory Requirements for High Speed Rail Correspond with the Vision for Operation of a U.S. High Speed Rail Network?

As discussed above, a high speed rail network would need, conservatively, to operate at an average speed of 150 mph to lure passengers from air and automobile travel on a sustainable basis.[118] Geographically, the

112. *Program Investment Map*, *supra* note 86, at 10.

113. FEDERAL RAILROAD ADMINISTRATION, HIGH-SPEED INTERCITY PASSENGER RAIL (HSIPR) PROGRAM: FREQUENTLY ASKED QUESTIONS (Department of Transportation 2009), *available at* http://www.fra.dot.gov/downloads/HSIPR%20FAQs%2007-07-09%20FINAL.pdf.

114. FEDERAL RAILROAD ADMINISTRATION, HIGH-SPEED INTERCITY PASSENGER RAIL (HSIPR) PROGRAM: ABOUT THE HSIPR PROGRAM (Department of Transportation 2009), *available at* http://www.fra.dot.gov/us/content/2325.

115. Press Release, U.S. Department of Transportation, President Obama, Vice President Biden to Announce $8 Billion for High-Speed Rail Projects across the Country (Jan. 28, 2010), *available at* http://www.fra.dot.gov/pages/press-releases/341.shtml.

116. WHITEHOUSE.GOV, RECOVERY ACT HIGH SPEED RAIL AWARDS , http://www.whitehouse.gov/sites/default/files/rss_viewer/hsr_awards_summary_public.pdf [hereinafter RECOVERY ACT AWARDS]. And additional $2.4 billion was awarded from the 2009 and 2010 fiscal year budgets in October, 2010. While this amount increased the total funding allocated to high speed rail, the geographic and technological distribution of the increased funding is substantially similar to the ARRA distributions. FRA.GOV, FRA HIGH-SPEED INTERCITY PASSENGER RAIL (HSIPR) PROGRAM: FY10 AND REMAINING FY09 FUNDING SELECTION SUMMARY 1–7 (2010), http://www.fra.dot.gov/rpd/downloads/Summary_of_FY10_Selected_Projects_1010.pdf.

117. RECOVERY ACT AWARDS, *supra* note 116.

118. *See supra* Part III.B.1.

high speed rail network would need to service heavy traffic corridors, while also anticipating a more comprehensive network in the future.[119] These requirements of averaging 150 mph and serving heavy traffic corridors represent the minimum standards to which high speed rail must adhere, if it is to achieve both the purpose and vision of high speed rail.

ARRA succeeds in providing funding for heavy traffic corridors, but it fails in establishing sufficient system requirements for federally funded high speed rail systems. ARRA sets out the appropriation for high speed rail under title XII of Division A of the bill.[120] It begins by stating that the appropriation is "[f]or an additional amount for section 501 of Public Law 110–432".[121] Section 501 of Public Law 110–432, commonly referred to as the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), is the section of the law that deals specifically with high speed rail corridors.[122] The section of the law particularly relevant to this discussion is § 501(d), which creates 49 U.S.C. § 26106.[123] With this new code section, the law creates a section specific definition of high speed rail as "intercity passenger rail service that is reasonably expected to reach speeds of at least 110 miles per hour."[124] Thus, ARRA, by committing its high speed rail funding to P.L. 110-432, adopts the 110 mph attainment (but not average) standard, which is woefully short of the needed 150 mph average standard. ARRA does at least succeed, regarding the geographic requirements, because § 502 of PRIIA modifies §501 to the extent that for an application to be approved it must fall within one of the designated high speed corridors.[125]

Therefore, by establishing the system requirements at 110 mph, ARRA fails to capture the purpose and vision of U.S. high speed rail.

2. Is High Speed Rail Suited to ARRA's Shovel-Ready Mandate?

As a law partially intending to provide an immediate boost to the U.S. economy, ARRA was designed to favor "ready-to-go" or "shovel-ready" projects.[126] This means that favored projects "are those for which planning, environmental and preliminary engineering activities have been completed—thus allowing grant recipients to immediately begin final design and

119. *See supra* Part III.B.2.

120. American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115, 208 (codified in scattered sections of the U.S.C.) (2009).

121. *Id.*

122. Passenger Rail Investment and Improvement Act of 2008, Pub. L. No. 110-432 Div. B § 1, 122 Stat. 4907, 4959 [hereinafter Passenger Rail Investment and Improvement Act] (codified in scattered sections of 49 U.S.C.) (2008).

123. *Id.* at 4960.

124. *Id.* This definition is different from the definition found under the definition section of the chapter in 49 U.S.C. § 26105, which requires high speed rail service to sustain speeds of 125 mph. 49 U.S.C. § 26105 (2006).

125. Passenger Rail Investment and Improvement Act, *supra* note 122, at 4960.

126. FEDERAL RAILROAD ADMINISTRATION, DEP'T OF TRANSP., RAIL PROGRAMS FUNDED UNDER THE AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA) OF 2009 1–8 (2009), *available at* http://www.fra.dot.gov/downloads/ARRA%20FAQs%20FINAL.pdf.

construction and/or enter into design-build contracts."[127] Combined with the July 10, 2009 deadline for pre-applications to the Federal Railroad Administration, this means that prospective projects would have to be "shovel-ready" less than six months after ARRA passed on Feb.17, 2009.[128] So, those projects that are best suited to ARRA funding are those that were "shovel-ready", or nearly so, prior to the passage of ARRA, as well as those projects that could become "shovel-ready" in less than six months.

High speed rail in the U.S. was, for the most part, not "shovel-ready" prior to the passage of ARRA and is not able to become "shovel-ready" in less than six months. Prior to the passage of ARRA only two states, Florida and California, had high speed rail projects on the horizon.[129] In fact, Texas, which includes one of the U.S.'s heaviest traffic corridors, missed out on ARRA high speed rail funding because, it was so far from appearing to be "shovel-ready," it wasn't awarded any funds.[130] The absence was so shocking that it prompted U.S. Transportation Secretary Ray LaHood to say, "If Texas had had its act together, it would have gotten some high-speed rail money."[131] Additionally, the development of new rail lines is such a legal process, due to right-of-way issues and local and federal ordinances, that planning cannot be expected to be completed in six months.

Therefore, a funding legislation intended to respond quickly to economic hardship, such as ARRA, is not the ideal way to fund the development of a U.S. high speed rail network.

3. Does ARRA Funding Provide a Sufficient Beginning for U.S. High Speed Rail?

A conservative estimate of developing true high speed rail in all of the designated corridors would range somewhere between $400–$800 billion.[132] While the funding from ARRA has never been purported to fund the entire cost of a U.S. high speed rail network, it has been stated that the President intended for the $8 billion investment to act as a down payment on such a network.[133] It is unclear what is meant by down payment in this context; however, some additional text may inform the context. In conjunction with the statement that

127. *Id*. at 3.

128. *Id*.

129. Christopher Conkey, *California, Florida Top List to Secure High-Speed-Rail Funds*, WALL ST. J. (May 8, 2009, 11:41 AM), http://online.wsj.com/article/SB124179625738301017.html.

130. RECOVERY ACT AWARDS, *supra* note 116.

131. Chris Moran, *Harris County Punches Ticket for Rail Group*, HOUSTON CHRONICLE, Feb. 9. 2010, *available at* http://www.chron.com/disp/story.mpl/metropolitan/6859259.html.

132. *Supra* part III.B.3.

133. FEDERAL RAILROAD ADMIN., *supra* note 63, at 1. It should also be noted that shortly before the publication of this Note, Vice President Biden announced President Obama's intention to provide another $53 billion in funding for high speed rail. The additional funding, which is projected to begin with $8 billion in President Obama's next fiscal budget and provide the remaining $35 billion over a six year period, has not yet been approved by Congress and so this Note will not address that funding directly. Press Release, The White House, Office of the Vice President, Vice President Biden Announces Six Year Plan to Build National High-Speed Rail Network (Feb. 8, 2011), *available at* http://www.whitehouse.gov/the-press-office/2011/02/08/vice-president-biden-announces-six-year-plan-build-national-high-speed-r [hereinafter White House Press Release].

the funding was intended to be a down payment, the President explained that it was intended to "jump-start" the development of a comprehensive high speed rail network.[134] Thus, the ARRA funding is expected to establish the beginning of a high speed rail network.

ARRA funding fails to establish the beginnings of a high speed rail network, because it is too modest. Considering the total funding of $400–$800 billion that U.S. high speed rail will require, the $8 billion allocated by ARRA would amount to only a 1%–2% down payment on a national network. Furthermore, if each of the eleven designated corridors was to receive an equal share in the ARRA funds, it would amount to $720 million per corridor, falling below 5% of total project cost for even the cheapest of the corridors. Thus, it would seem that the only way that the $8 billion could significantly "jump-start" development in any of the high speed rail corridors would be to allocate the full amount between one or two corridors.

Moreover, too much of the intended funding is diverted to non-high speed rail improvements for the ARRA funds to "jump-start" high speed rail. According to the funding provisions of ARRA, the Secretary of Transportation is only required to "give priority to projects that support the development of intercity high speed rail service."[135] This weak language allows projects laying foundation for high speed rail to receive priority along with actual "shovel-ready" projects.[136] Through this language $4.5 billion of the awards that were granted under ARRA actually went to non-high speed projects,[137] while $3.5 billion of the awards were distributed between California and Florida high speed rail projects.[138] Thus, even though only two high speed rail projects were actually funded with ARRA allocations, the amounts of those awards were drastically diluted by non-high speed projects almost to the equivalent of an equal share allocation among all eleven corridors.

Therefore, it appears significantly unlikely that ARRA provides sufficient funding to even begin a U.S. high speed rail network.

IV. RECOMMENDATION

Following the previous analysis, the biggest problems facing development of a U.S. high speed rail network are lack of funding, overly demanding time requirements, and lack of central organization. These problems are nearly identical to the problems faced by the interstate highway system prior to the creation of the Federal Highway Administration. In the years following the passage of the 1956 Highway Act,[140] officials and

134. *Program Investment Map*, *supra* note 86.

135. American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115, 208 (2009).

136. RECOVERY ACT AWARDS, *supra* note 116.

137. RECOVERY ACT AWARDS, *supra* note 116.

138. RECOVERY ACT AWARDS, *supra* note 116. It should also be noted that the $8 billion of additional funding described in footnote 133 of this Note will be divided equally between "network development" and "system preservation and renewal", the latter of which is meant to keep Amtrak in good repair. White House Press Release, *supra* note 133.

140. National Interstate and Defense Highways Act, Pub. L. No. 84-627, 70 Stat. 374 (1956).

concerned citizens complained of a lack of funding, impatience in planning and construction, and a lack of organization.[141] Unfortunately, with the inclusion of high speed rail funding in ARRA, it appears as if Congress is set to repeat the mistakes of the past, by underestimating the pending scope of high speed rail. The high speed rail money from ARRA may have already been awarded, but it is not too late for Congress to correct itself and create a future system of high speed rail development that harmonizes with the benefits and vision of a U.S. high speed rail network.

Congress should apply the lessons of the past and begin by establishing a federal high speed rail administration under the department of transportation to ensure the future commitment to American high speed rail. Along with the creation of a new administration, Congress should specifically address its ARRA mistakes by appropriating $75–$100 billion as a true "down payment" on high speed rail. Additionally, construction of all designated high speed rail corridors should begin and comprehensive system planning should be undertaken. Moreover, Congress should amend current rail laws to reflect a commitment to truly high speed rail, by requiring that any service operate at average speeds of 150 mph or more to be considered high speed rail. The combination of these corrections and the creation of a federal high speed rail administration would place high speed rail on the road to dethroning the federal highway system as "the greatest public works project in history".

A. Establishment of a Federal High Speed Rail Administration Separate from the Federal Railroad Administration

Admittedly, creation of a federal high speed rail administration will not directly correct the problems for American high speed rail already created by ARRA. However, the establishment of such an administration may prove to be the most important Congressional action for the development of a high speed rail network. A federal administration on par with the federal highway administration and federal aviation administration would commit America to a future that includes high speed rail. The natural order of our bureaucratic system dictates that a federal high speed rail administration would receive annual funding, develop expertise in the field upon which Congress can be advised, and ensure a dedicated group of public servants that have their self-preservation incentives tied to the mission of high speed rail.

One might think that there is no need for a federal high speed rail administration, because the federal railroad administration can continue to manage the development of high speed rail. This belief simply ignores the demonstrated inability of the federal railroad administration to competently manage high speed rail development[142] and the disparate goals of traditional

141. Richard F. Weingroff, *Federal-Aid Highway Act of 1956: Creating the Interstate System*, PUB. ROADS, Summer 1996, at 5, *available at* http://www.fhwa.dot.gov/publications/publicroads/96summer/p96su10.cfm.

142. Matt Kelley, *Short-staffed high-speed-rail agency draws fire*, USA TODAY, Mar. 08, 2010, *available at* http://www.usatoday.com/news/washington/2010-03-08-rail-oversight_N.htm.

rail transport (passenger and freight) and high speed rail. As mentioned above, high speed rail requires dedicated rail lines for it to achieve its potential.[143]

The creation of a federal high speed rail administration, however, does not mean that high speed rail development returns to square one. Much like how the federal highway administration absorbed the commerce department's bureau of public roads,[144] a federal high speed rail administration could absorb departments from the federal railroad administration and other agencies to prevent the loss of valuable expertise.

Thus, a distinct administration within the department of transportation, dedicated solely to high speed rail development, would solidify the future of high speed rail in America in a way unattainable by other manners.

1. Amending Laws to Reflect Contemporary High Speed Rail System Requirements

As it stands, Congress has several definitions of what high speed rail is.[145] In one section of the Internal Revenue Code, it suggests that high speed rail is rail service that will operate at 150 miles per hour. In 49 U.S.C. §26105, high speed rail means rail service that can reach 125 miles per hour. Still, in 49 U.S.C. § 26106, high speed rail means service that can reach 110 miles per hour. Although it is not uncommon for the U.S. code to carry several distinct meanings for the same phrase, in this instance, it appears to be mostly an accommodation to the inferior performance of current U.S. passenger rail service.

Congress should define all high speed rail as rail service averaging 150 mph. This corrective action is probably the simplest and quickest that Congress can take to atone for the mistakes of ARRA and yet the benefits will be far reaching. By establishing a uniform standard for high speed rail speed, Congress will simplify funding determinations, feasibility studies, and future planning. Perhaps more importantly, by establishing the standard for high speed rail as averaging 150 mph, Congress will ensure that future high speed rail funding will be spent on high speed rail technologies comparable to those in Europe and Asia.

2. Making a Sufficient Down Payment on an American High Speed Rail Network

Only slightly more complicated than correcting the speed standard discrepancies would be correcting the initial investment shortfall left by ARRA. Admittedly, the 150 mph standard is somewhat arbitrary,[146] but, so long as the speed standard falls within a range of acceptable speeds, it is the

143. *Supra* part III.B.1.

144. Department of Transportation Act of 1966, Pub. L. No. 89-670, 80 Stat. 931, 933 (1966).

145. *Supra* part III.B.1.

146. While there are studies demonstrating that trains operating at the 150 mph standard can compete favorably for passengers in certain circumstances, in actuality, there is no reason that the standard couldn't be set at 149 or 151 mph while still achieving the desired result.

uniformity that truly benefits high speed rail development. In contrast, when discussing a federal funding allocation in the tens of billions of dollars, an arbitrary amount will not suffice. The next steps in securing a down payment sufficient to jump start development of a high speed rail network are planning and cost estimation. Those are exactly the types of projects that a newly formed federal high speed rail administration would need to start with. That being said, given the previous analysis in part III.C.3., we know that a reasonable down payment would range between $75–$100 billion for construction of the eleven designated high speed rail corridors. Thus, Congress can appropriate an amount in that range to the new federal high speed rail administration, requiring that no more than 10% be allocated to planning and that, other than planning, the funds only be used for construction.

3. Constructing Targeted Corridors and Creating a Plan for Comprehensive High Speed Rail in the Future

With an allocation of $75–$100 billion, construction on every federally designated high speed rail corridor could start relatively soon. Planning and analysis of high speed rail in most of these corridors has been ongoing for nearly two decades.[147] At the same time, contemplation of a comprehensive system should not generally require a delay in construction of the several corridors because the contemplation can be something as simple as drawing lines on a map until a comprehensive network appears. Some say that is even how the interstate highway system began.[148] Even better, give the new federal high speed rail administration 90 days to prepare a map of what high speed rail could look like in fifty years, if America later chooses to develop a comprehensive system, and use that projection to ensure that the comprehensive system could naturally develop from the corridor system.

Thus, the U.S. can still fulfill the vision and promise of high speed rail, by establishing a permanent federal high speed rail administration and standardizing speed requirements, increasing initial funding, and beginning construction while continuing planning.

V. CONCLUSION

Passenger rail has a long and storied history in the U.S., beginning with leading the world in both technology and scope and eventually reaching insolvency and federal management. The reasons for this decline cannot be entirely attributed to the technology of passenger rail, because it continued to serve as a central mode of transportation for advanced countries throughout the world. Due to the decline in ridership, the U.S. has missed out on many of the exciting technological advances in passenger rail and now it will virtually have

147. Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), Pub. L. No. 102-240, 105 Stat. 1914, 1934-35 (1991); *Chronology of High-Speed Rail Corridors: Designations and Extensions*, FEDERAL RAILROAD ADMINISTRATION, *available at* http://www.fra.dot.gov/rpd/passenger/618.shtml.

148. Lee Martz, *Origins of the Interstate*, FEDERAL HIGHWAY ADMINISTRATION (2000), *available at* http://www.fhwa.dot.gov/infrastructure/origin.htm.

to start from scratch, if it wishes to develop a viable passenger rail network. There are several efficiency, environmental, and economic benefits that will come from taking the opportunity and creating a top-tier high speed rail system. However, to ensure that those benefits materialize the U.S. must develop a grander vision for high speed rail that involves competitive service speeds and high volume routes (or possibly a comprehensive national network). The funding required for such an endeavor is astronomical, but compares favorably with the funding required to build the U.S. interstate highway system and other high speed rail networks throughout the world. The statutory construction of ARRA's high speed rail allocations may actually be driving the U.S. further from a true high speed rail network. ARRA allows a great deal of the designated high speed rail allocations to fund traditional passenger rail improvements, nullifying the opportunity to catch up to other high speed rail systems in one instance. Moreover, ARRA's participation requirements do not fit well with development of high speed rail because they demanded too much planning and research too fast and those programs that could get ARRA funds remained severely underfunded. The answer is to develop a federal high speed rail administration and provide a continual stream of financing similar to that of the creation of the Federal Highway Administration.