ENDNOTES

SECTION II: THE CONTEXT FOR THE DISCUSSION

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2. William H. Frey, "Mapping the Growth of Older America," Brookings, 2007.
3. Based on projections by the Joint Center for Housing Studies, Harvard University.
4. Hudson Institute, *2010 and Beyond: A Vision of America's Transportation Future,* New York, 2004, p. 50.
5. UNCTAD, FDI/TNC Database, 2007
6. Marc Levinson, *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger,* Princeton University Press, 2006.
7. But it is still expensive to move people and transportation *within metropolitan areas* and is consuming a larger and larger share of household costs, as discussed below. Edward L. Glaeser and Janet E. Kohlhase, "Cities, Regions and the Decline of Transport Costs," Cambridge: National Bureau of Economic Research Working Paper No. 9886: 2003.
8. PricewaterhouseCoopers, "UK Economic Outlook 2007," London.
9. Alan Berube, "MetroNation: How U.S. Metropolitan Areas Fuel American Prosperity," Brookings, 2007.
10. Alan E. Pisarski, "Commuting in America III," National Cooperative Highway Research Program Report 550 and Transit Cooperative Research Program 110 Washington: Transportation Research Board, 2006.
11. Based on Brookings analysis of IRS 2000-2004 migration data.
12. The FHWA notes that these figures are much higher than those reported in the U.S. Census' vehicle inventory for 2002 because of new data collection and reporting, and not necessarily because of not because of substantial vehicle registration changes. See Office of Highway Information Management, "Highway Statistics 2005," Federal Highway Administration Table MV-9.
13. Eno Transportation Foundation, "Efficient Goods Movement and the Environment," Summary of Symposium Series, October 2005 – March 2006, p. 5.
14 Congressional Budget Office, "Freight Rail Transportation: Long-Term Issues," 2006
15. Robert E. Lang and Arthur C. Nelson, "Beyond the Metroplex: Examining Commuter Patterns at the 'Megapolitan' Scale," Lincoln Institute of Land Policy Working Paper WP07RL1, 2007.
16. Regional Plan Association, "America 2050: A Prospectus," New York: September 2006.
17. Edward Glaeser, Jed Kolko, and Albert Saiz, "Consumer City." *Journal of Economic Geography* 1: 27–50: 2001.
18 Edward Glaeser and Joshua D. Gottlieb, "Urban Resurgence and the Consumer City," Harvard Institute of Economic Research Discussion Paper 2109: 2006.
19. Brookings analysis of data from the Bureau of Labor Statistics, U.S. Department of Labor. Updated from Edward L. Glaeser, Matthew Kahn, and Chenghuan Chu, "Job Sprawl: Employment Location in U.S. Metropolitan Areas," Brookings, 2001.
20. A heavily-used transit corridor in Arlington, Virginia boasts low vacancy rates in its 21.1 million square feet of office space—nearly as much space as the city of Denver's entire downtown. Dennis Leach, "Roslyn-Ballston Corridor," in *The New Transit Town: Best Practices in Transit-Oriented Development,* H. Dittmar and G. Ohland, eds, Washington: Island Press, 2004.
21. One recent study of 13 large metropolitan areas found that small-scale, scattered commercial development—referred to as Edgeless Cities—account for about 40 percent of the total office space. Traditional downtowns follow with nearly 33 percent of space. Edge cities have about just over 15 percent, with the remaining 13 percent in suburban corridors and secondary downtowns Robert E. Lang, Thomas Sanchez and Jennifer LeFurgy, "Beyond Edgeless Cities: Office Geography in the New Metropolis," National Center for Real Estate Research, National Association of Realtors, 2006.
22. Alan Berube and Elizabeth Kneebone, "Two Steps Back: City and Suburban Poverty Trends 1999–2005," Brookings, 2006.
23. Robert Puentes and David Warren, "One Fifth of America, A Comprehensive Guide to America's First Suburbs," Brookings, 2006.

SECTION III: SEVERAL FACTORS ARE DRIVING THE WIDESPREAD DEMAND FOR REFORM

1. U.S. Department of Transportation, "Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance Report to Congress," (the C&P report) (2006), exhibit 3-11.
2. Ibid.
3. Brookings analysis of data from FHWA National Bridge Inventory. Yearly tables: http://www.fhwa.dot.gov/bridge/deficient.htm.
4. Richard Steinmann and Robert Tuccillo, "Transit in the U.S.: Conditions, Performance, and Finance," Briefing for the National Surface Transportation Revenue and Policy Study Commission, June 27, 2006.
5. Federal Transit Administration, National Transit Database, Table 2: Revenue Vehicle Inventory, 2004.
6. Bureau of Transportation Statistics, "National Transportation Statistics 2007," U.S. Department of Transportation, Table 1-28c: Condition of Rail Transit Infrastructure (Percent).
7. U.S. Government Accountability Office, "Federal Role in Providing Safety Oversight and Freight Infrastructure Investment Could Be Better Targeted," GAO-07-770, 2007, p. 11.
8. OMB, "Detailed Information on the Amtrak Assessment," January 2008, http://www.whitehouse.gov/omb/expectmore/detail/10004000.2005.html
9. The highway figures include only public road and street mileage. Beginning in 1998, approximately 43,000 miles of Bureau of Land Management Roads are excluded. The transit system length is measured in both directions and beginning in 2002, the data for commuter and light rail modes include "purchased" transportation service provided to a public transit agency from transportation provider based on a written contract.
10. Pisarski, Table 3-5.
11. Lang, Sanchez , and LeFurgy, 2006.
12. Mitretek Systems, "Intelligent Transportation Systems Benefits and Costs," prepared for Federal Highway Administration, May 2003. Report: FHWA-OP-03-075
13. The congestion figure is from: Cambridge Systematics, Inc., "Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Mitigation," prepared for Federal Highway Administration, 2005
14. U.S. DOT C&P report, 2006, exhibit 2-11. The American Association of State Highway and Transportation Officials found that only half of Americans have access to easy-dial "511" traveler information systems. AASHTO, "Invest in our Future: Future Needs of the U.S. Surface Transportation System." 2007.
15. U.S. DOT, "Highlights from the 2006 ITS Deployment Tracking Database," 2006.
16. Schrank and Lomax, 2007.
17. Energy Information Administration, "Annual Energy Outlook 2008 (Revised Early Release)," Report #:DOE/EIA-0383(2008). http://www.eia.doe.gov/oiaf/aeo.
18. David Schrank and Tim Lomax, "The 2007 Urban Mobility Report," Texas Transportation Institute, 2007, http://mobility.tamu.edu.

19. National Cooperative Highway Research Program, "Economic Implications of Congestion," Report 463, Transportation Research Board, 2001.
20. Partnership for New York City, "Growth or Gridlock? The Economic Case for Traffic Relief and Transit Improvement for a Greater New York," 2006.
21. For this analysis we used raw data from the FHWA's Highway Performance Management Systems (HPMS) database and aggregated the county level data up to the latest metropolitan area definitions. Note that this is different from urbanized areas which the FHWA also uses.
22. Cambridge Systematics, Inc., "An Initial Assessment of Freight Bottlenecks on Highways," Prepared for Federal Highway Administration in association with Battelle Memorial Institute. Columbus: 2005.
23. Although the report points out that the costs of delivering these benefits could be substantial depending on the congestion strategy. See: Rod Eddington, "Main Report: Transport's Role in Sustaining the UK's Productivity and Competitiveness," HM Treasury, UK, 2006a.
24. Partnership for New York City, p. 40.
25. See NCHRP Project 8-36, Task 22.
26. Surface Transportation Policy Partnership, "Easing the Burden, a Companion Analysis of the Texas Transportation Institute's Congestion Study," Washington: 2001.
27. For a comprehensive discussion of the causes of congestion, its dynamics, and its relative incidence in various parts of the country, see Anthony Downs, *Still Stuck in Traffic: Coping with Peak-Hour Traffic Congestion* Brookings, 2004.
28. This is similar to the approach in Paul Weyrich and William Lind, "Does Transit Work? A Conservative Reappraisal," Free Congress Research and Education Foundation, 1999.
29. For this paper, data from 2002, 2003, and 2004 are examined for the nation and for the 32 metropolitan areas surveyed during those years.
30. The top five metropolitan areas ranked by perceptions of transit availability are Los Angeles, New York, Denver, Anaheim, and Seattle. The bottom 5 are Kansas City, Indianapolis, Oklahoma City, Charlotte, and Fort Worth.
31. An ABC/Time/Post poll generally confirm these statistics and in 2005 found that public transit is more available in the Northeast and West (where seven in 10 said it was an option) than it is in the South and Midwest (only five in 10). (ABC News/Time Magazine/ Washington Post Poll, "A Look Under the Hood of a Nation on Wheels," 2005); Another study from the Bureau of Transportation Statistics found that only 40 percent of Americans reported that they live within a quarter mile of a bus stop of any kind, and under a quarter live within five miles of rail. (Bureau of Transportation Statistics, "National Transportation Availability and Use Survey," 2002.)
32. The information in the NTD is presented by transit agency so what is reported here has been aggregated up to the urbanized area level. For consistency's sake they are referred to as metropolitan areas here.
33. These figures for buses report number of vehicles operated in maximum service (VOMS). According to the National Transit Database: "VOMS is the revenue vehicle count taken during a transit agency's maximum season of the year, on the day of the week that this maximum occurs. It is not taken on a day when a special event or other extreme set of circumstances would cause the resulting tally to represent a one-time event rather than a recurring maximum service requirement. Because it does not include spare and stored vehicles, this fleet-size measure provides a more meaningful estimation of a transit agency's operating characteristics."
34. Brookings analysis of Federal Transit Administration data from the National Transit Database.
35. Amtrak would have generated $122 million more in 2006 if it achieved a 75 percent on time performance in 2006, mostly from increased fare revenues. Office of Inspector General, "Effects of Amtrak's Poor On-Time Performance," U.S. Department of Transportation Report Number CR-2008-047, 2008.
36. Bureau of Transportation Statistics, "Freight," U.S. Department of Transportation. Undated, available at http://www.bts.gov/programs/freight_transportation/html/more_freight.html.
37. Michael Meyer, "Road Congestion Impacts on Freight Movement," in *The Future of Urban Transportation II*, Eno Transportation Foundation, Washington, DC, 2008.
38. The FHWA notes that these figures are much higher than those reported in the U.S. Census' vehicle inventory for 2002 because of new data collection and reporting, and not necessarily because of not because of substantial vehicle registration changes. See Office of Highway Information Management, "Highway Statistics 2005," Federal Highway Administration Table MV-9.
39. National Surface Transportation Policy and Revenue Study Commission, "Transportation for Tomorrow," 2008, p. 2-16.
40. Bureau of Transportation Statistics, "National Transportation Statistics 2007."
41. Ibid; U.S. Department of Transportation, Table 1-42 Average Length of Haul, Domestic Freight and Passenger Modes (Miles).
42. Jean-Paul Rodrigue and others, *The Geography of Transport Systems,* London: Routledge, 2006.
43. Chad Shirley and Clifford Winston, "The Impact of Congestion on Shippers' Inventory Costs," Final report to the U.S. Department of Transportation, Federal Highway Administration. 2004.
44. Glen Weisbrod, Donald Vary, and George Treyz, "Economic Implications of Congestion," National Cooperative Highway Research Program Project 2-21, Transportation Research Board, 2001; cited in Cambridge Systematics, "The Benefits of Reducing Congestion," National Cooperative Highway Research Program Project 8-36, Task 22, 2002.
45. The most sinister of these interchanges come with their own monikers like Spaghetti Junction, the Mixing Bowl, Orange Crush, Malfunction Junction, and the Stack.
46. Cambridge Systematics, Inc., 2005.
47. HLB Decision Economics Inc., "Public Policy Impacts on Freight Productivity," 1999.
48. Kant Rao and William L. Grenoble, "Modeling the Effects of Traffic Congestion on JIT," *International Journal of Physical Distribution & Logistics Management,* Vol 21(2): 1991.
49. Thomas Golob and Amelia Regan, "Traffic Congestion and Trucking Managers' Use of Automated Routing and Scheduling," *Transportation Research Part E: Logistics and Transportation Review*, Vol 39(1) 2003, pp. 61-78.
50. Isaac Shafran and Anne Strauss-Weider, "Financing and Improving Land Access to U.S. Intermodal Cargo Hubs," Transportation Research Board NCHRP Report 497, 2003.
51. These terms for these connectors is sometimes inconsistent. "First mile" is used here to reflect the infrastructure needed to transport goods out of air and marine terminals to the broader road and rail shipping network in the U.S. "Last mile" is often considered the final delivery directly to the consumers themselves.
52. Maritime Administration, "Report to Congress on the Performance of Ports and the Intermodal System," U.S. Department Of Transportation, June 2005.
53. American Association of State Transportation Organizations "Freight-Rail Bottom Line Report," 2003.
54. CBO, 2006.
55. BTS, 2007.
56. Ibid.
57. To be sure, greenhouse gases are not all bad. The earth benefits from a natural "greenhouse effect," whereby greenhouse gases—including CO_2, methane, nitrous oxide, and others—absorb some of the heat that is emitted by the earth's surface after being warmed by sunlight. This naturally occurring effect keeps average surface temperatures at about 45 degrees Fahrenheit as opposed to the -15 degrees Fahrenheit that the earth would endure without the effect. Pew Center on Global Climate Change, "Climate Change 101: Understanding and Responding to Global Climate Change," 2006.
58. Energy Information Administration, "Emissions of Greenhouse Gases in the United States," 2005. Note that while CO_2 has a low warming potential, the enormous amount of it in the atmosphere means that it comprises 84 percent of total greenhouse gas warming potential.

59. Intergovernmental Panel on Climate Change, "Climate Change 2007: The Physical Science Basis."
60. For examples of the potential consequences of climate change, see: Intergovernmental Panel on Climate Change, 2007.
61. David Greene and Andreas Schafer, "Reducing Greenhouse Gas Emissions from U.S. Transportation," Pew Center on Global Climate Change, 2003.
62. Ibid.
63. U.S. Environmental Protection Agency, "Health Effects of Pollution." 2006.
64. Energy Information Administration, 2005. Additionally, almost 2 percent of U.S. transportation is fueled by natural gas. While cleaner, the use of natural gas also emits CO_2. The balance of U.S. transportation fuels include renewable options like ethanol, which also releases CO_2 when burned. However, fuels like ethanol can be considered carbon-neutral because the original source of the fuel—plants such as corn—sequesters carbon.
65. Greene and Schafer, 2003.
66. Environmental Protection Agency, "Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2006."
67 Feng An and Amanda Sauer, "Comparison of Passenger Vehicle Fuel Economy and GHG Emissions Standards Around the World," Pew Center on Global Climate Change, 2004.
68. U.S. Department of Transportation, "Vehicle Miles Traveled (VMT) and Vehicle Emissions," 2002. Because CO_2 emissions are dependant primarily on MPG and VMT, and because MPG remains relatively constant, any increase in VMT coincides with a proportionate increase in CO_2 emissions.
69. See: Reid Ewing and others, *Growing Cooler: The Evidence on Urban Development and Climate Change*, Washington: Urban Land Institute, 2008.
70. Source: Brookings analysis of federal highway data
71. Marilyn A. Brown, Frank Southworth, and Andrea Sarzynski, "Shrinking the Carbon Footprint of Metropolitan America," Brookings, 2008.
72. Ibid.
73. International Energy Agency, "Energy Balances of OECD Countries, 1999–2000," 2001. Conversion to barrels of oil equivalent was made by multiplying tonnes of oil equivalent by the conversion factor of 7.33. See the Society of Petroleum Engineers for more conversion factors.
74. Energy Information Administration, "U.S. Imports by Country of Origin." http://tonto.eia.doe.gov/dnav/pet/hist/mcrfpus1m.htm.
75. The rankings come from the 2007 Failed States Index prepared by The Fund for Peace and Foreign Policy Magazine. The index employs a rating of 12 social, economic, and political/military indicators as well as other assessments of institutional capabilities. See: http://www.foreignpolicy.com/story/cms.php?story_id=3865&page=0.
76. Alan Berube and others, "Finding Exurbia: America's Fast-Growing Communities at the Metropolitan Fringe," Brookings, 2006.
77. John F. Kain, "Residential Segregation, Negro Employment, and Metropolitan Decentralization," *Journal of Economics* 82 (1968): 175–97.
78. Harry J. Holzer and Michael A. Stoll, "Meeting the Demand: Hiring Patterns of Welfare Recipients in Four Metropolitan Areas," Brookings, 2001.
79. Keith R. Ihlanfeldt and David L. Sjoquist. "The Spatial Mismatch Hypothesis: A Review of Recent Studies and Their Implications for Welfare Reform," *Housing Policy Debate,* 9: 849-93 (1998). Also see: Michael A. Stoll, "Job Sprawl and the Spatial Mismatch between Blacks and Jobs." Brookings, 2005.
80. Bureau of Transportation Statistics, "Transportation Statistics Annual Report," 2005.
81. Elizabeth Roberto, " Commuting to Opportunity: The Working Poor and Commuting in the United States," Brookings, 2008.
82. Matt Fellowes, "From Poverty, Opportunity: Putting the Market to Work for Lower Income Families," Brookings, 2006.
83. Ibid.
84. Center for Housing Policy, "A Heavy Load: The Combined Housing and Transportation Burdens of Working Families," Washington, 2006.
85. Center for Neighborhood Technology and Center for Transit-Oriented Development, "The Affordability Index: A New Tool for Measuring the True Affordability of a Housing Choice," Washington: Brookings, 2006.
86. American Automobile Association, "Crashes vs. Congestion – What's the Cost to Society?" prepared by Michael D. Meyer and Cambridge Systematics, Inc., 2008.
87. Two other new high risk areas are national security and food safety. See: U.S. GAO, "High-Risk Series: An Update," GAO-07-310, 2007.
88. Cited in: Robert A. Katzman, ed., *Daniel Patrick Moynihan: The Intellectual in Public Life* Washington: Woodrow Wilson Center Press, 1998, p. 78.
89. The ASCE reports that they "assembled a panel of 24 of the nation's leading civil engineers, analyzed hundreds of studies, reports and other sources, and surveyed more than 2,000 engineers" to determine investment needs for the nation's infrastructure. American Society of Civil Engineers, "Report Card for America's Infrastructure: Methodology," 2005.
90. Ross Crichton, "Highway Investment Scenario Estimates: Impacts of Analytical Assumptions," Briefing for the National Surface Transportation Revenue and Policy Study Commission, July 2006.
91. U.S. DOT C&P report, 2006, exhibit 7-10.
92. Freight and passenger rail estimates are also large and differ somewhat depending on the source. The range for freight rail is between $4 and $10 billion annually. Passenger rail is between $3 and $7 billion. AASHTO, 2003.
93. U.S. DOT C&P report, 2006, exhibit ES-13.
94. See e.g., National Surface Transportation Policy and Revenue Study Commission, "Base Case Needs Assessment: Highways," Commission Briefing Paper 6A-01, 2007.
95. Transportation for Tomorrow, Exhibit 4-22.
96. National Transportation Policy Project, "Commentary on the Report of the National Surface Transportation Policy and Revenue Study Commission," Washington: Bipartisan Policy Center, 2008.
97. Eddington, 2006a.
98. Susan Binder, "Limitations of the USDOT Investment Analysis," Briefing for the National Surface Transportation Revenue and Policy Study Commission, July 2006.
99. U.S. Governmen Accountability Office, "Federal-Aid Highways: Trends, Effect on State Spending, and Options for Future Program Design," GAO-04-802, 2004, p. 39.
100. Gary Maring, "Future Financing Options to Meet Highway and Transit Needs," Prepared for the Regional Plan Association National Roundtable on Surface Transportation, Tarrytown, New York, February 20–22, 2007.
101. Federal Highway Administration, Highway Statistics 2005, table FE-10.
102. National Association of State Budget Officers, "State Expenditure Reports: 2004–2006."
103. Brookings analysis of FHWA Highway Statistics Series Table SF-3, 1995–2005.
104. U.S. GAO, "Federal-Aid Highways," GAO-04-802, 2004, p. 5.
105. Source: Highway Statistics Series, SF-1. Although the federal highway data presents it as such, it is questionable whether bond proceeds should be included here as "revenues." Bond proceeds must be repaid in the future, along with the interest payments, presumably by other sources of revenue—such as the state gas tax revenue or from general funds. See: Robert Puentes and David Warren, "Today's Roads with Tomorrow's Dollars: Using GARVEE Bonds to Finance Transportation Projects," Brookings, 2005.
106. The Leaky Underground Storage Tank Trust Fund receives .10 cents.
107. Bureau of Transportation Statistics, "Survey of State Funding for Public Transportation," 2005.
108. Martin Wachs, "Improving Efficiency and Equity in Transportation Finance," in *Taking the High Road: A Metropolitan Agenda for Transportation Reform,* B. Katz and R. Puentes, (eds.) Brookings Press, 2005.
109. U.S. DOT C&P report, 2006, p. 6-22.
110. Source: Robert Puentes and Ryan Prince, "Fueling Transportation Finance: A Primer on the Gas Tax," in *Taking the High Road: A Metropolitan Agenda for Transportation Reform,* B. Katz and R. Puentes, eds., Brookings, 2005.

111. The rescission orders can be found on the FHWA's website of Directives and Policy Memorandums: http://www.fhwa.dot.gov/legsregs/directives/notices.htm
112. Surface Transportation Policy Partnership, "President Bush Signs FY'07 Spending Measure, Largest Single Program Rescission on the Way," 2007.
113. Ken Simonson, Testimony before the National Surface Transportation and Policy Revenue Study Commission, March 19, 2007.

SECTION IV: TRANSPORTATION, THE U.S. ECONOMY, AND THE METROPOLITAN PRIORITY

1. School and church trips are combined. See Bureau of Transportation Statistics, "Highlights of the 2001 National Household Travel Survey," 2003.
2. Joseph Giglio, *Mobility: America's Transportation Mess and How to Fix It,* New York, Hudson Institute, 2005, p. xii.
3. According to the latest Consumer Expenditure Survey data on the whole, consumers in the entire southern region of the U.S. spend more on "transportation" than they do on "shelter" although total "housing" expenses are the largest component. U.S. Department of Labor, "Consumer Expenditures in 2005," Bureau of Labor Statistics, Report 998, 2007.
4. Nicholas Stern, "The Economics of Climate Change," HM Treasury, UK, 2006.
5. Eddington discusses this balancing act by examining three economically growing countries: China, India, and Ireland and how the latter two grew their national economy with only limited transportation investment. The report warns, however, that this is a difficult model to sustain and targeted investments do become necessary. Eddington, 2006a, p. 11.
6. Randall Eberts, "How Levels of Investment in Transportation Affect Economic Health," University of California, Irvine, 1999.
7. National Research Council, "Key Transportation Indicators: Summary of a Workshop," Janet Norwood and Jamie Casey, eds. National Research Council, 2002. p. 26.
8. Kajal Lahiri, Wenxiong Yao and Peg Young, "Transportation and the Economy: Linkages at Business Cycle Frequencies," *Journal of Transportation Research,* No. 1864: 103-111. 2004.
9. Rosalyn A. Wilson, "Transportation in America 2001," Eno Transportation Foundation, 2002.
10. Clifford Winston, *Government Failure versus Market Failure,* AEI-Brookings Joint Center for Regulatory Studies, 2006, p. 63
11. Wilson, 2002, p. 5.
12. One study found that the aggregate population of center cities would have grown by about 8 percent if the interstates had not been built. Nathaniel Baum-Snow, "Did Highways Cause Suburbanization?" *The Quarterly Journal of Economics,* MIT Press, vol. 122(2), pages 775-805, 05 (2007).
13. This is, of course, in addition to national defense. Before he signed the bill, Eisenhower notes that "in case of atomic attack on our key cities, the road network must permit quick evacuation of target areas." Cited in: Kathleen Tobin, "The Reduction of Urban Vulnerability: Revisiting 1950s American Suburbanization as Civil Defense," *Cold War History,* Vol, 2(2) 1-32; 2002.
14. HLB Decision Economics Inc. and KPMG LLP, "Public Policy Impacts on Freight Productivity: Final Report with Annotated Bibliography," prepared for Federal Highway Administration, 1999. The authors note that caution should be used in interpreting these results for policy making.
15. Chad Shirley and Clifford Winston, "Firm Inventory Behavior and the Returns from Highway Infrastructure Investments," *Journal of Urban Economics* 55 (2004) 398–415. Another way to look at it is that there are potentially large returns from the initial capital investment in the highway system, but once the system was completed subsequent expenditures that primarily attempted to maintain the system were likely to yield lower returns.
16. See e.g., Theofanis P. Mamuneas and M. Ishaq Nadiri, "Production, Consumption and the Rates of Return to Highway Infrastructure Capital," Report prepared for U.S. Department of Transportation, 2003.
17. This is similar to the principle of triple convergence which holds that major improvements to a roadway will result in shifts to that roadway from other routes, other times, and other modes until that facility becomes congested. See Downs, 2004, p. 327.
18. Marlon G. Boarnet and Andrew F. Haughwout, "Do Highways Matter? Evidence and Policy Implications of Highways' Influence on Metropolitan Development," Brookings, 2000.
19. Mark H. Rose, "Reframing American Highway Politics, 1956-1995," *Journal of Planning History* 2003; 2; 212.
20. Ronald D. Utt, "More Transportation Spending: False Promices of Prosperity and Job Creation," Heritage Foundation Backgrounder #2121, 2008.
21. See also: Federal Highway Administration, "Highway Operations Spending as a Catalyst for Job Growth," MacroSys Research and Technology, 2003. Of course, the point could easily be made that spending a billion dollars on just about anything (e.g., transit, housing, medical care, alternative energy, convention centers, pollution control) would support job creation of roughly the same magnitude.
22. This argument was recently made at a National Research Council conference: "Key Transportation Indicators: Summary of a Workshop," Janet Norwood and Jamie Casey, eds. National Research Council, 2002.

SECTION V: TTHE POLICY PROBLEM: FEDERAL TRANSPORTATION POLICY IS ABSENT, OUTDATED, AND UNDERPERFORMING

1. Tom Lewis, *Divided Highways,* New York: Viking Press, 1997, p. 104.
2. Richard F. Weingroff, "Creating a Landmark: The Intermodal Surface Transportation Efficiency Act of 1991" Federal Highway Administration, 2005.
3. The law also required that the Secretary of Transportation distribute copies of the policy declaration to every employee and that it was posted in every office of the U.S. DOT. This statutory requirement was never fulfilled. ISTEA, P.L. 102-240, Sec. 2. (1991).
4. Although there was strong language inserted with respect to the Future of Surface Transportation System Section 1909.
5. Although obscured by its disagreements about funding levels and sources, the NSTPRSC's most important contribution is its forceful call for a renewed federal purpose. In recent months organizations within the transportation lobby such as the U.S. Chamber of Commerce, the Association of Metropolitan Planning Organizations, the American Road & Transportation Builders Association, American Association of State Highway and Transportation Officials, and the American Public Transportation Association have all called for some articulation of a national vision and purpose as have a diverse group of research and policy organizations such as the T4America Campaign, the Bi-Partisan Policy Center, the Reason Foundation, America 2050, and the Hudson Institute. The National Stone, Sand and Gravel Association said that developing a new vision for transportation in the U.S. is "not negotiable – it's a matter of life and death..." NSSGA, "Aggregates in Action," 2007.
6. The 2006 National Strategy to Reduce Congestion on America's Transportation Network comes close. However, that plan is focused only on strategies ostensibly intended to reduce traffic congestion such as toll roads and methods such as congestion pricing. While important, this does not represent a comprehensive approach to the nation's transportation challenges. U.S. Department of Transportation, "National Strategy to Reduce Congestion on America's Transportation Network," 2006.
7. While the federal and state governments have provided extensive funding for truck, barge, and airline infrastructure over the past quarter century, freight railroads receive little funding assistance. The railroads pay all of their own infrastructure and rights-of-way costs and are responsible for the risks associated with those costs. Since 1980, the largest freight railroads invested over $350 billion split about equally between infrastructure and equipment.
8. For an insider discussion about this congressional fight, see: Costas Panagopoulos and Joshua Schank *All Roads Lead to Congress: The $300 Billion Fight Over Highway Funding,* Washington: CQ Press, 2007.
9. Thomas M. Downs, "Is There a Future for the Federal Surface Transportation Program?" *Journal of Transportation Engineering,* Vol. 131, No. 6, June 1, 2005. 393-396

10. U.S. GAO, 2004, p. 5.
11. See: James F. Wolf, Robert Puentes, Thomas W. Sanchez, and Tara K. Bryan, "Metropolitan Transportation Planning in the Post-ISTEA Era: What Happened, and What Do We Do Now?" in *The Future of Urban Transportation II*, Eno Transportation Foundation, 2008.
12. Bruce McDowell, "Improving Regional Transportation Decisions: MPOs and Certification," Brookings, 1999.
13. FHWA, "Comments on Draft 1.0 Regional Transportation Vision (First Chapter of the RTP)," 2007.
14. Martin Wachs, "A Quiet Crisis in Transportation Finance: Options for Texas." *Horizon: The Future of Transportation; A Publication of the Texas Department of Transportation,* Summer, 2006, pp. 2-27.
15. For regional analyses, see the following—Atlanta: Duane D. Stanford, "Metro Roads Shortchanged: Funding Formula Steers Cash to Rural Highways at the Expense of Gridlocked Atlanta Motorists," *Atlanta Journal-Constitution,* September 28, 2004, p. A1; California: Adrian R. Fleissig and William F. Gayk, "Distribution of State Transportation Funding," Sacramento: California State University Center for California Studies, 2003; Houston: Catherine Rentz Pernot, "Transportation Funding Equity: The Local Pie Is Strangely Sliced," Houston: Gulf Coast Institute, 2003; Pennsylvania: Anne Canby and James Bickford, "Highway Investment Analysis," Philadelphia: 10,000 Friends of Pennsylvania, 2003; San Antonio: Bill Barker, "Gasoline Tax Shortchanges Big-City Drivers," *San Antonio Express-News,* January 19, 2003; St. Louis: University of Missouri-St. Louis, "Analysis of Metropolitan St. Louis State Transportation Fiscal Flows," Public Policy Research Center, 2001; Phoenix, Denver, Dallas, and Seattle: Paul Dempsey et al, "Metropolitan Planning Organizations: An Assessment of the Transportation Planning Process," A Report To Congress, University of Denver, 2000; Ohio: Edward W. Hill and others, "Slanted Pavement: How Ohio's Highway Spending Shortchanges Cities and Suburbs," Brookings, 2003: Michigan: Citizens Research Council of Michigan, "Improving The Efficiency Of Michigan's Highway Revenue Sharing Program," Livonia, MI; No. 1085: 2008
16. Metropolitan Seattle and Denver are exceptions and successfully fought to receive an equitable funding share.
17. Environmental Working Group, "Gas Tax Losers: Why Congress Must Ensure a Fairer Share of Gas Tax Revenues for Metro America." Washington, 2004.
18. U.S. DOT C&P report, 2006, exhibit 6-7.
19. U.S. GAO, "Bus Rapid Transit Offers Communities a Flexible Mass Transit Option," GAO-03-729T, 2003, p. 3.
20. Making Appropriations for the Department of Transportation and Related Agencies for the Fiscal Year Ending September 30, 2002, and for Other Purposes, H. Rept. 107-308, 107 Cong., 1 sess., 2001.
21. U.S. DOT C&P report, 2006, exhibit 6-25.
22. U.S. GAO, "Amtrak Management: Systemic Problems Require Actions to Improve Efficiency, Effectiveness, and Accountability," GAO-06-145, 2005.
23. Air Transportation Safety and System Stabilization Act. 147th Congressional Record, pages H5894-5918.
24. U.S. GAO, "Challenges Facing the Agency in Fiscal Year 2009 and Beyond." GAO-08-460T, 2008.
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31. Rod Eddington, Speech to the Commonwealth Club, London, December 1, 2006.
32. No doubt a key reason for the federal non-interventionist approach is the states themselves. During the deliberations regarding TEA-21 several AASHTO policy documents illustrate this resistance in no uncertain terms. In 1996 they wrote that "there would be considerable problems and the states would object to tying any federal distributions to national performance goals." Then in 1997 the group resolved that "performance measures should not used by the federal government as a means of restricting the authority and flexibility of state transportation officials, complicating or further regulating the program, or creating additional data collection burdens on the states." Cited in Teresa Curristine, "Reforming the U.S. Department of Transportation: Challenges and Opportunities of the Government Performance and Results Act for Federal-State Relations," *Publius,* Vol. 32(1), page 25 (2002).
33. The criteria to be evaluated in planning highway projects are: 1) economic vitality and global competitiveness; 2) safety; 3) security; 4) accessibility and mobility of people and freight; 5) environmental protection and energy conservation; 6) connectivity; 7) system management; and 8) preservation and maintenance. Public Law 109-59, Sections 5303 (h)(1) and 5304 (d)(1)
34. New Hampshire is the only state without a seat belt law, consistent with its motto: Live Free or Die. TEA-21 created two federal incentive grant programs to encourage states to increase the use of seat belts and child safety seats: Section 405 incentive grants and Section 157 incentive grants. These grant programs are designed to encourage states to increase seat belt use rates and target specific occupant protection laws and program. U.S. Department of Transportation, "Buckle Up America: Incentive Grants for Increasing Seat Belt Use," 2000.
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SECTION VI: POLICY RECOMMENDATIONS: A TRANSPORTATION AGENDA FOR A PROSPEROUS AMERICA

1. The U.S. Postal Service is the nation's largest public enterprise with current annual revenues approaching $70 billion. Winston, 2006.
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short of their proposal to more than double the size of the interstate system. See: American Association of State Highway and Transportation Officials, 2007, "Transportation Invest In Our Future: Future Needs Of the U.S. Surface Transportation System," 2007.
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To address the pressing transportation and infrastructure challenges facing the United States and abroad, the Brookings Institution launched the Metropolitan Infrastructure Initiative to inform a national discussion about how smart, targeted transportation and infrastructure policies can enhance U.S. competitiveness and help the country grow in environmentally sustainable and socially inclusive ways. At the core of this initiative is the fact that cities and suburbs are home to the bulk of the nation's transportation assets and therefore hold the greatest promise for helping the nation achieve prosperity. The goal of the initiative is to develop timely, independent analysis, frame key debates, and offer policy recommendations to help leaders in the U.S. and abroad address key infrastructure challenges with specific emphasis on transportation. This work builds on a decade of independent and rigorous research and policy development.

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