

NATIONAL DEBATE TOPIC FOR HIGH
SCHOOLS, 2012-2013

Resolved: The United States Federal
Government Should Substantially Increase
Its Transportation Infrastructure
Investment in the United States

NATIONAL DEBATE TOPIC FOR HIGH SCHOOLS, 2012-2013
Pursuant to 44 United States Code, Section 1333

Compiled by the Congressional Research Service
and the Knowledge Services Group
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44 U.S.C. SECTION 1333

CHAPTER 13—PARTICULAR REPORTS AND DOCUMENTS

Sec. 1333. National high school and college debate topics

(a) The Librarian of Congress shall prepare compilations of pertinent excerpts, bibliographical references, and other appropriate materials relating to:

(1) the subject selected annually by the National University Extension Association as the national high school debate topic and

(2) the subject selected annually by the American Speech Association as the national college debate topic.

In preparing the compilations the Librarian shall include materials which in his judgment are representative of, and give equal emphasis to, the opposing points of view on the respective topics.

(b) The compilations on the high school debate topics shall be printed as Senate documents and the compilations on the college debate topics shall be printed as House of Representative documents, the cost of which shall be charged to the congressional allotment for printing and binding. Additional copies may be printed in the quantities and distributed in the manner the Joint Committee on Printing directs.

(P.L. 90-620, Oct. 22, 1968, 82 Stat. 1270)

Historical and Revision Notes

Based on 44 U.S. Code, 1964 ed., Supp. III, Sec. 170 [Sec. 276a] (Dec. 30, 1963, Pub. L. 88-246, Secs. 1, 2, 77 Stat. 802)

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Foreword

The 2012–2013 high school debate topic is: “Resolved: The United States federal government should substantially increase its transportation infrastructure investment in the United States.”

In compliance with 44 U.S.C. Section 1333, the Congressional Research Service (CRS) of the Library of Congress (LC) prepared this bibliography to assist high school debaters in researching the topic. This bibliography is intended to assist debaters in the identification of resources on the topic. In selecting terms and websites for this manual, CRS sampled a wide spectrum of opinions reflected in the current literature on this issue. No preference for any policy is indicated by the selection or positioning of articles or websites cited, nor is CRS disapproval of any policy or article to be inferred from its omission.

The manual is organized by subjects and source areas. For example, General Information comprises Congressional Hearings; Think Tanks and the Transportation Research Board (TRB);¹ and Books and Articles. The other sections in addition to General Information are Airports and Airways; Bridges and Tunnels, Highways and Roads, and Transit; Maritime: Ports and Waterways; Railroads; the American Recovery and Reinvestment Act of 2009 (P.L. 111–5, 123 Stat 115) which is included because the Act contained appropriations for immediate expenditures on transportation infrastructure and the section contains congressional hearings both before and after the appropriation and expenditure of funds; and Agencies and Organizations.

Many of the U.S. government documents listed in the bibliography are available either online or in federal depository libraries. These libraries may be identified in the Federal Depository Library Directory at: <http://catalog.gpo.gov/fdlpdir/FDLPdir.jsp>. Your local public library may be able to obtain the documents that are not available in an online format from these federal depository libraries through an interlibrary loan.

The Library of Congress cannot distribute copies of this publication or other materials identified throughout this publication to debaters. This publication and other U.S. government documents may also be found online in the Federal Digital System at: <http://www.gpo.gov/fdsys>.

The bibliography was prepared by John Williamson, Mark Gurevitz, Carol Glover and Rita Tehan, Information Research Specialists in the Resources, Science and Industry Section of the Knowledge Services Group, and by Audrey Celeste Crane-Hirsch, Information Research Specialist in the Humanities Section of the Knowledge Services Group, CRS, under the direction of Anne Marie Gwynn, Head of the Resources, Science and Industry Section, Knowledge Services Group, CRS.

Good luck to each debater in researching, preparing, and presenting arguments on this year’s topic.

Mary B. Mazanec, Director
Congressional Research Service

¹The Transportation Research Board (TRB) is a part of the National Academies and is partially funded by the federal government through the National Science Foundation as well as through grants from executive branch agencies. TRB not only receives grants, but also gives and oversees research grants on transportation-related subjects.

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AN ANNOTATED BIBLIOGRAPHY ON THE
2012–2013 HIGH SCHOOL DEBATE TOPIC

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December 2013

Introduction

The 2012–2013 high school debate topic is: “Resolved: The United States federal government should substantially increase its transportation infrastructure investment in the United States.”

This selective bibliography is intended to assist debaters as they identify resources and references on the debate topic and includes citations to books, congressional publications, magazine and journal articles, and websites. The annotations are drawn from either the Transportation Research Board’s Transport Research International Documentation database (TRID, <http://trid.trb.org/>) or the website of the publishers or from specialized databases (e.g., ProQuest Congressional). CRS is not responsible for the contents of the annotations. This compilation is not intended to supply complete coverage of the topic. Further research on the topic resources can be done at high school, research, depository, and public libraries. Also, debaters are encouraged to consult international organizations, U.S. Government agencies, private think tanks, and non-governmental organizations (NGOs) and their websites, which can provide further information on the topic of transportation infrastructure investment. The manual is divided into six subtopics:

General Information

Airports and Airways

Bridges and Tunnels, Highways and Roads, Transit

Maritime: Ports and Waterways

Railroads

American Recovery and Reinvestment Act of 2009 (P.L. 111–5, 123 Stat 115)

Agencies and Organizations

General Information

Congressional Hearings

United States. 2010a. *Investing in Infrastructure: Creating Jobs and Growing the Economy: Hearing before the Committee on Banking, Housing, and Urban Affairs, United States Senate, One Hundred Eleventh Congress, Second Session, on Examining Job Creation and Economic Growth through Investment in Our Nation's Infrastructure, September 21, 2010*. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG-111/shrg63651/pdf/CHRG-111shrg63651.pdf>

Hearing to examine domestic infrastructure development and finance, focusing on potential economic impacts and the role of the national infrastructure bank. Supplementary material (p. 38-115) includes submitted statements, witnesses' written statements and written replies to Committee questions, and a report.

———. 2010b. *Long-Term Financing Options for the Highway Trust Fund including Member Proposals: Hearing before the Subcommittee on Select Revenue Measures of the Committee on Ways and Means, U.S. House of Representatives, One Hundred Eleventh Congress, First Session, July 23, 2009*. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG-111hrg63001/pdf/CHRG-111hrg63001.pdf>

Hearing before the Subcommittee on Select Revenue Measures to examine possible long-term financial options for the Highway Trust Fund, which manages federal highway and transit expenditures (Subcommittee advisory, p. 2-3). Ways are suggested to reorganize funding programs for transportation so that the HTF will not go bust and the Congress will not have to augment transportation expenditures with monies from the General Fund. Representative Oberstar (Chairman of the House Transportation and Infrastructure Committee) observed that funds had been removed from the HTF over the past few years for disaster relief and then not replaced. He stated his opinion that there ought to be an office in the Federal Highway Administration (FHWA) for expediting highway project construction.

———. 2011a. *Financing 21st Century Infrastructure: Hearing before the Committee on Finance, United States Senate, One Hundred Twelfth Congress, First Session, May 17, 2011*. Washington: U.S. G.P.O.
<http://www.finance.senate.gov/library/hearings/download/?id=88ce7530-2c39-427c-8fcd-36cbb8e13ad8>

Hearing to review infrastructure financing issues, and to examine strategies to promote finance options and funding mechanisms for the national transportation infrastructure. “The U.S. currently spends only about 2 percent of its Gross Domestic Product (GDP) on infrastructure. While China spends close to 9 percent of its GDP

on infrastructure.” Advocates of increased infrastructure investment maintain that it offers potential avenues to economic and fiscal growth, as well as tangible benefits for public safety and overall transportation system efficiency. Supplementary material (p. 35-117) includes submitted statements and witnesses' written statements.

———. 2011b. *Improving and Reforming Our Nation's Surface Transportation Programs: Beckley, West Virginia, Field Hearing with Submissions from the Charleston, West Virginia, Listening Sessions: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Twelfth Congress, First Session, February 14, 2011*. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg65735/pdf/CHRG-112hhrg65735.pdf>

Hearing before the Subcommittee on Select Revenue Measures to examine possible long-term financial options for the Highway Trust Fund, which manages federal highway and transit expenditures (Subcommittee advisory, p. 2-3). Authorization of surface transportation programs expired on Sept. 30, 2009. The One Hundred Eleventh Congress was unable to agree on a new bill. The Highway Trust Fund was designed to be a self-financing mechanism, using new and existing highway user taxes, however, in recent years the balance of the Highway Trust Fund has fallen dramatically (from \$31,100,988,000 in FY 2000 to \$14,902,926,000 in FY 2012). In recent years, additional monies from the General Fund have had to be transferred into the HTF to keep it solvent. In order to guarantee long-term stability for surface transportation programs, any long-term reauthorization must also include a stable source of revenue to support program funding. Supplementary material (p. 181-196) includes submitted statements.

———. 2012a. *Building American Transportation Infrastructure Through Innovative Funding: Hearing before the Committee on Commerce, Science, and Transportation, United States Senate, One Hundred Twelfth Congress, First Session, July 20, 2011*. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG112shrg72409/pdf/CHRG-112shrg72409.pdf>

Hearing to examine efforts and strategies to promote innovative financing options for transportation infrastructure improvement projects, including proposed national infrastructure bank to provide funding for eligible infrastructure projects. The U.S. is said to have over 90,000 miles of highways in need of repair and over 70,000 structurally deficient bridges, while traffic and congestion problems continue to increase. Recent estimates indicate that the U.S. needs to invest \$2.2 trillion in order to keep pace with national infrastructure needs. Supplementary material (p. 59-66) includes witnesses' written replies to Committee questions and correspondence.

———. 2012b. *National Infrastructure Bank: More Bureaucracy and More Red Tape: Hearing before the Subcommittee on Highways and Transit of the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Twelfth*

Congress, First Session, October 12, 2011. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG-112hrg70681/pdf/CHRG-112hrg70681.pdf>

Hearing before the Subcommittee on Highways and Transit to examine the Obama Administration proposal to establish a national infrastructure bank to finance key infrastructure projects as part of the American Jobs Act of 2011 (Subcommittee memo and witness list, p. vi-ix). The national infrastructure bank proposal would create a government-established entity that provides credit assistance to sponsors of infrastructure projects. Capitalized with \$10 billion, the projects would be selected by a Board of Directors appointed by the President. Supplementary material (p. 47-106) includes submitted statements, witnesses' written statements and written replies to Subcommittee questions, and correspondence.

Government Accountability Office Reports

Dalton, Patricia A. 2008. *Physical Infrastructure Challenges and Investment Options for the Nation's Infrastructure: Testimony before the Committee on the Budget and the Committee on Transportation and Infrastructure, U.S. House of Representatives.* [Washington, D.C.]: U.S. Govt. Accountability Office.
<http://www.gao.gov/assets/130/120031.pdf>

Physical infrastructure is critical to the nation's economy and affects the daily life of virtually all Americans—from facilitating the movement of goods and people within and beyond U.S. borders to providing clean drinking water. However, this infrastructure—including aviation, highway, transit, rail, water, and dam infrastructure—is under strain. Estimates to repair, replace, or upgrade aging infrastructure as well as expand capacity to meet increased demand top hundreds of billions of dollars. Calls for increased investment in infrastructure come at a time when traditional funding for infrastructure projects is increasingly strained, and the federal government's fiscal outlook is worse than many may understand. This testimony discusses (1) challenges associated with the nation's surface transportation, aviation, water, and dam infrastructure, and the principles GAO has identified to help guide efforts to address these challenges and (2) existing and proposed options to fund investments in the nation's infrastructure. This statement is primarily based on a body of work the U.S. Government Accountability Office (GAO) has completed for the Congress over the last several years. The nation faces a host of serious infrastructure challenges. Demand has outpaced the capacity of the nation's surface transportation and aviation systems, resulting in decreased performance and reliability. In addition, water utilities are facing pressure to upgrade the nation's aging and deteriorating water infrastructure to improve security, serve growing demands, and meet new regulatory requirements. Given these types of challenges and the federal government's fiscal outlook, it is clear that the federal government cannot continue with business as usual. Rather, a fundamental reexamination of government programs, policies, and activities is needed. Through prior analyses of existing programs, GAO identified a number of principles that

could guide a reexamination of federal infrastructure programs. These principles include (1) creating well-defined goals based on identified areas of national interest, (2) establishing and clearly defining the federal role in achieving each goal, (3) incorporating performance and accountability into funding decisions, (4) employing the best tools and approaches to emphasize return on investment, and (5) ensuring fiscal sustainability. Various options are available to fund infrastructure investments. These options include altering existing or introducing new funding approaches and employing various financing mechanisms, such as bonds and loans. For example, a variety of taxes and user fees, such as tolling, can be used to help fund infrastructure projects. In addition, some have suggested including an infrastructure component in a future economic stimulus bill, which could provide a one-time infusion of funds for infrastructure projects. Each of these options has different merits and challenges, and choosing among them will likely involve trade-offs among different policy goals. Furthermore, the suitability of the various options depends on the level of federal involvement or control that policymakers desire. However, as GAO has reported, when infrastructure investment decisions are made based on sound evaluations, these options can lead to an appropriate blend of public and private funds to match public and private costs and benefits. To help policymakers make explicit decisions about how much overall federal spending should be devoted to investment, GAO has previously proposed establishing an investment component within the unified budget.

Think Tanks and Transportation Research Board

Acosta Fraser, Alison. 2012. "Will Transportation Reauthorization Be Another Big Spending Boondoggle?" WebMemo #3482. The Heritage Foundation. February 2, 2012. <http://www.heritage.org/research/reports/2012/02/transportation-program-reauthorization-another-big-spending-problem>

Congress should eliminate wasteful transportation programs and reduce spending. As Congress gears up for another year, reining in spending and debt should top the agenda, but one issue heading squarely against that priority is reauthorization of the transportation program. The last transportation bill, SAFETEA-LU, was marked by gluttonous excesses, which ranged from its porcine spending increases and wasteful spending on programs that did not improve roads, to its earmarks, which spawned the infamous "Bridge to Nowhere." Spending in SAFETEA-LU was so excessive that Congress was repeatedly called on to bail out the Highway Trust Fund.

Acosta Fraser, Alison, and Emily Goff. 2012. "Transportation Conference Bill: Some Good Reforms, but Too Much Spending." Issue Brief #3652. The Heritage Foundation. June 28, 2012. <http://www.heritage.org/research/reports/2012/06/transportation-conference-bill-some-good-reforms-but-too-much-spending>

Although the transportation bill has some positive reforms, it fails to correct the fundamental problems with transportation funding. Senate and House conferees have reached an agreement to fund surface transportation programs through 2014. The bill, MAP-21 (H.R. 4348), should be measured against how it steers the country away from its current path of reckless spending and whether it improves congestion, mobility, and safety.

Buxbaum, Jeffrey N., and Iris N. Ortiz. 2009. *Public Sector Decision Making for Public-Private Partnerships*. Washington, D.C.: Transportation Research Board.
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_391.pdf

Public sector agencies are increasingly exploring the use of public-private partnerships to increase funding available for infrastructure improvement. This study examines the information that is available to properly evaluate the benefits and risks associated with allowing the private sector to have a greater role in financing and developing highway infrastructure. The report will be of interest to public sector decision makers seeking to leverage or supplement traditional sources of funding with private investment and other participation. Information for the study was gathered through a literature review, a survey of U.S. state departments of transportation and Canadian ministries of transportation, and a second survey of other stakeholders. Supplemental information was gathered through interviews.

CSIS Commission on Public Infrastructure. 2006. *Guiding Principles for Strengthening America's Infrastructure*. Washington, D.C.: Center for Strategic and International Studies. <http://csis.org/publication/guiding-principles-strengthening-americas-infrastructure>

America's economic well-being and physical security depend on safe and reliable public infrastructure. Roads, airports, railways, ports, and other public investments are instrumental in boosting America's productivity and global economic competitiveness. Facilities that manage water, waste, and energy are fundamental in sustaining the nation's quality of life and health. But the United States is both under-investing in infrastructure and investing in the wrong projects: new investments are critically needed, but the nation lacks the policy structures to make the correct choices and investments. It is time to re-examine priorities for the nation's infrastructure. Based on the authors' experience in the public and private sectors, these are the basic principles the authors believe should guide policy to strengthen the nation's infrastructure.

Bailey-Campbell, Pamela. 2011. "Challenges Mount for Traditional Transportation Funding: Are Public-Private Partnerships a U.S. Solution?" *TR News*. (274).
<http://onlinepubs.trb.org/onlinepubs/trnews/trnews274Challenges.pdf>

Public-private partnerships (PPPs) increasingly have become a way for public agencies around the world to build or upgrade transportation infrastructure; in the United States, PPPs are still developing. In this article the author looks at successful U.S. programs, draws out rules for success, and recommends three actions at the federal level to make the most of PPPs: (1) Create PPP information resources; (2) Supply financial tools; and (3) Provide seed money.

Doren, Peter Van. 2003. "Let the Market Free Up Transportation in U.S." Commentary. *The Hill*. May 19, 2003. <http://www.cato.org/publications/commentary/let-market-free-transportation-us>

Examples from around the world show that government can use the power of the marketplace to improve transportation for citizens. But in the United States, which in so many other sectors of the economy is the world leader in market innovation, market forces have been ignored in favor of a government subsidize-and-control approach to transportation that has harmed efficiency and financed many projects of dubious value. With the expiration of longstanding federal legislation concerning aviation, Amtrak, highways and transit, Congress has a rare opportunity in 2003 to use market forces to free up America's gridlocked roads and taxiways.

Ehrlich, Everett M. 2005. *Public Works, Public Wealth: New Directions for America's Infrastructure : A Report of the CSIS Public Infrastructure Project*. Washington, D.C.: CSIS Press, Center for Strategic and International Studies. <http://csis.org/files/media/csis/pubs/publicworkspublicwealth.pdf>

America's infrastructure policy is at a crossroads, caught between rising demands and outdated programs to address them. Airports, highways, ports, and harbors are severely congested. Drinking water and wastewater facilities, bridges, dams and school buildings are in poor condition. The cost of these failures is great: time is lost to delay, commerce is impeded, business productivity is compromised, and lives are threatened. Yet federal investment in public infrastructure has decreased steadily as a share of both the economy and federal spending over the past two decades. The risk of under investment is only part of the equation. Of equal or greater concern is the prospect that the investments the nation makes are not the right ones. The nation's infrastructure policy favors new construction even when maintenance, renovation, and improved management offer better responses to the problem. Infrastructure policy favors politics over sound investment principles. And as U.S. programs fail to change in response to new realities, additional spending will be progressively less able to solve the nation's infrastructure problems.

Henkin, Tamar. 2009. *Debt Finance Practices for Surface Transportation*. Washington, D.C: Transportation Research Board. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_395.pdf

This report presents basic principles of debt issuance for public agencies. The primary focus is on the current practices of state agencies with responsibilities for surface transportation investment. The report may be useful in assisting in the decision on when and how to best use debt financing techniques to fund investments in transportation infrastructure. Anticipated audiences include those with financial oversight responsibilities for state departments of transportation (DOTs), public authorities, and local governments. Others who may benefit include legislative oversight committees and the media. Information for this report was gathered through a literature review, a comprehensive survey of state DOTs, selected interviews, and a study of selected state policies, guidelines, and documentation.

International Conference on Transportation Finance, and Benjamin G. Perez. 2012. *Financing Surface Transportation in the United States: Forging a Sustainable Future Now!: Summary of the Fourth International Conference*. Washington, D.C.: Transportation Research Board. <http://onlinepubs.trb.org/onlinepubs/conf/CP48.pdf>

This Fourth International Conference on Transportation Finance attracted some 150 transportation finance specialists from the public and private sectors. They gathered to share the latest developments in innovative funding techniques and to explore options for securing continued revenue to support national infrastructure and mobility needs. The conference's opening plenary session featured keynote presentations by Victor Mendez, Federal Highway Administrator, and Jane Garvey, North American Chair for Meridian Infrastructure, who highlighted transportation priorities and future opportunities. The subsequent plenary sessions each explored a different issue, as follows: the policy dynamics of future surface transportation finance, public and political acceptance issues posed by alternative financing methods, international project finance, sustainable transportation finance, emerging issues, and creation of a research road map for the future. The conference also featured two preconference workshops describing the state of the practice for performing benefit–cost analysis and discussing emerging trends for raising capital, and several breakout sessions after each plenary session. This report is a factual summary of what occurred at the conference.

Katz, Bruce. 2007. *Remaking Transportation and Housing Policy for the New Century*. Washington, D.C.: Brookings. <http://www.brookings.edu/research/testimony/2007/02/28transportation-katz>

Testimony before the Appropriations Subcommittee on Transportation, Housing and Urban Development and Related Agencies, Committee on Appropriations, U.S. House of Representatives, February 28, 2007.

Katz, Bruce, Robert Puentes, and Christopher Geissler. 2008. *America's Infrastructure Ramping Up or Crashing Down*. Washington, D.C.: Brookings.
<http://www.brookings.edu/research/papers/2008/01/infrastructure-katz-puentes>

A forum on competitiveness was held on October 10, 2007. The keynote speaker placed emphasis on better infrastructure investments, commenting that these investments would make America more secure, safer, and happier. Consensus at the forum is that America's infrastructure is broken, and needs innovation and investments at all levels. Challenges to infrastructure investments include social issues and environmental sustainability. In addition, the infrastructure system is driven by politics, instead of policy, which would be more useful. Finally, national priorities could be advanced through infrastructure investments, though this idea is rarely entertained.

Katz, Bruce, and Robert Puentes. 2006. *Remaking Transportation Policy for the New Century. Speech to Institute of Transportation Engineers*. Washington, D. C.: Brookings. <http://www.brookings.edu/research/speeches/2006/01/23transportation-katz>

The speech argues that the profound demographic, economic, and cultural changes the nation is experiencing are presenting the nation with a complex and conflicting set of transportation challenges. Yet the nation's transportation policy is not equipped to meet these challenges. The authors lay out an agenda for transportation policy going forward that focuses principally on enhancing the economic prosperity of people and places.

Levinson, David M., and Emilia Istrate. 2011. *Access for Value Financing Transportation Through Land Value Capture*. Washington, D.C.: Metropolitan Policy Program at Brookings, 2011.
<http://www.brookings.edu/research/papers/2011/04/28-transportation-funding-levinson-istrate>

The worsening financial state of the federal, state, and local governments is a frequent subject in media and political circles. As discretionary expenditures, transportation programs likely face significant changes if they are to cope with spending cuts across all levels of government. These changes would require not only reprioritizing the use of scarce funds, cutting ineffective programs, and improving the performance of remaining programs, but also encouraging states and local partners to find other sources of funding for transportation.

Miller, Jonathan D. 2007. *Infrastructure 2007 A Global Perspective*. Washington, D.C.: ULI-the Urban Land Institute.

http://transportationfortomorrow.com/final_report/pdf/volume_3/background_material/08_infrastructure_2007_a_global_perspective.pdf

This report is based on four seminars held in Los Angeles, California; New York City; Washington, DC; and Mumbai, India regarding the existing state of infrastructure maintenance and repair, new instruments of financing infrastructure, and the role of infrastructure in urban form. The report explores the interface between the built environment and infrastructure. Various forms of infrastructure are included in the discussions, including fiber optics, airports, highways, ports, railroad tracks, electrical power lines and public transit facilities.

O'Toole, Randal. 2008. *Roadmap to Gridlock: The Failure Of Long Range Metropolitan Transportation Planning*. Washington, D.C.: Cato Institute
<http://www.cato.org/publications/policy-analysis/roadmap-gridlock-failure-longrange-metropolitan-transportation-planning>

Federal law requires metropolitan planning organizations in urban areas of more than 50,000 people to write long-range (20- to 30-year) metropolitan transportation plans and to revise or update those plans every 4 to 5 years. A review of plans for more than 75 of the nation's largest metropolitan areas reveals that virtually all of them fail to follow standard planning methods. As a result, taxpayers and travelers have little assurance that the plans make effective use of available resources to reduce congestion, maximize mobility, and provide safe transportation facilities.

———, 2009a. *Getting What You Paid For - Paying For What You Get: Proposals For The Next Transportation Reauthorization*. Washington, D.C.: Cato Institute.
<http://www.cato.org/publications/policy-analysis/getting-what-you-paid-paying-what-you-get-proposals-next-transportation-reauthorization>

When Congress passed the Federal Aid Highway Act of 1956, it gave the Bureau of Public Roads a clear mission: oversee construction of a safe, high-speed Interstate Highway System. As that system neared completion in the 1980s, the mission of the Department of Transportation became increasingly murky. Now the department is supposed to reduce congestion; attract people out of their automobiles; clean the air; promote economic development; improve livability; create a sense of community; and accomplish a variety of other often conflicting goals — most of which are not easily quantifiable.

———, 2009b. *The Citizens' Guide to Transportation Reauthorization*. Washington, D.C.: Cato Institute. <http://www.cato.org/publications/briefing-paper/citizens-guide-transportation-reauthorization>

Sometime in 2010 or 2011, Congress expects to decide how to spend the \$250 billion or more of federal gas taxes and other highway user fees that will be

collected over the next six years. The process of doing so is called *surface transportation reauthorization*. A major point of contention in this law is how much of the nation's transportation system should be centrally planned and how much should be built and operated in response to the needs of actual transportation users.

———. 2011. *Transportation: From the Top Down or Bottom Up?* Washington, D.C.: Cato Institute. <http://www.cato.org/publications/commentary/transportation-top-down-or-bottom>

Advocates of bottom-up funding, such as the Cato Institute, Reason Foundation and Heritage Foundation, respond that public and private transportation providers better serve the nation's needs when they are responsive to the fees people pay for various forms of transportation. In fact, most of the problems with transportation today, from an antiquated air-traffic control system to deteriorating bridges to empty transit buses, are due to top-down planning.

Puentes, Robert. 2007. *Don't Raise That Gas Tax...Yet!* Washington, D.C.: Brookings Institution. <http://www.brookings.edu/research/opinions/2007/08/22gastax-puentes>

President George W. Bush got it exactly right at his press conference earlier this month when, in the wake of the Minneapolis bridge collapse, he shot down a suggestion that the federal government increase the gas tax to raise more money for transportation. Instead, he rightly suggested Washington needs to reconsider how it is spending the billions of dollars that already go toward infrastructure.

———. 2008. *A Bridge to Somewhere: Rethinking American Transportation for the 21st Century*. Washington, DC: Brookings Institution. http://www.brookings.edu/~media/Files/rc/reports/2008/06_transportation_puentes/06_transportation_puentes_report.pdf

This paper summarizes a longer document on transportation policy in the United States in the 21st century. It discusses three reforms to transportation policy that it would be helpful to undertake. The three major policy areas to concentrate on are empowerment of metropolitan areas, optimization, and federal leadership.

———. 2009a. *Congress Plans a Transportation Overhaul*. Washington, D.C.: The New Republic. <http://www.brookings.edu/research/opinions/2009/06/19-transportation-puentes>

In the past several months, two different national commissions, advocates, think tanks, and civic leaders from metropolitan areas across the country called for a major overhaul of the nation's transportation law. After all, America's transportation policy has long been adrift with no clear goals, and no good tools to meet its myriad

challenges. Individual states generally just receive a check from Congress (funded largely by gas-tax revenue), with no performance standards or accountability for how those billions are spent.

- . 2009b. *Promises and Pitfalls in Public-Private Partnerships for Transportation*. Washington, D.C.: Brookings Institution.
<http://www.brookings.edu/research/speeches/2009/07/14-transportation-puentes>

Private investment in U.S. infrastructure has been described as the #1 emerging market in the world. In fact, this flurry of attention prompted Standard & Poor's to warn recently of a dotcom-like pricing bubble. All this has both been welcomed with open arms and met with sharp resistance. A recent poll by the investment banking firm Lazard found that 61 percent of individuals favor private investments in rail, airports, roads and bridges.

- . 2010a. *Creating Banks for Transportation Infrastructure*. Washington, D.C.: Brookings Institution. <http://www.brookings.edu/research/testimony/2010/05/13-infrastructure-puentes>

From time to time, collapsed bridges, failed dams, and ruptured water pipes remind the nation of the need for increased investment in the maintenance of U.S. infrastructure. Overall, the condition of the nation's infrastructure is generally declining, especially in metropolitan areas. There is also growing concern that the infrastructure that exists today is woefully obsolete, geared more for a prior generation than for the challenges of the 21st century.

- . 2010b. *Moving Past Gridlock a Proposal for a Two-Year Transportation Law*. Washington, DC: Metropolitan Policy Program at Brookings
<http://www.brookings.edu/research/papers/2010/12/14-transportation-puentes>

The author states the case for authorization of a two-year federal surface transportation law to help spur America's economy and improve its transportation infrastructure. He suggests some pivotal reforms to the bill in the areas of performance measurement, asset management, partnering with metropolitan areas so that they increase their own revenue, and improved coordination of federal credit assistance programs.

- . 2012. *Strengthen Federalism: Establish a National PPP Unit to Support Bottom-Up Infrastructure Investment*. Washington, D.C.: Brookings Institution.
<http://www.brookings.edu/research/papers/2012/11/13-public-private-infrastructure-investment>

Public/private partnership (PPP) units were created by countries around the world to perform various functions, such formulating policy, technical advising, and

enhancing quality control. Since public/private partnerships (PPPs) often involve complex contracts that vary for each project and each location, it was felt that another mechanism was needed to navigate the PPP world. It is hoped that PPP units will calm PPP bottlenecks and protect the interested public, while allowing their technical expertise to help government agencies that do not have the wherewithal to enter into the fray.

Puentes, Robert, and Linda Bailey. 2003. *Improving Metropolitan Decision Making in Transportation Greater Funding and Devolution for Greater Accountability*. Washington, D.C.: Brookings Institution, Center on Urban and Metropolitan Policy. http://www.brookings.edu/~media/research/files/reports/2003/10/transportation%20puentes/200310_puentes.pdf

This paper examines how transportation decision making has evolved, especially in metropolitan areas. It summarizes the degree of financing and program authority that metropolitan areas are given under the Transportation Equity Act for the 21st Century (TEA-21). It also argues for expansion of current transportation laws to increase the amount of funding sources and the decision making powers in metropolitan areas. This will allow transportation in the 21st century to fulfill the promises of previous attempts at transportation reform.

Books, Articles, and Government Reports

Atkinson, Robert D. 2009. *Paying Our Way: a New Framework For Transportation Finance*. Washington, DC: The Commission. http://financecommission.dot.gov/Documents/NSTIF_Commission_Final_Report_Advance%20Copy_Feb09.pdf

The Commission has evaluated a wide range of options that could begin to close what has become an unacceptable and unsustainable investment deficit in the United States' surface transportation infrastructure. The Commission assessed each option's ability to raise significantly more resources at the federal level and to support the ability of state and local governments to do the same. Looking to the future, the Commission endorses the growing consensus that transitioning to a funding approach based more directly on use of the transportation system is the right foundation. It is now possible to use technological advances to significantly improve how people pay for their use of the transportation system. The Commission's core recommendations focus on new intelligent systems: improving how the system is funded, specifically in ways that are more sustainable and more efficient. The Commission's other recommendations also play vital roles in ensuring overall funding security and staving off further system degradation through immediate action that will afford the nation the time to realign the funding framework.

Bai, Qiang, and Samuel Labi. 2009. *Uncertainty-Based Tradeoff Analysis Methodology for Integrated Transportation Investment Decision-Making*. West Lafayette, IN: NEXTRANS. http://ntl.bts.gov/lib/32000/32100/32112/Final_Report_020.pdf

Transportation agencies strive to maintain their systems in good condition and also to provide acceptable levels of service to users. However, funding is often inadequate to meet the needs of system preservation and expansion, and thus performance- and budget-constrained optimization continues to be an issue. Adding complexity to this issue is the increasing visibility of different stakeholders who advocate for consideration of a multiplicity of diverse perspectives in the highway decision-making process. Thus agencies are grappling with the issue of how best to incorporate multiple performance objectives in their decision-making processes. Some of these objectives conflict with each other, and therefore a need arises for decisionmakers to find optimal solutions that examine the tradeoffs and provide a reasonable balance between the different objectives. Furthermore, there is the issue of uncertainty: outcomes of projects are never exactly what the decision-makers envisage; if such inevitable uncertainties are not duly accounted for, the final decision that may seem optimal may actually be associated with high risk. Finally, at most agencies, the management of highway assets is divided into several sub-areas such as pavements and safety assets. In this management structure, optimal management decisions are carried out separately for specific types of highway assets or management systems but do not always guarantee a global optimal strategy for all the management systems combined. Thus, a decision-making framework that integrates all asset types is needed to enhance decision-making and to ensure more efficient use of scarce funds. Clearly, a need exists for a multi-objective decision-making problem that integrates the various management systems, duly incorporates uncertainty, and helps decision-makers assess the tradeoffs between the performance measures. This study addresses that need. This report presents innovative techniques for carrying out multiple-criteria project selection and tradeoff analysis among the different management systems that comprise highway asset management. A key product of this study is the development of a novel project selection framework formulated as a multi-objective optimization problem.

Burchell, Robert W, Matthew S. Crosby, and Mark Russo. 2010. "Infrastructure Need in the United States, 2010-2030: What Is the Level of Need? How Will It Be Paid For?" *The Urban Lawyer*. 42 (4):41.

The U.S. infrastructure is failing, and there is inadequate funding to repair current facilities and construct new ones. This paper discusses current and future infrastructure needs in the United States, and presents possible sources of funding. Fifteen categories of infrastructure and their respective needs are considered, including aviation, bridges, rail, roads and transit. Total cost for all infrastructure needs is estimated at \$375 billion over the next 20 years. Increasing user fees/charges and fuel taxes are proposed as ways to generate more funding for transportation-related infrastructure. The author suggests that the U.S. must

massively invest in repairing, improving and expanding its close-in infrastructure, which will provide a catalyst for growth for the construction and transportation industries. Since current funding sources are inadequate, other federal, state and local expenditures must be cut back so that these funds can be spent on providing the infrastructure that will serve as a catalyst for economic growth.

Council of Economic Advisers (U.S.), National Economic Council (U.S.), and United States. 2011. *Recent Examples of the Economic Benefits from Investing in Infrastructure*. [Washington, D.C.]: Executive Office of the President. http://www.whitehouse.gov/sites/default/files/infrastructure_report_final_pdf_110211.pdf

Investments in transportation infrastructure have substantial economic benefits, in both the short and the long run. Evidence of these benefits is clearly visible in many of the infrastructure projects that have recently been completed throughout the country. The U.S. economy relies heavily on transportation infrastructure, and these investments to improve the condition and performance of the nation's infrastructure allow people and goods to move more efficiently and safely around the country. Without a well-functioning system of roads and highways, public transit, railways, seaports, and aviation, much of the activity in the U.S. economy would grind to halt. In order to meet the needs of a growing economy, there is an ongoing need for new investments to maintain, upgrade, and expand the nation's stock of transportation infrastructure. Yet the U.S. has been underinvesting in infrastructure for many years. Recognizing the pressing need to revitalize America's infrastructure network, President Obama has proposed \$50 billion in immediate investments in transportation infrastructure, as part of the American Jobs Act. The President's proposal includes investments to make highways safer and more efficient; to repair and modernize public transit systems; to improve intercity passenger rail service and develop high-speed rail corridors; to improve airports and modernize the air traffic system; and to support innovative multi-modal transportation programs. Among the innovative infrastructure efforts the President is championing through the American Jobs Act is a \$10 billion proposal to capitalize an independent National Infrastructure Bank, which will both increase overall investment in infrastructure by attracting private capital to co-invest in specific infrastructure projects and help to improve the efficiency of infrastructure investment by relying on a merit-based selection process for projects. This report discusses the compelling economic rationale for making these investments now and lays out four types of infrastructure projects likely to yield large returns. The benefits of these investments are illustrated in this report through examples of recent projects that have already had a substantial positive impact. The report ends by discussing innovative methods of financing infrastructure, leveraging private funding and creating structures to direct infrastructure funds where they will be most effective.

Elmer, Vicki, and Adam Leigland. 2013. *Infrastructure Planning and Finance: A Smart and Sustainable Guide*. Hoboken, N.J.: Taylor and Francis.

Infrastructure Planning and Finance is a non-technical guide to the engineering, planning, and financing of major infrastructure projects in the United States, providing both step-by-step guidance, and a broad overview of the technical, political, and economic challenges of creating lasting infrastructure in the 21st Century. Infrastructure Planning and Finance is designed for the local practitioner or student who wants to learn the basics of how to develop an infrastructure plan, a program, or an individual infrastructure project. A team of authors with experience in public works, planning, and city government explain the history and economic environment of infrastructure and capital planning, addressing common tools like the comprehensive plan, sustainability plans, and local regulations. The book guides readers through the preparation and development of comprehensive plans and infrastructure projects, and through major funding mechanisms, from bonds, user fees, and impact fees to privatization and competition. The rest of the book describes the individual infrastructure systems: their elements, current issues and a 'how-to-do-it' section that covers the system and the comprehensive plan, development regulations and how it can be financed. Innovations such as decentralization, green and blue-green technologies are described as well as local policy actions to achieve a more sustainable city are also addressed. Chapters include water, wastewater, solid waste, streets, transportation, airports, ports, community facilities, parks, schools, energy and telecommunications. Attention is given to how local policies can ensure a sustainable and climate friendly infrastructure system, and how planning for them can be integrated across disciplines.

Geddes, R. Richard. 2011. *The Road to Renewal: Private Investment in U.S. Transportation Infrastructure*. Washington, D.C: AEI Press.

In *The Road to Renewal: Private Investment in U.S. Transportation Infrastructure*, R. Richard Geddes surveys the current state of the American transportation system and finds that, like the roads themselves, the existing policy approach is in desperate need of repair. Drawing on the basic economic principles behind supply, demand, competition, and incentives, Geddes argues that a shift toward increased use of public-private partnerships (PPPs)--contractual agreements between public agencies and private parties that allow private participation in the design, construction, operation, and delivery of transportation facilities--could significantly improve the quality of America's transportation infrastructure.

Giglio, Joseph M. 2005. *Mobility: America's Transportation Mess and How to Fix It*. Washington, D.C: Hudson Institute.

The book demonstrates that the financing and management of surface transportation is deteriorating. It discusses challenges for economic growth, which in today's

economy depends on transportation capacity. Giglio analyzes these challenges and discusses solutions for financing, managing and accelerating the introduction of technology into the nation's surface transportation system. Rather than viewing various transportation modes as silos, he suggests an integrated approach, using technology to offer customers greater choices.

Grigg, Neil S. 2010. *Infrastructure Finance: the Business of Infrastructure for a Sustainable Future*. Hoboken, N.J: John Wiley & Sons.

Infrastructure Finance examines how the activities associated with updating and creating efficient transportation and communications, reliable and affordable energy, clean water, and other essential systems, have become a profitable financial endeavor. Recently, providing, operating, and maintaining infrastructure has advanced as a recognized and important investment sector that reaches beyond earlier business models. *Infrastructure Finance* puts this field in perspective and details what you need to know to succeed within it.

LePatner, Barry B. 2010. *Too Big to Fall: America's Failing Infrastructure and the Way Forward*. New York: Foster Pub.

This book evaluates how the I-35W Bridge in Minneapolis collapsed in August 2007, which killed 13 people and injured 145 others. Investigations following the tragedy revealed that it was not an unavoidable accident, but one that could have been prevented. The book shows how this type of tragedy threatens to be repeated at many thousands of bridges located across the nation. Already more than 50 percent of the nation's bridges are past their intended lifespan. Using the I-35W Bridge as a starting point, the book chronicles the problems that led to that catastrophe, poor bridge design, shoddy maintenance, ignored expert recommendations for repair, and misallocated funding. The book then explores the responses to the tragedy, including the National Transportation Safety Board (NTSB) document which failed to report the full story to the nation. From here the book evaluates what the I-35W Bridge collapse means for the country as a whole and outlines the possibility of a nationwide infrastructure breakdown. The author exposes government failure on a national as well as state level and uncovers how the nation's transportation system prioritizes funding for new projects over maintenance funding for aging infrastructure. The author explains the imperatives for why this country must maintain an effective infrastructure system, and how it plays a central role in supporting both the nation's economic strength and national security. Written both for those who can effect change and for those who must demand it, the book presents an eye-opening critique of a bureaucratic system that has allowed political best interests to trump those of the American people.

Rohatyn, Felix G., and Warren Rudman. 2005. "It's Time to Rebuild America." *Washington Post*, December 12. <http://www.washingtonpost.com/wp-dyn/content/article/2005/12/12/AR2005121201263.html>.

Two recent, very different events on opposite sides of the United States serve as startling examples of the nation's unwillingness to support needed public investment or to consider the consequences of failing to do so.

Wall, Anthony. 2013. *Public-Private Partnerships in the USA: Lessons to be Learned for the United Kingdom*. New York: Routledge.

Broadly, a Public-Private Partnership (or PPP) is any collaboration between the public and private sector, but research in the UK has tended to focus on those that have been used for major infrastructure projects, such as roads, schools, and hospitals. This book compares and contrasts PPP research in the UK with that of cases in the USA, including interviews with some of the key stakeholders (decision makers in the public sector, contractors, and users) of PPPs in North America, and observations of PPPs in action (such as schools and roads). No prior major studies have compared the UK and USA when it comes to the development and operation of PPPs, and this book fills a gap in the literature, addressing a number of key questions, including: Is the private sector viewed with less suspicion in the USA when it comes to projects that would normally fall under the aegis of the public sector? How do politics affect PPPs? How do key players in the PPP process define project success, determine the merits and drawbacks of the initiative, and deal with controversial elements of the scheme such as value for money and risk transfer? The result is a volume that offers practical advice for the future development of PPPs in the UK.

Airports and Airways

Government Accountability Office Reports

Dillingham, Gerald Lee. 2005. *Airport and Airway Trust Fund Preliminary Observations on Past, Present, and Future: Testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives*. [Washington, D.C.]: U.S. Government Accountability Office. <http://www.gao.gov/assets/120/111630.pdf>

The Airport and Airway Trust Fund (Trust Fund) was established in 1970 to help fund the development of a nationwide airport and airway system and to fund investments in air traffic control facilities. It provides all of the funding for FAA's accounts such as the Airport Improvement Program (AIP), which provides grants for construction and safety projects at airports, the Facilities and Equipment (F&E), which funds technological improvements to the air traffic control system, and the Research, Engineering, and Development (RE&D). In addition, the Trust Fund provides some funding for FAA's operations account. To fund these accounts, the Trust Fund relies on a number of taxes for revenue, including passenger ticket, fuel, and cargo taxes that are paid by passengers and airlines. Since 1970, revenues have generally exceeded expenditures--resulting in a surplus or an uncommitted balance. In 2004, the Trust Fund's year end uncommitted balance was about \$2 billion. A number of structural changes in the aviation industry and external events have affected revenues flowing into and out of the Fund and have caused some aviation stakeholders to speculate about the Fund's financial condition. The various taxes that accrue to the Trust Fund are scheduled to expire in 2007. GAO was asked to provide information and analysis about the financial outlook of the Trust Fund.

———. 2007a. *Airport Finance Preliminary Analysis Indicates Proposed Changes in the Airport Improvement Program May Not Resolve Funding Needs for Smaller Airports: Testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/assets/120/116070.pdf>

To address the strain on the aviation system, the Federal Aviation Administration (FAA) has proposed transitioning to the Next Generation Air Transportation System (NextGen). To finance this system and to make its costs to users more equitable, the administration has proposed fundamental changes in the way that FAA is financed. As part of the reauthorization, the administration proposes major changes in the way that grants through the Airport Improvement Program (AIP) are funded and allocated to the 3,400 airports in the national airport system. In response, GAO was asked for an update on current funding levels for airport development and the sufficiency of those levels to meet planned development costs. This testimony comprises capital development estimates made by FAA and Airports Council International (ACI), the chief industry association; analyzes how much airports have

received for capital development and whether this is sufficient to meet future planned development; and summarizes the effects of proposed changes in funding for airport development. This testimony is based on ongoing GAO work. Airport funding and planned development data are drawn from the best available sources and have been assessed for their reliability. This testimony does not contain recommendations.

———. 2007b. *Commercial Aviation: Potential Safety and Capacity Issues Associated with the Introduction of the New A380 Aircraft*. [Washington, D.C.]: U.S. Government Accountability Office. <http://www.gao.gov/products/GAO-06-571>.

Airbus S.A.S (Airbus), a European aircraft manufacturer, introduced a new aircraft, the A380 that will be the largest passenger aircraft in the world with expected delivery to its first customers in late 2006. The A380 has a double deck and is expected to seat between 555 and 853 passengers. The A380 is much larger than its competitors with a wingspan of 262 feet, a tail fin about 80 feet high, and a maximum takeoff weight of over 1.2 million pounds. A freight version of the A380 is scheduled for delivery in 2008. Because of the size of the A380, U.S. airports have to make changes to accommodate the aircraft. This may include widening runways and taxiways, or restructuring gate areas to accommodate the additional passengers. This report examines (1) the costs and nature of the changes U.S. airports are making to their infrastructure to accommodate the A380, (2) the funding sources being used to finance these changes, and (3) the major factors influencing the changes being made. The Federal Aviation Administration (FAA) and Airbus provided technical comments on the report. Airbus also commented on the 18 airports' cost estimates of the changes being made for the A380 and estimated \$720 million for these changes. Based on the costs airports reported initially and GAO's subsequent reconfirmation efforts, GAO did not change the cost estimates provided by the airports.

———. 2007c. *Federal Aviation Administration Viability of Current Funding Structure for Aviation Activities and Observations on Funding Provisions of Reauthorization Proposals: Testimony before the Committee on Finance, U.S. Senate*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/assets/120/117315.pdf>

The Federal Aviation Administration (FAA) operates one of the safest air transportation systems in the world, but this system is under growing strain as the demand for air travel increases. Recognizing the need to transform this system, Congress created the Joint Planning and Development Office (JPDO), housed within FAA, to plan and develop the Next Generation Air Transportation System (NextGen). The current authorization for FAA, the Airport and Airway Trust Fund (Trust Fund), and the excise taxes that support the Trust Fund will expire September 30, 2007. Reauthorization bills in the Senate (S. 1300) and the House (H.R. 2881) identify various revenue sources, including flight surcharges and certain fees, to fund FAA, including NextGen. Concerned about the need for stable, sustainable financing for the nation's multibillion-dollar transportation infrastructure

investments, including NextGen, GAO has designated transportation financing as high risk. GAO's statement addresses (1) the extent to which the current funding structure can support FAA's activities, including NextGen, (2) the implications of selected provisions of proposals to fund aviation activities, and (3) issues that could affect the overall cost of NextGen. The statement is based on recent GAO reports and testimonies, updated through interviews with FAA officials and stakeholder representatives.

———. 2013. *National Airspace System: Improved Budgeting Could Help FAA Better Determine Future Operations and Maintenance Priorities. Report To Congressional Requesters*. [Washington, D.C.]: Government Accountability Office. <http://www.gao.gov/assets/660/657138.pdf>

Through the Next Generation Air Transportation System (NextGen) initiative, the Federal Aviation Administration (FAA) plans to transform the current ground-based radar air-traffic control system to a system based on satellite navigation, automated position reporting, and digital communications. The NextGen transition will be a complex, multi-year, incremental process. Decisions affecting how long the transition will take and the number of existing systems that will remain in operation during the transition have implications for FAA's existing systems, workforce, facilities, and budget. The U.S. Government Accountability Office (GAO) was asked to continue monitoring the progress and challenges associated with the NextGen transition and implementation. In this report, GAO examined (1) FAA's progress in addressing key challenges affecting its ability to execute the NextGen transition; (2) the performance and condition of current air traffic control system and facilities; (3) FAA's efforts to address maintenance requirements of its current systems and facilities; and (4) the extent to which FAA has planned for the financial resources for sustaining existing systems and facilities and the NextGen transition. The FAA has made some progress in addressing key challenges as it begins the gradual transition to NextGen. It has filled key leadership positions and developed tools to manage interdependent NextGen programs. FAA is working to address other identified challenges, including incentivizing aircraft operators to equip with NextGen technologies, identifying workforce roles under NextGen, and realigning and consolidating facilities. However, FAA has yet to make some decisions needed to move forward with these efforts. For example, FAA is evaluating realignment options to help realize efficiencies but has not yet identified which facilities will be consolidated or realigned. FAA reports that operational availability of current air traffic control systems at the largest airports has exceeded 99 percent, and underlying data suggest increasing maintenance requirements for current systems and facilities, some of which may have to operate for many more years during the NextGen transition. For example, from fiscal years 2001 through 2012, planned, or scheduled, system outages doubled while unscheduled outages increased 45 percent, an increase due, in part, to the age and deteriorating condition of existing systems. FAA data on facilities and infrastructure condition, although limited, also suggest potentially increasing maintenance requirements. FAA is working to establish a new

performance measure to publicly report on system condition and replace the operational availability measure, which was discontinued in 2012. Recognizing that FAA's cost estimates for maintaining existing systems and facilities and implementing NextGen exceed anticipated funding levels, the agency is developing a plan to address its system and facilities maintenance issues, which it expects to complete by September 2013. In developing the plan, it recognizes that many unstaffed facilities, such as shelters and communication towers, face deteriorating conditions that can put employees maintaining these facilities at risk of injury. However, the process used to collect condition data does not facilitate an agency-wide priority assessment, as each location established its own priorities. Thus, FAA cannot target its limited resources on those projects in greatest need of repair and most critical to the national airspace system. FAA is also working to retire systems that are no longer needed as NextGen capabilities are deployed but will need to overcome challenges in securing stakeholder buy-in and funding. FAA's budget planning does not fully account for future operations and maintenance needs and priorities of existing and NextGen systems. While FAA's capital plan identifies priorities based on 5-year funding projections, better data on FAA infrastructure could help prioritize competing resource demands of existing systems and facilities and NextGen deployment. FAA data on life-cycle operations and maintenance costs give some indication of future requirements, but FAA has not determined how these costs might be paid for, particularly if it has to maintain a growing number of existing systems as NextGen is deployed. FAA has identified improvements needed for its operations budget process and proposed to develop a 5-year operations plan that better links capital investments with future operations costs, but has yet to institute these improvements. To improve FAA's efforts to manage the transition, GAO recommends that FAA develop a strategy to improve planning of its operations budget and ensure sufficient data are available to support these efforts.

Think Tanks and Transportation Research Board

Crider, Rick. 2011. *Guidebook for Developing and Leasing Airport Property*. Washington, D.C.: Transportation Research Board.
http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_047.pdf

This report discusses the key issues associated with developing and leasing available airport land and summarizes best practices from the perspective of the airport sponsor. The guidebook presents a diverse set of case studies that show several approaches airports have taken to develop and lease property for both aeronautical uses (e.g., aircraft maintenance facilities, fixed-base operator facilities, hangars, training centers, and cargo facilities) and nonaeronautical uses (e.g., light industrial and commercial facilities). A glossary of terms is also included. This guidebook will therefore be of interest to anyone desiring a better understanding of the process for developing and leasing airport property.

Cullen, Laurie. 2011. *Collaborative Airport Capital Planning Handbook*. Washington, D.C.: Transportation Research Board.
http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_049.pdf

This report provides guidance to those in the airport community who have responsibility for, and stake in, developing, financing, managing, and overseeing an airport capital plan and the individual projects included in it. The handbook provides clear guidance on who should perform each task in the collaborative planning process. It also defines and describes the different ways in which members of the airport community communicate to ensure effective exchanges between internal and external stakeholders.

GHD, Inc, National Research Council (U.S.), Airport Cooperative Research Program, and United States. 2012. *Asset and Infrastructure Management for Airports Primer and Guidebook*. Washington, D.C.: Transportation Research Board.
http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_069.pdf

This publication addresses asset and infrastructure management applicable to all areas of the operation of an airport. The primer portion of the report includes an overview of an asset and infrastructure management program and explores the benefits and costs of implementation. The guidebook portion of the report provides examples from various airports and is designed to be a reference for integrating proven asset and infrastructure management practices and techniques at airports of all sizes. The report defines an asset and infrastructure management program and its components and how a program relates to daily operations and longer-term planning. In addition, the project that developed ACRP Report 69 also produced a PowerPoint presentation, which can be used to present the benefits of a program to stakeholders.

Molar, Barry. 2011. *Strategies and Financing Opportunities for Airport Environmental Programs*. Washington, D.C.: Transportation Research Board.
http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_024.pdf

The time when an airport's environmental responsibilities consisted of preparing environmental review documents for airport construction projects and mitigating the impacts has long since passed. Today's additional environmental responsibilities bring with them increased financial burdens. This report summarizes public and private funding opportunities and strategies available to airports to help accomplish their environmental programs and objectives.

Morrison, Steven A., and Clifford Winston. 2008. "Delayed!: U.S. Aviation Infrastructure Policy at a Crossroads". *Aviation Infrastructure Performance: Study*

in *Comparative Political Economy*. Washington, D.C.: Brookings Institution Press.
<http://www.brookings.edu/research/articles/2008/05/aviation-winston>

In the aftermath of the September 11 terrorist attacks, travelers' fears of flying have given way to their anxieties about delays they may encounter when going through airport security, leaving the departure gate and taking off, flying to their destination, and landing and disembarking from the aircraft. In 2005 inflight delays and earlier airport arrivals for security screening were estimated to cost passengers and airlines in the United States \$40 billion annually.

Nichol, Cindy. 2007. *Innovative Finance and Alternative Sources of Revenue for Airports*. Washington, D.C.: Transportation Research Board.
http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_001.pdf

This report explores alternative financing options and revenue sources currently available or that could be available in the future to airport operators, stakeholders, and policymakers in the United States. It also examines common capital funding sources used by airport operators, reviews capital financing mechanisms used by airports, describes various revenue sources developed by airport operators, and reviews privatization options available to U.S. airport operators.

Books, Articles, and Government Reports

Messer, Ron. 2011. "New Financing Opportunities for Airports: Exploring the Possibility of a Specialty REIT". *Journal of Airport Management*. 5 (2).

As a result of a massive decentralization initiative, the Canadian government will no longer fund any airport expansion or refurbishment. This paper investigates the possibility of the private sector using equity in the form of a real-estate investment trust (REIT) as a means of financing the newly privatized airports. The paper discusses how REITs work, using REITs in airport financing, structuring an airport REIT and the risks for airports and investors. Using a REIT as a financing vehicle offers several advantages, including lower risk, more capital, enhanced income streams and lower financing cost. The author recommends that the REIT exist apart from the airport and be governed by a board of trustees. Non-cumulative, non-participating and non-convertible preferred shares should be used to securitize the REIT's assets.

National Research Council (U.S.). 2003. *Securing the Future of U.S. Air Transportation a System in Peril*. Washington, D.C.: National Academies Press.
http://www.nap.edu/openbook.php?record_id=10815&page=1

As recently as the summer of 2001, many travelers were dreading air transportation because of extensive delays associated with undercapacity of the system. That all

changed on 9/11, and demand for air transportation has not yet returned to peak levels. Most U.S. airlines continue to struggle for survival, and some have filed for bankruptcy. The situation makes it difficult to argue that strong action is urgently needed to avert a crisis of undercapacity in the air transportation system. This report assesses the visions and goals for U.S. civil aviation and technology goals for the year 2050.

Bridges and Tunnels, Highways and Roads, Transit

Congressional Hearings

United States. 2004a. *Enhancing the Role of the Private Sector in Public Transportation: Hearing before the Subcommittee on Housing and Transportation of the Committee on Banking, Housing, and Urban Affairs, United States Senate, One Hundred Eighth Congress, First Session, on the Current Role of the Private Sector in Providing Public Transportation Services, What Barriers Exist to Increasing That Role, and What Might Be Done in Reauthorization to Reduce These Barriers, July 23, 2003.* Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-108shrg95184/pdf/CHRG-108shrg95184.pdf>

Hearing before the Subcommittee on Housing and Transportation to examine issues and recommendations regarding the role of motor bus lines and other private operators in providing public transportation services through contracts with local transit agencies and other means. Hearing was held in light of upcoming reauthorization of Federal surface transportation grant programs under the Transportation Equity Act for the 21st Century (TEA-21). Supplementary material (p. 28-184) includes witnesses' written statements, submitted statements, correspondence, and: -- GAO, "Transit Labor Agreements: Most Transit Agencies Report Impacts Are Minimal" Nov. 2001, with questionnaire results (p. 146-182).

———. 2004b. *Financing Our Nation's Roads: Hearing before the Joint Economic Committee, Congress of the United States, One Hundred Eighth Congress, First Session, May 6, 2003.* Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-108shrg91928/pdf/CHRG-108shrg91928.pdf>

Hearing to examine strategies to fund Federal aid programs for State and local road construction projects to reduce traffic congestion, in light of upcoming reauthorization of the Transportation Equity Act for the 21st Century. Also briefly considers H.R. 1767, the Freeing Alternatives for Speedier Transportation (FAST) Act, to allow States to fund construction of additional interstate highway lanes by charging drivers fees for lane usage. Supplementary material (p. 31-58) includes a submitted statement and witnesses' written statements.

———. 2005. *Keeping Metro on Track: the Federal Government's Role in Balancing Investment with Accountability at Washington's Transit Agency : Hearing before the Committee on Government Reform, House of Representatives, One Hundred Ninth Congress, first session, July 28, 2005.* Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-109hrg23269/pdf/CHRG-109hrg23269.pdf>

Hearing to examine funding, performance, and oversight issues relating to public transit system rail and bus mass transit services operated by the Washington

Metropolitan Area Transit Authority, D.C., in light of proposal to increase Federal assistance to WMATA. Perspectives on oversight and financial challenges facing WMATA; review of WMATA activities and importance to D.C. area; views on public transit system funding issues; arguments and need for a dedicated funding source for WMATA (related materials, p. 88-106); support to increase Federal funding for WMATA; role of transit boards to improve public transit system accountability and performance; elaboration on WMATA funding challenges. Supplementary material (p. 192-203) includes submitted statements.

- . 2006. *Understanding Contemporary Public Private Highway Transactions: the Future of Infrastructure Finance?: Hearing before the Subcommittee on Highways, Transit, and Pipelines of the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Ninth Congress, Second Session, May 24, 2006*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-109hrg28290/pdf/CHRG-109hrg28290.pdf>

Hearing before the Subcommittee on Highways, Transit, and Pipelines to examine use of public-private partnerships (PPPs) to finance highway projects and other transportation infrastructure improvements, including use of tolls. Supplementary material (p. 51-146) includes witnesses' written statements and submitted statements.

- . 2007a. *Public-Private Partnerships: Innovative Financing and Protecting the Public Interest: Hearing before the Subcommittee on Highways and Transit of the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Tenth Congress, First Session, February 13, 2007*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-110hrg34778/pdf/CHRG-110hrg34778.pdf>

Hearing before the Subcommittee on Highways and Transit to examine use of public-private partnerships (PPPs) to finance highway projects and other transportation infrastructure improvements, including use of tolls, and to review related public policy implications (Subcommittee memo and witness list, p. vi-xvi). Supplementary material (p. 53-139) includes witnesses' written statements, a witness's written replies to Subcommittee questions, reports, and submitted statements.

- . 2007b. *Structurally Deficient Bridges in the United States: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Tenth Congress, First Session, September 5, 2007*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-110hrg37652/pdf/CHRG-110hrg37652.pdf>

Hearing to examine Federal, State, and local government efforts to improve highway transportation infrastructure and increase funding for maintenance and repair of

structurally deficient bridges, in light of Aug. 2007 interstate bridge collapse in Minneapolis, Minn. (Committee memo, p. vii-xv). Supplementary material (p. 116-326) includes submitted statements, witnesses' written statements and written replies to Committee questions, correspondence, and: -- Braaten, Mike (Colorado Municipal League); Taylor, Chip (Colorado Counties, Inc.); "Local Government Transportation Needs", slide presentation, with tables and graphs (p. 295-313).

- . 2008a. *Transportation Infrastructure: Issues and Options: Hearing before the Committee on Finance, United States Senate, One Hundred Tenth Congress, Second Session, July 10, 2008*. Washington: U.S. G.P.O. <http://www.finance.senate.gov/library/hearings/download/?id=992ac706-ccc6-45f4-9b0c-d2fc09d54c39>

Hearing to examine Federal financing and investment for surface transportation infrastructure, in light of concerns about declining infrastructure conditions and financial status of the Highway Trust Fund. Road congestion costs approximately 78 billion annually in lost hours and wasted fuel. In addition, one in every four bridges is structurally deficient, and one out of every seven bridges on the strategic highway network is structurally obsolete. Supplementary material (p. 21-104) includes submitted statements and witnesses' written statements.

- . 2008b. *Investing in infrastructure: the Road to Recovery: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Tenth Congress, Second Session, October 29, 2008*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-110hhrg45362/pdf/CHRG-110hhrg45362.pdf>

Hearing to examine infrastructure investments role in economic recovery and job creation efforts, including investments in transportation infrastructure (Subcommittee memo and witness list, p. vi-xxvi). Supplementary material (p. 116-610) includes submitted statements, witnesses' written statements and written replies to Committee questions, correspondence, and: -- Rails-to-Trails Conservancy; "Active Transportation for America: The Case for Increased Federal Investment in Bicycling and Walking", with tables and graphs (p. 530-577).

- . 2009. *Sustainable Transportation Solutions: Investing in Transit to Meet 21st Century Challenges: Hearing before the Committee on Banking, Housing, and Urban Affairs, United States Senate, One Hundred Eleventh Congress, First Session, on Coordinating Housing and Transportation Policy to Encourage Smart Land Use, Generate Economic Growth, and Develop Solutions to Effectively Address 21st Century Transit Challenges, March 12, 2009*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-111shrg51476/pdf/CHRG-111shrg51476.pdf>

Hearing to review proposals to extend and revise Federal surface transportation assistance programs authorized under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, focusing on transit-related provisions. Supplementary material (p. 42-82) includes witnesses' written statements and written replies to Committee questions, and submitted statements.

- . 2010a. *Addressing Surface Transportation Needs in Rural America: Field Hearing before the Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security of the Committee on Commerce, Science, and Transportation, United States Senate, One Hundred Eleventh Congress, First Session, August 10, 2009*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-111shrg53062/pdf/CHRG-111shrg53062.pdf>

Hearing in Sioux Falls, S.Dak., before the Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety and Security to examine rural transportation issues and investment. Supplementary material (p. 55-59) includes witnesses' written replies to Subcommittee questions.

- . 2010b. *Financing Investments in Highways and Mass Transit: Hearing before the Committee on the Budget, House of Representatives, One Hundred Eleventh Congress, First Session, Hearing Held in Washington, DC, March 17, 2009*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG111hhrg47994/pdf/CHRG-111hhrg47994.pdf>

Hearing to examine Federal investment in and funding needs of highway and mass transit infrastructure. Supplementary material (p. 65) includes a witness's written replies to Committee questions.

- . 2010c. *Using Innovative Financing to Deliver Highway and Transit Projects: Hearing before the Subcommittee on Highways and Transit of the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Eleventh Congress, Second Session, April 14, 2010*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg55967/pdf/CHRG-111hhrg55967.pdf>

Hearing before the Subcommittee on Highways and Transit to examine innovative financing options to fund Federal aid programs for State and local highway and transit projects (Subcommittee memo and witness list, p. vi-xiii). Transportation financing refers to the different financial tools that are used to leverage transportation funding and revenue sources, allowing transportation agencies to raise the up-front costs needed to build projects and expedite the implementation of surface transportation improvements. These tools include a wide variety of bonds, credit enhancements, debt instruments, and loan programs. Supplementary material (p. 51-230) includes submitted statements, witnesses' written statements and written replies to Subcommittee questions, a report, press releases, and correspondence.

Government Accountability Office Reports

Herr, Phillip. 2010. *Highway Bridge Program Condition of Nation's Bridges Shows Limited Improvement, but Further Actions Could Enhance the Impact of Federal Investment : Testimony before the Subcommittee on Highways and Transit, Committee on Transportation and Infrastructure, House of Representatives*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/products/GAO-10-930T>

One in four bridges in the United States is either structurally deficient and in need of repair, or functionally obsolete and is not adequate for today's traffic. The Highway Bridge Program (HBP), the primary source of federal funding for bridges, provided about \$7 billion to states in fiscal year 2010. This testimony addresses (1) the current state of the nation's bridges and the impacts of the HBP and (2) the extent to which the HBP aligns with principles GAO developed to guide the re-examination of surface transportation programs. This testimony is based on prior GAO reports, updated with bridge data and information provided by agency officials.

———. 2013. *Transportation Infrastructure: Limited Improvement in Bridge Conditions Over the Past Decade, but Financial Challenges Remain: Testimony before the Subcommittee on Transportation, Housing, and Urban Development, and Related Agencies, Committee on Appropriations, U.S. Senate*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/products/GAO-13-713T>

The May 23, 2013 collapse of a section of the Interstate 5 bridge over the Skagit River, north of Seattle, Washington, underscores the importance of maintaining the nation's infrastructure and the economic impact that a bridge failure can have on a region. This GAO testimony addresses (1) what is known about the current condition of the nation's bridges and impact of federal funding for bridges and (2) a preliminary look at recent changes to the surface transportation and bridge program made by Moving Ahead for Progress in the 21st Century Act (MAP-21). The Act consolidated a number of highway programs, including the former Highway Bridge Program. There has been limited improvement in bridge conditions in the past decade, but a substantial number of bridges remain in poor condition. Of the 607,380 bridges on the nation's roadways in 2012, 1 in 4 was classified as deficient. Some are structurally deficient and have one or more components in poor condition and others are functionally obsolete and may no longer be adequate for the traffic they serve. Data indicate that the number of deficient bridges has decreased since 2002 even as the number of bridges has increased. The impact of the federal investment in bridges is difficult to measure. For example, while Department of Transportation (DOT) tracks a portion of bridge spending on a state-by-state basis, the data do not include state and local spending, thus making it difficult to determine the federal contribution to overall expenditures. Understanding the impact of federal investment in bridges is important in determining how to invest future federal resources. There has been

progress in clarifying federal goals and linking federal surface transportation programs—including bridges—to performance. DOT worked with Congress which adopted provisions in MAP-21, including provisions that move toward a more performance-based highway program. MAP-21 specified that National Highway Performance Program funds may only support eligible projects—including bridge projects—on the National Highway System. The Act also required the Secretary of Transportation, in consultation with states and others, to establish performance measures for bridge conditions. However, although there has been progress in these areas, Congress and the administration need to agree on a long-term plan for funding surface transportation. As GAO noted in its 2013 High Risk Update, continuing to fund a Highway Trust Fund shortfall through general revenues may not be sustainable without balancing revenues and spending from the fund. GAO is not making any new recommendations. In 2008, GAO recommended that the Secretary of Transportation work with Congress to identify and define national goals for the federal bridge program, develop and implement performance measures, identify and evaluate best tools and practices, and review and evaluate funding mechanisms to align funding with performance. GAO closed this recommendation as implemented based on the provisions contained in MAP-21.

United States. 2007. *Surface Transportation Strategies Are Available for Making Existing Road Infrastructure Perform Better: Report to the Ranking Member, Committee on Environment and Public Works, U.S. Senate*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/products/GAO-07-920>.

For the past several decades, the capacity of the nation's road network has not grown fast enough to keep pace with demand. The increasing congestion is apparent to millions of commuters and freight operators. Although road building is perhaps the most familiar antidote, Congress, the Department of Transportation (DOT), and transportation research have emphasized the need to more efficiently use the existing infrastructure as a means to control congestion. GAO was asked to examine various issues associated with increasing the efficient use of existing infrastructure. This report examines the following questions: (1) What factors inhibit the efficient use of the existing infrastructure of roads and highways? (2) What techniques have been developed for making the current infrastructure more efficient and what is known about the results? (3) How have local decision makers implemented these techniques? (4) What strategies exist for increasing the use of such techniques? To address these questions, GAO reviewed existing studies, examined efforts in five states, and sought transportation officials' views, among other things.

———. 2008. *Highway Bridge Program Clearer Goals and Performance Measures Needed for a More Focused and Sustainable Program: Report to Congressional Committees*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/assets/290/280423.pdf>

The August 1, 2007, collapse of a Minnesota bridge raised nationwide questions about bridge safety and the U.S. Department of Transportation's (DOT) ability to prioritize resources for bridges. The Highway Bridge Program (HBP), the primary source of federal funding for bridges, provided over \$4 billion to states in fiscal year 2007. This requested study examines (1) how the HBP addresses bridge conditions, (2) how states use HBP funds and select bridge projects for funding, (3) what data indicate about bridge conditions and the HBP's impact, and (4) the extent to which the HBP aligns with principles the U.S. Government Accountability Office (GAO) developed, based on prior work and federal laws and regulations, for re-examining surface transportation programs. Based on information gathered during bridge inspections that are generally conducted every 2 years, the HBP classifies bridge conditions as deficient or not; assigns each bridge a sufficiency rating reflecting its structural adequacy, safety, serviceability, and relative importance; and uses that information to distribute funding to states to improve bridges. Deficient bridges include those that are structurally deficient, with one or more components in poor condition, and those that are functionally obsolete, with a poor configuration or design that may no longer be adequate for the traffic they serve. While each state's HBP apportionment amount is largely determined by bridge conditions and bridges generally must be below a certain condition threshold to qualify for HBP funding, other bridges are also eligible for HBP funds because states may use the funds for a broad array of other purposes, such as bridge systematic preventive maintenance projects. The HBP affords states discretion to use HBP funds and select bridge projects in a variety of ways. Some states are focused on reducing their number of deficient bridges, while other states are pursuing different bridge priorities. For example, California has focused on seismically retrofitting bridges, a safety concern for that state. Furthermore, some states have developed tools and approaches for selecting bridge projects that go beyond those required by the HBP, such as bridge management systems and state-specific bridge condition rating systems. Bridge conditions, as measured by the number of deficient bridges and average sufficiency rating, improved from 1998 through 2007. However, the impact of the HBP on that improvement is difficult to determine, in part, because (1) the program provides only a share of what states spend on bridges and there are no comprehensive data for state and local spending on bridges and (2) HBP funds can, in some cases, be used for a variety of bridge projects without regard to a bridge's deficiency status or sufficiency rating. The HBP does not fully align with GAO's principles, which are based on GAO's prior work and federal laws and regulations, in that the program lacks focus, performance measures, and sustainability. For example, the program's statutory goals are not focused on a clearly identified federal or national interest, but rather have expanded from improving deficient bridges to supporting seismic retrofitting, preventive maintenance, and many other projects, thus expanding the federal interest to potentially include almost any bridge in the country. In addition, the program lacks measures linking funding to performance and is not sustainable, given the anticipated deterioration of the nation's bridges and the declining purchasing power of funding currently available for bridge maintenance, rehabilitation, and replacement. Once the federal interest in bridges is clearly defined, policymakers can clarify the goals for federal involvement and align the program to achieve those

goals. HBP sustainability may also be improved by identifying and developing performance measures and re-examining funding mechanisms. GAO is recommending that DOT work with Congress to identify specific program goals in the national interest, develop and implement performance measures, incorporate best tools and practices, and review the program's funding mechanisms.

—. 2010. *Federal Transit Programs Federal Transit Administration Has Opportunities to Improve Performance Accountability: Report to the Committee on Banking, Housing, and Urban Affairs, U.S. Senate*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/new.items/d1154.pdf>

Public demand and federal funding for transit have grown in recent years, yet most of this funding is not tied to performance. As Congress prepares for reauthorization of the federal surface transportation programs, the U.S. Government Accountability Office (GAO) was asked to report on (1) the extent to which federal transit programs use performance information in making decisions about funding distribution and in evaluating the programs' effectiveness; (2) mechanisms for making these programs more performance based, and strategies for supporting their successful implementation; and (3) how selected U.S. and foreign transit agencies have used performance measurement in their planning and decisions, and their views on the federal role in transit. Some federal transit programs distribute funds based partly on performance, but opportunities to improve grant recipients' performance accountability remain. Of the eight transit programs GAO reviewed—which represent 97 percent of total federal transit grants in fiscal year 2010 (excluding funds provided under the American Recovery and Reinvestment Act)—two are generally funded by congressional direction, while the remaining six are funded through legislatively defined grant formulas. Federal funding for the two nonformula programs GAO reviewed—the New Starts Program and the Bus and Bus Related Equipment and Facilities Program—is awarded in part according to performance. A small percentage of federal transit funding for the six formula programs is apportioned based on performance—according to GAO's analysis, about 5 percent, on average, of fiscal year 2010 funding. FTA does not, in general, analyze fully or use the performance data it collects from transit agencies to evaluate the effectiveness of its transit grant programs; thus, FTA is missing a valuable opportunity to evaluate the end results of its program activities and programs' funding formulas. GAO identified three performance accountability mechanisms for making federal transit programs more performance based, including providing financial rewards or penalties/sanctions, increasing or decreasing program flexibility as a performance incentive, and recognizing entities that achieve certain performance goals. These mechanisms have both potential advantages—most notably, they can encourage improved performance and help agencies make sound decisions when allocating limited funds—and potential disadvantages that can produce inequitable results or burden transit agencies with requirements to gather, maintain, and analyze data. GAO also identified several key strategies that can support the use of these mechanisms and mitigate their disadvantages, such as ensuring that mechanisms are

of sufficient value and that appropriate measures are selected, among others. However, without FTA analysis of the appropriateness, feasibility, and potential impact of using various transit performance mechanisms, Congress may lack information to determine whether and how these mechanisms could be used to make transit funding more performance based as it prepares for the upcoming surface transportation reauthorization. Transit agencies that GAO interviewed use performance measurement to varying degrees, but they face challenges in linking performance with planning and decision making. All of these agencies measure performance in certain categories, such as ridership and on-time performance, but the extent to which they measure it in others—such as environmental impact, energy usage, and economic development—varies widely. Transit agency officials reported that measuring performance presents challenges, in part because it can be difficult to obtain relevant data and develop a sound methodology. They also said that linking performance to planning and decision making is challenging because of either limited funding or political priorities. These transit agencies and other experts suggested a variety of changes to the federal role in transit, including increasing investment in existing transit infrastructure; developing federal transit program goals that generally address broader issues, such as encouraging a shift from automobiles to public transit; and promoting livable communities around transit systems. The Federal Transit Administration (FTA) should (1) report to Congress on options for adding performance accountability mechanisms to transit programs to ensure efficient and effective federal transit programs and (2) further analyze and use transit agency data, when applicable, for evaluating federal transit program performance.

———. 2012a. *Highway Infrastructure Federal-State Partnership Produces Benefits and Poses Oversight Risks: Report to the Ranking Member, Subcommittee on Highways and Transit, Committee on Transportation and Infrastructure, House of Representatives*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/products/GAO-12-474>.

Over the years, the federal-aid highway program has expanded to encompass broader goals, more responsibilities, and a variety of approaches. As the program grew more complex, the Federal Highway Administration's (FHWA) oversight role also expanded, while its resources have not kept pace. As GAO has reported, this growth occurred without a well-defined overall vision of evident national interests and the federal role in achieving them. GAO has recommended Congress consider restructuring federal surface transportation programs, and for this and other reasons, funding surface transportation remains on GAO's high-risk list.

———. 2012b. *Surface Transportation Financing Program Could Benefit from Increased Performance Focus and Better Communication: Report to Congressional Committees*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/products/GAO-12-641>.

Projects that received credit assistance through the Transportation Infrastructure Finance and Innovation Act (TIFIA) program, administered by the Department of Transportation (DOT), tend to be large, high-cost highway projects. As of April 2012, DOT has executed 27 TIFIA credit agreements for 26 projects with project sponsors such as state DOTs and transit agencies. Overall, DOT has provided nearly \$9.1 billion in credit assistance through 26 loans and one loan guarantee. By mode, there are 17 highway, 5 transit, and 4 intermodal projects. Most projects have a total cost of over \$1 billion. DOT monitors individual credit agreements but does not systematically assess whether its TIFIA portfolio as a whole is achieving the program's goals of leveraging federal funds and encouraging private co-investment. DOT has identified goals and objectives for the TIFIA program, but its limited use of performance measures makes it difficult to determine the degree to which the program is meeting these goals and objectives. Given that DOT already collects project data, it could use these data to better evaluate the program's overall progress toward meeting its goals.

—. 2012c. *Bus Rapid Transit Projects Improve Transit Service and Can Contribute to Economic Development: Report to the Committee on Banking, Housing, and Urban Affairs, U.S. Senate*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/assets/600/592973.pdf>

BRT is a form of transit that has generated interest around the world to help alleviate the adverse effects of traffic congestion and potentially contribute to economic growth. BRT features can include improvements to infrastructure, technology, and passenger amenities over standard bus service to improve service and attract new riders. The use of federal funding for BRT in the United States has increased since 2005, when the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users expanded eligibility for major capital projects under FTA's Capital Investment Grant Program to include corridor-based bus projects. BRT projects can be funded through New, Small, and Very Small Start grants under the Capital Investment Grant Program. GAO was asked to examine (1) features included in BRT projects funded by the FTA; (2) BRT project performance in terms of ridership and service and how they compare to rail transit projects; (3) how BRT-projects' costs differ from rail transit project costs; and (4) the extent to which BRT projects provide economic development and other benefits. U.S. bus rapid transit (BRT) projects GAO reviewed include features that distinguished BRT from standard bus service and improved riders' experience. However, few of the projects (5 of 20) used dedicated or semi-dedicated lanes—a feature commonly associated with BRT and included in international systems to reduce travel time and attract riders. Project sponsors and planners explained that decisions on which features to incorporate into BRT projects were influenced by costs, community needs, and the ability to phase in additional features. For example, one project sponsor explained that well-lighted shelters with security cameras and real-time information displays were included to increase passengers' sense of safety in the evening. Project sponsors told GAO they plan to incorporate additional features such as off-board fare collection over time. The BRT projects GAO reviewed generally increased ridership and improved service

over the previous transit service. Specifically, 13 of the 15 project sponsors that provided ridership data reported increases in ridership after 1 year of service and reduced average travel times of 10 to 35 percent over previous bus services. However, even with increases in ridership, U.S. BRT projects usually carry fewer total riders than rail transit projects and international BRT systems. Project sponsors and other stakeholders attribute this to higher population densities internationally and riders who prefer rail transit. However, some projects—such as the M15 BRT line in New York City—carry more than 55,000 riders per day. Capital costs for BRT projects were generally lower than for rail transit projects and accounted for a small percent of the Federal Transit Administration’s (FTA) New, Small, and Very Small Starts’ funding although they accounted for over 50 percent of projects with grant agreements since fiscal year 2005. Project sponsors also told GAO that BRT projects can provide rail-like benefits at lower capital costs. However, differences in capital costs are due in part to elements needed for rail transit that are not required for BRT and can be considered in context of total riders, costs for operations, and other long-term costs such as vehicle replacement. GAO found that although many factors contribute to economic development, most local officials it visited believe that BRT projects are contributing to localized economic development. For instance, officials in Cleveland told GAO that between \$4 and \$5 billion was invested near the Healthline BRT project—associated with major hospitals and universities in the corridor. Project sponsors in other cities told GAO that there is potential for development near BRT projects; however, development to date has been limited by broader economic conditions—most notably the recent recession. While most local officials believe that rail transit has a greater economic development potential than BRT, they agreed that certain factors can enhance BRT’s ability to contribute to economic development, including physical BRT features that relay a sense of permanence to developers; key employment and activity centers located along the corridor; and local policies and incentives that encourage transit-oriented development. GAO’s analysis of land value changes near BRT lends support to these themes. In addition to economic development, BRT project sponsors highlighted other community benefits including quick construction and implementation and operational flexibility.

Think Tanks and Transportation Research Board

American Association of State Highway and Transportation Officials, and National Surface Transportation Policy and Revenue Study Commission (U.S.). 2007a. *Transportation -- Invest in Our Future: Future Needs of the U.S. Surface Transportation System*. [Washington, DC]: American Association of State Highway and Transportation Officials.
<http://financecommission.dot.gov/Documents/Background%20Documents/tif2-1.pdf>

This report presents a needs assessment of the nation's surface transportation system. It describes demographics, potential upgrades, competition and financing. Some summary statistics are as follows: Highway Investment - In 2005, highway capital

investment was \$75 billion, \$33 billion or 45 percent of the total in Federal assistance, and \$42 billion from the state and local level. Transit Investment - In 2004, transit capital investment was \$13.2 billion, \$5.2 billion or 40 percent of the total in Federal assistance, and \$8 billion from the state and local level. Construction Costs - Between 1993 and 2015 highway and transit construction costs will have increased 70 percent. Restore Purchasing Power - To restore the program's purchasing power, Federal highway assistance will have to increase from \$43 billion in 2009 to \$73 billion in 2015, and transit assistance will have to increase from \$10.3 billion to \$17.3 billion. U.S. DOT 2004 Conditions and Performance Report (C&P) - Based on 2002 data, Highways "Cost to Improve" estimate is \$118.9 billion, Transit "Cost to Improve" estimate is \$24 billion. C&P Report Estimates Adjusted for Inflation - Adjusting U.S. DOT's 2004 "constant dollar" projections to "years of expenditure" dollars yields the following estimates for 2007: Highways - The "cost to improve" highways and bridges in the United States to the levels needed in 2007 is estimated at \$155.5 billion. Transit - The "cost to improve" transit in the United States to the levels needed in 2007 is estimated at \$31.4 billion. Freight Rail - The "cost to maintain freight rail's current market share," in 2007 is estimated at \$12 billion—\$2.75 billion annually in public support and \$9.25 billion annually in railroad private capital investment. Intercity Passenger Rail - The "cost to bring 21 intercity passenger rail corridors to a good state of repair," is \$3.3 billion in annual rail capital investment. Population - Between 1955 and 2005, the U.S. population grew by 130 million to 295 million. Over the next 50 years, it is expected to grow by 140 million to 435 million. Vehicles - In 1955, our highways carried 65 million cars and trucks. They carry 246 million today, and that number is expected to reach nearly 400 million by 2055. Travel - Highway travel in the United States measured in "vehicle miles traveled," increased from 600 billion in 1955 to 3 trillion in 2006. FHWA forecasts that it will grow by 2.07 percent per year through 2022. Travel may exceed 7 trillion vehicle miles by 2055. Truck Freight - Truck tonnage is expected to increase 114 percent between 2004 and 2035. Trucks are expected to carry 79 percent of total tonnage. Rail Freight - Rail tonnage is expected to grow by 63 percent by 2035. Rail is expected to carry 13 percent of total tonnage in 2035, down from 14 percent in 2004. Truck Traffic - Today's Interstates carry an average of 10,500 trucks per day per mile. By 2035, this figure will increase to 22,700 trucks per day, per mile. Today only 30 miles on the Interstate carry more than 50,000 trucks per day per mile. By 2035, that number may reach 2,500 miles. Trade - Trade as a percentage of Gross Domestic Product (GDP) increased from 13 percent in 1990 to 26 percent in 2000, and is expected to reach 35 percent by 2020. Container Cargo - U.S. container traffic increased from 8 million units in 1980, to 42 million in 2005. By 2020, container volume is expected to hit 110 million units. Interstate Highways - The 47,000-mile Interstate Highway System contains only 1 percent of total U.S. highway miles, but carries 24 percent of all traffic and 41 percent of large truck traffic. Interstate vehicle miles traveled are expected to double from 690 billion in 2002 to 1.3 trillion 20 years from now. Tolls - In 2005, tolls generated \$7.75 billion in receipts which represented 5 percent of highway revenues. There are 4,630 miles of toll roads in the United States in 25 states. Global Competition - China is building a 53,000-mile National Expressway System which, when complete

in 2020, will rival the 47,000-mile U.S. Interstate System. India is building a 10,000-mile national expressway system. Europe with a population of 450 million is spending hundreds of billions of euros on a network of highways, bridges, tunnels, ports, and rail lines.

———. 2007b. *Transportation: Invest in Our Future: a New Vision for the 21st Century*. Washington, DC: American Association of State Highway and Transportation Officials. <http://nfl.transportation.org/Documents/TIF5-1%20Techstreet.pdf>

The American Transportation Network of highways, transit, rail, and ports is poised on the threshold of a period of innovation unprecedented in U.S. history. The benefits from forward-looking investment will be the underpinnings of a thriving national economy, maintaining America as the international leader in technology and wealth creation, with benefits flowing to all citizens. Congress created the National Surface Transportation Policy and Revenue Study Commission and directed it to develop a “conceptual plan” to ensure that the surface transportation system will continue to serve the needs of the United States over at least the next 30 years. During a series of hearings across the country, Commission members themselves have called for the development of a “bold national vision” for transportation. The American Association of State Highway and Transportation Officials (AASHTO), in collaboration with several industry partners, has developed a national transportation vision which seeks to do both. Calling upon the foremost transportation experts in the country, AASHTO and partner associations convened topic panels and a visioning summit to bring forward key issues and solutions. Jointly they have compiled comprehensive recommendations that will enable the United States to achieve the transportation vision described. The findings contained in this report chart a path to modernize and transform today’s system to meet the challenges of tomorrow. The vision that these experts developed will be achieved by moving towards the following goals: (1) Invest in the innovation and the highway, public transportation and rail capacity needed to support a strong economy, maintaining America as the international leader in technology and wealth creation; (2) Connect all regions of the country, urban and rural, to the global economy, and do so reliably every day; (3) Expand opportunities for jobs, places to live, time with family, education, health care, and other services; (4) Integrate the highway, rail and port freight systems of the North American trade bloc to enable the U.S. to remain an economic superpower; (5) Synchronize transportation policies with policies for housing, land use, energy, the economy, and the environment; (6) Improve the quality of life for all citizens through a dramatic increase in safety, reduced congestion, and energy independence; (7) Harness advanced technologies in every aspect of the system; (8) Preserve America’s freedom to travel, where desired, when desired, by whatever means desired, from this generation to the next.

———. 2007c. *Transportation: Invest in Our Future: America’s Freight Challenge*. Washington, DC: American Association of State Highway and Transportation Officials. ftp://ftp.mdt.mt.gov/research/LIBRARY/TIF3-1-FREIGHT_CHALLENGE-AASHTO.PDF

As trade barriers fall around the world, a new trade barrier is rising around the American continent. Congestion at the nation's ports, on its highways, and along its railroads is becoming the new tariff of the 21st Century. This congestion increases travel times, it disrupts tightly planned supply chains, and it raises the costs of doing business with America and in America. The effect of rising congestion is like a tax--only it escalates every year without a vote of the people. This congestion tax can be repealed only if the United States adopts a new vision and new strategy for a global, 21st Century American transportation system. The foundations of this congestion crisis are built upon the aging transportation network that serves the United States today: The Interstate Highway System was planned in the 1950s for traffic volumes of the 1980s; America's rail network was planned in the late 19th and early 20th Centuries to meet the needs of a newly emerging industrial nation; America's water ports are being overwhelmed by foreign trade; and, perhaps more serious than the problems in any one mode is the increasing need to improve connections between modes. The American Association of State Highway and Transportation Officials (AASHTO) produced this report for the National Surface Transportation Policy and Revenue Study Commission to warn national policy makers of this impending crisis. AASHTO also proposes a series of far-reaching policies that must be adopted if America is to retain its competitive advantage. This report is presented in five chapters: (1) Driving Trends of Congestion; (2) The American Economy--Faster, Smarter and Leaner; (3) America's Freight Transportation Network--Struggling to Keep Up; (4) Intermodal Connections--The Missing Links; and (5) What Needs to Be Done.

———. 2007d. *Transportation: Invest in Our Future: Revenue Sources to Fund Transportation Needs*. Washington, DC: AASHTO.
http://financecommission.dot.gov/Documents/Background%20Documents/AASHTO_Report_on_Funding_Issues_9-07.pdf

Congress directed the National Surface Transportation Policy and Revenue Study Commission to conduct a comprehensive study of the needs of America's surface transportation system and sources of revenue to fund them over at least the next 30 years. This report by the American Association of State Highway and Transportation Officials was developed to assist the Commission in their analysis. It supplements two earlier reports, *Future Needs of the U.S. Transportation System* and *Surface Transportation Policy Recommendations*. This report addresses: three questions which frame the background for the revenue options to be considered, and a needs assessment summary; the revenue crisis Congress will have to address in 2009; short-term federal revenue options for the Highway Trust Fund; short-term federal revenue options outside the Highway Trust Fund; state and local government revenue options; and long-term federal revenue options.

———. 2010. *The Road to Livability: How State Departments of Transportation Are Using Road Investments to Improve Community Livability*. Washington, DC: American Association of State Highway and Transportation Officials.

Since the U.S. Department of Transportation is making livability a top priority for future transportation funding, this is an important concept to define. While some would suggest livability means a life without cars, this definition really doesn't work for the millions of Americans who have chosen the lifestyle that an automobile affords. A public policy that addresses true livability must include not only urban but rural communities, not only the environment but also the economy, not only transit riders and bicyclists, but soccer moms and family vacationers at the Grand Canyon. The Washington State Department of Transportation suggests that a "livable future" requires a balance of three key societal goals: vibrant communities, vital economy and sustainable environment—all goals for which good transportation is essential. In providing good transportation networks for their citizens, state DOTs have long been the incubator of such "livable" policies as community-sensitive design, historic preservation, asphalt recycling, and practical engineering. They support the expansion of choices for transportation users to include transit, walking and biking. Daily they are working with communities and demonstrating that livability can be accomplished through road-related improvements. State departments of transportation are using several techniques to improve the livability of their communities: creating good-paying jobs; stimulating the broader economy; investing in green projects; revitalizing a small town's "main street"; transforming urban streets into neighborhood centers; preserving scenic country roads; creating smart transportation solutions in tight economic times; enhancing neighborhoods through the enhancement program; making design responsive to community needs; integrating transportation and land use; using scenic byways to attract tourists and support local economies; promoting walking and biking; and supporting travel and tourism.

Balducci, Patrick, and Joseph R. Stowers. 2008. *State Highway Cost Allocation Studies*. Washington, D.C.: Transportation Research Board. NCHRP Synthesis 378. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_378.pdf

In 1937, Oregon conducted the nation's first highway cost allocation study (HCAS), a study designed to determine the fair share that each class of road user should pay for the construction, maintenance, operation, improvement, and related costs of state highways, roads, and streets. Since that first HCAS, at least 84 studies have been performed in 30 states. The Oregon "cost-occasioned" approach—based on the principle that costs are occasioned by highway-user classes and can be attributed to each class based on measures of relative travel, space requirements, and loadings—has served as the foundation of nearly every state HCAS. Some of the most significant advancements, however, have occurred as the result of three federal HCASs completed in 1965, 1982, and 1997. This report examines the history and evolution of highway cost allocation study practice and explores the current state of the practice.

Bronzini, Michael S. 2013. *Transportation and the Economic Health and Attractiveness of Metropolitan Regions*. Washington, D.C.: Free Congress Foundation.
<http://dc.streetsblog.org/wp-content/uploads/2013/06/Transportation-Engine-for-Growth-Paper.pdf>

This paper reviews the contemporary history of urban development paradigms in the United States. It then addresses the function of balanced transportation systems, including public transit, in urban revitalization efforts. The paper also discusses the economic benefits provided by investments in efficient transportation systems. The revitalization of urban areas depends upon metropolitan transportation investments. Due to the increasing challenge of new highway construction, changing mode choice and travel patterns, growing urban population density, and alterations in urban housing, it is likely that new transportation investments will be made in public transit. Public transit investments have a variety of economic and social benefits. These include improved business growth and productivity, cost savings (in decreased congestion) for urban drivers, and direct cost savings by transit riders. In addition, public transit increases property values. The paper also offers a short discussion of how efficient supply chains encourage urban growth and vitality.

Burkhardt, Jon E. 2003. *Economic Benefits of Coordinating Human Service Transportation and Transit Services*. Washington, D.C.: Transportation Research Board. TCRP Report 91. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_91.pdf

Coordinating human service transportation services and public transit services can provide significant economic benefits. The coordinating agencies, the riders of the services, and local communities all can receive measurable benefits, including additional funding, more cost-effective operations, and increased mobility.

———. 2011. *Sharing the Costs of Human Services Transportation*. Washington, D.C.: Transportation Research Board. TCRP Report 144.
http://www.nap.edu/openbook.php?record_id=14490.

This report provides a common, unified approach that can be used to calculate the full cost of providing transportation services by all transportation providers: public transit authorities, human service agencies, not-for-profit agencies, or private-for-profit providers. Given the variety of agencies involved in delivering community transportation services, addressing multiple perspectives should add greatly to the validity, applicability, and implementability of the results presented by this study. When a participating agency asks, “How much should I pay?” this report provides the methods necessary to answer that question in a consistent and equitable manner.

Cambridge Systematics, and American Association of State Highway and Transportation Officials. 2003. *Transportation Invest in America: Freight-Rail Bottom Line Report*.

[Washington, D.C.]: American Association of State Highway and Transportation Officials. <http://freight.transportation.org/doc/FreightRailReport.pdf>

This document presents AASHTO's view concerning the capacity of U.S. national freight transportation, especially the freight-rail system, in order to keep pace with the expected growth of the economy over the next 20 years. Given forecasts for substantial increases in freight in the coming years, it will be a challenge for the freight-rail industry to maintain its market share of freight movement, and an even greater challenge to increase it. Major sections dealt with in this publication include Rail's Role in the Intermodal Freight System, Alternative Futures for the Freight-Rail System, and Creating the 21st Century Freight-Rail System. Several photos, graphs, tables, maps, and figures representing a variety of data are included.

Cohen, H. S., and Joseph Barr. 2012. *State of Good Repair: Prioritizing the Rehabilitation and Replacement of Existing Capital Assets and Evaluating the Implications for Transit*. Washington, D.C.: Transportation Research Board. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_157.pdf

This report presents a framework for transit agencies to use for prioritizing capital asset rehabilitation and replacement decisions. By applying this framework, a decision maker can answer questions about asset rehabilitation and replacement investment decisions. The published report is accompanied by four Microsoft Excel models, which are available electronically via the TRB website. This report and the models will be a valuable resource for transit agencies and will be of interest to regional, state, and federal agencies that oversee, plan, or finance public transportation.

Cox, Wendell. 2013. "Transit Policy in an Era of the Shrinking Federal Dollar". Backgrounder #2763. Washington, DC: Heritage Foundation. <http://www.heritage.org/research/reports/2013/01/transit-policy-in-an-era-of-the-shrinking-federal-dollar>

Throughout the life of the federal transit program, traffic congestion has gotten worse, and transit is unable to provide practical mobility to jobs throughout the metropolitan area to low-income citizens. For three decades, federal gas taxes have supported urban transit services, principally to relieve traffic congestion through urban rail systems. The federal transit program has been justified with claims of providing mobility to low-income citizens and reducing emissions from automobiles. However, transit has not delivered on any of these objectives. Moreover, transit's benefits are highly concentrated in just six "transit legacy cities"; to which more than half the nation's transit commuting occurs. The costs of transit have risen far more than its ridership. For all these reasons, transit should not be a priority for federal funding, especially during severe budget constraints. This Backgrounder evaluates transit's performance and provides a wider context of issues

that should be included in any examination of transit and its support by federal subsidies.

De Rugy, Veronique, and Kathryn G. Newmark. 2005. Federal Highway Pork. *Washington Times*. May 30. <http://www.aei.org/article/economics/fiscal-policy/federal-highway-pork/>

The federal government should cease funding local transportation projects and then cut the gasoline tax accordingly.

McCarthy, Leslie Ann, Seri Park, and Anthony R. Giancola. 2013. *Practices and Performance Measures for Local Public Agency Federally Funded Highway Projects*. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_442.pdf

This report compiles and documents public agency practices used in federal-aid project development and management. A primary objective of this study is to explore what performance measures, delivery practices, strategies, and tools are currently used in relation to federally-funded local public agency (LPA) highway project development and delivery, and how they are used to measure success in project administration. The report also provides information on the definition and elements of state department of transportation (DOT)-sponsored LPA certification processes. Information used in this study was acquired through a review of the literature, a survey of DOT local program representatives in all states, and a survey of local program agency representatives identified by DOTs. Follow-up interviews with multiple state and local agency representatives provided additional information.

Orr, Benjamin and Alice Rivlin. 2009. Road-use Fees Could Solve Our Transit Woes. *Washington Business Journal*. <http://www.brookings.edu/research/opinions/2009/05/01-congestion-pricing-rivlin>

The Washington, D.C. area is contemplating a new way of financing transportation — pricing road use by vehicle miles traveled (VMT) with higher fees for using congested roads. This opportunity reflects innovative thinking about transportation financing in response to growing concern about infrastructure maintenance, climate change and the inefficiencies caused by congestion.

Perez, Benjamin G., Tiffany Batac, and P. S. Vovsha. 2012. *Assessing Highway Tolling and Pricing Options and Impacts*. Washington, D.C.: Transportation Research Board. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_722v1.pdf

This report provides state departments of transportation (DOTs) and other transportation agencies that are considering instituting or modifying user-based fees

or tolling on segments of their system with a decision-making framework and analytical tools that better describe likely impacts on revenue generation and system performance. This report is presented in two volumes. This volume, Volume 2, will provide staff who develop the forecasts of potential revenue, transportation demand, and congestion and system performance with an in-depth examination of the various analytical tools available for direct or adapted use.

Perez, Benjamin G., Reno Giordano, Edward V.A. Kussy, Nancy Smith, Brandon J. Davis, Carollyn B. Lobell, and Heidi Stamm. 2013. *The Effect of Public-Private Partnerships and Non-Traditional Procurement Processes on Highway Planning, Environmental Review, and Collaborative Decision Making*. Prepublication draft. Capacity Focus Area of the Second Strategic Highway Research Program (SHRP 2), Transportation Research Board.
<http://pubsindex.trb.org/view/2013/M/1245203>

This study has been conducted as part of the Capacity Focus Area of the Second Strategic Highway Research Program (SHRP 2) which involves 22 different research efforts exploring how environmental, economic, and community issues can be integrated into the analysis, planning, and design of new highway capacity. The centerpiece of the SHRP 2 Capacity Focus Area is the Decision Guide, a four-phased structure of key decisions common to the development of all transportation projects through the completion of Metropolitan Planning Organization (MPO) and National Environmental Protection Act (NEPA) processes: long-range planning, programming, corridor planning, and environmental review/permitting. The specific purpose of this study -- SHRP 2 C12, "The Effect of Public-Private Partnerships and Non-Traditional Procurement Processes on Highway Planning, Environmental Review, and Collaborative Decision Making" -- is to assess the interplay between the use of public-private partnerships (P3s) and the transportation and environmental planning processes in order to identify, if P3s are to be considered as a means to procure transportation improvements, how and when they should be considered. The framework of the established Decision Guide was considered throughout this process with special attention paid to how P3 procurements interface and influence it. The research conducted for SHRP 2 C12 is based on extensive interviews with state transportation department and MPO officials and private investors with hands-on experience implementing P3 projects, a review of relevant government laws and regulations, and secondary source materials.

Schank, Joshua and Emil Frankel. 2012. *The Consequences of Reduced Federal Transportation Investment*. Eno Center for Transportation and the Bipartisan Policy Center. <https://www.enotrans.org/publications>

The Consequences of Reduced Federal Transportation Investment is a report co-authored by the Eno Center for Transportation and the Bipartisan Policy Center. It outlines the foreseeable consequences of reductions in federal surface transportation

funding. Focusing on the likely impacts of a 35 percent reduction in federal surface transportation funding by state agencies and transit authorities, the report emphasizes the need to institute a sustainable stream of transportation revenues and investment resources.

Shatz, Howard J. 2011. *Highway Infrastructure and the Economy: Implications for Federal Policy*. Santa Monica, CA: Rand Corp. <http://www.rand.org/pubs/monographs/MG1049.html>

To inform debate on a new transportation bill being considered, the authors review the literature on the economic outcomes of highway infrastructure spending, which constitutes the largest share of federal spending on transportation infrastructure. They first highlight the connections between highway spending and the economy and then analyze the literature to trace the effects of highway infrastructure on productivity, output, and employment. Then, they conduct a formal quantitative meta-analysis to discern more clearly why the literature has produced its current findings about infrastructure and the economy. After discussing these findings, they consider the implications for federal highway policy and for future research.

United States, Transit Cooperative Research Program, Transit Development Corporation, National Research Council (U.S.), and Cambridge Systematics. 2009. *Local and Regional Funding Mechanisms for Public Transportation*. Washington, D.C.: Transportation Research Board. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_129.pdf

This report and the Local and Regional Funding Database, which is posted on the Transportation Research Board (TRB) website at http://trb.org/news/blurbs_detail.asp?id=9599, will be of interest to public transportation systems, local and regional governments, and others interested in funding for public transportation services. The Local and Regional Funding Database is intended to serve as an interactive repository of information gathered from transit systems about their local and regional funding mechanisms. This database can be updated in the future as additional information becomes available.

Utt, Ronald D., and Wendell Cox. 2011. Using Market Processes to Reform Government Transportation Programs, Report No. 2: Improving Transit with Competitive Contracting. *WebMemo #3312*. Washington, DC: Heritage Foundation. <http://www.heritage.org/research/reports/2011/07/improving-transit-with-competitive-contracting>

America's transit systems confront serious financial challenges that will force them to raise fares and reduce service unless they can get better control of their costs. Carrying less than 5 percent of commuters and less than 2 percent of all urban travel

and concentrated primarily in large urban areas, these faltering systems will be seeking ever-higher subsidies at a time when hard-pressed state and local governments are laying off teachers and police and Congress is contemplating significant cuts in all transportation programs. If public transportation is to remain viable, it must completely rethink the way it operates.

Winston, Clifford. 2005. *So Many Transit Dollars for So Little Congestion Relief*. Washington, D.C.: Brookings Institution.
<http://www.brookings.edu/research/opinions/2005/07/22metropolitanpolicy-winston>

When Congress eventually passes its six-year national transportation bill, the worst thing about it will not be that it was stalled for more than two years or its roughly \$284 billion price tag. The worst thing is that it will do so little to improve the mobility of the nation's travelers.

Winston, Clifford, and Vikram Maheshri. 2007. On the Social Desirability of Urban Rail Transit Systems. *Journal of Urban Economics*. 62 (2):362
<http://www.brookings.edu/research/papers/2006/08/rail-systems-winston>

The evolution of urban rail transit in the United States over the past twenty years has been marked by three inescapable facts that signal an inefficient allocation of transit resources. Rail's share of urban travelers is declining during a period when there has been little investment in new roads; its deficits are rising sharply; and yet investment to build new systems and extend old ones continues.

Winston, Clifford, and Ashley Langer. 2006. The Effect of Government Highway Spending on Road Users' Congestion Costs. *Journal of Urban Economics*. 60 (3):463. <http://www.brookings.edu/research/papers/2006/05/05transportationwinston>

Policymakers attempt to reduce the growth of congestion by spending billions of dollars annually on our road system. The authors evaluate this policy by estimating the determinants of congestion costs for motorists, trucking operations, and shipping firms. The authors find that, on average, one dollar of highway spending in a given year reduces the congestion costs to road users only eleven cents in that year. The authors also find that even if the allocation of spending were optimized to minimize congestion costs that it still is not a cost-effective way to reduce congestion. The authors conclude the evidence strengthens the case for road pricing.

Zmud, Johanna, and Carlos Arce. 2008. *Compilation of Public Opinion Data on Tolls and Road Pricing*. Washington, D.C.: Transportation Research Board.
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_377.pdf

This synthesis study summarizes and analyzes public opinion on tolling and road pricing across the United States and internationally. It compiles existing data from completed public opinion research and presents an interpretive framework for understanding situational context in outcomes from various public opinion polls. Additionally, the study provides a systematic review of how the public feels about tolls and road pricing. It addresses such questions as: What is the overall public opinion concerning charging for the use of roads? Is there widespread support or focused opposition? What factors are associated with its acceptance or rejection? The synthesis is intended as a resource for public and elected officials making decisions about infrastructure policy and projects and officials in the process of considering, planning, implementing, and operating tolled facilities. This report is based on a thorough review of the published literature, a scan of national and international media on the topic, and direct contact with organizations of interest or those with experience with tolling programs and road pricing. In addition, a survey questionnaire was distributed to agencies responsible for or engaged in tolling and road pricing to both identify data sources and gather perspectives on relevant issues. The synthesis annotates 110 data points, which are defined as poll, survey, or focus groups that capture public opinion.

Books, Articles, and Government Reports

Karner, Alex, Anamarie Urrutia, and Debbie A. Niemeier. 2012. "US Public Transit Fantasies: Performance and Economic Stimulus". *Rivista Internazionale Di Economia Dei Trasporti*. 39 (1).

This article considers the performance of economic crisis stimulus funding on public transit performance in the United States. The authors note that little is known about the changes in the management of resources by agencies when funds are scarce and public authorities require an increasing number of passengers to be carried by public transport. The authors focus on the performance of transit agencies since 1991, focusing on California. They determined that the effect of government subsidies varies by the source of funding and the size of operator. One section discusses the recent economic downturn's negative impact on both efficiency and overall operator performance. The authors conclude that decreasing efficiency and overall performance are evidence of service-cutting behavior in the situation of operating shortfalls. Service cuts have a direct effect on revenue vehicle miles and ridership. They conclude by calling for additional funds for transit operations, particularly in light of the anticipated greater role of public transit in addressing climate change. This paper is from a workshop on the theme of quality, regulation, and environmental sustainability in public transport, held in October 2010 at the University of Roma Tre.

Lowe, Kate. 2013. "Funding Rail: Federal Decisions and Local Financing." *Public Works Management and Policy*. 18 (2): 127-144.

Local funds for transportation infrastructure are increasingly necessary, even though the U.S. federal government provides billions for urban rail projects. Through analysis of a competitive federal rail program (New Starts), this research tests the hypothesis that local financing decisions--as a demand-side factor in funding allocations--can drive federal rail spending. The analysis also considers alternative explanations for funding outcomes: transportation benefits and political clout. Based on a statistical analysis of 60 projects and 2 brief project profiles, findings indicate that local financial commitment--more than other factors--explains federal awards. Rail expansions that most advance federal transportation goals, as captured by program evaluation criteria, are not more likely to receive New Starts awards, but funded projects all met a minimum threshold for benefits. As a result, local decisions on transit funding both rely on and affect the allocation of federal monies.

O'Toole, Randal. 2009. *Gridlock: Why We're Stuck in Traffic and What to Do About It*. Washington, D.C: CATO Institute.

Americans are the most mobile society in history, yet the nation's transportation system is on the verge of collapse. Traffic congestion today is five times worse than it was 25 years ago. Many bridges are in desperate need of replacement. Worst of all, many transportation planners believe their job is to make congestion worse in order to discourage mobility. Gridlock reveals the origins of this mess and fixes for it. The United States has two paths before it. Some advocate building an expensive network of high-speed trains and urban rail transit lines that will mainly serve a narrow elite. Gridlock argues instead for focus on improving methods of transportation that will increase everyone's mobility and pay for themselves, whether it's cars, buses, planes, or trains.

Roth, Gabriel Joseph. 2006. *Street Smart Competition, Entrepreneurship, and the Future of Roads*. New Brunswick, N.J.: Transaction Publishers.
<http://site.ebrary.com/id/10451659>.

This book describes how effective road transportation is crucial to economic and social being to people around the world. Yet, in cities and rural areas worldwide, road systems suffer from traffic congestion, unsafe conditions, high costs, political corruption, waste, environmental degradation and poor maintenance. This book examines private, market-based alternatives for road services, in both theory and in practice. It explores at least four such possible directions for private services, including testing and licensing vehicles and drivers; management of government-owned road facilities; franchising; and outright private ownership. The book examines contemporary examples of entrepreneurial innovation in road pricing, commercialization, and privatization in environments as diverse as California, China, Singapore, Sweden and the United Kingdom. Although political classes everywhere are reluctant to give up their lucrative sources of power and wealth, the main obstacle to the private provision of roads is public ignorance. The book traces

the history of the private provision of roads under the incredibly difficult conditions prevailing before the railway age, and shows how modern road-management and pricing technologies can enable the interactions of consumers and suppliers in free markets in order to provide truly responsive road services.

United States. 2007. *Financing Federal-Aid Highways*. Washington, D.C.: U.S. Dept. of Transportation, Federal Highway Administration], Office of Legislative and Governmental Affairs.
http://www.fhwa.dot.gov/policy/olsp/financingfederalaid/financing_highways.pdf

Because of a continuing demand for information concerning the financing of Federal-aid highways, the Federal Highway Administration (FHWA) prepared a report, "Financing Federal-Aid Highways," in January 1974 to describe the basic process involved. The report was modified and updated in July 1976, May 1979, October 1983, November 1987, May 1992, and August 1999. These updates were prepared following enactment of new highway or surface transportation acts to reflect changes made by those acts. Enactment of Public Law 109-59, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), has made it necessary to update the August 1999 version to incorporate the changes in financing procedures brought about by that act. As with previous versions, this report follows the financial process from inception in an authorization act to payment from the Highway Trust Fund (HTF), and includes discussion of the congressional and Federal agency actions that occur throughout.

———. 2009. *Rail Modernization Study Report to Congress*. Washington, D.C.: U.S. Dept. of Transportation, Federal Transit Administration.
http://www.fta.dot.gov/documents/Rail_Mod_Final_Report_4-27-09.pdf

This report assesses the level of capital investment required to attain and maintain a state of good repair (SGR) for the Nation's seven largest rail transit operators. The study estimates the total value of the existing backlog of over-age assets at these agencies. It also considers reinvestment needs within the context of past levels of Federal funding support as well as potential changes to the current Federal program. In summary, the Rail Modernization Study finds that more than one-third of agencies' assets are either in marginal or poor condition, indicating that these assets are near or have already exceeded their expected useful life. Assuming assets are permitted to remain in service beyond their expected useful life for a limited time (a realistic assumption based on current agency practices), there is an estimated SGR backlog of roughly \$50 billion (2008 dollars) for the agencies under consideration. The study also finds that, between 1991 and 2009, although the actual dollar amount of capital funding from Federal sources to the seven agencies increased, their share of Fixed Guideway Modernization funds—to "old rail cities" in particular—actually declined as new fixed guideway systems, such as busways and HOV lanes, entered the program. In addition, the study examined the seven agencies' current utilization

of asset management practices. Such practices are intended to help organizations with large infrastructure holdings to more efficiently manage their reinvestment needs. The Federal Transit Administration (FTA) found that, while all seven agencies maintain comprehensive asset inventories for capital planning purposes, other asset management practices are lacking. Based on the report's analysis, the Rail Modernization Study offers four options that Congress and FTA may wish to consider: (1) Modification to the existing fixed guideway modernization fund formula; (2) Implementation of a temporary funding source designed to eliminate the existing SGR backlog; (3) Technical support for asset management; and (4) Capital asset reporting.

Wolff, Dave P., and Greg B. Eisman. 2011. *The Highway Trust Fund and Donor-Donee Debate over Distributions*. New York: Nova Science Publisher's.

This book looks at donors to and donees of the Federal Highway Trust Fund and their conflicts. Sections include: the donor-donee issue in highway finance; and a Government Accounting Office (GAO) report on states receiving more funding than they contribute in highway taxes.

Maritime: Ports and Waterways

Congressional Hearings

United States. 2010. *The Future of National Surface Transportation Policy: Hearing before the Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security of the Committee on Commerce, Science, and Transportation, United States Senate, One Hundred Eleventh Congress, First Session, April 28, 2009*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-111shrg52161/pdf/CHRG-111shrg52161.pdf>

Hearing before the Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety and Security to examine Federal surface transportation policy and investment initiatives. Supplementary material (p. 61-79) includes a submitted statement and witnesses' written replies to Subcommittee questions.

———. 2012. *The Economic Importance and Financial Challenges of Recapitalizing the Nation's Inland Waterways Transportation System: Hearing before the Subcommittee on Water Resources and Environment of the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Twelfth Congress, First Session, September 21, 2011*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg68481/pdf/CHRG-112hhrg68481.pdf>

Hearing before the Subcommittee on Water Resources and Environment to examine economic benefits and infrastructure development and maintenance needs of the inland waterways transportation system, and to review fiscal challenges facing the Inland Waterways Trust Fund and proposals to address capital investment needs for inland waterways infrastructure (Subcommittee memo and witness list, p. vi-xiii). The inland waterways transportation system provides freight mobility that otherwise would be too costly or even impossible for other transportation modes to accommodate. The majority of the system is over 50 years old and in need of repair and modernization, however there are currently insufficient revenues in the Inland Waterways Trust Fund to cover the estimated 8 billion needed to properly repair and modernize inland waterways. Supplementary material (p. 59-157 and throughout) includes submitted statements, correspondence, witnesses' written statements, reports, and articles.

Government Accountability Office Reports

United States. 2012. *Maritime Infrastructure: Opportunities Exist to Improve the Effectiveness of Federal Efforts to Support the Marine Transportation System : Report to Congressional Addressees*. <http://www.gao.gov/products/GAO-13-80>

The U.S. Army Corps of Engineers (Corps) and the Department of Transportation (DOT) use a variety of programs to maintain and improve Marine Transportation System (MTS) infrastructure. The Corps is the lead federal agency responsible for maintaining and improving navigable waterways. Corps data show that obligations for navigable waterways have decreased from over \$3 billion in fiscal year 2009 to about \$1.8 billion in fiscal year 2011. Most annual DOT funding is provided to states through formulas, and states determine which projects to fund. For example, in fiscal year 2011, the Surface Transportation Program provided \$9.5 billion to states for a variety of transportation projects, which may have included port improvements. However, because DOT does not specifically track formula funding used to maintain or improve ports or port connectors, officials were unable to provide GAO the extent to which these funds were used for port improvements, although the officials stated that the number of port-specific projects was likely small. Several DOT grant and credit programs can also provide specific funding to ports, though ports are primarily responsible for maintaining and improving infrastructure on port property.

Office of Inspector General, U.S. Department of Transportation

United States. 2013. *MARAD Has Taken Steps to Develop a Port Infrastructure Development Program But Is Challenged in Managing Its Current Port Projects*.

[Washington, D.C.]: U.S. Dept. of Transportation, Office of the Secretary of Transportation, Office of Inspector General.

<http://www.oig.dot.gov/sites/dot/files/MARAD%20Oversight%20of%20Port%20Infrastructure%20Development%20Projects%5E8-2-13.pdf>

In 2003, the Maritime Administration (MARAD) was authorized to administer funds for developing and modernizing the Port of Anchorage, the main seaport in Anchorage, AK. The Port of Anchorage Intermodal Expansion Project—a partnership with the Port and the Municipality of Anchorage—is ongoing, and there have been significant setbacks, including construction problems and schedule delays. MARAD has since been authorized to administer two other port projects: the multi-port Hawaii Harbors Infrastructure Expansion Program in 2005 and the Port of Guam Improvement Enterprise Program in 2008. The Port of Guam project, which is estimated to receive up to \$117 million in Federal funding, is part of a critical construction program that will support the relocation of U.S. Marine Corps forces from Japan to Guam. In 2009, MARAD was mandated to establish a Port Infrastructure Development Program (PIDP) for the improvement of port facilities. The setbacks with the Port of Anchorage project have raised concerns about MARAD's ability to manage its port projects. Given MARAD's central role, the U.S. Department of Transportation Office of Inspector General (OIG) evaluated the Agency's execution of its port infrastructure development responsibilities. Specifically, OIG evaluated MARAD's (1) oversight and risk management of port infrastructure development projects, and (2) oversight of port infrastructure projects' contract planning and administration. MARAD did not establish effective oversight mechanisms when it initiated its port infrastructure development responsibilities. MARAD narrowly interpreted statutory requirements, which state that appropriated

amounts for the Port of Anchorage and Hawaii Harbors projects shall be “transferred to and administered by” the Maritime Administrator. According to MARAD officials, in the absence of clear statutory guidance, MARAD delegated authority for project construction and management through Memorandums of Agreement (MOAs) with the local authorities in Anchorage, Hawaii, and Guam. In doing so, MARAD did not (1) adequately define its port project oversight responsibilities or provide guidance to contractors for developing Program Management Plans (PMPs); (2) establish a sound risk management process consistent with industry best practices; or (3) have a process to systematically store, maintain, and track project progress and funds. MARAD did not effectively manage its port project contracts. Between 2003 and 2011, the Port of Anchorage project’s cost estimate grew over four and a half times from \$211 million to \$1 billion, with scheduled completion slipping 8 years. According to MARAD officials, prior to 2011 the Agency’s leadership made a policy decision that abdicated programmatic and technical control to local port officials which contributed to problems with the project.

Think Tanks and Transportation Research Board

Meyers, Alan. 2013. *Waterborne Freight Transportation: Bottom Line Report*. Washington, D.C.: American Association of State Highway and Transportation Officials. <http://www.infrastructureusa.org/wp-content/uploads/2013/07/aashto-water-2013.pdf>

From the initial settlement of North America, through colonization and expansion, and to the present day, where and how Americans live has been determined in large part by waterborne transportation. Today, the United States relies on its Marine Transportation System, or MTS, for access to global markets and global products, and for domestic goods movement as an alternative to congested surface transportation. The MTS includes facilities on three coasts, the Great Lakes, and the Inland Waterways; it serves every state, either directly by water or indirectly via highway and rail connections; and it supports trillions of dollars in U.S. economic activity annually. The MTS evolved as a decentralized system comprised of many different stakeholders and responsible entities, with funding coming from a variety of public and private sources. By many measures, the MTS is a great success; it has recovered from the recent recession and is handling near-record freight volumes. But looking forward, the MTS faces critical challenges: decades of insufficient system maintenance, which have left many parts of the MTS inoperable or on the brink of failure; excessive delays in navigation project delivery; inadequate and unpredictable funding for critically needed MTS improvements; lack of a national strategy to ensure the MTS provides the greatest benefit to the nation as a whole; and no locus of responsibility for the well-being of the MTS, and its failure or success. To promote discussion and action, the American Association of State Highway and Transportation Officials (AASHTO) commissioned this Waterborne Freight Transportation report. The report describes the nature, extent, and critical role of the MTS, and offers a number of findings and conclusions for consideration,

and possibly adoption, by AASHTO and others. The main finding is this: with respect to waterborne freight, “business as usual” will lead to unacceptable further declines in MTS condition and performance, and to significant lost opportunities for the nation’s economy. A renewed national commitment to the MTS is urgently required, along with corresponding changes in how to plan for and fund the MTS. Options for change include: 1) Federal legislation to achieve full state-of-good-repair for MTS waterways, guarantee full utilization of funds collected for MTS improvements, and significantly improve the cost, speed, and reliability of MTS project delivery; 2) a new Office of Multimodal Freight, under the Secretary of Transportation, empowered and directed to eliminate the current balkanization of MTS planning, funding, and project delivery responsibilities, and advance sound planning and project implementation; and 3) promotion of best practices in MTS planning and investment at the state, regional, and local levels.

Books, Articles, and Government Reports

Musick, Nathan. 2010. *Public Spending on Transportation and Water Infrastructure*. Washington, DC: Congress of the United States, Congressional Budget Office. <http://www.cbo.gov/sites/default/files/cbofiles/attachments/11-17-10-Infrastructure.pdf>

In fiscal year 2007—the most recent year for which data on combined spending by the federal government and by state and local governments are available—total public spending for transportation and water infrastructure was \$356 billion, or 2.4 percent of the nation’s economic output as measured by its gross domestic product. For the purposes of this study, transportation and water infrastructure encompasses infrastructure for all forms of surface transportation (highways, mass transit, rail, and waterways), aviation, water resources (such as dams and levees), and water distribution and wastewater treatment. Between 2003 and 2007, real (inflation-adjusted) public spending on transportation and water infrastructure declined by \$23 billion, or 6 percent. That decline, which reflects a decrease in real capital spending, especially by the federal government, stands in contrast to the fairly steady increase in spending for such infrastructure during the previous two decades. In particular, real capital spending on highways, mass transit, and aviation fell markedly even as capital spending on other types of infrastructure—such as rail and water transportation, water resources, and water supply and wastewater treatment—remained stable or rose. The drop in real capital spending for highways, mass transit, and aviation between 2003 and 2007 was primarily the result of a sharp increase in prices for materials used to build such infrastructure—an increase that outpaced the growth of nominal (current dollar) spending on those types of infrastructure. In 2009, the federal government spent \$87 billion on transportation and water infrastructure, an increase of \$6 billion over the amount spent in 2007. Of those outlays, about \$4 billion was made available through the American Recovery and Reinvestment Act of 2009 (ARRA). In total, lawmakers appropriated \$62 billion in funding for transportation and water infrastructure under that legislation. The

Congressional Budget Office expects that, in nominal terms, federal spending for transportation and water infrastructure under ARRA will total \$54 billion through 2013, by which time almost 90 percent of the funds made available for infrastructure through ARRA will have been spent. The composition of public spending on transportation and water infrastructure can be represented in three ways: by the level of government providing the funding or other form of financial support; by the nature of the spending (whether it is designated for capital projects or for operation and maintenance); and by the type of infrastructure. State and local governments account for about 75 percent of total public spending on transportation and water infrastructure—even after subtracting from their gross spending the value of grants and loan subsidies that the federal government provides for such purposes—and the federal government accounts for the other 25 percent. That split has remained roughly constant over the past two decades.

Railroads

Congressional Hearings

United States. 2011a. *Developing True High Speed Rail in the Northeast Corridor: Stop Sitting on Our Federal Assets: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Twelfth Congress, First Session, January 27, 2011*. Washington: U.S. G.P.O.

<http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg65480/pdf/CHRG-112hhrg65480.pdf>

Hearing in NYC to examine benefits of developing high-speed passenger rail transportation system in the Northeast Corridor (Committee memo and witness list, p. iv-xiv). Although U.S. train service already lags behind global competitors, the current National Railroad Passenger Corp. (Amtrak) plan to bring high-speed rail service to the Northeast Corridor would not be completed until 2040. Supplementary material (p. 56-132) includes submitted statements, witnesses' written statements, a report, correspondence, and: -- Fitch Ratings; "High Speed Rail Projects: Large, Varied and Complex", Apr. 6, 2010, with graphs (p. 100-118)

———. 2011b. *Sitting on Our Assets: Rehabilitating and Improving Our Nation's Rail Infrastructure: Hearing before the Subcommittee on Railroads, Pipelines, and Hazardous Materials of the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Twelfth Congress, First Session, February 17, 2011*. Washington: U.S. G.P.O. □ <http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg65451/pdf/CHRG-112hhrg65451.pdf>

Hearing before the Subcommittee on Railroads, Pipelines, and Hazardous Materials to examine implementation and status of and proposed improvements to the railroad rehabilitation and improvement financing (RRIF) program, established under the Transportation Equity Act for the 21st Century and expanded under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, also known as SAFETEA-LU, to provide loan guarantees for acquisition or rehabilitation of railroad equipment and facilities (Subcommittee memo and witness list, p. vi-xiii). DOT estimates that freight rail transportation demand will increase 88 percent by 2035 and studies indicate that meeting this demand will require 148 billion in infrastructure investments. Without such investment, 30 percent of rail miles in primary corridors will be running above capacity by 2035, causing severe congestion nationwide. Supplementary material (p. 4-15, 50-51, 56-90) includes submitted statements, correspondence, and witnesses' written statements.

———. 2011c. *Finding Ways to Encourage and Increase Private Sector Participation in Passenger Rail Service: Hearing before the Subcommittee on Railroads, Pipelines, and Hazardous Materials of the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Twelfth Congress, First Session, March 11,*

2011. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg65396/pdf/CHRG-112hhrg65396.pdf>

Hearing before the Subcommittee on Railroads, Pipelines, and Hazardous Materials to examine passenger rail service private sector participation trends (Subcommittee memo and witness list, p. vii-xii). Current private investment in rail travel is governed by the Passenger Rail Investment and Improvement Act (PRIIA) of 2008, which reformed operation of the National Railroad Passenger Corp. (Amtrak) and opened the door for new private sector participation. Supplementary material (p. 2-6, 37-120) includes submitted statements, witnesses' written statements and written replies to Subcommittee questions, and correspondence.

———. 2013. *An Update on the High-Speed Intercity Passenger Rail Program: Mistakes Made and Lessons Learned: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Twelfth Congress, Second Session, December 6, 2012*. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg77211/pdf/CHRG-112hhrg77211.pdf>

Hearing to examine Federal Railroad Administration (FRA) management and implementation of the high-speed intercity passenger rail (HSIPR) program, and to review status of rail projects and strategies to improve HSIPR program (Committee memo and witness list, p. v-x). The American Recovery and Reinvestment Act of 2009 provided \$8 billion to launch the FRA HSIPR program in June 2009. At the time, President Obama stated that the HSIPR program would create high-speed rail access for 80 percent of Americans within 25 years. The FRA focus is now on project oversight since 99 percent of Federal funding has been awarded and obligated. Supplementary material (p. 62-165) includes a submitted statement, and witnesses' written statements and written replies to Committee questions.

Government Accountability Office Reports

United States. 2007. *Railroad Bridges and Tunnels Federal Role in Providing Safety Oversight and Freight Infrastructure Investment Could Be Better Targeted: Report to Congressional Requesters*. [Washington, D.C.]: U.S. Govt. Accountability Office.
<http://www.gao.gov/products/GAO-07-770>.

Freight railroads account for over 40 percent (by weight) of the nation's freight on a privately owned network that was largely built almost 100 years ago and includes over 76,000 railroad bridges and over 800 tunnels. As requested, GAO provides information on this infrastructure, addressing (1) the information that is available on the condition of railroad bridges and tunnels and on their contribution to railroad congestion, (2) the federal role in overseeing railroad bridge and tunnel safety, (3) the current uses of public funds for railroad infrastructure investments, and (4) criteria and a framework for guiding any future federal role in freight infrastructure

investments. GAO reviewed federal bridge safety guidelines and reports, conducted site visits, and interviewed federal, state, railroad, and other officials.

———. 2013. *Intermodal Transportation: a Variety of Factors Influence Airport-Intercity Passenger Rail Connectivity : Report To Congressional Committees*. [Washington, D.C.]: U.S. Govt. Accountability Office.
<http://www.gao.gov/assets/660/656553.pdf>

Increasing passenger travel has led to growing congestion in the nation's air transportation system, and projections suggest that this trend is likely to continue. The integration of air and intercity passenger rail service, which is provided in the United States by Amtrak, has been suggested by some transportation experts as a strategy to increase mobility and reduce congestion in the United States. The FAA Modernization and Reform Act of 2012 mandated that the U.S. Government Accountability Office (GAO) review issues related to air-rail connectivity. This report discusses (1) the nature and scope of air-rail connectivity, (2) the benefits and costs of air-rail connectivity, (3) factors affecting the development and use of air-rail connectivity, and (4) potential strategies to improve air-rail connectivity. Most major U.S. airports have some degree of physical proximity to intercity passenger rail stations, though only 2 airports are currently collocated with intercity rail stations. Specifically, 42 of the nation's 60 large and medium hub airports are located within 10 miles of Amtrak stations; 21 of the 42 airports are within 5 miles of Amtrak stations. At the 2 collocated airports, passengers can access Amtrak either via an automated people mover (Newark Liberty International Airport) or by walking (Bob Hope Burbank Airport). At some airports, such as Baltimore/Washington International Thurgood Marshall Airport, passengers can take a direct shuttle between the airport and the nearby Amtrak station, while at other airports, connections to Amtrak can be made through other modes of transportation. Studies and data, while limited, suggest that relatively few passengers in the United States use intercity rail to travel to and from the airport or through more integrated travel such as code-sharing agreements, whereby airlines sell tickets for Amtrak's service. The only existing air-rail code-sharing agreement in the United States is at Newark Airport. Amtrak and states are considering projects to expand intercity rail connectivity with airports, including as part of the construction of high-speed rail in California. Air-rail connectivity may provide a range of mobility, economic, and environmental benefits, though the financial costs of building these connections could be substantial. Specifically, based on discussions with industry stakeholders, input from surveyed experts, and a review of academic literature, GAO found a general consensus that air-rail connectivity can provide a range of mobility benefits for travelers, though less agreement existed on the importance and extent of economic and environmental benefits. However, achieving these benefits could require significant trade-offs, because the costs of expanding the existing intercity passenger rail network and constructing viable connections can be significant. Given these costs, based on GAO's work, there are currently limited locations where benefits are high enough to justify funding to improve air-rail connectivity. Air-rail

connectivity remains limited in the United States, according to experts, as a result of institutional and financial factors, among other things. In particular, the limited nature of the existing intercity passenger rail network, including the frequency of service and connectivity to other transportation modes, remains an obstacle to developing and using air-rail connections. Securing funding for air-rail projects also remains a barrier. While funds from some federal grant programs can be used to help facilitate air-rail connections, there is no single funding source for air-rail projects. There are strategies to improve air-rail connectivity, but adopting them involves trade-offs. Experts generally focused on, among other things, leadership, funding, and infrastructure improvements, though the effectiveness of these strategies may depend on a project's local characteristics. There has been little emphasis on air-rail connectivity by either the Department of Transportation (DOT) or Amtrak. Furthermore, experts noted that some of the strategies could be particularly challenging or costly to implement, such as in locations where the rail network was developed decades before airports. For example, increasing intercity passenger rail's frequency could improve air-rail connectivity but could also be expensive.

Office of Inspector General, U.S. Department of Transportation

United States, and Mitch Behm. 2011. *Amtrak Made Significant Improvements in Its Long-Term Capital Planning Process Federal Railroad Administration*. [Washington, DC]: U.S. Dept. of Transportation, Office of the Secretary of Transportation, Office of Inspector General.
<http://www.oig.dot.gov/sites/dot/files/FinalAmtrakCapital.pdf>

The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) re-authorized the National Railroad Passenger Corporation (Amtrak) for the years 2009 through 2013. Not since the Amtrak Reform and Accountability Act of 1997 (ARAA) has Amtrak received a multi-year authorization for appropriations to cover its capital spending. As a result, the company has had to develop its capital budget on a year-to-year basis without knowing how much funding Congress would provide. This method of planning has significantly affected Amtrak's ability to maintain safe and reliable infrastructure and equipment, and increased its capital program's annual costs. Amtrak estimates that the State of Good Repair (SOGR) backlog on Amtrak-owned and operated Northeast Corridor (NEC) infrastructure alone is approximately \$5.2 billion in fiscal year 2010 dollars. Amtrak also faces the renewal and replacement of an aging equipment fleet, safety and security needs, business improvement initiatives, and compliance with legal requirements such as accessibility for passengers with disabilities. Because Amtrak requires significant Federal funds for its capital program, the House Appropriations Subcommittee on Transportation, Housing and Urban Development, and Related Agencies requested this audit. OIG objectives were to determine: (1) Amtrak's five-year capital requirements and how they align with the company's business and strategic goals; (2) how Amtrak prioritizes its capital projects; (3) Amtrak's capital needs and ability to implement its increased capital budget as a result of the American Recovery and

Reinvestment Act (ARRA); and (4) how Amtrak evaluates the performance of its capital projects. Amtrak has established four long-range planning documents that outline the company's long-term capital requirements and align with the company's business and strategic goals. Amtrak prioritizes its capital needs through the use of Decision Lens, a software package that brings transparency to the process and facilitates collaboration among groups with different prioritization needs. Amtrak assessed its capital needs and in a short time-frame reported them in a capital spending plan for the \$1.3 billion in funds it received from ARRA. Per ARRA's requirements, the company has allocated a large portion of the grant to its security and life safety programs for projects that will reduce infrastructure vulnerabilities and enhance incident management, such as fire detection and suppression systems. Amtrak developed a measurable performance plan for its capital projects.

Think Tanks and Transportation Research Board

Bing, Alan J. 2010. *Guidebook for Implementing Passenger Rail Service on Shared Passenger and Freight Corridors*. Washington, D.C.: Transportation Research Board. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_657.pdf

The United States is facing increasing congestion on the Nation's highways and capacity constraints on the national rail system. Higher gasoline prices are increasing public demand for energy-efficient transportation alternatives. Faced with these challenges and increased emphasis on multimodal planning under federal transportation statutes (i.e., ISTEA, TEA-21, and SAFETEA-LU), state interest in intercity passenger and commuter rail development has grown significantly in recent years. Thirteen states support Amtrak service and 38 states have developed or participated in developing plans for enhanced intercity passenger rail service. A growing number of commuter rail systems operate on lines of various ownership configurations (e.g., freight railroad, county, city, state, and transit authorities). AASHTO's report *Intercity Passenger Rail Transportation* (January 2003) documents \$17 billion in state-defined infrastructure and equipment needs over 6 years and another \$43 billion in needs over the next two decades. Eighty percent of these needs involve investments in privately owned freight corridors. Several states have well-established rail passenger programs through which capital and operating funds are provided to ensure intercity, commuter, and transit services. Other states are beginning to implement rail passenger service plans and projects. Most of these rail services will operate on freight corridors. The concept of passenger and freight operations co-existing in shared-use corridors is central to further development of state-supported passenger rail service in the United States. All current Amtrak service is on shared-use corridors. Virtually all plans for enhanced passenger rail service, both intercity and commuter rail, developed by states are based on the shared-use corridor concept. Congress is considering legislation to provide federal funding assistance to states for passenger rail service, and increasingly, states have committed their own funds to support various passenger rail services. Recent legislative proposals call for states and freight railroads to reach agreements

regarding access, the proper level of infrastructure improvements, maintenance costs, and other issues before federal, state, local, or private project funding is provided. There is no broadly accepted methodology to address these issues equitably so that the public interest is served and private freight railroads have a reasonable incentive for entering into such agreements. The lack of such a methodology sets the stage for a long, costly, and often frustrating negotiating process for all participants that can significantly delay or jeopardize project implementation. The objective of this research is to develop a guidebook for determining the appropriate level of publicly and privately funded investments and for establishing performance standards for passenger and freight rail services operating on shared-use corridors. The guidebook should encourage the broad acceptance of improved principles, processes, and methods to support agreements on access, cost allocation, capacity allocation, operational issues, future responsibilities for capacity improvements, and other fundamental issues that will affect the ultimate success of shared-use passenger and freight agreements between public and private railroad stakeholders.

Rowangould, G. 2013. Public Financing of Private Freight Rail Infrastructure to Reduce Highway Congestion: A Case Study of Public Policy and Decision Making in the United States. *Transportation Research. Part A, Policy and Practice*. 57:25-36

As goods movement continues to increase it is expected to outpace infrastructure capacity in the United States. Moving a larger share of goods by rail rather than truck is a potentially cost effective part of a solution. Freight rail not only offers a substitute for truck trips but is a cleaner, more energy efficient, and safer alternative. Recently a number of private freight rail projects have received public funding. The public funds are aimed at increasing freight rail capacity with the goal of diverting some goods currently moved by truck to rail. While the benefits of moving goods by rail are relatively clear, it is unclear if public decision makers can effectively identify strategic rail investments that will achieve their policy goals. This study critically examines the analytical methods, models, and data that are commonly used to support decisions to provide public funds for private freight rail projects. This is accomplished through a case study of California's Trade Corridors Improvement Fund program which provided \$680 million for 11 freight rail projects. The study's contributions include identifying critical analytical flaws and challenges affecting the benefit estimates that public funding decisions rely on. Improvements to current evaluation methods are also identified as are regulatory reforms and policy interventions that may offer more effective and reliable outcomes.

Vranich, Joseph. 2004. *End of the Line: the Failure of Amtrak Reform and the Future of America's Passenger Trains*. Washington, DC: AEI Press.
<http://www.aei.org/book/economics/end-of-the-line-book/>

This book contends that Amtrak is hopelessly flawed and should be phased out and suggests directions for America's future. The book focuses on developments since

the passage of the Amtrak Reform and Accountability Act (ARAA) of 1997. It provides a brief history of Amtrak and describes the many years of mismanagement that lead up to the enactment of the ARAA; outlines the proposed reforms and Amtrak thwarted them; describes how Amtrak continually demands more subsidies and threatens to shut down when it has cash-flow problems; assesses post-reform developments and concludes that Amtrak's future is hopeless and that preserving Amtrak is irrational; examines myths about the value of Amtrak and fallacies about the cost of Amtrak; considers the threat of terrorism against rail passenger systems and highlights some train safety issues in New York City that Amtrak has not addressed; describes how, in recent years Amtrak has managed to alienate its major institutional customers: local commuter agencies and state transportation departments-and why many public agencies contracting with Amtrak may seek alternative operators in the future; argues that it is time to replace Amtrak with something more workable and relevant; and surveys what Great Britain, Japan, Canada, and the United States have done to privatize and develop publicly owned railroads. The book also considers some creative approaches to rail transportation.

Government Report

United States. 2010. *National Rail Plan: Moving Forward*. [Washington D.C.]: Federal Railroad Administration. <http://www.fra.dot.gov/Elib/Details/L02696>

The United States and world economies are experiencing an increased demand for rail. Expanding U.S. passenger and freight mobility will require a networked railroad system that is able to modernize and increase capacity. With an estimated U.S. population growth of 70 million people over the next 25 years, mostly centered in metropolitan regions, a national rail plan is needed to ensure a coordinated and intelligent system that provides safe, reliable, and efficient passenger and freight rail service. The United States now faces new challenges spurred by unprecedented population growth, economic transformations, and technological innovations. High-speed rail, now established in many developed nations, is positioned to benefit the United States as the States' plans mature and projects are implemented. With FY 2009 kick-starting U.S. high-speed rail investment and planning, follow-on funding and strategic investment will bring the nation closer to realizing the vision outlined by Congress and the Administration. The next American transformation will require an interconnected and balanced transportation network that maximizes the benefits of every mode. A key to integrating these systems is higher-performing rail, including the full spectrum of high-speed and intercity passenger rail, commuter rail, and freight rail. These interconnected rail systems will relieve congestion, promote livable communities, facilitate economic expansion, respect environmental sustainability and provide choices for the American public. This investment will set the stage for job creation, sustainable economic competitiveness, a more resilient infrastructure and a lasting prosperity. This Progress Report details the interplay of factors that demonstrate the importance of efficient and effective rail infrastructure to the Nation's economy. These include a dramatic increase in population, particularly

in high-growth areas, and the concomitant need for transporting more freight and improving safety. Such an infrastructure will also reduce fuel consumption, which, in turn, will enhance national security by diminishing U.S. reliance on foreign oil. This report describes the different yet complementary visions for the two rail systems, a high-speed and intercity passenger rail system and a high-performing freight rail system. These systems will use many of the same resources and much of the same infrastructure. Working in tandem, they will connect people and goods in a seamless and efficient manner. Finally, the report describes the Federal Railroad Administration's (FRA) outreach program to develop the National Rail Plan, and its synergy with the U.S. Department of Transportation's (DOT) strategic goals.

**American Recovery and Reinvestment Act of 2009 (P.L.
111-5, 123 Stat 115)**

Congressional Hearings

United States. 2009a. *Recovery Act: 10-week Progress Report for Transportation and Infrastructure Programs: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Eleventh Congress, First Session, April 29, 2009*. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg49497/pdf/CHRG-111hhrg49497.pdf>

Hearing to examine Federal, State, and local progress in implementing transportation and infrastructure programs authorized under the American Recovery and Reinvestment Act (ARRA) of 2009, which authorized Federal assistance for various measures to promote economic recovery and reinvestment (Committee memo and witness list, p. v-xi). Supplementary material (p. xii-xcvi, 83-279) includes submitted statements, correspondence, witnesses' written statements and written replies to Committee questions, a report, and: -- Committee majority staff; "American Recovery and Reinvestment Act of 2009, Transportation and Infrastructure Provisions Implementation Status as of April 17, 2009", 2009, with tables and a graph (p. xii-lxiii).

———. 2009b. *Recovery Act: 120-day Progress Report for Transportation Programs: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Eleventh Congress, First Session, June 25, 2009*. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg50765/pdf/CHRG-111hhrg50765.pdf>

Hearing to examine Federal and State progress in implementing transportation and infrastructure programs authorized under the American Recovery and Reinvestment Act (ARRA) of 2009, which authorized Federal assistance for various measures to promote economic recovery and reinvestment (Committee memo and witness list, p. v-xi). Supplementary material (p. xii-lxxiii, 8-14, 88-175) includes a report, submitted statements, witnesses' written statements, a witness's written replies to Committee questions, and: -- Committee majority staff; "American Recovery and Reinvestment Act of 2009, Transportation and Infrastructure Provisions Implementation Status as of June 15, 2009", June 23, 2009, with a graph and tables (p. xii-lxvi).

———. 2009c. *Recovery Act: 160-day Progress Report for Transportation and Infrastructure Programs: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Eleventh Congress, First Session, July 31, 2009*. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg51436/pdf/CHRG-111hhrg51436.pdf>

Hearing to examine Federal and State progress in implementing transportation and infrastructure improvement programs authorized under the American Recovery and Reinvestment Act (ARRA) of 2009, which authorized Federal assistance for various measures to promote economic recovery and reinvestment (Committee memo and witness list, p. v-xxiv). Supplementary material (p. xxv-lxxix, 52-131) includes submitted statements, witnesses' written statements, and: -- Committee majority staff; "American Recovery and Reinvestment Act of 2009, Transportation and Infrastructure Provisions Implementation Status as of July 17, 2009", July 30, 2009, with tables and a graph (p. xxv-lxxix).

- . 2009d. *Recovery Act 225-day Progress Report for Transportation and Infrastructure Investment: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Eleventh Congress, First Session, October 1, 2009*. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg52650/pdf/CHRG-111hhrg52650.pdf>

Hearing to examine Federal and State progress in implementing transportation and infrastructure improvement programs authorized under the American Recovery and Reinvestment Act (ARRA) of 2009, which authorized Federal assistance for various measures to promote economic recovery and reinvestment (Committee memo and witness list, p. v-xxii). Supplementary material (p. xiii-lxix, 62-130) includes witnesses' written statements, submitted statements, correspondence, and: Committee majority staff; "American Recovery and Reinvestment Act of 2009, Transportation and Infrastructure Provisions Implementation Status as of Sept. 18, 2009", Sept. 30, 2009, with tables and a graph, (p. xiii-lxix).

- . 2010a. *Tracking the Money: Preventing Waste, Fraud, and Abuse of Recovery Act Funding: Hearing before the Committee on Oversight and Government Reform, House of Representatives, One Hundred Eleventh Congress, First Session, July 8, 2009*. Washington: U.S. G.P.O.
<http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg62119/pdf/CHRG-111hhrg62119.pdf>

Hearing to examine Federal, State, and local government progress in implementing transportation and infrastructure improvement programs authorized under the American Recovery and Reinvestment Act (ARRA) of 2009, which authorized Federal assistance for various measures to promote economic recovery and reinvestment, including efforts to prevent waste, fraud, and abuse. Supplementary material (p. 15-27, 181-811) includes submitted statements, reports, a press release, articles, correspondence, and: a. National Governors Association; National Association of State Budget Officers; "Fiscal Survey of States", June 2009, with tables and graphs (p. 301-369) b. "Infrastructure Mobilization Effort - State-Reviewed, Shovel-Ready Project List", in Massachusetts (p. 432-551) c. "Mobilization for Federal Economic Recovery Infrastructure Investments - Task Force Reports", in Massachusetts, Feb. 2009, with tables (p. 552-743) d. Coburn, Tom; "100 Stimulus Projects: A Second Opinion", June 2009 (p. 746-790).

- . 2010b. *Recovery Act: One-year Progress Report for Transportation and Infrastructure Investments: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Eleventh Congress, Second Session, February 23, 2010*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg55031/pdf/CHRG-111hhrg55031.pdf>

Hearing to examine Federal progress in implementing transportation and infrastructure programs authorized under the American Recovery and Reinvestment Act (ARRA) of 2009, which authorized Federal assistance for various measures to promote economic recovery and reinvestment (Committee memo and witness list, p. v-xvii). ARRA has resulted in 10,348 highway, transit, and wastewater projects, which have created 300,000 direct on-project jobs and over 938,000 total jobs. Supplementary material (p. xviii-xcvii, 80-183) includes submitted statements, witnesses' written statements and written replies to Committee questions, and: -- Committee majority staff; "The American Recovery and Reinvestment Act of 2009: Transportation and Infrastructure Provisions Implementation Status as of January 15, 2010", Feb. 8, 2010, with tables and a graph (p. xviii-xcvii)

- . 2010c. *Recovery Act: Progress Report for Highway, Transit, and Wastewater Infrastructure Formula Investments: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Eleventh Congress, Second Session, March 26, 2010*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg55031/pdf/CHRG-111hhrg55031.pdf>

Hearing to examine State and local progress in implementing transportation and infrastructure programs authorized under the American Recovery and Reinvestment Act (ARRA) of 2009, which authorized Federal assistance for various measures to promote economic recovery and reinvestment (Committee memo and witness list, p. v-x). State and local agencies and organizations are accountable for spending funds authorized under ARRA for transportation and infrastructure projects. Supplementary material (p. xi-xciv, 41-187) includes submitted statements, witnesses' written statements and written replies to Committee questions, and: -- Committee majority staff; "The American Recovery and Reinvestment Act of 2009: Transportation and Infrastructure Provisions Implementation Status as of March 12, 2010", Mar. 25, 2010, with tables (p. xi-xciv)

- . 2010d. *Recovery Act: Progress Report for Infrastructure Investments: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Eleventh Congress, Second Session, May 26, 2010*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg56726/pdf/CHRG-111hhrg56726.pdf>

Hearing to examine Federal progress in implementing infrastructure programs authorized under the American Recovery and Reinvestment Act (ARRA) of 2009, which authorized Federal assistance for various measures to promote economic

recovery and reinvestment (Committee memo and witness list, p. v-xiii). ARRA has resulted in 13,148 highway, transit, and wastewater projects, which have created 159,000 direct on-project jobs and over 1,170,000 total jobs. Supplementary material (p. xv-xcvii, 57-198) includes submitted statements, witnesses' written statements and written replies to Committee questions, and: -- Committee majority staff; "The American Recovery and Reinvestment Act of 2009: Transportation and Infrastructure Provisions Implementation Status as of May 14, 2010", May 25, 2010, with tables and a graph (p. xv-xcvii)

———. 2010e. *Recovery Act: Progress Report for Infrastructure Investments: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Eleventh Congress, Second Session, July 27, 2010*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg57634/pdf/CHRG-111hhrg57634.pdf>

Hearing to examine Federal and State progress in implementing infrastructure programs authorized under the American Recovery and Reinvestment Act (ARRA) of 2009, which authorized Federal assistance for various measures to promote economic recovery and reinvestment (Committee memo and witness list, p. v-xiv). ARRA has funded 17,024 highway, transit, and wastewater projects, which created about 350,000 direct on-project jobs and over 1.2 million total jobs. Supplementary material (p. xv-cvii, 60-117) includes submitted statements, witnesses' written statements, a witness's written replies to Committee questions, and: -- Committee majority staff; "The American Recovery and Reinvestment Act of 2009: Transportation and Infrastructure Provisions Implementation Status as of July 16, 2009", July 26, 2010, with a graph and tables (p. xv-cvii)

———. 2011. *Stimulus Status: Two Years and Counting: Hearing before the Committee on Transportation and Infrastructure, House of Representatives, One Hundred Twelfth Congress, First Session, May 4, 2011*. Washington: U.S. G.P.O. <http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg66184/pdf/CHRG-112hhrg66184.pdf>

Hearing to examine DOT and EPA progress in implementing transportation and infrastructure programs authorized under the American Recovery and Reinvestment Act (ARRA) of 2009, which authorized Federal assistance for various measures to promote economic recovery and reinvestment (Committee memo and witness list, p. iv-xxii). Despite authorizing over \$787 billion in economic stimulus funding under ARRA, including \$64 billion for transportation and infrastructure projects alone, the U.S. economic recovery remains slow and the Federal budget deficit continues to grow. Supplementary material (p. 43-156) includes submitted statements, and witnesses' written statements and written replies to Committee questions.

Government Accountability Office Reports

Siggerud, Katherine. 2009. *Recovery Act States' Use of Highway Infrastructure Funds and Compliance with the Act's Requirements: Testimony before the Committee on Transportation and Infrastructure, House of Representatives*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/products/GAO-09-926T>.

The American Recovery and Reinvestment Act of 2009 (Recovery Act) included more than \$48 billion for the Department of Transportation's (DOT) investment in transportation infrastructure, including highways, rail, and transit.

United States. 2011. *Recovery Act Funding Used for Transportation Infrastructure Projects, but Some Requirements Proved Challenging: Report to the Congress*. [Washington, D.C.]: U.S. Govt. Accountability Office. <http://www.gao.gov/assets/330/320351.pdf>

This report responds to two U.S. Government Accountability Office (GAO) mandates under the American Recovery and Reinvestment Act of 2009 (Recovery Act). It is the latest report on the uses of and accountability for Recovery Act funds in selected states and localities, focusing on the \$48.1 billion provided to the Department of Transportation (DOT) to invest in transportation infrastructure. This report also examines the quality of recipients' reports about the jobs created and retained with Recovery Act transportation funds. This report addresses the (1) status, use, and outcomes of Recovery Act transportation funding nationwide and in selected states; (2) actions taken by federal, state, and other agencies to monitor and ensure accountability for those funds; (3) changes in the quality of jobs data reported by Recovery Act recipients of transportation funds over time; and (4) challenges faced and lessons learned from DOT and recipients. As of May 31, 2011, nearly \$45 billion (about 95 percent) of Recovery Act transportation funds had been obligated for over 15,000 projects nationwide, and more than \$28 billion had been expended. Recipients continue to report using Recovery Act funds to improve the nation's transportation infrastructure. Highway funds have been primarily used for pavement improvement projects, and transit funds have been primarily used to upgrade transit facilities and purchase buses. Recovery Act funds have also been used to rehabilitate airport runways and improve Amtrak's infrastructure. The Recovery Act helped fund transportation jobs, but long-term benefits are unclear. For example, according to recipient reported data, transportation projects supported between approximately 31,460 and 65,110 full-time equivalents (FTE) quarterly from October 2009 through March 2011. Officials reported other benefits, including improved coordination among federal, state, and local officials. However, the impact of Recovery Act investments in transportation is unknown, and GAO has recommended that DOT determine the data needed to assess the impact of these investments. Federal, state, and local oversight entities continue their efforts to ensure the appropriate use of Recovery Act transportation funds, and recent reviews revealed no major concerns. The DOT Inspector General found that DOT generally complied with Recovery Act

aviation, highway, and rail program requirements. Similarly, state and local oversight entities' performance reviews and audits generally did not find problems with the use of Recovery Act transportation funds. GAO's analysis of Recovery.gov data reported by transportation grant recipients showed that the number of FTEs reported, number of recipients filing reports, and portion of recipients reporting any FTEs decreased over the past two reporting quarters as an increasing number of projects approached completion or were awaiting financial closeout. The Federal Highway Administration performs automated checks to help ensure the validity of recipient reported data and observed fewer data quality issues than in previous quarters but does not plan to use the data internally. Certain Recovery Act provisions proved challenging. For example, DOT and states faced numerous challenges in implementing the maintenance-of-effort requirement, which required states to maintain their planned level of spending or be ineligible to participate in the August 2011 redistribution of obligation authority under the Federal-Aid Highway Program. In January 2011, DOT reported that 29 states met the requirement while 21 states did not because of reductions in dedicated revenues for transportation, among other reasons. The economically distressed area provision also proved difficult to implement because of changing economic conditions. With regard to the high speed intercity passenger rail and Transportation Investment Generating Economic Recovery (TIGER) grant programs, GAO found that while DOT generally followed recommended grant-making practices, DOT could have better documented its award decisions.

Office of Inspector General, U.S. Department of Transportation

United States. 2011. *Federal Highway Administration's oversight of Federal-aid and Recovery Act projects administered by local public agencies needs strengthening Federal Highway Administration*. [Washington, D.C.]: U.S. Dept. of Transportation, Office of the Secretary of Transportation, Office of Inspector General. http://www.oig.dot.gov/sites/dot/files/FHWA%20LPA%20Report%5E07-15-11_0.pdf

On July 15, 2011, OIG issued a final report on the Federal Highway Administration's (FHWA) oversight of federal-aid and Recovery Act projects administered by Local Public Agencies (LPA). OIG initiated the audit since LPAs received up to \$8 billion in Recovery Act highway funds and FHWA previously acknowledged that LPAs were an internal control weakness. OIG audit objectives were to assess: (1) the extent of LPA compliance with Federal requirements; and (2) the effectiveness of FHWA's actions in ensuring that states have adequate LPA oversight programs. OIG found at least one instance of noncompliance with Federal requirements in 88 percent of the 59 LPA projects reviewed in four states and identified \$5 million in unsupported costs. Most prevalent were shortcomings related to construction management requirements. This report identified weaknesses in the actions FHWA has taken in addressing state LPA oversight weaknesses. OIG made four

recommendations for improving FHWA oversight. FHWA concurred with all four recommendations.

———. 2013a. *FHWA Is Monitoring Unexpended Recovery Act Highway Funds, but Some Funds May Remain Unused*. [Washington, D.C.]: U.S. Dept. of Transportation, Office of the Secretary of Transportation, Office of Inspector General.
http://www.oig.dot.gov/sites/dot/files/Web%20file_FHWA%20Unexpended%20ARRA%20Funds.pdf

The American Recovery and Reinvestment Act of 2009 (ARRA) provided \$27.5 billion for investments in highway infrastructure projects nationwide. The Federal Highway Administration (FHWA) is responsible for overseeing this investment, which included \$26.1 billion in Highway Infrastructure Investment Grants (highway projects). FHWA issued guidance on ARRA within weeks of the law's passage, and as of April 17, 2013, about 96 percent of these funds have been expended. As part of ongoing ARRA oversight, the status of any remaining unexpended ARRA highway project funds was examined and whether States can use them to the fullest extent before the time period for spending the funds expires after September 30, 2015. At the end of fiscal year 2012, States had unexpended ARRA funds of approximately \$1.5 billion from ARRA obligations for highway projects and \$155 million in de-obligations, or "recovered" funds, from ARRA projects. The objectives were to assess FHWA's controls for monitoring unexpended funds; determine whether FHWA's policies, procedures, and management activities result in the prompt, appropriate use of unexpended ARRA funds; and identify unexpended funds at risk of not being spent by final deadlines. This audit was conducted between July 2012 and June 2013 in accordance with generally accepted Government auditing standards. As part of this audit a statistical sample of 70 of 3,346 ARRA highway projects with unexpended ARRA Highway Infrastructure Investment Grant obligations as of September 30, 2012 was selected to project the amount of potential future recovered funds.

———. 2013b. *Lessons Learned From ARRA Could Improve the Federal Highway Administration's Use of Full Oversight*. [Washington, D.C.]: U.S. Dept. of Transportation, Office of the Secretary of Transportation, Office of Inspector General.
<http://www.oig.dot.gov/sites/dot/files/FHWA%20Use%20of%20Full%20Oversight%5E5-7-13.pdf>

With the infusion of \$27.5 billion in American Recovery and Reinvestment Act (ARRA) funds for highway projects, the Federal Highway Administration (FHWA) had to meet Office of Management and Budget (OMB) requirements for enhanced oversight and increased accountability for recovery funds. To address these requirements, FHWA expanded its existing oversight process by performing ARRA programmatic and project reviews of States' management of Federal funds, such as those performed by National Review Teams. Additionally, FHWA conducted full

oversight reviews of about 1,200 of nearly 15,000 ARRA projects to ensure they received a comprehensive assessment and that States met all relevant Federal requirements. Under full oversight, FHWA retains review and approval responsibilities for project design, plans, specifications, estimates, right-of-way certification statements, contract awards, inspections and final acceptance. When projects are not designated for full oversight, these responsibilities are typically delegated to the States through Stewardship and Oversight Agreements. Given FHWA's responsibility to provide effective stewardship and oversight of ARRA funds, the U.S. Department of Transportation Office of Inspector General (OIG) initiated this audit to (1) determine whether FHWA's full oversight inspections detected instances of noncompliance with select Federal requirements and (2) assess whether FHWA's oversight guidance adequately defines full oversight procedures needed to ensure a comprehensive review of projects during construction. Briefly, while Florida, Michigan, and Pennsylvania generally complied with Federal requirements for quality control and quality assurance, FHWA full oversight inspections did not always detect instances of States' noncompliance with other Federal requirements. Specifically, FHWA Division Offices did not routinely verify whether these States complied with some Federal requirements. FHWA guidance does not adequately define full oversight. Rather, FHWA allows each of its Division Offices to determine the type, scope, and consistency of project inspections and the extent of supervision needed. As a result, FHWA Division Offices rarely prepared written plans to identify which construction activities would be inspected, did not fully document oversight procedures performed or justify why they excluded some Federal requirements and the related risk areas from their review, and—contrary to FHWA guidance—had limited evidence of supervisory review of inspection reports.

Think Tanks and Transportation Research Board

Puentes, Robert. 2010. *TIGER's Tale and Lessons for Stimulus Spending*. Washington, D.C.: Brookings. <http://www.brookings.edu/blogs/up-front/posts/2010/02/22-stimulus-puentes>.

The author notes that the majority of TIGER spending is going to the 100 largest metropolitan areas in the United States.

Eno Center for Transportation. 2013. *Lessons Learned from the TIGER Discretionary Grant Program*. Washington, D.C.: Eno Center for Transportation.
[https://enotrans.r.worldssl.net/wp-content/uploads/wpsc/downloadables/TIGER-paper.pdf](https://enotrans.r.worldssl.net/wp-content/uploads/wp-content/uploads/wpsc/downloadables/TIGER-paper.pdf)

The Transportation Investment Generating Economic Recovery (TIGER) program was created as part of the American Recovery and Reinvestment Act of 2009 (ARRA) to finance transportation infrastructure projects. TIGER utilizes a mode-neutral approach, which is also merit-based. TIGER was, basically, part of a larger

stimulus program that was intended to promote short-term economic recovery. But the program continued on, after its initial establishment as part of the ARRA, and was reauthorized with bipartisan support three additional times, as part of a general appropriations bill. This paper explores the performance and history of the TIGER program from 2009 to 2012 with a specific focus on identifying program features that are especially relevant for wider efforts to ensure that U.S. transportation policy becomes more performance based.

Books, Articles, and Government Reports

American Association of State Highway and Transportation Officials. 2010. *More Projects and Paychecks: Transportation's Summer of Recovery*. Washington, D.C: American Association of State Highway and Transportation Officials.
<http://recovery.transportation.org/ARRA-2.pdf>

The transportation investment in stimulus is working—and in every state across the nation. More than \$40 billion in highway and transit projects have been approved and are moving forward—almost \$30 billion are under contract on 16,761 different projects. More than 63,000 direct on-project jobs have been created or sustained in August as a result of the American Recovery and Reinvestment Act and states have already paid out \$3.2 billion in payroll. This report summarizes the investments from the American Recovery and Reinvestment Act in the transportation, employment and economic achievements of various states. It also details state-by-state projects and investments as of August 31, 2010.

Leduc, Sylvain, and Daniel Wilson. 2012. *Roads to Prosperity or Bridges to Nowhere? Theory and Evidence on the Impact of Public Infrastructure Investment*. Cambridge, Mass.: National Bureau of Economic Research.

The authors examine the dynamic macroeconomic effects of public infrastructure investment both theoretically and empirically, using a novel data set we compiled on various highway spending measures. Relying on the institutional design of federal grant distributions among states, the authors construct a measure of government highway spending shocks that captures revisions in expectations about future government investment. The authors find that shocks to federal highway funding has a positive effect on local GDP both on impact and after 6 to 8 years, with the impact effect coming from shocks during (local) recessions. However, the authors find no permanent effect (as of 10 years after the shock). Similar impulse responses are found in a number of other macroeconomic variables. The transmission channel for these responses appears to be through initial funding leading to building, over several years, of public highway capital which then temporarily boosts private sector productivity and local demand. To help interpret these findings, the authors develop an open economy New Keynesian model with productive public capital in which regions are part of a monetary and fiscal union. The authors show the presence of

productive public capital in this model can yield impulse responses with the same qualitative pattern the authors find empirically.

Agencies and Organizations

There are many organizations and associations (quasi-governmental and affiliated with educational institutions) which deal with transportation in addition to government agencies. Below is a partial list.

Aircraft Owners and Pilots Association

421 Aviation Way
Frederick, MD 21701
(301) 695-2000
<http://www.aopa.org/>

As the world's largest aviation organization, AOPA is a valuable resource for any journalist covering aviation. AOPA has representatives based in its Frederick, MD., headquarters, in Washington, D.C. and seven regions across the United States. AOPA provides services that include advocacy at the federal, state, and local levels, as well as pilot legal, finance and insurance services, flight planning products, safety programs and award-winning media products.

Airlines for America

(formerly the Air Transport Association)
1301 Pennsylvania Avenue, NW
Suite 1100
Washington, DC 20004
202.626.4000
<http://www.airlines.org/Pages/Home.aspx>

Founded by a group of 14 airlines meeting in Chicago in 1936, Airlines for America was the first and remains the only trade organization of the principal U.S. airlines. Airlines for America airline members and their affiliates transport more than 90 percent of all passengers and cargo in the United States. Airlines for America vigorously advocates for America's airlines as models of safety, customer service and environmental responsibility; and as the indispensable network that drives the nation's economy and global competitiveness.

American Association of Port Authorities

1010 Duke Street
Alexandria, VA 22314-3589
703-684-6321
<http://www.aapa-ports.org/>

AAPA today represents 160 of the leading seaport authorities in the United States, Canada, Latin America and the Caribbean and more than 300 sustaining and associate members, firms and individuals with an interest in seaports.

American Association of State Highway and Transportation Officials

444 N Capitol St. NW - Suite 249

Washington, DC 20001

(202) 624-5800

<http://www.transportation.org>

The American Association of State Highway and Transportation Officials advocates transportation-related policies and provides technical services to support states in their efforts to efficiently and safely move people and goods.

American Public Transportation Association

1666 K Street NW, 11th Floor

Washington, DC 20006

(202) 496-4800

<http://www.apta.com/Pages/default.aspx>

APTA members are public organizations that are engaged in the areas of bus, paratransit, light rail, commuter rail, subways, waterborne passenger services, and high-speed rail. Members also include large and small companies who plan, design, construct, finance, supply, and operate bus and rail services worldwide. Government agencies, metropolitan planning organizations, state departments of transportation, academic institutions, and trade publications are also part of the APTA membership.

American Short Line and Regional Railroad Association

50 F Street, N.W.

Suite 7020

Washington, DC 20001

Phone: (202) 628-4500

<http://www.aslrra.org/home/index.cfm>

The American Short Line and Regional Railroad Association (ASLRRRA) is a non-profit trade association that represents the interests of its 450 short line and regional railroad members in legislative and regulatory matters. Short line and regional railroads are an important and growing component of the railroad industry. Today, they operate and maintain 30 percent of the American railroad industry's route mileage, and account for 9 percent of the rail industry's freight revenue and 12 percent of railroad employment.

American Society of Civil Engineers

1801 Alexander Bell Drive

Reston, VA 20191

(800) 548-2723

<http://www.asce.org/>

ASCE is committed to protecting the health, safety, and welfare of the public, and as such, is equally committed to improving the nation's public infrastructure.

American Trucking Associations

950 North Glebe Road, Suite 210

Arlington, VA 22203-4181

(703) 838-1700

<http://www.trucking.org/Home.aspx>

Since 1933, American Trucking Associations has been the leading advocate for the trucking industry. Through a strong federation of state associations, affiliated conferences and individual members, ATA is committed to developing and advocating innovative, research-based policies that promote highway safety, security, environmental sustainability and profitability. ATA's professional staff works to educate policymakers and the general public about the essential role trucking plays in the economy, promote responsible policies to improve highway safety and advance the industry's environmental goals.

The American Waterways Operators

801 North Quincy Street, Suite 200

Arlington, VA 22203

703.841.9300

<http://www.americanwaterways.com/>

The American Waterways Operators is the national advocate for the U.S. tugboat, towboat and barge industry. AWO members operate on the rivers, coasts, Great Lakes, and harbors of the United States.

Association of American Railroads

425 Third Street, SW

Washington, DC 20024

202-639-2100

<https://www.aar.org>

America's freight railroads operate the safest, most efficient, cost-effective and environmentally sound freight transportation system in the world — and the Association of American Railroads (AAR) is committed to keeping it that way. Operating over a 140,000-mile network stretching across the far reaches of North America, AAR members include the major freight railroads in the United States, Canada and Mexico, as well as Amtrak. Working with elected officials and leaders in Washington, D.C. on critical transportation and related issues, AAR ensures that the freight rail industry will continue to meet America's transportation needs today and tomorrow. As the standard setting organization for North America's railroads, AAR

is also focused on improving the safety and productivity of rail transportation. AAR helps advance these goals through its two subsidiaries, the Transportation Technology Center Inc.(TTCI) and the Railinc Corp. TTCI is the world's leading research, development and testing facility, and develops next-generation advancements in safety and operation efficiency. Railinc serves as the rail industry's leading resource for rail data, information technology and information services, and uses one of the world's largest data networks to track customer shipments. AAR also supports the Railroad Research Foundation (RRF), a world-class policy research organization dedicated to sustaining a safe, secure and technologically advanced rail network.

Boat Owners Association of the United States
(BOATU.S.)

880 South Pickett Street
Alexandria, VA 22304
800-395-2628
<http://www.boatus.com/>

BoatUS is an acronym for Boat Owners Association of The United States. BoatUS is a Membership association, with over half a million Members, that has been providing savings, service and representation for recreational boat owners nationwide since 1966. BoatUS is the nation's most powerful advocate for advancing the interests of boaters and the single source to meet all boaters' needs.

Center for Transportation and the Environment

730 Peachtree Street
Suite 330
Atlanta, GA 30308
678-244-4150
<http://www.cte.tv/>

The Center for Transportation and the Environment (CTE) is a nonprofit organization that facilitates the research, development, demonstration, bridge to commercialization, and market acceptance of advanced transportation technologies and alternative fuels. CTE is also a leader in the measurement and evaluation of commuter behavior and the efficiency and effectiveness of transportation demand management (TDM) programs.

Chamber of Maritime Commerce

350 Sparks Street
Suite 700
Ottawa, Ontario, Canada
K1R 7S8

613-233-8779

<http://www.cmc-ccm.com/>

The CMC represents over 170 companies that rely on marine transportation to deliver products and materiel that serve people all over the world. The CMC represents not only marine industry service providers, but also their customers: large industrial companies that need competitive marine systems and services in order to get goods and materiel to and from market. The CMC community consists of a uniquely broad spectrum of marine industry stakeholders. Through this unique, inclusive membership base, CMC provides respected advocacy for marine related issues with a national perspective. CMC also offers a bi-national perspective with a membership base that includes both Canadian and U.S. organizations, the only bi-national organization of its kind.

Global Automakers

(formerly Association of International Automobile Manufacturers)

1050 K Street, NW, Suite 650

Washington, D.C. 20001

<http://www.globalautomakers.org/>

The Association has served as the voice of automobile manufacturers from around the world since 1961 under various names. Today, it represents the U.S. divisions of 13 motor vehicle manufacturers

Institute of Transportation Engineers

1627 Eye Street, NW, Suite 600

Washington, DC 20006

202-785-0060

<http://www.ite.org/>

Founded in 1930, ITE is a community of transportation professionals including, but not limited to transportation engineers, transportation planners, consultants, educators and researchers. Through meetings, seminars, publications and a network of nearly 17,000 members, working in more than 90 countries, ITE is a source for expertise, knowledge, and ideas.

Intermodal Association of North America

11785 Beltsville Drive

Suite 1100

Calverton, MD 20705

301-982-3400

<http://www.intermodal.org/>

IANA is North America's leading industry trade association representing the combined interests of the intermodal freight industry. IANA's membership roster of over 1,000 corporate members includes railroads—Class I, short-line and regional; water carriers and stacktrain operators; port authorities; intermodal truckers and over-the-road highway carriers; intermodal marketing and logistics companies; and suppliers to the industry such as equipment manufacturers, intermodal leasing companies and consulting firms. IANA's associate (non-voting) members include shippers (defined as the beneficial owners of the freight to be shipped), academic institutions, government entities and non-profit associations.

International Air Transport Association

IATA Regional Office for the Americas

703 Waterford Way (NW 62nd Avenue) Suite 600
Miami, Florida 33126
305 264 7772

IATA USA

1201 F Street, N.W. Suite 650
Washington, DC 20005
202 628 9292

<http://www.iata.org/Pages/default.aspx>

- IATA membership: 240 airlines, 113 countries.
- Flights by IATA members represent 84% of total traffic (Available Seat Kilometers)
- IATA members total freight – 43 million tonnes in 2012, of which 29 million tonnes were international
- IATA members' total passengers 2012 (scheduled) - 1.9 billion, of which 860 million were international

International Maritime Organization

4, Albert Embankment

London

SE1 7SR

United Kingdom

+44 (0)20 7735 7611

<http://www.imo.org/Pages/home.aspx>

The mission of the International Maritime Organization (IMO) as a United Nations specialized agency is to promote safe, secure, environmentally sound, efficient and sustainable shipping through cooperation. This will be accomplished by adopting the highest practicable standards of maritime safety and security, efficiency of navigation and prevention and control of pollution from ships, as well as through

consideration of the related legal matters and effective implementation of IMO's instruments with a view to their universal and uniform application.

National Association of Railroad Passengers

505 Capitol Court, NE, Suite 300
Washington, DC 20002-7706
<http://www.narprail.org/>

NARP is the largest national membership advocacy organization for train and rail transit passengers. NARP has worked since 1967 to expand the quality and quantity of passenger rail in the United States. NARP's work is supported by around 20,000 individual members.

The National Industrial Transportation League

1700 North Moore Street
Suite 1900
Arlington, VA 22209
(703) 524-5011
<http://www.nitl.org/>

The League, founded in 1907, is the nation's oldest and largest shipper association representing businesses of all sizes, using all modes of transportation to move their goods in intrastate, interstate, and international commerce.

Shipbuilders Council of America

655 Fifteenth Street NW, Suite 225
Washington, DC 20005
(202) 772-5577
<http://www.shipbuilders.org/>

SCA members constitute the shipyard industrial base that builds, repairs, maintains and modernizes U.S. Navy ships and craft, U.S. Coast Guard vessels of all sizes, as well as vessels for other U.S. government agencies. In addition, SCA members build, repair and service America's fleet of commercial vessels. The Council represents 41 companies that own and operate over 85 shipyards, with facilities on all three U.S. coasts, the Great Lakes, the inland waterways system, Alaska and Hawaii. SCA also represents 91 partner members that provide goods and services to the shipyard industry.

Society of Automotive Engineers

(SAE International)

400 Commonwealth Drive
Warrendale, PA 15096-0001
724.776.4841
<http://www.sae.org/>

SAE International is a global association of more than 138,000 engineers and related technical experts in the aerospace, automotive and commercial-vehicle industries. SAE International's core competencies are life-long learning and voluntary consensus standards development.

Transportation Research Board

The National Academies
500 Fifth Street, N.W.
Washington, D.C. 20001
202-334-2934
<http://www.trb.org/Main/Home.aspx>

TRB is one of six major divisions of the National Research Council— a private, nonprofit institution that is the principal operating agency of the National Academies in providing services to the government, the public, and the scientific and engineering communities. The National Research Council is jointly administered by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. TRB's varied activities annually engage more than 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest by participating on TRB committees, panels, and task forces. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

United States Government

Department of Defense

U.S. Army Corps of Engineers
441 G Street NW
Washington, DC 20314-1000
<http://www.usace.army.mil>

Department of Homeland Security

United States Coast Guard
2100 2nd Street, SW
Washington, DC 20593
<http://www.uscg.mil>

Department of Transportation

1200 New Jersey Avenue, SE
Washington, DC 20590
855-368-4200
<http://www.dot.gov>

- **Federal Aviation Administration**
800 Independence Avenue, SE
Washington, DC 20591
1-866-835-5322
<http://www.faa.gov>
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