



# AMERICA ON THE MOVE:

Transportation and Infrastructure  
for the 21st Century

AN INITIATIVE TO ADVANCE U.S. COMPETITIVENESS

## A CALL TO ACTION:

Highlights from the AOTM National Summit,  
February 26-28, 2014



*Terrafugia's  
flying car*



*U.S. Sen.  
Mikulski &  
Weather  
Channel  
meteorologist*



*Professor Kanter  
& Mayor Diaz  
outside Miami  
Port Tunnel*

**CLASSIC CONSTRUCTION**

# INTRODUCTION

On February 26-28, 2014, over 200 top leaders from business, government, labor, associations, and advocacy groups participated in a national Summit at Harvard Business School, "America on the Move: Transportation and Infrastructure for the 21st Century."

The Summit included many industries and sectors that do not often appear together, and discussions emphasized the perspective of users. There was broad agreement about the need for a national strategy that focuses on technology opportunities, intermodal connections, revitalized cities, and regional planning coalitions. Policies created decades ago should be reviewed and revised in light of new realities of competition, technological change, and human needs.

This report includes highlights from the AOTM Summit in eight sections:

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*On the Web: [www.hbs.edu/AmericaontheMove](http://www.hbs.edu/AmericaontheMove)*

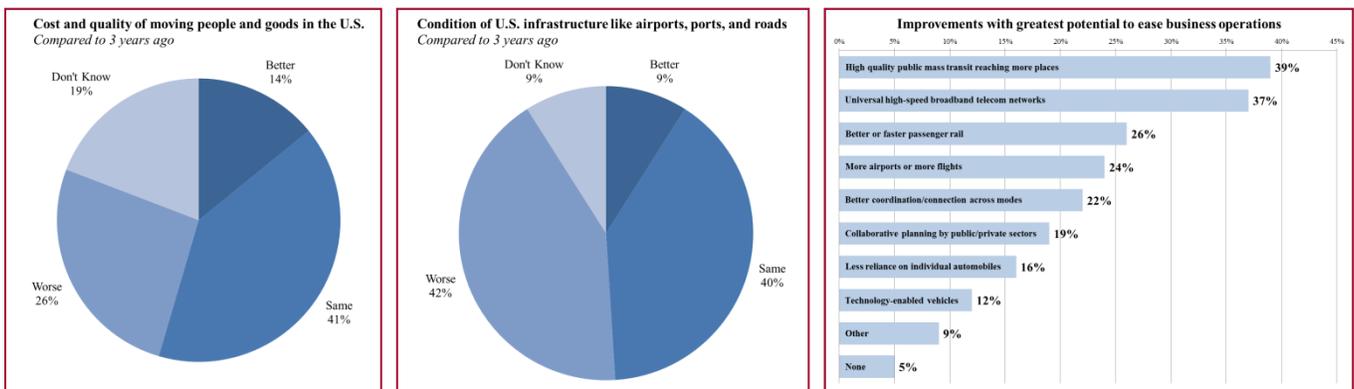
# CALL TO ACTION AND ACTION AGENDA

By **Rosabeth Moss Kanter**, Professor, Harvard Business School; Chair/Director, Harvard Advanced Leadership Initiative; and AOTM Summit Chair

The slogan for the America on the Move Summit is "mobility is opportunity." It's almost impossible to do anything, to get anywhere, be anywhere, be anything without mobility.

Everybody cares about transportation and infrastructure, but often for very different reasons, and caring about one aspect doesn't lead to consensus about action. People concerned about the environment and climate change care about this issue because they want fewer carbon emissions, cleaner fuel or no fuel at all. Business cares about this because it affects how they get and distribute goods and services. It affects costs, it affects speed and service, it affects where they locate production. Individuals and families also have a stake. Transportation affects health and safety. And all of us want to get somewhere, primarily for work. The biggest use of highways in America is work commuting. Even in a world going digital, we still need physical infrastructure—to support digital networks for remote work, or to deliver goods ordered over the Internet.

In addition, there are important equity issues in America. The poor tend to live in neighborhoods that have the fewest transportation options, and they're the people who can go digital less than anybody, even if they wanted to go digital and had the broadband and could afford the cost. The jobs most open to the least-advantaged are by and large face-to-face service jobs, jobs that require them to get somewhere other than their neighborhoods, which often have low car ownership and lack other transportation options.



*December 2013 survey of 1,947 HBS alumni and other business leaders*

Regardless of the issue one cares about, transportation looms large. Business leaders on the third annual HBS U.S. Competitiveness survey, distributed in December 2013, had familiar complaints about congestion, delays, inadequate airports, and lack of public transportation for their employees. Many reported that they saw no change over the past three years, but twice as many felt things were getting worse as those that felt they were getting better. And nearly 40% said that what they want is high quality mass transit to more places—40%. That's an amazing

consensus because that's affecting all parts of society, even for business leaders who themselves could get private transportation easily.

Overall, several phenomena intersect. Everyone cares but we don't quite agree. America has great industries, for example in information technology, but does not always support or deploy what they do. There is big economic impact from major modes of transportation, but there are also costs for modernizing the infrastructure platforms on which they run which America is not willing to pay. This is a public agenda item that misses clarity about national purpose. Although the world is at the cusp of change—a revolution in big data, the use of technology, new business models, the sharing economy, the revival of cities and their lure to young people, awareness of the problems of inequality and access to jobs—the problem of transportation and infrastructure is divided up into silos within the government and across industries.

Forces for change are not matched by the urgency of action. With perhaps a quarter of all bridges in America deemed structurally deficient, the Highway Trust Fund about to run out of money, commuter rail accidents exacerbating road congestion, mobile networks running at slow speeds with variable coverage, and airlines desperate for a next generation air traffic control system to reduce delays and fuel burn, why is it so hard to get public support for long-term infrastructure investments?

There is an overwhelming consensus that the need is critical. At the opening of the America on the Move Summit, Harvard Business School Dean **Nitin Nohria** spoke about his experience coming to America for the first time as a young graduate student. He was struck by how advanced the infrastructure was compared to India. Over the last 30 years, he has seen U.S. transportation and infrastructure decline. “When you've been so far ahead for so long, it's so easy to take it for granted,” he said. **Patrick Gallagher**, U.S. Acting Deputy Secretary of Commerce, identified the priority Commerce puts on innovation and global trade, with transportation enhancements a necessary component. General Electric Chairman and CEO **Jeffery Immelt** said that infrastructure is one of four things that drive a competitive economy, along with training and education, small businesses and entrepreneurship, and regulatory reform.

So what's wrong with the infrastructure debate in America?

For one thing, the word infrastructure doesn't sizzle. It sounds technical, inanimate, and bureaucratic. The case for infrastructure is often made by statistical abstractions, not by emphasizing the daily needs of ordinary Americans: how we get to work, find affordable goods and services, get our children to school, or access health care. Transportation touches everything; physical and geographic mobility increase choices. But there's no consumer movement for infrastructure. Although public transit has numerous grass-roots advocacy groups, they rarely if ever use the word infrastructure when pressing for better bus service, for example. Long-term investment requires a human face and clarity about benefits.

The scare factor doesn't rally support. Predictions that bridges might crumble and kill people get no attention until it happens. But memories fade, and maintenance leaves you just where you were before, only with a smaller checkbook and bad memories. I cross the Charles River dividing parts of Harvard daily via a picturesque, historic, red brick bridge. When several years of stressful reconstruction are finished, we will have (drum rolls, please) a picturesque, historic, red brick bridge—with no improvements ensuring peaceful coexistence of pedestrians, buses, cars, trucks, and bicycles.

Maintenance is not a vision. It is often not a priority. Consider a repair-avoiding couple I know in Washington, DC, who are serial home buyers. When they live in a house long enough that it needs maintenance, they sell it and buy another. Do they epitomize Washington attitudes? It's easier to abandon the old than pay to renew it.

Immediate job creation—a goal echoed by US Chamber president **Thomas Donohue** and AFL-CIO president **Richard Trumka** in joint presentations on infrastructure—is an important benefit, but not a vision. The Transcontinental Railroad, the Interstate Highway System, and the post-Sputnik space race were not about jobs. (Indeed, students of history will recall that the railroads had to import foreign labor from China to get the tracks laid.) Those visionary projects were growth propellants that opened opportunity for a new economy, as remote areas gained transportation connections and new aerospace technologies emerged.

Furthermore, infrastructure sounds big and expensive, at a time when the nation doesn't like either. Money is important but not an insurmountable problem. Private investment can be attracted to excellent regional projects that combine immediate pain alleviation with a longer-term vision. A new tunnel under the Port of Miami direct to the Interstate highway has brought about 6,000 temporary construction jobs, but the real prizes will stem from dramatic cargo growth from the bigger ships arriving via an expanded Panama Canal and the development of downtown neighborhoods that had been gridlocked and polluted by truck traffic from the port. Former Miami Mayor **Manny Diaz** included the tunnel in a civic transformation vision that included arts and sports. The tunnel is being completed on time and under budget. A private investment firm operates the concession under strict performance standards.

Infrastructure doesn't seem cool to the young. Rising entrepreneurs think small, private, and disruptive, seeking new technologies that bypass establishments. Young urban professionals increasingly don't own cars, which reduces their interest in debates about the Highway Trust Fund. Yet, they are busily creating the infrastructure future. Innovators are accelerating development of autonomous vehicles, changing the role of human operators (and the meaning of drivers' licenses). Parking apps abound; connected cars are the new wave. Zipcar and Uber use technology for car-sharing and ride-sharing. A young Boston entrepreneur, borrowing a page from Google's (controversial) private bus route between Mountain View and San Francisco, is creating a new urban bus service. To realize these transportation dreams, information-enriched infrastructure is essential. Yet entrepreneurial techies are rarely at the table when infrastructure is discussed.

The infrastructure debate takes place in fragments. Hundreds of major associations, coalitions, and think tanks advocate for their own mode of transportation, issue by issue. Air and rail don't talk to each other—just as they fail to connect at most airports (although freight rail and trucking companies work well together). The major investors in U.S. infrastructure are often foreign companies; a French firm financed the Miami port tunnel, paying a French construction company that used a German tunnel-boring machine, and another French company won the contract to operate Massachusetts Bay Transportation Authority subways and trains. There's nothing inherently wrong with taking foreign capital, but unless U.S. businesses have a bigger stake in the issue, they can't be knowledgeable contributors to public-private planning.

Bright spots are springing up regionally. Atlanta and Detroit have plans underway for airport-passenger rail connections. Los Angeles is the center of ambitious plans for urban light rail, airport and seaport connections, and longer-distance high-speed rail. Chicago has ambitious

plans to ease rail congestion, use bus rapid transit, and increase bike-sharing. Public-private coalitions can set priorities, find synergies across efforts, and leverage existing assets.

**To get America moving toward building the national future, we can:**

- Create visions for a "Connected America"—corridors with economic impact potential, such as North American trade via north-south rail connecting Canada and Mexico, cross-state economic zones, and sufficient broadband for high-speed communication networks.
- Develop a national strategy and national priorities that acknowledge new realities—for example, the population shift from suburbia to cities, a need to change focus from single transportation modes to inter-modal connections. Modernize international Open Skies agreements and air traffic control. Add transportation to problem-solving for health, education, jobs, and environmental protection. Devolve implementation to regional, often metropolitan, planning groups, with the flexibility to direct funding.
- Reframe tired policies to open new connections. Change the name of the Highway Trust Fund to the Mobility Trust. The name is outmoded anyway; it also funds public transit. Expand the scope to include technology innovations.
- Assemble information that users care about— e.g., port efficiency moving goods, commute times, buses to available health providers, condition of local roads and bridges. Open more government data, such as weather information, for analysis and communication by private companies.
- Stimulate private sector investor interest and capability for public-private partnerships. Mount a series of convenings across the country. Develop toolkits and technical assistance both nationally and regionally. Learn from state infrastructure banks (and local initiatives such as Chicago) about what might work nationally.
- Engage entrepreneurs and emerging leaders in the quest for mobility. Provide publicity, seed funds, challenge grants, and research opportunities.

The America on the Move Summit is a contribution to a national conversation that should be repeated throughout the nation, one that increases awareness, identifies priorities, stimulates innovation, and encourages action. The U.S. can regain its stature as the land of opportunity by emphasizing the purpose that animates infrastructure: mobility. Infrastructure might not inspire, but mobility is opportunity.

# WHAT MOVES U.S.:

## AIR AND RAIL INDUSTRY PERSPECTIVES

The view from major carriers: How globally competitive are industry sectors, and the U.S. transportation system as a whole? What are the strengths, weaknesses, and opportunities for the 3Rs—repair, renewal, reinvention—for industries in the transportation sector, and for intermodal connectivity? Where are there opportunities for improvement in cost efficiency, customer/user satisfaction, safety, and sustainability? What do industry players need to improve effectiveness and performance?

### AIR

#### Main ideas from AOTM Summit:

- Airlines are returning to health after a period of turbulence. Air transportation is a U.S. strength but facing new competition. The industry is a major contributor to GDP and must be competitive internationally.
- Federal tax and regulatory policies should be reviewed and updated. The industry is heavily-taxed industry in the U.S. International airlines often have lower costs; competition from the Middle East. "Fair skies" should be added to open skies policies, as these are updated, and the visa process improved.
- Technology innovations are critical; there is a need for a NextGen air traffic control system and other uses of technology to upgrade.
- Industry-led innovations, with federal government coordination, can produce dramatic improvement.
- Airports lag but are modernizing. There are questions of regional desire for capacity, which might lead to over-capacity, versus national priorities.

#### Speaker comments from AOTM Summit:

**Jeffrey Immelt**, Chairman and CEO, General Electric: When I was a young GE guy and I wanted to fly anywhere around the world, I always flew to London. Nobody ever flies to London anymore because of Dubai. The focus by the Emirates government to become the centerpiece of the world, their willingness to invest in infrastructure ahead of anybody else changed the game.

**Richard Anderson**, Chairman and CEO, Delta Air Lines: This morning Delta was named one of the top 50 most admired companies in Fortune Magazine. In 2007 we were in bankruptcy. And over the course of that transformation, the whole industry has transformed itself... Airlines are the most taxed industry in the U.S. The only industry that pays for our police services directly... At some point this country has to seriously take on not just open skies, but fair skies... You understand the importance of this industry to GDP if you look back just one year ago and in the midst of sequester, the air traffic control system was shut down and the economy of the United

States, without air travel, started running down and Congress and the White House fixed it. We passed a bill in the House and the Senate and got it signed by the President in 48 hours to stop the slowdown of the U.S. air transportation system.

**Benito Minicucci**, Vice President and COO, Alaska Airlines: Over 20 years ago, there was difficulty landing in Juneau, Alaska, because of consistent low visibility conditions. So they were actually threatening to move the state capitol to Anchorage because state legislators couldn't get their job done. And we couldn't let that happen. Alaska got together with Boeing, the FAA, component manufacturers; we got innovative and we introduced satellite based navigation into our flight management computers. We were landing in conditions that we couldn't land in before. [RNP, Required Navigation Performance helps aircraft glide on cruise control along a very specific path, reducing the need to switch between cruise and acceleration.] With RNP, you fly fewer miles, use less gas, create less pollution, reduce noise, get more on-time arrivals, and increase customer satisfaction. The FAA has embraced the technology and has established an RNP NextGen Task Force to help deploy it more broadly.

**David Siegel**, CEO of Frontier Airlines: Frontier Airlines is a discount carrier, so we sweat the assets. As a discount carrier, we're bringing back those \$25 fares you were used to at People Express. But, like People Express, we charge for bags and other amenities. We are a slow learner or slow adopter because we're only implementing RNP [Required Navigation Performance] in the last year at Frontier. This just shows you the gap in technology adoption and some of the challenges in the business.

**Jane Garvey**, former Administrator, FAA (Federal Aviation Administration): Air traffic control, despite its progress, is still one of the most challenging parts of aviation. There are several reasons for this, not least of which is that [the air traffic control system] is a full government entity dependent upon the budgetary process and other factors outside of the control of the aviation industry.... In the 1990s, President Clinton advocated for a quasi-government entity, separate from the FAA, to manage air traffic control; however, Congress would not pass the proposal. This kind of reform is still necessary.

Further information, detailed analyses, case examples:

*Rosabeth Moss Kanter, Aditi Jain, and Ai-Ling Malone, "Flying High, Landing Low: Strengths and Challenges for U.S. Air Transportation," HBS Background Note No. 314-098, April 2014. To order cases, contact Harvard Business Publishing: [www.hbsp.harvard.edu/product/cases](http://www.hbsp.harvard.edu/product/cases).*

## RAIL

### Main ideas from AOTM Summit:

- Freight rail is a U.S. strength. The industry reinvests in infrastructure, makes its own repairs. It does not rely on government subsidies (unlike passenger rail).
- Freight rail works with the trucking industry to improve efficiency and reduce congestion and pollution. Intermodal connections can be further strengthened (including ports and airports).

- New partnerships with industry and with federal and state government can make further improvements.

### Speaker comments from AOTM Summit:

**Michael Ward**, Chairman and CEO, CSX: While we've improved the profitability of the industry, we've also cut rates in half of what they were in 1980 for our customers, on an inflation adjusted basis. We're providing a more economical product to them and it's safer and more reliable. Over the years, as an industry, our train accident rate is down 80%; our personal injury rate is down 85%; and we're doing this with about one-third of the workforce we had in 1980.... We're actually partnering with the trucking industry now. They have some challenges with driver shortages due to the limited appeal of the traditional driver lifestyle of weeks away from home on the road and highway congestion. We find that, working with our partners in the trucking industry, we can provide some good solutions both economically and environmentally....We're partnering with GE to test if LNG (liquefied natural gas) will make sense for the rail industry....The challenge will be putting the infrastructure into fuel and making the retrofit investments. The toughest decision is not the technology; but the bet on the movement of two fuels, which is a tough decision to make when a huge capital investment is required [to retrofit the locomotives].

**Charles "Wick" Moorman**, Chairman, Norfolk Southern: The Crescent Corridor is an exemplary success story. This is basically a freight corridor that runs from the south and southwestern United States up into the northeast in New England. Along the Interstate 81 corridor there was two and a half times truckload traffic that had been expected in the design parameter. Churches were adopting miles of highway to pray for the motorists. We started to talk with states and with federal officials. We generated a plan to take 800,000 to a million trucks off the highway. Ultimately, the project saved half a billion dollars in trucking costs, half a billion dollars in congestion costs, a million trucks off the highway, reduction of heavy truck crashes, and nearly two million less tons of carbon....Now the railroad industry historically has taken no money from the federal government. In fact, as the interstate highway system was built in the 1950s, it turns out that at that time the leaders of the rail industry were actually approached by government leaders to see if there was an interest in government investment in rail infrastructure, and it was declined.

**Michael Ward:** Railroaders are like farmers. You heard about the farmer that won the lottery? They said to him, 'Oh my god, you won the lottery, what are you going to do with all that money?' He said, 'I'm a farmer and I love farming and I'm going to farm until every penny of it's gone.' And I say railroaders are sort of like that. When we make more money, we're going to invest more back into the infrastructure, so we can strengthen the railroad and grow the business.

Further information, detailed analyses, case examples:

*Rosabeth Moss Kanter and Matthew Guilford, "Rail Transportation in the United States," HBS Background Note No. 314-084, April 2014. To order cases, contact Harvard Business Publishing: [www.hbsp.harvard.edu/product/cases](http://www.hbsp.harvard.edu/product/cases).*

# GETTING THE GOODS: LOGISTICS PAIN POINTS, BOTTLENECKS, WISH LISTS

In moving goods to customers and consumers – from shippers to retailers, across the supply chain – what works well, what doesn't? How smoothly do parts of the system connect? Where are the PPBs (pain points and bottlenecks) with respect to global movement of goods (import-export) and local access? What are the needs and the trends? What should change to facilitate getting goods to market? What is high on priority wish lists?

## Main ideas from AOTM Summit:

- A national infrastructure plan is needed, including a freight policy, a corridor strategy, and provision for regional planning and execution.
- E-commerce/retail transformation is not matched by transportation transformations. Strategies should be informed by looking forward to new realities.
- Despite numerous gains in efficiency because of technology, many transportation systems remain stuck in the past, causing unnecessary bottlenecks and costs.
- Ocean shipping is essential, but ports are a major source of bottlenecks.
- Airports are built without strategic priorities.
- Intermodal connections are essential but modes have differing capacity; future opportunities (bigger ships) pose challenges (trains not equivalently larger).

## Speaker comments at AOTM Summit:

**Gerald Storch**, former Chairman and CEO, Toys 'R Us; Chairman, Storch Advisors: In the future, we're about to undergo the most fundamental and transformational change in consumer goods and retail in a generation, and we are not ready for it. So today, what are the old-world issues that bug me? Capacity. Boom/bust cycles, particularly for ocean freight rates. I don't want to be an expert at gambling and hedging what it's going to cost to move containers. Regulation and deregulation. Congestion delays at ports. Ice storms and snow storms around the country, paralyzing roads and air ports, usually in places like Arkansas or Texas or Georgia, when you least expect it. Overtaxed municipalities and states can't keep up. Terrorism and inspection delays at the ports. Paperwork holding up shipments at the ports, often due to arcane customs issues no one really understands. The FDA and the Consumer Products Safety Commission inspections and enforcement, both real and clearly politically motivated. The sad state of the United States Post Office. Strikes. Strikes. Strikes. It adds costs every way you can think of. Hours of meetings trying to decide whether to send shipments a month early all the way through the Panama Canal to the port of New York because we're afraid of Long Beach. Actual costs. Contingency costs. Disruption remediation costs.

**Laura Sen**, CEO, BJ's Wholesale Club: Major concerns? Driver shortages. It's even more challenging because of tightening standards and increases in insurance costs. We need to focus on millennials as our workforce. 2013 regulations in terms of schedules, hours the drivers can work, reset period really hurt the system. Emissions requirements increased the cost. Maintenance costs have gone up. Congestion at the ports, shortages of equipment, battle between the trucking companies and the ocean liners. Short wish-list: change driver reset period and address ports by working with all the stakeholders to come up with a set of common priorities.

**Chris Suitemeier**, Executive Vice President of Logistics, Wal-Mart: We need a national freight policy. Variability creates cost—for example, weather. Port challenges are around harmonization of information. Different constituents want different types of information, and trying to pull all of that together into some form of efficiency is a huge challenge. Pro: freight rail. Wish list: Synchronizing the supply chain. For example, suppliers are not open on the weekend, but yet our distribution centers are open.

**Bill Logue**, President and CEO, Federal Express Freight: There have been great gains. Logistics as a percentage of GDP was 17% back in 1979, and it's 8.5% now. Innovation includes some work with the FAA, particularly at our Memphis hub, using some new science; it's gone incredibly well. Increased population impact on commerce is dramatic. But there's been no change in trucking in last 20 years. There's a significant opportunity to add twin 33-foot trailers (no weight increase). Benefits are 18% potential growth in the next wave volume, so that in 2035, there's doubling. Wish-list: new highway bill, adequate funding (fuel tax), NextGen air traffic control detailed plan. And change the debate—it's a necessity; it's not a luxury.

**Ann Drake**, CEO, DSC Logistics: What works well today: Technology. The biggest issue—clogged ports. Lack of collaboration. Transportation is very siloed. Shippers and carriers work against each other. Solution: systems management and new technologies rather than physical infrastructure investment. Key actions: promote congestion pricing, regional planning agencies give as much attention to goods movement as people movement, invest in transit, share data, supply chain industry take more responsibility. Wish-list: national plan for transportation and infrastructure, ownership and innovation around metropolitan areas for planning and executing future-focused integrated transportation systems, collaborative thinking across all stakeholders, a new kind of leadership, triple-sector leadership with the talent and the passion to work across all three sectors—business, government, and society.

**Don Ralph**, Vice President of Supply Chain and Logistics, Staples: We need a national infrastructure plan that starts in the Federal government. It has to pull in constituencies from State government, from private enterprise, from NGOs and others. Challenges: Leadership vacuum. The business is changing. It's about what customers want, when they want it, where they want it, and how they want it. The need for big data and analytics is critical. We must drive more predictability and reliability into what we do.

**Tay Yoshitani**, CEO, Port of Seattle: There used to be a buffer zone between ports and the communities; those buffer zones have eroded, and it complicates port operations. We must dramatically improve efficiencies of ports. The Water Resources Development Act collects about \$1.5 billion on behalf of ports and spends about \$800 million on maintenance. Transportation reauthorization... trying to define what this national freight policy should look like. It's very political. What's the best utilization of limited funds? Decisions that are made that affect ports need to be made at the regional level.

**Douglas Foy**, former Massachusetts Chief of Commonwealth Development; founding partner, Serrafix: The big ships coming through the new Panama Canal are capable of carrying 14,000 TEUs, which is a 20 foot container. And if they put those 20 foot containers end to end, that's a 40 mile long train. I'm not sure we have the rail head to put all those containers on and I know we can't get them out of trucks and out of those ports. So what's the plan?

**Gina Marie Lindsey**, CEO, Los Angeles World Airports: We need to be very abstemious about the facilities in which we do invest. The Ontario airport is overbuilt. We should emphasize intermodalism. Emphasize a user pay system. We need to be more efficient, direct our resources that are being spent in less than optimal ways toward national priorities.

**Jane Garvey**, former Administrator, FAA (Federal Aviation Administration) Administrator: We do not have a national transportation policy. But we've got a wonderful opportunity in the two reauthorizations that are coming. It would be wonderful to see a surface reauthorization that included a real emphasis on corridors. Corridors that include freight connections; that include highway connections; and that include connections to transit systems. And the next step would be the FAA bill and, again, supporting intermodal connections.

# RETHINKING CITIES: NEEDS FOR THE 21<sup>ST</sup> CENTURY

Cities and metropolitan regions are transportation hubs – airports, ports, intercity rail, public transit, and other intra-city modes. How are cities and regions repairing, renewing, and reinventing infrastructure for the twenty-first century? Are they ensuring competitive conditions for businesses, and opportunities for people to find/get to jobs and enjoy a high quality of life? Are there new models for mobility within cities (e.g., car or bicycle sharing)? Are there new sources of leadership and leadership models? What is high on the priority wish lists?

## Main ideas from AOTM Summit:

- Policies created when suburbia was expanding must be reexamined and revised now that a high proportion of the population lives in cities.
- Cities and their surrounding regions—metropolitan areas—are transportation hubs and the sites for infrastructure projects, so they should be a locus of decision-making. Mayors most want from federal and state government direct, flexible funding, to tailor projects and make local connections across modes of transportation.
- Mayors are increasingly active convening other mayors and working on their own financing institutions.
- There should be local, regional, and corridor strategies (linking areas where intercity connections generate economic returns). Regional, cross-sector coalitions spanning state lines and city jurisdictions are necessary.
- The profile of cities is changing: a younger population more interested in sustainable options, less interested in owning a car. Pedestrians, bikes, and vehicle-sharing are part of urban strategies.
- Public transit is critical; it also helps deal with inequality (economic segregation) and transportation disparities. Transportation is a high proportion of family budgets, so public transportation options free resources for other uses, even for the affluent. For the less-affluent, access and affordability are issues.
- Transportation gets people to jobs, and projects are also a source of jobs. Involving community residents can bring benefits.
- As much as possible, solutions should be flexible and leverage existing infrastructure; buses are an example. They can be enhanced with technology, some of which is deployable at low cost (parking apps, technology-enabled traffic lights).

## Speaker comments at AOTM Summit:

**Rodney Slater**, former U.S. Secretary of Transportation: In 2000, toward the end of the Clinton Administration, the U.S. Department of Transportation issued a transportation vision for 2025. In May 2000, President Clinton spoke about the importance of making wise and informed choices today and in the years to come in order to make communities more livable, give citizens greater choice and mobility, protect the environment, and help to create a truly global community. But because of subsequent events, including the terrorist attacks, two recessions, and military spending on two war efforts, national efforts were stalled. The economic stimulus in response to the global financial crisis focused on shovel-ready projects, which prodded state and local action, and now there is a readiness on the part of state and local officials to move on more significant projects. In Chicago Mayor Rahm Emanuel is pulling together Mayors from around the country to start to engage on the issue of infrastructure and infrastructure investment.

**Manny Diaz**, former Mayor of the City of Miami: There should be more local flexibility in funding and more direct funding to cities, which will ensure that that money actually goes into relevant transit projects. Better public transit is also more economically viable for citizens. People today in America are spending more money on transportation than they're spending on food and health combined. That's not a good economic system.

**Steven Koch**, Deputy Mayor of Chicago: Chicago really exists for one primary reason; it's a transport hub. It was a transport hub 200 years ago. It's a transport hub today, whether it's originally stagecoaches, canoes or people on foot or today, railroad, air or data. Chicago is probably the single major crossroads of the United States, or the North American continent. The biggest reason people come to Chicago is their access to the rest of the world. [At the same time,] Chicago has the most rapidly growing population of any downtown in the country. It's largely millennials, between the ages of 25 to 35. They want to live and work in close proximity. They want to commute in a much more sustainable way.

**Scott Griffith**, former CEO, Zipcar, transportation investor, General Catalyst: Vehicle and ride sharing is almost all being driven by millennials as the starting point...because they live their lives on the information highway. They live their lives on the smart phone.

**Brad Markell**, Executive Director, AFL-CIO Industrial Union Council: Another benefit of investing in public transit is to overcome the historic and social economic segregation to make our cities better and our society more equal.

**Edward Glaeser**, Professor, Harvard Economics Department and Kennedy School: First, the combination of elevator and pedestrian thoroughfares is a great way to get around cities. It's important when we think about what transportation infrastructure is, to remember that building up can be a great substitute for building out. Second, there is a lot to love about buses. Buses can move to react to things, in a world that we don't know how much demand is going to show up. Buses are great about this. Bus infrastructure gets replaced rapidly. You can put new technology into it all the time.

**Charles Ogletree**, Professor, Harvard Law School: I'm concerned with who's included and who's left out? It's not how many bus stops you have, but who can afford to pay for a bus.

**Anita Hairston**, Associate Director, PolicyLink, and Co-Chair, Transportation Equity Caucus: Community leaders in St. Louis, Missouri developed, along with the Department of Transportation, a community benefits agreement for a \$500 million highway project. They decided to dedicate half a percent of the actual budget for the project and use it for targeted training for those who had been underrepresented when it came to those jobs. They were highly successful with that because they exceeded their goals for participation with businesses owned by people of color and, also in terms of the workers who were a part of the project. And they came in three weeks early and \$11 million under budget.

**Stephen Goldsmith**, former Deputy Mayor of New York City and former Mayor of Indianapolis: The question is how the public sector side configures the request in order to purchase innovation for the private side, and then manages that contract. We need innovation in terms of smart transportation, innovation and better capital, innovation and better management. There are lots of opportunities to get a better return on the dollar.

**Karen Freeman-Wilson**, Mayor of Gary, Indiana: We did an RFI (Request for Information), followed by an RFQ (Request for Quotation) to ask, "What do you think should happen at the airport?" This resulted in a public-private partnership with \$100 million over 40 years... Our Data-Driven Gary project partners with the University of Chicago's Harris School of Public Policy to help the city make decisions... Everybody talks about projects, everybody talks about big ideas. But at the end of all this are people. And for us, it really means jobs for people. We have a 40% poverty rate in the city of Gary. What I have to do is change the lives, the prospects, the opportunities for the citizens who are there.

Further information, detailed analyses, case examples:

*Rosabeth Moss Kanter and Ai-Ling Malone, "Rethinking Cities: Chicago on the Move," HBS Case No. 314-079, May 2014. To order cases, contact Harvard Business Publishing: [www.hbsp.harvard.edu/product/cases](http://www.hbsp.harvard.edu/product/cases).*

# TECHNOLOGY: THE POWER OF CONNECTED NETWORKS & VEHICLES

Can technology make transportation and infrastructure "smarter?" Will wireless networks run everything? Will vehicles control themselves? Will Big Data reinvent systems? What is needed to realize potential? Is technology a U.S. strength? Is there sufficient capacity for future demands? Is the U.S. using its own innovations?

## Main ideas from AOTM Summit:

- Technology, especially data analytics and mobile networks, should be an essential part of a national transportation and infrastructure strategy.
- The U.S. leads technology innovation but lags in some areas of deployment compared to other nations, including in broadband for wireless/mobile connectivity and air traffic control systems.
- Only a small proportion of transportation-related spending is used for intelligent transportation, and unlike some other countries, intelligent transportation is not yet a national priority. There are low-cost solutions to transportation problems applying information technology (e.g., traffic light signaling) but some solutions are a hard sell to the public (e.g., congestion pricing).
- Private sector companies are taking the lead in developing a mobile-based ecosystem to support transportation: connected vehicles, smart roads, and mobile networks. But this requires high degrees of cooperation across sectors and disparate industries to ensure adequate and well-integrated infrastructure platforms.
- Big Data, data analytics, has potential to add efficiencies, lower costs, reduce congestion, reduce carbon emissions. "Next gen" air traffic control systems are needed to improve/modernize a sector with significant economic impact.
- The U.S. has all the ingredients to leap ahead. It should be a national priority to connect them.

## Speaker comments at AOTM Summit:

**Jeffrey Immelt**, Chairman and CEO, General Electric: There are two, three areas we're really the best in the world, and then there are some places where we're just falling behind. I'd say our air traffic control system, our passenger rail system, broadband is not where it should be. I live in Fairfield County, Connecticut. I don't get cell phone coverage in my house. I was working on a deal with a guy in Nigeria, and he said let me call you over the weekend. I said I've got to give you my landline. I can't give you my cell phone because I don't get cell coverage at my house.

**Daniela Rus**, Professor and Director of Computer Science and Artificial Intelligence Lab (CSAIL), MIT: We work in Singapore because we have access to transportation networks and data. For example, by having access to a dataset of 26,000 Singaporean taxis, we were able to improve efficiency and reduce the number of taxis on the road by 30%.

**Robert Atkinson**, President, Information Technology and Innovation Foundation: Only 2% of transportation-related spending in the United States is used for intelligent transportation. It's not our networks that are deficient. It's our application of using IT in the transportation that is deficient... If we built a real time performance based system, it would force states to move to ITS investments because ITS investments are very, very cheap for the bang for the buck. The single biggest thing we could do in this country that would be the cheapest and single easiest thing is traffic light signalization. Get smart traffic lights. That would do more for mobility for this country per dollar of investment than anything else.

**Lowell McAdam**, Chairman and CEO, Verizon Communications: For the past 30 years, we've been putting the tools in the toolbox; the next three to four years will need to be about how we leverage them... The deployment of 4G LTE [mobile networks] across the United States has touched off a mobile data explosion and catalyzed a lot of innovation across the technology industry. Machine-to-machine traffic will grow at a compounded annual rate of nearly 90%, and a lot of that will be driven by the automotive industry... In Brooklyn, 45% of fuel consumption is caused by drivers looking for parking spaces. Technology has solutions to those problems and they rest in the mobile networks and smartphones that are so commonplace today.

**Scott Griffith**, former CEO, Zipcar, transportation investor, General Catalyst: On an annual survey conducted by Zipcar, millennials consistently and overwhelmingly said that they would give up access to a vehicle before they were willing to give up access to their smart phones... The user experience has to revolve around the smart phone.

**Mary Barra**, CEO, General Motors: From the automobile perspective, it's a turning point in the industry that is largely customer-driven. Customers want the connectivity of their smart phones and want it integrated with their vehicle....Remember. The original mobile phones were called car phones. That was an opportunity to seize and automobile manufacturers didn't take it... Now, more than two-thirds of U.S. car buyers own a smart phone and over 80% of them say that connectivity influences their purchase decision. Connectivity is key... Vehicle-to-vehicle communication (V2V) works when V2V exists. Although vehicle communication technology is well-developed, coordination still needs to happen, and there has to be a clear vision... GM can quickly build the technological backbone for VMT into its vehicles, but it should not be auto executives who decide whether that should happen—it should be policymakers.

**Guruduth Banavar**, Vice President for Cognitive Computing, IBM: The next generation of decision-making software, such as IBM's Watson technology, are going to be able to see, understand images, understand video" based on the content of objects, not because of metadata analysis of those systems... This is a tremendous leap forward for transportation, especially autonomous driving situations.

**David Kenny**, CEO of The Weather Company: In aviation, weather causes 70% of flight delays, which for only the month of January 2014 equated to \$2.5 billion in costs. Data-driven decision making can reduce the costs, including response to turbulence.

*Jane Garvey*, former Administrator, FAA (U.S. Federal Aviation Administration), co-chair Meridiam North America; and *Karen Gordon Mills*, former Administrator, SBA (U.S. Small

*Business Administration), echoed the need for a plan for "Next Gen" (next generation) air traffic control. Innovators need some certainty.*

**Charles Bolden**, Administrator, National Aeronautics and Space Administration (NASA): [Small businesses are the backbone of NASA developments. Commercialization of space has been a success.] Today, for the first time in a long time, I don't have to go to a foreign country to get cargo to the international space station. That is because Boeing and SpaceX are our primary cargo carriers from Earth to the international space station... If such private technology sector dynamism can be injected into U.S. transportation systems, they can also enjoy innovations.

**Lowell McAdam**: If the United States decides to improve intelligent transportation, technology companies will rally, and it will get done. If NASA could guarantee cell sites on Mars, Verizon will build them.

**Willy Shih**, Professor, Harvard Business School: We have a lot of capabilities in this country, especially complex systems, software. We are the world's largest market. Can this opportunity, this platform for innovation and infrastructure, the consumer focus in our system integration skills, can that contribute to a more competitive U.S. and what can we do as leaders to foster that?... Start bridging some of those organizational silos and foster more of these discussions. The U.S. has potentially a great technology advantage, certainly in the software and complex systems.

Further information, detailed analyses, case examples:

*Rosabeth Moss Kanter and Kevin Rosier, "The Information Superhighway Meets the Highway: Technology and Mobility Trends and Opportunities," HBS Background Note No. 314-093, April 2014. To order cases, contact Harvard Business Publishing: [www.hbsp.harvard.edu/product/cases](http://www.hbsp.harvard.edu/product/cases).*

# FINDING THE MONEY AND THE WILL TO INVEST

With long wish lists for the **three R's**—**repair** crumbling infrastructure, **renew** modes of transportation and governing policies, and **reinvent** transportation systems with technology—where will America find the will to act and the resources to support actions? As the federal Highway Trust Fund is about to run out of money, how can controversies over funding sources be resolved—raising gas taxes or replacing this with user fees, such as tolls on Interstate Highways, congestion pricing, or vehicle-miles-traveled (VMT) fees? Is the problem of investment one of money, political will, or lack of national strategy? Where can America find new or largely untapped pools of capital? How can business, labor, and government find common ground in the transportation and infrastructure investment debate? Can the U.S. Congress and the Senate lead?

## Main ideas from AOTM Summit:

- Infrastructure investments must be more strategic, stemming from national and regional priorities. This requires national strategy—a desire echoed in every session.
- Uncertainty about government action—policies, regulations, decision-making—is a problem for investors.
- Funding through gas taxes still has proponents, and gas taxes are being raised in some states, but in light of trends (e.g., more fuel-efficient vehicles, or electric cars), user fees should be strongly considered as replacements (electronic tolling, vehicle-miles-traveled fees). "Users pay" is a principle with growing support across transportation modes.
- Public funds or tax revenues supposedly targeted for maintenance of particular facilities/services are too easily diverted for uses other than the original intent without a strategic purpose, but simply to cover other revenue shortfalls.
- It is promising to separate purpose and strategy from the question of financing. There are multiple sources of funds, from traditional to innovative.
- Pools of capital exist, including pension funds (aligned with a longer time horizon) and private investors. There are barriers to attracting private capital from outside the U.S., and U.S. investors are only recently building capabilities in this domain.
- Conundrum: short-term crisis (running out of money) which inhibits longer-term projects, but can't approach future with assumptions rooted in the past, so need short-term stopgaps while building longer-term strategy.
- Public-private partnerships are promising and feasible, with numerous models possible. Infrastructure banks that attract private investors to projects are in place in over thirty states and one municipality.

- Institutional structures which result in fragmented systems (each transportation mode in a silo) inhibit both strategic priority-setting, synergies from maximizing connections, and ability to assemble resources.

### **Speaker comments at AOTM Summit:**

**Elizabeth Warren**, U.S. Senator from Massachusetts: The way I see this, it's about choices. When there is not enough money to fix our transportation system it is because we have made other choices. In this case, choices to spend money on subsidies, choices to decide to keep tax loopholes open. Under-investing in transportation doesn't happen in a vacuum. It is the necessary consequence of other decisions that are undermining our economic future.

**Jose Gomez-Ibanez**, Professor, Harvard Kennedy School: Congressional apportionment of goods often requires that the government spread the goodies thinly and widely, resulting in over-funding of poorly conceived projects and under-funding of projects with true national significance.

**Gina Marie Lindsey**, CEO Los Angeles World Airports: We need to be very abstemious about the facilities in which we do invest. The Ontario airport is overbuilt. We should emphasize intermodalism, emphasize a user pay system. We need to be more efficient, and direct our resources that are already being spent in less than optimal ways toward national priorities.

**Jeffrey Immelt**, Chairman and CEO, General Electric: GE views infrastructure as a \$60 billion global investment opportunity, but there is a need for smart choices. I can tell you as a private investor, as a private company, I've had the chance to invest in high speed rail a dozen times and I've said no every time because I didn't think it made sense from an economic or technical sense.

**Beverly Scott**, General Manager/CEO, MBTA (Massachusetts Bay Transportation Authority): We are in the institutional armor of the 20th century trying to do a 21st century job and that does not work. We are much too siloed, much too fragmented. It is one thing to do strategic thinking and it is quite another to be able to marshal the resources to actually be able to get the decisions on the ground.

**Tay Yoshitani**, CEO, Port of Seattle: Half of port tax revenues are routinely diverted from the Harbor Maintenance Trust Fund.

**David Walker**, former U.S. Comptroller-General, co-founder, Comeback America: The Highway Trust Fund is not funded and can't be trusted...The largest pool of capital in the world is one that I used to oversee. It's called pension funds. I used to be assistant secretary of labor for ERISA. Obviously you don't want to compromise basic fiduciary standards, but there are tremendous opportunities.

**Christopher Beall**, Partner, Highstar Capital: In the US and other places in the world, there are tremendously low-cost pools of capital that we could access. It would be nice if our tax law didn't penalize some of those pools of capital for investing in the US. The Foreign Investment in Real Property Tax Act changes the tax rate for those investors, a huge disincentive for that capital coming into the US. Well-structured policies, particularly on the tax side, and well-structured

processes, combined with good projects will get private capital off the sidelines to invest in some very important projects.

**Karen Gordon Mills**, former Administrator, SBA (U.S. Small Business Administration): From my own experience as the SBA administrator, public-private partnerships can be pretty powerful. The SBA has a loan guarantee portfolio of over \$100 billion, but it operates as a powerful public-private partnership with 5000 banks all across the country. Because we weren't making loans ourselves, just guaranteeing them and taking some of the risk away from the banks, we were able to deploy a record \$30 billion a year at a total cost of less than a billion dollars. And all this money helped small businesses that the market wasn't reaching access the capital that they needed to grow. A second model is the small business investment partnership or SBIC, to get equity capital into small businesses that venture capital isn't reaching. Private investors make the decisions on which projects or which companies will get the investments to insure that the projects have good economic rationale. The SBIC model last year deployed over \$3 billion in capital to America's most promising entrepreneurs at zero cost to taxpayers. Both of these programs have an important lesson—the federal government does not have to go it alone, a little government money can go a long way as a multiplier for private capital, incentivizing private capital where the risk may otherwise be too great.

**Joseph Aiello**, co-Chairman, North America, Meridiam Infrastructure: The reality is that the investors increasingly going to public/private partnerships are U.S. pension funds and U.S. labor dollars. So while in 2008 nobody was really sure what these PPP infrastructure investments were like, the investment community and the investment population has changed radically just over the last four years. Similarly, while no U.S. firm bid on the Port of Miami Tunnel, today if you were to look at the major construction companies that are pursuing PPPs and making investments at the same time, so they have effectively mimicked the big, global players in the PPP market—Kiewit, Fleur, Walsh out of Chicago have assembled investment steps that are probably as good as pure investors like Highstar and Meridiam. It's a remarkable response by US companies to the new opportunity to invest. I think we should all be proud of that ability to continue to respond and innovate.

**Bill Logue**, President/CEO, Federal Express Freight: Wish-list includes a new highway bill, adequate funding (fuel tax), NextGen air traffic control system detailed plan. And change the debate—it's a necessity; it's not a luxury.

**David Kiley**, Vice President, Public Finance, Piper Jaffray: We've seen some movement in the last year of transportation legislation actually getting through states. And so far four states passed legislation last year, Pennsylvania, Virginia, two Republican states, and Maryland and Massachusetts passed bills. And each bill effectively increased the baseline gas tax.

**Earl Blumenauer**, U.S. Representative from Oregon: The gas tax is a necessary evil, much like flossing—but as we say in my household, “you only floss the ones you want to keep.”

**Bill Graves**, former Governor of Kansas, President, American Trucking Association: I'm almost appalled at the notion that all of a sudden as a nation, we're going to abandon a user pay system that's worked for 50 years to support the build out of roads and bridges and we're going to start raiding, in effect, the general fund of this nation....The road and bridge piece has to be solved on a user funded basis or I think we're going to make a huge mistake as a country going forward.

**Tom Rice**, U.S. Representative from South Carolina: In a world where Congress has been unable to agree on a budget in years, marshaling support for a national transportation plan—and

supporting mechanisms like an infrastructure bank—is easier said than done... The regulatory structure is an enormous threat to U.S. competitiveness... Port Everglades in Ft. Lauderdale, Florida, has been attempting to get federal permission for a deep dredge project since 1998 and has been unable to start due to continued regulatory hurdles.

**Stephen Goldsmith**, former Deputy Mayor of New York City; former Mayor, Indianapolis: The over-consumption of our assets, driven by the lack of pricing, is a very significant issue... If you take two words people don't like and put them together, and you wonder why you can't sell the concept of congestion and pricing... But the other problem is you have to connect the proceeds of dynamic pricing to something that's tangible. And most folks don't believe that they were going to benefit from dynamic pricing.

**Karen Gordon Mills**: It creates a difficulty in terms of an investment proposition if you don't know what the standards are going to be, for example when the air traffic control reforms are going to come. Clearly the private sector can be involved in driving innovation and in financing, but the U.S. government and the American people have to be involved in this vision.

**Fred Salvucci**, former Secretary of Transportation for Massachusetts; Professor, MIT: The biggest thing we could do is to separate the spending from how to pay for it. Spending the money is the one thing we might be able to get everybody to agree on. There'd be a lot of benefits from the stability. How to pay for it would end up being a fight, but roughly a third of that money would come back to the federal government immediately in the income taxes from workers who are now employed instead of unemployed. Now let's make another radical assumption. What if we actually do something useful with the money? If we do something useful with the money, we're now improving the productivity of the entire economy for the future years. That's where the real payoff is.

**Robert Atkinson**, President, Information Technology and Innovation Foundation: If we built a real time performance-based system, it would force states to move to intelligent transportation system investments because ITS investments are very, very cheap for the bang for the buck. The single biggest thing we could do in this country that would be the cheapest and single easiest thing is traffic light signalization. Get smart traffic lights. That would do more for mobility for this country per dollar of investment than anything else.

**Thomas Donohue**, President, U.S. Chamber of Commerce: Here's some old news. The simplest most straightforward way to fix the Highway Trust Fund and buy some time to develop additional funding sources is to raise the federal gas tax which we haven't done for 20 years. Shippers are for it, truckers are for it, the construction industry is for it, labor is for it, the chamber is for it, the triple A is for it, and that's a helluva start.

**Richard Trumka**, President, AFL-CIO: We need a permanent dedicated revenue stream. As Thomas [Donohue] noted, both of us support the increase in the gas tax or some variation of it, a user's fee to capture some of those users that don't necessarily operate on gasoline. And we think collectively that because you have to have it done by September that's probably the only viable solution that can be done between now and September before the trust fund actually runs out of money there. So we testified in front of the Senate committee, and Chair [Senator Barbara] Boxer told us that she favors a five or six year authorization and Tom and I both agreed to that and said ten would even be better so that you can actually plan these things. It was one of the shortcomings of the stimulus program that we had such short-term projects, and the big stuff that needed to get done didn't necessarily get done. Once we get past that, we support a broad

investment agenda in all aspects of the nation's public goods in transportation, energy, and communications infrastructure.

Further information, detailed analyses, case examples:

*Rosabeth Moss Kanter and Daniel Fox, "Finding the Money: An Overview of Infrastructure Finance Challenges and Opportunities," HBS Background Note No. 314-094, May 2014. To order cases, contact Harvard Business Publishing: [www.hbsp.harvard.edu/product/cases](http://www.hbsp.harvard.edu/product/cases).*

# AN OPPORTUNITY TO THINK DIFFERENTLY

**Anthony Foxx**, U.S. Secretary of Transportation

February 27, 2014

We have an infrastructure deficit in this country. It is massive, estimated in the trillions of dollars. This is not a new problem; it has been compiling for many, many years. But it is about to smack us in the face as a result of several confluences of circumstance. Number one, the fact that the gas tax is a declining source of revenue in the Highway Trust Fund presently, and that we are heading towards a cliff in August or September of this year at which point the trust fund will have more expenses than it has resources to pay. It's already created consternation at the state and local level. Many of these departments of transportation will be making decisions earlier than August or September about whether they're going to extend programs and construction projects. So we may see activity that stops transportation projects from happening well before this issue is resolved in Congress. Add to that the fact that the Surface Transportation Bill expires at the end of September or October 1. Then layer on top of that the general view about borrowing to spend money on anything in Washington. What you have is the makings of a terrible circumstance for the country—but perhaps an opportunity for us to think differently about how we do things.

As a former mayor, I can tell you that it is not easy getting elected officials to tell their constituents that they've got to find a way to raise revenue. It is a very difficult conversation. But I also fully appreciate that the worst possible thing that can happen here is that we do nothing, in which case we will see 700,000 jobs that will stop immediately. We would be doing a grave disservice to the American people.

We're going to have a hundred million additional people in this country over the next 30 years. That is going to put incredible pressure on our existing infrastructure if we don't better maintain the infrastructure we have and create new capacity where we can. This is particularly true in areas like the southeast and the west where the population surges are expected to be the greatest. But I can also say that in areas of the northeast where there is legacy infrastructure that is greatly in need of repair that we cannot turn a blind eye to those state and local repair needs as well.

In the 1970s, Transportation Secretary Coleman's plan set a framework when people fleeing cities for rural areas. Now that's flipped. Technology flips other assumptions. There are major questions about the role of technology, whether for automobiles, aviation, rail, or any number of modes. Technology is quickly reaching a point where the role of the operator is going to become a bigger and bigger question. Today we have the operator mostly in control, and technology can intercede occasionally. In the future we may flip that a little bit and so it may be the case that the technology is controlling the vehicle, and the driver intercedes occasionally. That has great implications for safety and a range of other issues

In order to address this challenge we've got to have a very targeted message to Members of Congress. They need to know what bridges, roads, highways, and transit projects are not getting done or getting slowed down or maybe even stopped as a result of the cumulative effect of mandated measures in the past.

How do you streamline, how do you make projects happen in a more certain predictable and hopefully quicker delivery schedule? One of the things we're doing at USDOT, and have done since the Recovery Act, is identify projects of national significance and post them on the dashboard and folks can see exactly how those projects are progressing. We've had about 50 of those projects. One is the Tappan Zee Bridge in New York, a huge one, about a \$2 billion project. It had about three or four years of permitting baked into it, on paper. You know that sometimes that what's on paper sometimes grows into seven or eight years. As it turns out we were able to get the Tappan Zee permitting done in 15 months as opposed to 3 or 4 years. That's when we are at our best. Let's translate results like that which today are the exception, and let's work to make that the rule.

The voices of the American people and the constituencies that understand the importance of these investments cannot be understated.

*Comment, **Thomas Donohue**, President, U.S. Chamber of Commerce: We have a positive view about the fact that you were a mayor and that you understand what's going on, but the bottom line is you're going to end up holding the bag in a couple of months, and we better find something to put in it.*

I'll take donations.

I've said very publicly about the coalition that you and Rich [Trumka] have helped to pull together, that while we don't necessarily have agreement on the funding solution you propose, we believe that having affirmative dialogue about solving this problem is very important. I've also said that we have open minds and open ears to other solutions. Our approach is in general going to be one of incentivizing innovation, and structural changes at the state and local level that help us move closer to using our economic clusters as organizing principles for transportation investment.

My boss had me down at the White House just a while ago. I left that meeting in which Al Sharpton and Bill O'Reilly were sitting with each other, and I came to this meeting at HBS hearing about the Yankees and the Red Sox. So something's definitely going on today. Maybe that means we're going to get a transportation bill done.

# THE WALLET, THE WILL, AND THE WOMEN

**Barbara A. Mikulski**, U.S. Senator; Chair, Senate Appropriations Committee  
February 28, 2014

Transportation has defined the United States of America. When America was inventing itself, Thomas Jefferson in 1806 helped lead the way for something called the National Road to go from Maryland, the great seaport, up into Cumberland and over the Alleghenies to begin to settle the west. Transportation built America. I believe that it is transportation and our physical infrastructure that can and will rebuild America in terms of jobs, opportunity for business, opportunity for people, opportunities to redefine communities, whether it's to reinvent the cities or revitalize the suburbs. Transportation creates jobs in a field that actually for the most part pay living wages. We're deeply concerned about shrinking the income inequality in our country.

We're not doing well. We have congestion on our highways and airports, and we have deadlock, gridlock, slam down politics in the United States Congress. If you like what happens to you when you commute and you can't get going, you ought to try to move an amendment or a bill on the floor in the United States Senate. It is almost impossible. The committees were invented at the beginning of an industrial revolution, and are not organized for a 21<sup>st</sup> century economy or 21<sup>st</sup> century public policy. Our dysfunctional and arcane Senate procedures, particularly around the filibuster and "the hold," create a toxic climate, mean that we're not able to move anything. Great ideas, innovative approaches to the future, often just die on the Senate floor.

If you want a highway transportation bill, or any bill, it must go through committees. Then, at the end of the day, though it's in the federal law book, it's got to get in the federal checkbook. In order to get in the federal checkbook it's got to come to the budget committee and that it's got to come through the appropriations committee. To move a bill, first we have to go through the full committee mark-up rule on the floor. In the Senate you don't vote on a bill, you vote on the motion to proceed, so you have to get permission to proceed. In the old days, you would just do it. Now you need 60 votes and that's one of the reasons we are dysfunctional; it's pretty hard to get 60 votes in divided government. Then let's say someone wants to offer an amendment say to add money for the National Highway Safety Board, which should not be controversial. You can also filibuster the amendment; every time the filibuster is triggered you get 30 hours of debate. So to get a transportation bill or to get a medal for Mother Theresa or Nelson Mandela can take three or four weeks. This has got to change. We must change the organization and streamline the rules.

I believe change is in the air, and I'm proud to tell you it's being led by the women in the Senate. We believe you have to change the tone in order to change the tide. There are now 20 of us, and because we've now been there a while, we're on every committee and are committee chairs. We have developed relationships among ourselves with a tone that we want to encourage in the Senate. People say the Senate's a club, but the Senate hasn't been a club for a very long time. We don't do a lot of listening in our institution anymore. For the women, though, our dinners are about relationships, getting to know each other, and listening. We don't judge each other, and we even disagree with each other. We're not cookie cutters; we're not all one size fits all because we're the same gender. We'll agree on goals, but disagree on means. We encourage intellectual rigor and sound argument in an atmosphere of civility, with even some banter.

We need to think differently about revenue because the gasoline tax now is going to run out. That will create the crisis, but do we then vote for the same old—like index it, not a bad idea—or do we also look at it and come up with something totally new that really meets infrastructure needs, whether it's rail, air, airports, etc. I think that the way that we get to I hope comes out of this effort at Harvard Business School is starting a national conversation, really showing that it affects everybody, that everyone could be part of this and that they could benefit. What I rallies people is something specific, where you can really focus attention, and the benefits that will come out—rather than something so big that'll never have the resources to do it at this point. The great thing about transportation: it is connected to the private sector, and it creates jobs with a living wage. With the decline in manufacturing, this is critical.

We also need to look at our innovation economy. We're starting to fall behind in research significantly, how research can be translated also into the new ideas that go to the new products that'll be the new jobs, whether they're in IT or life science or whatever, so that we're growing. People are really worried about middle class jobs.

One of the biggest issues of being able to go to work right now is transportation. In Maryland we're practically gridlocked; trains are overcrowded, and more. When the American Academy of Civil Engineering gives the United States of America "D" in the safety of physical infrastructure, its roads, bridges, and dams, this is really serious. You can rally people around this and create jobs. Or consider a small airport in Hagerstown, Maryland. Because of the role that airport plays regionally, it's the gateway to Western Maryland, and it is one of the major employers, in and around the airport. If it were not for that airport, I'm not sure what the Hagerstown economy would be. I think this what people can get excited about.

*Comment, Mark Hoecker: I work at Norfolk Southern, I have been in the railroad industry in a variety of capacities for about 12 years, including working in the union. One of the things that I have been amazed by at this Summit at HBS is that there is an incredible coalition here: from the railroad industry, the trucking industry, the airline industry, people who want infrastructure. How do you carry that message to people particularly in the House where there isn't this recognition that this is important, particularly from districts where people may not see the benefits?*

I got into politics fighting a highway. I led pretty massive demonstrations. I told parliamentarians from around the world: In this country they sent me to the city council, in other countries they would have put me in jail... You shouldn't have to fear risking your seat if you want to rebuild America's infrastructure. Physical infrastructure does not challenge some of the ideological debates or philosophical controversies. Transportation is a bread and butter word. The only way you'd ever risk your seat is if you're for the money to pay for this. That's where it comes in. So which is now the way we would talk about it. "Barbara, you voted for the raise the gas tax, I can barely afford it now," says the mother of four pulling up with a minivan that costs \$100 at every refill. She's going to be mad at me. However, if she feels that whatever we're doing enables her to get to work, get to school, even maybe have a mass transit option or any of these things, or that we have other ways of funding transportation I think we're going to be able to do it. With the big projects, we're all in it, but if you felt that a local project was giving mom or dad a job, then you'd support it.

Here's where I think a business goal could help. There are many ideas out there right now about an infrastructure bank. The President's plan for his transportation is to close tax loopholes. I love closing tax loopholes, but there's a limit to that, one of which is, and you know the

President's idea, the whole thing of rewarding people to offshore jobs. But the President would not be opposed if we could come together and think about how to repatriate money back to the United States of America. There are billions of dollars made by American corporations legitimately in countries that have rules of law in contract and a belief in private property. How do we bring that money back home and invest it where we have an outcome? We should invite the private sector to be our partner in thinking this through where we bring the profits back home, we have a tax rate that they feel is acceptable, but in bringing it back home it goes into a bank or like new kinds of bonds or so on, and we get the money and we get what comes from the money, which is more jobs and more growth.

And then let's look at other ways. I remember War Bonds as a child in World War II. To support the war effort, you could buy stamps and at the end you got like a bond, costing maybe \$18.75 and cashing to \$25. I felt that I personally was helping win World War II. What would happen if we all thought about rebuilding America—that it was part of a national effort, people saw things in their own community, that they were doing it. I think we can get to this. We can encourage money that was legitimately earned to come back to American corporations, to do an American project that we all believe has value, where it is targeted, and where even they might get to some type of municipal bond, where the money going into the bank. Let there be profit. Let's not have a message that looks like we're shrinking profit or shrinking opportunity.

What we need to be talking about in our country is maintaining the hope and dream of opportunity. We should ask where is America going, and how can we really pull together that keeps American exceptionalism and makes infrastructure safe and reliable for the world. Let's use our clout to keep this conversation going.

## MOVING FORWARD: ACTION AGENDA SUMMARY

- Create visions for a "Connected America"—corridors with economic impact potential, such as North American trade via north-south rail connecting Canada and Mexico, cross-state economic zones, and sufficient broadband for high-speed communication networks.
- Develop a national strategy and national priorities that acknowledge new realities—for example, the population shift from suburbia to cities, a need to change focus from single transportation modes to inter-modal connections. Modernize international Open Skies agreements and air traffic control. Add transportation to problem-solving for health, education, jobs, and environmental protection. Devolve implementation to regional, often metropolitan, planning groups, with the flexibility to direct funding.
- Reframe tired policies to open new connections. Change the name of the Highway Trust Fund to the Mobility Trust. The name is outmoded anyway; it also funds public transit. Expand the scope to include technology innovations.
- Assemble information that users care about— e.g., port efficiency moving goods, commute times, buses to available health providers, condition of local roads and bridges. Open more government data, such as weather information, for analysis and communication by private companies.
- Stimulate private sector investor interest and capability for public-private partnerships. Mount a series of convenings across the country. Develop toolkits and technical assistance both nationally and regionally. Learn from state infrastructure banks (and local initiatives such as Chicago) about what might work nationally.
- Engage entrepreneurs and emerging leaders in the quest for mobility. Provide publicity, seed funds, challenge grants, and research opportunities.

# APPENDIX:

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\*Inclusion in this list does not signify endorsement of the contents of this report.





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