



# U.S. Infrastructure: Ignore the Need or Retake the Lead?

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## Introduction

Aging and decaying U.S. highways, bridges and public works require urgent attention. A growing population is placing increasing demand for improved transportation networks and public services. However, U.S. infrastructure funding continues to fall short as local, state and federal budget deficits constrain necessary investments. The consequences of underinvestment in these vital systems are dire, affecting the United States' global standing as a leader in economic growth, productivity, competitiveness, capital inflow, job creation, sustainability and lifestyle.

The decisions made today will determine whether the U.S. will neglect its current and future infrastructure needs or retake its position as the world's leader in economic and social progress. The key to securing ongoing infrastructure leadership rests in the determination, creativity and innovativeness of public and private institutions to fund and finance the necessary investments. Each day that passes without substantial commitments to U.S. infrastructure development merely postpones the inevitable, multiplies the expense, and increases the likelihood of an intractable public works crisis that will last for generations.

## The State of U.S. Infrastructure

Several years ago, a memorable line from an advertising campaign for automotive oil filters ominously stated, "You can pay me now, or pay me later." The well understood implication was that the vehicle owner had a choice: a relatively modest investment today to ensure the car's continued performance or a much larger investment tomorrow to repair engine damage caused by owner neglect.

The line also applies to the current state of U.S. infrastructure. Unfortunately, despite substantial evidence to support even modest investment compared with demonstrated need, it appears policymakers have defaulted to the "pay me later" choice. No doubt, that bill will come due, and it will be massive. Meanwhile, as we postpone investment, U.S. infrastructure continues to crumble, threatening to send the nation's already fragile economic engine into full seizure.

According to the American Society of Civil Engineers' (ASCE) Infrastructure Report Card, the U.S. merits a "D" based on its woeful state of disrepair across all categories of infrastructure. Further, ASCE estimates that the five-year needed investment to address the U.S.'s deficient infrastructure is \$2.2 trillion. To put this in perspective, the

current national deficit is approximately \$14 trillion, and yet we need \$2.2 trillion to keep our infrastructure intact, safe and contributing to economic growth. Few would argue this represents a minor sum, but fewer still can reasonably argue that the longer-term price of inattention will offer more preferential terms and conditions.

The decline in the quality of U.S. road, rail, port and air transport networks, which we depend upon for the efficient movement of people and goods, has been noted by key international organizations. According to the 2010–2011 Global Competitiveness Index published by the World Economic Forum, the U.S. ranked 15th in the category of infrastructure<sup>1</sup>, behind nations such as the United Arab Emirates (ranked number 3), Singapore (5), the United Kingdom (8), Canada (9) and Iceland (12). This ranking would seem to be the direct byproduct of a 50% decline in U.S. infrastructure investment as a percentage of Gross Domestic Product since 1960<sup>2</sup>.

Other vital U.S. infrastructure systems related to basic social needs also suffer from disrepair. Water and wastewater systems in major municipalities — some more than a century old — are stressed to the breaking point. In 2002, the U.S. Environmental Protection Agency's (EPA) Clean Water and Drinking Water Gap Analysis Report estimated that "if investment in water and wastewater infrastructure doesn't increase to address anticipated needs, the funding gap over the next 20 years could grow to \$122 billion for Clean Water capital costs and \$102 billion for Drinking Water capital costs."

In the decade since the release of EPA's report, spending has remained inadequate to address the needs. Complicating the challenge, according to the U.S. Conference of Mayors, "Instead of sharing the responsibility to finance the necessary infrastructure Congress has taken the position that achieving the goals of the [Clean Water and Safe Drinking Water Acts] is not a federal responsibility."<sup>3</sup> As a result, states and municipalities are shouldering a funding burden that in many cases is beyond the ability of their budgets to accommodate.

1. The Global Competitiveness Report 2010–2011 © 2010 World Economic Forum
2. Progressive Policy Institute: "Building America's 21st Century Infrastructure"
3. Trends in Local Government Expenditures on Public Water and Wastewater Services and Infrastructure: Past, Present and Future, February 2010

Meanwhile, the U.S. population continues to grow. Joel Kotkin, Distinguished Presidential Fellow in Urban Futures at Chapman University and author of *The Next Hundred Million: America in 2050*, predicts U.S. population will swell to more than 400 million by 2050. The short-term challenge to address the urgent state of America's infrastructure will be child's play compared with the challenge of accommodating the needs of approximately 25% more citizens. Currently, and absent visionary thinking and stalwart leadership, the U.S. is wholly unprepared to meet either the short-term or long-term challenge.

## Consequences of Infrastructure Underinvestment

Inadequate infrastructure spending contributes to weaker short- and long-term economic prospects. According to the WEF, "Extensive and efficient infrastructure is critical for ensuring the effective functioning of the economy, as it is an important factor determining the location of economic activity and the kinds of activities or sectors that can develop in a particular economy." A 2009 study by the Political Economy Research Institute (PERI) found that "infrastructure investments and economic growth rise and fall together,"<sup>4</sup> which portends negatively for the U.S. economy given current levels of underinvestment.

The PERI study also found that "infrastructure investment spending will create about 18,000 total jobs for every \$1 billion in new investment spending, including direct, indirect, and induced jobs." At a time when the U.S. unemployment rate remains in the high single digits, spending on critical infrastructure projects seems an appropriate and effective remedy for the economic and social challenges we currently face.

Aging infrastructure exacts a hidden surcharge on the U.S. economy that directly affects the nation's global competitiveness. Overburdened and overtaxed roads and highways are a significant contributor to lost productivity. According to the 2010 Urban Mobility Report, published by the Texas Transportation Institute at Texas A&M University, "the cost of congestion has risen from \$24 billion in 1982 to \$115 billion in 2009," and "yearly peak delay for the average commuter was 34 hours in 2009, up from 14 hours in 1982." Congestion translates into reduced economic output (GDP), inefficient distribution networks and opportunity costs as

employees and businesses adjust schedules to compensate for lost productivity.

Congestion also leads to increased fuel consumption and a corresponding increase in greenhouse gas emissions, both of which present powerful arguments for improving the efficiency of our surface transportation network. Rising fuel costs will severely constrain economic recovery in the U.S. as consumers dedicate a larger share of discretionary income to maintain their mobility. Greenhouse gas emissions, widely implicated as primary suspects in climate change, present an overarching environmental challenge that prudence and plain business sense would suggest we address forthrightly. Expanding the capacity of U.S. road and highway networks only partially addresses the congestion challenge; other considerations must include expanded bus and rail transit networks, transit-oriented development and an interoperable intercity passenger rail system featuring high-speed corridors.

Inadequately maintained and overburdened water and wastewater systems present severe consequences to human health. The potential for water-borne pathogens and contaminants increases with every breach in the system. In addition, ruptures in water distribution systems impair roads and structures, which cause disruptions, impose financial losses, and endanger lives. As ASCE noted, "Many systems have reached the end of their useful design lives. Older systems are plagued by chronic overflows during major rainstorms and heavy snowmelt and are bringing about the discharge of raw sewage into U.S. surface waters."<sup>5</sup>

## Grant Funding Under Pressure

Engineers, contractors and skilled workers are ready to tackle the challenges facing U.S. infrastructure, and the list of necessary projects would fill an order book for decades. In addition, we have all the essential technology and equipment to quickly move forward. The missing piece has been and remains adequate funding.

Currently, the economic climate in the U.S. and structural deficits at the state and federal level preclude much beyond funding for maintenance and repair work or minor upgrades of existing infrastructure. For major projects, grant funding appears infeasible as any agreement about the need for infrastructure improvement quickly devolves into a political argument about corresponding funding. This is an

4. How Infrastructure Investments Support the U.S. Economy

5. Report Card for America's Infrastructure: Wastewater



unnecessary and unfortunate dispute, considering the wide variety of funding mechanisms available through public and private sources, including many that leverage what each source does best. Worse, the arguments are equivalent to two runners from the same team engaging in a shoving match while the rest of the field passes them by.

The current hyperpoliticization of infrastructure funding is best exemplified by the debate during and subsequent to the passage of the American Recovery and Reinvestment Act of 2009 (ARRA) — the so-called stimulus bill. The \$787-billion bill was passed by Congress largely along party lines, with dissenting voices loudly bemoaning the increase in the federal deficit that would result.

Ultimately, while stimulus funding has been helpful for advancing small projects and necessary maintenance and repair work, it was not intended to serve as a sustained funding mechanism for infrastructure projects. Furthermore, one of the more popular and effective financing tools that emerged under ARRA, Build America Bonds (BABs), failed to receive an extension beyond the end of 2010. BABs, available for a variety of state and municipal public works, were subsidized by the federal government at 35% of the taxable interest paid, thus lowering net borrowing costs. As opposed to other financing instruments, BABs were not eligible for private involvement.

The controversy surrounding the stimulus bill combined with other legislative initiatives, including the health care reform bill, led to an electoral revolt that swept in a new wave of legislators who arrived in statehouses and Washington, D.C., with a fiscally conservative public mandate. The shifting political tide has effectively thwarted forward-thinking projects that would begin building the next generation of the nation's infrastructure. Most notably, ambitious plans for a national network of high-speed intercity passenger rail have been tempered as newly elected governors in key states have rejected federal seed money and opponents of deficit spending continue to voice strident criticism.

In this highly charged political environment, any proposed major expenditure of the taxpayers' money will be subject to intense scrutiny against the backdrop of a fragile economic recovery, the rapidly increasing federal deficit and the ongoing burden of foreign debt obligations. As a firm that must manage within its means, AECOM understands the concerns many taxpayers express regarding deficit spending and other financial challenges facing the nation; however,

infrastructure spending provides taxpayers substantial return on their investment over the long term in the form of jobs, economic growth, improved productivity, enhanced mobility, a better environment, and the safe and ample supply of public services.

In near term, however, the federal government is unlikely to generate the substantial revenues required for infrastructure investment through either improved economic activity or tax increases. Even core infrastructure funding under the Transportation Reauthorization Bill remains in limbo due to concerns over revenue shortfalls. President Obama submitted his fiscal year 2012 budget request to Congress, which sought a significant boost in transportation funding and outlined a six-year, \$556-billion surface transportation reauthorization proposal. However, the Transportation and Infrastructure Committee has withheld support pending a plan that would close a projected \$435-billion revenue gap.

Meanwhile, states continue to experience cuts in transportation-related and public works budgets for the foreseeable future. Adding pressure, a potential increase in municipal bond defaults threatens to dampen investor enthusiasm for what has been a widely successful financing tool for state and local projects. Even if widespread municipal bond defaults are unlikely, the cost of capital will assuredly increase to reflect a risk premium.

## Public-Private Partnerships: A New Tool for Cities and States

The combination of increasing infrastructure needs and tightened budgets has necessitated states and cities to do more with less. Public-private partnerships are a proven, performance-based solution to deliver infrastructure faster, cheaper, and with improved accountability to taxpayers. More than 25 states — as well as numerous foreign nations — are using these partnerships to improve their infrastructure. By broadening their tool-kit, they have undertaken more projects, in less time, and saved billions of dollars for taxpayers. To take one example, Virginia has delivered over \$9 billion in transportation projects since its PPP law was passed in 1995.

It is widely accepted that some things are done well by the public sector, while others are done well by the private sector. A public-private partnership is a contractual agreement between a government and a private partner(s) that matches the strengths and resources of both

— through an efficient allocation of risk and reward — to deliver a service or facility for the benefit of citizens. PPPs transfer long-term maintenance risk, creating an environment where the whole life cycle costs of a project are considered and the whole life solution for a project applied. This unique element of risk transfer inherent in PPPs offers the public sector tremendous value, including:

- Fixed price/budget certainty;
- On-time delivery;
- Increased accountability and improved performance;
- Greater innovation and efficiency; and
- Expands financing options and budgetary flexibility, which helps accelerate delivery.

Abroad, flexible delivery approaches have spurred a fusion of public and private capital that has delivered all forms of infrastructure, including nonrevenue producing assets. For example, the United Kingdom's Private Finance Initiative has delivered 700 new infrastructure projects totaling over \$30 billion. France has delivered a \$58-billion high-speed train through a PPP. In just three years, British Columbia, Canada, has utilized PPPs to procure \$8 billion in projects, primarily transport related, but social infrastructure projects are becoming more prevalent.

The design-build (DB) procurement mechanism is the first step of a public-private partnership. This procurement process transfers greater risk (typically retained by the public sector) to the private sector, which can create long-term efficiencies, more innovative approaches, and improved overall performance. Unlike a DB contract where the private sector largely retains the project delivery, design, and construction risks, in a design-build-finance-operate-maintain (DBFOM) PPP structure, the private sector retains risks for 35 years or more and is incentivized to employ value engineering innovations and produce maximum efficiencies in the delivery of infrastructure over the long term.

In addition, unlike DB, in DBFOM procurement the private sector puts equity at risk from the project inception through the end, motivating greater accountability and performance. Essential to the decision-making process is the fact that an appropriate process is developed by the procuring agency, based on an understanding of the PPP process, and that a sufficiently robust assessment of alternative models is completed. Of critical importance is that the selected approach can reveal to key stakeholders (i.e. taxpayers) demonstrable value.

The foundation for a successful PPP project includes the following criteria:

- The project is critically needed or part of capital plan;
- The project has a financing shortfall;
- Project goals include accelerated delivery, reduced costs, and increased performance;
- The project is complex and entails high risk;
- PPP legislation has been enacted;
- A dedicated revenue stream exists to finance the project over the long-term; and
- The project has political support at all levels.

These criteria are not necessarily sufficient for PPP project delivery. In particular, in the absence of federal regulations governing PPP frameworks, multi-state projects are difficult to finance and deliver. However, PPPs have indisputably become an effective method to deliver complex, capital intensive projects rapidly and cost effectively.

## Paving the Way for PPPs

The federal government has initiated financing programs, focused solely on transportation projects, which have considerably strengthened the market for PPPs. These federal programs have lowered the cost of financing PPP deals in the transportation sector by offering supplemental forms of debt finance that enable lower cost financing and potentially longer terms than are typically available in the taxable bank or bond markets.

Traditionally, states and cities financed transportation projects using tax receipts and proceeds of tax-exempt municipal bonds. Lacking the benefit of tax-exempt financing, private partners had to use taxable debt financing to bolster their bids for transportation PPP projects. Given the cost of capital arguments in favor of tax-exempt financing, the PPP market was hindered. In 2005, however, the U.S. Internal Revenue Code was amended to establish a new category of Private Activity Bonds to include all transportation projects, not just airports, ports, water and sewer projects. Consequently, private consortiums receiving PAB allocations can now benefit from the lower cost of capital achievable in the U.S. tax-exempt bond markets.

Another popular financing option that motivates private participation in state and local surface transportation projects comes in the form of a federal loan program through the Transportation Infrastructure Finance and

Innovation Act (TIFIA). TIFIA loans, which are available up to 33% of total eligible project costs, enable securing private market financing at below-market interest rates equivalent to U.S. Treasury rates. For example, in March 2009 the U.S. Department of Transportation (USDOT) approved a loan of approximately \$600 million for an estimated \$1.8-billion tolled express lane project for Interstate 595 in Broward County, Florida. The balance of financing comprised private bank debt, private equity and qualifying funds from Florida DOT. Unfortunately, TIFIA — or similar — loans are currently unavailable for non-transportation projects.

Although TIFIA plays an instrumental role in fueling the PPP market, the supply of credit assistance available is far less than the demand. Last year, for instance, USDOT announced that it had received 39 letters of interest from state and local governments seeking \$12.5 billion in TIFIA loans for investments totaling nearly \$41 billion. Program funding, however, is currently available to support less than 10 percent of the expressed credit demand.

A potential solution to meet the current demand for expanded federal financing for PPP projects would be for Congress to expand the current TIFIA allocation, which is \$122 million per year or approximately \$1 billion of annual credit assistance. Given the growing demand for TIFIA, increasing the budget allocation for this credit program would enable billions in estimated projects to move forward. For instance, a five-year authorization of \$2 billion to fund the subsidy costs of \$20 billion of new loans could support potential total project investment in excess of \$50 billion.

Another possible option for increasing credit assistance to projects beyond just transportation, to include energy and water, could come in the form of a federal infrastructure bank. Recently, U.S. Senators John Kerry, Mark Warner and Kay Bailey Hutchison proposed an infrastructure bank under the Building and Upgrading Infrastructure for Long-Term Development (BUILD) Act. The BUILD Act would create the American Infrastructure Financing Authority, which is another name for a national infrastructure bank, and expands upon a similar Obama Administration proposal that focused only on transportation-related projects.

The national infrastructure bank could leverage federal credit assistance to maximize private financing, helping to address the nation's infrastructure needs. In practice, the BUILD Act's infrastructure bank would provide loans and loan guarantees for projects selected on their merits, as opposed to political considerations. A self-sustaining entity, the

infrastructure bank would heavily depend on the private sector to finance at least 50% of a project's costs. Eligible projects would generally exceed \$100 million (\$25 million for rural projects) and be of national or regional significance.

The success of a national infrastructure bank resides in a governance, management and oversight framework resistant to political influences. As a government-sponsored enterprise, a national infrastructure bank would need to demonstrate viability past its initial endowment, which would place a premium on selecting the right early projects. Otherwise, the national infrastructure bank will face the same criticisms as Fannie Mae and Freddie Mac experienced for their mismanagement.

With the proper executive oversight, a national infrastructure bank would be a useful asset for long-term infrastructure development and deserves serious consideration. However, as with any proposed legislation, a complete assessment must wait until the ink is dry on the final bill. In the meantime, other programs such as TIFIA may be more practical to expand, and in fact their successful ongoing development may preclude the need for a national infrastructure bank.

Ultimately, an integrated multifaceted approach to financing is essential to address the urgency of the state of U.S. infrastructure. Many of the projects critical to America's future transportation and public works systems are complex and will require more than one type of financing approach. For example, the facilities offered by TIFIA, the availability of syndicated bank debt and/or privately placed bonds, and the creative use of subordinated debt can integrate to deliver projects.

Importantly, revenue streams and risk mitigation are crucial to generating investor demand. There are numerous methods to generate revenues, including fuel taxes, tolls, congestion pricing, managed lanes, user fees, vehicle-miles traveled and voter-approved taxes, to ensure private-partner interest. From a risk mitigation perspective, if federal or state infrastructure banks could be developed with sufficient reserves to guarantee debt service payments, projects sitting on the drafting table assuredly would find new life.

## Retaking the Global Lead in Infrastructure

With the growing realization that traditional funding sources in the form of grant reimbursement programs cannot keep pace with the need for and growing complexity of infrastructure projects, new funding mechanisms are critical to ensuring the future viability of America's infrastructure, as well as its global leadership in transportation systems and public works. At the same time, private participation in financing and project delivery is the key for accelerating the pace of delivery and improving the quality and performance of infrastructure assets.

Private participation depends on continued access to low-cost financing; the ability to significantly leverage grant funding; regulatory certainty, particularly relating to energy and environmental policies; and continuation, extension or expansion of already successful federal debt and loan programs for infrastructure improvement. Certainly, the private sector stands ready to work with members of Congress, federal agencies, and states and municipalities to explore new financing tools as well as revenue sources to support continued investment in America's infrastructure.

The current debate surrounding the affordability of infrastructure investments suggests that the U.S. has the option to forego projects that will ensure its global competitiveness and ability to accommodate a growing population. To the contrary, the evidence indicates that the U.S. is running out of time to provision for its current infrastructure needs, let alone its future needs. The private sector has the capacity, creativity, and incentive to achieve this mission in partnership with federal, state and local entities.

Finally, those who work directly with the public sector to deliver projects — engineering and contracting firms — have long-standing relationships with the various agencies where project oversight resides. These firms provide the core elements of project design and construction and uniquely understand both the public and private side of the equation, including what constitutes fair and proper project risk allocation. Engineering and contracting firms thus are well positioned to play a more active role in bringing projects to fruition, instead of keeping projects vital to the nation's long-term economic and social progress mired in the realm of debate. ■

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