THE WAY FORWARD

A New Economic Vision for America's Infrastructure

MAY 2014

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Summary

Disruptive market, demographic, fiscal, and environmental dynamics are fundamentally reshaping America's economic landscape. In this new reality, the United States should think of infrastructure not in the general but in the specific, understanding the ways in which different infrastructure sectors—such as transportation, energy, and water—are governed, financed, and delivered. At the same time, metropolitan areas need to outline their priorities given their distinct economies, competitive advantages, and infrastructure needs. As public dollars become scarcer, we expect that the next generation of American infrastructure will require the public, private, and civic sectors to engage and partner in new ways. This white paper details the critical role infrastructure plays in the American economy, outlines the disruptive trends that are redefining the marketplace, and lays out a new path forward.

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Why Infrastructure Matters Today

We live in a pivotal decade. The United States faces an unprecedented number of economic, demographic, fiscal, and environmental challenges that compel both the government and the private sector to rethink the way they do business. While these new forces are incredibly diverse—including everything from the shale gas revolution to renewed consumer preferences for urban living—they share one underlying need: modern, efficient, and reliable infrastructure.

Tangible assets made of concrete, steel, and fiber-optic cable are essential building blocks of the American economy. Infrastructure enables global trade, powers businesses, connects workers to their jobs, creates new opportunities for struggling communities, and protects America from an unpredictable natural environment. From private investments in telecommunication systems, broadband networks, freight railroads, energy projects, and pipelines, to public investments in transportation, water, public buildings, and parks, America's infrastructure is the backbone of a healthy national economy.

Infrastructure also supports American workers, providing millions of jobs each year to build and maintain the structures and facilities that power our economy. Data from the Bureau of Labor Statistics reveals that approximately 14 million Americans are employed in fields directly related to infrastructure. From locomotive engineers, electrical power line installers and truck drivers to airline pilots, construction laborers and meter readers, infrastructure jobs account for nearly 11 percent of the nation's workforce, offering many employment opportunities that have low barriers to entry and are projected to grow over the next decade.[1]

Infrastructure is necessary for the achievement of important national goals. It supports the growth of advanced industries, a high-value, manufacturing-intensive sector of the economy that needs reliable infrastructure to connect supply chains and efficiently move goods and services across domestic and international borders. Infrastructure also connects households across metropolitan areas to higher quality opportunities for employment, health care, and education. Investments in clean energy and public transit have the potential to reduce greenhouse gas emissions and help achieve resiliency and sustainability goals. This same economic logic applies to a range of different infrastructure assets, including broadband networks, water systems, and energy production and distribution.

Disruptive Factors Affecting Infrastructure Design

Today, a remarkable set of demographic and cultural changes, such as the aging and diversification of our society, shrinking household sizes, domestic migration, and an increasingly collaborative and ecosystem-driven work culture, place new emphasis on things like transportation alternatives and telecommunications to connect people and communities. For example, the percentage of licensed drivers among young Americans is the lowest in three decades, correlating with increased public transit use in some metropolitan areas and new innovations such as car and bicycle sharing.[2] The prototypical family of the suburban era, a married couple with school-age children, now represents only 20 percent of households, down from more than 40 percent in 1970. A recent survey by the Urban Land Institute found that 55 percent of Generation Y respondents said close proximity of their home to public transportation is important.[3]

Moreover, the United States is still a growing country. We've added nearly 25 million people in the last ten years. This tremendous growth, concentrated in the nation's 50 largest metros,[4] will place new demands on already overtaxed infrastructure assets, including water systems, transportation, and data networks. Metropolitan areas should be ready to adapt these systems, not only to serve millions of new customers, but also to maximize the potential for low-income residents who already face disproportionately high unemployment levels.

For example, a recent Brookings analysis found that only about one-quarter of jobs in low- and middle-skill industries are accessible via transit within 90 minutes for a typical metropolitan commuter.[5] Successful metropolitan areas will be those that find innovative ways to connect workers to jobs and to overcome the digital divide between high- and low-income neighborhoods. Even though the White House points out that broadband speeds have doubled since 2009 and over 80 percent of Americans now have access to high-speed wireless broadband, adoption rates for low-income and minority households remain disproportionately low (about 43 and 56 percent, respectively).[6]

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These societal changes in our country are matched by the intensity of its economic transformation. Over 80 percent of global GDP growth is expected to occur outside the United States over the next five years and, due to rapid globalization, will be concentrated within cities.[7] This development offers an unprecedented opportunity for American companies to export more goods and services and to create high-quality jobs at home. It also amplifies the role of our logistics infrastructure, such as seaports, air hubs, freight rail, border crossings, and highways. These assets move more than $51 billion worth of goods each day quickly and efficiently in support of the complex supply chains that are integral to our modern economy.[8]

Our rapidly diversifying domestic energy portfolio is similarly disruptive for infrastructure. The windfall of unconventional natural gas necessitates new and traditional methods for energy transportation, requiring the accelerated growth of new truck, pipeline, and rail networks. Rooftop solar has rattled electric utilities as they scramble for new ways to incorporate and store the energy while keeping the grid operating. At the same time, we expect smart grid and clean energy challenges to remain complex as hundreds of thousands of small- and large-scale projects are projected to come to fruition in the coming decades.

As the United States continues its shift towards a more research- and development-intensive, innovation-based economy, businesses are seeking new ways to take advantage of proximity to boost their bottom lines. The spatial geography of innovation is shifting from isolated science parks and secluded corporate campuses to mixed-use, transit-connected urban enclaves. These "Innovation Districts" are where existing clusters of advanced research universities, medical complexes, and technology and creative firms are sparking business expansion, as well as residential and commercial growth.

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High-profile natural disasters, such as Superstorm Sandy, elevated the profile of America's water infrastructure challenges. Overwhelmed wastewater systems, washed-out roads, shorted electrical circuitry, and flooded train stations not only highlighted the economy's reliance on these networks, but also revealed the poor and aging condition of many of these important systems. Consequently, a whole range of new investments and practices are being deployed to rebuild the nation's water systems. Cities are also working to capture and soak up storm and rain water rather than building expensive infrastructure to channel it away. For example, in a recent report, the Center for Urban Future describes how New York City plans to invest $2.4 billion over the next 18 years in so-called "green" infrastructure, such as rooftop vegetation, porous pavements, and soils, to make the city more permeable.[9]

Disruptive Factors Affecting Infrastructure Funding and Finance

In addition to the types of infrastructure needed in the coming years, another set of disruptive forces is leading to a change in how projects are funded and financed.

Despite infrastructure's fundamental and multifaceted role in maintaining national growth and economic health, the United States has underinvested in its infrastructure for decades. Today, infrastructure spending as a share of U.S. GDP is around 2.5 percent, much lower than the 3.9 percent in peer countries, such as Canada, Australia, and South Korea, while this figure for Europe is close to 5 percent, and between 9 percent and 12 percent for China.[10] The McKinsey Global Institute estimates that the United States should spend at least an additional $150 billion a year on infrastructure through 2020 to meet its needs. This investment is expected to add about 1.5 percent to annual GDP and create at least 1.8 million jobs.[11]

The federal government has not taken the actions required to reinvest in our nation's infrastructure and, in many cases, these infrastructure projects are the purview of state and local authorities. For the foreseeable future, federal support for infrastructure programs, such as the Highway Trust Fund and State Revolving Funds for water, will likely continue to face cuts and budgetary shortfalls. Other experiments, such as the National Infrastructure Bank (though noteworthy), seem too complex and politically challenging in the current legislative environment. Regulation and a pervasive "not-in-my-backyard" attitude also present hurdles. Furthermore, given the rise in interest payments, increases in entitlement spending, and decline in traditional sources of government revenue such as the gasoline tax, competition for limited resources is fierce.

A handful of states and a number of cities are developing new ways to select, fund, and build economically important projects. Unfortunately, many of these efforts remain hamstrung due to the lingering effects of the Great Recession. The 2008 financial crisis cut deep into both state and local government revenue streams. Many have dipped into rainy-day funds, took on additional debt, fired essential staff, and otherwise tightened their belts throughout the last several years.

Some cities and states now see budget surpluses due in part to increases in property tax revenues and state level sales tax collections. However, it will take years for most localities to build back their reserves, repay the additional debt incurred during the recession, and pay for deferred maintenance on a range of infrastructure assets. Meanwhile, insufficient retirement security, in the form of unfunded pension obligations for many Americans who are living longer, and other debt burdens facing government continue to limit the availability of public funds to pay for necessary infrastructure. And, though interest rates remain at historically low levels, the ability of many governments to borrow from the capital markets is hindered by debt caps and weak credit ratings. Finally, expectations of an ability to borrow at today's low rates would likely create long-term challenges for governments should interest rates rise in the future.

Pressures on federal and state governments to become leaner and more efficient, along with financial challenges at the local level, are driving leaders to seek out new tools to deliver economically important infrastructure. However, innovation is particularly difficult considering that many communities have spent the last 50 years deferring their most pressing infrastructure challenges and pursuing stop-gap budgetary measures, instead of developing long-

term solutions. The American cities, metropolises, and states that will succeed in the next century are those that break the cycle of "short-termism" to develop new ways to invest in infrastructure.

The Current Infrastructure Narrative is Too Abstract

The United States has a long way to go to correct a half-century of bad habits and underinvestment and make new solutions for infrastructure the norm rather than the exception. There are three critical problems:

First, despite important progress over the last decade in framing infrastructure as a key economic driver, it remains an amorphous and simplistic discussion. Infrastructure is made up of interrelated sectors as diverse as a water treatment plant is from an airport, a wind farm, a gas line, or a broadband network. We believe the focus on infrastructure in the abstract led to unrealistic "silver-bullet" policy solutions that fail to capture the unique attributes of each of these critical enablers of the American economy. In reality, each of the individual sectors of infrastructure are very different in terms of project design, market attributes, and how they are governed, regulated, owned, and operated.

Second, we believe this generalization overemphasizes the federal role and fails to recognize the diverse and highly fragmented ways that America selects, builds, maintains, operates, and pays for assets as different as public transit, telecommunications, and water. For certain sectors, federal spending is relatively high, such as transportation and water for which federal spending averaged $92.15 billion each year from 2000 to 2007.[12] But even for those sectors, the federal share of total spending was never higher than 27 percent during that time.[13] For other sectors, such as freight rail, telecommunications, and clean energy, the federal role in funding and finance is actually quite limited (though they may be affected by federal regulations).

Third, this lack of precision means the United States failed to develop customized solutions to distinctive challenges, in our view. The United States should design infrastructure investments in service of the *next economy*, not the current or prior one. Over the last 25 years, many infrastructure investments were designed to support a post-industrial economic growth model that prioritized consumption and amenities over investments in innovation and production. Yet, one of the lessons we've learned from the Great Recession is the need to grow and support the tradable sectors—typically manufacturing and high-end services—that are concentrated in our metropolitan areas. Our 100 largest metropolitan areas house almost two-thirds of our population, generate 74 percent of our gross domestic product, and disproportionately concentrate assets like infrastructure that drive economic success.[14]

In our view, prioritizing metropolitan infrastructure around this *next economy* means, for example, making investments in freight connectivity to enable access to metropolitan markets through modern global value chains. It means making investments that support the transition to cleaner and more abundant domestic energy sources. It means reimagining and redeveloping older industrial properties by leveraging their enviable location near waterfronts and downtowns and along transit lines. It means having a greater focus on green infrastructure to absorb and manage water rather than relying on costly over-engineered solutions.

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Yet even here, infrastructure priorities differ from one metropolitan area to another depending on the nature of its economy, physical location, past investments, growth trajectory and other factors. What Phoenix needs, for example, is likely quite different from what Portland needs, which is likely quite different from what Pittsburgh needs. By defining and designing infrastructure investments from the bottom up, the fundamentals of individual metropolitan economies can be taken into consideration and better matched to each area's needs. This approach would help make clear what our infrastructure priorities really are and what stakeholders want. It also means enabling metropolitan leaders to work on ambitious and creative strategies to make their infrastructure goals a reality. These strategies include everything from multi-state infrastructure collaborations, to new partnerships, to special infrastructure trusts, and direct voter approval.

America Needs a New Path Forward

So what does all this mean for how America designs, finances, delivers, and governs its infrastructure?

We expect it means that almost all solutions will have a public and private character. As a country, we should endeavor to move beyond simplistic notions of "privatization" to a future of infrastructure with true partnerships between government agencies, private firms, financiers, and the general public. This is how many nations successfully develop infrastructure around the world today.

But here again, the nature and mix of public and private arrangements will likely be customized depending not only on individual transactions, but also on the nature of the particular infrastructure sector.

First, for some sectors like intra-metropolitan transportation (roads, bridges, and transit), we expect the lion's share of revenue will need to be raised by public means or through innovative market mechanisms.

Capturing Value in Public Assets: Virginia Air Rights

As cities and states continue to look for sources of revenue, new efforts are emerging to capture the enormous value in the land the public sector already owns. Pioneered in the 1950s at New York's Grand Central Terminal, the idea of selling or leasing the right to develop real estate above an existing infrastructure asset—known as "air rights"—is attracting new interest across metropolitan America.

Recently, Boston used this value capture technique to derive revenue from the Central Artery/Tunnel Project (the "Big Dig"). New York pursued a similar contract to build out a portion of the Barclay's Center in Brooklyn. Today, an idea in Arlington, Virginia, could literally pave the way for a new, economically integrated, model of air rights development.

The idea of pursuing a partnership on air rights came out of a drive to secure new revenues for the state. Fortunately, Virginia's Office of Transportation Public Private Partnerships (OTP3) already has a strong track record in negotiating a wide range of risk and capital sharing projects between the state and the private sector. Notably, OTP3 successfully negotiated the complex high occupancy toll lane project on Virginia's portion of the Washington beltway with a private partner, Transurban, as well as more than $6.3 billion in other projects within the last two years. However, the air rights project required the state to fundamentally change the way it normally thinks about what it owns and controls, not just as a steward and a builder, but also as property owner and redevelopment partner.

An initial scan of the state's transportation assets surfaced a number of potential properties in dense urban areas. The most promising is above Interstate 66 in the Rosslyn area of Arlington. Directly across the Potomac River from Washington, D.C., Rosslyn is a business hub hosting a variety of different corporations, including Corporate Executive Board, IBM, and others. Unfortunately, this center of business activity is isolated from the riverfront and the Capital by the busy urban freeway, limiting opportunities for Rosslyn's growth.

Through an internal analysis, and in consultation with the real estate investment firm Jones Lang LaSalle, the state determined that it could potentially "create" over 10 acres of developable land, drive hundreds of millions of dollars in private sector investment, provide $24 million in additional tax revenue for the county, and generate several million dollars a year in recurring revenue for the state.[16]

In addition to revenue goals, the transportation department also took an expansive vision of its role by considering its work as an extension of regional economic development priorities. Further, the department recognized that Arlington's model for dense, walkable, and transit-oriented development has the potential to reduce its future road building costs.

Achieving these goals would require innovative partnerships between public agencies, all levels of government, private developers and local residents. This project is particularly complex given the multitude of federal approvals required from the Environmental Protection Agency, the National Park Service, the Bureau of Land Management, the Federal Highway Administration, and the Federal Aviation Administration. However, the common interest, alignment, and clear articulation of goals on key economic development priorities is moving the project forward.

While still in process, the Rosslyn air rights project demonstrates a new funding and financing future where public assets are used in tandem with private sector expertise and capital.

Ballot measures have traditionally played an important role in securing funds for infrastructure investment, particularly at the local level. Because such projects are often financed using general obligation bonds (which, in many places, require popular approval first), many municipalities go to voters for decisions on financing infrastructure projects. Many cities are also following this trend. This has especially been popular in the western United States where cities such as Los Angeles, Phoenix, and Salt Lake City are taxing themselves, dedicating substantial local money, and effectively contributing to the construction of the nation's critical infrastructure system.

Initiatives for intra-metropolitan transportation are popular among voters. According to the Center for Transportation Excellence, 73 percent of intra-metropolitan transportation measures passed in 2013, as did 79 percent in 2012.[15] While state level ballot measures on infrastructure investments are far less common, in 2013, eight states voted to raise taxes to pay for infrastructure projects. This includes both conservative states like Wyoming and democratic controlled legislatures in states like Maryland.

At the local level, a number of cities are using market mechanisms that capture the increased value in land that accrues from certain infrastructure investments. This can provide a more targeted way to finance new or existing transportation projects by matching the benefit from infrastructure with its cost. These techniques include impact fees through which land developers are assessed a charge to support associated public infrastructure improvements, generally local roads and public works like sidewalks. The lease or sale of air rights is another practice that has been used to finance development around transit stations for decades, famously around Grand Central Station in New York, and more recently in Boston and Dallas.

Another growing trend is the use of tax increment financing (TIF) districts. TIFs support infrastructure projects by borrowing against the future stream of additional tax revenue the project is expected to generate. For example, a TIF was used to finance infrastructure improvements for the Atlantic Station project in Atlanta. A similar strategy was used to fund a streetcar in Portland, Oregon, by creating a local improvement district that leveraged the economic gains of nearby property owners. Furthermore, the city of Fort Worth, Texas, used a TIF in the mid-1990s to spur renewal projects that provide significant benefits to the downtown area today.

We believe that the federal government should allow greater flexibility for states and cities to innovate on projects that connect metros. For example, passenger facility charges, which are used to fund airport modernization, are artificially capped at $4.50 and do not do nearly enough to cover the airport's operating and long-term investment costs. We believe the busiest passenger airports need to be empowered with the ability to meet their larger-than-average congestion and investment costs without federal impositions or caps. The archaic restrictions on tolling the Interstates should also be lifted, in our view. Metropolitan and local leaders (in conjunction with the states) are in the best position to determine which Interstate roadway segments are the strongest candidates for pricing strategies.

Second, there are other infrastructure classes and projects that we believe are potentially appropriate as public-private partnerships (PPPs). These are often complex agreements that allow the public sector to engage with private enterprises to take an active role in one or more aspects of the lifecycle of an infrastructure asset. PPPs can take a wide range of forms, but, at their heart, include risk and cost sharing in the design, building, maintenance, financing, or operations of an asset.

There is no doubt that public sector interest in these new partnerships is motivated by the funding and financial squeeze. In the post-recession United States, low-credit ratings, debt caps, and limited options for credit enhancements continue to burden many states and localities with high debt costs. These factors often make PPPs appealing, as issuing additional tax-exempt debt may be financially or politically unfeasible. While PPPs are not "free money," these innovative partnerships can offer cities a wide range of benefits including lifecycle cost savings, increased budgetary accountability, higher quality deliverables, and faster project delivery.

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Institutional investor interest in infrastructure PPP investments is also growing. For many of these investors, PPPs are often the best way to gain exposure to the American infrastructure market. Furthermore, infrastructure PPPs potentially provide large investors with access to stable, long-term cash flows, a hedge against inflation, low volatility, stable and predictable returns, and low correlation with other asset classes. In addition, many of these investors, such as those from the private equity sector, have long-term capital that can allow them to focus on results measured in years, not quarter to quarter. We believe this long-term focus aligns with public needs in that it allows for both significant operational improvements and for proper engagement with a wide variety of stakeholders who have an interest in the positive outcome of these investments.

However, not all infrastructure sectors or projects are appropriate for such risk/reward sharing arrangements between the public and private sectors. Some investments may not be profitable enough for the private sector, though they may meet a host of public policy priorities, such as certain green infrastructure or public parks without a revenue stream. For example, private conservancies provide maintenance and oversight for parks in cities such as New York, Pittsburgh, Houston, and St. Louis, but they are typically

Leveraging Private Sector Resources and Innovation: Bayonne Water PPP

Bayonne, New Jersey, is located on the western side of the Upper New York Bay across from Brooklyn. Given its geography, Bayonne has long been an industrial and manufacturing center, home to petroleum refineries and fishing operations. With the decline of those industries in the area, the city is working to rebuild its economy around technology, logistics, and transportation due to its proximity to the Port of New York and New Jersey.

Bayonne's Municipal Utilities Authority (BMUA), the city's water and sewer utility, is also reinventing itself. In 2012, it installed the first wind turbine in metropolitan New York to supply power to its pumping stations. Also in 2012, the city finalized an innovative public-private partnership (PPP) to improve and operate the city's water system.

At the time of the PPP deal, BMUA was burdened with nearly $125 million in debt, which dragged down its credit rating and degraded its ability to raise the funds necessary to reinvest in an aging, neglected, and outmoded system. BMUA needed to reevaluate the way it did business in order to bring in new capital, talent, and technology to get things back on track. Fundamentally, the agency realized that, despite myriad problems, its assets held real economic potential. BMUA provided water for a growing community with a number of economic strengths, including one of the country's largest ports, a major medical center, and a robust manufacturing and distribution sector. The water utility was an asset for the city, not a liability.

Making the most of this community asset required BMUA to draw up a key set of management priorities. First, it wanted to maintain ownership over the system. Second, it wanted to make sure that it identified and operationalized strong quality and reliability standards for the system. Third, it wanted to cushion ratepayers from excessive price fluctuations. Finally, BMUA wanted to ensure that the employees were treated fairly.

With these core requirements in place, the city determined that these needs could be fulfilled outside the existing structure of BMUA and through a partnership with the private sector. Through a competitive bid process, BMUA selected a proposed joint venture between United Water, a water service company, and KKR, an investment firm. In exchange for a 40-year concession with BMUA, United Water and KKR agreed to pay off $125 million of the utility's debt, invest nearly $110 million to modernize the system, retrain and bolster the utility's staff, and eventually save the utility an estimated $35 million over the lifetime of the contract, based on the city's analysis. The deal also leveraged United Water's significant regional presence, bringing a larger pool of highly skilled engineers and high-tech equipment to the utility.

The benefits of the partnership are already evident. The completion of the investment helped the city of Bayonne to receive a credit upgrade from Moody's. Rates will increase modestly for the community, though the city projects it to be at a lower rate of increase than if it had continued to manage the system. Within the first year, the United Water-KKR joint venture made significant investments in upgrading pipes and equipment by installing advanced monitoring equipment across the entire system. These investments have helped to improve the system to provide better service. In addition, new fleet vehicles have been purchased, employees have received over 2,500 hours of training, and the system's first comprehensive asset management plan has been developed.

Although the Bayonne water investment is in its early days, it is representative of a new movement in American infrastructure investment in which cities are finding new ways to build partnerships that turn infrastructure liabilities into productive assets.

nonprofit organizations that exist for the sole benefit of the parks with no risk sharing between the public and private sectors.

In our view, infrastructure projects most ripe for PPPs include those with a clear revenue stream from rate-payers, such as water infrastructure. In these cases, there is ample opportunity for the private sector to increase capital investment, bring in new technologies, and improve services. Thoughtful infrastructure procurement can also open the door to a wide range of PPP projects that do not include ratepayers. We believe that nearly any asset may be suitable for a PPP as long as there is a mechanism to spread risk between the public and private sector, even without a user fee structure. So-called "availability payment models" can allow for the public sector to pay a recurring user fee for the use of an asset based on its condition and accessibility. These availability payments can come from gas taxes, general funds, or any other non-asset-specific revenue stream. In these cases, it is important that there is a real understanding of the underlying economics and an appropriate capital structure.

Strong candidates for successful PPPs also typically need stable policy environments and strong political leadership, clear and defined responsibilities for the partners, data to support financial planning and usage projections, and be large enough in scale to attract private sector interest.

Since there are no standards for contracts and pricing, risk sharing, and returns, a mix of public, private, and civic groups will likely have to help develop the models for this new path forward for infrastructure. An emerging example is the West Coast Infrastructure Exchange (WCX), which is partially supported by the nonprofit Rockefeller Foundation. The WCX is a collaborative effort between California, Oregon, Washington, and British Columbia to create a pipeline of investable projects and develop standards for important factors, such as transparency, contracts, labor and risk allocation, among others. The overarching goal is to build an organic marketplace of projects and to create a platform from which public, private, and nonprofit partners can learn. By sharing these details in a transparent and accessible manner, project finance and delivery methods can be scaled and replicated.

If successful, we think that the WCX could serve as a model for a series of state, city, and metro-led infrastructure exchanges across the United States. Each regional exchange would be able to focus on the infrastructure delivery and finance strategies best tailored to their own culture, traditions, and needs. An East Coast or Mid Atlantic Exchange may focus on infrastructure needs related to rebuilding coastlines and climate resiliency post-Superstorm Sandy, or on transit and transportation projects that cross state borders. A Midwestern Exchange may hone in on challenges of rebuilding water infrastructure in a largely slow growth environment. A Southern Exchange may focus on new infrastructure to accommodate fast growth and the new geography of manufacturing, supply chains, and goods movement. Irrespective of the precise focus, these individual exchanges could be linked up through a project clearinghouse to share data, information, and best practices.

Third, other sectors of infrastructure, such as energy, telecommunications, and freight rail, will likely remain dominated by the private sector, typically with federal and state regulatory oversight. But we expect there will also be new types of public and private relationships in these sectors. For example, while broadband networks are still delivered by private sector companies, local governments recognize that network access is equally important to the economic success of households as well as businesses. As cities like Los Angeles and other markets explore ways to extend broadband access to all homes in order to take full advantage of modern computing capabilities, they are also working to figure out the financing arrangements and business opportunities for firms interested in developing those networks.

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Similarly, the country's trade and logistics industry is highly decentralized, with private operators owning almost all of the trucks and rails, and the public sector owning the roads, airports, and waterway rights. Unlike some of our international peers, such as Germany, Canada, and Australia, the United States does not have a unified strategy that aligns disparate owners and interests around national economic objectives. That is why we think innovative partnerships are necessary to improve the efficiency and reliability of freight movements in and around major metropolitan areas. The Chicago Region Environmental and Transportation Efficiency Program (CREATE) aligns several of these interests in a metropolitan-wide effort to unblock freight and passenger bottlenecks that contributes to delays in the system. The $2.5 billion for the program will come from a mix of traditional sources (federal grants), private investments (railroads), state loans (bonds), and existing local sources.[17]

Innovation Districts are another example of an emerging trend in blended public and private investment. These highly integrated redevelopment projects leverage a city's existing civic, corporate, and philanthropic assets to take advantage of the shifting spatial geography of innovation mentioned earlier. Fundamentally, Innovation Districts knit together large institutions like hospitals and universities with large corporations, spin-off companies, business incubators, mixed-use housing, office, retail, and modern urban amenities to form clusters of economic growth. By their very nature, these ventures require constant access to a broad array of private, public, and civic capital. Leading examples of Innovation Districts around the United States are utilizing everything from commercial lending, to basic science and applied research grants, to place-based infrastructure investments, and even seed grants from philanthropies.

Public/Private/Philanthropic/Partnerships: A P4 for Detroit

While the widely reported narrative about Detroit's bankruptcy reflects the city's precarious fiscal outlook, it fails to recognize tremendous market momentum concentrated in the downtown and midtown areas of the city. Evidence of this resurgence—years in the making—can be seen throughout the city's urban core, manifested in new residents, new businesses, and a renewed sense of hope in the city's future.

Such activity did not occur by happenstance, but is the result of a new type of intentional, coordinated investments from private, civic, and philanthropic organizations, supported by targeted governmental action. According to the 7.2 Square Mile Report on Greater Downtown, approximately $880 million was invested in the Detroit Central Business District (CBD), the adjacent Lafayette Park, and Rivertown areas between 2010 and 2012. An additional $1.2 billion was invested in midtown during this period, with much of that investment concentrated in the North Cass and Medical Center areas.[19]

These investments are representative of a major shift in the way cities are working to fund and finance urban redevelopment and infrastructure. Traditionally, federal and state governments make direct or indirect investments in transit, roads, parks, and assisted housing, as well as in other capital improvements. States and cities also regulate building codes and standards of construction, establish how tax delinquent properties can be foreclosed, and dictate the ground rules for using eminent domain.

However, with increasingly tight budgets at all levels of government, cities like Detroit are finding new ways to comingle public, private, and philanthropic resources to fund physical and economic development projects and initiatives.

Private investors, spearheaded by Quicken Loans founder Dan Gilbert, are taking the lead in investing and revitalizing real estate throughout the CBD. According to Opportunity Detroit, a nonprofit organization focused on revitalizing the city, Gilbert's Rock Ventures has acquired over 40 downtown properties, accounting for 4 million square feet of office and retail and space, and another 3.7 million square feet of parking. Since August 2010, approximately 100 companies have moved to or relocated to Rock Ventures-owned buildings in the CBD.[20]

These investments build off of a significant philanthropic presence in Detroit. An analysis of the Foundation Center Grants Database conducted by the Reinvestment Fund found that between 2007 and 2011, foundations made 3,587 grants totaling approximately $551 million to organizations in the District; this represented 78 percent of all philanthropic dollars invested in Detroit during this period.[21] Some of the most ambitious philanthropic initiatives are tied to the Kresge Foundation's plan to invest in the M-1 light rail system that will run 3.3 miles through the heart of the city. With 11 stops along the way, the transit system will provide physical connections through the area and serve as a stimulant for more dense development in existing neighborhoods.

In tandem with both the private and philanthropic investments, major civic anchor institutions are leveraging their balance sheets to catalyze urban renewal. The Detroit Medical Center is currently investing $850 million in upgrades, renovations, and expansions of its facilities. The Henry Ford Health System, Wayne State University, the College for Creative Studies, Michigan State, and the University of Michigan are also making millions of dollars' worth of investments.[22]

Furthermore, these investments are bolstered by governmental action on specific regulatory issues, such as revised zoning ordinances and targeted infrastructure improvements, including a street light replacement program. Partly as a result, from 2009 to 2011, the number of jobs in the CBD grew by 5 percent, while they declined 6 percent in the city as a whole.[23]

The growing momentum in Detroit's core illustrates how the private, government, and nonprofit sectors can come together to meet mutual goals. Such focused, intentional partnerships should provide a model for other metros.

There are several examples of Innovation Districts. New York City deployed millions in municipal capital for necessary investments in infrastructure to lure universities and private tech firms to its Roosevelt Island redevelopment area; Detroit benefited from local and national philanthropies' support and creation of innovation funds for start-ups in the city's Midtown and Downtown neighborhoods; and, in St. Louis, a business model is being developed to install gigabit-speed fiber optic cable under the street at the same time construction is underway for a planned trolley line to serve the city's Innovation District.[18] While healthy skepticism exists concerning the public sector's role in traditional real estate development, the openness and transparency surrounding these new arrangements stand in sharp contrast to what is normally a highly compartmentalized lending, planning, and public policy.

Regardless of the funding arrangement, we think it is clear that projects are getting more complex. There is no universally ideal mix of funds; it depends on the specific time and place and the particulars of each project. Any public revenue source should be balanced among administrative efficiency, equity, political acceptability and other factors. The level of private engagement would depend on market and business opportunities.

But in the end, traditionally public funded sectors like water and transportation are including more private interests while private sectors like energy and telecommunications are exhibiting public attributes. This tends to shift the notion of public-private partnerships away from individual transactions towards the nature and purpose of the infrastructure asset. In this way, the different sectors of infrastructure come together in an integrated manner as metropolitan areas implement and replicate tailored strategies that promote productive, inclusive and resilient economic growth.

Conclusion

In many respects, we believe America's ability to fully realize its competitive potential depends on making smart infrastructure choices. These choices should be responsive to game-changing economic, demographic, fiscal, and environmental realignments that will fundamentally alter the kind of infrastructure America needs for people, places, and businesses to thrive and prosper. At the same time, we should recognize the financial and political challenges ahead and the complexities inherent in today's infrastructure investments.

> **"We believe America's ability to fully realize its competitive potential depends on making smart infrastructure choices."**

At stake is our nation's economic future. We believe that a better understanding of the role of the public and private sectors, as well as the partnerships between them, will serve to provide Americans with the reliable and modern infrastructure they need to build greater economic opportunity and create more and better jobs. As a result, metropolitan areas would be better connected to global and domestic marketplaces, and better supported by improved water, telecommunications, and public infrastructure. A greater variety of energy sources would be available to households and businesses, and all sectors will be made more resilient to natural and economic shocks. But this will only happen if new solutions for the delivery, design, and financing of infrastructure become the norm rather than the exception. It is time for a new path forward for infrastructure in America.

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Acknowledgments

The authors wish to thank Patrick Sabol, Adie Tomer, and Joseph Kane from the Brookings Institution for their contributions to this white paper.

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