

Deloitte.



**An innovative approach
to public capital projects**
Changing the view, the conversation,
and the infrastructure



It will not come as news to state and city officials that federal government spending on the nation's infrastructure has plummeted. It is now at its lowest point in 70 years. In the second quarter of 2018, investment spending by the federal government fell to 1.4 percent of GDP for the first time since the 1940s, down from about 5 percent in the 1950s and 1960s.¹

Since 1994, states have been investing more in infrastructure than Washington, DC, has. During that 25-year period, new technologies have transformed entire industries, along with the daily lives of most Americans. Yet these technologies—artificial intelligence, machine learning, data analytics, the Internet of Things (IoT), sensors, and mobile communications, among others—have only begun to transform the ways in which states and cities invest in projects, and the infrastructure itself, by enabling smart infrastructure.

Meanwhile, the needs and expectations of citizens and businesses have escalated, along with the need for smart infrastructure capable of responding to those needs and expectations. Government must therefore think and plan in ways that generate short-, medium-, and long-term strategies for prioritizing and meeting these demands and implement new approaches to building infrastructure.






Given the trends and challenges that states and cities now face, the need for updated approaches to capital investment has become as urgent as the need for updated infrastructure. In addressing these needs, government can seize opportunities to enhance the lives of citizens, attract new businesses and residents, transform the built environment, and preserve the natural environment—all while lowering costs of constructing and maintaining infrastructure.

1. *It's Never Infrastructure Week*, Justin Fox, Bloomberg Opinion, 9/6/18, <https://www.bloomberg.com/opinion/articles/2018-09-06/government-spending-hits-a-striking-new-low>.

Trends and challenges: Moving fast and multiplying

The sums, risks, and stakes involved in public capital projects warrant a thoughtful and fully rationalized selection process. But, as often as not, many projects are driven by political concerns, limited interests, and expediency. While such approaches could work in less disruptive, more consistently prosperous times, today's trends and challenges warrant a new view and new conversations.

Those trends and challenges include:

-  **Public sensitivity** to taxation, particularly highly visible real estate, income, and sales taxes
-  **Frequent interruption** of infrastructure projects due to funding and financing issues
-  **Intense geographical competition** for new business and workers that can boost economic vitality and the tax base
-  **Increasing strain** on existing infrastructure and difficult tradeoffs among new projects and maintenance needs
-  **Public skepticism** over the ability of governments to deliver on projects



New opportunities to generate revenue streams, obtain funding and financing, and get infrastructure built



New ways of enhancing the attractiveness of the state or city through better service and greater convenience, and through ecologically sound features, such as wildlife crossings and bicycle-friendly roadways

Changing the view on how infrastructure is approached requires new strategies. Another important element is leveraging technology as part of your strategy, during project management, and as part of ongoing return on investment analysis. Technology can be a game-changer in public investment, as it has been in the private sector—particularly in much of the rest of the world.

By many measures, the United States falls short of the rest of the developed world and consistently receives a low grade on the American Society of Civil Engineers' Report Card for America's Infrastructure.² While the United States may be behind the rest of the developed world in infrastructure, many locales are seeing success by rethinking the way America builds.



Cases in point

Many states have started to update their approaches. As examples:

Michigan has enhanced its leaders' understanding of the state's infrastructure practices through a rigorous comparative assessment against those of other states. The assessment covered transportation, water, energy, and communication infrastructure, and practices related to project management, coordination, review and approval, procurement, funding, and financing. This has positioned the state for significant improvements.

Virginia uses a portfolio-based process to score transportation infrastructure projects. Officials have replaced politically driven approaches with transparent, data-driven decision-making. Criteria include safety, congestion, accessibility, land use, economic development, and environmental concerns. The criteria and scoring results are available to the public online.

2. *Measuring up US infrastructure against other countries*, Hiba Baroud, The Conversation, 2/13/18, <http://theconversation.com/measuring-up-us-infrastructure-against-other-countries-78164>.

Think differently: Transforming infrastructure— and infrastructure investment

Many state and city governments have not updated their approaches to capital projects in ways that address emerging trends and challenges. Doing so entails developing strategies to identify, prioritize, fund, finance, execute, and oversee projects—and investing in smart infrastructure.

Deloitte collaborates with government to rethink infrastructure strategies and execution from start to finish, and ongoing analysis of impact. States and cities need a new approach to the project life cycle, from selection to delivery. Broadly, such an approach requires three steps:

1 Create a portfolio view of projects:

To develop and support a long-term strategic vision, decision-makers must identify all potential projects and develop the business case for each one, and assessments of project risks, benefits, and income streams. Then, using comparative analytics, decision-makers can evaluate tradeoffs and resource allocations and prioritize projects transparently for the public. On this foundation, Deloitte can help organizations build a narrative that clarifies and prioritizes decisions and defines each project's role in realizing the larger vision for the state or city.

2 Identify funding and financing sources:

Facing limited federal assistance and heightened financial pressures, governments are looking to private equity and global investment funds and to innovative financing through design/build contracts and public/private partnerships.

Deloitte can help clarify the business case and income streams for each project as part of the overall strategy, while providing guidance on how to communicate to officials and educate the public about projects and the need for any new taxes, fees, or tolls, and overall improvement to the mobility and quality of life.

3 Clear a path for project delivery:

Deloitte can help governments identify the resources needed to chart and navigate a path from start to finish. This strategic vision can help increase public confidence in their ability to deliver as promised and within budget. These resources include innovative systems and controls, procurement practices, and construction management methods. These resources, together with a portfolio view of projects supported by clear business cases and viable funding and financing, can transform a state's or city's infrastructure.

Technology can be a game-changer. Technology can enhance infrastructure throughout the project's life cycle. For example, smart infrastructure has eliminated the need for tollbooths and coin-operated parking meters in many locales. Water companies and power generators use data analytics and visualization tools to inform consumers' usage and enhance transparency in pricing. Sensors embedded into structures signal the need for preventive maintenance. Smart streetlights save energy while readily responding to citizens' needs. In public transit, smart phones enable ticketing and updates on schedules and delays. And smart infrastructure is only in its infancy.



Smart infrastructure as part of your strategy

Smart infrastructure refers to combining physical infrastructure with digital infrastructure. For example, the implementation of devices containing sensors that interact with infrastructure (power, water, transportation, buildings, etc.) enabling faster and cheaper management of physical assets. These sensors can collect data in real-time and communicate with applications to generate analytics. The data can be analyzed by infrastructure managers and used to make fact-based decisions about the physical state of their assets. Organizations can share actionable information with consumers and third parties to better enable decision making. Smart infrastructure interactions can also help reduce the consumption of scarce resources. Understanding how to maximize the intersection of physical and digital should be a critical part of your overall infrastructure strategy.

The intersection of technology



Data gathering and analytics can generate a portfolio view of projects and the business case for each. Quantitative and qualitative analysis of public needs and economic rationales can help secure funding and financing. Construction analytics, drone observation, data-collecting wearables, and other technologies assist in project monitoring, risk management, and oversight.



Smart infrastructure can make a state or city more competitive in the battle for talent. Citizens' expectations of the public sector escalate as the quality of private-sector service delivery increases. Deloitte looks at how smart infrastructure can enhance mobility, economic development, and the ecological system. Smart infrastructure can deliver in ways that impact the region holistically—often at limited cost to the government.



How it works: Smart parking

Smart parking presents a simple example of smart infrastructure. Drivers searching for parking spaces generate congestion and pollution while wasting time and feeling frustration. With a smart parking system, they can—via their mobile devices—identify a nearby space, reserve it, and pay for it. If there's no nearby space available for the next X minutes, they can seek one further away, and perhaps get a discount for using that space.

To implement smart parking, a city needs private-sector partners to provide the hardware, software, and payment platform, and the expertise to manage development,

installation, and controls. The challenges entail identifying the benefits, partners, and optimal methods of sharing the revenue stream. These partners and solutions exist, with San Francisco—among other cities—having deployed such systems to good advantage.

Smart parking is just one approach to leveraging technology, revenue streams, and private-sector resources to deliver benefits to citizens at barely noticeable cost increases. The same benefits and mechanisms can apply to water, power, and other public goods.

The Deloitte difference: Experience, insight, and execution

In serving the public sector for close to 50 years, Deloitte has worked with the federal government and 49 of 50 states on transformation initiatives. Deloitte, thus, recognizes the challenges that states and cities face, and can provide insights into people, processes, and technologies to collaborate with you on innovative ways of thinking.

Deloitte has assisted public-sector clients in all phases of the project-management life cycle, not only in North America, but also overseas, where many locales have advanced well beyond the sophistication of their US counterparts in deploying smart infrastructure.

Specifically, Deloitte can work with government and public entities to:



Craft and implement

prioritization frameworks for diverse infrastructure and capital project portfolios



Create business cases

and cost/benefit analyses for multiple projects, demonstrating financial and nonfinancial impacts



Identify and develop

innovative procurement methods and collaborations



Implement

leading practices in construction planning, management, and oversight to deliver better, faster, and less costly outcomes



Apply

sophisticated asset management, including predictive analytics, to drive operational efficiencies and improvements



Identify revenue streams

to support public projects and mutually beneficial revenue-sharing and service level agreements

Deloitte can help you change the conversation with decision-makers and the public to develop and communicate a cohesive vision, justify your approaches and priorities, and define value to stakeholders. By sharpening their view into the array of projects and their options, decision makers can enhance transparency around the decision-making process, to their benefit and that of the public.



Start the conversation

Traditional thinking, approaches, and activities can no longer address the infrastructure challenges that states and cities now face. The stakes are too high, time is too short, risks are too numerous, and resources are too limited—while at the same time, the opportunities and benefits are too great to ignore.

The need for public investment is strong, as are the pressures on state and city governments to find new revenue sources. Nonetheless, decision-makers must chart a path forward. To learn how you can begin to address these challenges and seize the opportunities, contact a Deloitte professional today.

Avi Schwartz

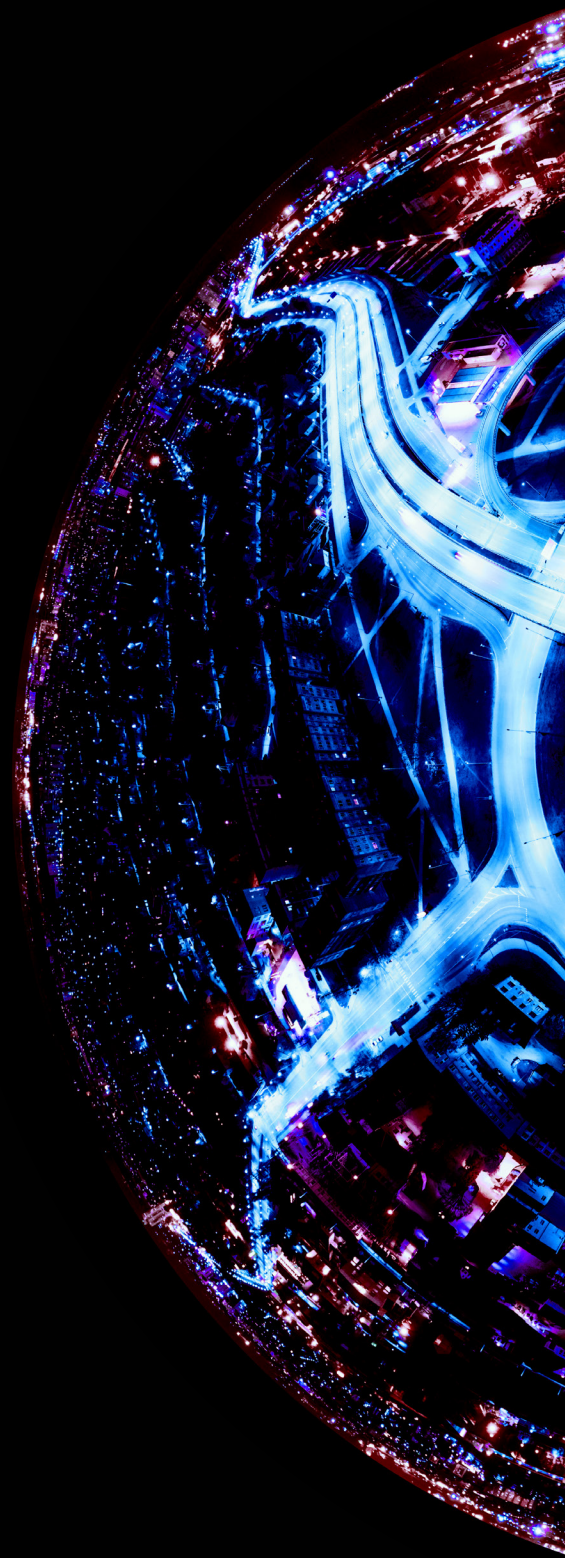
Principal,
Risk & Financial Advisory
Deloitte Transactions
and Business Analytics LLP
(646) 505-9106
avschwartz@deloitte.com

Mark Blumkin

Managing Director,
Risk & Financial Advisory
Deloitte Transactions
and Business Analytics LLP
(201) 264-6234
mblumkin@deloitte.com

Rahul Gupta

Managing Director,
Risk & Financial Advisory
Deloitte Transactions
and Business Analytics LLP
(571) 814-6433
rahulgupta56@deloitte.com





This publication contains general information only and Deloitte is not, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your business. Before making any decision or taking any action that may affect your business, you should consult a qualified professional advisor.

Deloitte shall not be responsible for any loss sustained by any person who relies on this publication.

About Deloitte

As used in this document, "Deloitte" means Deloitte Transactions and Business Analytics LLP, a subsidiary of Deloitte LLP. Please see www.deloitte.com/us/ about for a detailed description of our legal structure. Certain services may not be available to attest clients under the rules and regulations of public accounting.