

# Deloitte.



## **Investing in infrastructure**

Leading practices in planning,  
funding, and financing



# Executive summary

Infrastructure is clearly in the spotlight in the United States today. From the campaign trail to town hall meetings, concerns about the nation's aging infrastructure and the lack of investment in new and existing assets are being raised.

Infrastructure sustains American commerce and trade, bolsters the country's economy, and makes us more competitive globally and more secure domestically. But infrastructure assets are costly long-term investments.

Many state and local governments that are responsible for delivering infrastructure assets are facing tight budgets and finding it a challenge to deliver all the infrastructure they would like to. Bridging this gap is a complex interdisciplinary challenge that requires creativity and innovation in the planning, funding, financing, construction, and operations of infrastructure assets.

Fortunately, the tools required to address the gap are evolving and increasingly available to the US public sector. Public sponsors today have a choice to pursue traditional public sector procurement or innovative procurement approaches, utilizing the private sector's capital and efficiencies. Financing is available in multiple

markets, including municipal bonds, project finance loans, dedicated federal credit programs, and private equity investments. These options help public sponsors align the development of capital projects to the timing and requirements of their budgets and the needs of their constituents.

Furthermore, public sector decision makers are increasingly adopting leading practices that enable infrastructure planning and execution flexibility. Improved communication with multiple stakeholders (including voters) on the life-cycle costs and benefits of specific programs and projects can lead to the approval of new projects and even new funding streams.

Modern tools can assist in more robust and goal-oriented investment analysis and prioritization/optimization processes that increase confidence that the "right" projects are being built at the right time. Digital innovations in capital project management and oversight, as well as grants management can increase the efficiency and speed of project delivery. And active physical infrastructure asset management can improve life-cycle costs and planning of an infrastructure portfolio.

These developments can increase the attractiveness of the US infrastructure market, which has already caught the eyes of an increasing number of global institutional capital investors seeking the stable, long-term cash flows of infrastructure assets. Private infrastructure investors are currently sitting on billions of dollars earmarked for sound infrastructure projects with risk profiles acceptable to them. Public sponsors who are able to make the case for their projects will be well-positioned to do more with less by bringing this private capital and private sector innovation and efficiency to play.

The time is ripe for the public sector to improve and integrate its approach on planning, procuring, and delivering infrastructure in the United States. The public sponsors who seize the current opportunity and fully utilize the available tools for infrastructure development will be the ones who rapidly develop commerce and trade in their regions. This will ultimately enable their economies to compete nationally and internationally, making them more attractive for businesses and individuals alike.

# The case for change: Understanding the current state of infrastructure in the United States

In developed economies like the United States, public infrastructure is typically one of the few forms of government spending that gets support across the political landscape. Roads, water treatment systems, and power lines all contribute to a smoothly functioning economy. They can also stimulate economic growth, increase safety, and reduce energy demand.

But the opposite holds true as well. Poor road conditions can increase driving time, waste man-hours as people idle in traffic, and have a major impact on transportation and shipping costs. And bad water and unreliable energy can reduce public health and productivity.<sup>1</sup>

## High spending and a crumbling infrastructure

Every year, the US spends over \$400 billion on public infrastructure.<sup>2</sup> This figure appears high, but annual spending routinely falls short of major maintenance requirements and results in a deterioration of the country's infrastructure assets.

In 2017, the American Society of Civil Engineers gave the US infrastructure a grade of D+ and estimated that the country needs an additional \$2.1 trillion in investments between 2016 and 2025<sup>3</sup> to meet its needs and reduce negative impacts on the economy.

In its 2017 Infrastructure Report Card, the American Society of Civil Engineers (ASCE) estimated that inadequate infrastructure spending could cost the nation almost \$4 trillion in GDP, resulting in a loss of 2.5 million jobs through 2025. While measuring the gross infrastructure investment needs in the US is a challenge, it's clear that chronic under-investment has created inefficiencies

in large segments of the economy.<sup>4</sup> According to the ASCE, the pressing needs for major infrastructure sectors are<sup>5</sup>:

### Transit



Although demand for transit solutions is increasing nationwide, US public transit systems face a \$90 billion rehabilitation backlog created by a lack of adequate funding and maintenance. The push to develop and upgrade public transit systems has been strong but uneven, and millions of Americans still don't have proper access to public transit solutions.

### Water

A large portion of the country's water infrastructure is reaching the end of its useful life. According to the American Water Works Association, maintaining and expanding the service of existing assets would require \$1 trillion.



### Airports

Congestion at airports is a growing concern, and 80 percent of major US airports may soon experience Thanksgiving-level congestion at least one day a week. The federal cap on airport charges, however, reduces the ability of airport authorities to address the growing congestion, resulting in a \$42 billion funding gap over 2016-2025.

### Roads/highways

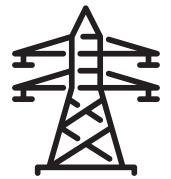
More than 40 percent of US urban interstates are congested. In 2014,



delays imposed approximately \$160 billion in costs, primarily due to fuel costs and lost man-hours. In addition, years of deferred maintenance have resulted in massive pavement degradation, with 20 percent of highway pavements now deemed in poor condition.

### Electricity

Most US electric transmission and distribution lines are reaching the end of their useful lives and are currently operating at maximum capacity. In 2015, there were 3,581 outages averaging 49 minutes each, and the age of these assets is raising concerns about their reliability and cost of service. It's unclear how the grid will be able to accommodate future growth in its present condition and adapt to the increasing decentralization of power generation, including diversified renewable generation capacity.



### Waterways and ports

US ports are an essential enabler of the economy as gateways in and out of the country. But they're struggling in two areas: accommodating increasing vessel sizes in a post-Panamax world, and efficiently connecting cargoes with land-based logistic networks. Port authorities and their private sector partners are planning to spend \$155 billion between 2016 and 2020 on expansion, modernization, and repair of port assets.



The need for an infrastructure push in the US is well-documented and supported by politicians on both sides of the aisle. Few issues benefit from such a public consensus, yet infrastructure still lags behind.

**The elephant in the room: funding**

The core challenge to infrastructure development in the US has been—and continues to be—the availability and suitability of funding mechanisms.

“We don’t need to find a solution—we need to fund one...”

—Joe Boardman, Amtrak president and chief executive<sup>6</sup>

The debate on infrastructure procurement generally focuses on developing innovative ways to finance projects. But the more pressing concern is often the need to identify appropriate funding sources that will pay for their creation and maintenance over their useful life. The difference between the two is subtle but important. Frequently, these two terms are used interchangeably, further muddling the discussion.

**Funding versus financing**

**Funding:** The revenue or public spending that pays for the development and ongoing maintenance of an asset or service. It’s the money that doesn’t have to be “paid back.”

**Financing:** The structure and related instruments used to leverage or securitize future funding sources. It’s the money that’s borrowed to build the project, and it’s paid back from the funding sources.

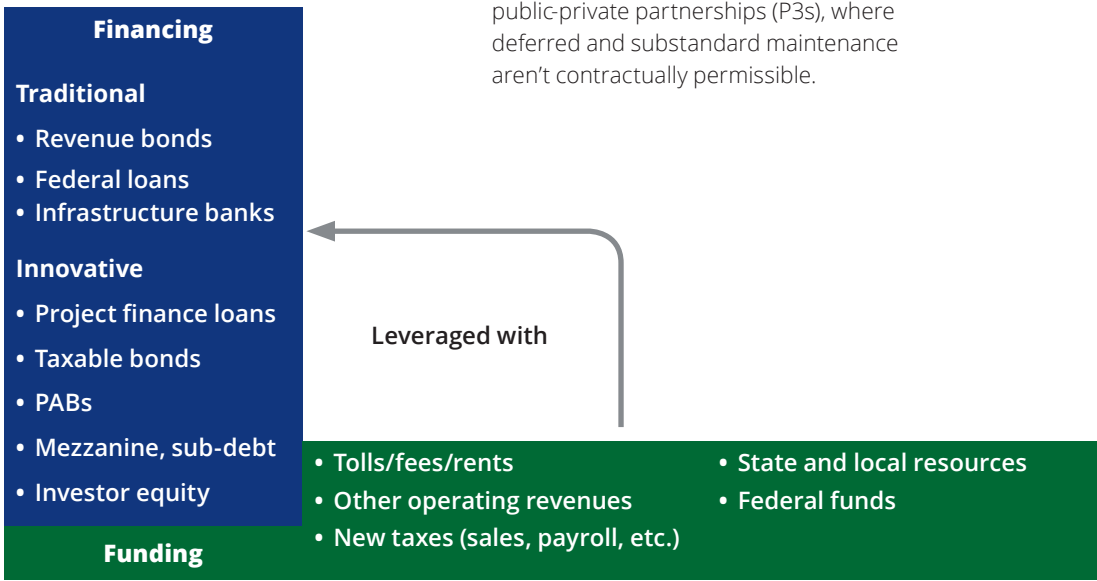
Infrastructure projects rely on a dedicated source of revenues (funding) to pay for their upfront and ongoing costs. Funding sources can be leveraged and securitized to cover development and construction costs. But projects also need revenues to pay for operations and maintenance and to repay the cost of financing instruments used to deliver the project. This need is particularly pronounced for innovative procurement and financing solutions like public-private partnerships (P3s), where deferred and substandard maintenance aren’t contractually permissible.

Funding sources are often user fees (usage-based or access charge) or dedicated taxes (e.g., sales tax). In the case of taxes, government entities must educate their constituents on how the proposed ways to address critical infrastructure gaps will demand additional tax revenues.

Keeping user fees and taxes artificially low and diverting funding away from regularly scheduled operations and maintenance to politically visible “greenfield” projects are some of the contributing factors to the current situation of deferred maintenance and the upkeep of declining infrastructure.

As all levels of US government actively contribute to the development of domestic infrastructure, ensuring that funding streams are both adequate and resilient for the proposed asset development and ongoing operations is pivotal to address the massive spending gap.

**\$ Sources:**



**\$ Uses:**

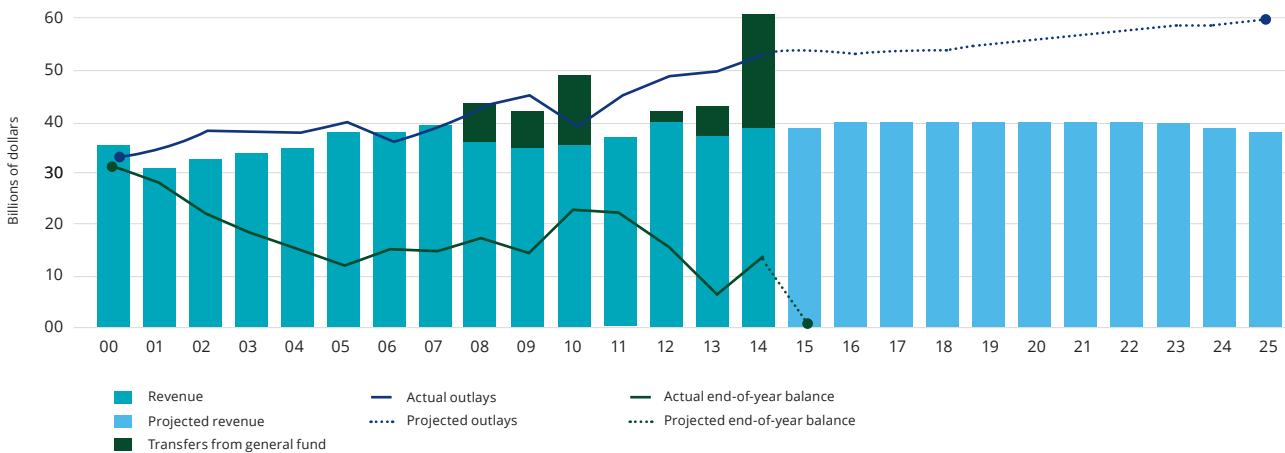


### The Highway Trust Fund: An example of decreasing funding

The Highway Trust Fund was established in 1956 to fund the costs associated with the US Interstate Highway System. The fund collects and disburses money for federal highway and transit projects across the country. Its impact is crucial for the ongoing development of US transportation infrastructure, as the federal government accounts for approximately 25 percent of annual expenditures in highways and transit.<sup>7</sup>

#### Federal Highway Trust Fund faces growing shortfalls

Actual and projected revenue outlays, 2000-2025



Source: The Pew Charitable Trusts, Funding Challenges in Highway and Transit, <http://www.pewtrusts.org/en/research-and-analysis/analysis/2015/02/24/funding-challenges-in-highway-and-transit-a-federal-state-local-analysis>

In spite of its importance to US transportation projects, spending has outpaced revenues and is expected to continue to do so if current taxation levels aren't increased. The federal tax on gasoline has been set at 18.4 cents per gallon since 1993, requiring the US Congress to regularly supplement from the general fund to maintain a positive balance.<sup>8</sup>



# The opportunity: Addressing US infrastructure needs

## Increased availability of private capital

The amount of private equity allocated for infrastructure but not yet deployed is at unprecedentedly high levels. In 2015, a reported \$108 billion of dry powder sat in infrastructure-focused private equity funds. In 2016, that figure grew to \$137 billion.<sup>9</sup> Estimates indicate that private equity groups intend to play a significant role in North American infrastructure investment, with firms like Blackstone aiming to target as much as \$40 billion in infrastructure deals.<sup>10</sup>

The record level of existing, non-deployed investment capital aimed at US infrastructure projects creates a unique opportunity for sponsors of public infrastructure. Following the money, it's clear that there's real appetite in the market for taking on risk, but only in exchange for long-term, predictable returns. Recent competition for infrastructure assets has pushed up prices, and 51 percent of fund managers feel that attractive investment opportunities were easier to find in 2015 than in 2016. Global deal activity declined from 914 transactions in 2014 to 661 in 2015; from \$444 billion to \$349 billion, respectively.<sup>11</sup> As the new administration works with state and local project sponsors who seek to make investment-grade projects available and bankable, those with dormant capital will seize the opportunity.<sup>12</sup>

## Putting private and public funds to use

Historically, infrastructure in the US has been financed by state and local authorities through municipal bond issuances,

with support from federal government grants or low interest loans. However, the financial crisis, ballooning pension and health care liabilities, and other legacy entitlements have left many state and local authorities with tight fiscal budgets. While the underinvestment in infrastructure isn't a recent trend, the funding crisis has contributed to stagnant or decreasing public spending during the recovery years.<sup>13</sup>

One potential path to increase public investment in US infrastructure and deliver projects better, cheaper, and faster is to combine private investments with innovative public financing strategies. The US market has been opening up to these strategies, but the growth rate has been uneven, largely due to the local political climate and the limited availability of creditworthy projects.

## Infrastructure financing

### A public and private partnership (P3)

Infrastructure-focused public-private partnerships have a decades-long track record of successful application in Western Europe, Canada, and Australia. But their adoption in the US has been slow. This is, in part, due to the efficiency and stability of private capital in municipal bond markets, the fact that a number of typical P3 sectors—like health care, rail, and energy—have long been privatized in the US, and the existence of public sector procurement constraints at the state and federal levels. However, P3s are becoming an increasingly popular procurement strategy at a time when public spending is decreasing,

This is particularly true for large projects where private sector innovation, efficiency, and risk sharing can have significant economic benefits.

Recent public discourse about infrastructure investment has focused on alternative procurement strategies as a public policy priority. In this regard, alternative procurement strategies such as P3s give state and local governments the ability to optimize risk allocation well ahead of breaking ground. P3s offer the opportunity for developers, financiers, and politicians to negotiate the allocation of risks between the public and private sectors. The outcome of this discussion should drive the preferred procurement approach. This approach should, in turn, determine the financing mechanisms that decision makers will use to leverage available funding streams.

Private concessionaires and state and local authorities are learning to work together to leverage the private sector's access to multiple financing markets (equity funds, private placements, and Private Activity Bonds (PABs), among others). In addition, private investors are looking for ways to "put money to work" and adopting less aggressive financing structures with lower leverage and lower equity return expectations (high single-digits on brownfield projects).



P3s allow the awarding authority to choose the procurement method best suited to the needs of individual projects. The procurement method employed often depends on what risks are transferred because the risks to be borne by the private sector determine the extent of private sector involvement and the responsibility it's willing to take. Awarding authorities are able to manage their portfolio of projects by electing to share the risks and responsibilities of design, construction, financing, and operations in a manner that optimizes their portfolio of assets.

**What a P3 is:**

- A project procurement strategy
- A financing mechanism

**What a P3 is not:**

- A funding mechanism

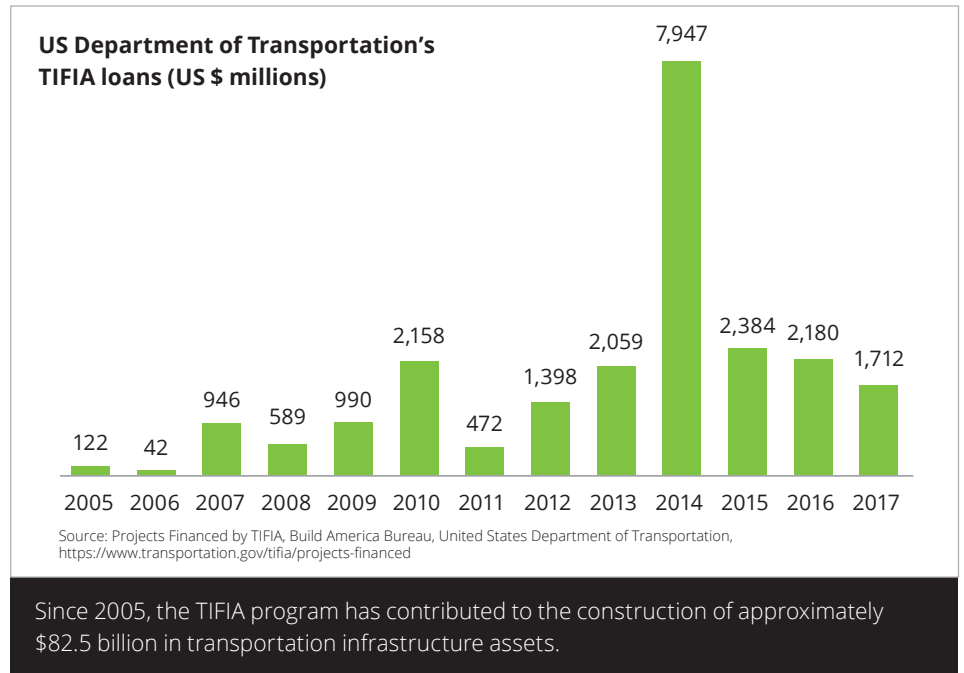
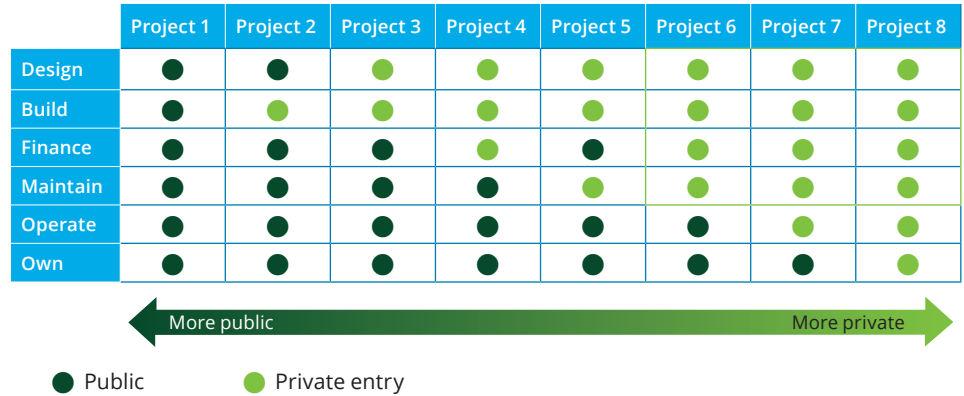
**Federal innovative financing support**

Federal financing is likely to support US infrastructure projects. In addition to the tax exemption on municipal bonds and PABs, the federal government has created several credit programs designed to fill market gaps and provide flexible low-cost financing solutions. Notable among these are the US Department of Transportation's Transportation Infrastructure Finance and Innovation Act (TIFIA) and Railroad Rehabilitation and Financing (RRIF) programs, EPA's Water Infrastructure Finance and Innovation Authority (WIFIA) loan program, and the Department of Energy's Loan Guarantee and Transmission Infrastructure programs.

Other proposals for alternative federal financing strategies include the creation of national or state infrastructure banks and the development of new types of bonds to encourage private participation in project financing. Proposed new types of bonds include Qualified Public Infrastructure Bonds (QPIBs), America Fast Forward (AFF) bonds, and Green Bonds for the water sector. These bonds would fill the gap between traditional municipal financing and private activity bonds, while using the lessons learned from the Build America Bonds introduced in 2009.<sup>14</sup>

Regardless of the final solutions selected by the federal government, successful implementation requires political will and bipartisan buy-in.

**Range of project delivery/procurement models for awarding authorities**





## The political stage

The size of the infrastructure challenge in the US is likely to require a strong demonstration of political leadership to facilitate the deployment of public and private funds on much-needed projects. To that end, the current administration is seeking to create a climate that will make it easier for state and local governments to advance infrastructure projects. Proposed initiatives aim to:

- Unlock federal funds for projects sponsored by both public and private entities
- Expand federally directed credit facilities to increase access to low-cost capital for a wide variety of infrastructure projects
- Further the restructuring process for targeted federal infrastructure assets to pass into the hands of the private sector
- Rethink regulations with respect to approving, developing, and operating infrastructure assets

The Trump administration has expressed its intent to include \$200 billion of federal spending toward enacting its infrastructure plan. This plan would offer incentives to states and local authorities to take the reins of their infrastructure project prioritization and delivery and to determine the optimal risk sharing with appropriate private entities. Altogether, the new policies aim to de-risk infrastructure investment for private and public sector participants by securing new funding and financing streams and by reducing obstacles to moving projects through the development pipeline. The intent of the administration's plan is to stimulate a total capital inflow of \$1 trillion into American infrastructure.

A combination of stimulus-type federal financing and private investments are expected to help spur further investments in infrastructure. For example, one proposal being pursued is lifting the cap of PABs. The PAB program allows for issuance of tax-exempt bonds on behalf of private entities that are constructing and financing



Source: Fact Sheet: 2018 Budget: Infrastructure Initiative, [https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/budget/fy2018/fact\\_sheets/2018%20Budget%20Fact%20Sheet%20Infrastructure%20Initiative.pdf](https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/budget/fy2018/fact_sheets/2018%20Budget%20Fact%20Sheet%20Infrastructure%20Initiative.pdf).

public infrastructure. Removing the current cap of \$15 billion will allow the Department of Transportation to have wider latitude in selecting qualified projects to use this cost-saving tool in the delivery of needed infrastructure assets.

Another proposal the administration is considering is the establishment of a federal capital revolving fund for federal infrastructure, which could address the imbalance between upfront investments and long-term operating expenses in the annual appropriations process. Capital projects with large upfront costs but lower operating and maintenance costs are often seen as less politically favorable than those with lower upfront costs but higher upkeep costs. The fund will be designed to help finance some of these projects and get paid on the back end by annual appropriations, thus more appropriately reflecting the utilization of such projects by relevant agencies. It would also prioritize the selection of projects that have both a high return on investment and include plans for future cost avoidance.

However, the optimal capital environment for long-term prosperity still depends on the leadership of state and local officials. It's at these levels of government that most projects are scoped, prioritized, developed, and built.<sup>15</sup>

## State and local governments step up to fund infrastructure

The current political reality enables and expects state and local governments to lead the charge in managing the future of their infrastructure. Project prioritization, procurement, delivery, and the day-to-day oversight of existing infrastructure assets tends to be the responsibility of state- and local-level decision makers. Given states' mandates to move projects forward, another lever decision makers have is the use of ballot measures to fund specific infrastructure programs and projects. When the funding needs of projects link directly to specific value creation, voters are often willing to raise levies on themselves to fund projects.

In the most recent election cycle, more than 300 initiatives made it to ballots that asked voters to increase taxes for transportation improvements, totaling potentially \$250 billion in transit investments alone.<sup>16,17</sup> Of these measures, significant approvals included:

- The Sound Transit expansion in the greater Seattle area, where voters approved a \$54 billion bill to construct 62 miles of light rail, increase rapid bus service, acquire more trains, and develop transit infrastructure.<sup>18</sup>

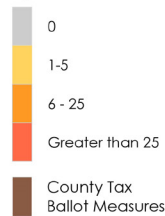
- The Metropolitan Atlanta Rapid Transit Authority (MARTA) modernization and expansion in the greater Atlanta area, which implemented a 0.4 percent sales tax over five years to generate \$300 million and a 0.5 percent sales tax over 40 years to generate \$2.5 billion. The first tax is a special purpose local option sales tax to pay for the right of way to complete the 22-mile Atlanta BeltLine, complete 15 streets projects, implement a second phase of Atlanta's Bike Share program, improve pedestrian sidewalks, and optimize traffic signaling. The second tax is to fund MARTA's transit expansion, specifically improving the high-capacity rail system, constructing new infill rail stations, and procuring a larger bus fleet. The measures, combined with current infrastructure programs, will eventually bring 94 percent of Atlanta's residents within half a mile of a transportation node.<sup>19</sup>

- Measure M in Los Angeles County, which passed with 71 percent approval,<sup>20</sup> made permanent an existing sales tax hike and imposed a new 0.5 percent retail transactions and use tax within the county. All funds raised from the tax, estimated at \$860 million per year,<sup>21</sup> are designated for use in the ordinance's expenditure plan. These expenditures include optimizing freeway traffic flow; accelerating rail construction and building rail lines; enhancing local regional and express bus service, bike, and pedestrian connections; improving transportation system connectivity; and addressing transit and highway safety; among others.

Less populous areas have also followed this trend, moving forward with targeted ballot measures. In 2016, for example, Grand Haven, Michigan, approved a measure to invest in bicycle paths.<sup>22</sup> The funding for that came from a property tax increase of 0.45 mill for 20 years and will generate about \$300,000 per year for a \$4.4 million project.<sup>23</sup>

### Total Transportation Tax Measures on November 2016 Ballot

#### By State



Gas Tax	5
General Tax	1
Income Tax	7
Property Tax	243
Sales Tax	62
Other Tax (Depletion fee)	1

SOURCE: Eno Center for Transportation  
ANALYSIS: UCLA Institute of Transportation Studies

Source: Total Transportation Tax Measures on November 2016 Ballot By State, [http://www.its.ucla.edu/wp-content/uploads/sites/6/2016/11/Brozen\\_UCLA\\_Tax\\_Measures.jpg](http://www.its.ucla.edu/wp-content/uploads/sites/6/2016/11/Brozen_UCLA_Tax_Measures.jpg).

### How state and local governments can seize the opportunity

The anticipated increase in public and private interest in infrastructure means that state and local governments should consider positioning themselves to take advantage of the additional funding streams, financing sources, or other changes that may impact the development needs of their infrastructure. In light of the massive infrastructure demands across the country, changes in the funding and financing landscape could represent a significant opportunity for state and local governments to address urgent gaps. However, these same governments may be competing against one another to secure funding and financing.

Under a possibly competitive environment, state and local governments could consider working to capture as much federal support as possible by:

- **Developing a business case approach.**

By adopting leading practices used by the private sector and evaluating the overall benefits and costs of each project, state and local authorities may be able to deliver projects more efficiently, reduce later support from the federal government, and have the information necessary to make a compelling case to all stakeholders that the project makes financial sense.

- **Entering into a dialogue with the federal government.** State and local

governments are driving infrastructure investments in the US. By interacting with Congress and the administration regularly, they have an opportunity to provide valuable inputs to national infrastructure priorities.

- **Developing their projects to be shovel-ready.** Competition among projects could happen, as each authority tries to secure funding for their projects. By being a step ahead and developing projects as far as possible, state and local governments may be able to better position themselves at the head of the pack and increase the likelihood of funding.

- **Proposing projects that fit the infrastructure bill eligibility criteria.**

The administration anticipates total public and private investments of \$1 trillion, but the US needs even more investment in infrastructure. State and local governments should consider pushing forward projects that align with the criteria included in the bill. Thus, they may be able to maximize funding for eligible projects and free other funds to develop and build the projects that don't fit and wouldn't have been funded.

State and local governments can benefit significantly from the expected increase in infrastructure funding. But in order to maximize federal support, they should take proactive steps that may ultimately increase their ability to receive funds.

# The call to action

## All hands on deck

All levels of government are taking steps toward the implementation of a revival plan for US infrastructure. The successful implementation of a large-scale infrastructure rehabilitation plan in the US will require an increase in coordination among all stakeholders, including federal, state, and local governments and private investors. The adoption of a “partnership” approach to solving infrastructure problems could help focus efforts on communicating the benefits and costs of each project within the context of an overarching long-term plan. A few proposed steps are listed here and expanded in the sections below. These action items could help governments at all levels of the US optimize their infrastructure investment approaches:

- Be ready. Identify and prioritize projects and identify the potential for private sector involvement.
- Adopt a life-cycle view that evaluates projects over their entire useful life.

Specific actions that can be taken to execute on these two imperatives include:

- Coordinate infrastructure planning to maximize social value
- Standardize infrastructure investment reviews and approvals to facilitate decision making
- Identify infrastructure funding mechanisms for each project
- Formalize infrastructure grants management to improve funding
- Explore innovative financing and procurement mechanisms to deliver “better, faster, cheaper”
- Leverage digital technology to improve capital projects delivery
- Manage infrastructure assets over their life cycle to optimize value

## Be ready

The traditional approach to infrastructure development in the US offers the advantage of letting constituents determine which projects they are willing to pay for at the local level. However, decentralized and diffuse decision responsibilities mean that projects of regional or national character may be put on the “back burner” in favor of localized spending that’s unlikely to benefit a broader set of stakeholders.

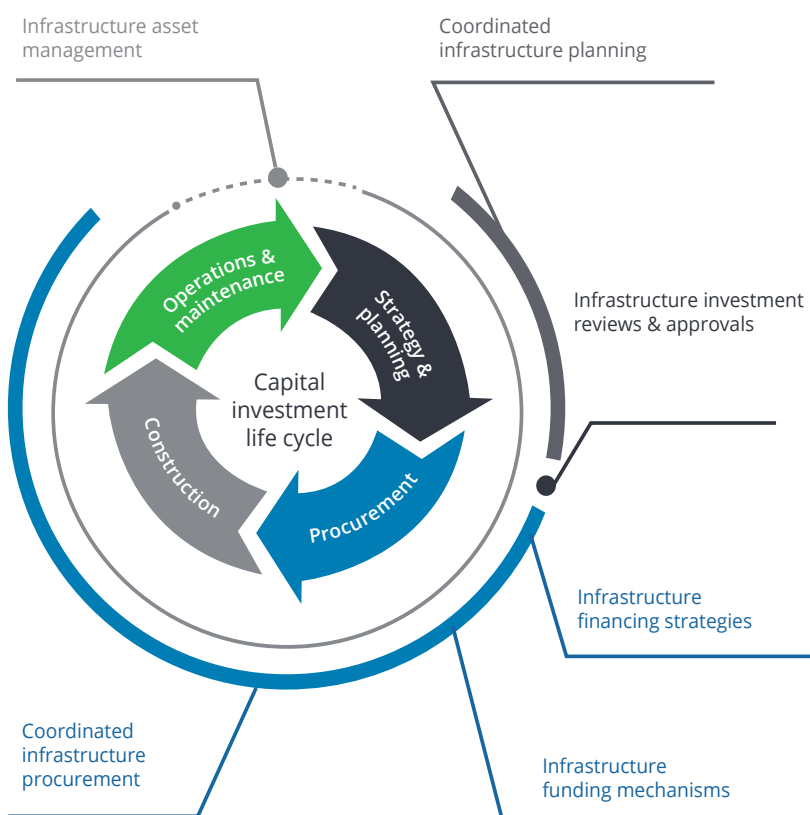
Given the potential historic size of the infrastructure spending plans proposed by US leaders, the ability of specific projects to capitalize on any new federal program is critical. As part of a partnership approach across all levels of government, state and local authorities could proactively shape their programs to facilitate any application for funding by taking two steps: first,

preparing a prioritized list of projects and execution plans; and second, identifying opportunities to engage the private sector in new projects and develop preliminary P3 plans.

## Adopt a life-cycle view

The costs of infrastructure assets are composed of upfront construction costs, and the costs associated with the operations and maintenance of these assets throughout their useful life. Life-cycle cost analysis not only allows for the comparison of different projects or project delivery mechanisms over time, but it also informs decision makers about the full expenses that will be required over the life of the asset.

## Infrastructure life-cycle approach



### Spotlight on the State of Michigan

The State of Michigan, like many states across the country, currently faces significant challenges as it develops its infrastructure. In 2015, Michigan Governor Rick Snyder signed into law a broad road and bridge funding package. However, many stakeholders acknowledge that a more holistic solution is required to address the state's infrastructure funding gap.

In response to high-profile infrastructure issues, Governor Snyder created the 21st Century Infrastructure Commission in March 2016 as a means of studying the state's infrastructure needs and identifying "strategic best practices to modernize" transportation, water and sewer, energy, and communications infrastructure in the state. This measure would help keep Michigan's infrastructure safe and efficient now and in the future. The Business Leaders for Michigan (BLM) launched a complementary initiative designed to jump-start infrastructure improvements. BLM engaged Deloitte to conduct an independent research study to identify leading practices other states and nations have used to address their infrastructure needs. Through this study, BLM was also able to provide recommendations for policy and business leaders.

The BLM study identified that Michigan would need to increase annual infrastructure spending by \$4 billion to align with the US average. As part of this study, a gap assessment was completed on Michigan's infrastructure planning, funding, and financing practices. The leading practice research completed in this study found that other state governments in the US—and governments around the world—are increasing their focus on the six key elements of the capital investment life cycle. The aim is to direct funds toward projects that have a high return on investment and that mitigate significant risks to the general public from aging infrastructure.

The results show Michigan to be at diverse levels of maturity across its different infrastructure platforms, when compared to leading practices. The study observes that Michigan has generally settled for "fair to good" levels of infrastructure planning, funding, and financing practices, while it should be striving for "better or best." The study supports the need for significant new funding to support long-term infrastructure solutions in the state.

A full copy of the BLM report is available at [www.businessleadersformichigan.com](http://www.businessleadersformichigan.com). Research and industry analysis for this project was conducted by Business Leaders for Michigan and Deloitte's Infrastructure & Capital Projects Group.



# Coordinate infrastructure planning to maximize social value

State and local governments are moving toward a more coordinated infrastructure planning approach in collaboration with key agencies and other stakeholders. This is allowing for the design of an integrated long-term infrastructure strategy and driving economic development from infrastructure investments.

As part of this approach, establishing stand-alone infrastructure authorities to coordinate these efforts and advise state and local governments on project priorities is becoming a trend. There's no standard way to set up an infrastructure authority—each one differs in terms of its roles and limits of responsibilities. The decisions depend on existing policies and department structures within the state.

Examples of recent successful infrastructure planning authority implementations include Infrastructure Victoria in Australia, Partnerships BC, and Infrastructure Ontario.

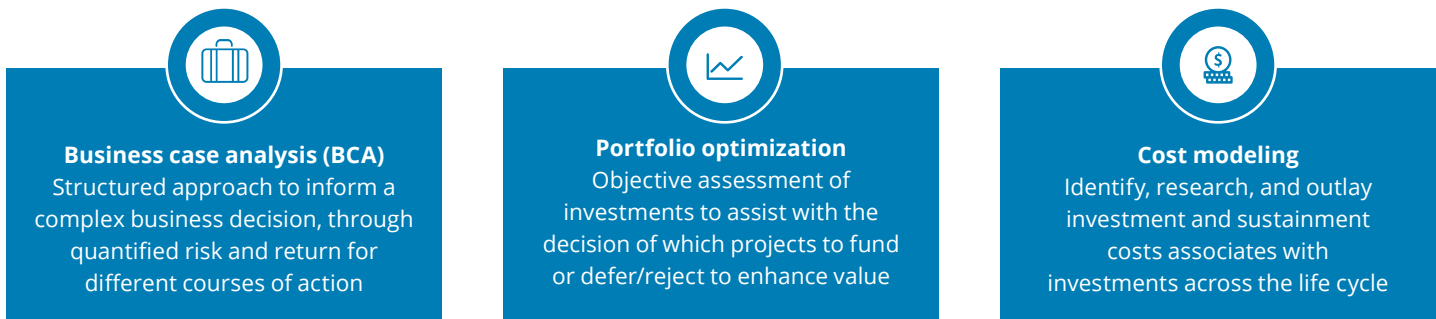
A coordinated infrastructure planning approach appears to be suited to the new budget-constricted environment that state and local authorities are facing. Given these constraints, while additional funding cash streams are being defined, governments will most likely need to prioritize and expedite the delivery of projects that address a

critical safety issue or an economic problem, such as lost man-hours in traffic.

The application of a reliable and repeatable infrastructure planning framework is likely to include outputs of a life-cycle cost analysis. Deloitte has developed and applied an infrastructure framework to help clients analyze their projects, identify the “champions” that would best fit their priorities, and deploy limited capital in the most efficient fashion possible.



Solutions should follow a standardized methodology and enable users to obtain **proven and repeatable** results. Initiatives should be tailored to the specific needs of the organization, allowing customization of the solution set to address specific needs.



# Standardize infrastructure investment reviews and approvals to facilitate decision making

State governments often face many factors that make it difficult to properly prioritize funding and risk. Whether it's because of competing regional needs, funding gaps, or inconsistent risk management, states without a consistent framework to allocate funds often aren't nimble enough to address unforeseen issues or plan for the long term.

## Leading practices

Governments that implement a decision framework for fund allocation to address

gaps and numerous other infrastructure risks are typically better equipped to react to the ever-changing politics around the reviews and approvals in capital spending. This framework can help relieve political pressure to reorganize priorities and provides the private sector with the stability to forecast infrastructure needs. One way governments can create a more efficient infrastructure implementation program is by publishing capital investment procedures and business case templates to be used

by project sponsors and stakeholders. The growing use of standardized tools and methodologies to assess and prioritize major infrastructure project proposals can also aid state governments in presenting the case to the federal government when federal funds are available.

To take this a step further, publishing the decision framework results as a list of infrastructure priorities allows the public to view their government more transparently.



# Identify infrastructure funding mechanisms for each project

As described earlier, infrastructure funding sources are dedicated cash flows that can be used to support the construction, operations, and maintenance of an infrastructure asset and the repayment of its financing. Financing is simply funding brought forward through debt and equity.

Infrastructure is typically funded via two main streams: revenues from infrastructure user fees and tax revenues (direct or indirect).

Taxes can be used directly or indirectly. An example of a direct use of taxation for infrastructure development is the allocation of a dedicated portion of a sales tax to a transit agency. An example of an indirect use of taxation is the support provided by a state authority to an infrastructure agency through appropriations from its general fund, which is funded by taxes and fees collected across the state.

User fees or dedicated tax proceeds don't have a clear advantage over one another, as both funding schemes have been successfully used to support infrastructure development. According to recent poll conducted in 2016 by HNTB, an engineering consulting company, Americans are more favorable to user fees to pay for transportation infrastructure.<sup>24</sup> In light of increased reliance on private sector and P3s, analysts<sup>25</sup> assert that user fees could offer several attractive features compared to taxation:

## User fees: Revenues collected based on specific use of infrastructure

- **Access:** Levied by utilities/operators that charge for "connecting" to the network or obtaining the "right" to use the infrastructure. Includes airport passenger facility charges, electricity capacity fees, water capacity charges.
- **Usage based:** Levied by utilities/operators based on how much of the infrastructure is used. Includes tolls, electricity usage fees, water consumption charges.

## Taxes: Revenues collected from general population

- **Sales taxes:** State-pledged sales or other tax streams from general taxation.
- **Gas tax:** A usage-based tax levied at federal and some state levels, often a flat rate per gallon purchased.
- **Vehicle miles traveled tax:** Charges for miles driven, which better aligns with costs imposed by users.
- **Water and sewage tax:** Levied on top of capacity and usage fees to provide an alternative funding source.



### Fairness and equity

Users pay for their share of the use of the asset without relying on other individuals subsidizing their usage.



### Feedback

Users vote with their wallet and are likely to use infrastructure that's most suited for their needs, increasing its profitability and spurring additional construction.



### Scarce resource allocation

User fees could help rebalance demand by making consumers prioritize their expenses and needs.



### Improved maintenance

User fee-funded infrastructure may be more likely to be kept in a state of good repair to maintain usage and revenue levels, particularly when performance standards are included in a contract.<sup>26</sup>



## Formalize infrastructure grants management to improve funding

Grants processes are significantly different from contracting and are governed by their own statutes and regulations. Important back-office activities are also required to support proper fiscal management of a grant. Budgeting for grants, developing processes to monitor grant spending, controlling and encumbering costs, and billing and recognizing value are critical steps in the grant management process.

All the regulations associated with grant funding can seem daunting to grantees. There are a number of considerations for state and local governments to effectively administer grants, including:

- **Be a good steward of funds:** Keep your financial house in order by analyzing financial systems, recording time spent on activities, and only using funds for intended purposes.
- **Be audit-ready:** Every entity receiving more than \$750k in funds will be audited and should be set up for success. Know the federal regulations and any funder-specific requirements.
- **Establish and continuously update policies:** You have to walk the walk to establish good standards and make them relevant to your own agency. Refine and update policies and procedures to keep pace.
- **Demonstrate leading practices:** Serve as a positive example and steward within the organization about how to stay in line with grant requirements. Model positive behavior to inspire others to do so, too.
- **Invest in the right systems:** Given the importance of accurately tracking data, it's critical to have the right technical infrastructure and project management approaches to facilitate and streamline reporting processes.
- **Educate and communicate:** Bring the full organization along so they're aware of requirements and policies, setting all stakeholders up for success.
- **Mind your p's and q's:** Be prepped for the intricacies of reporting by knowing requirements, tracking, and establishing systems that support reporting.
- **Establish a strong governance structure.** Having the right people and oversight in place can support effective grant management in the long run.





## Explore innovative financing and procurement mechanisms to deliver "better, faster, cheaper"

State and local entities have access to a large variety of financing sources—from the traditional municipal bond market to federal grant and credit programs—that they will most likely need to use extensively to finance the rehabilitation of US infrastructure. In addition to the deployment of innovative financing structures, state and local entities could need to make additional moves to fully benefit from these mechanisms. The first element to consider would be the development of legislation to allow P3s to be created for the type of infrastructure most needed locally.

A second element would be a federal effort to establish national leading practices with information shared between awarding authorities to build a country-wide knowledge base, as each state and local entity experiments with specific projects to determine the best procurement and financing solutions for their needs. While this approach may require time and may lead to some failures, it would allow state and local authorities the possibility to test the market, share experiences, and ultimately select the solutions that best answer their problems.

The last element that could be crucial for the successful deployment of P3s across the country is securing buy-in from constituents. P3s are often seen as private developers investing in projects to make healthy profits at the detriment of the community's needs. State and local authorities should strive to educate their constituencies on the benefits offered by P3s in terms of overall costs, acceleration of program construction, and protection of the public interest. As local infrastructure development ultimately relies on voters' approvals, this aspect of project procurement is a key component of long-term infrastructure funding and financing. For more detail on how to successfully partner, see Deloitte's report, "Partnering for Value".<sup>27</sup>



## Leverage digital technology to improve capital projects delivery



Going digital in capital project execution can achieve:

- Substantial increase in design speed
- Increased project delivery speed
- Lower risk profiles and costs
- Reduced asset maintenance costs

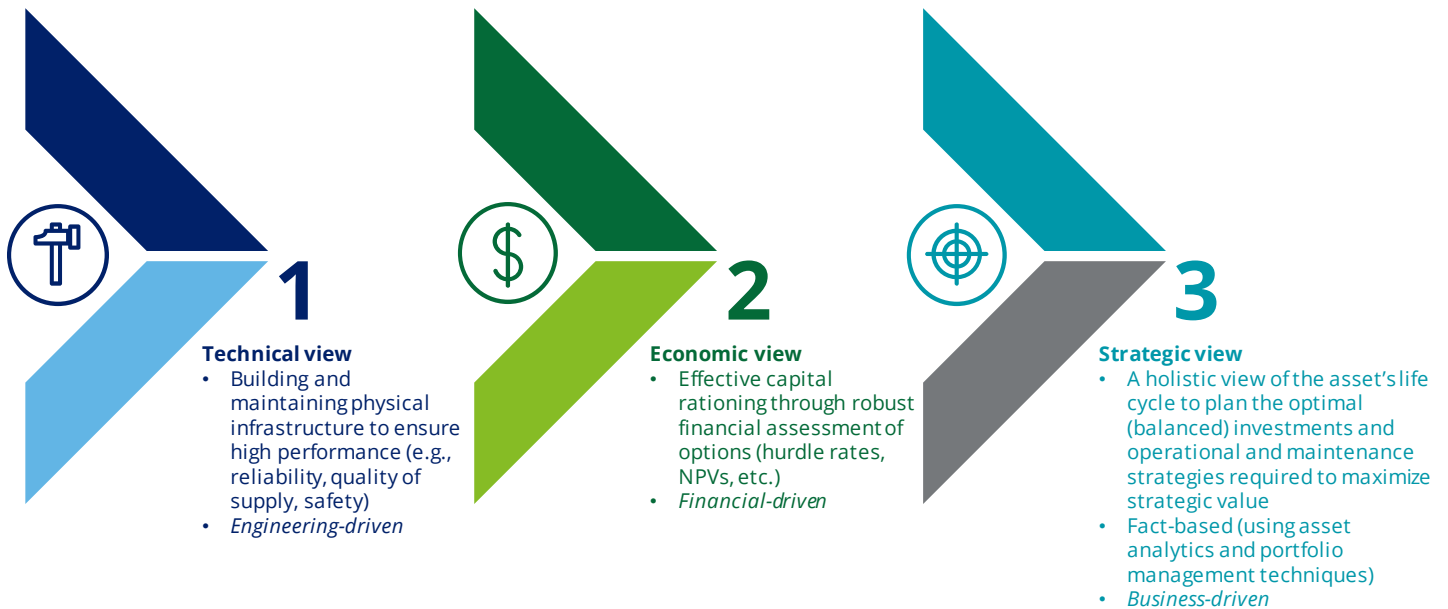
Advancements in technology have enabled capital projects to achieve new speed and efficiency. However, “digital” and “analytics” aren’t plug-in solutions. They represent a fundamental shift in the way entities think about the capital projects life cycle. Some of the most recent emerging technology trends in capital projects where business value is being realized are:

- **Technology that allows parties to trust a shared record or ledger.** It’s distributed to all participants in a network who use computers to validate transactions and therefore remove the need for a third party to intermediate.
- **Oversight and collection of construction data.** Aerial maps, 3D models, and so on can help track the progress of weather events, assess health and safety prior to workforce mobilization, etc.
- **Wearable technology.** Wearables are pioneering a way to make on-site communication, document work management, real-time support, and asset data capture more efficient and safer.
- **Cloud-based integrated platform.** Cloud-based tools can improve access to program controls capability, technology solution, processes, and business rules.

# Manage infrastructure assets over their life cycle to optimize value

Infrastructure asset management (IAM) is the active management of an infrastructure asset over its life cycle to realize the full value of the asset at each of the design, build, operations, and divestiture stages. From proactive maintenance, to technology upgrades, to preparing for renewal or replacement, leading owners are focusing on understanding long-term sources of value and risk and are managing them accordingly.

Over the past few years, IAM has evolved from the engineering-driven technical view of an asset at any given point or time to a multi-stakeholder business-driven strategic view of the asset and its future.



Some key leading practices that are being employed in IAM today include:

- **Appointing asset risk managers.** Infrastructure assets include a host of business, operational, financial, legal, tax, regulatory, security, safety, health, and environmental risks. Having a dedicated asset risk manager and organization-wide asset management steering committee can help manage these risks in a balanced way.
- **Design and implement standard frameworks.** Adopting asset management standards like ISO 55000 and developing systems and processes that can cover data for small and large assets allows state governments to more proactively manage their portfolio and optimize the value delivered to the public.
- **Increasing transparency.** As asset owners develop IAM systems, policies, and procedures, this information can be used to communicate with both internal and external stakeholders. In particular, the use of strategic, portfolio-based, predictive decision making can help build business cases that make a stronger argument for infrastructure investments.



**Avi Schwartz**

Principal | Deloitte Risk and Financial Advisory  
Infrastructure & Capital Projects  
Deloitte Transactions and Business Analytics LLP

Avi Schwartz is a principal in the Capital Projects group of Deloitte Risk and Financial Advisory. He has more than 20 years of experience working in the construction industry and advising owners of major capital construction projects. He routinely conducts management and financial controls assessments of significant capital projects with a goal of improving performance and mitigating strategic and operational risks. While his clients have included a range of Fortune 500 companies, Avi maintains a special focus on large-scale public sector construction and infrastructure projects, integrating best practices from public, private, and global entities so that public sector projects can be built better. In addition, he has published articles on project delivery and risk mitigation, and he periodically serves as an adjunct lecturer at Columbia University on topics of public sector project oversight.



**Mark Blumkin**

Managing Director | Deloitte Risk and Financial Advisory  
Infrastructure & Capital Projects  
Deloitte Transactions and Business Analytics LLP

Mark Blumkin is a managing director in the Capital Projects Practice in the New York office of Deloitte Risk and Financial Advisory. He has more than 30 years of experience in design, construction, and management of major capital projects and programs. Mark's experience includes advising public and private sector owners on the appropriate project delivery strategy, as well as process improvement services related to capital programs. Mark has worked with many large government entities around their capital planning and execution of large capital projects.



**Jim Ziglar, Jr.**

Specialist Leader | Deloitte Risk and Financial Advisory  
Infrastructure & Capital Projects  
Deloitte Transactions and Business Analytics LLP

Jim Ziglar leads Deloitte Risk and Financial Advisory's US Infrastructure Procurement and Advisory efforts, where he focuses on advising federal, state and local government and private sector entities on the funding, financing, procurement and operation of infrastructure assets. His experience includes Public-Private Partnerships (P3), project financings, and municipal financings, particularly in the transportation, energy and social infrastructure (government facilities) sectors. He has 23 years of experience in US municipal finance, project finance, strategic consulting, and marketing and CRM consulting. This includes serving US federal and municipal government entities as a financial advisor and an investment banker for over 17 years, helping them to finance infrastructure projects and solve other financial challenges through traditional and creative structured funding and financing solutions.



**Nick Gartner**

Senior Manager | Deloitte Risk and Financial Advisory  
Infrastructure & Capital Projects  
Deloitte Transactions and Business Analytics LLP

Nick Gartner is a senior manager in the Infrastructure & Capital Projects practice of Deloitte Risk and Financial Advisory with more than 12 years of experience across a range of asset-intensive industries. He has served in a variety of project management, design management, and construction management positions on a number of public and private projects, both in the United States and Australia. Nick has experience in the provision of business strategy and implementation, target operating model design, capital efficiency, program management, and infrastructure asset management services to clients in the consumer and industrial products, public sector, and energy and resources industries. Prior to transitioning to the US firm, he was a part of Deloitte Australia's Strategy & Operations Consulting Practice, where he gained experience in business strategy and implementation, operational efficiency improvements, cost reduction, and infrastructure asset management services.

## Contact us

**Avi Schwartz**  
Principal  
+1 636 505 9106  
avschwartz@deloitte.com

**Mark Blumkin**  
Managing Director  
+1 212 436 2359  
mblumkin@deloitte.com

**Jim Ziglar, Jr.**  
Specialist Leader  
+1 571 882 8661  
jziglar@deloitte.com

**Nick Gartner**  
Senior Manager  
+1 212 653 7844  
nigartner@deloitte.com

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