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Hearing on:
"Long-term Economic Benefits and Impacts from Federal Infrastructure
and Public Transportation Investment"

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Chairman Brown, Ranking Member Scott, and Members of the Committee, thank you for the opportunity to testify before you today on the important topic of the "Long-term Economic Benefits & Impacts from Federal Infrastructure and Public Transportation Investment." I'm Rick Geddes and I serve as the Academic Director and Founder of Cornell University's Program in Infrastructure Policy, or CPIP. I am also a Professor in Cornell's Jeb E. Brooks School of Public Policy, Professor of Economics at Cornell, and a Non-Resident Senior Scholar at the American Enterprise Institute.

I am pleased today to discuss infrastructure policy. Civil infrastructure is indeed the backbone of any modern society. It encompasses the fundamental facilities and systems that support daily life, economic activities, and overall well-being. Its importance can be understood through several key aspects:

Infrastructure's impact on the economy
Infrastructure supports economic development. Well-developed infrastructure such as roads, bridges, ports, rail, and airports facilitate trade, reduce transportation costs, and enhance connectivity, driving economic growth. It supports industries by providing efficient logistics and supply chains. Infrastructure such as water supply systems, sewage treatment plants, and waste management facilities are crucial for public health. They ensure access to clean water, proper sanitation, and the effective disposal of waste, reducing the risk of disease outbreaks. Civil infrastructure also impacts the quality of life by providing essential energy services including electricity, heating, and cooling. Robust infrastructure is essential for disaster preparedness and the ability to respond to potential and real disasters. Well-designed and maintained infrastructure can withstand natural disasters such as earthquakes, floods, and hurricanes, minimizing damage and aiding in recovery.

Moreover, advances in infrastructure, such as smart grids and digital connectivity, drive technological innovation and improve efficiency across various sectors, including transportation, communication, and energy management. Overall, sound civil infrastructure is foundational to the functioning and advancement of society. It impacts every aspect of daily life, from economic

stability and health to quality of life and environmental sustainability. Investing in and maintaining infrastructure is crucial for building resilient, prosperous, and equitable communities.

The Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law (BIL), was signed into law by President Biden on November 15, 2021. The most recent major infrastructure-related act passed by Congress was the Inflation Reduction Act, which was signed into law on August 16, 2022. Given that almost two years have passed since the IRA was signed, it is now appropriate to assess the effects of both of these acts.

Inflationary impact

Although those acts are important for addressing pervasive infrastructure problems, such as deferred maintenance, their impact has been more muted than anticipated, for several reasons. First, there has been significant inflation in the cost of the materials and labor necessary to deliver many projects over the past two years. As The Economist warned in November of 2023:

> The problem is that inflation has been rampant in the construction sector, making delays that much more pernicious. The single biggest component of the infrastructure package was a 50% increase in funding for highways to $350bn over five years. But highway construction costs soared by more than 50% from the end of 2020 to the start of 2023, in effect wiping out the extra funding.[1]

Those cost increases have continued since November 2023. Although Covid-related cost increases (such as disruptions in supply chains) appear to be moderating, inflation in key construction materials has been stubbornly persistent and is likely to continue. As recently reported by Statista, the percentage change on previous year of the Producer Price Index (PPI) for June 2024 for cement was 6.9%. It was 6.8% for concrete block and brick. It was 6.5% for ready-mix concrete. For brick and structural clay tile it was 4.8%, and so on.[2] Those rates are routinely higher than increases in the consumer price index, weakening the purchasing power of federal infrastructure dollars. Moreover, these costs do not include the labor necessary to utilize these products.

Permitting process

Second, America's cumbersome permitting process under the National Environmental Policy Act of 1970, or NEPA, continues to delay projects. That is particularly disconcerting in an inflationary environment. As Robert Poole, Jr. (Director of Transportation Policy at the Reason Foundation and an MIT-trained engineer) states in a new June 2024 report,

> The United States has an infrastructure permitting problem. Proposed projects spend years in the federal environmental review process, delaying their eventual construction and the resulting benefits to their users. Project costs grow, sometimes dramatically, due to inflation during the years-long review process but also due to mitigation measures that

[1] See: https://www.economist.com/united-states/2023/11/22/spending-on-infrastructure-has-fallen-in-real-terms-in-america (accessed July 28, 2024).
[2] See: https://www.statista.com/statistics/1046602/inflation-construction-materials-us/ (accessed July 28, 2024).

> are imposed on the project as a condition for going forward. And some projects end up not being built. Bipartisan infrastructure experts view the legal infrastructure that has evolved for implementing the requirements embodied in the 1970 National Environmental Policy Act (NEPA) as a significant factor.[3]

NEPA-induced project delays, as well as compliance costs, can be significant. As Michael Bennon, Daniel De La Hormaza and I reported in a 2023 article published in the Journal of Regulatory Economics, a typical Environmental Impact Statement (or EIS) under NEPA now takes about 4½ years and is over 600 pages long. Some EISs take over a decade to complete.[4] In an economic sector where "time really is money," such long timelines often significantly increase project cost.

Although there are several avenues for NEPA reform, Australia offers an appealing approach. In Australia, the primary environmental legislation is the Environmental Protection and Biodiversity Conservation (EPBC) Act of 1999. Any action or project that is likely to have a significant impact on the national environment requires authorization under that act. A 2012 amendment to the EPBC includes an assessment of environmental impacts, as well as proposed offsets/mitigations. The Department of Climate Change, Energy, the Environment, and Water (DCCEEW) reviews nationally significant projects. Project developers must submit a preliminary application to DCCEEW, with strict timelines regarding how quickly the agency must respond. The agency must typically respond within 20 days to decide if the project needs an assessment, and which of five alternative assessments is most appropriate.[5]

BABA impacts

Third, provisions of the Build America, Buy America Act (BABA), although well-intentioned, appear to be inhibiting project delivery. BABA was enacted on November 15, 2021, as part of the BIL. The act requires federal agencies to prioritize the use of American-made goods and services in infrastructure projects. That includes requiring that all iron, steel, manufactured products, and construction materials used in federally funded projects be produced in the United States. The act applies to all federal financial assistance for infrastructure projects obligated after May 14, 2022.

On June 11, 2024, POLITICOPRO reported that, with the tighter BABA requirements, even minor products must be produced by US companies in order to qualify for the available federal infrastructure incentives. However, those items often are not available or are far more expensive than the imported versions, adding to cost and increasing delays.[6]

Compliance with BABA has thus become confusing for many contractors and project developers. The BABA waiver process, in which the newly created Made in American Office (or

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[3] Robert W. Poole, Jr. Reforming Environmental Litigation, Reason Foundation, June 2024, p. 1.

[4] See Michael Bennon, Daniel De La Hormaza, and R. Richard Geddes, 2023. "A Hazard Analysis of Federal Permitting under the National Environmental Policy Act of 1970," Journal of Regulatory Economics, pp. 1-30.

[5] See Robert W. Poole, Jr. Reforming Environmental Litigation, Reason Foundation, June 2024, p. 20.

[6] See James Bikales, "Biden's Infrastructure Push Crashes into His Buy America Agenda," PoliticoPro, June 11, 2024.

MIAO, which is part of the Office of Management and Budget) plays a central role, is rife with inconsistencies. What qualifies as a waiver under BABA is unclear to many market participants, which greatly slows project delivery.[7] This has become a major source of concern and delay in project delivery.

It appears that, in the laws' zeal to assist US domestic manufacturing, it has created conflicting policy objectives and significant confusion among providers. The goal of supporting US domestic manufacturing is conflicting with accelerating delivery of infrastructure while ensuring wise use of taxpayer dollars. Ensuring crystal-clear guidance from MIAO regarding BABA waivers would be an important first step in facilitating efficient project delivery.

Public-private partnerships can support higher infrastructure needs

The BIL authorizes $1.2 trillion in spending for roads, bridges, rail, water, the power grid, and high-speed internet. In addition, aspects of the BIL encourage greater private-sector participation in US infrastructure delivery. Section 80403, for example, increases the national limit on Private Activity Bonds (or PABs) for qualified highway or surface freight transportation facilities from $15 billion to $30 billion.

More can be done, however, to encourage greater private involvement in US infrastructure delivery, which would help address several stubborn problems we face today. Indeed, the present moment presents an opportunity for the private sector to take on a larger role in providing infrastructure financing beyond what can be provided by the federal government.

There are many cases that support the success of public-private partnerships in building, operating, and maintaining various types of infrastructure. For example, rebuilding the Francis Scott Key Bridge in Baltimore offers the chance to bring American infrastructure delivery up to rest-of-world standards through better cooperation between the public and private sectors. The core of such cooperation is a long-term contract between the public and private sectors known broadly as a "public-private partnership," or PPP.

The central aspect of a PPP is that it bundles or "wraps" the design and construction of a piece of infrastructure together with its operation and maintenance over the long term, such as 25 or 30 years. Such a PPP might also include private-sector financing to cover the new bridge's substantial design and construction costs. Because the Key Bridge featured all-electronic tolling, a user-fee funding source already exists to help pay for the new bridge (especially for maintenance) over time.

Although the federal government has committed some funding to reconstruct the Key Bridge, it will likely require more than this initial commitment. A PPP for the Key Bridge that combines design and construction with future operation and maintenance, for example, usually includes provisions to ensure that the infrastructure is properly maintained. This reduces the likelihood of deferred maintenance, one of the main problems plaguing US infrastructure today. Indeed,

[7] See, e.g., Tim Duit, "Examining the US Department of Transportation' Regulatory and Administrative Agenda," Testimony Presented to the Committee on Transportation & Infrastructure, Subcommittee on Highways and Transit, July 24, 2024.

maintenance has been deferred on so many roads and bridges that it is difficult to bring them all up to a state of good repair.[8]

Rather than simply "bouncing back" from this bridge disaster, which disrupted supply chains across many industries, a long-term PPP provides the opportunity to "bounce forward." A quiet but vast technological revolution has occurred in infrastructure since 1977, the year the Key Bridge went into service. Improvements in materials (such as concrete and asphalt), sensors, designs, and more are readily available. Such improvements can be incorporated into the new bridge's design and construction, as well as its operation and maintenance by "future proofing" contracts with the private sector.

Today many roads and bridges that were built in the 1960s and 1970s could benefit from technology and innovations that did not exist in those decades. Because PPP contracts include operation and maintenance over the long term, there is a risk of locking in outdated technologies if there is not a forward-looking perspective included in the process. Future proofing refers to the risk of not adopting available innovative technology and design standards well into the future. A future-proofed contract places that risk on the private partner, thus ensuring that private capital, incentives, and expertise are deployed to make US infrastructure as resilient as possible for decades to come.

The other pitfall with any large construction project is time delays. Many US infrastructure projects notoriously run over time and over budget. When completed, Phase 1 of New York's Second Avenue Subway, for example, cost about $2.5 billion per mile. That is 8 to 12 times more expensive than similar subway projects in Sweden, Italy, Paris, Berlin, and Istanbul.

A properly structured PPP contract puts the risk of time and cost overruns on the private partner rather than the taxpayer. The private partner can be incentivized to deliver the project on time via financial penalties for late delivery and rewards for delivery ahead of schedule. Evidence suggests that projects led by private entities often come in either on time or ahead of schedule.[9]

Finally, PPPs allow projects to cut through much of the bureaucracy that often slows US projects. America has typically used a design-bid-build (DBB) approach, where a government entity first bids out the bridge's design and then bids out the chosen design. Combining and integrating the design and construction into a single project results in quicker delivery and more synergies between design and construction firms. New York's widely acclaimed new Tappan Zee Bridge was built using such a contract.

The Key Bridge disaster reinforced the importance of risk assessment, and assessing all situations that could happen in the supply-chain process. Evaluating all processes and planning for every "what if" situation will help both the public and private sectors to handle such a tragedy.

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[8] See, e.g., the American Society of Civil Engineers quadrennial infrastructure "Report Card" at https://infrastructurereportcard.org/ (accessed July 28, 2024).

[9] See, e.g., Stefan Verweij, Ingmar van Meerkerk, and Carter B. Casady, Assessing the Performance Advantage of Public-Private Partnerships: A Comparative Perspective, London: Edward Elgar, 2022).

Congress can take steps in the future to facilitate greater use of PPPs in the United States. One is to encourage states and regions to utilize "PPP units." PPP units are quasi-governmental entities that assist the public sector with pre-project screening, project prioritization, education, and expert advice. PPP units have been established in Australia, Canada, China, Israel, Japan, Egypt, the United Kingdom, and India, among many other countries. They strive to ensure that infrastructure projects attract private participation while promoting the public interest. Despite their global popularity, PPP units remain relatively underused in the United States. PPP units have effectively supported private participation in infrastructure around the world. Because the US lags other developed countries in PPP use, the benefits of such units would likely be large if implemented here.[10]

Interestingly, one side effect of the BIL is that more states and local governments are working together to coordinate their infrastructure efforts. This may lay the groundwork for future cooperation under the auspices of regional PPP units. As The Economist states:

> Some also think that the infrastructure law may pay other dividends. To manage all the grant applications and the funding, the federal government asked states to establish infrastructure coordinators, leading to more joined-up planning for water, roads, energy and more. "It goes against a hundred years of how states have worked," says Mr Ferrer. "It's been hard and awkward for them. But it is a better way to do things."[11]

Permitting processes can facilitate projects

As noted above, with the significant progress of federal infrastructure funding to support the need for new and updated infrastructure, one of the stumbling blocks is the permitting process. Large projects often cross many jurisdictions, including federal, state and local jurisdictions. The permitting process can take years to coordinate and can add to the cost and timetable of a project.

Uncertainty around permit schedules can be costly and creates significant variability for organizations that want to take advantage of the new infrastructure funding. With much funding only available until 2026, inefficiency and permitting delays can derail a project. Complex processes, poor data governance, and resource constraints are some of the primary factors underlying today's permitting challenges.

A White House study in 2020 found that the NEPA permitting process, which most major infrastructure projects must go through to receive a federal permit, takes between 3.5 and 6 years to complete, on average.[12]

Permitting agencies that can assume a leadership role for managing the process and for communicating with all entities can play a significant role in facilitating progress and getting

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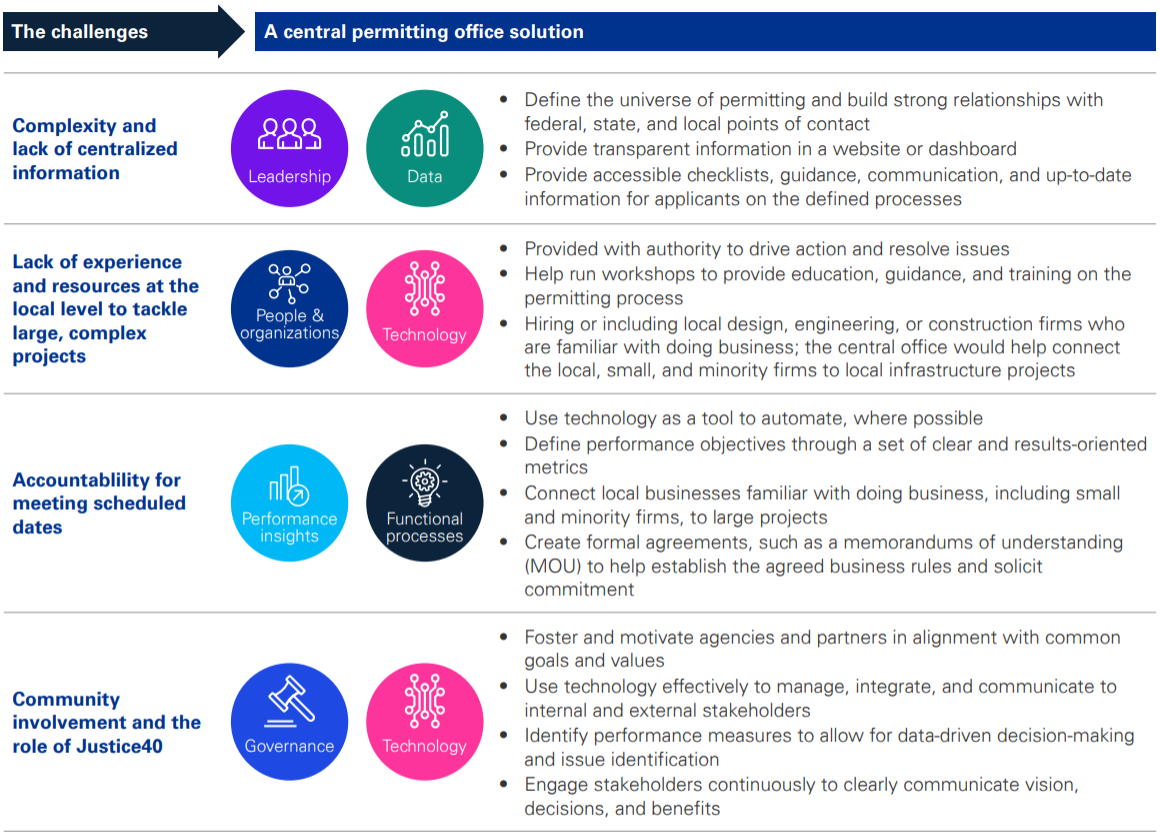
[10] See R. Richard Geddes and Carter B. Casady, Private Participation in US Infrastructure: The Role of PPP Units, Washington, DC: American Enterprise Institute, October 26, 2016.

[11] See: https://www.economist.com/united-states/2023/11/22/spending-on-infrastructure-has-fallen-in-real-terms-in-america (accessed July 28, 2024).

[12] Environmental Impact Statement Timelines," Executive Office of the President Council on environmental Quality, June 12, 2020

projects in place more quickly. It is imperative that governments at all levels support permitting reforms to speed critically needed infrastructure improvements. A central permitting office can support the introduction of integrated permitting capabilities at the state and local levels. A KPMG study offers insight into the cycle time, project application status, and suggests streamlining the process by which infrastructure funding is directed to projects and communities that need it.

Although many states have resources assigned to permitting-related issues, only some have dedicated offices sufficiently resourced and empowered to address the known issues. Today's permitting challenges are exacerbated by the upcoming accelerated pace of infrastructure investment. There is an urgency to establish clear guidance, enabling clear communication and providing access to consistent information.[13]



A central permitting office model creates a framework for how a central state or local permitting office may function, and provides an enterprise with reference architecture to help it rapidly improve its permitting functions, thereby improving cycle time.

Each of the model's interdependent components—leadership, governance, people and organization, functional processes, technology, and performance insights and data—is vital to shaping the office's purpose, function, and responsibilities.

[13] Dr. Christian Robert and Suzie Heap, Permitting: Streamlining delivery of today's infrastructure opportunity, KPMG, March 2023.

Cyber threats

Rising geopolitical tensions are injecting national security concerns into what were previously viewed as core civilian activities. Growing cyber-threats to America's electrical grid, as stressed by FBI Director Christopher Wray in recent testimony, serves as a case in point. Although geopolitical events are inherently unpredictable, this is likely to drive further investment in energy and advanced and defense-related manufacturing, again an example of how the private entities can support government.

Technology and innovation factors

The rapid pace of technological change in infrastructure is unprecedented. New types of concrete, energy storage and generating sources, including hydrogen and a new generation of nuclear reactors, are appearing regularly, often due to the investments that companies are making in technology to drive greater and faster innovation. Although welcome, the ultimate impact of this technological wave on the infrastructure landscape is quite challenging to predict.

Increasing private investment in infrastructure

Greater use of PPPs offers investors new opportunities to participate in US infrastructure as an asset class. Importantly, many investors in infrastructure via PPPs and other avenues are large institutions. Those institutional investors include public and private pension funds, insurance companies, sovereign wealth funds, and university endowments, among others. This demonstrates how private investment can be a "triple win" for public infrastructure owners, for the public using that improved and maintained infrastructure, and for institutional investors who place their retirement savings in infrastructure assets and receive appealing returns.

The global investment community has recognized that both civil and social infrastructure is an important asset class and a growing opportunity. Despite institutions' under-allocation to infrastructure, 2023 was the most challenging year for private infrastructure fundraising since 2015, according to the second annual Institutional Infrastructure Allocations Monitor released on June 18, 2024, by Hodes Weill & Associates and Cornell University's Program in Infrastructure Policy. However, considering growing target allocations to infrastructure and positive investor sentiment, the pace of annual investments is expected to accelerate over the medium-term.[14] Infrastructure portfolios continue to demonstrate resilient revenues and offer investors strong risk-adjusted returns, despite general market volatility.

The primary conclusion of the 2024 Infrastructure Allocations Monitor is that institutions are poised to allocate significant capital to infrastructure investments as global transaction activity rebounds. The weight of this capital can be expected to have broad implications for the industry with respect to fundraising, lending activity, and asset valuations. Although some third-party research suggests infrastructure markets may be overvalued, the combination of abundant capital and liquidity, global government support, and anticipated rate cuts, along with the benefit of the asset class's "inflation participation," can be expected to sustain current valuation and financing

[14] https://www.hodesweill.com/single-post/2024-institutional-infrastructure-allocations-monitor, June 20, 2024

metrics, including discount rates. This perspective does not downplay the risks of prolonged high interest rates or slow economic growth, but rather highlights a crucial consideration for industry participants.

Conclusion

These legislative acts are to be applauded given the needs of our country to strengthen and update our infrastructure. The funding commitments through the BIL, the CHIPS and Science Act, and the Inflation Reduction Act, are expected to achieve those goals and contribute to future proofing the resilience of our various infrastructure networks. I believe that with some changes in permitting policies, the incorporation of new technologies and innovative products, and the integration of public-private partnerships, the various levels of government can leverage this funding to benefit future generations for decades to come.