

Essential Transportation Infrastructure Improvements to be Funded Through Infrastructure Act

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In January of this year, hours before President Biden was set to visit the city of Pittsburgh, PA, to discuss the Infrastructure Investment and Jobs Act (IIJA), the nearby Fern Hollow Bridge collapsed. Prior to his previously scheduled speech at a manufacturing mill, the President toured the damage caused by this collapse and shared some remarks. The collapse ahead of Biden's visit may be just pure irony, or even bad luck, but for those in the know, this was the end result of a lack of investment in the nation's infrastructure. The Fern Hollow Bridge was one of over 30 bridges that had been rated in poor condition by the city. Transportation infrastructure issues aren't exclusive to Pittsburgh, however. According to the 2021 Report Card for America's Infrastructure, following years without

funding or investment, 43 percent of American roadways are in poor or mediocre condition. With funding finally in hand, state and local governments are deciding how to allocate IIJA funds to improve and modernize transportation infrastructure.

Infrastructure Challenges and Priorities

The sheer number of transportation infrastructure issues that need to be addressed impacting traffic, safety, and mobility is overwhelming. While the IIJA is enabling local and state agencies to enhance infrastructure and improve public safety, the breadth of resources available is making it difficult for state and local governments to know where to



begin. In a recent interview with Government Technology Insider, Jimmy Kim, Head of Business Development for Transportation/Mobility at Verizon elaborated, explaining: “The biggest challenge is deciding where to start and whether to invest in building new infrastructure or retrofitting existing infrastructure.”

Historically, state and local governments have chosen to build new infrastructure when funds have been available. Whether or not the new infrastructure actually fixes the problem, headlines about tax dollars going to new roads, bridges, or tollways give citizens a positive perception. More recently, however, that mindset has changed. “The mentality has actually shifted to focus on how agencies can leverage innovative technology to make the most efficient use of the infrastructure they already have,” Kim shared.

This realization has prompted state and local agencies to rethink past practices. By embracing technology, decision makers are finding that IT can help fix the root cause of transportation problems, including congestion and traffic safety, rather than just build more roads and hope the problem is fixed. These are the challenges local and state officials are working to address with the help of the IIJA.

Digital Roadway Infrastructure Solutions

Modern roadway infrastructure goes beyond the asphalt concrete. Digital roadway infrastructure refers to the network backbone and the connectivity that keeps essential technology, like IoT sensors, smart cameras, LiDAR, and other IPS applications, running smoothly. Today, these devices are used ubiquitously to provide valuable insights, improve safety, and enable capabilities and connections. For local and state agencies, the focus needs to be placed on the network to guarantee continuous operations. Noted Kim, “all these applications don’t work unless you actually have the fundamental connectivity to the roadway infrastructure.”

Over the past decade, state and local agencies have been working in connection with vendors to deliver 5G and fiber connectivity to transportation infrastructure. These 5G solutions can enable real-time data, images, and information to move more quickly and securely to their destination. This information can help deliver faster emergency response times, among other benefits. In the future, transportation leaders will look for more ways to put this information to work to optimize traffic, connect people, and improve public safety. For example, with 5G and fiber connectivity, citizens could be able to receive real-time alerts on incidents, weather, parking situations, and other factors that could impact transit on their smartphones.

In combination with 5G, Multi-access Edge Computing (MEC) is also a solution showing positive potential for transportation infrastructure. “Essentially, MEC enables compute resources to be migrated to the edge of the network as an alternative to maintaining expensive processing on devices like traffic cameras,” Kim explained. MEC has virtualized some of the critical hardware that would otherwise be required to enable the wide range of IPs and connected vehicle use cases involving electronic toll collection, to create transit signal priority, various roadside alerts, and pedestrian safety. The idea with MEC is to enable communication through network managed services. These services help traffic management centers to focus on their core competency as an agency, like how to respond to incidents.

With the National Highway Traffic Association already reporting record traffic fatalities for 2022, 5G and MEC could help improve traffic safety. In fact, fatality solutions have been a priority since Transportation Secretary Pete Buttigieg announced the National Roadway Safety Strategy in January 2022. 5G technology can help assist by enabling faster, more efficient post-crash care, safer vehicles, and safer roads, all of which are focal points of the Department of Transportation’s long-term strategy. These tech-driven advancements can help simultaneously improve safety and spur innovation in other areas of transportation. For example, in Michigan, work has begun on

building a wireless, public, in-road electric vehicle (EV) charging network. This system will be the first of its kind in the US and enable electric vehicles to charge while on the road, even when they’re in motion.

Conclusion

Transportation infrastructure is a lynchpin of a functional and prosperous country. If people can’t get to their jobs, or companies can’t transport goods reliably then productivity and economic growth are negatively impacted. It is, therefore, vital that transportation infrastructure is in good condition not just for the short term, but for many years to come. The IIJA will have a powerful impact on the nation through the resources it provides and the investments in next-generation technology it will support.