Building America's Future 2020 Vision

Preparing for Tomorrow's Infrastructure Today

It is clear that in recent years, America's infrastructure has been on the cusp of dramatic change. Advances in technology are leading the way to a future where cars will drive themselves, carrying people and goods safely and reliably to their destinations; a passenger rail network will safely and quickly connect major metropolitan areas; leaks in our water infrastructure will be detected before pipes burst; a smart grid will prove to be dependable and resilient; air travel will be more efficient and environmentally friendly; and roads will be free of congestion.

This is not a fantasy. Some of these advances are already happening, and others are just a few short years away. But one thing is clear: we can't build a future on last century's infrastructure networks. In order to compete in the 21st century, America must have 21st century infrastructure.

The United States has always been a hub of innovation, and many of the technological advances that make our infrastructure more efficient were developed here. This has not gone unnoticed – all across America, states and cities are looking to the future and embracing advancements in technology that can improve and modernize infrastructure for better performance, efficiency, safety and reliability. But in order to prepare for the future, cities need to consider technology in their planning process. According to the National League of Cities, only six percent of long-range plans in major U.S. cities are factoring in the impact of autonomous and self-driving cars.

Preparing for Autonomous Vehicles

The advantages of autonomous and connected cars include creating more efficient traffic flow (which means less congestion), improved fuel efficiency, and increased productivity: "drivers" will spend time in the car answering e-mails, texts and phone calls without worrying about distracted driving. The safety aspect is key: cars that can "talk" to each other will significantly reduce accidents.

It seems like every day a new application has been developed for smartphones, and they are transforming the way the average American navigates his or her daily commute. For example, there are apps that provide information about traffic conditions, the location of traffic accidents or work zones, or the arrival of the next bus or train. With other apps, the user can summon a ride with the touch of a finger from services like Uber and Lyft and pay for it without any cash changing hands. Apps that let a driver reserve and pay for a parking space allow for greater convenience and also result in less congestion from drivers searching for a parking space. It is estimated that 30 percent of cars circling a city at any given time are doing so as they search for parking. Cities across the country recognize this challenge and are looking to technology to provide solutions. For example, the City of Los Angeles has installed low-power sensors and smart meters to track the occupancy of parking spaces throughout some of its most congested districts, allowing the City to change pricing on its parking spaces depending on demand.

Funding and Financing Tomorrow's Roads and Transit

Technology will also play a larger role in funding and financing our transportation infrastructure. In many major metropolitan areas, it no longer makes sense to build more roads to ease chronic and growing congestion. Instead, some regions are embracing technologies to alter driver behavior by

pricing roads according to the level of congestion. Time is money. Many drivers are willing to pay to avoid a traffic jam and are rewarded with a more reliable trip. Taking these cars off of the so-called "free" lanes eases up congestion for all drivers. Open road tolling allows for the continued flow of traffic and thereby eliminates delays and congestion at toll booths.

The federal gas tax of 18.4 cents per gallon pays for the vast majority of our roads and bridges. Since it has not been increased in over a quarter century nor indexed to inflation, it has lost 65 percent of its purchasing power and can no longer keep pace with needs. Couple that with greater fuel efficiency in vehicles, and it's no wonder that America has a $2 trillion infrastructure investment gap.

States like Oregon, California, Washington and Colorado are among a handful who have conducted pilot programs that use advancements in technology to charge drivers by the mile instead of by how much gasoline their vehicle consumes. This is important as the number of vehicles that use little or no gasoline at all are becoming more prevalent on the roadways. These vehicles are paying little or nothing at all for their use of and wear and tear on the roads. The Fixing America's Surface Transportation (FAST) Act in 2015 recognized the value of this concept and included $95 million in grants available to states seeking to implement a pilot program testing road user charges or other innovative funding options. Technologies exist to implement road user charges that also allow prices to vary depending on the weight of the vehicle (the heavier the vehicle the more damage it causes to roads), the time of day, and current traffic conditions.

States Filling a Federal Void

As robust federal funding has become less reliable in recent years, some states have joined together to form infrastructure exchanges or accelerators that seek to provide financing to bundles of varied infrastructure projects -- ones that would not attract the financing needed to move forward standing on their own. The West Coast Infrastructure Exchange formed by Oregon, Washington, California and British Columbia was the first such exchange and it has been followed by the Northeast Infrastructure Accelerator, the Intermountain Infrastructure Exchange, and the Great Lakes Infrastructure Exchange. The FAST Act included $12 million to assist states considering the formation of other exchanges. States have also stepped up their efforts to raise transportation funding, with 30 states having increased their gas tax since 2013. Local ballot referenda seeking to increase funding for transportation have had an 81 percent success rate between 2010 and 2019 and rose even higher in the November 2019 election to 89 percent.

Protecting our Power Grids

The increasing reliance on technology to make our electric grid more reliable and efficient also exposes it to cyber mischief. Just as with autonomous vehicles and the need to safeguard them from cyber-attacks, we must ensure that our smart electric grids are protected. From protecting customer data collected from smart meters that could tell from usage patterns when the customer may not be home, to the increasing prevalence of intelligent devices that manage the electric supply and demand – we must ensure the safety and integrity of this network. Imagine a scenario where a terrorist is able to attack the electric grid by shutting it down and depriving millions of citizens of power. Chaos would ensue, endangering lives and livelihoods and doing massive harm to the economy.

Congestion in the Skies

When it comes to air travel, our skies are fast approaching gridlock. U.S. air travel will continue to grow from just over one billion passengers in 2018 to a projected annual growth of nearly 2 percent annually over the next 20 years. Much like using technology to curb congestion on our roads, modernizing the nation's air traffic control system from one that is radar-based to one that relies on satellites will also make our aviation network more efficient. According to a FAA/Nextor study, the costs and impacts of flight delays in the U.S. and estimated annual costs of delays is $33 billion. Satellite-based technology known as NextGen is vital to meeting future demand and to avoiding gridlock in the skies and at our nation's airports. When fully implemented, NextGen will allow more aircraft to safely fly closer together on more direct routes thereby reducing delays and providing unprecedented benefits for the environment and the economy through reductions in emissions, fuel consumption and noise. However, NextGen has experienced unstable federal funding and as a result, the United States is still relying on World War II-era radar technology. Our global competitors are also working on modernizing their air traffic control navigation, and it is important that the systems being developed are inter-operational.

Inadequate Airport Infrastructure

Travelers passing through America's airports are all too familiar with the cramped and outdated terminals in many parts of the country. Similarly, as the amount of cargo passing through airports continues to increase, inadequate facilities risk hampering further growth. A 2019 study revealed that America's airports are facing more than $128 billion in new infrastructure needs through 2023. A majority of these needs are to accommodate growth in passenger and cargo activity. Much like our roads and bridges, airports have suffered from insufficient funding. The Passenger Facility Charge – a federal capped but locally imposed user fee – has not been increased in 20 years and has lost 50 percent of its purchasing power. Deficient airport infrastructure that fails to meet the growing demands of travelers and local businesses can have a negative impact on the economic growth of cities and regions.

Neglected Passenger Rail

We must also address the chronic neglect and under-funding of America's passenger rail network. Because our rail network is riddled with choke points, passenger trains in the U.S. run at slower speeds today than they did in the mid-20th century. America's fastest train, the Acela Express running between Boston and Washington, reaches a top speed of 150 mph – but most of the time it averages speeds closer to 70 or 80 mph. To catch up with our international competitors, we must begin to strategically invest in high speed rail in corridors where it makes the most sense. The high-speed rail project likely to have the greatest national impact is the Northeast corridor, as it generates the highest GDP in the country and has an annual ridership of 13 million. However, only $10 billion in federal funding has been made available for high speed rail since 2009.

The Cost of Inaction

It is clear that rapid advances in technology are bringing transformative changes to infrastructure. While America must continue to innovate and embrace these advancements, it is critical that we not lose focus on properly repairing and maintaining our existing infrastructure.

Our nation's refusal to face facts and take care of our roads, rails, bridges and pipelines has very real consequences – both for public safety and for the economy. Repairing our infrastructure will also provide thousands of well-paying jobs for communities across our country. The cost of not fixing our infrastructure could lead to a $3.9 trillion loss in GDP by 2025.

A vision for the future

As we enter the third decade of the 21st century we must do more to make America's infrastructure the envy of the world. Twenty-first century challenges require 21st century solutions. It is time to think big. Rapid advancements in technology have already made significant improvements on our quality of life, and further transformation is inevitable. America is the world's leader in innovation, and we must harness that creativity to modernize our nation's infrastructure. Our goal must be to have fully integrated interoperability across all modes of transportation.

In order to get the country on the best path forward we need a strong vision and a long-term infrastructure strategy. Such a policy must have clear criteria for achieving economic objectives necessary for growth and prosperity, which will rely on policy innovations rather than political considerations. We must create incentives for cities and regions to collaborate on the most efficient ways to leverage public investments with private sector dollars. We need to reward innovations by offering competitive grants to take ideas from being pilot projects to becoming widespread. We need greater federal involvement when it comes to regulating autonomous and driverless vehicles, as it would not make sense to have 50 separate laws governing this rapidly growing innovation. Building America's Future has put forth our policy recommendations to the Trump Administration and key officials in Congress.

What we do, or fail to do, now is not about the past — it is about our future. Building America's Future is optimistic about the possibilities, now and in the decades to come, and will continue to encourage visionary leadership that ensures America's place as the world's technological leader and preeminent global economic power. Now let's get to work and build America's future.