



BUILDING TO WIN



FEBRUARY 2019



NATIONAL ASSOCIATION OF
Manufacturers



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BUILDING TO WIN



Manufacturers are the heartbeat of America. Our story is about people—people who make American prosperity and economic growth a reality each day. People who go to work feeling immense pride and a sense of duty to keep this country moving forward. People whose ideas, inventions and tangible contributions create opportunity for everyone.

For generations, manufacturers have risen to the occasion to meet great challenges, to give more Americans a chance to improve their lives and build our nation for the future. Now, it is time again for our leaders to follow our example and strengthen the foundation that makes our work and our daily lives possible: our nation's infrastructure.

Across the country and across the political spectrum, Americans recognize that we have an urgent need to invest in and modernize our infrastructure. With so much at stake, we cannot afford to wait any longer.

The National Association of Manufacturers first released “Building to Win,” a bold, significant infrastructure proposal, in 2016. Since then, it has helped drive the conversation and serves as a blueprint to make America's infrastructure the greatest in the world. Cited by the Trump administration and leaders of both parties, it represents manufacturers' vision for the path forward.

Every day, Americans see the consequences of the underinvestment in our infrastructure. Roads are crumbling. Bridges are failing. Ports and waterways, airports and runways are clogged and congested. The electric grid is strained, our waterpipes are deteriorating and we lack the pipelines needed to deliver reliable energy supplies.

We must commit to addressing these challenges, just as we should commit to staying ahead of the curve where we are succeeding, most notably in telecommunications. Making these needed investments in a targeted, substantial way will ensure that America can remain a nation that creates and makes its future, thereby shaping our own destiny and enhancing our standard of living for decades to come.

Manufacturing workers in the United States, and all Americans, should refuse to settle for infrastructure that lags behind the rest of the world. Making historic investments in America's infrastructure will improve the lives of manufacturing workers, while helping all manufacturers better serve their customers and communities. It will bolster the security of our nation, and it will strengthen the ties that bind us together as a country, improving commerce and communication and paving the way for the success of the next generation.

David Seaton

Chair of the Board, National Association of Manufacturers
Chairman and CEO, Fluor Corporation

Jay Timmons

President and CEO
National Association of Manufacturers

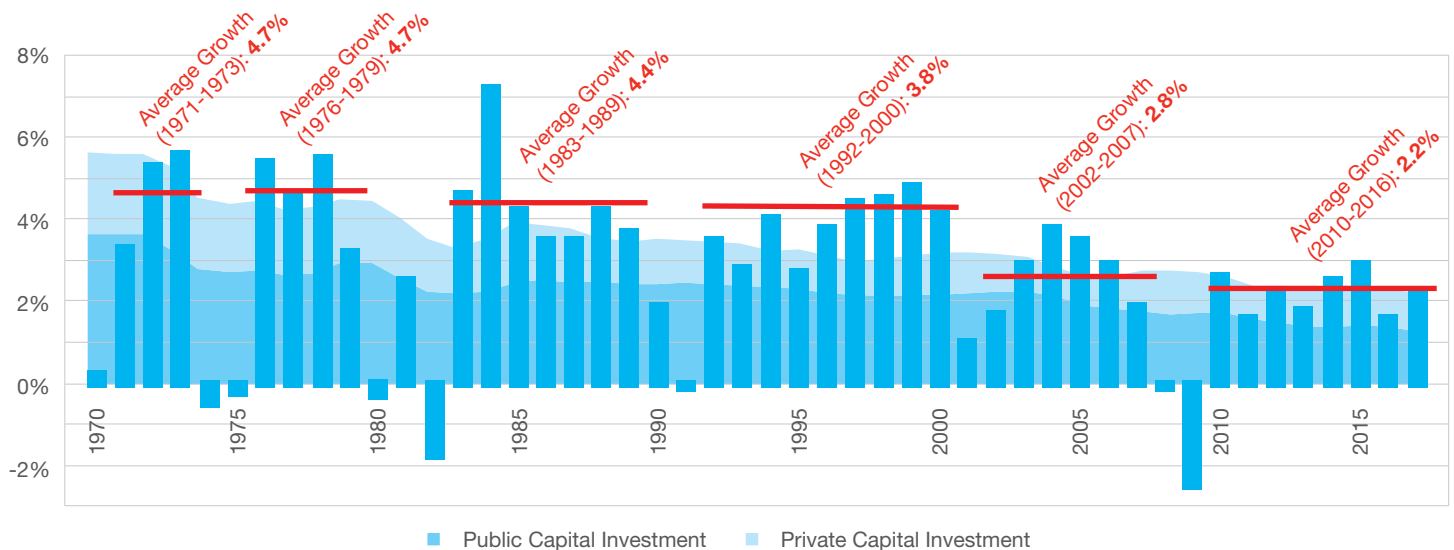
MANUFACTURERS NEED A 21ST-CENTURY INFRASTRUCTURE SYSTEM

Great nations build and invest in great infrastructure. Too many 21st-century U.S. infrastructure systems depend on 20th-century investments. Now in an alarming state of disrepair and in urgent need of new funding, America's infrastructure can no longer wait. Families, communities and manufacturers need modern transportation, energy, broadband and water infrastructure to meet the demands of today's economy. The modern manufacturing economy we are building does not have the kind of infrastructure we need to support our vision for an exceptional America.

REAL GDP GROWTH, 1970–2017

(Annual Percentage Change, Seasonally Adjusted, 2012 Chained Dollars)

and REAL INFRASTRUCTURE INVESTMENT AS A PERCENTAGE OF REAL POTENTIAL GDP, 1970–2017



VISION AND CONFIDENCE

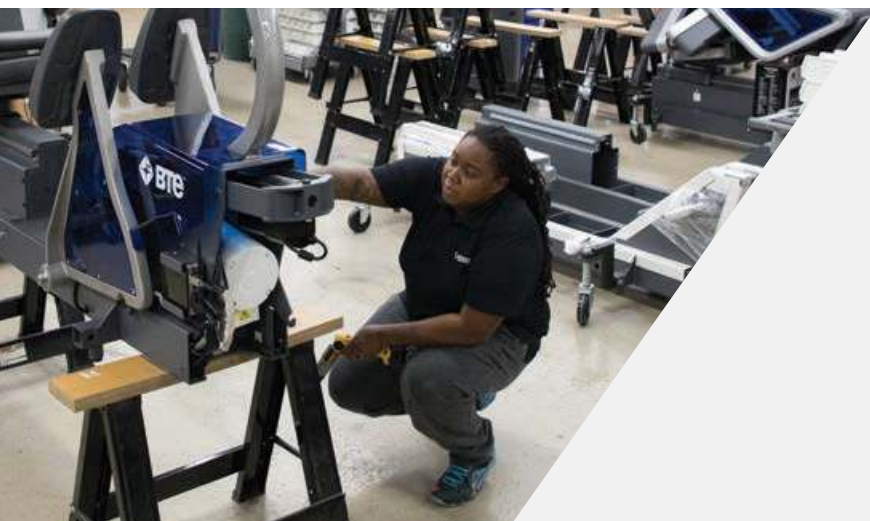
It was the vision of our Founding Fathers to have strong ports and waterways to support trade and a postal road system to connect families and communities in a new nation. When the steam engine came along, railroads were built to link an expanding nation, and steamboats transformed freight movement on rivers and oceans, giving the United States a leading role on the global stage. Manufacturing in the United States was able to come into its own thanks to the support and growth of transportation services as well as public and private transportation networks. President Dwight Eisenhower saw the potential for the nation to be even more connected and that critical road infrastructure gaps existed, potentially hobbling America's post-war potential.

Since President Eisenhower's vision and leadership to invest in the interstate system, U.S. infrastructure investments have been neglected. Unfortunately, NAM data demonstrates that the trend of infrastructure investment has not improved, but worsened.

Underinvestment in U.S. infrastructure worsens by the year. Infrastructure investment is only one-third of what it was in 1960.

In 2018, manufacturing optimism reached record highs as a direct result of competitive tax and regulatory policy. Tax reform and an improved regulatory environment helped to propel faster growth, with manufacturers raising wages, investing in their operations and offering innovative benefits. However, manufacturers increasingly raise concerns about rising transportation costs and insufficient infrastructure. More than 70 percent of manufacturers do not believe the state of our nation's infrastructure is positioned to respond to the competitive needs of a growing economy.

A great nation and strong economy should not neglect the maintenance of its infrastructure or underinvest in its future. Passing a significant infrastructure bill would not only support economic growth through increased labor productivity and new job creation, but also provide confidence and vision to position manufacturers for long-term success.



“ We depend on infrastructure to get our products to the end market. Infrastructure investments and an efficient transportation system will have a direct impact on growing our business.”

Charles “Chuck” Wetherington
President
BTE Technologies, Inc.
NAM SMM Chair

GLOBAL COMPETITIVENESS

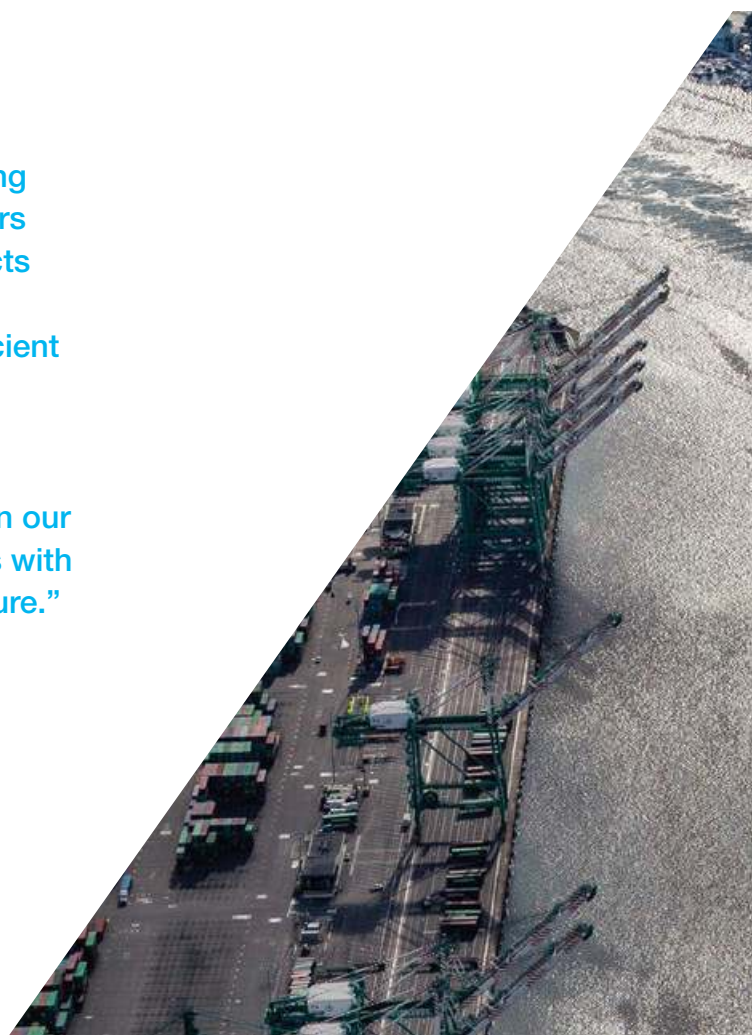
Each year, the World Economic Forum includes infrastructure as one of its key measures of economic competitiveness. For 2017–2018, the United States ranked behind many of its biggest global competitors at 9th in overall infrastructure quality.¹

Manufacturers and families continue to rely on outdated roads, bridges, waterways, ports, runways and drinking water and wastewater systems, many of which are more than 50 years old. Our global competitors are making strategic decisions to invest in their futures. China's infrastructure investment is almost double the size of the infrastructure spending in the United States, and India's infrastructure investments are growing at a rate that triples the infrastructure outlays of the United States, Canada and Mexico *combined*.²

Manufacturers are committed to ensuring America's infrastructure is the best in the world. It is time for the United States to take the lead again and modernize our infrastructure.

“There is nothing more satisfying than connecting with, supporting and empowering our customers and dealers day in and day out. To ensure our products arrive at the customer site, we rely on roads, bridges, rails, airports, ports and waterways. Modern and efficient transportation systems allow us to do the work—the efficient flow of materials to suppliers, of parts in and out of our manufacturing plants and, ultimately, of products to our customer site is heavily dependent on our transportation systems. Building a better world starts with building a better infrastructure—now and into the future.”

Denise C. Johnson
Resource Industries Group President
Caterpillar Inc.



PRODUCTIVITY

Many manufacturers have adopted a just-in-time or lean business model to maximize efficiency. Today, companies rely on the ability to instantaneously connect with customers and suppliers, efficiently move their products to market and incorporate new technologies and innovations to reduce waste. In the end, these practices reduce costs for manufacturers, businesses and consumers alike.

Manufacturing ingenuity and productivity demand quality infrastructure. Modern infrastructure systems unleash greater productivity and support manufacturers' gains in efficiency. But the inverse is also true—a lack of infrastructure investments stymies productivity and limits opportunities for businesses. If ports are clogged, trucks are delayed, water is shut off or access to the internet lapses, productivity and customer service are impacted. For one Indiana manufacturer, an emergency bridge closure prevented an entire production shift from getting to work, which shut down his shop floor and cost the company \$1 million.

JOB CREATION

Millions of jobs are at stake when infrastructure remains deteriorating and inadequate. Without immediate action on the infrastructure crisis, the United States will lose more than 2.5 million jobs by 2025 and more than 5.8 million by 2040.³

By contrast, infrastructure investments can create jobs in the near term, setting off a positive ripple effect across industries.

A 2017 PricewaterhouseCoopers report highlights that a \$1 trillion infrastructure investment could create 11 million jobs. Approximately 10 percent of infrastructure jobs would be in manufacturing with specific needs for skilled workers in fields such as information technology and data science.⁴ Construction and manufacturing jobs have a powerful multiplier effect on our economy; for every \$1.00 spent in manufacturing, the economy grows by \$1.89.⁵



QUALITY OF LIFE

When the federal government fails to invest in infrastructure improvements, American families and businesses, in particular manufacturers, bear the brunt of the costs.

According to the American Society of Civil Engineers (ASCE), from 2016 to 2025, families will lose \$3,400 every year because of deficient infrastructure. By 2026, that cost will rise to a staggering \$5,100 wasted every year.⁶

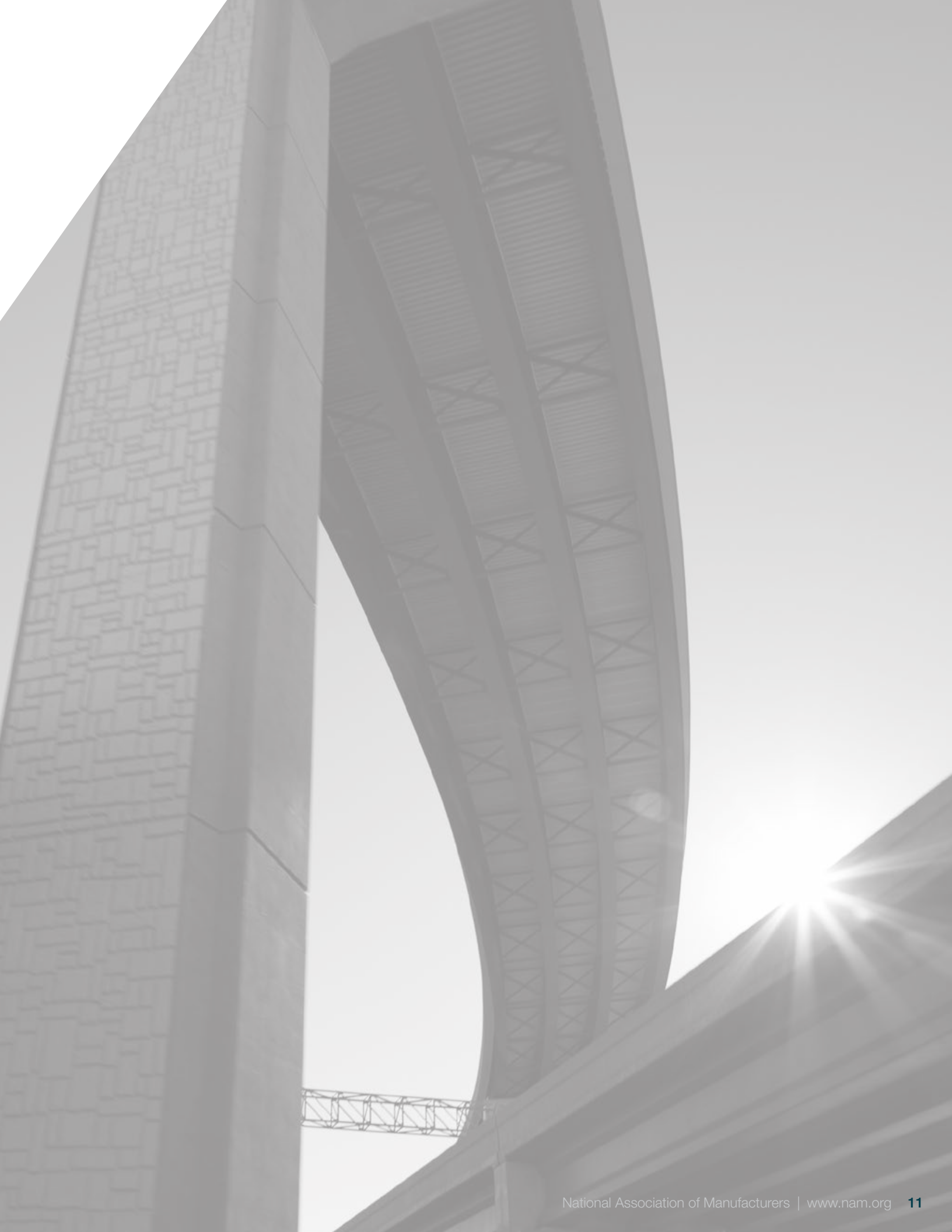
Next-generation transportation, energy, water and broadband systems will enhance the quality of life for families and communities around the country. Greater mobility and connectivity give workers better access to job opportunities and options for housing, telemedicine, shopping and recreation. In the 20th century, the proliferation of airports and international aviation agreements unlocked the wonders of convenient, low-cost, long-distance travel and opened pathways for tourism and commerce. When manufacturers are able to reduce transportation, water and energy costs through more advanced or more reliable services, consumers benefit from lower prices of household products. In short, infrastructure boosts the quality of life, from rural areas to urban centers and every community in between.

INNOVATION AND SAFETY

Reducing road fatalities and injuries remains a national imperative. Human error remains the leading cause of 94 percent of all vehicle crashes. While progress has been made to address overall vehicle and behavioral safety, the advent of drones, autonomous vehicles, big data and other machine-learning applications present new opportunities and challenges to improving the nation's traffic safety as well as our productivity.

As new technologies come online and into the heavy duty and automotive markets, vehicles are also evolving into mobile computers with wheels. This is an exciting time for automotive and truck manufacturers as well as suppliers, but to maintain a mantle of leadership, our nation's elected officials and leaders must get safety regulations and the adoption of new technologies right. As an example, basic infrastructure, like clear lane lines and road markings, will be critical to the long-term success of autonomous vehicles. State and local investments in this area cannot be overlooked. Also, a federal regulatory approach that considers the industry a technology partner and allows for innovation will be instrumental to the further success of automated driving systems (ADS).

Physical infrastructure must also evolve to address mounting road congestion in urban and suburban areas so that new capacity can be flexible and responsive to the demands on the road in realtime. Innovation and safety are intertwined even deeper as we enter this exciting period where transportation innovations will not only transform safety but also the way we live and work.



IMMINENT CHALLENGES IN TRANSPORTATION INFRASTRUCTURE

Investing in transportation infrastructure will advance the American economy and enhance our competitiveness on the world stage. And yet, despite the clear benefits, the United States has failed to adequately invest in modern, efficient transportation infrastructure. An NAM study found that infrastructure investment as a percentage of real potential GDP has fallen precipitously over the past three decades.⁷ This dearth of investment wastes time and money and poses serious safety risks to workers, drivers and passengers. More than 30 years of anemic infrastructure funding levels have created a crisis that requires new investments that can tackle projects of national and regional significance that have been stalled for decades.

After years of delays and missed deadlines, Congress has started to work together to pass bipartisan infrastructure bills on time. Since 2014, Congress has maintained a two-year reauthorization cycle for new inland waterway and port dredging projects. In late 2015, lawmakers passed a multiyear surface transportation bill, increasing investments in roads and bridges. In October 2018, Congress sent a five-year Federal Aviation Administration (FAA) reauthorization to the president's desk. However, these efforts have only succeeded in maintaining the status quo and did not resolve chronic funding challenges or address the backlog of projects of national and regional significance that have been on the to-do list for decades. Congress must continue to pass not only long-term authorizations, but also consider new measures to address the backlog of investments needed across all types of infrastructure.

ROADS, BRIDGES AND TRANSIT

From city streets to rural highways, the nation's roads and bridges are clogged with traffic, and in many cases, they are in serious disrepair. It is completely unacceptable that 65 percent of major roads in the United States are rated "less than good condition."⁸ That takes a toll on manufacturers' bottom lines through unreliable delivery times and increased fleet maintenance costs. U.S. businesses pay \$27 billion in additional freight costs every year because of poor road conditions.⁹ Beyond the economic costs, failing to address deteriorating roads is also a grave safety concern. Road conditions were a significant factor in approximately one-third of traffic fatalities in 2013.¹⁰ Nothing short of American lives and livelihoods are threatened by our deteriorating roadways.

More than 54,000 bridges across the United States are rated "structurally deficient," meaning they are in need of significant maintenance and repair.¹¹ U.S. drivers and passengers cross these structurally deficient bridges nearly 178 million times a day.¹²

In addition to structural deterioration, traffic congestion costs both time and money, and it slows productivity. In 2017, Americans in urban areas spent 7.4 billion hours of extra time on the nation's roads—time that could have been better spent contributing to the economy.¹³ Traffic also delays the trucking industry that ships freight for manufacturers, adding \$74.5 billion to operational costs.¹⁴ These costs are frequently passed to manufacturers, who consider rising prices in the transportation market a primary business concern. Without improvements, congestion will worsen. Unless we act now to invest in infrastructure, peak-hour congestion will clog 35 percent of the nation's highways by 2045.¹⁵

For public transit, even as ridership has increased, a lack of funding has contributed to an aging system. The average age of a transit bus is 7.3 years, and nearly half of heavy rail cars in the United States need immediate replacement, according to the American Public Transportation Association. Public transit is a vital mobility option for many workers across the country and helps ease congestion on roads and bridges. The construction, operation and maintenance of transit assets rely heavily on manufactured goods.



AVIATION

Manufacturers rely on aviation systems to connect with customers and transport time-sensitive and high-value cargo around the world. Unfortunately, our aviation infrastructure has been buckling under antiquated systems that cause delays, congestion and wasted fuel. Limited airport capacity and increased demand have created a perfect storm, leading the FAA to forecast added delays in the years ahead.¹⁶

With the FAA's Next Generation Air Transportation System (NextGen), the federal government has embarked on an effort to modernize air traffic systems. The initiative, however, has faced numerous delays and cost overruns, and the FAA has yet to address key challenges hindering implementation.¹⁷ Without improvements to aviation infrastructure, businesses are set to lose \$258 billion by 2020. By 2040, those losses would balloon to \$1.2 trillion.¹⁸



PORTS AND WATERWAYS

Ports and inland waterways once showcased the very best of American civil engineering and ingenuity. But many of these pieces of infrastructure have aged well beyond their intended use and were not built to manage today's size and volume of ships and cargo. For example, along inland waterways, more than half of the locks that help ships more easily navigate rivers are more than half a century old.¹⁹ Additionally, 70 percent of locks and dams experienced an unscheduled delay or service interruption in 2015.²⁰ Half of all vessels experience service interruptions, delaying them for hours at a time.²¹

Seaports are the gateways to U.S. trade with the rest of the world, but bottlenecks hurt U.S. companies and diminish America's global economic competitiveness. In a survey of American Association of Port Authorities members, one-third of respondents said congestion over the past decade has cut into port productivity by 25 percent or more.²²

RAIL

FREIGHT RAIL



Privately owned freight railroads help manufacturers transport imports and exports from the center of the country to marine and inland ports and everywhere in between.

This system, graded the highest of any infrastructure type by the ASCE, differs from other infrastructure sectors because it is almost entirely privately owned and

operated. Private investments—averaging \$27 billion annually over the past five years—allow the sector to maintain and upgrade its track and equipment, in turn helping bolster safety.²³ Railroads are implementing innovative technologies, such as unmanned drones and a nationwide network of wayside detectors, to inspect equipment with greater precision and frequency and operate a “smart” and connected network.

While railroads are getting smarter and safer, grade crossings where roadways meet railways remain dangerous. In 2017, there were 274 fatalities at grade crossings.²⁴ The good news is 95 percent of all rail-related deaths are preventable, and investments in separations of highway and rail crossings will save lives. Federal and state governments must invest in grade crossings.

PASSENGER RAIL

In 2018, Amtrak ridership stood at 31.7 million, reflecting consistent demand for passenger rail in the United States, especially along the already congested Northeast Corridor (NEC).²⁵

Train travel as an alternative to passenger highway travel on I-95 or busy airports in the same geographic footprint alleviates congestion. If the NEC were lost for a day, the U.S. economy would face \$100 million in increased congestion costs and lost productivity. However, along the NEC, upgrades to basic infrastructure, such as signals, power systems and tracks, are needed, and the average age of major projects is 111 years.²⁶

Investments in both passenger and freight rail spur a thriving railway supply industry that supports more than 650,000 jobs.²⁷

Traffic clogging the nation’s roads and bridges is at an all-time high. Ports and airports are at capacity. Unsound infrastructure puts lives at risk. Businesses and manufacturers are cutting into their bottom lines with wasted time and money. According to the NAM’s quarterly survey, manufacturers consider rising transportation costs a top business concern.

The United States desperately needs a targeted, substantial investment in revitalizing the nation’s infrastructure. Congress should legislate identifying and prioritizing projects of national and regional significance requiring federal investment and vision to revitalize the nation’s infrastructure.



BUILDING TO WIN

TOP TRANSPORTATION PRIORITIES

“Infrastructure improvements are necessary to ensure that America remains competitive in a global economy that impacts us all. We must have the ability to easily transport components from our suppliers to our manufacturing facilities, and from our manufacturing sites to our customers, in an efficient and reliable manner, keeping our economy moving for the betterment of America.”

Martin Weissburg
Chairman, Volvo Group North America
President, Mack Trucks

FUNDING NEEDS BY TRANSPORTATION MODE

10-YEAR INFRASTRUCTURE NEEDS



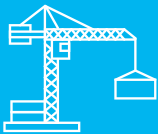
\$713 BILLION
Highways



\$123 BILLION
Bridges



\$128 BILLION
Airports



\$15 BILLION
Ports and Inland
Waterways



\$90 BILLION
Public Transit



\$29 BILLION
Rail

TOTAL: \$1.09 TRILLION

After decades of underinvestment, the gap between current spending and what is needed to revitalize U.S. transportation infrastructure totals more than \$1 trillion²⁸—a staggering sum. Some critics wrongfully contend that such numbers are exaggerated. But after years of stop-and-start efforts, instead of long-term solutions, we are left with an acute need. Rather than debating the scope of the problem, it is time to come together under a “Building to Win” strategy.

The NAM sees a clear opportunity to fix the nation’s languishing transportation systems in a targeted way. Far from being a blank check for pet projects, the NAM recommends investments that come with strong accountability measures to ensure funds go to projects offering the greatest value for businesses, families and the economy.

This agenda offers a transportation blueprint to target specific priority investments that can deliver tangible results for U.S. manufacturers, businesses and American households. These span each of the critical transportation infrastructure sectors, collectively serving the vital needs of American businesses and communities and should be top priorities for Congress and the president.

HIGHWAYS

OVERALL INVESTMENT NEEDED: \$713 BILLION²⁹

From urban highway corridors to key interchanges where commuters and trucks come to a chronic standstill, the American Highway Users Alliance (AHUA) publishes the results of the top highway bottlenecks in the country.³⁰ This list is familiar to many American manufacturers and businesses. Drivers have been confronting these choke points for years if not decades.

As freight shipped by truck is expected to almost double by 2045, reducing highway congestion becomes a greater necessity. Congestion exacerbates growing challenges in the truck services market, such as truck driver shortage and truck availability. Easing congestion is vital to manufacturers' ability to move goods and component parts efficiently. The American economy cannot afford to come to a standstill any longer.

The following highway bottlenecks are some examples of manufacturers' needs for improved transportation.

Chicago (Kennedy Expressway—I-90)

Chicago is one of the nation's most important intermodal junctions and a manufacturing hub. Highways, freight rail lines, inland waterways and cargo flight routes all converge in the Windy City.

A 12-mile stretch of the Kennedy Expressway that links downtown Chicago with O'Hare International Airport and the northwest suburbs of the city is classified as the worst highway bottleneck in the country by the AHUA. Fixing this bottleneck through capacity enhancements or intelligent highway management strategies has the potential to save up to \$418 million annually in reduced delays for motorists and trucks.³¹

Los Angeles (I-405, I-10, U.S. 101, I-110, I-5/I-10 Interchange)

With its ports and airport facilities, Los Angeles serves as one of the principal gateways for manufactured goods to come in and out of the United States. Even manufacturers and businesses based far from California are affected by the pace at which freight can pass through the Los Angeles region.

Los Angeles is home to many of the top bottlenecks in the United States, according to the AHUA.³² Together, they account for 44 million hours of delays annually.

Atlanta (I-285 and I-85—Tom Moreland Interchange)

Although highway congestion impacts all road users, some choke points in the U.S. interstate network more significantly affect the movement of freight trucks. The worst such bottleneck for freight is the Tom Moreland Interchange in Atlanta.³³ The five-level interchange is known as "Spaghetti Junction" for the complicated web of overpasses and interchanges. Businesses from across the Southeast and broader freight network would benefit substantially from efforts to alleviate the chronic congestion at this interchange.

New York City (Hudson River Crossings, Cross Bronx Expressway, I-678)

The most populous city in the United States is also one of the Northeast's most critical transportation hubs. As the largest business center in the region and a major port, New York City receives manufactured goods from across the country. But with freight vehicle restrictions on most of New York's tunnel crossings and a growing need for increased freight rail capacity surrounding the city, many of New York's highways are choked with truck traffic, which slows down all motorists. Infrastructure improvements to New York's highways are critical for ensuring that as the region grows, this bottleneck does not disrupt the broader freight system.

Houston (I-69, I-610)

Two stretches of highways in Houston are critically congested gateways to the city's commercial and industrial centers, slowing the movement of manufactured goods and hampering economic activity.

ACTION REQUIRED:

Relieve highway bottlenecks and repair America's crumbling highways and bridges.

THE HIGHWAY TRUST FUND:

A BUMPY ROAD TO SOLVENCY

The Highway Trust Fund (HTF) supports state and local investments to ease traffic congestion on highways, fix bridges, improve transit systems and make important safety improvements. But over the past several years, the fund has been on a path toward insolvency.

The HTF is funded primarily through the federal gas tax. In the past, Congress raised the gas tax to maintain critical infrastructure investments. But the last increase was in 1993, and the rate was not indexed to inflation, meaning the purchasing power of this revenue has declined by 40 percent since 1993. And as fuel-efficient cars become more popular, drivers use less gas. So, while drivers are crisscrossing America's highways more than ever, the HTF collects less revenue per mile traveled.

To make up for the shortfalls, the federal government has transferred approximately \$140 billion from the Treasury General Fund so state and local highway projects can continue. But this is a stopgap solution. **We need a reliable, user-based, long-term funding stream so that families, drivers and manufacturers can have the safe, efficient highways they need.**

BRIDGES

OVERALL INVESTMENT NEEDED: \$123 BILLION³⁴

Bridges in the United States are in dire condition, with 9 percent deemed “structurally deficient.” The following bridges are some of the most heavily traveled that are in substandard condition:

- **I-405 over Olympic Boulevard (Santa Monica, Calif.)**
296,000 daily crossings
- **I-270 E over Conway Road (St. Louis, Mo.)**
210,521 daily crossings
- **Garden State Parkway over Mill Road (Union County, N.J.)**
193,870 daily crossings

In addition to these high-traffic bridges, there are a number of states with an alarmingly high percentage of structurally deficient bridges, compromising the safety of the thousands of drivers crossing them every day.

State	Percentage of All Bridges Deemed Deficient ³⁵	Number of Structurally Deficient Bridges
Rhode Island	23%	181
Iowa	21%	5,067
West Virginia	19%	1,372
South Dakota	19%	1,081
Pennsylvania	18%	4,173

ACTION REQUIRED:

Act now to repair and upgrade America’s neglected and unsafe bridges.

BRENT SPENCE BRIDGE

THE HIGH COST OF DELAY: The Ohio River's Brent Spence Bridge in the Cincinnati area is a vital economic corridor.

Not only does it carry thousands of vehicles daily across the Ohio–Kentucky border, the freight that crosses the bridge is equal to 3 percent of the nation's GDP. In the more than half century since the bridge opened in 1963, daily traffic has grown to more than 172,000 vehicles on a structure initially meant to accommodate only 80,000. The stress placed on the bridge is only expected to grow, and the Federal Highway Administration's National Bridge Inventory classifies the bridge as “functionally obsolete” because of safety and capacity concerns. Despite the severe need on one of the busiest trucking routes in the United States, investments to replace the Brent Spence Bridge are continually delayed, and local businesses bear the brunt of the consequences.

A stalled \$2.7 billion proposal to replace the bridge and make associated highway upgrades would provide economic benefits exceeding \$18 billion in 20 years, according to the Texas A&M Transportation Institute. But for every day that inaction delays this critical work, the price tag increases by more than \$220,000.

“My employees—and the products that we make—waste valuable time crossing the Ohio River on the Brent Spence Bridge due to the uncertainty of this structure. We need immediate funding to move stalled projects like the Brent Spence Bridge off the sidelines.”

Dan Glier
President
Glier's Meats, Inc.



AVIATION

OVERALL INVESTMENT NEEDED: \$128 BILLION³⁶

The United States should commit to a swift plan for modernizing the U.S. air traffic system with NextGen implementation to alleviate congestion at the nation’s airports. The FAA estimates that NextGen would reduce flight delays by 35 percent.

In addition, U.S. airports need upgraded standards and modernized revenue sources. From 2019 to 2023, the nation’s airports will require \$25.6 billion annually in capital improvements, with 34 percent of those costs needed just to maintain a state of good repair and 66 percent needed for new capacity to accommodate growth in passengers and cargo.³⁷ By 2030, nine airports—including New York City, Charlotte, Houston, Las Vegas, Phoenix and San Francisco—will dependably experience severe delays. These airports are hubs serving hundreds of regional airports. These investments are necessary for continued safe, competitive passenger and cargo air travel in the United States.

Top 10 U.S. Passenger Airports ³⁸	Top 10 U.S. Cargo Airports ³⁹
Hartsfield–Jackson Atlanta International	Memphis International
Los Angeles International	Ted Stevens Anchorage International
Chicago O’Hare International	Louisville International–Standiford Field
Dallas–Fort Worth International	Chicago O’Hare International
Denver International	Miami International
John F. Kennedy International	Los Angeles International
San Francisco International	Cincinnati/Northern Kentucky
McCarran International	Indianapolis International
Seattle–Tacoma International	Dallas–Fort Worth International
Charlotte/Douglas International	Ontario International (California)

ACTION REQUIRED:

Quickly develop a plan to accelerate the implementation of NextGen air traffic management technology. Modernize revenue sources that will support upgrading runways and airports to world-class standards.



PORTS AND INLAND WATERWAYS

OVERALL INVESTMENT NEEDED: \$15 BILLION⁴⁰

While the United States has more than 300 commercial harbors and more than 600 smaller harbors, the top 10 port complexes handle a majority of cargo volume and international vessel calls. Port congestion exacerbates first- and last-mile delays in freight movements, driving up the cost of goods in both the global marketplace and supply chains here in the United States.

Top 10 U.S. Ports by Tonnage, 2017⁴¹

Ports	Rank	Total Tons (Millions)
South Louisiana, La.	1	275.1
Houston, Texas	2	260.1
New York, N.Y., and N.J.	3	135.9
New Orleans, La.	4	96.3
Beaumont, Texas	5	89.4
Corpus Christi, Texas	6	87.3
Long Beach, Calif.	7	86.0
Baton Rouge, La.	8	77.0
Virginia Beach, Va.	9	67.3
Los Angeles, Calif.	10	65.8

In addition, approximately 25 percent of the nation's freight value is shipped on the 12,000-mile inland waterway system, passing through 192 lock sites that connect the heartland to global markets.

Unfortunately, instead of doing maintenance work to prevent failures, our nation's locks are only fixed when they fail, which is unsustainable. Improving inland waterway systems and modernizing locks that suffer from serious service disruptions would relieve congestion on already-overcrowded highways, creating a win-win for manufacturers, consumers, drivers and the nation's economy.

ACTION REQUIRED:

Take an expedited approach to deepen and modernize ports, upgrade aging locks and enhance intermodal connections.

SOUTHERN CALIFORNIA MULTIMODAL IMPROVEMENTS:

UNCLOGGING CONGESTION

Los Angeles notoriously suffers from the worst traffic congestion in the country. Traffic not only stalls local residents but also impedes the efficient flow of goods to and from the ports of Los Angeles and Long Beach. These ports are a vital gateway for waterborne trade by cargo volume in the country, serving both the major regional market and inland regions across the country. The economic impact of Los Angeles' congestion is therefore felt throughout the United States by everyone from retailers to small manufacturers and to Midwestern farmers who rely on the ports to remain competitive.

Investing in the region's ports, intermodal links and roads would help alleviate current congestion and help prepare for expected growth. While work has begun on the replacement of the Gerald Desmond Bridge, which carries about 15 percent of the nation's waterborne cargo to and from the ports of Long Beach and Los Angeles, a number of other critical projects are stalled because of insufficient or uncertain funding. Investment in these projects would help clear congestion and reduce traffic accidents, allowing commerce to flow more smoothly between the ports and some of the nation's largest distribution, warehousing and logistics centers.



PUBLIC TRANSIT:

OVERALL INVESTMENT NEEDED: \$90 BILLION⁴²

From 1996 to 2016, the number of people using transit—including commuting workers—grew by 33 percent.⁴³ However, transit agencies face budget shortfalls and have difficulty addressing capital investment needs—21 percent of buses need replacement now, and an additional 32 percent will need replacement in five years' time. New investments would allow transit agencies to repair and replace aging fleets and help ensure transit systems remain a safe and reliable mobility choice for all passengers, including manufacturers and their employees.

ACTION REQUIRED:

Eliminate the maintenance backlog and expand the reach of public transit into more communities.

PASSENGER AND FREIGHT RAIL:

OVERALL INVESTMENT NEEDED: \$29.4 BILLION⁴⁴

Since 2000, Amtrak's ridership, especially on the NEC, has seen historic growth. The most recent surface transportation reauthorizations include provisions that hold Amtrak accountable. In conjunction with better Amtrak management, the reauthorizations have led to an improved Amtrak bottom line. This accountability and success have supported investments to address the backlog of projects on the NEC. Additionally, policymakers should continue to focus investment—both traditional funding programs and competitive grant awards—on improving road- and rail-grade separations on both freight and passenger lines to reduce delays and save lives.


ACTION REQUIRED:

Invest in Amtrak's capital needs and grade crossings across the entire network while promoting regulatory and fiscal policies that incentivize continued record levels of private capital reinvestment in railroad infrastructure.


A black sign with white text that reads "34 Penn Station". The sign is mounted on a wooden post. In the background, a blurred cityscape with tall buildings is visible.

34
Penn
Station

THE GATEWAY PROGRAM

A photograph of the George Washington Bridge, a large suspension bridge, spanning the Hudson River. The bridge is illuminated with lights, and the city skyline is visible in the background.

Serving nearly half a million people a day, New York City's Penn Station is the busiest rail station in North America—and perhaps the most troubled. The twin, single-track rail tunnels under the Hudson River—the most critical link of the Northeast rail corridor—are more than a century old, already at full capacity and sustained heavy damage in 2012 from Superstorm Sandy. Reconstructing the tunnels would require closure of each tube for more than a year—an undertaking that would cause massive disruptions to rail service in the region and wreak economic havoc. That's why constructing a new tunnel is so critical.

A photograph of the entrance to the Holland Tunnel. A large sign above the entrance reads "HOLLAND TUNNEL" and "STAY IN LANE". The entrance is a dark, arched opening in a brick building.

The Gateway Program is a visionary track, tunnel, bridge and station improvement project that would double the number of passenger trains running under the Hudson River. Despite the acute need and financial commitments from the states of New York and New Jersey, the project's outlook is uncertain. Construction on phase one—the new tunnel and Portal North Bridge—was scheduled to begin in 2019 with a completion date of 2026. However, funding uncertainties could delay this project and cause serious economic damage to the Mid-Atlantic corridor and beyond. But jump-starting the project would bring massive and long-term benefits not just to the region but for the nation's economy.

GOOD GOVERNANCE MEASURES TO EFFECTIVELY DELIVER BETTER INFRASTRUCTURE

AN INDEPENDENT COMMISSION TO EVALUATE PRIORITIES AND REVENUE OPTIONS

An independent, bipartisan transportation commission is needed to oversee a national strategic plan for transportation investments, including recommending revenue adjustments to achieve the plan as recommended by the National Surface Transportation Policy and Revenue Study Commission more than a decade ago. In the meantime, many states have created independent transportation commissions to oversee statewide planning and project selection like state public utility commissions. The federal government similarly has relied on the Defense Base Closure and Realignment Commission (BRAC) to make recommendations on military base closings and the Postal Regulatory Commission to set postal rates.

Empowering a bipartisan commission would depoliticize the decision-making process, and linking revenue proposals to a national strategic plan would also raise confidence that infrastructure funds would be spent judiciously. Both factors should alleviate obstacles to approving new revenue sources or raising fuel tax rates. Of course, like the BRAC process, Congress should approve the plan.

ACTION REQUIRED:

Create an independent, bipartisan transportation commission.

“A six-year delay in starting construction on public projects costs the nation more than \$3.7 trillion, including the costs of prolonged inefficiencies and unnecessary pollution.”

Philip Howard
Legal Reform Expert and Founder
Common Good



EXPEDITED ENVIRONMENTAL REVIEW

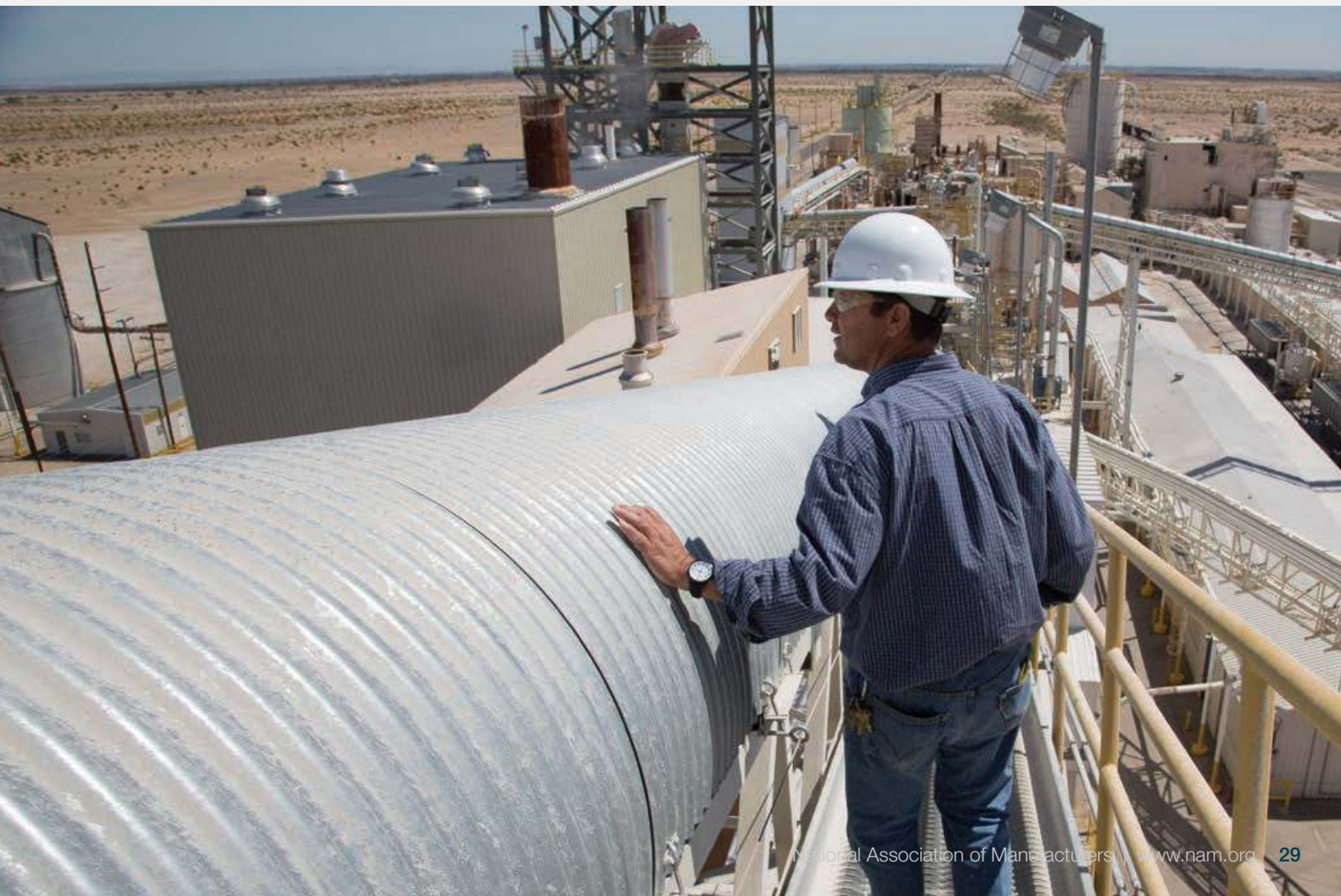
The United States lags behind other advanced economies in setting reasonable policies and procedures that promote the expediency of project reviews while ensuring environmental protections. Shortening the average time for approval on transportation projects would go a long way in helping Americans realize the benefits of infrastructure investments.

The average environmental impact statement takes more than five years to complete.⁴⁵ To streamline this cumbersome process, policymakers should address a number of concerns, including unnecessary and immaterial details in the review that are only added out of a fear of litigation and the multiple local, state and federal agencies that lack clear hierarchy, slowing decision-making.

ACTION REQUIRED:

Streamline regulations so projects can get done more quickly, mandate accountability and improve efficiencies and processes to reduce the costs of delayed infrastructure. Suggestions include the following:

- Promote early engagement and open collaboration between federal, state, tribal and local permitting authorities.
- Encourage agencies to use third-party contractors to expedite independent reviews and save taxpayer resources.
- Limit abuse of the legal system as a tactic to delay projects.



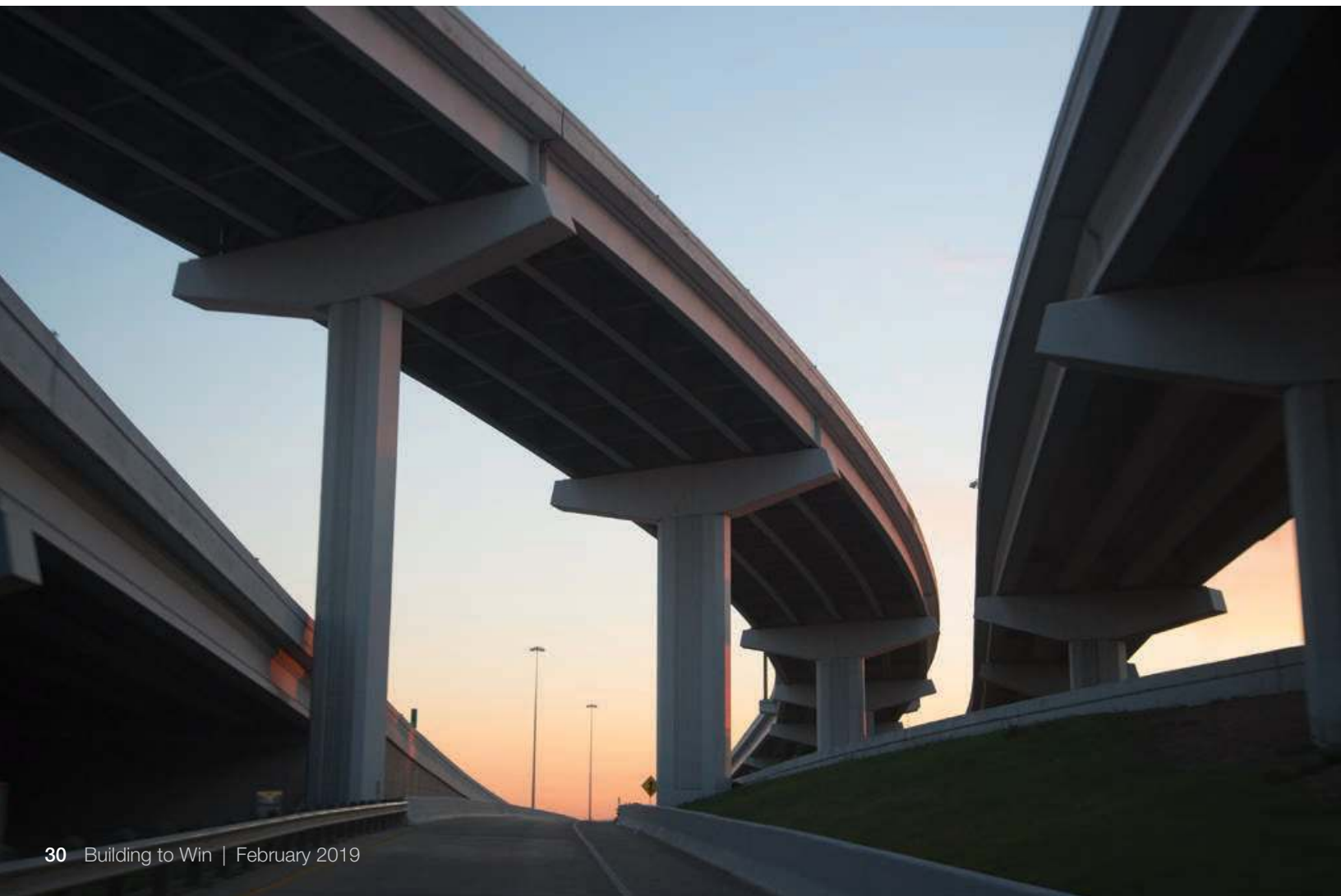
OPTIONS TO FUND AND FINANCE

The dire state of U.S. transportation infrastructure demands immediate action. Though the need for new revenue has mounted over time, funding transportation infrastructure beyond routine maintenance has become an uphill battle, especially when multiple jurisdictions are involved in designing, planning, funding and building a given project. Policymakers need to embrace new ways to increase infrastructure investments to meet the needs of businesses and communities.

Federal Contributions for Transportation Investments

The following is a list of funding ideas for policymakers to consider. This is not an exhaustive list, nor does it represent an exact policy prescription for what lawmakers should adopt. The NAM is putting these funding options forward to spark the conversation on how to turn the tide on chronic underinvestment, get people back to work, catch up with the rest of the world on infrastructure and address a long-term public policy challenge that elected officials have long neglected.

Manufacturers believe in the power of ideas and the ability of innovative leaders to craft new solutions—and we recognize the best options may not have yet been identified.



Option for Funding	Description and Potential Action	Revenue Estimate
Gas Tax	<p>Gasoline is taxed at 18.4 cents per gallon and diesel at 24.4 cents per gallon. The gas tax, which is the primary method of collecting revenue for highway maintenance, was last raised in 1993.</p> <p>Increase the gas and diesel taxes during a one-time legislative opportunity by 15 and 20 cents, respectively.</p>	\$144.3 billion over five years
Gas Tax Indexing	<p>The purchasing power of the fuel tax has declined over the past 20+ years. Adjusting the fuel tax to inflation by pegging the diesel and gas taxes to the Consumer Price Index help to prevent future declines in purchasing power.</p>	\$12.5 billion over five years
Vehicle Miles Traveled (VMT) Fee	<p>The federal government has mandated increases in fuel efficiency without addressing how such changes impact funding for transportation investments. A transition to a mileage-based user fee would capture all vehicles. Charges could vary: a flat fee (i.e., a fixed number of cents per mile, regardless of where or when the travel occurred); a variable fee based on driver considerations, such as time of travel, congestion, type of road traveled on, type and weight of the vehicle and vehicle emission levels; or a combination of these factors.</p> <p>Introduce a VMT of 1 cent per mile and 4 cents per mile on trucks.</p>	For cars, \$145.6 billion over five years; for trucks, \$58.8 billion over five years
Registration Fees	<p>Registration fees are directed and collected through state departments of motor vehicles.</p> <p>A federally imposed vehicle registration fee, on top of existing state registration fees, could raise revenue for infrastructure investments. Registration fees that ensure electric or hybrid-electric vehicles are supporting transportation funding have been proposed as a means to collect revenue from car owners who consume little or no fuel, yet rely on the same roads as gas- and diesel-powered cars.</p> <p>\$100 registration fee on electric vehicles and a \$50 registration fee on hybrid vehicles; or \$5 registration fee on all vehicles.</p>	\$1 billion over five years for electric and hybrid vehicles; \$12.2 billion over five years for all vehicles
Passenger Facility Charge (PFC)	<p>Airports administered by public agencies are able to collect a PFC of up to \$4.50 for every enplaned passenger through the airline ticketing process. Revenues collected from this fee support airport capital improvements as well as airport access-enhancing road and transit projects. Since the PFC was last increased in 2000 and it is not indexed for inflation, its purchasing power has diminished significantly. Raising the cap that airports can assess on passengers would provide more funds for airport and other infrastructure investments.</p> <p>Raise the cap on PFCs to \$8.</p>	\$13.3 billion over five years
Harbor Maintenance Tax	<p>The harbor maintenance tax is similar to customs duties and fees. It is a 0.125 percent tax assessed on the value of imported commercial cargo. The majority of the tax's revenues is designed to pay for harbor maintenance and dredging and deposited into the Harbor Maintenance Trust Fund (HMTF).</p> <p>Increase the Harbor Maintenance Tax by 25 percent.</p>	\$2.8 billion over five years
Unlock the HMTF	<p>HMTF funds must be released through the annual appropriations process. Frequently the amount released from the Trust Fund is less than the user fees collected for it.</p> <p>Release \$9.3 billion backlog of funds in the HMTF.</p>	\$9.3 billion one-time payment

PRIVATE CONTRIBUTIONS FOR TRANSPORTATION INVESTMENTS

Private-sector support for infrastructure development can be brought to bear with careful planning and thoughtful policy adjustment. Longstanding and new financing options for building infrastructure have grown in popularity. Public-private partnerships (PPPs) can be achieved through a range of federal, state and local activities designed to transfer risk, introduce new innovations and build projects that would otherwise languish because of traditional funding concerns or constraints.

PPPs are not suitable for all infrastructure projects but exist to provide another avenue to help fund and deliver needed infrastructure investments.

Taxpayers save money when the private sector assumes risk that it can manage more efficiently than the public sector, and the private sector can often deliver higher-quality service compared to traditional procurement. However, the capability to leverage federal or state investments in infrastructure is based on a core principle that investors must be repaid. Infrastructure project sponsors, namely states and localities, must be willing to raise new fees, rates, tolls and/or taxes or even dedicate a funding stream from a budget line item for a committed period of time to repay the investors.

Federal backstops and incentives to engage in PPPs are critical to the long-term success of private investment in infrastructure. The following options would enhance current infrastructure financing alternatives already available in the open market or through federal agencies, such as the U.S. Department of Transportation's nationally recognized credit assistance program for qualified projects of regional and national significance provided under the Transportation Infrastructure Finance and Innovation Act.

Financing Option	Description	Estimated Loan Capability
Qualified Public Infrastructure Bonds	These would be similar to private activity bonds but would offer more flexibility, potentially carrying all of the same tax-exempt features as municipal bonds so as to attract a broader range of investors and be available to a broader range of infrastructure projects.	\$1.3 billion over five years
Move America Bonds/Tax Credits	The Move America Act proposed by Sens. Ron Wyden (D-OR) and John Hoeven (R-ND) builds off the previous "Build America Bonds" effort but would allocate tax credits to private-sector purchasers (i.e., corporate taxpayers with tax liabilities) to attract private capital investment to public infrastructure.	\$8 billion investment from the Treasury would support \$226 billion in investment in infrastructure projects over 10 years.
Build America Bonds	Created by the 2009 stimulus bill and now expired, "Build America Bonds" provided state and local governments a direct 35 percent subsidy in lieu of the traditional tax-exempt bond.	More than \$180 billion financed public infrastructure projects
National Infrastructure Bank	The bank would offer long-term loans on favorable terms based on Treasury rates. Some proposals have called for financing projects larger than \$100 million with a focus on regional or national importance, a clear public benefit and backed by an identified revenue stream that repays the loan. Rural projects could receive a set-aside for projects valued at least \$25 million.	Proposals have ranged from \$10 billion to \$25 billion. A \$25 billion appropriation would be expected to support \$250 billion worth of activity in loans, loan guarantees and other sources of credit for public infrastructure.



STATE AND LOCAL CONTRIBUTIONS

All levels of government have a responsibility and role in the modernization of U.S. infrastructure. While the federal government provides substantial funding for transportation infrastructure, investment decisions and execution rest with state and local leaders. State and local governments must plan for growth, conduct environmental reviews, set priorities and build consensus among stakeholders and the general public. Finally, state and local governments are the primary stewards of public infrastructure in the United States, responsible for the long-term maintenance of many asset classes.

In addition to declining infrastructure spending by the federal government, spending by state and local governments on all types of capital declined as a share of GDP from 2.4 percent in the early 2000s to 1.9 percent in 2014.⁴⁶ In response, many states have boldly pursued and passed legislation to provide new funding for local infrastructure needs. The NAM applauds the successful, bipartisan efforts in 27⁴⁷ states to raise revenue for infrastructure in five years. Additionally, in 2018, half of states passed at least one ballot measure to support transportation infrastructure.⁴⁸

But states cannot upgrade U.S. infrastructure alone. No single partner can deliver a well-functioning, national U.S. infrastructure network driven by long-term vision and funding stability. A sustained and focused effort by federal, state and local governments as well as the private sector will help reverse a troubling decline and create opportunities to address persistent backlogs and aging infrastructure.



CREATE:

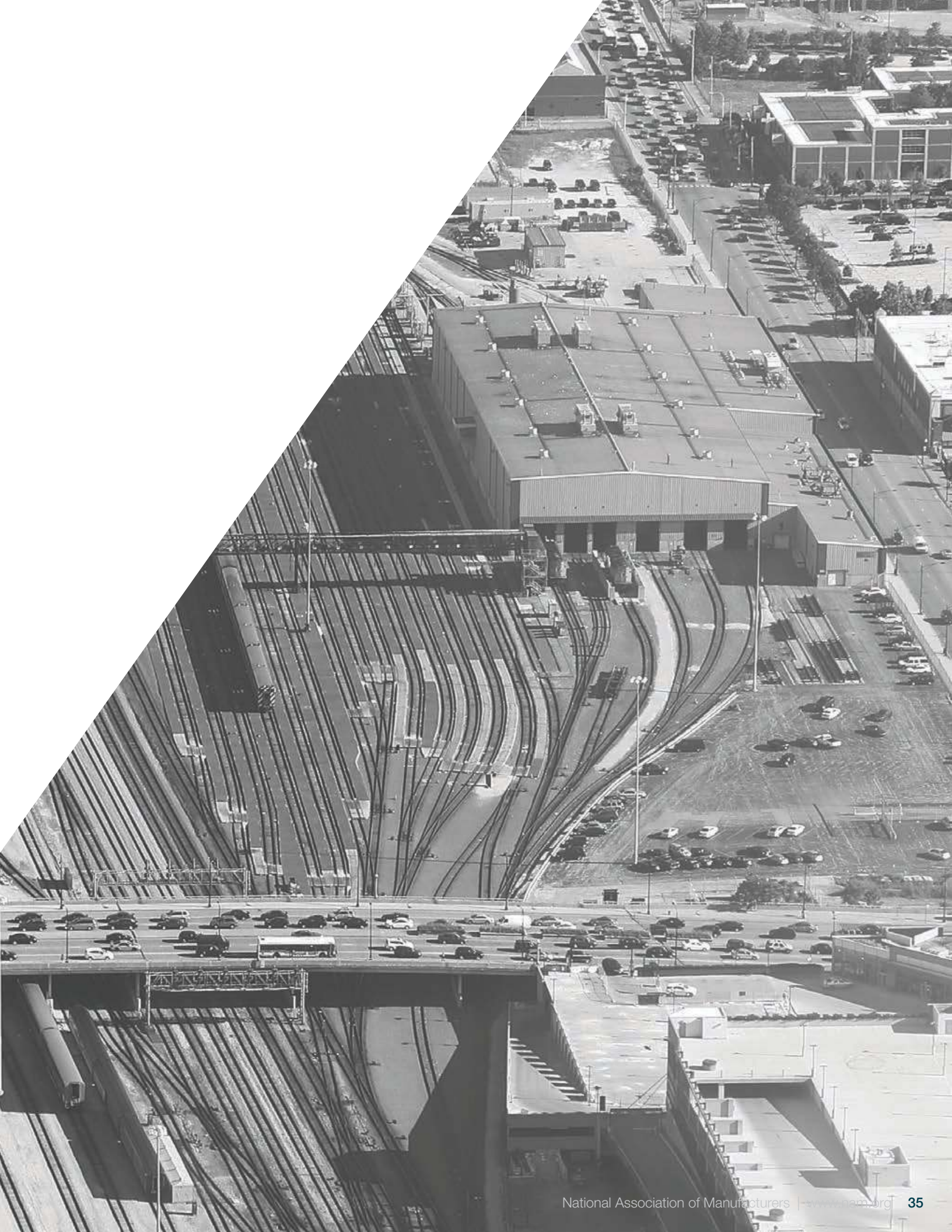
IMPROVING RAIL NETWORKS THROUGH A REGIONAL PARTNERSHIP

As a major manufacturing hub, the Chicago area handles one-fourth of the nation's freight rail traffic, making the rail network critical to commerce in the Midwest and across the country. Nearly 500 freight trains and 760 passenger trains pass through the region every day, and freight levels are expected to almost double by 2045. With this growth comes an increase in congestion along Chicago's freight corridors, many of which are more than a century old, and can slow trains passing through the city for an average of 30 hours.

In 2003, the federal Surface Transportation Board convened CREATE (Chicago Region Environmental and Transportation Efficiency Program), a task force made up of local and regional stakeholders and all six of the freight railroads that are active in Chicago. This task force recognized that growing rail congestion threatened the economic competitiveness of the region and businesses across the country. Since then, CREATE has invested billions of public and private dollars to upgrade regional rail infrastructure. The program has completed nearly 30 projects, which together have created increased rail network capacity and decreased the travel time needed to move freight across the city by 45 percent. The projects have also decreased travel times for motorists, transit users and passenger rail riders.

In total, the program will invest \$4.4 billion in infrastructure improvements over a 30-year period, which are estimated to generate \$31.5 billion in economic benefits.

In 2018, CREATE received almost \$200 million in federal, state and local grant awards to invest in projects. Most significantly, the CREATE Program partners were awarded a federal "Infrastructure for Rebuilding America" (INFRA) grant for the 75th St. Corridor Improvement Project (CIP) and Argo Connections Project. The \$132 million INFRA grant will leverage public and private funding commitments of \$342 million to fix the most complex and congested segment of railroad in North America. The 75th St. CIP and Argo Connections projects will reduce rail and highway delays and expand freight, commuter and passenger railroad capacity not only in Chicago, but serving the nation. However, much CREATE Program work remains to be done. There are nearly 20 projects for which funding sources have yet to be identified, including grade separation projects as well as passenger rail corridor upgrades. Another dozen projects are in the planning and environmental review phase but are still years away from completion.



BEYOND TRANSPORTATION: AMERICA'S INFRASTRUCTURE CHALLENGES

After years of decline and squandered opportunities, U.S. transportation infrastructure is in dire need of repair. But transportation is not the only type of infrastructure suffering from serious deficiencies, and it is certainly not the only investment the United States needs to make to establish a strong, competitive edge in the world economy. Several other infrastructure systems—from water, to pipelines and microgrids, to broadband—demand immediate attention.

“To remain competitive, we need infrastructure working for us, not against us. From broadband, to water, to roads, the U.S. needs a comprehensive infrastructure policy that focuses on networks and systems, maximizes smart technology, ensures rural-urban connectivity, streamlines project delivery and provides adequate and reliable funding.”

Jason Andringa
President and CEO
Vermeer Corporation

WATER

Drinking Water and Wastewater Investment Needed: \$105 Billion⁴⁹

Communities across the country rely on water infrastructure that is approaching the end of its useful life. The average age of the pipe bringing water to faucets across the country is 47 years, but in urban centers, the age is frequently much higher.⁵⁰

Average Age of Pipes in Urban Centers ⁵¹	
Philadelphia, Pa.	78 years
Washington, D.C.	77 years
New York, N.Y.	76 years

There are more than 53,000 water systems in the United States. More than half of these systems are small, stand-alone operations serving fewer than 500 people.⁵² As many as 240,000 water main leaks every year cause property damage and service disruptions.⁵³ Every day the average U.S. business is without water, it loses \$230 in sales per employee. In water-intensive manufacturing industries, that cost can skyrocket to \$5,800 per employee.⁵⁴

ACTIONS REQUIRED:

- Robust expansion of PPPs for drinking water and wastewater projects, through programs like the Water Infrastructure Finance and Innovation Act, will bring added resources above and beyond current EPA State Revolving Funds and other programs.
- Eliminating state volume caps on private activity bonds for drinking water and wastewater projects will leverage private capital to multiply the impact of federal efforts.
- Support and incentivize partnerships or consolidations that expand small utilities’ operational efficiencies, access to capital, compliance with complex state and federal regulations and customer satisfaction.
- Stemming the loss of clean water by replacing pipes at the end of their useful life and introducing technology-enabled monitoring for leaks can yield financial savings, while preventing the waste of precious clean water.
- Using new technologies and engineering solutions to reduce pollution from sewer overflows protects water sources, public health and aquatic resources.
- Innovative stormwater solutions can enhance the resilience of U.S. cities, while also providing new public assets (like waterfront parks) that also serve as flood protection zones.

ENERGY

The way Americans produce and use energy is changing rapidly, and energy infrastructure must also evolve to keep pace. Most energy infrastructure is privately owned and operated, but subject to federal, state and local regulation. Regulators have been hesitant to approve investments in resilience.

The electric power grid delivers a constant flow of energy to the nation's households, buildings and businesses. From powering schools and hospitals, to charging ubiquitous handheld devices, to keeping factories running, lives and livelihoods depend on the reliable delivery of electricity. For many manufacturers, energy is the largest and most important cost. Manufacturers need reliable, affordable, always-on power, which cannot occur without a modern, effective electric grid. Electric utilities have invested hundreds of billions of dollars to build new transmission lines and distribution infrastructure to support a rapidly evolving grid. At the same time, major changes in where and how we generate and consume electricity will require even greater grid infrastructure investments.

In addition, a renaissance in domestic energy production has unlocked vast amounts of oil, natural gas and natural gas liquids, reducing U.S. dependence on imported energy and turning the United States from a net importer to a net exporter of the commodities. Technological innovation has increased dramatically. Domestic production keeps energy costs low for households and businesses, driving new, major investments in manufacturing sectors that use these fuels as feedstocks and resulting in year-over-year emissions reductions from power plants and industrial sources. Demand for domestically produced oil and natural gas has never been greater and is expected to grow by 40 percent in the next 10 years, driven mostly by the manufacturing and power-generation sectors.

Supply will more than accommodate demand, but instead of coming from tankers docking in coastal ports, oil and gas now come from inland states like North Dakota, Colorado, Texas, Oklahoma, New Mexico, Pennsylvania and Ohio. As a result, there is a geographic mismatch between where the fuels will be produced and where they will need to go. The nation's network of pipelines will need to keep pace. By investing in new pipelines and continuing to update the existing network, we can save consumers money and unleash the tremendous job-creating potential of domestic oil and gas exploration.

ACTIONS REQUIRED:

- Reform existing laws and regulations and resolve conflicts among federal- and state-permitting authorities to facilitate a more transparent, streamlined and coordinated regulatory process for the siting and permitting of all energy delivery infrastructure, including oil and natural gas pipelines, energy transport by rail, energy export terminals, interstate electric transmission infrastructure, and carbon capture and utilization.
- Promote new energy infrastructure investments as a means of increasing U.S. infrastructure's resilience to climate change by mitigating against and designing for projected future climate conditions. Regulators should work to more quickly approve smart investments.
- Examine innovative financing mechanisms for new energy infrastructure to encourage private investment.
- Coordinate underground infrastructure work for road, water, gas, electric and broadband to yield construction savings and reduce traffic disruptions from construction work.
- Invest in regions without a developed pipeline network to bring down home heating costs in places like New England and make manufacturers more competitive.

DIGITAL

Digital infrastructure boosts Americans' quality of life in many ways, from increasing access to health care providers to expanding educational opportunities. It allows businesses to connect with partners and customers faster, and it propels new products to market. Internet-driven technology is at the heart of modern manufacturing through connected shop floors and the development and use of the internet of things and emerging technologies, such as artificial intelligence.

Unlike many types of transportation infrastructure, digital infrastructure is designed, built, financed, operated and maintained primarily with private investments and without significant cost to the federal taxpayer. Unfortunately, numerous outdated local laws and regulations inhibit the deployment of current and next-generation broadband infrastructure projects. Additionally, local laws, processes and siting requirements unnecessarily slow or prevent manufacturers' ability to deploy this infrastructure by making it difficult to get the necessary approvals to continue to build out and invest in our modern infrastructure system. To address these challenges, the federal government should intervene to ensure that manufacturers are able to reap the benefits of next-generation wireless broadband networks without delay. Creating incentives to invest in broadband infrastructure and maximizing consumer choice in how they connect, without creating a complex mandatory regulatory regime, can help address this challenge.

The Path to 5G:

- The United States can realize tremendous benefits from the deployment of next-generation wireless technology.
- According to a study by Deloitte, countries first to adopt 5G could see over a decade of competitive advantage.⁵⁶
- According to an Accenture report, next-generation wireless technology could "create 3 million new jobs and boost annual GDP by \$500 billion, driven by a projected \$275 billion investment from telecom operators."⁵⁷
- 5G will power new innovations from autonomous vehicles and smart city technologies to precision agriculture. Improved processing speeds and increased wireless capacity with 5G will lead to advancements in data-heavy tasks, like those associated with connected devices and artificial intelligence.

ACTION REQUIRED:

Ensure the regulatory framework keeps pace with the evolving nature of mobile technology by building on efforts to streamline the deployment of small cell infrastructure.

ACTIONS REQUIRED:

- State and local "dig once" policies that coordinate underground infrastructure work can speed broadband adoption by encouraging broadband providers to deploy fiber infrastructure along roads that are already under construction.
- Concerted policy efforts can help address barriers to broadband deployment in hard-to-serve areas. These may include leveraging federally funded investment partnership programs, streamlining regulatory processes across multiple agencies and levels of government and promoting policies that foster the use of cutting-edge communications infrastructure.
- Promote a regulatory environment that fosters private-sector investment in broadband. This includes policies that continue to close the gap between urban and rural populations' access to high-speed internet by effectively directing federal support to and incentivizing private investment in areas without reliable internet access.
- Prior so-called net neutrality regulations applied outdated, heavy-handed laws to today's modern broadband resulting in regulatory uncertainty and decreased investment in broadband.⁵⁵ The federal government should continue a light-touch regulatory approach that fosters innovation and investment in broadband infrastructure.

LOOKING AHEAD

Modernizing transportation infrastructure would not only support manufacturing workers in the United States, jump-start economic growth, spur job creation, strengthen our national security and enhance quality of life, but also create momentum that could be harnessed to make progress on other critical fronts, such as water utilities, the electric grid, pipelines and digital infrastructure.

This blueprint from the NAM is intended to amplify an important conversation about infrastructure that has been underway for decades. Even more, it should serve as an urgent call from manufacturers for elected officials to not only act, but act with purpose.



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