# INFRASTRUCTURE 2017 Gearing Up and Going Beyond



A Special Report Prepared By The Washington Times Advocacy Department



"It's time to start building in our country, with American workers and with American iron, and aluminum and steel. It's time to put up soaring new infrastructure that inspires pride in our people and our towns."

- President Donald J. Trump, June 9, 2017, at a White House announcement about regulatory relief.

### **Infrastructure 2017** Gearing Up and Going Beyond

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## Time to get to work on infrastructure



By Sen. John Barrasso, M.D.

cross America, we have aging roads, bridges, dams and water systems. Our crumbling infrastructure is threatening public safety, slowing economic development and costing us all.

A recent study by the American Society of Civil Engineers found that American families are losing \$3,400 per year in disposable income because of crumbling infrastructure. This comes in the form of wasted time in traffic, higher grocery bills or unreliable water and electricity services.

It is time we address our long-neglected public works.

As chairman of the Senate Committee on Environment and Public Works, I am committed to passing infrastructure legislation that will improve lives, protect families and strengthen the economy.

Our committee has held seven hearings this year on improving our nation's highways, bridges and other structures. These hearings have proven that different communities have different needs. We cannot use a "one-sizefits-all" approach.

Private financing has proven successful for projects in big cities. We should seek private partners to help finance major port and highway projects to help boost our larger urban areas.

This same private investment is typically less effective in rural communities. Big-ticket projects are less common in rural areas like my home state of Wyoming.

Less populous places may need to rely more on public financing. We've used these models in the past, and they're a good way to get the most bang for the taxpayer's buck if we use them responsibly.

Programs like the Transportation Infrastructure Finance and Innovation Act (TIFIA) and the Water Infrastructure Finance and Innovation Act allow us to multiply the impact of our federal funds. TIFIA has been around since 1998 and yields what economists call a 40-to-1 rate of leverage. A single taxpayer dollar produces the equivalent of a \$40 investment.

Improvement projects in rural communities are possible when we combine federal, state and local dollars. communities. We all eat food from ranches and farms that rely on these water systems.

These projects will create jobs and strengthen America's economy. They will expand opportunities for businesses by allowing products to reach markets more quickly and safely. Legislation tackling America's finish projects faster. We can also do it for less money.

President Trump and Members of Congress agree on the importance of working together to fix America's infrastructure.

The members of our committee are working to make infrastructure improvements a priority this year.



### Our committee has heard testimony that the highest hurdles to starting roadwork are often government permits and approvals.

These established funding mechanisms don't require a new bureaucracy.

Rural states have seen the successes of the federal government contributing its share of funding through formulabased mechanisms that ensure these communities get a fair piece of the pie. These funding programs help projects get done more quickly, without expensive delays.

Congress needs to make sure we are listening to rural communities and giving them an equal seat at the table as we address infrastructure.

Better roads and water systems across America help us all. We all buy goods that are transported on our nation's highways through these infrastructure needs must also address commonsense ways to speed up Washington's bureaucracy. Our committee has heard testimony that the highest hurdles to starting roadwork are often government permits and approvals.

The director of the Wyoming Department of Transportation told the committee about a project that took 10 months to build but 10 years to permit. Lengthy delays like this run up project costs, slow needed improvements, and has left our country with failing bridges, dams and roads.

If we find ways to streamline government review processes, while protecting the environment and using local expertise, then we can start and We are also working with the men and women who plan, build and maintain our roads, bridges, water systems and ports. These are the experts who know what needs to be done to keep America moving and prosperous.

If we can pass major infrastructure legislation, we will grow our economy and help ensure the health and safety of American families. Together we can find the best answers to our nation's infrastructure needs. Together we can get this done.

Sen. John Barrasso, Wyoming Republican, is Chairman of the Senate Committee on Environment and Public Works.

# U.S. public, politicians agree: Time to modernize U.S. infrastructure

### By Tom Smith and Dr. Norma Jean Mattei, P.E.

he images of roads that have seemingly become rivers over the past few weeks in Houston are hard to fathom. Hundreds of miles of roads were impacted by Hurricanes Harvey and Irma, whether submerged in feet of water or washed away. Utilities, like electric lines and water treatment plants, also suffered, leaving people in the dark and without water. These are stark reminders of the importance of infrastructure.

But it doesn't take a major event like a hurricane to realize that. Every day, water main breaks, potholes and delayed flights are increasingly more common. The American Society of Civil Engineers recently released 2017 Infrastructure Report Card graded the nation's infrastructure an overall grade of "D+" across 16 categories. Bridges, dams, drinking water, aviation, ports, and more, serve as the backbone of our economy. Yet, we so often don't think much about our infrastructure until it stops working.

The inconveniences of infrastructure disruptions add up. In fact, the average American family loses \$3,400 in disposable income each year because of inadequate infrastructure. Travel delays, car repairs after hitting a pothole, and products that cost more because of inefficiencies in the supply chain are all examples of the ways inadequate infrastructure costs each of us. These "unseen taxes" are a waste of money that we could instead be proactively investing into infrastructure, saving each of us, and the nation as a whole, money in the long run.

The good news is there is a growing desire to do something about it. Throughout the election season, President Trump repeatedly called out our ailing infrastructure as a national priority. Democrats have indicated a desire to work in bipartisan fashion to address these needs. The American people are behind them — a recent poll found 89 percent of Americans support an infrastructure bill and believe it's the issue Congress should focus on.

We should seize this opportunity to modernize our infrastructure and make it something we can be proud of once again.

Making the most of this opportunity starts with truly increasing our investment into our nation's infrastructure. Currently, our investment equates to 2.5 percent of the U.S. gross domestic product. By increasing the investment



from all levels of government and the private sector to 3.5 percent by 2025, we can close the nation's \$2 trillion infrastructure investment gap.

These investments should be made strategically, focusing on projects that provide substantial, long-term benefits to the public and the economy. Many federal programs have proven successful at channeling infrastructure investments into worthy projects in the past. Bolstering funding to these programs will reduce overhead costs and startup time while still allowing for significant and noticeable improvements across all sectors of U.S. infrastructure. As projects are considered, we need to evaluate not only the upfront costs, but how we will keep our infrastructure in a state of good repair for the long term — an ideal that has too often fallen by the wayside, and led us to where we are today. Just as you consider spending more money up front for a roof that will last longer, so too should we be conscientious investors who think about the long-term benefits of the upfront product.

Smart investments will only be possible with leadership, planning and a clear vision for our nation's infrastructure. While it's time to get infrastructure legislation moving, we should take our time in developing and executing a plan. This will take collaboration from all levels of government, along with input from business, labor and nonprofits to ensure we're putting together a plan and a timeline that will effectively address our infrastructure needs.

Another part of that timeline is the permitting and regulatory process, which the Trump administration has taken steps to streamline. This is a positive stride forward in ensuring priority projects come to fruition more quickly, while saving money.

Part of these considerations must be anticipating the needs of the future and preparing for them. From autonomous vehicles to more frequent storm events to an aging population, there are a lot of



factors today's engineers are considering when it comes to how our infrastructure

will need to be designed for the next 10 years, 50 years or 100 years. While there's no crystal ball, there are commonsense steps we can take now to modernize our infrastructure in a way that improves life today and is also ready to meet the challenges of tomorrow.

Our nation is at a crossroads. We're halfway there, with bipartisan interest and the support of the American people. Let's commit to building an American infrastructure system that strengthens and supports our nation's prosperity.

Tom Smith is Executive Director and Norma Jean Mattei, P.E., Ph.D., is President of the American Society of Civil Engineers.

### 2017 INFRASTRUCTURE REPORT CARD

Over the last four years, several infrastructure categories showed progress, resulting in grade increases. However, the 2017 Report Card's cumulative GPA of D+ reflects the significant backlog of needs facing our nation's infrastructure writ large. Underperforming, aging infrastructure remains a drag on the national economy, and costs every American family \$3,400 a year.



## It's time to restore America's infrastructure.





In the American Society of Civil Engineers' 2017 Infrastructure Report Card, America's Infrastructure received a D+.

Aging, underperforming infrastructure hurts the national economy and costs hardworking Americans through wasted time and fuel, costly vehicle repairs, lost work hours, and drained disposable income. America's infrastructure challenges are significant, but solvable. While some progress has been made, more needs to be done to compensate for decades of inaction and underinvestment.

Learn more about the Infrastructure Report Card and be part of the solution by visiting **www.InfrastructureReportCard.org** and downloading the Save America's Infrastructure app.



## An infrastructure priority: Ensuring safe drinking water



By Rep. Greg Walden

hen we hear the word "infrastructure," our minds often tend to think of highways, roads and bridges. While that's an

important part of our nation's infrastructure, an often-overlooked component is our drinking water delivery systems. Just as roads and bridges create stable communities and economies, so does safe, clean drinking water.

Drinking water is delivered to our homes, businesses and schools via one million miles of pipes, by both privately and publicly owned water systems. More than 51,000 community water systems scattered across the country treat 42 billion gallons of water that are used by Americans daily. Many of these pipes were laid in the early to mid-20th century with an estimated lifetime of 75 years to 100 years. In fact, some communities back in my home state of Oregon still rely on wood stave pipes.

While drinking water quality does remain high across the country, the recent crisis in Flint, Michigan, should serve as a stark reminder that more can, and should, be done so communities can effectively and efficiently pipe safe drinking water to peoples' homes.

Just last Congress, then-President Barack Obama signed the Water Infrastructure Improvements for the Nation (WINN) Act into law. This important law authorized new funding for lead pipe replacement in disadvantaged communities and deployment of innovative technologies to keep tabs on the quality of the water we consume.

Instead of waiting to react to the next crisis, the Energy and Commerce Committee, which I chair, has been hard at work on legislation to ensure

that Americans across the country have access to clean drinking water.

We have taken a thoughtful approach, working in a bipartisan manner on legislation to modernize our nation's drinking water delivery systems for the 21st century, bring greater investment to the country's aging drinking water infrastructure, and facilitate compliance of our federal drinking water standards

Fund to cover costs associated with preconstruction activities and replacing or rehabilitating aging treatment, storage or distribution facilities.

Another important component of the bill is the provision creating a strategic plan to have an electronic system in place that would allow water utilities to send their compliance data to states, and states then to send the

success so far doesn't mean our work is over. We will diligently continue our efforts with our colleagues on both sides of the aisle to get this important infrastructure bill across the finish line.

That's what has come to define this committee. While we may not agree on everything, we don't let that keep us from getting things done that make our communities and their economies



# LLUSTRATION BY GREG GROESCH

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Through several hearings and markups, we received feedback from both public and private stakeholders as we carefully crafted this bipartisan legislation, H.R. 3387, the Drinking Water System Improvement Act.

H.R. 3387 authorizes \$8 billion over five years for the Drinking Water State Revolving Loan Fund Program — a federal-state partnership to help assist states in ensuring the quality of water Americans drink remains high. This legislation also opens the eligible uses of the Drinking Water State Revolving data to the Environmental Protection Agency. Doing this is an important step in ensuring the quality of our water and provides us with the tools we need to monitor water quality in real time. There's also a provision in the bill that will help schools replace drinking water fountains that contain lead.

H.R. 3387, the Drinking Water System Improvement Act, unanimously passed the committee in July and is currently pending consideration on the House floor.

Just because we've had some

better. The fact of the matter is that everyone, regardless of where they live, should have access to safe, reliable drinking water and that's what we're trying to accomplish here at Energy and Commerce. I remain confident that we can get this measure through the full House of Representatives, through the Senate and to President Trump's desk for his signature.

Rep. Greg Walden, Oregon Republican, is Chairman of the House Energy and Commerce Committee.



### By Rep. Bill Shuster

f you believe Congress should focus on cutting taxes for the American people, reducing the size of government, and ending decades of wasteful federal spending, then pay close attention to the House of Representatives in the a days

coming days.

The 21st Century Aviation Innovation, Reform, and Reauthorization Act (AIRR), up for House consideration before the end of September, achieves these goals while modernizing an increasingly antiquated American transportation system.

The legislation provides long-overdue reforms of the Federal Aviation Administration (FAA). For instance, the legislation cuts bureaucracy to strengthen the global competitiveness of American aerospace manufacturers and encourage domestic growth in the burgeoning drone industry rather than driving those jobs overseas.

This bill also fundamentally addresses our broken model of air traffic control (ATC) service and allows for modern technology to improve the safety and efficiency of our aviation system. The 21st Century AIRR Act separates ATC service from the FAA and establishes a

# Congress cannot squander a rare opportunity for reform

not-for-profit service provider governed by actual aviation system users and stakeholders instead of bureaucrats. This new approach will finally allow the FAA to focus on what it does best: regulating aviation safety.

In general, federal bureaucracies are functionally capable of providing regulatory oversight, but they are bad at providing a high-tech service and really bad at innovating — which is what ATC service is and requires. For proof, contrast the FAA's commendable safety record to its well-documented 30-year record of waste and mismanagement of ATC modernization. The FAA has spent billions of taxpayer dollars in the name of modernizing our outdated ATC technology, but has failed to deliver the "transformational" results it promised.

Don't be fooled by reports of recent "successes" in the FAA's delayed NextGen modernization effort. These overblown, incremental and piecemeal improvements disguise the fact that the FAA has continually moved the goalposts and dumbed down NextGen in order to enhance the optics of its performance. The Department of Transportation Inspector General actually has stated that the costs of NextGen, as originally envisioned, could swell from an estimated \$40 billion to \$120 billion and possibly be delivered by 2030 at the earliest. And this system, if ever delivered at all, will be decades behind schedule and already outdated by the time it's actually fully implemented.

Here's the bottom line: The United States' ATC system still relies on World War II-era technology. Air traffic controllers do their jobs in part by passing along little paper strips that contain flight information. System delays and inefficiencies cost American passengers and businesses

- \$25 billion every year, and delays are getting worse at many major airports.Nearly every other modern country
- in the world has reformed its ATC service, allowing them to realize improvements in efficiency, safety and cost, and surpass us in technology. It's time to break the endless cycle of

government waste and mismanagement of this important technology service. The 21st Century AIRR Act moves

thousands of air traffic controllers and other FAA employees out of the government, allows for private-sector efficiencies that are simply impossible within a government agency, and cuts taxes by 80 percent on the entire flying public by adjusting a tax scheme that has overcharged and under-delivered for the past 45 years.

This bipartisan bill has broad support, both on and off Capitol Hill. Among the growing number of supporters are conservative and libertarian organizations and leaders such as Heritage Action, FreedomWorks, National Taxpayers Union, Competitive Enterprise Institute, Citizens Against Government Waste, Taxpayers for Common Sense, the Reason Foundation and many more.

However, in order to justify its own agenda of protecting a status quo that benefits its own small but well-heeled group of members, one vocal Washington special interest is attempting to

Nearly every other modern country in the world has reformed its ATC service, allowing them to realize improvements in efficiency, safety and cost, and surpass us in technology. It's time to break the endless cycle of government waste and mismanagement of this important technology service.



stand in the way of this reform that will enhance our economy and help passengers spend less time stuck at an airport or on a tarmac.

This lobbying group for owners of private planes, including major corporations, is promoting a false narrative that we have no alternative but to stay with our failed government system. They argue that reform successes in other countries — Canada's not-for-profit model has led to over 40 percent lower ATC costs in its 20-year history — are simply unimaginable in the United States. Opponents claim our aviation system is just too big to succeed like the rest of the world and that only the government can provide ATC services. I reject that attitude.

Functionally, ATC is the same throughout the world. It is a high-tech service for managing the movement of an airplane from one sector of airspace to the next.

Just like the United States, Canada has sections of airspace over densely populated urban areas as well as swaths of rural regions. As a whole, our aviation system is larger and scaled to size and complexity, and we will continue to provide ATC service on a larger scale. That will not change. And while costs in Canada continue to go down, here in the United States, Congress continues to spend more to get less.

People would laugh if you suggested that the federal government would do a better job building airliners or a cellphone network. Both of those businesses provide services that are highly complicated, require billions of dollars in capital investment and are subject to government oversight, just like air traffic service will continue to be.

If the special interests get their way, this rare opportunity for Congress to break the cycle of Washington dysfunction will be lost. Flight delays will continue to grow, and more tax dollars will be wasted by an agency that has long shown itself incapable of living up to its own promises.

Ask yourself, whom do you trust to run an efficient high-tech service? The private sector and a balanced board of aviation system users who have the strongest interest in ensuring the most modern, efficient, and safest aviation system possible, or a government bureaucracy already responsible for three decades of waste and mismanagement? The answer should be obvious to all Americans.

Rep. Bill Shuster, Pennsylvania Republican, is Chairman of the House Transportation and Infrastructure Committee.

# Time to free air traffic control from the federal bureaucracy





### **By Robert Poole**

major battle is under way to improve the air traffic control (ATC) system by removing it from the Federal Aviation Administration (FAA), the national air safety regu-

lator. The reasons are many, including the fact that modernization of air traffic control technology and procedures is over budget, behind schedule and far less advanced than in other countries.

America's air traffic control system is more costly than it should be, and its funding via annual congressional America's air traffic control system is more costly than it should be, and its funding via annual congressional appropriations is unstable and unpredictable. Moreover, having the same agency operate the system and regulate its safety – self-regulation – is a conflict of interest.

appropriations is unstable and unpredictable. Moreover, having the same agency operate the system and regulate its safety — self-regulation — is a conflict of interest.

A growing consensus of experts has concluded that U.S. air traffic control is basically a 24/7 high-tech service business that performs poorly because it's trapped in a large tax-funded bureaucracy. A bill nearing passage in the House would separate the system from the FAA, converting into a selfsupporting utility, paid for directly by the airlines that use its services.

The advantages of this model are many. By removing it from the federal budget process, air traffic control would be depoliticized — freed from micromanagement by federal overseers, each with its own agenda. With this change, a growing revenue stream of user fees could be used to back revenue bonds to finance large-scale facility replacement and technology upgrades. Arm's-length safety regulation would be more transparent and rigorous than the current system, where everything is done behind closed doors within a single agency. And governance would be via a board of directors carefully balanced to represent all principal aviation stakeholders, including air traffic controllers, pilots, airports, large airlines, small airlines and private plane interests.

This reform model is not just theory. Over the past 30 years, more than 60 countries have separated their air traffic control systems from their transportation agencies, converting air traffic organizations to self-funded companies, regulated for safety. The largest of these ATC providers, like Nav Canada and the United Kingdom's NATS, have investment-grade bond ratings that help modernization efforts. Nav Canada's air traffic control unit costs are 26 percent less than FAA's, despite FAA supposedly having economies of scale due to its larger size. These companies have consolidated numerous control centers into a smaller number of high-tech replacements — without political interference. Nav Canada and others are at least a decade ahead of FAA on upgrades of technology and procedures. And a growing body of studies shows that ATC systems perform better following "corporatization."

If the United States joins this global trend, the benefits for air travelers would be many. Besides increased safety (due to arm's-length regulation and better technology), there would be significant reductions in air travel congestion and delays. These would stem from replacing the current zig-zag air routes, created in the 1950s, with shorter, direct routes, increasing runway throughput, and redesigning complex, congested airspace, especially in the New York metro area, the source of 40 percent to 50 percent of all airspace delays.

There would also be significant taxpayer benefits. Shifting the entire air traffic organization out of the federal government would move 33,000 people off the federal payroll and reduce current aviation excise taxes by \$11 billion per year. That's why a large and growing number of taxpayer and consumer groups support ATC reform, which also has the support of the air traffic controllers' union, pilots' unions, nearly every airline, former Department of Transportation secretaries, retired senior FAA officials, and a diverse set of think-tank researchers.

The primary opponent is a coalition of private-plane groups and officials of rural airports who have frightened themselves by misrepresenting corporatization as a takeover of the ATC system by the major airlines — despite the fact that the major airline trade group would appoint only one of 13 seats on the new ATC corporation's board.

Change is difficult and getting this done will be a struggle, but there is a useful precedent to remember. In 1987, the Reagan administration succeeded in divesting National and Dulles Airports from the FAA, freeing them from being part of the federal budget. With a new nonprofit governing board and access to the bond market, Reagan National and Washington International Dulles Airport were transformed into the modern, passenger-friendly airports we use today. The same transformation awaits our struggling air traffic control system.

Robert Poole is Director of Transportation Policy at Reason Foundation, where he has advised four presidential administrations on infrastructure issues.

## The infrastructure that drives America's future: Electric transmission



### **By Kathy Shea**

t's the most critical national infrastructure of all: our interstate electricity transmission system. This 700,000-mile network of high-voltage wires that crisscross the country feeding energy into our communi-

ties powers America's digital economy much as roads and bridges carry physical commerce.

The problem is that we are putting increasing demands on electric infrastructure that wasn't designed for today's needs. We need an updated and expanded power grid to support exponential technologies, new sources of energy coming online and the related needs of customers as we rush further into the 21st century economy.

Alaska Sen. Lisa Murkowski is right on target when she points out that energy infrastructure is "central to our way of life and our standard of living, but it is almost always an afterthought."

### Grid infrastructure in the spotlight

Natural disasters and events like the solar eclipse serve to bring the power grid into public consciousness, however briefly.

Hurricanes Irma, Harvey and Sandy are the most recent examples of the importance of the interconnected electricity grid. When the power goes out, everyone is affected. We need a system that is strong, networked and highly resilient in order bring electricity back online to our cities and towns as soon as possible after a storm.

The recent solar eclipse also put electric infrastructure in the spotlight. While the nation watched in wonder, electric engineers made sure that our systems could still provide needed energy to places like California where its massive solar energy generation went dark. This was a successful event for our industry because the interconnected electricity transmission system delivered electric energy from distant locations — working as it was meant to work.

To continue to achieve the highest degree of reliability and efficiency that Americans expect in an increasingly dynamic and often disruptive economic and technological environment, we still need a diverse portfolio of resources, energy efficiency programs, demand responsiveness, conventional and renewable low-carbon generation, as well as imports of electricity.

Updating and expanding our transmission grid will allow our industry to maintain the highest level of reliability and resilience while meeting our nation's advancing energy needs for decades to come.



### Electric transmission infrastructure's evolving role

Transmission will play a pivotal role in securing a successful and cost-effective energy portfolio. It will facilitate the delivery of new resources and technologies. It also acts as insurance against unforeseen but inevitable changes in markets, climate and demography, many of which would otherwise increase risks and costs to customers. In support of this energy future, the Department of Energy's recently released grid study contains important guidance for improving grid resiliency standards and transmission siting processes.

These and other emerging energy issues have pushed our industry to adopt modern thinking toward a regionally connected grid instead of focusing only on building local facilities, and it has made us more dynamic and capable of adapting to new realities — all in the name of serving customers. In fact, a 2016 study done for the transmission industry group WIRES projected savings of up to \$45 billion annually in the U.S. if we as a country quit just talking about infrastructure and start making timely development of the grid a priority. That means streamlining transmission planning and thinking more positively about transmission as a wholly integrated and flexible interregional network instead of a patchwork of systems. Just as the interstate highway system facilitates commerce throughout the country, a robust, interconnected transmission grid provides access to a greater abundance of resources and customers that make the flow of electricity more efficient.

### **Collaboration is key**

For over a decade, WIRES has had a diverse membership of investor-owned, publicly-owned and member-owned transmission providers, as well as transmission customers, regional transmission organizations, and service and technology companies.

We know that modernizing our most important national infrastructure — our backbone power grid — requires our industry to collaborate with federal and state regulators, legislators, customers and other stakeholders. Updating and expanding our transmission grid will allow our industry to maintain the highest level of reliability and resilience while meeting our nation's advancing energy needs for decades to come. Let's keep this conversation going.

Kathy Shea is President of Transmission for Eversource Energy and President of the transmission industry group WIRES (www.wiresgroup.com).

# Why Congress is the essential leader on infrastructure





### **By Norman Anderson**

he stately arrival of the infrastructure bill seems to be our country's Waiting for Godot moment — but is it going to move the needle in making our country great? Infrastructure is not simply roads and bridges, or wastewater treatment plants, or natural gas pipelines, or high-speed internet. To be sure, it is all of those things, but more importantly, when our citizens think about infrastructure, they are thinking of results, of benefits. They are thinking of health and mobility and opportunity - that greatness in all of those things underpinning and enabling what John Locke called "the honest industry of mankind'

But it is Congress — those 535 CEOs

of political lands throughout our country — that has an outsized role to play in building a far-seeing national consensus on infrastructure, and it is Congress that needs to harness the aspirations of their citizens to make that happen.

Congress needs to seize the infrastructure moment: Infrastructure is long-term, close to the action and involves Congress' key power — spending. How can Congress seize this moment? Before we get to that point, let's

clarify the issue.

Because we no longer have the appetite for increased taxes, we are moving from a system of publicly funded infrastructure, overseen by congressional mandate, to a system that is increasingly funded by the private sector, overseen by the executive office(?) In terms of the structure of our government, nobody made this decision, and it will not work; Congress needs to be intimately involved in any increase in the role of the private sector — otherwise, we the people will instinctively shy away.

And don't kid yourselves, the only way to increase infrastructure investment is through increasing access of private monies to infrastructure investment opportunities. We may tell ourselves that we are at a tipping point, but one publicprivate partnership (P3) was closed in the U.S. last year, and the percentage of GDP invested in infrastructure — 1.4 percent, not the 3 percent of our fathers and grandfathers — is at an all-time low. So, what do we do? What does Congress do?

First, Congress needs to seize this implicit moment of bipartisan magic and support an infrastructure bill that delivers a new, long-term vision for the country, one that will guide us through the next 15-20 years. In a recent survey that we conducted for our Blueprint 2025 initiative, 73 percent of industry respondents said vision was "very important" to the success of an infrastructure initiative, and only 53 percent cited finance as "very important." Vision not only tells us where we are going, it gives our leadership the authority to take us there.

Second, Congress needs to recognize that the "public works" machinery and focus of our government and its committees is outdated and must be reformed. Infrastructure lasts for 30-40 years, and in the context of the rapidly changing, technology-driven global economy, it is either strategic — or immediately outdated.

At least two things need to happen. We need a consolidated infrastructure budget for our country — how is it that we talk about "infrastructure," but there is no infrastructure budget or department of infrastructure? And we need people thinking in these terms — infrastructure as strategy rather than potentially attainable pork.

We also should think of new institutions that are explicitly bipartisan — like an infrastructure bank, with directors appointed by Congress chartered to focus on critical failures in the infrastructure market; like funding priority projects that can't attract the private sector; or rural projects (bridges, broadband, wastewater) that are critical to the kind of country we want to build.

The important point here is that from the voters' perspective this is the job of Congress — they have the standing, the accountability, the close-to-the-bone reality and ... the power.

Third, Congress needs to move to a new conceptual level if it is going to lead on infrastructure. The benefits of infrastructure — health, mobility, new business, job creation, manufacturing, a robust tax base — are what voters charge their elected representatives to create for them. These are local, visceral, tactile benefits that emerge powerfully from both local and national projects. In a recent study that we produced with Boston Consulting Group (BCG), we showed that just 60 strategic projects created benefits in more than 50 percent of congressional districts. That is an astonishing fact — the goods for those projects are manufactured all over the U.S. Congress needs to not only really care about infrastructure benefits, but also the manufacturing jobs that are created across the U.S. Congress needs to focus like a laser on the benefits of infrastructure projects, score them, and make sure that they are optimized.

Last week, I was in Denver speaking with the leadership of a top-tier regional engineering and construction firm one of those firms that are the lifeblood of local communities because they are identifying, designing and building projects for our children and our grandchildren. These firms are disappearing because of our lack of infrastructure investment.

Without vision, the people perish. With vision, Congress can create this generation's equivalent of the 1956 National Interstate and Defense Highways Act, harnessing our imaginations to the will of our citizens, in recreating the greatest infrastructure country on Earth.

#### .....

Norman F. Anderson is the Founder and CEO of CG/LA Infrastructure, a global infrastructure strategy firm. He is the founder of Blueprint 2025, a 100 CEO initiative to build the next generation of U.S. infrastructure. He is a member of the World Economic Forum and a regular contributor to CNBC and Fox Business News. Follow him on Twitter @ anderson\_norman.



By Ty E. Gable

hile attention to the nation's infrastructure comes and goes on Capitol Hill, the roads, bridges and water systems in

all 50 states continue to deteriorate every minute of every day. With some members of Congress signaling bipartisan support for a serious infrastructure bill, we are at a crossroads.

Now is the time — as a nation — to make a commitment to rebuilding our infrastructure that is unlike anything in the last 50 years. While tax reform and health care are issues that divide us, we can agree that our failing infrastructure is fueling waste and inefficiency, stifling our

## Ready to rebuild

competitiveness and detracting from our quality of life. While the scope and funding of an infrastructure rebuilding package are up for debate, we can start with the fact that we need to do this as a nation. Many state and local governments are not waiting for Congress and are funding their own long-term infrastructure rebuilding programs through user fees, increased taxes and public-private partnerships. While these efforts are laudable, it won't be enough. We need a broad federal program to get this done the right way.

We've heard all the arguments against passing an infrastructure bill. Let's tackle a few of those head on.

*There's not enough money.* Solving the infrastructure funding puzzle is a little like tackling our future energy needs. There's not one solution but many. There is plenty of money on the sidelines — among private firms, pension investment funds and international tax code reforms to create an infrastructure bank, shore up the Highway Trust Fund and help finance rural projects.

*There's not enough labor.* The shortage of skilled laborers in the construction industry is well known. In our industry, precast concrete manufacturers have been dealing with this issue for years. One of the problems is the uncertainty

that inaction causes. There is no incentive to hire more people and make major equipment purchases until we have the certainty of a bill. When that happens, we'll be ready to move. Like much of the construction industry, precast concrete plants - where so much infrastructure is manufactured - are much more automated than they were a generation ago. The industry is much more productive than it was a generation ago. We have the technology and the expertise to meet the demand. Beyond the precast plant, a recent spate of mergers and acquisitions among major contractors is signaling that the major players in the construction industry are getting ready to take on the challenge as well.

Congress is too divided to do anything big right now. Isn't it time to break out of that mindset and get a win for everybody? This concept should be a slam dunk, although the details will be hotly debated. The majority of Americans want infrastructure rebuilding, although they are unclear how to pay for it. Let's have a national debate on what we need to rebuild and how we can pay for it — and be ready to compromise a little on all sides. A large, meaningful bill will never please everybody, but nothing of this magnitude ever could. We need to be ready to have a robust debate where all options are on the table. It will take courage and leadership from Congress and President Trump to make the case.

The nation's precast concrete manufacturers build infrastructure. When we talk about infrastructure, we're talking about the underground drainage systems around roadways. We're talking about bridges - from small bridges that span creeks on two-lane rural roads to components for mammoth structures that span waterways that carry thousands of vehicles every day. We're talking about rebuilding the nation's aging and failing sewer systems. We're building wastewater treatment systems, stormwater detention systems, septic tanks and grease interceptors of all sizes in locations everywhere that protect the nation's groundwater. We know infrastructure. We know it's crumbling. And we know how to rebuild it. We're ready. Let's go.

Ty E. Gable has served as President of the National Precast Concrete Association since 1994. Based in Carmel, Indiana, NPCA includes more than 600 precast concrete manufacturers and 300 supplier companies in all 50 states, eight Canadian provinces and 10 additional countries. For more information, visit precast.org.



## Something we can all agree on



By Rep. Carolyn B. Maloney

mproving our country's roads, bridges, tunnels and rail systems is a basic function of our government that has traditionally been supported by both parties. By investing in infrastructure, we not only repair deteriorating bridges, roads and tunnels, but also strengthen our communities and speed up commerce. It is one of the best ways to generate economic growth and create good paying jobs nationwide. As our country struggles with slow growth, I believe it is the right time for the federal government to make a significant investment in infrastructure.

To see the benefits of new infrastructure investment, take a look at the newest part of the New York City Transit system — the Second Avenue Subway.

In the New York Metropolitan area, and regions like it across the U.S., mass transit is how we commute. More than half of New Yorkers take mass transit to work, and one of the mass transit projects most in need of federal funding is the Second Avenue Subway.

After a century of planning, the first of four phases of the Second Avenue Subway opened this past January 1st to great fanfare and celebration. Since its opening, property values along the route have risen, most local business along the route report growth, and ridership has skyrocketed.

The Metropolitan Transportation Authority (MTA) says that 176,000 people use this subway route each day, an increase of more than 50,000 since it opened for revenue service eight months ago. To meet this demand, the MTA announced that it would be adding two additional trains.

The success of the Second Avenue Subway's first phase is evidence that we need to finish the job and extend this line north to 125th Street in Harlem and south to Hanover Square. New Yorkers are using mass transit more than ever, with weekday subway ridership at its highest levels since 1948. As crowded subway cars grow more packed, wouldbe passengers are often left standing on the platform, watching several trains pass them by before they can squeeze on. With this kind of demand, expansion of the system is critical.

Although New York has more subway stations than any system in the world, our city suffers from "transit deserts" — areas that lack mass transit options. For example, the far east side of Manhattan has no subway, and the Lexington Avenue line, the closest option, is regularly derided as the most overcrowded subway in the nation. There truly is a limit to the number of desperate need of transit improvements and expansions. Fortunately, mass transit development projects are some of the best investments we can make. They create jobs during construction and after completion. They take cars off the road, relieving congestion and improving the environment, and they make it easier for people to get to work, or just get around town, rather than being forced to turn down work because of an impossible commute.

The fact of the matter is that federal funding is critical to any project as big

done without the \$1.3 billion in federal funding that I helped secure. The subsequent phases are likely to be at least as expensive. But it will be well worth the investment when you consider the jobs and economic growth that it will generate.

Now is the time for our country to complete the full Second Avenue Subway and invest in similar transit projects across the country. New transit will be used by millions of people, bring economic opportunities to areas that have been overlooked, reach neighbor-



The Second Avenue Subway's second phase would extend the line north to 125th Street in East Harlem. Image courtesy of Metropolitan Transportation Authority.

PHOTO CREDIT: METROPOLITAN TRANSPORTATION AUTHORITY

### As crowded subway cars grow more packed, would-be passengers are often left standing on the platform, watching several trains pass them by before they can squeeze on. With this kind of demand, expansion of the system is critical.

people who can cram into a subway car. We need to address this issue by completing the Second Avenue Subway to benefit people along the entire route, and improving signaling so more trains can run on overcrowded lines.

New York City is not the only city in our country with transit deserts. States and cities across the country are in and complex as the Second Avenue Subway. With utility cables and water pipes buried under New York's streets, and other subway tunnels already built, new subway construction is forced deep underground to avoid the older tunnels and any disruption to the electric and water grids. Phase 1 cost approximately \$4.5 billion and it wouldn't have gotten hoods that have lacked transportation alternatives, and take people where they want to go. The economic growth and quality of life improvements that come with infrastructure development make it one of the best investments our country can make — and that is something we all, Democrats and Republicans, can agree on.

Rep. Carolyn B. Maloney, New York Democrat, is Ranking Member on the House Joint Economic Committee and serves on the House Committee on Financial Services and House Committee on Oversight and Government Reform.

# Pioneering automated travel — and learning along the way

### By Greg Winfree, J.D., and Ginger Goodin, P.E.

merica's population is growing faster than the infrastructure we routinely rely upon to meet our daily needs. The demand for roadway space in recent years has steadily outpaced the supply, and gridlock threatens both our economy and our quality of life.

On the surface, "build more roads" would appear to be the most logical answer. And while it's true that we need an expanded system, increasing capacity represents only part of the solution. Ensuring that our transportation system works more efficiently making it work smarter, not just harder — is more essential now than ever.

We face a dounting challenge

We face a daunting challenge. But there's good news, thanks to the brightest minds in industry and at our nation's leading research institutions, like the Texas A&M Transportation Institute. Together, we're working to realize the dream of automated travel — a world in which cars and trucks can to some extent think for themselves, drive themselves, and be conversant with signs, road lane markings, and other elements of the traveling environment.

The future (and present) we're now building will constitute the greatest mobility advancement in modern history. The potential benefits to society are immense, but automated



The future (and present) we're now building will constitute the greatest mobility advancement in modern history. The potential benefits to society are immense, but automated vehicle technology carries with it both capabilities and risks.

vehicle technology carries with it both capabilities and risks. Our success in accelerating the former and mitigating the latter will depend upon managing expectations and carefully thinking through myriad questions.

Those questions aren't all technological in nature. The travel we've done on our streets and highways for a very long time has been based on the presumption of a human driver. Shifting from that reality will require a thorough re-examination of public policy related to transportation. And at the same time, it will require us to scrutinize emerging assumptions about self-driving cars.

From the beginning, for instance, the prospect of automated travel has given us great hopes for safer roadways. Those hopes now seem more realistic, in light of recent study findings showing that blind-spot warning systems and those that prevent cars from drifting into adjacent lanes can reduce crashes by at least 11 percent,



An aerial view of the Texas A&M University System RELLIS Campus where TTI conducts much of its connected vehicle research.

and by more than 20 percent for crashes involving injuries.

At the same time, though, another study by the Insurance Institute for Highway Safety found that in using automated systems that find parking spots and park the car, drivers give more attention to the dashboard and less to vehicle surroundings. That finding suggests that technology may be changing driver behavior in ways that could compromise safety rather than improve it, so the long-term safety picture for automated travel will remain murky for a while.

The same is true for how self-driving cars may affect traffic congestion. Without extensive real-world environments in which to explore the potential impacts, we're left to rely upon computer modeling to project them. That's very complex, and when you factor in the whims of unpredictable human behavior, the exercise also becomes somewhat imprecise, as our own research has shown. For now, though, let's just say that it's too early to pin all of our gridlock relief hopes on automated cars and connected roadways.

It's also a bit early to foresee how consumers will react. We've learned, for instance, that motorists in one Texas city were evenly split on the question of whether they'd ever travel in a self-driving car: Fifty percent said yes, and 50 percent said no.

And how do we fund all of this? Industry investors will pay to design and build self-driving cars, but taxpayers fund the government agencies that design and build the roads on which those cars will travel. The federal gas tax provides the basis for road funding; however, that tax isn't indexed to inflation, which has eroded its value sharply since the levy was last raised in 1993. Factor in the growth of electric vehicles and increased fuel economy standards and it becomes apparent that the gas tax cannot keep pace with current and future transportation needs.

In a way, we've been here before; several decades before, in fact. In pioneering the idea and pursuing the reality of the Interstate Highway System, mobility experts of the day had much to learn along the way. And so do we.

Greg Winfree, J.D. is the Agency Director of the Texas A&M Transportation Institute (TTI), and a former Assistant Secretary of Transportation in the U.S. Department of Transportation. Ginger Goodin, P.E. is a Senior Research Engineer for TTI, and an expert in the field of automated and connected vehicle policy.



#### By Rep. Steve Russell

n the morning of September 11th, 2001, Ben Sliney began his first day on the job as the new operations manager at the Federal Aviation Administration's command center in Herndon, Virginia. Within hours, Mr. Sliney made an extraordinary and gutsy call to ground 4,200 aircraft in flight across the United States — effectively shutting down U.S. airspace. The 9/11 Commission Report cites Mr. Sliney's decision as perhaps the decisive moment to restore control over one of America's darkest days in its history.

Imagine instead of Mr. Sliney, with his experienced team and decades of experience, there was a 13-member board. This board, composed of mostly for-profit private corporation members, would likely not be assembled when disaster strikes. Supposing the board could get everyone in communication, the debate begins. Do we ground planes? Do we call the White House and declare an emergency? Is it really an emergency? What is the economic impact on the airline industry if we ground every flight? Do we even have that authority? Should we rather...

This is how the 9/11 disaster could have become more disastrous if the proposed Air Innovation Reform & Reauthorization (AIRR) Act were law. This bill, also known as H.R. 2997, is attempting to crash-land on Congress. Should it do so successfully, it would create serious degradations to the oversight and national security of our airspace.

While I applaud the president's call to modernize our air traffic control system, this is not the modernization he is looking for. How could it be? The bill reduces his authority over our airspace to wartime emergency only. And even if such an emergency as 9/11 obviously warranted a decision for the president and the Department of Defense to intervene, it would have to go through the precious time-wastage of a 13-member board with commercial interests at the forefront of critical thinking.

The president is neutered even more in non-wartime scenarios. To illustrate, if this bill were law in 1981, Ronald Reagan would have had no authority to fire the

# Our national airspace is national, not private



striking air traffic controllers to protect the security, safety and economy of the United States. Thank God the bill was not law then or 20 years later.

The AIRR Act also immensely complicates the interoperability that the Defense Department and other agencies such as the FBI, Homeland Security, Drug Enforcement Agency and our intelligence services currently enjoy. Instead of jointly developing the technologies of spectrum vital to our national security, privatization separates them. Unfunded liabilities follow, as technologies deemed economical and efficient for the commercial airlines force the military, law enforcement and intelligence agencies to comply with a private corporation or develop workarounds to do their mission. Under current law, these technologies are developed jointly with interoperability, spectrum and military priority paramount.

That relationship was recently highlighted when Hurricane Harvey struck Houston and the military air traffic controllers seamlessly aided the massive international air terminal at Houston, as well as the monumental relief efforts of search and rescue. It all worked with Americans none the wiser.

We have the safest airspace in the world and also the busiest. If one were to track flights as a point of light on a map of North America, the United States compared to Canada would look like South Korea compared to North Korea if representing an electricity grid. North of the border, there is very little by comparison. If one compares the 35,000 flights in Europe with the 88,000 to 90,000 flights handled by our magnificent American controllers, there is no comparison. As to safety, we have not had a major airline fatal crash since



A new air traffic control tower is built at Dulles International Airport, Va, as part of the extension project Thursday, September 22, 2005. ( Photographs by Astrid Riecken / The Washington Times )

#### January 2011.

Our national airspace is just that national. It is not private. It belongs to "We the People." While understandable for conservatives to naturally draw toward privatization like bees to honey, this bill is more like dogs being drawn to antifreeze. It smells good. It tastes good. The consequences could prove fatal. Supposing one were to flippantly dismiss the national security implications of giving up our airspace to a private corporation, there is still that pesky Constitution. The AIRR Act prohibits any Title 31 oversight (the congressional oversight needed by law when public funds are issued) while demanding future appropriated tax dollars, making it

likely unconstitutional. There can be no government-regulating, fee-collecting, private entity without congressional oversight. Period.

There are three vital areas for government to maintain control — national defense, national intelligence and national airspace. The AIRR Act must never make a landing.

••••••

Rep. Steve Russell, Oklahoma Republican, serves on the House Armed Services Committee and on the National Security Subcommittee for Oversight and Government Reform. He is author of "We Got Him! A Memoir of the Hunt and Capture of Saddam Hussein" and served 21 years as a combat Infantry officer in the U.S. Army.

### Congress shouldn't deputize airlines as tax collectors



**By Andrew Langer** 

s a conservative, it bothers me when politicians evoke conservative-sounding arguments to push for legislation that fundamentally is not conservative. One such case is a provision in H.R. 2997, the House version of the bill to reauthorize the Federal Aviation Administration (FAA). This provision would separate the nation's air traffic control (ATC) system from the federal government and establish an independent entity. At first glance, it looks like something I would be in favor of. Except this so-called "privatization" is simply a give-away to special interests.

If passed, the bill would create a government-sponsored enterprise (GSE), in the same vein as Fannie Mae, the U.S. Postal Service or Amtrak. While the primary benefit of privatization is competition and market pressure, ATC is a natural monopoly. There would be no competition in the system proposed, or any of the market forces and pressures that accompany a competitive market that push firms to be keep prices down, to hold their products to a certain quality standard, and to be responsive to customer feedback. This brings the worst of both worlds by removing the entity from congressional oversight and spending control, but leaving taxpayers on the hook to bail it out when it flops.

Just like with other GSEs, we've been told that the new entity will be self-funded, in this case by a user fee. As always, I'm skeptical taxpayers won't ultimately have to bail out a GSE, but with the ATC proposal, it's really about control. Proponents have made clear that their real motivation is to shift the tax burden to other segments of the industry. Ian Adams, a proponent of separating ATC, recently argued that it would reallocate the tax burden among the "fees its users pay," including general aviation.

The only privatization will be that the authorization and taxing authority of Congress will be supplanted by authority of one segment of an industry to tax another with no oversight. If the airlines were granted more monopoly power and gained taxing authority from Congress, they have shown time and again they would abuse that power. They have increased their fees on passengers by over \$7 billion. Now they want to phase out their fuel and excise tax for a flat user-fee tax that would get levied disproportionately at economy class passengers. I'm always in favor of getting rid of taxes, but this is a tax



If the airlines were granted more monopoly power and gained taxing authority from Congress, they have shown time and again they would abuse that power. They have increased their fees on passengers by over \$7 billion.

by another name, without the political accountability to keep it from rising in perpetuity.

And, since there would be no accountability from anyone to stop it or make sure this entity is being managed properly, it's a safe bet that ultimately all taxpayers will pay more in the form of a bailout. No one can seriously claim that the airlines represent a beacon and shining example of good management, after all.

As if all of this weren't bad though, separating the air traffic control system would actually add \$100 billion to the federal deficit over 10 years, according the Congressional Budget Office (CBO).

At least for all of this, we have solid proof that we will have substantial progress on the deployment of Next-Gen technology, right? Nope again. Try to ask proponents exactly how this proposal would facilitate the more rapid deployment of NextGen, what those timetables are, where exactly the costs savings will come from, and you hear crickets.

Has there ever been another big, public-private entity that was formed to carry out a huge public mission and that was completely hamstrung by anticompetitive regulation and bureaucracy? Where we were told to just move ahead and we would figure out the details later? You guessed it, Obamacare. How is that turning out for conservatives? How did that turn out for America?

H.R. 2997 is being sold to the public in the same way that the Affordable Care Act was. No specific explanations, with lots of promised benefits. Perhaps we should learn from the past this time around.

Andrew Langer is President of the Institute for Liberty.



# Air traffic control privatization is an attack on rural America

### By Niel Ritchie and Selena Shilad

n the ongoing and vociferous debate about air traffic control system privatization, after all the sound bites and ad campaigns, we are left with really one certainty. "Privatization" is simply an attempt by the airlines to shift taxes and reduce access for rural America.

The airlines and their allies have spent millions attempting to sell lawmakers and the public this bill of goods. They have organized trips to Canada, although interestingly, not to the United Kingdom. They have slyly deferred any specific questions about cost savings, how delays and congestion would be alleviated, and how the implementation of NextGen would be facilitated more quickly under privatization.

In spite of all this, why are we certain that privatization is about control and reducing access, and not about modernization? Because the airlines have said so.

In one of the first meetings with the president some months back, the CEO of one major airline said that the problem with the current air traffic control system is that they "are not in control," that the issue was about the "fundamental organization of the air traffic organization."

This is crony capitalism at its worst: using the legislative process to try to spearhead a tax shift from one industry to another, holding hostage thousands of airport improvement projects and billions in FAA funding.

This is and has always been about the major carriers gaining more control, which is why their proposal would take authority over our air traffic control system away from 535 Members of Congress who represent communities of all sizes, and put it in the hands of 13 industry stakeholders. Despite claims by the airlines that they will not have that much control in a privatized system, they will have much more than they do today — and they will have it with no competition or oversight.

Why do we think that this is about directing resources and increasing taxes on rural towns and smaller communities? Because the airlines have said so.



The CEO of another major airline has said, "we also need to direct infrastructure improvements into the regions of the country where they'll





produce the most benefits, like the Northeast Corridor." And, in a new narrative, one proponent has admitted that the motivation is that Congress would have to end the aviation taxes that currently support ATC and authorize a nonprofit to charge cost-based fees, resulting in a "wealth transfer."

This is crony capitalism at its worst: using the legislative process to try to spearhead a tax shift from one industry to another, holding hostage thousands of airport improvement projects and billions in FAA funding. Consumers and communities will never see any of the benefit if the airlines are gifted control and taxing authority over air traffic control. Consumers are paying more in fees than ever, and still the airlines underinvest in their IT systems, resulting in an outage about once a month.

The proposed increase in taxes and shift away from smaller communities will drive a stake right in the heart of rural communities. Decreasing air



have been slashed in recent years by nearly 600 flights a day, Veritiv announced in 2015 it would relocate to Atlanta. The company cited the reduction in flights a Cincinnati/Northern Kentucky International Airport as the primary reason for moving. Just last month, Youngstown-Warren Regional Airport announced that the only airline serving that eastern Ohio airport was pulling out.

Nearly three-quarters of U.S. land is found in rural counties. Rural industries like agriculture and food production (\$136 billion/year), firefighting, flight training and disaster relief are critically reliant on smaller aircraft. This isn't just an issue that affects some communities, it affects all of our ability to keep our industries alive, food on our plate, power to our homes, water to our stores and technologies to our desktops. Smaller aircraft, airports, businesses and communities are America's lifeblood.

For decades, our FAA reauthorization process has been mired down by this exhausting and repetitive debate about air traffic control that has nothing to do with modernization, but that is really about gaining taxing authority and squeezing the life out of rural America. It's time to say no, for good.

Niel Ritchie is CEO of the Main Street Project and Past President of the League of Rural Voters. Selena Shilad is Executive Director of the Alliance for Aviation Across America.



# The Airlines Want To <u>Take Away</u> Congressional Oversight Over Our Air Traffic Control System

### That's A Bad Idea. Here's Why:

This "PRIVATIZATION" plan would give corporate interests and the Big Airlines total power over our air traffic control system -- putting profits over air safety and travel.

It would devastate rural communities -- allowing the Big Airlines to reduce access to small towns.

The same Airlines who raise prices during Hurricanes; shrink the size of your seats; and charge endless fees – with unlimited taxing authority.

### Say NO to Air Traffic Control PRIVATIZATION.

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Learn more at Aviationacrossamerica.org

Paid for by the Alliance for Aviation Across America

## Nuclear energy: The unsung hero of American infrastructure



### **By Maria Korsnick**

"Infrastructure" is often thought of as the steel and concrete foundation of the economy, but there is a more practical definition: hardware that runs all the stuff we take for granted.

Flip a light switch, recharge a phone, flush a toilet, pump gasoline into your car and drive to a supermarket to buy a pint of ice cream, and you are relying on the heart of that infrastructure, the electric system. Things we use every day rely on a reliable supply of electricity. It is impossible to talk about infrastructure without focusing on electricity, and it's impossible to talk about electricity without considering the critical role of nuclear power.

And nuclear plants, like a light switch, are often taken for granted. It's the true unsung hero of American infrastructure.

America's 99 power reactors produce nearly 20 percent of the electric energy we use. They don't run the system by themselves; it takes a balanced, diverse portfolio of generators to meet the varying conditions that face a dynamic power grid. And some other parts of the system are a lot more visible, like the graceful blades of wind turbines on hilltops or the conspicuous solar panels on rooftops. But reactors are the foundation on which the rest of the edifice is built.

Nuclear reactors operate through snow and rain and heat and gloom of night. For a long time, our industry's ambition was to act heroically but to remain unsung. No nuclear news was good news.

But there has been a change in the power grid, and despite years of continuous improvement in nuclear operations, today some plants are having trouble recovering their costs. As the Department of Energy study of the power grid identified in August, a sustained period of very low prices for natural gas has cut energy prices on the grid. Some flaws in the marketplace and minimum quotas set by most states for other energy sources, like solar and wind, have also made it hard for reactors.

All nuclear power plants are providing what the Department of Energy called "unpriced benefits" to the electricity market. Nuclear power plants produce more than 60 percent of the nation's emission-free electricity, keeping the system cleaner. And by providing diversity, they reduce the risk that a supply disruption of a single fuel could make us all suddenly acutely conscious of the things we take for prematurely because revenues from the flawed electric markets were not sufficient to make a profit.

And once a reactor is shut, it's gone forever, a piece of infrastructure squandered because of short-term considerations. And the nation loses nuclear's benefits — clean, reliable, carbon-free generation.

The federal government is becoming concerned. President Trump said in June, during a week devoted to energy topics, "We will begin to revive and expand our nuclear energy sector, which I'm so happy about, which produces clean, renewable and emissions-free if a vibrant American nuclear industry can export its product. American reactors sold abroad mean energy independence for the buyer, multidecade commercial relationships with countries where our global rivals are seeking influence, firm controls on nuclear proliferation, and clean air and clean water everywhere. But it will be hard to sell abroad what we don't actually use at home.

For all these reasons, it is time to recognize nuclear power is infrastructure we should not take for granted. Nuclear energy is the linchpin of energy diversity and resiliency, and we

### Things we use every day rely on a reliable supply of electricity. It is impossible to talk about infrastructure without focusing on electricity, and it's impossible to talk about electricity without considering the critical role of nuclear power.



Image of nuclear reactor control room courtesy of Nuclear Energy Institute.

granted, like light switches that always work. But reactors don't get paid for that.

Or, as the Department of Energy report put it, "Society places value on attributes of electricity provision beyond those compensated by the current design of the wholesale market."

Recently, some plants have closed

energy."

He said, "A complete review of U.S. nuclear energy policy will help us find new ways to revitalize this crucial energy resource."

And the resource is not just for use here at home. Demand for electricity is growing around the world, and the world will be cleaner and more secure must act with urgency to preserve it. After all, even unsung heroes can only grind away for so long.

Maria Korsnick is President and CEO of the Nuclear Energy Institute.

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# Energy infrastructure and a pro-domestic energy agenda



### By Rep. Fred Upton

odernizing the nation's energy infrastructure has been a focal point of the Energy and Commerce Committee in the 115th Congress. Americans deserve safe, secure and efficient energy that meets the needs of the 21st century economy.

For too long, the promises of modernized energy infrastructure were held back by a Washington-centric

Our efforts to explore these issues and identify solutions have not been in vain. In fact, we've passed numerous bills out of the committee, and the House of Representatives has passed several of the measures.

For over a century, hydropower has provided electricity to millions of Americans across the nation. It's clean, it's affordable, and it's reliable. Today, it is responsible for providing nearly 7 percent of the nation's total energy needs and, with technological advancements and smarter regulations, that number could grow exponentially. To date, the House of Representatives has passed several bills that promote hydropower expansion, and in June the committee passed H.R. 3043, the Hydropower Policy Modernization Act of 2017, which would modernize federal policies by designating the Federal Energy Regulatory Commission (FERC) as the lead agency for licensing hydropower projects.

The approval process for oil and natural gas pipelines often fell victim to political grandstanding by the previous administration. With the information gathered in our hearings, we acted and the House of Representatives passed two Energy and Commerce bills that modernize the

The nation's rapidly transforming energy landscape, coupled with technological innovation, has changed the way in which electricity is generated, delivered and consumed. Hydropower and natural gas are going to play an increasingly more important role in electricity generation across the country.

regulatory and environmental agenda. We've taken steps here at the committee to address these issues and have been working on implementing a forward-thinking, pro-domestic energy agenda that improves our energy infrastructure while creating jobs and putting consumers first.

In the Energy Subcommittee, where I serve as Chairman, we heard from a variety of stakeholders in both the public and private sector in a series of hearings focused on identifying problems with modernizing the nation's energy infrastructure while also focusing on solutions. We discovered that the federal government was often an impediment on economic growth, innovation and jobs. Multiyear permitting delays for oil and gas pipelines, hydropower facilities and transmission lines had become the norm.

nation's energy infrastructure through targeted reforms to the federal government's permitting and siting policies for oil and gas pipelines. H.R. 2883, the Promoting Cross-Border Energy Infrastructure Act, establishes a predictable and transparent process to permit the construction of cross-border pipelines and electric transmission facilities. H.R. 2910, the Promoting Interagency Coordination for Review of Natural Gas Pipelines, promotes better coordination among FERC and other agencies involved in siting interstate natural gas pipelines. Coupled together, these important bipartisan bills promote our energy infrastructure, strengthen our economy, create jobs and increase our energy security.

The nation's rapidly transforming energy landscape, coupled with technological innovation, has changed the way in which electricity is generated, delivered and consumed. Hydropower and natural gas are going to play an increasingly more important role in electricity generation across the country. In fact, natural gas now accounts for nearly 34 percent of the nation's electricity generation. Because of this, the subcommittee has also explored the state of America's evolving energy infrastructure and barriers to innovation, modernization, further job creation and economic growth. We've recently launched the "Powering America" hearing series, which seeks to provide our members the opportunity to explore electricity markets and learn more about electricity generation, distribution and consumption.

We have been proactively engaged with all stakeholders in a meaningful discussion on how we can strengthen our grid and provide greater value to American consumers, both now and in the future.

Despite our successes this Congress, our work is not over. We will continue to work on forward-thinking solutions that promote our energy infrastructure, create jobs, ensure grid reliability and resiliency, all while keeping what's best for the consumer in mind.

Rep. Fred Upton, Michigan Republican, is Chairman of the House Energy and Commerce Subcommittee on Energy.



## Thinking anew about electricity infrastructure



By James J. Hoecker

ll the innovation happening in the ways we produce, use and even store electricity in the decades ahead poses a big question: Do we still need to build traditional electric delivery infrastructure — i.e., electric transmission?

The special benefits derived from the transmission system as a shared network that we all rely upon are diverse. The grid facilitates the rise of distributed generation, the deployment of digital technologies, demand responsiveness, energy efficiency programs, and other advances like storage and microgrids, all of which hold promise for a bright energy-intensive future where customers can realize their full energy potential. Transmission is a tide that will raise all boats but, like trade or the highway system or the Internet, its benefits are broad, and individuals or groups may not always be able to identify with certainty its immediate benefits. Yet, without a robust transmission system, we will forfeit many future least-cost solutions and be less able to adapt to changing conditions as technology and economic forces transform how we produce, deliver and use energy.

Make no mistake about it. The electrical infrastructure we have today is not yet equal to the challenges of the changing 2lst century energy landscape. Worse yet, there exist common misconceptions — I'll call them "myths" — about electric transmission that are getting in the way of smart and timely investment in our nation's backbone transmission infrastructure, which will remain the most efficient means of delivering customer savings and integrating new technology and fuel resources.

For a more detailed examination of transmission mythologies, let me direct you to the new study by London Economics posted at www.wiresgroup.com, which provides the data that diffuses the myths identified below and a dozen others.

Myth 1: Energy efficiency and the

flattening of demand for electricity in various regions automatically results in diminished need for transmission infrastructure. Despite low electric load growth, transmission development is being driven by the need to upgrade aging infrastructure, address reliability mandates and plant retirements, and connect new resources in remote locations. We also need to ensure the electric grid can keep pace with technological innovation and the modern demand for power to sustain its critical role. This myth ignores long-term trends that will prevail over the 50-year life of transmission assets, the fact that our existing grid and its electro-mechanical components are now a generation or two old or older, and the ongoing need to integrate and expand the system to reach important new resources

located where the grid is

Myth 2: The integrated

wires network is obsolete in

light of the decentralization

of electric generation and

the rise of digital technolo-

resources like energy storage

gies, rooftop solar instal-

lations, and distributed

and microgrids. While

grid-edge technologies

offer enormous benefits

the grid is the enabler,

to consumers and locales,

integrator and facilitator of

these developments - so

either/or proposition. Life

lived entirely "off the grid"

may be possible in certain

cases, but virtually all uses

A modernized high-

voltage grid must be

of electricity lean on the

central grid.

it will never be a simple

weak and the customer base quite limited.

of retail electric bills.

*Myth 4: We have a functioning grid* now, and any additional investment will be excessive and an invitation to "goldplating." The industry has made significant investments over the past decade, benefiting customers significantly. But, given the many new demands being placed on the grid and the need for resilience in the face of extreme weather events and new security threats, now is a critical time to support continued investment in preparation for the years ahead. Historic underinvestment in transmission systems and the resulting age of the grid, grid reliability and security concerns, and modern power market dynamics are all driving the need for increased transmission investment.

regional boundaries — and the costs can be equitably shared on the basis of the benefits to an array of energy consumers.

The integrated alternating current (AC) transmission grid is like the highway system with on-and-off ramps. Its users and beneficiaries are geographically and demographically dispersed and economically diverse. While direct current (DC) projects represent contracted-for power that is delivered as if it were in a pipeline, the benefits on both the generation and power-consuming ends of such a system are powerful contributions to oftendistant state and local economies with regional impacts.

Fortunately, a national conversation is underway about strengthening our nation's infrastructure and it involves



empowered to integrate and dispatch new resources and technologies on demand and provide a degree of efficiency and market access beyond anything the grid was originally designed to provide and beyond anything that distributed resources can provide alone.

Myth 3: Transmission is expensive and should always be an option of last resort when it comes to investing valuable company or ratepayer dollars. Considering the benefits that a transmission project, and the grid as a whole, deliver to a wide constituency and the leverage it provides to so many innovations, transmission's upfront costs are more than justified. Unfortunately, the immediate reward of cutting costs and delaying infrastructure investment is always more enticing to policymakers than the uncertain reward of anticipating future needs. In any event, the benefits of well-planned transmission will always exceed the costs, and that investment will remain the smallest portion

Our nation currently relies on an aging transmission grid that was not designed to accommodate either the looming tomorrow. Electric transmission is already more systematically planned and regulated than any other kind of basic infrastructure, including natural gas pipelines, railroads, the Internet or even

the highway system. New transmission facilities never go to waste. The benefits are not only widespread, even national, but also intergenerational. In my view, the most unsupportable fear of regulators is that transmission will be overbuilt.

Myth 5: The benefits of any transmission investment go to only those utilities and customers taking service at the "receiving end" of the line. Transmission investment benefits everyone by improving service reliability, decreasing generation costs, and supporting competitive wholesale energy markets across state and perhaps the most vital infrastructure of all: the electric grid. Because the lights always come on, the truths about the need to invest in the grid are not always self-evident. The grid is aging, congested in places, fails to reach some of our most abundant resources, and will soon be called upon to support a more highly electrified, digital, and power-hungry 21st century economy. Let's work together to make sure our grid is prepared to meet the challenge.

James J. Hoecker is a former Chairman of the Federal Energy Regulatory Commission, an attorney at Husch Blackwell LLP and Counsel and Adviser to WIRES, an international nonprofit trade association that promotes investment in high voltage transmission infrastructure (www.wiresgroup.com).

### Lithium-ion energy storage: Key component of America's renewable energy future



### By Ken Zak

ne of the more interesting storylines in conjunction with the recent total solar eclipse in the United States was how it might affect power plants that rely on the sun to produce electricity.

Many in the energy industry wondered how the power grid would function when the sun went dark in the middle of the day, since solar contributes nearly 42,000 megawatts, or 5 percent, of peak electricity demand. How would utilities manage the relatively rapid down-ramping, followed by an equally rapid up-ramp of power flowing from solar plants?

Fortunately, both the grid and the plants powering it proved remarkably resilient to the energy and demand fluctuations.

But as the U.S. shifts away from traditional fuels and relies more heavily on renewables like wind and solar for power generation, the question becomes even more important. How will we keep the lights on and air conditioning running and our phones and electric vehicles charged when the sun goes down or the wind stops blowing?

This is where reliable and efficient advanced energy storage will play an increasingly crucial role in grid stability in the years to come. According to the U.S. Energy Information Administration, approximately 10 percent of total U.S. energy consumption and 15 percent of electricity generation came from renewable sources in 2016. The U.S. Department of Energy has set a goal of 30 percent of U.S. electric generation to come from renewables by 2025. Solar and wind power will make up the lion's share of that new renewable generation capacity.

While natural gas, coal and nuclear power will continue to provide a significant portion of our baseload power for some time to come, intermittent energy sources play a role too — and this role is expected to increase. If we're truly to make renewables an economically viable, baseload option, we must have ways to store large amounts of power for use when renewables can't meet the demand.

Enter advanced lithium-ion batteries. This technology has evolved dramatically in the last decade and now provides a proven source for energy storage. As manufacturers perfect more advanced fabrication methods, prices for batteries have become more affordable for large-scale deployment. Babcock & Wilcox and its subsidiary, Babcock & Wilcox MEGTEC, design and manufacture coating, drying and solvent recovery systems used for lithium-ion battery electrode manufacturing in our De Pere, Wisconsin, facility. The batteries our customers produce are used in a variety of applications, including rechargeable batteries for electric vehicles and energy storage for homes, businesses and utility-scale applications.

Lithium-ion energy storage in utilityscale applications offers readily accessible power when solar and wind plants are limited — like when the sun goes down at night, on cloudy days, and when the wind stops blowing. Power producers can quickly and seamlessly draw on energy stored in batteries to deliver a reliable and consistent flow of electricity



Protection Agency's website, storing electricity using methods such as lithium-ion batteries also offers important environmental benefits, allowing the integration of more renewables into the grid, helping generation facilities operate at more optimum levels and reducing reliance on less-efficient plants that run during times of peak demand.

It is challenging to determine a costper-megawatt hour of electricity on lithium-ion batteries across the entire energy industry. However, according to a widely distributed 2016 report

- Lazard's Levelized Cost of Storage Analysis 2.0 — lithium-ion battery costs are trending significantly downward. The report stated lithium-ion battery costs for peaker plants have dropped 12 percent (from a range of \$321 to \$658 per megawatt-hour in 2015 to \$285 to \$581 per megawatt-hour in 2016) in the last year alone, while costs fell 24 percent for use in energy transmission and 11 percent for residential energy storage.

As this technology becomes more economically viable, we expect to see it deployed with more regularity by U.S. power producers. At B&W, we believe American companies must continue to support development and deployment of lithium-ion technologies. We're confident they will play an even greater and valuable role in our energy infrastructure and security.

This is one reason we have a vision to build a state-of-the-art Technical Development Center at our Wisconsin location. This center, currently in the funding stage with commissioning planned for as soon as 2019, will support continued manufacturing innovation for battery electrodes and provide process development services for our customers as they implement new chemistries and build larger factories. We intend to equip the facility with coating lines and a drying lab to test and optimize new battery technologies in support of our customers in the utility, residential and automotive battery industries.

With continued innovation from the private and academic sectors, and strong support from government officials at the state and federal level, we believe lithium-ion battery technologies will become a key component of America's energy future and will contribute significantly to the advancement of environmentally sound, affordable baseload renewable energy in the United States.

Ken Zak is Senior Vice President at Babcock & Wilcox MEGTEC.





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# Waterways investment — and red-tape relief — means more jobs, commerce, national security



hen Americans hear

the word "infra-

By Thomas A. Allegretti

structure," our vast intermodal transportation system likely comes to mind, with roads, airports and rails a common part of many people's daily experience. But, there is another vital component of our nation's transportation network that is often out of sight and out of mind: the marine transportation industry. Quietly, safely, and often far from the traveling public, tugboats, towboats and barges ply our coasts, rivers, harbors and the Great Lakes, moving hundreds of millions of tons of commodities that are fundamental to the American economy and playing a critical role in our national and homeland security as well. When one considers the contributions of the tugboat, towboat and barge industry to our nation, the importance becomes clear of crafting public policies that allow it to operate efficiently.

The American Waterways Operators, through a cooperative agreement with the U.S. Maritime Administration, recently released a study documenting these economic contributions. Conducted by PricewaterhouseCoopers, the study details the number of jobs this industry supports, its impact on gross domestic product and tax revenue, commodities moved throughout the nation, and the safety, efficiency and environmental benefits of barge transportation. The numbers make a compelling case.

According to the AWO-MarAd study, the U.S. tugboat, towboat and barge industry directly provides over 50,000 jobs nationwide (including more than 38,000 crew positions on board the industry's vessels) and directly contributes \$9 billion to GDP annually. These are highquality, family-wage jobs — all too rare in today's economy — that provide a ladder of economic opportunity for hard-working high school graduates.

Taking into account the indirect and induced jobs that the industry supports throughout its supply chain and as a result of employee household spending, the impact grows to more than 300,000 jobs nationwide and a more than \$33 billion contribution to U.S. GDP. The industry also directly collects and pays \$1.2 billion in federal, state and local taxes annually, a number that expands to \$5.2 billion annually when taxes derived from indirectly supported activity are included.

The study also breaks down the range and volume of commodities transported by barge annually. On average, barges transport over 760 million tons of cargo per year, including agricultural products, petroleum, coal, chemicals, aggregates and manufactured goods.

This cargo moves on our waterways safely, efficiently and sustainably. One inland dry cargo barge can transport as much dry cargo as 16 bulk rail cars or 70 tractor trailers, while one inland liquid cargo barge can transport the equivalent of 46 rail cars or 144 tanker trucks. Barge transportation is also the safest mode of transportation for the public.

Given the benefits of barge transportation to our nation's economy, environment and quality of life, it is in our national interest that policymakers in Washington, D.C., and state capitals understand what to do, and what not to do, to keep this industry operating efficiently. First, we need continued investment





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in the waterways system on which tugboats, towboats and barges operate, which means, among other things: ensuring healthy appropriations levels for the U.S. Army Corps of Engineers and the locks and dams for which they are responsible; refraining from funding arrangements that include additional user fees on commercial vessels, which already pay a 29-cent-per-gallon fuel tax to the Inland Waterways Trust Fund; recapitalizing the U.S. Coast Guard's inland buoy tender fleet, which maintains the aids to navigation system critical to safe vessel operations; and, as soon as practicable, facilitating Senate confirmation of an Assistant Secretary of the Army for Civil Works to lead and manage the Corps of Engineers' mission.

Second, we need to fix the dysfunctional regulatory system for ballast water and other vessel discharges by enacting the Vessel Incidental Discharge Act (VIDA). Under the present framework, commercial vessels in interstate commerce are subject to duplicative and at times contradictory ballast water and other discharge regulations imposed by two federal agencies and 25 states, making compliance difficult and costly. VIDA will streamline this regulatory patchwork into a more effective and efficient system by consolidating regulations for ballast water and other vessel discharges under the authority of the U.S. Coast Guard, with appropriate roles for the Environmental Protection Agency and the states.

Third, we need to continue to

support the Jones Act. This law which requires that vessels transporting cargo between two American ports be American-built, American-owned, and American-crewed - is not only fundamental to maintaining an industry that supports thousands of jobs and upholds the highest standards of safety and environmental stewardship, but also ensures that our military has a stable provider of sealift capabilities, and that our homeland security personnel have a reliable partner to serve as "eyes and ears" along our nation's shoreline and inland waterways. Without the Jones Act, these critical partnerships would be put in jeopardy.

The tugboat, towboat and barge industry is an indispensable part of our nation's economy and security, and should therefore be integral to the national conversation about revitalizing American infrastructure. AWO looks forward to working with the Trump administration, Congress, and other stakeholders in the public and private sectors to ensure that policies affecting this vital industry are conducive to its continued success.

Thomas A. Allegretti is President and CEO of the American Waterways Operators and Chairman of the American Maritime Partnership. The PricewaterhouseCoopers study can be viewed at http://www. americanwaterways.com/awo-pwc

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### **By Sue Kelly**

lectricity powers our homes, businesses and the infrastructure that makes our communities livable and commerce possible — street lights, airports, ports, subways, schools, hospitals, police and fire stations, courthouses, libraries and the like.

In the United States, more than 49 million Americans in every state (except Hawaii) and every U.S. territory are served by community-owned, not-forprofit public power utilities. These utilities serve roughly 18 million homes and 2.6 million businesses. Other communities are served by for-profit utilities or customer-owned electric cooperatives.

# Tax-exempt municipal bonds are essential to building American infrastructure

Powering our nation's homes and businesses requires lots of infrastructure. Public power utilities alone own and operate natural gas, coal, nuclear, hydropower, wind, solar and geothermal electric-generating plants; more than 35,000 miles of bulk power transmission lines; thousands more miles of local distribution lines; approximately 8,000 distribution substations; and a myriad of other facilities.

In the last decade, to help continue providing affordable and reliable electric power, public power utilities invested \$100 billion to replace aging or outdated facilities, upgrade existing facilities, protect the environment, increase efficiency, improve reliability, and bolster security and safety. Demand for electricity has been, and is expected to remain, flat for several years, and so investments have also leveled off, but public power utilities continue to make investments to keep their electric systems reliable and resilient — \$5 billion in 2016 alone.

As community-owned, not-for-profit entities, public power utilities are limited in how they finance these investments. They cannot allow partners to "buy in" and cannot issue additional stock to shareholders. Likewise, they do not amass large cash reserves, which would amount to using excess revenues collected from past customers to build infrastructure to benefit future customers, and there are no large federal programs funding such investments.

Thus, public power utilities rely very heavily on tax-exempt municipal bonds to finance their infrastructure and capital investments. Because interest on a municipal bond is not taxed by the federal government, bondholders are willing to accept a lower interest rate on their loan. Coupled with the flexibility to refinance debt at lower interest rates over time if conditions permit, issuing tax-exempt debt can reduce overall financing costs by as much as 25 percent. Put another way, absent the ability to issue tax-exempt debt, all \$5 billion spent on new investments by public power in 2016 would instead have been used to pay additional interest on existing debt.

As policymakers consider "innovative" ways to finance \$1 trillion in infrastructure investments in the next 10 years, I would make one point: *In the*  drive to innovate, policymakers should not harm proven, existing financing tools such as the tax-exempt municipal bond.

As discussed, tax-exempt bonds have built public power. Even more important, tax-exempt bonds have built America. Nearly two-thirds of the nation's core infrastructure is financed with municipal bonds - roughly \$2 trillion in infrastructure investments in the last decade and as much as another \$3 trillion over the next decade. In fact, municipal bonds are the original public-private partnership. Private entities and individuals lend their capital to public entities to finance the roads, bridges, sewers, airports, ports, schools, and, yes, public power utilities, that make our communities livable and commerce possible. In sum, as policymakers look for new ways to fund and finance our nation's infrastructure, they should also look for ways to support municipal bonds, and, at the very least, commit to do no harm to this vital and time-tested financing tool.

Sue Kelly is President and CEO of the American Public Power Association.

## You cannot be *for* infrastructure and *against* **TAX-EXEMPT municipal bonds**

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# Thoughts on successful partnerships for infrastructure



### By Maj. Gen. (Ret.) Charles Williams and Gary Loew

resident Trump's infrastructure plan appears to be facing headwinds, both within the administration and in Congress. On Capitol Hill in particular, many lawmakers have shown

skepticism that the administration can reach its goal of generating \$1 trillion in infrastructure spending over 10 years by speeding up environmental permitting and incentivizing companies to invest in projects in exchange for tolls or fees.

This is a shame because more use of public-private partnerships (PPPs) could generate major benefits for the country's infrastructure. Done right, public-private partnerships can reduce the requirement for government funding; free governments of oversight, management and legal expenses on infrastructure projects; and reduce the risk of underbudgeted or failed projects. Partnerships can expedite completion of needed projects that don't have adequate funding or provide all of the funding for projects that strapped governments can simply not fund at all.

PPPs are woefully underutilized in the U.S. and much of the reason is selfinflicted. During our careers overseeing infrastructure plans within and outside the U.S. Army Corps of Engineers, we have seen good projects become hamstrung due to insufficient funding, uncertainty about regulatory approvals, and failure to coordinate among federal, state and local agencies for approvals and funding. This has scared off private investment.

So how can government and publicprivate partnerships work together successfully?

To begin, for the partnership concept to work, there have to be changes in how public-private projects are conceived. Governmental agencies need the authority to negotiate these partnerships,



Locks and Dam project in Illinois. The project was repeatedly behind schedule and over budget. The inland waterways community — which provided half of the funding through a fuel tax — was frustrated. A Corps' internal investigation determined that the key reason for failure to meet schedules was the consistent annual failure to fund the project to achieve an efficient construction plan. In cooperation with the inland waterway industry, the Corps began applying a much larger share of its construction budget and the matching share of fuel tax funding to the project.



The Fargo-Moorhead flood control program is a noteworthy example of public-private partnership. Image courtesy of Flood Diversion Board of Authority.

revenue sources must be identified, and the approval processes should be streamlined.

For the Trump administration, that means a necessary focus on timely delivery of all permits and funding, plus a "fast track" design-build mentality. Real estate issues should be resolved early, and governments must approve funding sources, such as tolls, taxes and other fees that might be charged for project services.

The private sector can provide the upfront capital funding needed under the right conditions. Several years ago, the Corps of Engineers encountered serious problems with the Olmsted As a result, Olmsted is now expected to complete earlier than scheduled and under budget.

Another success story is the Fargo-Moorhead flood control project now under construction near the Red River that flows between North Dakota and Minnesota. The local sponsor, the Flood Diversion Board of Authority, agreed to accelerate project funding, and both the Corps and the sponsor agreed to advance the schedule by split delivery of the project. The sponsor is constructing the diversion channel and the Corps is constructing the southern embankment. This public-private partnership has reduced the federal cost from \$850 million to \$450 million and is expected to reduce the delivery time by 50 percent. The cost and time savings would not have been possible with traditional appropriated annual funding.

Second, government agencies at all levels need to improve coordination. This includes greater real-time sharing of documents, more coordination of processes, shared execution dates, and coordination of permitting requirements. The Trump administration initiative in Executive Order dated August 15, 2017 to "Establish Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects" should improve coordination and timely processing.

In addition, the Trump administration can push federal agencies on improvements to the mechanics of the permitting process. These include greater automation of standard functions, such as application receipt letters and status updates. The administration could expedite efficient reviews by accounting for different potential impacts among proposed projects. While a large partnership project may require a complicated Environmental Impact Statement, there is probably more latitude to prepare Environmental Assessments for projects with minimal or no significant impact.

Finally, when significant infrastructure projects are approved and funded, the responsible private parties should execute these with design-build or other techniques to accelerate construction, reduce public inconvenience, and put the projects in service as quickly as possible. It is also important to emphasize that partnerships need to be smart about how they pursue their objectives. This has not always been the case. Before commencing, partnership members should have a clear and comprehensive strategic agreement. The agreement should address all project development and financial responsibilities; include specific schedules; and be clear about risk-sharing and environmental mitigation requirements; incentive agreements; pay-back periods; and responsibility for future operation, maintenance and project expansion.

The Trump administration is right to focus on public-private partnerships for the country's infrastructure. Done right, these are a win-win for everyone.

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#### A former General in the US. Army Corps of Engineers, Charles Williams was Chief Operating Officer for the builder of the nation's first private toll road in 150 years. Gary Loew was in charge of Programs and Project Management for the Army's Civil Works Directorate. Both are with the Federal permitting firm Dawson & Associates.

## Deepening the Port of Savannah: A boon to economy — and trade



A Spider Barge (right) distributes outer-channel sediment into a barge held in place by a tug boat (left), as a Cutter Head Dredge Alaska (outside frame) pumps material through the pipe. The work is part of the Savannah Harbor Expansion Project. The outer channel will extend up to 20 miles into the Atlantic when complete, making the entire shipping channel 40 miles long from entry to Garden City Terminal. Image courtesy of U.S. Army Corps of Engineers.



### By Rep. Buddy Carter

popular buzzword in Washington, D.C., right now is infrastructure and how we can get to our goal of seeing a plan finalized. As we continue to discuss an infrastructure plan, we must look beyond the traditional definition of "infrastructure" projects and include projects that add economic value, such as ports.

### We must work together to promote ways in which our country can grow economically and remain competitive in today's global marketplace. Now is our opportunity to bring our country's infrastructure into the 21st century, and our ports are leading the way.

The Ports of Savannah and Brunswick are economic engines for the United States, and the need to maintain and expand these cannot be overstated.

In Washington, the conversation has been on the economy, creating jobs, and increasing our GDP, but we need to focus on the tools that will get us there. Our nation's infrastructure was once the greatest in the world, from the interstate highway system under President Dwight Eisenhower to the creation of modern airports ferrying people to all parts of the globe.

While those infrastructure endeavors helped to catapult the United States to a global and economic power, they are now faced with the effects of age and neglect. The demand on our nation's ports has continued to grow, and our investment in those outlets should reflect that.

The second-busiest port on the East Coast, the Port of Savannah, has also experienced record growth. Just this month, the largest ship to ever call on the Port of Savannah, the Theodore Roosevelt, made its first stop in Savannah. The arrival of that 14,414 TEU container ship marked another year of record growth for the port. While this incredible growth is credited to the Georgia Port Authority's planning and logistics capabilities, it will soon face the problem of physical and environmental constraints.

The Port of Savannah is currently undergoing a major expansion, called the Savannah Harbor Expansion Project (SHEP), to deepen the river from 42 feet to 47 feet in order to accommodate the larger ships now coming through the Panama Canal. That project, which initially started in 1996, has been nearly two decades in the making. It is one of the most exhaustively studied projects in the nation and takes great lengths to protect our environment and the wildlife that call it home. That project is now under construction, but there is a lot that still needs to be done.

To keep the project on time, we need annual funding of roughly \$100 million until its completion. This year's budget request, while it's been the highest in project history, comes in at \$50 million — well short of what is needed. Each year the project is underfunded, the country loses out on nearly \$282 million in economic benefit from the project's completion, as well as seeing increases in the cost of the project to the American taxpayer.

Projects like SHEP are a no-brainer. With an estimated return of more than \$7.2 per \$1 spent, it's a model of what some initial investment can do for long-term growth. We need our nation's ports, like the Ports of Savannah and Brunswick, to be a priority in any infrastructure package that is developed.

The focus needs to be on getting the U.S. Army Corps of Engineers the resources they need to complete their backlog of deep-draft navigation projects and on funding infrastructure projects that will be an economic boon for the nation.

As the world's busiest and most advanced ports continue to develop outside of our borders, we must look at what we can do domestically. The deepening of the Port of Savannah is essential to our ability to maintain competitiveness with other global ports and to accommodate the rising demand placed on the system. Without a focus on the ports and what they contribute to our economy, we will continue to fall behind in international trade and will only grow our trade deficit.

We must work together to promote ways in which our country can grow economically and remain competitive in today's global marketplace. Now is our opportunity to bring our country's infrastructure into the 21st century, and our ports are leading the way.

Rep. Earl L. "Buddy" Carter, Georgia Republican, serves on the House Energy and Commerce Committee.

## Michigan's Soo Locks: The urgent need for one more



### By Rep. Jack Bergman

ver the course of my lifetime, I've experienced the world through many different lenses: as a father, grandfather, small business owner, U.S. Marine and

commercial airline pilot. Now as a freshman Congressman, I have the privilege of adding a new lens to my perspective. These first few months in Congress have enabled me to understand the broad scope of even the most complex legislation.

A comprehensive infrastructure overhaul has been part of the political landscape for decades. Politicians have pounded their chests about this issue for years, so far without significant results. Today, we have a once-in-a-generation opportunity to take action and get the work of the people accomplished. Just talking is no longer an option. An excellent next step toward restoring American pride and American jobs is to take action to rebuild our national infrastructure system. Long-term bureaucratic inaction is in part why many Americans voted to elect President Donald Trump.

Infrastructure is no longer considered just "roads and bridges" — it is much more complex than that. A comprehensive 21st century infrastructure package must include more than roads and bridges. Railways, locks, waterways, broadband and interstate electrical grids are all areas that top the list of infrastructure needs around our country, especially in Michigan's 1st Congressional District.

Did you know that one of the most vital pieces of our nation's economic and defense infrastructure is located in the northeast corner of Chippewa County in Michigan's Upper Peninsula?

Situated on the southeastern shore of Lake Superior is a critical part of our nation's infrastructure known as



Aerial photo of Soo Locks, a vital waterway for iron ore and other maritime commerce between Lake Superior and Lake Huron that first opened in 1855. Today, only two of its four locks are operable, and only one – the Poe Lock – can handle the largest lake freighters. Image courtesy of U.S. Army Corps of Engineers.

A comprehensive infrastructure overhaul has been part of the political landscape for decades. Politicians have pounded their chests about this issue for years, so far without significant results. Today, we have a once-in-a-generation opportunity to take action and get the work of the people accomplished.

the Soo Locks. The first Soo Lock was constructed in 1855. Less than 30 vessels navigated the channel in its first year of operation. Today, there are four locks in this Canadian border town that we Michiganders call "The Soo." Due to age and disrepair, only two of the four locks are operable — the Poe and MacArthur Locks.

Up to 10,000 ships per shipping season navigate these two locks. In fact, over 70 percent of U.S. vessels rely solely on just the Poe Lock to make their way through the Great Lakes and St. Mary's River. During shipping season, the Poe Lock alone handles an average of 12 freighters per day. Since 1969, there have been various upgrades and repairs done to the Poe Lock in an effort to keep it fully functional.

The following details are grim: According to a study released by the Department of Homeland Security (DHS) in 2015 that referenced the effects of unexpected Soo Locks closures, "Depending on what time of year the closure occurred, approximately 75 percent of the U.S. integrated steel production would cease within 2-6 weeks after the closure of the Poe Lock. Approximately 80 percent of iron ore mining operations, and nearly 100 percent of the North American appliances, automobile, construction equipment, farm equipment, mining equipment, and railcar production would shut down." The DHS study also concludes that if there were a lock closure, Michigan's unemployment rate could reach 22.6 percent, Indiana's 22.0 percent, Ohio's 17.2 percent, Illinois' 14.0 percent, Wisconsin's 12.7 percent, Pennsylvania's 11.2 percent, New York's 9.9 percent and Minnesota's 9.6 percent.

The results would plummet our nation's economy into a deeper recession than we experienced during the Great Recession in 2008.

Members of Congress from across the country and across the political spectrum have come together in support of the Soo Locks. And I have authored legislation, the Soo Locks Modernization Act (H.R. 2806), to authorize construction of a new Poe-sized lock. Additionally, the U.S. Army Corps of Engineers is in the process of conducting an updated economic study to conclude by the end of 2017.

We, the American people, can no longer accept the inaction that has put our country at an economic and national security risk. It is time for Congress to work across party lines and with President Trump to ensure that a 21st century infrastructure package is delivered for the people of our great country.

Rep. John "Jack" Bergman, Michigan Republican, served in the U.S. Marine Corps for 40 years, retiring with the rank of Lieutenant General. He is a member of the House Budget Committee, House Natural Resources Committee and House Veterans' Affairs Committee.



By Rep. Jeff Denham

otholes. Flight delays. Crumbling dams, spillways and bridges. The need for investment in our nation's infrastructure is glaring, and the deterioration has been occurring unchecked for years. For the first time in a long time, Washington is proposing an innovative and longoverdue infrastructure package that goes beyond just maintenance and is anything but status quo.

Working together, Congress and the Trump administration are proposing a transformational package of bold reforms to build a 21st century system in America that accommodates technological advances in all modes of transportation. The president has made a \$1 trillion promise, and it's now Congress' job to identify revenue, reform our permitting process and regulatory framework, and improve federal financing programs.

While finding new revenue is always a challenge, opportunities do exist. Last year, then-President Barack Obama signed into law a bill I authored, which will yield over \$8 billion by reducing the federal real estate footprint. The Federal Assets Sale and Transfer Act (FASTA) established a program for liquidation of unneeded federal real property. The law waives burdensome reviews and streamlines the disposal process for more than 267,000 vacant or underutilized federal buildings. Profits from the sale of these properties could be reinvested in much-needed infrastructure projects elsewhere. Tax reform will also provide options for dedicated transportation revenue for our trust funds and new projects.

For these dollars to be used most efficiently, we must also slash bureaucratic red tape and streamline the environmental review and permitting process. The administration has made good progress in this area by holding federal agencies accountable for their performance, establishing a lead agency responsible for "One Federal Decision," setting a two-year goal for environmental reviews and permitting, and creating a 90-day decision making time frame when documentation is complete. Congress has an opportunity to build on these tenets and

# Sale of federal assets could yield billions for infrastructure

provide additional tools to streamline the process by continuing to support an idea I championed to allow states to perform the environmental review and documentation process instead of relying on various federal agencies. This removes redundancy and reduces costs for participating states. The program has been so successful that we enhanced it in the 2015 highway bill.

In addition to environmental review and permitting, the Department of Transportation's regulatory framework is too dependent on projections and bureaucratic calculations. Regulations Finance and Innovation Act (TIFIA) program, Railroad Rehabilitation and Improvement Financing (RRIF) program and the Water Infrastructure Finance and Innovation Act (WIFIA). These programs provide low-cost access to credit for financing highway, bridge, rail, transit and drinking water projects among others. Tools like direct loans, loan guarantees and lines of credit assist public and private entities facilitate big projects by filling gaps in capital markets. Although successful, there is room for improvement, as not all categories of projects are eligible under TIFIA, RRIF and WIFIA. be capable of generating sustainable revenue streams. This commonsense tool would provide exponentially more investment in water storage at a low cost.

Thinking big is important for anticipating the future, but we cannot forget about our existing infrastructure. Those assets have significant value throughout their useful life. Policymakers should recognize that value and explore opportunities to leverage those assets. Attracting private sector interest and utilizing private sector expertise to reinvest and manage infrastructure is good business and will benefit the taxpayer. Congress



Performance-based regulations are grounded in real data and actual risk – not perceived threats – and reward successful operations with strong safety records. Taking this approach in guiding new technologies will remove government obstacles, provide certainty to industry and spur innovations on the cusp of development.

should be performance-driven to ensure safety is top-of-mind. Performance-based regulations are grounded in real data and actual risk — not perceived threats and reward successful operations with strong safety records. Taking this approach in guiding new technologies will remove government obstacles, provide certainty to industry and spur innovations on the cusp of development.

And finally, to provide an even higher return for the taxpayer, it's critical that we enhance federal financing options like the Transportation Infrastructure In California, we struggle with water storage and distribution. Important projects like dams and reservoirs are expensive and dependent on limited Bureau of Reclamation resources. In order to bring needed water storage to fruition, I have proposed the New WATER Act (H.R. 434) to attract new investment capital for development, construction and rehabilitation of these projects. Credit assistance under the program is available to public and private entities for creditworthy projects with long repayment periods. In order to be approved, projects must and the Trump administration understand this. We have a rare opportunity to make transformational investments with policy reforms, and we will accomplish the task.

Republican Rep. Jeff Denham is Chairman of the House Transportation and Infrastructure Subcommittee on Railroads, Pipelines, and Hazardous Materials. He represents California's 10th Congressional District.

## What infrastructure needs: Smart permitting



By Lt. Gen. (Ret) Bob Flowers

or years, members of Congress have criticized the federal infrastructure permitting process. While often justified, today's system is actually better and more efficient than it was

20 years ago. Still, there is room for improvement, and the Trump administration's main challenge is how to improve infrastructure permitting while ensuring that the result withstands the almost-inevitable court review.

This issue is especially important for encouraging public-private partnerships, which has emerged as a cornerstone of the administration's infrastructure plan. Officials recognize that the only way to attract private sector funding is by overcoming concerns about regulatory delays.

Will the administration's plan work? Yes, but only if they build on existing reforms that have proven effective.

First, the main delays with federal permitting usually stem from three laws: the National Environmental Protection Act, the Clean Water Act and the Endangered Species Act. All require compliance with regulations created in keeping with the Administrative Procedures Act, which sets rules on public notice and regulation justification.

The Trump administration and Congress could try changing the laws, but this appears unlikely. Agencies could try changing the laws' rules, but that is time-consuming and certain to spark litigation.

The best option, in my view, is through wider adoption of a process that unifies a project's permit applications under a single "one-stop shop," overseen by a designated federal official. That official becomes the arbiter among agencies and ensures a permit application does get not bogged down.

This model has worked in Europe for years. A version of it also helped

to accelerate New Orleans' rebuilding after Hurricane Katrina. In that instance, the Corps of Engineers had the lead and coordinated action with federal agencies.

Second, there needs to be greater flexibility to reflect projects' varying degrees of potential environmental imthat used specific timelines based on a project's potential impact. For a simple permit request, we would produce an answer within 30 days. A more complicated request would have an answer within 90 days, and a complex application involving other agencies would see a response within 180 days.



ILLUSTRATION BY GREG GROESCH

### Officials recognize that the only way to attract private sector funding is by overcoming concerns about regulatory delays.

pact. For example, a permit request to build a one-lane road extension can be handled faster than a permit request to build a multiple-lane bridge over a river. Projects that require mitigation for wetlands loss requires even more time.

When I took command of the Corps of Engineers Mississippi Valley Division, we instituted a new "triage" system Once, in response to a federal court action that potentially enjoined the Corps from operations on the Mississippi River and tributaries, we committed to a complete revision of our Mississippi River Environmental Impact Statement. We committed to complete the task within one year, despite some officials' angst that a comprehensive multiple-agency effort that included the U.S. Coast Guard, Environmental Protection Agency, Interior Department and several states could not be completed within that time.

But the district leaders in charge were firm and sure enough, the working group produced the new impact statement and it was excellent.

Having this timetable made our division's operations more efficient and reduced the problem of endless reviews. The lesson: Jobs expand or contract to fill a timeline.

Third, the administration and Congress have to accept that politically appealing actions can backfire, especially budget cuts on permitting departments. This is a classic selfdefeating strategy because project sponsors need federal officials who can write legally defensible documents that accompany the permit approvals. These documents include records of decision and environmental impact statements.

While Corps of Engineers Commander, I dealt with several members of Congress who thought the best way to promote a favored project was by cutting our permitting budget.

One well-known Republican who wanted Corps approval of a large energy project responded to a delay by cutting the Corps' permit budget. I told him I would commit to decisions within specific time frames for all projects, including his, but he had to fund our operations. He declined.

Too bad — that project would have had faster approval with adequate permit funding.

Finally, while there is much that the federal government can do to streamline permitting, public-private partnerships also have to be smart about the process. That means anticipating roadblocks and taking action to reduce delays.

Two years ago, the U.S. Fish & Wildlife Service (FWS) listed the northern long-eared bat as "threatened" under the Endangered Species Act. That triggered immediate delays on several logging and construction operations in the Northeast area. But one large operation saw this coming and conducted its own impact study, which it quickly submitted to FWS. The company avoided six months of construction delays.

Retired Army Lt. Gen. Robert Flowers, PE, former Commanding General of the Army Corps of Engineers, is a senior adviser at Dawson & Associates in Washington, D.C. He can be reached at RFlowers@Dawsonassociates.com.

# Unlocking billions of dollars of infrastructure funding capacity



#### maintained more effectively. Given the enormous pension liabilities governments face, operating savings are a source of infrastructure funding we cannot ignore.

One example of how to unlock value from a public asset involved the Indiana Toll Road lease. In 2005, Indiana leased its toll road for \$3.8 billion. The state then launched Major Moves, a project to restore Indiana's transportation infrastructure. Ten years later, Indiana had invested \$10.8 billion in connew private management.

Less well known is the Indianapolis parking meter P3. In that project, the City's P3-generated net revenue increased by over 1,000 percent overwhelmingly driven by technology enhancements and operational improvements as contrasted with rate hikes.

P3s have also enjoyed some bipartisan support. In 2016, Scranton, Pennsylvania, sold its sewer utility for \$195 million. The sale, to the City's existing



### Producing future infrastructure funding streams from P3-generated operating expense savings offers additional benefits. Well-managed P3 projects can deliver improved levels of service and ensure that assets are maintained more effectively.

struction, preserved about 50 percent of its road miles, and repaired a quarter of its 1,400 bridges without additional debt. While Indiana's toll road project went through bankruptcy, Indiana negotiated numerous protections in its P3 contract and received the lease payment upfront. Thus, the state shielded itself from the bankruptcy process, and toll road operations continued under water services provider, generated savings through consolidation and improved management practices.

Opponents cite myriad concerns regarding P3s. A few objections merit discussion.

P3s harm incumbent employees. Well-managed P3 transactions commit to no-layoff policies for incumbent employees, comparable wages and benefits, and ongoing union recognition. It's possible to capture the benefit of P3s without penalizing staff or unions.

P3s don't work in small cities. Smaller cities have numerous opportunities to convert P3-generated operational savings into new infrastructure. For example, there are 50,000 public water systems in the U.S. serving small cities. In 2012, Westfield, Indiana, (population 32,066) sold its utility assets to Citizens Energy, a local nonprofit public charitable trust serving as the regional gas utility. The transaction helped pay off Westfield Utilities' \$45 million debt, reduced utility rates from anticipated levels, and generated a \$46 million sum that the city invested in new infrastructure. The acquirer offered all employees jobs.

Private capital is more expensive than public debt. The cost of capital is just one factor in determining whether P3s are a viable alternative. Even with higher capital costs, P3s are often more cost-effective because private partners have operating advantages that even the most committed public managers cannot duplicate, including economies of scale, abundant capital and advanced technology.

Many infrastructure projects don't generate revenue. While local governments can't deploy P3s for all infrastructure projects, P3s can be an important part of the solution. And, when P3s for current operations generate savings, existing resources can be directed towards infrastructure projects without a revenue stream. Indiana's Major Moves provides one example.

Finally, the Trump administration should consider whether some elements of Australia's National Asset Recycling Initiative apply to the U.S. That program provided incentives to jurisdictions that sold or leased assets and reinvested the proceeds to fund infrastructure.

The strategies described above can help cities and states unlock billions of dollars of value trapped in existing operations to help fund new infrastructure.

Charles "Skip" Stitt is a Senior Director at D.C.-based Faegre Baker Daniels where he works with local governments to convert P3-generated operating savings into tomorrow's infrastructure funding streams. This article was adapted from the longer version of the author's March 3, 2017, Hudson Institute report, "Infrastructure Spending and Public-Private Partnerships."

By Charles "Skip" Stitt

he nation's approach to managing public infrastructure is often inefficient. Best practices, such as life-cycle asset management and preventive maintenance, are rarely a priority. We can, however, unlock billions of dollars of infrastructure funding capacity now trapped in existing assets by improving how we build, operate and finance infrastructure.

While experts discuss the size and urgency of our infrastructure needs, the debates focus on how to pay for new infrastructure.

The Trump administration has identified public-private partnerships (P3) as a primary strategy. A majority of states and D.C. have statutes allowing P3s. Other countries have also adopted P3s as a strategy to develop and replace infrastructure. When implemented properly, the P3 model lowers construction costs, accelerates project delivery, efficiently transfers risk and minimizes life-cycle costs.

Many government officials have experience deploying P3 strategies to lower the cost of existing government operations — and then using those savings to fund new infrastructure. Savings are possible because a large, highly focused manager of roads, airports, harbors, utilities and parking systems has more access to capital, technology and best practices than many public agencies. Using the P3 process for existing government operations can create annually recurring savings to fund new infrastructure projects. These savings streams can support significant new infrastructure when leveraged.

Producing future infrastructure funding streams from P3-generated operating expense savings offers additional benefits. Well-managed P3 projects can deliver improved levels of service and ensure that assets are

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uses of these ed homophones. at Character Was Removed from the Al

# credibility

[kred-uh-bil-i-tee]

### noun

1. the quality of being believable or worthy of trust.

### Word Origin and History for 'credibility'

1590s, from Medieval Latin credibilitas, from Latin credibilis (see credible ). Credibility gap is 1966, American English, in reference to official statement out the Vietnam War.

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### **3 Time Sigma Ki Award Winner**

White House News **Photographers Association** 2015 First Place

**Pictures of the Year International** Second Place - Campaign 2012

**Associated Press Sports Editors** Top 10 Award Winners 5 years in a row

Virginia Press Association 2012 Best in Show - In-Depth or Investigative Reporting 2010 First Place - Critical Writing

### **Society of Professional Journalists Washington DC Pro Chapter**

2016 Dateline Awards, Winners Daily Newspaper Division: Investigative Journalism, Commentary & Criticism

**Scripps Howard Foundation** 2009 First Place - Editorial Cartooning Award

**MDDC Press Association** 2009 First Place - Investigative Reporting

> **2010 APME Journalism Excellence** Awards International Perspective Award

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## The 'autonomy economy': Why U.S. must outpace China, other nations



### **By Grayson Brulte**

utonomous vehicles will usher in the single greatest change in society since the Industrial Revolution. For this change to happen, Congress will need to deliver to President Trump a national autonomous vehicle framework bill that includes vehicles weighing over 10,000 pounds.

Upon signature by President Trump, the autonomy economy will officially be launched to the benefit of society, creating millions of new jobs through sustained economic growth. The economic impact of autonomous vehicles and the autonomy ecosystem is projected to grow to \$7 trillion by 2050.

The economic growth of the autonomy economy will create millions of new jobs and save the United States \$871 billion in annual economic loss and societal harm caused by motor-vehicle accidents.

Today, the roads of America are dangerous. In 2015, an estimated 433,000 large trucks were involved in policereported accidents, resulting in 4,067 fatalities, a 4 percent increase from 2014. Some 74 percent of these fatalities were occupants of other vehicles traveling on the road. In 2016, over 40,000 individuals perished in a motor-vehicle accident. Ninety-four percent of these accidents were caused by human error.

Over the next 20 years, the number of individuals dying on the roadways of America will dramatically decrease if there is an autonomous vehicle framework in place that permits Level 5 autonomous vehicles to travel over state lines.

When an autonomous vehicle framework is in place, the roads of America will become safer and society will welcome the autonomy economy. The autonomy economy is an evolution based upon B. Joseph Pine II and James H. Gilmore's experience economy theory, which states that businesses will develop memorable experiences for their customers and the memory of those experiences will become the product.

While the term the "experience economy" was first introduced in 1998, the shift to an experience-based economy has happened over the last several years. B. Joseph Pine II and James H. Gilmore were ahead of their time in correctly predicting the evolution of the economy towards a service-based economy.

When Gov. Rick Scott of Florida signed one of the first autonomous vehicles laws in 2012 — HB 1207, allowing testing in the state — he successfully established the foundation for the autonomy economy. Investments being the technology and its supposed negative impact on jobs. Instead, we need to look back in history and study similar technological advancements.

The Industrial Revolution created tens of millions of more jobs than it replaced over the course of history, and the U.S. economy has grown and matured significantly since then. When new inventions were introduced, such as the electric-powered washing machine, there was an uproar over job loss. In fact, the washing machine went on to create more jobs than it replaced.

The fear of autonomous vehicles replacing jobs and not creating new jobs is a classic case of history repeating itself. For the introduction of new technologies, history is our greatest guide to could strategically allow Level 5 autonomous vehicles to operate on every road in the country. If this happened, China could overtake the United States as the leader in the development and testing of autonomous vehicles.

The World Health Organization estimates 260,000 individuals perish on the roads of mainland China every single year. With over 700 individuals perishing on the roads of mainland China every day, that government has a clear motive to allow Level 5 autonomous vehicles.

U.S.-based companies could off-shore their autonomous vehicle testing and investments benefiting the Chinese economy — not the U.S. economy — if Congress does not act.



made by the private sector in autonomous cargo shipping, autonomous vehicles and autonomous drones, and the space industry are creating hundreds of thousands of high-paying jobs with a net positive impact on the Florida economy.

The foundation Gov. Scott has established in Florida is one that the United States can build and expand upon. With investments being made in Silicon Valley, Southern California; Arizona; Detroit, Michigan; Florida; and Nevada; and with foreign investments being made by Softbank and Foxconn, the groundwork for the autonomy economy is actively being developed in the United States.

To unleash the full potential of the autonomy economy, we have to believe in the American dream by not prejudging predict the future.

While we do not yet know the full extent autonomy and autonomous vehicles will have on society, we do know that if the United States does not lead on autonomy, other countries will step up and autonomy jobs will ship overseas.

We are currently seeing this very scenario happening in Singapore as Nu-Tonomy, a Cambridge, Massachusettsbased autonomous vehicle start-up, is testing their technology overseas. If an autonomous vehicle national framework is not passed, we could see this same scenario occur in China, as U.S.-based technology companies have a desire to expand into China to tap into the growing population.

Capitalizing on this desire, China

It would behoove Congress to act and pass an autonomous vehicle national framework for the benefit of society. An autonomous vehicle national framework will create millions of high-paying U.S. jobs, thus having a positive impact on the economy.

It is time for America to come together and collectively usher in the autonomy economy for the benefit of all Americans.

Grayson Brulte is the Co-Founder and President of Brulte & Company, an innovation advisory and consulting company that designs innovation and technology strategies for a global marketplace. @gbrulte.

## The Ray in Georgia: Demanding more of roadways



#### **By Harriet Anderson Langford**

he world is getting smarter. Smart phones. Smart cars. Even smart thermostats. Yet, we're still building the same roads that we were building in the 1950s. We need roads ro than just get people from

that do more than just get people from one place to another.

At The Ray, we demand more and reject the status quo. We start our discussions with "what ifs": What if the road itself could produce energy? What if highway and interstate shoulders could generate new revenue for state departments of transportation? What if we demanded more of our roadways? At The Ray, we are asking, and answering, those questions.

The Ray is an 18-mile living laboratory located in southwest Georgia for innovative ideas and technologies that will set a new standard for roadways around the word and prove that ambitious goals are within our reach.

Take state revenue generation as a starting place. As electric vehicles continue to gain market share and autonomous cars (many of which will be electric or have electric components) become a reality, state departments of transportation (DOT) will be forced to diversify revenue beyond the dwindling gas tax. Fortunately, there is a wealth of underutilized and untapped resources at their fingertips: land.

For example, rights-of-way (think about the land that runs alongside roadways) vary in size, reaching acres of land. The primary purpose of this land is a place of safe harbor for distressed drivers, but it can also be made to multitask to the benefit of all. On The Ray, we're working with the Georgia DOT, the Georgia Public Service Commission and Georgia Power to install a one megawatt solar farm directly on and along the interstate. This project will be the first in the Southeast and only the fifth of its kind in the nation. The same logic can be applied to other renewable sources of energy like wind.

Later this year, The Ray will implement a perennial wheat cultivation pilot with the Land Institute. Many highly disposable consumer goods, like diapers and paper towels, use fibers such as perennial wheat in their products. Through profit-sharing or lease agreements with DOTs, these companies can grow their crops on the right-of-way and avoid competing with



Ray C. Anderson (1934-2011) is the namesake for the innovative road in western Georgia.

#### farming growing edible crops that cannot be grown so close to roadways.

And that's what is above ground. Below, there's a world of opportunities for energy and transportation to find common ground. High-voltage, direct current (HVDC) electric power transmission systems are more efficient than our current, ancient grid, which relies heavily on the older alternating current (AC). Unlike AC, HVDC is highly compatible with renewables, and laying these cables strategically in the right-of-way, where energy is being produced, results in an efficient system where energy is produced and consumed on smaller micro-grids.

The possibilities are endless. We only need to ask the right questions to start us on the right path. My father, Ray Anderson, revolutionized the carpet tile industry and taught the world that you can do well by doing good. The Ray highway is created and named in his honor, and I'm proud to bring his vision into a new sector. On The Ray, we're trying things that have never been done before and achieving better outcomes — safer roads, fewer deaths, infrastructure that

produces value and revenue for the economy and for state DOTs instead of being, simply, a liability.

Highway infrastructure is an untapped asset that we can no longer ignore. I invite all of you to reach out, learn about our project, pitch an idea and come to ride The Ray and experience the future of highway transportation. Let's drive the future.

Harriet Anderson Langford is Founder and President of The Ray.



In partnership with Georgia state agencies and Georgia Power, a one-megawatt solar farm is being installed on the right-of-way of The Ray, an innovative stretch of road in western Georgia. This will be the fifth U.S. solar farm and the first one in the Southeast. Image courtesy of The Ray.

## You get what you pay for



#### By Edward R. Hamberger

or years, there has been broad consensus that bold action is necessary to maintain and modernize our nation's infrastructure. Yet, like so many bygone policy battles, the challenge has

always been how to pay for it. While Washington, D.C., often chooses to overcomplicate things, the simple solution is the right one: If you are going to use infrastructure, you need to pay to maintain it.

Privately owned railroads have pumped an average of \$26 billion annually over the last five years into the rail network that serves this country. As a result, the U.S. has the best freight rail system in the world. While taxpayers foot the bill for roads and highways, they pay almost nothing for the vital rail infrastructure that safely and efficiently delivers for the U.S. economy, as well as provides the foundation for passenger rail throughout the country.

If Congress and the administration are serious about a long-term, sustainable solution to the country's infrastructure challenges, they must flip the paradigm on how surface infrastructure is funded. Most importantly, they must expect more from those who use — and damage — our infrastructure the most.

Users of the U.S. highway system are supposed to fund its maintenance through federal and state gas taxes. Since the 1950s, this user-pay system has been in place, but the last increase in the early 1990s leaves it at just 18 cents a gallon. This falls far short of what is needed today. And as cars become increasingly fuel efficient, the current gas tax model has proven to be less effective with each passing year. This has forced policy makers since 2008 to raid general taxpayer funds of \$143 billion to cover shortfalls in the Highway Trust Fund.

The existing gas tax model is fundamentally broken and makes

taxpayers the lender of last resort to buoy critical infrastructure. Beyond consuming already scarce taxpayer dollars, it subsidizes what the trucking industry should be paying to fund the infrastructure they use and damage each year.

Restoring modal equity — meaning trucks fully pay for their use of public roads and bridges — will go a long way in closing the Highway Trust Fund considering the weight of the vehicle — a so-called weight distance fee.

With freight demands expected to increase by 45 percent by 2040 according to the U.S. Federal Highway Administration, we cannot continue to wait to restore equity and sustainable funding to our surface transportation systems. Our highways, bridges and roads are already at a tipping point and will continue to fall further into disrepair health of their infrastructure. Those critical private investments set rail apart and earned it the highest ASCE grade — a "B."

Policymakers and the American people can rest assured that rail will continue to do what it takes to maintain its 140,000-mile network and continue striving for that top-of-the-class ASCE grade.

But highways have to up their grade



That same [ASCE] report card made clear that when one set of users – railroads – invests heavily in maintaining their transportation system, it shows in the health of their infrastructure. Those critical private investments set rail apart and earned it the highest ASCE grade – a "B."

gap and putting America's highway infrastructure on a sustainable path for the future. In overhauling highway funding, policymakers have a clear path forward to institute a system that requires all highway users pay for their fair use of infrastructure.

Some states have made moves to impose a fee on drivers and truckers based upon the distance they drive or what is known as Vehicle Miles Traveled (VMT). It's a simple concept where everyone using a highway pays for what they use. A few states have improved on this approach by also absent wholesale change.

Earlier this year, the American Society of Civil Engineers (ASCE) graded America's infrastructure a "D+" and estimated \$4.59 trillion is needed in spending over the next decade to rectify the situation. The Federal Highway Administration has estimated that an annual investment of \$170 billion was necessary to improve our nation's roads.

That same report card made clear that when one set of users — railroads — invests heavily in maintaining their transportation system, it shows in the as well, and that can only happen when trucks have to chip in their full share to get the nation's highways back to a state of good repair.

Since 1998, Edward R. Hamberger has served as President and Chief Executive Officer of the Association of American Railroads (AAR), the world's leading railroad policy, research and standard setting organization for freight railroads of the United States, Canada and Mexico, as well as Amtrak.

### Public infrastructure for public benefit



By Dennis R. Pierce

he story of the growth of our nation — the expansion of 13 Eastern Seaboard states from sea to shining sea — is the story of infrastructure. It is the story of inland waterways, like the Erie Canal, and the Transcontinental Railroad. It is the story of the federal highway system of nearly a century ago and the interstate highway system created during the 1950s. And it is the story of the Hoover Dam and the Tennessee Valley Authority.

Most of all, it is a story of big ideas, and even bigger projects, that were implemented of the people, by the people and for the people. These were investments in America, by America and for America ... for Main Street, first and foremost.

But lately our nation seems to have lost its way. Bipartisan transportation and infrastructure goals that have been shared for a century and a half have fallen victim to the paralysis of ideology.

And so bridges are crumbling and tunnels are threatened. In 2016, 58,495 bridges were rated as structurally deficient. Cars, trucks, buses and emergency vehicles cross deficient bridges more than 200 million times a day. If placed end to end, the deficient bridges would stretch 1,340 miles from New York City to Miami. The Arlington Memorial Bridge in Washington, D.C., carries 68,000 vehicles a day and the National Park Service estimates it will take \$250 million to repair.

The lack of proper infrastructure funding also has had a major negative impact on rail commuters, especially those along the East Coast, as evidenced by slowdowns created by years of deferred infrastructure repairs at New York's Penn Station. Tunnels that were built in the early 1900s are being used to carry passenger trains into and out of New York City. Penn Station in New York is forced to handle three times as many trains as it was designed to accommodate. And every day, three railroads, scores of employers and hundreds of



The people want, need and deserve better and safer infrastructure. We should have the best airports, rail systems and freeways in the world. The public will is there, and the political will must now fund and address the needs of the people.

Scomotive Engine

IBT

crews who toil around the clock with

freight trains rarely go to work at the

unpredictable on-duty times. Crews on

same time on any two days in a row, and

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thousands of commuters cross their fingers that this won't be the day that infrastructure fails in a catastrophic way.

And infrastructure does not end with roads, bridges and railroads. The nation's electrical grids and our water supply and waste treatment systems are long overdue for renewal and updating. Continued failure to address these important public needs will produce severe and costly interruptions to commerce when outdated and under-maintained systems inevitably fail.

As for rail safety, on key routes throughout the land, the railroad industry is implementing Positive Train Control (PTC), a technology that will improve safety for railroad workers, for passengers and for the communities through which our railroad systems operate. However, little has been done to ensure that the actual operation of these new technologies is not creating task overload on the cab of the locomotive. It is clear that well implemented and tested technology can help to bring infrastructure up to date, but technologies such as PTC alone will not solve every safety concern.

After more than 175 years, the railroad industry still has overworked train

their daily lives. A railroad can build and maintain a world-class infrastructure. but if the issue of fatigue on the nation's railroads is not addressed in a serious and fundamental way, then the industry won't be as safe as it can be.

The people want, need and deserve better and safer infrastructure. We should have the best airports, rail systems and freeways in the world. The public will is there, and the political will must now fund and address the needs of the people.

Let's get our infrastructure, and particularly the transportation system, moving into the 21st century. Let's buy American products. Let's put tens of thousands of underemployed Americans back to work. And let's build the transportation infrastructure that will equal what our forefathers created.

Trainin Dennis R. Pierce is the National President of the Brotherhood of Locomotive Engineers and Trainmen. The BLET represents nearly 57,000 professional locomotive engineers and trainmen throughout the United States and is the founding member of the Rail Conference, International Brotherhood of Teamsters.

## Broadening our broadband



#### By Rep. Marsha Blackburn

very day in cities across the nation people are having groceries delivered to their front doors after they have ordered online or through an app on their phone. Others are logging on each night to connect with friends, get an education or catch up with the news of the day. But in rural America, the picture is not the same. This difference has been dubbed the "digital divide."

While shopping, going to school and reading the news online may seem like ordinary tasks to many of you, imagine if you had to physically go to the store, sit for hours in class or wait for a regularly scheduled news program. Now imagine if you lived 15 miles from your nearest neighbor and had to do that. This is the reality for millions of Americans living in rural areas because they do not have access to broadband internet. Not limited access ... no access.

We live in a time where broadband access is considered an essential service — a critical access service as important as a four-lane highway and other projects that make up the traditional definition of "infrastructure." But as times change and how we work, study and access health care changes, so do definitions. As we move toward a more internet-connected world, we would be doing ourselves a disservice to leave broadband out of any discussion on infrastructure.

Studies have shown that broadband access creates jobs within a community, fosters innovation and promotes educational and health care opportunities. A recent Accenture report estimates the economic impact of "smart cities" could be as much as \$500 billion over 10 years. Further, according to a study conducted by the Tennessee Department of Economic and Community Development, broadband enabled 43 percent of all net new jobs and 66 percent of revenues.

Administrations since former President Clinton's have attempted to spur broadband deployment. Billions of dollars have been spent by the private sector to establish broadband networks in our country. Wireless networks are on the verge of 5G technology, bringing even faster connections to their customers, and recent auctions have unleashed more spectrum for wireless purposes. Yet, in rural parts of my district, constituents tell me stories of driving to a public library — sometimes miles out of the way — just to access the Wi-Fi in the parking lot so their children can do homework. It's still slow, but something is better than nothing.

In the past, there have been two primary approaches to addressing this issue: deregulation and investing. Now, President Trump has put forward a positive, aggressive agenda for revitalizing American infrastructure, including broadband infrastructure. Going forward, we need a combination of both thoughtful deregulation and responsible investment.

The regulatory burden of the past eight years has suffocated innovation and hard-working taxpayers. It is our job in Washington to create an environment that will spur broadband deployment, not restrict potential by caging companies in with oppressive rules and regulations.

A prime example of this is the regulatory prison in which Title II places our nation's broadband providers. Reclassifying broadband under rules written for 1930s-era public utilities was the wrong idea, and that decision is well on its way to being overturned. We also need to revise regulatory processes to keep pace with the technology of today. I was pleased to see President Trump's Executive Order last month calling for "discipline and accountability in the environmental review and permitting process for infrastructure" — including broadband. We should continue accelerating reviews, streamlining processes and eliminating redundant requirements to encourage the creation of new, and the expansion of existing networks and

technology.

We must also commit ourselves to responsible investments to stimulate growth. Existing programs across the federal government award over \$10 billion in grants and loans annually, yet broadband penetration remains stagnant. Instead of allowing federal dollars to be spent based on out-of-date and flawed models, for instance, we should invest in making sure public and private entities have reliable and up-to-date information on broadband coverage which is why my subcommittee has been focused on updating the National Broadband Map, which was last done in 2014. This would help ensure that federal funding goes toward unserved, rural America where it's not economically viable for private companies to deploy.

The economic, educational and health care opportunities that come with unleashing broadband are undeniable, but the digital divide is not going to close itself. And with the speed at which technology evolves, action is needed now more than ever. It will take a concerted effort to create a broadband infrastructure that serves today's needs and sets the stage for greater expansion and opportunity tomorrow.

Rep. Marsha Blackburn is Chairman of the House Energy and Commerce Subcommittee on Communications and Technology. She represents Tennessee's 7th Congressional District in the U.S. House of Representatives.

# Spectrum: The essential ingredient for America's broadband infrastructure



### **By Dave Wright**

Typical discussions of infrastructure policy revolve around roads, bridges, pipelines, ports and the like. These are critically important assets to our country and providing for their maintenance and necessary expansion should be a priority for policymakers. But there is no question that broadband networks are similarly important infrastructure, and that they play an increasingly vital role in fulfilling America's economic and societal potential.

These networks are constructed using fiber optic and copper cabling, but more of the connections are now wireless, especially the "last leg" connection to a laptop, smartphone or consumer electronic device. Cisco predicts that 63 percent of all internet protocol (IP) traffic will come from wireless (Wi-Fi and cellular) devices by 2021, rising significantly from 49 percent of traffic in 2016. This is no surprise to the average American worker or consumer, who assumes Wi-Fi or LTE connectivity will be available virtually wherever they go, and who relies on that connectivity for an ever-increasing number of activities. These wireless networks we all depend on are only possible due to the availability of a finite resource — radio frequency (RF) spectrum.

The thoughtful and forward-looking management of our national spectrum resources must be a top priority for policymakers. The wireless needs of our nation have changed drastically over the last 20 years, with both Wi-Fi and cellular data blossoming from virtual nonexistence to essential services, while other wireless technologies such as Bluetooth, ZigBee, and LoRa have emerged as important Internet of Things (IoT) connections. Federal uses have shifted as well. Unfortunately, our rules and regulations haven't entirely kept up with these changes.

As with any finite resource that is experiencing increasing demand, there is intense competition for spectrum. At the highest level, policymakers have to weigh governmental and commercial needs. There have been recent initiatives to open previously allocated federal spectrum for new commercial uses such as the Citizens Broadband Radio Service (CBRS), which will enable shared commercial access to the 3.5 GHz band on a secondary and tertiary basis to the existing military uses. It is imperative that National Telecommunications



#### **By Brent Skorup**

n the aftermath of a natural disaster, policymakers often turn their attention to the state of the nation's physical infrastructure. This no longer means strictly physical infrastructure, as broadband infrastructure is increasingly entering Congress' discussions. Policymakers should remember that broadband companies don't need

that broadband companies don't need vast, new subsidies — they mostly need forward-thinking regulators and invisible infrastructure: radio spectrum. Wireless broadband, in particular,

should boom in the next decade as carriers embark on building hundreds of thousands of "small cells" across the nation in order to lay the groundwork for 5G (fifth generation) technology. Cable operators large and small, likewise, are upgrading their networks to high-speed fiber optic lines. Streaming TV, teleconferencing, drones, driverless cars, and augmented reality will all benefit from more bandwidth and competition.

It's refreshing to see this administration and a Federal Communications Commission (FCC), led by its new chairman Ajit Pai, redirect its attentions to broadband infrastructure in the past few

# Spectrum is the next frontier for infrastructure

months. Commissioners and top officials at our communications regulator have been distracted by "net neutrality" for nearly a decade.

This obscure Internet issue was invented by law professors, has no meaningful effect on the average person despite the ink spilled over it, and in 2015 gave the FCC the pretext it needed to regulate the Internet. Fortunately, the new FCC is looking to restore light-touch regulation of the Internet and focus instead on wiring the country. The formation of the FCC's Broadband Deployment Advisory Committee, of which I am a member, and new proceedings exploring how to increase broadband coverage are good first steps.

More can be done by the FCC, other agencies, Congress, and the White House, however.

Spectrum policy, in particular, needs reform. Spectrum is a resource that allows smartphones, radio broadcast towers, Wi-Fi routers, and other devices to transmit audio, video and data wirelessly. Radio spectrum, like real estate, can be divided, bought, sold, traded and leased. Ever since Congress authorized spectrum auctions in the 1990s, consumer demand for wireless technologies and services has been insatiable.

There is an artificial shortage, however. Today, federal agencies possess over half of the valuable "beachfront spectrum" that transmits wireless signals well. Agencies need spectrum, but because they don't pay market rates for it, agency demand is distorted. Slowly, this federal spectrum is being released to commercial markets. In 2015, 25 MHz of federal spectrum was transferred to the FCC and sold for about \$20 billion. Since the federal government currently possesses and uses about 2,000 MHz, there's significantly more economic value to be unlocked.

Simply prioritizing spectrum policy at agencies would help. Every administration offers Presidential awards for federal employees who improve government operations. The Presidential Management Improvement award, for instance, is an annual award to individuals or small teams whose contributions result in verifiable savings to the government of \$250,000 or more. These types of awards range from recognition to paid time off to five-figure bonuses.

The White House should actively seek out federal spectrum managers and encourage their nominations. Identifying them is a challenge, but they should be rewarded for using their local knowledge to consolidate government spectrum and relinquish some for commercial use.

FCC Commissioner Jessica Rosenworcel has identified another problem with federal spectrum: Under current law, agencies can't sell spectrum and keep any of the proceeds. Losing spectrum and buying new systems is mostly pain, little gain. In the past, Congress has allowed agencies to lease and sell real estate, and it seems to encourage the sale of underutilized federal property. Congress should consider allowing the sale and lease of underused federal spectrum.

Finally, new and existing broadband providers need inexpensive access to state and local property, like utility poles and underground conduit, and expedited approval processes. The 2015 FAST Act, a transportation bill, added provisions that allow states to be reimbursed by the federal Highway Trust Fund for building "intelligent transportation system" (ITS) infrastructure. ITS includes roadside poles and conduit that someday could be used for vehicle-to-infrastructure wireless technologies. Those systems are years away, but states in the meantime could build the "dumb" infrastructure and lease it out at low rates to broadband providers.

The United States is a global leader in Internet technology and broadband connections, but the advances have not spread evenly across the nation. Spectrum shortages and local delays are hidden costs that increase every household's broadband bill. To induce broadband buildout and upgrades, federal lawmakers should scrutinize the use and sale of agency spectrum. State, county, and local officials should seek to eliminate the paperwork burdens associated with network upgrades. Free enterprise and American innovators will do the rest.

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and Information Administration (NTIA), Defense Department, and industry complete their collaborative efforts so that the FCC can authorize the CBRS band as soon as possible.

Another positive development was the modification of the Spectrum Relocation Fund (SRF) which allowed for reimbursement of federal agencies for research and development expenses related to clearing spectrum for auction. However, Congress needs to review and reassess its overall methodology for valuing the nation's spectrum. Currently, the Office of Management and Budget (OMB) only assigns a value to commercial spectrum if the access rights to that spectrum are sold as a license at auction. This valuation model has a pervasive impact throughout the policymaking process, reflected in places such as the approved uses of the SRF wherein only spectrum sold at

auction may result in reimbursement to the federal entities who made it available. This model ignores the immense value of unlicensed and permissive-use spectrum, and results in them being overlooked, or less-preferred, during the policymaking process. Unlicensed spectrum is used by technologies such as Wi-Fi, Bluetooth, and recently introduced Unlicensed LTE services. According to a Telecom Advisory Services report, the annual U.S. economic activity associated with unlicensed spectrum was valued at \$222 billion in 2013, and is estimated to have increased to \$547 billion in 2017. Yet, according to OMB, this spectrum has zero value.

For additional perspective, consider Cisco's market data, which shows that unlicensed Wi-Fi carried 16.8 times as much traffic as licensed cellular services in the United States during 2015. Congress and OMB ascribe great value to licensed spectrum, but no value to the unlicensed spectrum which is carrying the vast majority of our nation's wireless traffic. This needs to change.

A key reason that unlicensed spectrum has been such a boon to the American economy is that it enables innovation. As Federal Communications Commission Commissioner Michael O'Rielly once said, "What I love about unlicensed is that you don't know what you're going to get out of it." Indeed, when policymakers and regulators allow open access to spectrum, as with unlicensed and CBRS, it allows our brightest minds to develop all manner of products and services, and lets the market determine the winners. This is another area where CBRS is breaking ground, in that the framework supports new commercial uses on both an exclusive (licensed) and a permissive (quasi-unlicensed) basis, and allows freemarket forces to determine the exact allocation of the spectrum to each of those uses. This is a significant advancement from the traditional static allocations (licensed or unlicensed) via government fiat, and policymakers should consider these types of dynamic frameworks for

future spectrum designations, alongside the existing options. Realizing the opportunities presented by the open access of CBRS, a broad alliance of companies is working to bring private and neutral-host LTE solutions to all types of vertical industry markets, which hadn't previously had this option.

If America is to meet the broadband infrastructure needs of the upcoming decades, we must have spectrum policies that reflect the value and contributions of all spectrum types, allow for open innovation, and are responsive to a rapidly evolving wireless market.

Dave Wright is Director of Regulatory Affairs and Network Standards at Ruckus. He testified on these matters before the House Energy and Commerce Subcommittee on Communications and Technology in April.

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