



Get America Moving Again (GAMA)

Recommendations to Stimulate Renewal, Growth, and Global Leadership and Support National Security in the Movement of People and Goods

This is a challenging and unprecedented moment in history. By the end of the pandemic, hundreds of thousands of people will have died globally and millions more will have been infected.

In addition to the tragic and mounting human toll, this moment is an inflection point, one at which a new and bright spotlight has illuminated changes in our economy that have evolved over the past few decades. We see the benefits of foreign trade in the prices we pay,¹ and are aware of the human cost as jobs have moved offshore.² But this experience has demonstrated the extent to which China has come to undermine our security by dominating critical links in the supply chains for the goods that help keep our nation safe, from pharmaceuticals to medical PPE.

Yet, we have additional critical supply chains that we and our partners must rebuild and reinforce to protect against future threats to our economies and way of life: Transportation, so we can go where we want and get goods to consumers; energy, so we have the power to get there; and, 5G, so we can do those things without compromising our personal information or national secrets. Free movement and open roads define us and demand our protection.

In addition to meeting that macroeconomic challenge, which will take a serious and sustained effort over time, we also must address immediate economic challenges at home. Businesses and companies across the nation and around the world have been closed in response to the pandemic, and economic activity has slowed substantially. More than 30 million people in the United States have lost their jobs in just six weeks and millions of companies both small and large – including iconic American brands – in all sectors of the economy face bankruptcy,³ are struggling with broken supply chains,⁴ or have already succumbed to the economic toll of the pandemic.⁵ All will be affected.

The first priority of federal policy makers must be to address the immediate public health effects of the COVID-19 virus, and the needs of the individuals and institutions that have been most immediately affected, including those small businesses being hit the hardest. As the public health crisis subsides,

¹ Koyuncu, Cuneyt, and Rasim Yilmaz, “Can China Help Lower World Inflation? A Panel Study,” *Emerging Markets Finance & Trade*, vol. 42, no. 2, pp. 93–103 (2006).

² David H. Autor, David Dorn, and Gordon H. Hanson, “The China Shock: Learning from Labor-Market Adjustment to Large Changes in Trade,” *Annual Review of Economics*, Vol. 8, pp. 205-240 (Oct., 2016).

³ Bob Seay, “The Bankruptcy Tsunami To Come,” WGBH (Apr. 21, 2020).

⁴ Hans Thalbauer, “How COVID-19 Exposed Weaknesses In The Global Supply Chain,” *Forbes* (Apr. 2, 2020).

⁵ “Unemployment Insurance Weekly Claims,” Department of Labor (Apr. 9, 2020) available at www.dol.gov/ui/data.pdf.

however, the United States must have a strategy to jump-start the economy and leverage the nation's talented workforce, technological edge, and industrial capacity to secure our economy from future risks and *Get America Moving Again*.

Stimulus as the Foundation for a Stronger Economy

As the pandemic subsides, Congress must continue working to help our economy and our nation recover. In crafting additional stimulus programs, Congress should ensure that money can be quickly and effectively spent in order to get Americans back to work. Particular attention should be paid to economic activities that were slowed or stalled by the pandemic and social distancing measures.

Given the magnitude of the likely stimulus required to accelerate our economic recovery, however, Congress must not focus simply on a return to the status quo. It must help shape the nation's future by strengthening the foundation for continued, sustained growth. Congress should use this opportunity to sharpen the nation's technological edge, focusing on advanced manufacturing and emerging technologies that can contribute to immediate economic recovery, generate sustained growth, boost our global competitiveness by making American businesses and workers competitive, and enhance our economic and national resiliency in the decades to come. In crafting legislation, Congress must take into account the lessons we have learned from experiencing broken supply chains for critical drugs,⁶ personal protection equipment,⁷ and other crucial supplies and must apply these to, and across, other critical infrastructure sectors, particularly the energy and transportation sectors, on which our entire economy depends.⁸

Transportation and Energy are Key Building Blocks of Our Economy

The need to *Get America Moving Again* is about getting our economy moving again. That is, we must get people and goods moving safely and efficiently once again, and ensure that the electric sector, on which the economy rests, is well prepared for the future. In normal times, each day over 26 million children ride nearly 500,000 buses to school,⁹ 100 million-plus commuters drive to work,¹⁰ 24 million people ride public transit,¹¹ 2.7 million people fly on over 44,000 flights,¹² and more than 3 million truck drivers drive over 30 million trucks over half a billion miles to deliver goods to people and places as part of the most complex supply chains in the world.¹³

⁶ Yanzhong Huang, "The Coronavirus Outbreak Could Disrupt the U.S. Drug Supply," Council on Foreign Relations (Mar. 5, 2020).

⁷ Anita Patel, et al., "Personal Protective Equipment Supply Chain: Lessons Learned from Recent Public Health Emergency Response," Health Security (Jun. 1, 2017).

⁸ Knowledge@Wharton, "Coronavirus and Supply Chain Disruption: What Firms Can Learn," University of Pennsylvania (Mar. 17, 2020) available at knowledge.wharton.upenn.edu/article/veeraraghavan-supply-chain/.

⁹ "Love the Bus.com: Quick Facts," American School Bus Council, available at www.ncbussafety.org/LovethebusNC/documents/LovetheBusFacts_ae.pdf.

¹⁰ Brian McKenzie, "Who Drives to Work? Commuting by Automobile in the United States: 2013," United States Census Bureau, at p. 7 (Aug., 2015).

¹¹ "Public Transportation Facts," American Public Transportation Association, available at www.apta.com/news-publications/public-transportation-facts/.

¹² "Air Traffic By the Numbers," Federal Aviation Administration, available at www.faa.gov/air_traffic/by_the_numbers/.

¹³ "Economics and Industry Data," American Trucking Association, available at trucking.org/economics-and-industry-data.

The U.S. automotive and truck manufacturing industries support 9.9 million American jobs.¹⁴ The global transportation sector has already begun a race to an electrified, digitized future.¹⁵ This transition has already threatened the United States' global leadership in the automotive sector, with China making strategic moves to own the battery and electric motor supply chains, as well as the autonomous and 5G technologies of the future.

In periods of economic hardship, there is a tendency to pull back on forward-looking investments to focus on the preservation of – or a return to – the status quo.¹⁶ In the case of the U.S. transportation sector, acting on this reflex and withdrawing from investments in emerging technologies would pose an existential threat to the nation's competitiveness vis-à-vis foreign competition, and reverse the progress that has been made in the past decade preparing for the future of mobility.

If mobility is foundational to our economy, electricity is its bedrock. Modern life simply would not exist without electricity, and the pandemic reminds us of the importance of a reliable and resilient electric system. There are several initiatives that will create new jobs and bolster the foundation of a secure, reliable, resilient, and sustainable grid for the future. As electricity will power our transportation system of the future, the importance of the grid will only increase further.

Finally, the collapse of the oil market has harmed the U.S. oil production sector and could undermine innovation and investments in alternatives. The roots of this price collapse are a response to the pandemic, but responsibility for its severity lands squarely in the laps of ministers in OPEC nations and their cooperating partners who chose to fight for market share instead of responsibly responding to the crisis.¹⁷ Despite the United States being the largest energy producer in the world,¹⁸ we see that our current version of "energy security" is illusory; once again we are proven to be beholden to the whims of foreign governments that share neither our values nor our interests. In order for the United States to ever achieve real energy security, we must make changes now to accelerate a transition away from our dependence on oil as our sole transportation fuel and provide greater fuel choice – electricity, hydrogen, natural gas, etc. – for our vehicles. That will allow the United States to attain true energy dominance using diverse domestic fuels and avoid being as beholden to price or supply volatility controlled by other countries.

¹⁴ "America's Automobile Industry is One of the Most Powerful Engines Driving the US Economy," Auto Alliance, available at www.autoalliance.org/economy/.

¹⁵ Lucian Mihet-Popa and Sergio Saponara, "Toward Green Vehicles Digitalization for the Next Generation of Connected and Electrified Transport Systems," *Energies*, Vol. 11, p. 3124 (2018).

¹⁶ Walter Frick, "How to Survive a Recession and Thrive Afterward," *Harvard Business Review* (May–June, 2019).

¹⁷ Sarah Ladislaw, "The end of OPEC of a New Beginning," *Center for Strategic and International Studies* (Mar. 30, 2020).

¹⁸ "Remarks by President Trump and President Duda of the Republic of Poland Before Bilateral Meeting," *White House Transcript* (Jun. 12, 2019).

Shaping Congress's Next Steps

Get America Moving Again is based on the premise that the federal government's response to the pandemic should focus on four tasks:

- **Rescue** and repair things that the pandemic has revealed to be broken;
- **Recover** those parts of the economy that have been directly harmed by the pandemic in order to maintain economic activity and growth;
- **Stimulate** economic activity quickly after the pandemic subsides, creating jobs and economic activity in sectors and initiatives that are consistent with longer-term national goals; and
- **Prepare** the nation for subsequent disruptive events.

If Congress legislates wisely in supporting American private sector leadership and innovation, it can also make the United States stronger in the future. It can build more innovative, resilient, secure, efficient, effective, and sustainable energy and transportation infrastructure and leadership for the 21st century.

Recommendations

Rescue

The federal government's first task should be to fix things that the pandemic has revealed to be broken and require immediate repair. Many of these efforts are likely to be concentrated in the public health sector. Efforts to identify and treat infected individuals and to remove restrictions on interactions have been hampered by shortages of testing kits, personal protective equipment (PPE), hospital equipment, and hospital space. In allocating such PPE, policy makers should recognize that many people in the utility and transportation sectors are front-line workers who also need adequate protection. In New York City, for example, approximately 2,400 workers at the Metropolitan Transportation Authority (MTA) have tested positive and 79 workers have died since the pandemic began.¹⁹

Many workers in the energy and transportation sectors have lost income, and they should be helped, like workers across the economy, by the Paycheck Protection Program, small business loans, and other programs. Supporting workers in these vital sectors throughout this critical time will not only help mitigate the economic fallout driven by the pandemic and OPEC actions, but also better position these workers to return to the U.S. labor force as quickly as possible, when safe to do so.

Recover

The federal government's second task should be to help recover parts of the economy that have been directly harmed by the pandemic to bolster economic activity and growth. Assistance may be appropriate for businesses, companies, and state and local governments whose revenues are collapsing just as the need for their services is growing.

¹⁹ Winnie Hu and Christina Goldbaum, "The Worst-Case Scenario: New York's Subway Faces Its Biggest Crisis," *New York Times* (Apr. 20, 2020).

Proposal 1: Provide immediate federal funding to state and local agencies to sustain surface transportation infrastructure projects and offset losses to state transportation revenues, while also providing support for improvements to active transportation infrastructure during the crisis.

The pandemic has strained the budgets and operations of state and local governments that are struggling to respond with limited resources and disruptions to daily operations. State income tax revenues and other revenue streams – such as the gas tax and sales tax – are shrinking, due to decreased travel and economic activity. These looming budget shortfalls have already caused states and cities to furlough or lay off workers.²⁰ The American Association of State Highway and Transportation Officials (AASHTO) estimates that states will lose an average of 30 percent of transportation revenues in the next 18 months, and have asked Congress for an immediate \$49.95 billion to offset that loss.²¹ Moody’s Analytics has estimated that states will face between \$158 billion to \$203 billion in “fiscal shock” through fiscal year 2021 due to decreased revenues.²² Providing immediate federal support to states and localities will help to keep critical transportation and energy infrastructure projects moving in the next two years – ultimately helping to mitigate job losses, reduce lost time and boost productivity, ensure we continue to deploy innovative, advanced, and resilient transportation and electric systems, and minimize the loss of commercial activity caused by the cancellation of projects.²³ This should be done in a flexible manner (not through TIGER grants) and requirements for a state or local match should be waived so that declining gas tax revenues are not an obstacle to the use of these funds.

Furthermore, social distancing measures have highlighted the need for sufficient pedestrian and bicycle infrastructure in order to improve safety and ease of travel for pedestrians, cyclists, and micromobility users. The National Association of City Transportation Officials has catalogued hundreds of examples of how – in spite of resource challenges – cities across the country are implementing temporary measures to mitigate sidewalk crowding, encouraging the adoption of alternative modes, and providing support in other areas of transportation to improve social distancing.²⁴ However, infrastructure and policies that increase safety for pedestrians (especially vulnerable road users like seniors, children, and people with disabilities) and bicycles/micromobility should not be a temporary measure, but a national priority. Congress should provide funding to enable cities to improve active transportation infrastructure, including the improvement and rethinking of sidewalks and bike lines that can be officially expanded to micromobility and contactless autonomous delivery vehicles. With fewer cars currently on our roads, it is a time to repair and reimagine the streets, sidewalks, and bike lines.²⁵

²⁰ Fola Akinnibi, “States, Cities Already Cutting Jobs With Financial Toll Mounting,” Bloomberg Tax (Apr. 2, 2020).

²¹ Letter to Congressional Leaders from Patrick K. McKenna Jim Tymon, American Association of State Highway and Transportation (Apr. 6, 2020) available at www.enotrans.org/wp-content/uploads/2020/04/2020-04-06-AASHTO-Letter-to-Congress-on-COVID-19-Phase-4-FINAL.pdf.

²² Tony Romm, “Cities and states Brace For Economic ‘Reckoning,’ Eyeing Major Cuts and Fearing Federal Coronavirus Aid Isn’t Enough,” Washington Post (Apr. 10, 2020).

²³ Jon Huntley and Zheli He, “Short-Term Economic Effects of a “Phase 4” Infrastructure Response to Coronavirus,” Penn Wharton Budget Model (Apr. 16, 2020).

²⁴ “COVID-19: Transportation Response Center,” National Association of City Transportation Officials, available at nacto.org/program/covid19/.

²⁵ The Connecting America’s Active Transportation System Act ([H.R. 5696](https://www.congress.gov/bills/116/5696), S. [3391](https://www.congress.gov/bills/116/3391)) provides an example of how such a program could be implemented.

Recommendations:

- Provide an appropriate level of federal funding to sustain state and local transportation infrastructure projects during the recovery to maintain infrastructure in a state of good repair, keep projects moving, and workers employed.
- Establish a federal program to support communities in enhancing active transportation infrastructure to support the health and safety of residents while also rethinking new types of mobility and the use of the sidewalk and street real estate.

Proposal 2: Monitor the needs of public transit agencies and provide additional assistance, as needed.

Public transit plays a vital role in the mobility landscape and has been decimated by the pandemic. Ridership in some major transit systems has declined by 70 percent or more,²⁶ yet systems must maintain a level of operations for essential front-line workers throughout the pandemic. Moreover, it seems possible that ridership may be slow to rebound, even after social distancing guidelines are relaxed. Congress appropriated \$25 billion in the CARES Act to assist public transit providers in responding to the pandemic.²⁷ Public transit systems are likely to need additional assistance, and their need should be evaluated and incorporated into future stimulus legislation.

Recommendation:

- Evaluate needs of public transit agencies as the pandemic progresses and provide appropriate assistance, as appropriate.

Proposal 3: Ensure the continued survival and growth of emerging transportation options including micromobility and transportation network companies (TNCs).

As social distancing measures were put in place across the country, essential workers have still needed ways to get to work safely and conduct their daily tasks. In some cities, micromobility – lightweight, shared electric vehicles, like e-bikes, e-scooters, and mopeds – have become a lifeline for front-line workers. In New York City, Revel offered free rides on its mopeds to medical workers.²⁸ Other New York City residents turned to docked bikeshare services in order to avoid overcrowding subways. A survey of the participants in Spin’s “Everyday Heroes” program, which is providing free rides and helmets to healthcare workers, found that 74 percent of its participants did not have a car and 83 percent used scooters to commute to and from work.²⁹ As the nation slowly begins to reopen, micromobility can be deployed nimbly to continue providing a mobility option that exists in an unconfined, open-air environment and easily sanitized to reduce the risk of disease transmission.

The United States has been a global leader in micromobility – a technology that is proving itself to be valuable to transportation resiliency during the pandemic. The industry now faces significant financial hardship due to reduced travel and has laid off thousands of employees.³⁰

Other forms of shared mobility – including transportation network companies (TNCs) like Uber, Lyft, and Via – have continued to provide valuable services to essential workers, people in need of medical

²⁶ Laura Bliss, “Mass Transit Faces Downward Spiral of Reduced Revenue, Ridership” Bloomberg Law (Apr. 20, 2020); MTA Annual Disclosure Statement Supplement (Mar. 18, 2020).

²⁷ Coronavirus Aid, Relief, and Economic Security Act (Title XII of Division B).

²⁸ Scott Enman, “Health Care Workers Battling Coronavirus Will Get Free Revel Rides,” Brooklyn Daily Eagle (Mar. 20, 2020).

²⁹ Josh Johnson, “Micromobility Trends: Scooters as an Essential Service,” Medium (April 29, 2020).

³⁰ Megan Rose Dickey, “Bird Lays off About 30% of Workforce Amid COVID-19 Pandemic,” Tech Crunch (Mar. 27, 2020).

attention, and Americans needing to do errands, such as grocery shopping, but who do not own cars. Yet, these companies and their workers have also experienced significant financial difficulty – even as their services will help society’s gradual return to normalcy.

As America gets moving again, Congress should provide local governments and transit agencies with the financial support and flexibility to incorporate right-sized transportation options and forward leaning technologies – including micromobility, TNCs, and electric vehicles – in their recovery plans. As a starting point, localities should be permitted to utilize CARES Act funds to subsidize foregone or deferred regulatory fee payments from micromobility providers to cities. Additionally, Congress should consider providing targeted funding for governments to partner with shared mobility companies during the recovery and enable them to provide at-scale service during the recovery. This short-term relief will help the nascent industry to weather the storm and ensure that the long-term potential of shared mobility to provide as a flexible and affordable transportation is not lost.

Recommendations:

- Provide flexibility in the use of CARES Act funds to defray foregone or deferred regulatory fee payments from TNCs and micromobility companies to cities.
- Establish a competitive grant program that will temporarily designate micromobility companies as essential services within cities and provide \$200 million in financial assistance to cover operating and capital costs, as well as short-term operational costs relating to the pandemic, such as the increased costs for sanitization.
- Give transit agencies the flexibility to use *either* operational *or* capital funds to contract with TNCs and micromobility companies to reduce crowding on typical bus/rail routes, fill gaps in service, and provide 24/7 service to essential workers in FY 2020 and FY 2021.
- Create a federal definition for micromobility and provide broad-based program eligibility for transit agencies and departments of transportation to use federal dollars for micromobility pilot programs and services.³¹

Stimulate

Perhaps that greatest challenge that the federal government will face after the pandemic subsides is helping to stimulate our economy. The pandemic has created economic challenges unknown in our lifetimes including staggering job losses, trillions of dollars of lost economic activity, and declining stock markets, together, limiting consumers’ spending power and confidence in the economy.

The economic blow is so large that the government will need to invest beyond repair efforts to establish the necessary foundation for a robust economy in the future. When considering where to dedicate government stimulus resources, it should emphasize opportunities that can get people back to work quickly. It also should emphasize opportunities that align with other national goals. For instance, stimulus can be used to support innovative, advanced manufacturing, with an emphasis on technologies that will be vital to compete globally in the future. And, as the pandemic has demonstrated the risks of

³¹ As defined by SAE standard J3194, a powered micromobility vehicle is fully or partially powered, has a curb weight of 500 pounds or less, and has a top speed of 30 miles per hour or less. These vehicles typically range from a few hundred dollars to several thousand dollars, depending on the size, shape, and battery range. “SAE J3194™ Taxonomy & Classification Of Powered Micromobility Vehicles,” SAE International, available at www.sae.org/binaries/content/assets/cm/content/topics/micromobility/sae-j3194-summary---2019-11.pdf.

allowing our supply chains to move off-shore, stimulus funding can be useful in helping to rebuild our domestic manufacturing supply chains, including for energy and transportation.

Proposal 4: Provide trade-in incentives to purchase new, cleaner cars with additional incentives for electric vehicles (EVs). In addition, expand current federal incentives for advanced technology vehicles to stimulate the adoption of electric and alternative fuel transportation options across all modes of transportation and use cases.

Auto sales decreased significantly in the first quarter of this year, due to the collapse of the economy, decreased consumer confidence, and the implementation of social distancing policies. This year's U.S. auto sales are now projected to drop by about 25 percent from 2019 levels – the lowest volume since the 11.6 million in cars and trucks sold in 2010, following the Great Recession.³² Since the automotive sector drives \$950 billion into the economy each year and contributes to 3-3.5 percent of U.S. GDP,³³ this will have a devastating impact on the nation's economy and handicap economic growth for years to come. Congress must act immediately to prevent the United States from falling deeper into a recession and avoid further losses to the 9.9 million jobs that are directly and indirectly supported by the auto industry.³⁴

Congress should begin with a program to incentivize consumers to purchase newer, more efficient, more fuel-diverse vehicles in the immediate future. As demonstrated by the Cash for Clunkers program in the wake of the Great Recession, policies that incentivize consumers to purchase new vehicles accelerate the recovery by immediately galvanizing more economic activity – which also helps auto manufacturers realize a faster return on investment in domestic manufacturing capacity, research and development, and hiring skilled workers.

In the wake of the pandemic, Americans can seize the opportunity to continue to reduce dependence on foreign oil and enhance national security, as well as maintain the cleaner air and lower pollution levels we are now experiencing, by purchasing vehicles with more diverse fuel sources that are more efficient. For example, alternative vehicles, such as EVs, have substantial air quality and public health benefits for cities. This program should provide consumers who trade in older, less fuel-efficient vehicles with a voucher of \$5,000 towards the purchase of a new vehicle with a higher fuel economy rating. An additional \$1,000 should be provided for consumers purchasing vehicles powered by alternative fuels like electricity, hydrogen, or natural gas.

Congress also should reform the light-duty EV tax credit (30D) to ensure its benefits are accessible to more Americans, encourage consumers to buy new EVs in the near future, and establish a sunset date to that will spur the rapid expansion of EV manufacturing to meet rising demand. This will enable the EV market in the United States to grow, in spite of plummeting oil prices that will likely affect sales of new technology in which automakers have invested before the Saudi-Russian oil price war. Ultimately, this program also will contribute to America's competitiveness with China in owning the future EV supply chain, technology, and market.

³² Michael Wayland, "Led by US, global auto sales expected to plummet 22% in 2020 due to coronavirus," CNBC (Apr. 21, 2020).

³³ "America's automobile industry is one of the most powerful engines driving the US economy," Auto Alliance, available at autoalliance.org/economy/.

³⁴ See Wayland, CNBC.

Furthermore, diversifying transportation fuels contributes to the nation’s energy security objectives, regardless of the size or shape of vehicle that is used. Accordingly, incentives for adopting vehicles that use alternative fuels should be expanded to include medium- and heavy-duty alternative fuel vehicles (AFVs) and electric-powered micromobility transportation.

The potential for diversifying fuel choice in the freight and logistics sector is particularly promising: Although class 3-8 vehicles comprise just 3.6 percent of vehicles on the road, they account for 27 percent of oil used in the U.S. transportation sector.³⁵ As e-commerce is only projected to grow in the coming decades, companies are expanding their fleets in order to meet rising demand for deliveries. Providing support for the purchase of medium- and heavy-duty EVs and AFVs manufactured in the United States will help to scale this burgeoning market.

Recommendations:

- Establish a \$12.5 billion federal voucher program that will provide consumers who trade in older, less efficient vehicles with a voucher of \$5,000 toward the purchase of a newer, more efficient vehicle.
 - Provide an additional \$1,000 voucher for the purchase of an EV or other alternative fuel vehicle.
- Reform the Light-Duty EV Tax Credit (30D) to make it more accessible to more consumers and encourage the expedited manufacturing and adoption of EVs in the passenger vehicle market.
 - Eliminate the volume limitation of 200,000 vehicles per manufacturer;
 - Initiate a gradual phase-down beginning on December 31, 2023; and
 - Provide consumers with the alternative option of a cash-on-the-hood rebate of \$7,000 instead of the \$7,500 credit in order to reduce barriers to accessing the credit.
- Establish a 30 percent tax credit for the purchase of new Class 4-8 electric and alternative fuel vehicles that will be used exclusively for commercial purposes. This should include provisions for manufacturing in the United States to ensure that vehicles are built domestically.
- Establish a rebate for electric micromobility vehicles that offsets 30 percent of the purchase of a new micromobility device or \$500, whichever is less.

Proposal 5: Expand oversubscribed Low- or Zero-Emission Vehicle Grant Program for American-manufactured vehicles, and transition other fleets and critical infrastructure.

The United States is home to a burgeoning electric bus industry that is already beginning to strengthen the nation’s supply chain for batteries and other components essential to the construction of medium- and heavy-duty electric vehicles. Government policies have spurred the growth of this vital industry, supporting American jobs at advanced manufacturing facilities operated by companies like Proterra, Navistar, and Blue Bird. Accelerating these fuel diversification efforts enable government fleets to reduce their exposure to long-term oil price volatility and decrease the total cost of vehicle ownership, while also making progress toward air quality attainment goals. It also will expand the foundation of the electric vehicle industry, allowing us to compete with China, now home to approximately 99 percent of all electric buses around the globe.³⁶

³⁵ Stacy C. Davis and Robert G. Boundy, “Transportation Data Book Energy, Edition 38.1,” Oak Ridge National Lab, Tables 1.14, 3.4, and 5.1 (Apr., 2020).

³⁶ Katie Fehrenbacher, “China’s electric bus leadership,” GreenBiz (Sept. 28, 2018).

The economic impacts of the pandemic have been brutal for state and local governments and public metro systems. The Center on Budget and Policy Priorities estimates that state budget shortfalls will ultimately reach about 10 percent in the fiscal year that ends on June 30 in most states and as much as 25 percent in the following year.³⁷ Providing federal support to help overcome the up-front cost barriers to vehicle electrification can offer states and cities grappling with reduced revenue an opportunity to reduce their total cost of ownership by using electric buses, including expenditures on fuel, operation, and maintenance^{38,39,40,41} Federal support would also help bolster the market for this important emerging technology, provide a boost to the local economy, and allow municipalities to take advantage of the operational benefits of EVs.

Expanding the popular Low- or No- Emission Vehicle Grant Program will expedite the transition of the nation's fleet of 49,000 transit buses to electric versions or alternative fuels, while contributing to the growth of a domestic electric bus manufacturing sector and the associated components. The FTA has reported that the FY 2019 grant solicitation received applications for 157 projects requesting a total of \$500 million but funded just 38 projects for \$84.95 million – demonstrating significant unmet demand for the program.⁴²

Similarly, there is growing demand for a transition to electric school buses, with many new models built in the United States and North America entering the market. The iconic yellow school buses that carry 25 million American children to school every day also expose them to harmful diesel emissions that have been shown to reduce students' health and educational outcomes.⁴³ A concentrated national effort to replace America's 480,000 school buses with electric versions or alternative fuels would contribute to building of this supply chain in the United States and improve energy security by diversifying fuel choice, while reducing operating costs in school transportation. Federal support for improving school transportation will not only improve health and educational outcomes for children, but also assist cash-strapped school districts in purchasing American-made buses such as those manufactured by Blue Bird in Fort Valley, Georgia.⁴⁴

Another iconic American vehicle – the U.S. Postal Service (USPS) delivery truck – is long overdue for modernization and responsible replacement. The Grumman Long Life Vehicle (LLV) has delivered the nation's mail for more than two decades but lacks many of the modern safety technologies that many

³⁷ "States Grappling With Hit to Tax Collections," Center on Budget and Policy Priorities (May 4, 2020).

³⁸ Under most conditions, electric vehicles have a lower energy cost per mile than conventional vehicles. See, "Comparing Energy Costs per Mile for Electric and Gasoline-Fueled Vehicles," Idaho National Laboratory.

³⁹ A meta-analysis by the California Air Resources Board estimates that maintenance costs for electric vehicles is 25 percent lower than combustion engine vehicles. "Advanced Clean Trucks: Total Cost of Ownership Discussion Document," California Air Resources Board (Feb. 22, 2019).

⁴⁰ New York City reports that maintenance costs for electric Ford Focus are 78 percent lower than a gasoline Focus. Keith Kerman, "Reducing Maintenance Costs With Electric Vehicles," NYC Fleet Newsletter (Mar. 8, 2019).

⁴¹ Upfront vehicle purchase costs remain a barrier to the purchase of electric vehicles. In the near term, purchase incentives can help to bridge the gap. Over time, companies and industry analysts expect electric vehicles to be cost-competitive with combustion engine vehicles in early to mid-2020's, due to improving battery technology and economics. See "Update on electric vehicle costs in the United States through 2030," International Council on Clean Transportation (Apr. 02, 2019); Nathaniel Bullard, "Electric Car Price Tag Shrinks Along With Battery Cost," Bloomberg Opinion (Apr. 12, 2019).

⁴² Federal Transit Administration, "Notice of Funding Opportunity," 85 Fed. Reg. 4,348 (Mar. 17, 2020).

⁴³ Phillip Burgoyne-Allen and Bonnie O'Keefe, "From Yellow to Green: Reducing School Transportation's Impact on the Environment," Bellwether Education Partners (Aug., 2019).

⁴⁴ "Blue Bird Delivers Its 100th Electric-Powered School Bus," School Transportation News (Apr. 14, 2020).

now take for granted, including anti-lock brakes, air conditioning, and airbags – and averages just 10 miles per gallon. The USPS spends \$2 billion per year to maintain these vehicles – which are also now catching fire at concerning rates, with more than 120 fires over the past five years.^{45,46} USPS is currently evaluating proposals from four teams of companies to build the Next Generation Delivery Vehicle (NGDV), which may include EV and hybrid options. Fuel diversification should be a priority for USPS in order to realize long-term cost savings, as its fleet consumed 195 million gallons of gasoline and diesel in 2019.⁴⁷ As USPS nears its \$6 billion decision regarding the purchase of 180,000 vehicles that will last decades, both Congress and USPS should take steps to ensure that a majority of its vehicles (or as many as practicable) are domestically-manufactured EVs, which will provide another boost to building the supply chain in the United States, and support the necessary charging infrastructure.

In addition, the Congestion Mitigation and Air Quality Improvement (CMAQ) program provides a flexible funding source for state and local governments to fund transportation projects and programs to help meet the requirements of the Clean Air Act.⁴⁸ The CMAQ program provides communities with the ability to replace the worst performing vehicles in their fleets with newer, cleaner versions, based on their priorities, across the full spectrum of vehicles from light-duty to medium- and heavy-duty as well as the related charging infrastructure. Such funding allows states and localities to reap the cost savings starting on day one and absorb some of the fiscal shocks they are already seeing.

A significant injection of dedicated grant funding for the Voluntary Airport Low Emissions (VALE) Program as well as the Airport Zero Emissions Vehicle (ZEV) and Infrastructure Pilot Program would contribute to meaningful demand for new vehicles in a sector that is exploring for opportunities to find ways to cut emissions outside of the plane itself – while also reducing fuel consumption and operational costs.

Lastly, Congress should create a federal competitive grant program to support the adoption of alternative fuel vehicles at the nation’s coastal ports, inland ports, and intermodal facilities. While these facilities are vital to – and in fact one of the largest reasons for – America’s economic prosperity, they generally lack the modern equipment that can keep us competitive into the future. Any competitive grant program should target opportunities to assist both large trucking fleets and owner-operators to replace aging trucks, as well as drayage vehicles, with AFVs. Sufficient funding should also be provided for charging/refueling infrastructure, as well as technical assistance for transitioning fleets.

Recommendations:

- Provide \$1 billion annually for five years for the Low- or No- Emissions Grant Program that can be used for purchasing or leasing zero-emission and low-emission transit buses and the infrastructure to support them.
 - Establish a waiver so that transit agencies replacing federally funded diesel buses, as part of an approved plan to transition to a zero-emission bus fleet, do not have to repay the federal

⁴⁵ Cyndia Zwahlen, “Safety Experts Alarmed by Mail Trucks Bursting Into Flames,” Trucks.com (May 13, 2019).

⁴⁶ “U.S. Postal Service: Offering Nonpostal Services Through Its Delivery Network Would Likely Present Benefits and Limitations,” Government Accountability Office, Report GAO-20-190 at p. 9 (Dec. 18, 2019).

⁴⁷ “Fiscal Year 2019 Fleet Alternative Fuel Vehicle Program Report,” U.S. Postal Service (Feb. 15, 2020) available at about.usps.com/what-we-are-doing/green/pdf/USPS-AFV-Annual-Fleet-Compliance-Report.pdf.

⁴⁸ “Congestion Mitigation and Air Quality Improvement (CMAQ) Program: CMAQ Essentials,” Department of Transportation, available at www.fhwa.dot.gov/Environment/air_quality/cmaq/reference/cmaq_essentials/.

interest in the diesel buses, if the buses have reached six years of operation, or the asset has been fully depreciated.

- Appropriate \$12.5 billion over five years for a [Diesel Emissions Reduction Act \(DERA\)](#) school bus rebate program to replace diesel school buses with electric, hybrid electric, or other alternative fuels buses.
- Enable the electrification of up to one-half of the USPS delivery fleet with a direct appropriation of \$2.35 billion for vehicles and charging infrastructure.
- Expand funding for the CMAQ program by \$1 billion a year for five years, so state and local fleet managers can replace existing vehicles with electric, hybrid electric, or other alternative fuel vehicles.
 - Waive the requirements that CMAQ eligible projects come from a transportation plan and Transportation Improvement Program and for non-federal matching dollars.
- Support ground-side and air-side adoption of zero- and low-emission vehicles at airports by providing \$500 million a year for five years for both the VALE Program, and the Airport ZEV and Infrastructure Pilot Program.
- Support the electrification of the nation’s freight and logistics sector through a five-year \$500 million, annual competitive grant program that supports the integration of EVs and AFVs at ports and intermodal facilities.
- Waive or reduce requirements for state or local governments to provide matching funds for grant programs so that tight budgets are not an obstacle to deploying advanced vehicles.

Proposal 6: Stimulate investments in next-generation transportation technologies.

The automotive sector is the backbone of U.S. industrial strength, employing millions of American workers in well-paying jobs and contributing to economic growth across the nation. With the global transportation sector on the cusp of revolutionary change, it is vital that Congress support the automotive industry in not simply recovering from the pandemic, but in maintain its lead in the global competition to design and manufacture of state-of-the-art vehicles that will define the future of transportation. This should include alternative fuel vehicles (AFVs) and autonomous vehicle (AV) technologies and the fueling infrastructure to support them.

Despite early moves in U.S. manufacturing of light-duty electric vehicles by Nissan, Tesla, and others, the Chinese and Europeans have moved far ahead of the United States in the manufacture of medium- and heavy-duty EVs.⁴⁹ Consequently, American freight and logistics companies have been forced to look overseas to purchase medium-duty EVs from companies like Chanje, a Chinese state-supported enterprise whose parent company has manufacturing operations in Hangzhou, China.

The Advanced Technology Vehicles Manufacturing (ATVM) Loan Program, administered by the Department of Energy (DOE), is a proven mechanism for supporting the expansion of domestic auto manufacturing. Through ATVM, DOE provides direct loans to automakers and parts suppliers to construct new factories and reconfigure existing facilities in order to produce more efficient gasoline-powered cars and AFVs. While loan guarantee programs have been subject to criticism in other sectors as a result of bad actors, ATVM has produced positive results in supporting ambitious ventures in

⁴⁹ Rivian, an EV manufacturer based in Plymouth, Michigan, became a key exception to the rule when it received a sizable order from Amazon for electric delivery vehicles. However, the company’s revival of a former Mitsubishi factory in Normal, Illinois has now been stalled due to COVID-19 – forcing Rivian to push back its timeline for hiring thousands of workers to build EVs until 2021. Robert Channick, “Electric truck startup Rivian pushes launch back to 2021 as COVID-19 delays Normal factory retooling,” Chicago Tribune (Apr. 6, 2020).

emerging technologies: So far, 98 percent of the dollars loaned were fully repaid – with interest. To date, ATVM has contributed to a total of 17 facilities being built or retrofitted in nine states, leading to the direct employment of 38,000 Americans in automotive manufacturing.⁵⁰ DOE has estimated that these projects have resulted in an annual reduction of 282 million gallons of gasoline consumed – or approximately 18,000 barrels per day – and 2.4 million tons of carbon dioxide emissions.⁵¹

Despite this success, and although DOE still has over \$16.5 billion in loan authority and over \$4 billion in credit subsidy appropriations available, it has not issued a new ATVM loan in several years and the application process has been described as having become particularly “burdensome” and “restrictive.”⁵² Moreover, fees associated with completing the application, including independent advisor fees and closing costs, are further barriers that limit access to the program. In addition to reducing these barriers, Congress should also expedite the timeline for review of applications. This would be particularly beneficial for companies, like Lordstown Motors in Lordstown, OH, which are seeking to expeditiously revive shuttered factories to build the next generation of vehicles in America’s heartland.⁵³

Furthermore, the ATVM program was originally developed to support the manufacturing of more efficient gasoline-powered and alternative fuel vehicles in the light-duty segment.⁵⁴ The eligibility criteria for ATVM should be expanded to include medium- and heavy-duty AFVs, AVs, and their associated components. When Congress created the ATVM loan guarantee program, it also authorized the establishment of a grant program for the same purposes.⁵⁵ Congress also should fund the grant program to offer assistance to companies for which grants would be more appropriate than loan guarantees, and enact a 10-year extension of the grant program before its expiration date of December 31, 2020.⁵⁶

To incentivize immediate private-sector investment in domestic manufacturing, Congress should revive the 48C Advanced Manufacturing Tax Credit. This tax credit, originally established under the American Recovery and Reinvestment Act of 2009, provided a 30 percent tax credit for investments to re-equip, expand, or establish domestic clean energy manufacturing facilities for products including batteries for EVs and hybrids, equipment for refining or blending renewable fuels, and lighting and smart grid technologies. In reinstating this credit, Congress should consider expanding product eligibility to include autonomous vehicle technologies, micromobility, and other emerging transportation technologies.

⁵⁰ “Advanced Technology Vehicles Manufacturing Loans: Employment Impacts,” Blue Green Alliance, available at www.bluegreenalliance.org/wp-content/uploads/2016/11/ATVM-employment-impacts-and-potential-FINAL.pdf.

⁵¹ Bill Canis and Brent D. Yacobucci, “The Advanced Technology Vehicles Manufacturing (ATVM) Loan Program: Status and Issues,” Congressional Research Service (Jan. 15, 2015).

⁵² “Status of DOE Loan Programs: Briefing to Appropriations Committees,” General Accountability Office (Mar. 15, 2013).

⁵³ David Shepardson, “Lordstown Motors Pursuing \$200 Million U.S. Retooling Loan, Will Show EV Truck at Detroit Show,” Reuters (Jan. 28, 2020).

⁵⁴ In January 2017, DOE announced that the manufacturing of infrastructure for alternative vehicle fuels including electricity, hydrogen, liquefied natural gas, compressed natural gas, and biofuels may also be eligible under the ATVM program. Department of Energy, “Eighth Supplement to Loan Guarantee Solicitation Announcement,” Loan Programs Office (Jan. 9, 2017) available at www.energy.gov/sites/prod/files/2017/01/f34/Eighth_Supplement_to_Advanced_Fossil_Solicitation_regarding_Alternative_Fuel_Infrastructure_010917.pdf.

⁵⁵ 42 U.S.C. § 16062; 42 U.S.C. § 17013.

⁵⁶ 42 U.S.C. § 17013(c).

Recommendations:

- Update DOE's ATVM program to support investments in state-of-the-art manufacturing facilities that will support the domestic production of AVs and AFVs and associated infrastructure.
 - Appropriate \$50 million to reduce application costs, including the cost of independent financial advisors, and to accelerate the loan review process;
 - Expand eligibility to include manufacturing facilities for medium- and heavy-duty AFVs, autonomous vehicles, micromobility devices, and their associated components;
 - Consider establishing a performance-based mechanism wherein manufacturers' repayment liability is decreased for each vehicle produced.
- Establish and fund the competitive grant program already authorized by the Energy Independence and Security Act of 2007 to provide expeditious financial support to companies in building or retooling domestic manufacturing facilities during the economic recovery and extend the program through December 31, 2030.
- Revive the 48C Advanced Manufacturing Tax Credit to provide a 30 percent investment tax credit to provide \$2.5 billion annually for three years to re-equip, expand, or establish domestic manufacturing facilities in the clean energy and transportation technology sectors.

Proposal 7: Invest in nationwide electric charging and alternative fueling infrastructure.

The private sector has already begun to build out EV and AFV infrastructure, but a great deal of work remains. A significant federal investment in the nationwide buildout of EV and AFV infrastructure that incentivizes private sector installation ahead of widespread adoption would help to establish a robust charging and fueling network throughout the country, while contributing to near-term job creation. By diversifying our vehicle fleets, we continue to enhance our energy, economic, and national security. A report by the Edison Electric Institute estimates that the United States will need 900,000 public charging stations and 1,200,000 Level 2 workplace charging stations to support an estimated 18.7 million EVs by 2030.⁵⁷

To spur immediate private-sector investment in the installation of EV and AFV infrastructure, Congress should convert the Alternative Fuel Vehicle Refueling Property Tax Credit (30C) into a refundable tax credit, eliminating the \$30,000 limitation to account for the increased costs of DC Fast Chargers, and extend the tax credit through the end of 2025. The Clean Corridors Act, as modified and included in the bipartisan American Transportation Infrastructure Act of 2019, provides a framework for the Department of Transportation (DOT) to issue grants will support the nationwide build-out of charging and refueling infrastructure to support electric, hydrogen, and natural gas vehicles across the major national highway corridors.⁵⁸

Additionally, Congress should create a competitive grant program for the construction of charging depots in major metropolitan areas targeted to accelerating the electrification of TNCs and livery services, as well as the freight and logistics sector. To enhance the resiliency and grid-balancing opportunities of the program, up to 10 percent of the program funds should be directed to pilot programs that demonstrate the ability to deploy bi-directional charging that supports both the vehicles and the grid at larger scale as part of vehicle-to-grid programs.

⁵⁷ Adam Cooper (IEI) and Kellen Scheffter (EEI), "Electric Vehicle Sales Forecast and the Charging Infrastructure Required Through 2030," Edison Electric Institute (Nov., 2018).

⁵⁸ See, [America's Transportation Infrastructure Act of 2019 \(S. 2302\)](#) Subtitle D, Sec. 1401. Passed by the Senate Environment and Public Works Committee on July 30, 2019; The Clean Corridors Act (S. 674, H.R. 2616).

Finally, given that workplaces are the second most frequent vehicle charging location, behind homes, and can be the primary location for drivers without access to home charging, Congress should provide technical assistance to companies and help defray the costs of installing workplace charging infrastructure.⁵⁹ The “Workplace Charging Challenge,” sponsored by DOE, supported hundreds of employers between 2013-2018 in installing thousands of chargers, and proved the importance of stakeholder engagement, education, and employer recognition. Additionally, employers need more in-depth technical assistance to: assess their infrastructure needs, determine the impacts from adding chargers, how to manage demand charges and support vehicle-to-grid opportunities, and work collaboratively with utilities. In addition, companies need support in funding the installation of charging infrastructure not otherwise covered by existing programs.

Recommendations:

- Enact the Clean Corridors Act with an annual appropriation of \$750 million for five years for the deployment of electric, hydrogen, and natural gas vehicles in corridors throughout the United States.
- Update the Alternative Fuel Vehicle Refueling Property Tax Credit (30C):
 - Convert 30C to a refundable tax credit;
 - Eliminate the \$30,000 limit per refueling property; and
 - Extend the credit through December 31, 2025.
- Create a competitive grant program of \$200 million annually to support the construction of charging depots equipped with DC Fast Chargers in urban areas.
- Revitalize the Workplace Charging Challenge through a new competitive cooperative agreement to provide \$10 million in annual support over the next three years.
 - Provide support for stakeholder engagement, employer education, and employer recognition.
 - Provide in-depth technical assistance to employers about infrastructure needs, utility costs, and opportunities for utility partnerships.
 - Provide a matching grant program for private sector investment to help defray costs of infrastructure installations that could include considerations around providing public access for some charging infrastructure.

Proposal 8: Create regulatory certainty to enable the safe and expeditious deployment of autonomous vehicles.

The pandemic has brought the benefits of AV technology into focus. Its value, particularly by connecting us to the things that we need – even when we are being asked to stay apart for our safety – has never been more evident. Today we worry about contracting the COVID-19 virus when getting packages delivered to our homes,⁶⁰ sharing a vehicle with drivers or passengers,⁶¹ or waiting weeks to get a time slot to have groceries delivered,⁶² problems that would evaporate in an autonomous world.

While the United States has been a leader in developing AV technology, it has been slower to provide the regulatory certainty or necessary support that would have allowed AVs to play a significant and

⁵⁹ Chris Vlahoplus and Benjamin Lozier, “Charging up: A review of electric vehicle workplace charging,” Green Biz (Apr. 1, 2019).

⁶⁰ Ganda Suthivarakom, “How to Handle Packages During the Coronavirus Pandemic,” Wirecutter (Mar. 24, 2020).

⁶¹ David Meyer, “Uber driver who stopped working to avoid coronavirus dies from disease,” New York Post (Mar. 25, 2020).

⁶² Lesley Stockton, “The Best Options for Grocery Delivery During the Coronavirus Pandemic,” Wirecutter (Apr. 16, 2020).

valuable role in responding to the pandemic. Meanwhile, China has used autonomous systems to disinfect city streets⁶³ and more than 2,000 hospitals,⁶⁴ transported goods to hospitals,⁶⁵ and provided expedited regulatory approval and subsidies to deploy AVs on city streets for food delivery to frontline workers.⁶⁶ This follows on China's efforts to compete with the United States for control the future of autonomy: In particular, Huawei Technologies has adopted an "aggressive" attitude to develop AV technologies in a bid to diversify its portfolio amid allegations that its telecommunications technology presents cybersecurity and privacy threats to consumers and governments around the world.⁶⁷

Conversely, the United States has floundered in developing a consistent federal regulatory framework to support the deployment of AVs – much to its own disadvantage. According to SAFE's research, AVs have the potential to unlock nearly \$800 billion in annual social and economic benefits by 2050. For these benefits to be realized, Congress must first update outdated motor vehicle regulations and provide a pathway for the expeditious and safe deployment of the technology.

The R2X, an AV produced in the United States by Nuro, reveals the future of transporting food and supplies: purpose-built driverless vehicles that are smaller, electric, and efficient that can provide contactless delivery. While this vehicle does not travel over 25 miles per hour, it took the National Highway Traffic Safety Administration (NHTSA) more than a year to provide the vehicle with regulatory approval to operate on public roads – not because the vehicle was autonomous, but because it would not have side mirrors, a windshield, or a rear-view camera. Modernizing the nation's motor vehicle regulations will reduce these types of unnecessary barriers and accelerate the development and manufacturing of these advanced vehicles in the United States.

Finally, Congress should also increase the cap on "exemptions" for vehicles that meet or exceed existing federal motor vehicle safety standards (FMVSS), but whose technologies have outpaced the strict definition of those standards and are thus deemed out of compliance. This well-established pathway has been critical to the development of new safety and alternative fuel technologies, and is vital to the advancement of autonomous vehicles in the United States, which are estimated to be an \$8 trillion global industry, and into which U.S. automakers and technology developers have already invested billions of dollars.⁶⁸ In advance of comprehensive AV regulatory reform, discussed below, Congress should provide a near-term path to continued investment, domestic job creation, and U.S. global leadership through reform that does not add to the deficit. The U.S. Department of Transportation noted⁶⁹ that the current exemption structure must be updated to allow for U.S. companies to compete globally and to justify the level of investment needed to develop the technology domestically. U.S. competitors - most notably China - face no such barriers and companies in China have rushed to seize

⁶³ Alexandria Hein, "Mini tanks deployed to disinfect coronavirus-hit areas in China," Fox News (Feb. 17, 2020).

⁶⁴ Eugene Demaitre, "Coronavirus Fight in China to Get a Boost from UVD Disinfection Robots," The Robot Report (Feb. 21, 2020).

⁶⁵ "JD.com Uses L4 Autonomous Driving Solutions to Deliver Goods in Locked-Down Wuhan," KrASIA (Feb. 7, 2020).

⁶⁶ "Driverless Delivery Van Startup Sees Demand Surge During Outbreak," Bloomberg News (Mar. 8, 2020).

⁶⁷ Heng Ting-Fang and Laily Li, "Huawei steps up ambitions in self-driving vehicles race," Nikkei Asian Review (Mar. 30, 2020).

⁶⁸ Michael Wayland, "GM's Cruise values autonomous vehicle industry at \$8 trillion," CNBC (Feb. 5, 2020).

⁶⁹ "Testimony of Dr. James C. Owens, Acting Administrator National Highway Traffic Safety Administration Before the Committee on Commerce, Science & Transportation United States Senate Highly Automated Vehicles: Federal Perspectives on the Deployment of Safety Technology," (Nov. 20, 2019).

this competitive advantage, particularly as most AV testing fleets in the United States remain “grounded” due to state and local closure requirement related to the pandemic.

Recommendations:

- Enable the domestic, at-scale manufacturing of AVs with novel designs by providing NHTSA with the authority to grant Federal Motor Vehicle Safety Standards (FMVSS) exemptions for up to 100,000 vehicles per manufacturer – as long as the vehicle is as safe as, or safer than, FMVSS-compliant vehicles.
- Establish a level playing field where all AV developers – automakers, research institutions, and technology companies alike – have the ability to test vehicles which are not certified to FMVSS on public roads, provided that they do so responsibly and safely.
- Preserve the traditional role of the federal government as the sole regulator of the design, construction, and performance of motor vehicles.
- Prohibit states and localities from enacting discriminatory laws that would prevent people with disabilities from realizing the benefits of enhance mobility through vehicle autonomy.
- Provide regulatory certainty for the autonomous trucking sector by including ADS-equipped trucks in any legislation.

Proposal 9: Promote a U.S.-based supply chain for rare earth elements by chartering a cooperative, seeded with \$500 million in capital. Develop a thorium bank to manage the byproduct of the refining process.

Rare earth elements (rare earths) are a group of minerals whose properties have made them critical materials critical for advanced energy and transportation technologies, national defense, and other commercial and industrial applications.⁷⁰ Despite their name, they are not scarce, with mining deposits available around the world, including the United States.⁷¹ However, rare earths are unusually expensive to produce because they are found in such low concentrations. For instance, in late April 2020, one ton of Neodymium and Praseodymium cost respectively approximately \$49,800 and \$89,500,⁷² while one ton of stainless steel cost \$2,535.⁷³

Over the last four decades, China has made a concerted effort to dominate the rare earth global supply chain.⁷⁴ China benefits from its substantial deposits of rare earth minerals,⁷⁵ its low cost of labor, and lax environmental standards.⁷⁶ China then refines and processes the rare earths through a group of companies, which are effectively state-directed enterprises.⁷⁷ It has leveraged its control over the value chain to force foreign corporations to transfer to it manufacturing facilities and technology in exchange

⁷⁰ Rare Earth Materials in the Defense Supply Chain, General Accountability Office, Report GAO-10-617R at p. 4 (Apr. 14, 2010).

⁷¹ *Id.* at p. 17.

⁷² See, price.metal.com for price quote under precious metals, rare earth.

⁷³ See, Metal.miner.com for price quote under metal pries, stainless steel.

⁷⁴ “Interview with Kristin Vekasi: China’s Control of Rare Earth Metals,” The National Bureau of Asian Research (Aug. 13, 2019).

⁷⁵ Marc Humphries, “Rare Earth Elements: The Global Supply Chain,” Congressional Research Service, at pp. 10-11 (Dec. 16, 2013).

⁷⁶ Valerie Bailey Grasso, “Rare Earth Elements in National Defense: Background, Oversight Issues, and Options for Congress,” Congressional Research Service, at p. 1 (Dec. 23, 2013).

⁷⁷ *Id.* at 19.

for secure supply contracts.⁷⁸ The U.S. Government Accountability Office (GAO) has confirmed that its monopoly control of the rare earth value chain has resulted in vulnerabilities in the procurement of multiple United States weapons systems.⁷⁹ China's control of rare earths presents a security risk to the United States and other nations which require these elements to manufacture a wide range of defense and non-defense related products required in our modern economies.

China's monopoly has evolved from being the leading resource producer of mined rare earths to the leading producer of separated rare earth oxides, equal to 95 percent of global production, and a larger share of all new rare earth metal production globally.⁸⁰ Its power over the market stems from the fact that China is the only source for materials required for the production of so many products with technical and military applications. If the United States does not establish the capacity to produce rare earth metals from oxides, opening mines or creating refining and oxide separation capacity will only serve China's interests, as it will still remain in control of nearly all capacity to produce metals and alloys.

U.S. companies have been unable to compete with China because no single company consumes enough rare earths to justify building a supply chain, and companies cannot act together due to antitrust restrictions. Moreover, processors will not accept abundant and available rare earths that contain elevated levels of thorium due to regulatory licensing, compliance and disposal costs as required by the Nuclear Regulatory Commission. Thorium is a low-level radioactive element with too few industrial uses today, new production of which must be stored under expensive strict guidelines. The U.S. mining industry disposes of enough rare earths, byproduct of other commodities, every year to meet the non-Chinese world's demand. Thorium has some industrial uses today and might serve as a fuel source in a new nuclear fuel cycle in the future, a prospect that China is working to develop.

A U.S.-based cooperative to refine rare earths could compete with Chinese suppliers by pooling public and private capital to build and operate an integrated refining, processing and metallurgical facility. By locking in members of the cooperative as buyers for the rare earth products, the cooperative could guarantee a steady stream of revenue. Members would be guaranteed access to products in exchange for committing to purchase specified volumes at the cooperative's cost, which should remain reasonable because the customers of the cooperative are also its owners. Though prices might, at times, be higher than those offered by the Chinese, the supply chain would be secure, and the prices stable and not subject to manipulation by Chinese companies.

Recommendations:

- Grant an antitrust safe harbor so that companies can coordinate in the establishment of a co-op to refine and process rare earth elements in the United States.
- Offer a federal charter to an entity to take ownership of, and accept liability for, the thorium produced as a byproduct or rare earth refining, store it consistent with all regulatory requirements, and work to expand market for thorium.
- Contribute \$500 million to a rare earth processing co-op.

⁷⁸ See, "S. 2093: RE-Coop 21st Century Manufacturing Act," 116th Congress, available at www.govtrack.us/congress/bills/116/s2093/text.

⁷⁹ GAO, pp. 19-35.

⁸⁰ U.S. Department of Defense. Office of the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy. "Annual Industrial Capabilities Report to Congress," at p. 25 (Oct., 2013).

- Fund \$250 million in research to develop industrial, defense and energy applications for thorium.

Proposal 10: Revise outdated trucking regulations to increase capacity, increase and improve safety and efficiency in the freight and logistics sector.

Now more than ever, Americans are depending on FedEx, UPS, Amazon, and e-commerce as home deliveries have shifted from a welcome convenience to a necessity in a socially-distanced economy. The trucks that these and other Less Than Truckload (LTL) carriers are using are cubing out rather than weighting out by carrying so many packages for home delivery across the country. Congress should modernize federal truck length regulations through a modest five-foot increase to the current maximum allowance for twin 28-foot trailers. This regulatory update would allow trucks to move the same amount of freight with 18 percent fewer truck trips, leading to 3.1 billion fewer truck miles traveled each year and reducing fuel consumption by 255 million gallons annually – yielding 2.9 fewer tons of CO₂ emissions per year.⁸¹

This regulatory change would immediately scale up private-sector investment in the manufacturing and then purchasing of these trailers. To address potential safety concerns, Congress should include a mandate of four additional safety features: An automatic emergency braking system, a speed limiting device capped at 68 miles per hour, electronic stability control, and an on-board safety video recorder.⁸²

Additionally, existing federal truck weight regulations prevent hydrogen fuel cell-powered trucks from operating on the interstate highway system – stymieing the adoption of a viable alternative fuel for medium- and long-distance trucking. These regulations have previously been adjusted to authorize electric and natural gas trucks,⁸³ but the federal government has not yet done so for hydrogen powered trucks. Adopting fuel-neutral federal trucking regulations would allow the U.S. trucking sector to continue on a path to greater fuel diversification – ultimately contributing to reduced oil consumption and emissions. As manufacturers such as Nikola in Arizona are preparing to scale up domestic production of hydrogen trucks, reducing barriers to their deployment will encourage domestic manufacturing and expanded adoption.⁸⁴

Recommendations:

- Authorize Twin 33s to operate on interstates, provided that they are equipped with: a speed limiting device capped at 68 miles per hour; an automatic emergency braking (AEB) system; electronic stability control; and an on-board safety video recorder.
- Update federal truck regulations to be fuel-neutral by providing a weight limit exemption to hydrogen-powered trucks.

⁸¹ Ronald R. Knipling, “Twin 33 Foot Truck Trailers: Making U.S. Freight Transport Safer And More Efficient,” Americans For Modern Transportation,” (2017).

⁸² Randy Mullett, Letter to Senators Deb Fischer and Tammy Duckworth, Americans for Modern Transportation (Feb. 12, 2020), available at americansformoderntransportation.org/project/1189/.

⁸³ 23 U.S.C. § 127(s).

⁸⁴ Russ Wiles, “Truck manufacturer buys site for Arizona factory that will employ 2,000 workers,” AZ Central (Mar. 22, 2019).

Proposal 11: Implement an Energy Storage Investment Tax Credit (ITC).

Energy storage is a vital part of making our nation’s electric system more reliable and resilient. Grid scale storage can help provide stable and steady power from intermittent, clean sources, such as wind and solar, and even small-scale storage can provide back-up power during emergencies.

As a nascent industry that holds significant promise, this type of incentive could make energy storage more affordable and facilitate broader marketplace adoption. Developing more commercial energy storage is especially vital to jump-start our economic recovery and spur investment in such new technologies, both in the near and longer term. Moreover, creating a larger market for batteries for the power and transportation sectors could boost domestic battery manufacturing and help create or retain highly skilled jobs in this strategically-important sector, which the United States currently is losing to China and other nations.

Recommendation:

- Congress should enact an Energy Storage Investment Tax Credit. (Bipartisan bills have been introduced: S. 1142/H.R. 2096 – identical bills).

Proposal 12: Establish an Electric Transmission Investment Tax Credit (ITC).

Electric transmission is vital to moving power generation resources from rural and remote areas to population centers. As such, transmission is a critical component of ensuring our electric system remains reliable and resilient. Erecting more transmission lines also would help create highly skilled, well-paying jobs.

However, building a new, long-distance transmission line in the United States can be quite costly, time-consuming, and cumbersome, due to several policy and regulatory challenges. Some parts of the country have regional or state wholesale power markets, while other parts of the United States do not, which can add another layer of complexity to getting a transmission line built, depending on its proposed location. Generation resources, primarily renewable energy sources, are waiting to come on-line in parts of the United States, and transmission would help bring these resources to fruition. An ITC for transmission would help overcome some of the barriers and make the up-front investments for “shovel-ready” transmission projects more affordable, so that more transmission could be constructed. In turn, more jobs could be created or retained, more diverse energy resources could be deployed, and more energy and broader economic development could occur.

Recommendation:

- Congress should establish an Electric Transmission Investment Tax Credit with a “commence construction” date prior to December 31, 2026. (S. 3107 provides a good basis for this provision.)

Prepare

The federal government’s fourth task should be to help prepare for future disruptive events and enhance economic growth and development by implementing policies that promote a sustainable, secure, resilient future.

Proposal 13: Enhance grid resilience and reliability through greater deployment of grid modernization technologies and capabilities.

Smart meters/advanced metering infrastructure (AMI) and other automated grid technologies facilitate remote or contact-less detection of the precise location of power outages and their isolation. Fault detection, isolation and restoration technology, sometimes referred to as “self-healing” technology, can automatically detect faults on the grid and re-route power, reducing or eliminating outages.⁸⁵ In the absence of such smart technologies, utilities may learn about power outages only when reported by customers, delaying utility response times and undermining resilience, and may have to send linemen into the field to reset tripped switches.⁸⁶ This equipment also reduces outage times, thereby enhancing the reliability of our electric system, on which our entire digital economy depends. Critically, this equipment can also help protect utility workers by limiting their exposure to sick customers (such as during a pandemic) and by reducing their need to locate power outages in the field during severe weather events.

This technology already exists and its deployment can create projects and jobs quickly. It also saves utilities and consumers large sums of money by reducing outage times. The examples are plentiful of the benefits of such technologies. To illustrate some of the potential benefits, an Electric Power Research Institute (EPRI) study has suggested that CenterPoint Energy’s intelligent grid could ultimately save consumers \$1.6 billion in prevented losses based on calculations using the DOE’s Interruption Cost Estimate (ICE) calculator.⁸⁷ Another report found that investments in smart grid technologies in Burbank, CA reduced outages by 96.5 percent.⁸⁸

Recommendation:

- Congress should fund \$5 billion annually for two years through grants and/or other direct assistance as appropriate, to fund the deployment of grid modernization infrastructure, particularly smart meters/AMI to improve electricity, gas, and water management. Assistance should be able available to all utilities who have not yet installed smart meters/AMI, and to maximize the resilience and reliability benefits thereof to the greatest extent practicable, as well as to equipment manufacturers.

Proposal 14: Support a microgrid grant pilot program to enhance resilience.

A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid, which can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode.⁸⁹

In the event of an interruption of electrical service over the grid, microgrids can disconnect from the grid and continue to serve their load. They can be created to serve critical facilities, such as hospitals or

⁸⁵ *Pacific Northwest Smart Grid Demonstration Project: A Compilation of Success Stories*, Bonneville Power Administration (BPA), page 21 (Dec. 2014).

⁸⁶ *Id.*

⁸⁷ “Cost/Benefit Analysis of CenterPoint Energy’s Intelligent Grid Project,” EPRI/CenterPoint Energy Houston Electric, at p. 6 (Oct., 2014) (included in a 2015 Distribution Cost Recovery Factor (DCRF) Filing (Docket 44572) to the Public Utility Commission of Texas (PUCT)).

⁸⁸ “Municipal Utilities’ Investment in Smart Grid Technologies Improves Services and Lowers Costs,” Department of Energy, p. 3 (Oct, 2014).

⁸⁹ “About Microgrids,” Microgrids at Berkeley Labs, available at building-microgrid.lbl.gov/about-microgrids.

transportation infrastructure, or other contiguous facilities, such as military bases, college campuses, or business parks.

After Superstorm Sandy, for instance, Princeton University's microgrid disconnected from the surrounding electric grid and generated power for the entire campus for nearly three days, until the university reconnected with the main grid. The microgrid also provided power for police, firefighters, paramedics and other emergency-services workers from the area who used Princeton as a staging ground and charging station for phones and equipment.⁹⁰

Recommendations:

- Congress should appropriate \$200 million in funding to DOE per year, over five years, for grants for a microgrid pilot deployment program.
- The microgrid projects should serve different types of load and be geographically dispersed to demonstrate their capabilities in different circumstances and in different parts of the nation.

Proposal 15: Support research & development to modernize the grid and to enhance grid cybersecurity.

Grid modernization technologies and capabilities that facilitate the secure and reliable design, planning, and operation of the electric grid, such as sensors, distribution automation, and dynamic line rating systems, continue to evolve. Their use can help improve sensing, monitoring, and visualization of the electric grid for real-time situational awareness and support decision making that enables improved operation of the power system, particularly given changes in power generation sources and loads that also vary among geographic regions of the United States.

The grid also faces an increasing number of cybersecurity threats, particularly with an increasing number of "smart" devices and systems connected to the electric grid, and as transportation electrification expands, along with the associated electric charging infrastructure. The pandemic highlights some of the myriad cybersecurity threats to our critical infrastructure, particularly with large sectors of society working remotely, and conducting telemedicine, online learning, and more. These threats are evolving in nature and in their degree of sophistication. The United States, therefore, needs to constantly evolve its cyber-related capabilities and continue to better understand current and future cyber threats and envision their consequences – to continue to protect our energy and national security.

Recommendation:

- Congress should fund \$3.4 billion for research and development to modernize the grid⁹¹ and to strengthen the capacity of the energy sector to prepare for and withstand cyber and physical attacks.⁹²

⁹⁰ Morgan Kelly, "Two years after Hurricane Sandy, recognition of Princeton's microgrid still surges," Princeton University, Office of Communications (Oct. 23, 2014).

⁹¹ See, e.g., H.R. 5428, the Grid Modernization Research and Development Act, (passed the House Science Committee on a bipartisan basis).

⁹² See, e.g., H.R. 5760, the Grid Cybersecurity Research and Development Act, (passed the House Science Committee on a bipartisan basis).