



## **Building for the 21st Century:**

### **An infrastructure plan to create jobs, increase resilience, and usher in a new era of opportunity**

Infrastructure is essential to our daily lives. In principle, excellent infrastructure enables our communities to thrive. For example, parents can make their kid's soccer game or get home in time for dinner rather than sitting in traffic for hours. Everyone has safe drinking water and breathes clean air. Cities and towns invest in parks, modern school buildings, and streets that support local jobs and attract businesses and families. State-of-the-art airports, public transit, highways, waterways, and railways enable people to travel safely and goods to get to market. And high-speed Internet supports new industries and connects friends and family across the world.

Yet over the last four years, politicians in Washington have failed to deliver for the American people. The current administration has been incapable of keeping its promise to pass major infrastructure legislation, and critical projects around the country are stalled because of it. Meanwhile, our roads and bridges crumble, our schools fall into disrepair, water systems poison our children, and our flood protection systems fail as climate change accelerates. When our infrastructure works well, we hardly notice. These days, we notice our infrastructure a lot.

In communities across America, we know that investments in infrastructure create well-paying jobs and provide essential services like water and transportation that help us raise families and start businesses. This is why cities and towns have been leading the way on new infrastructure partnerships and approaches. Yet too often, as I saw in South Bend, the federal government does not help as it should—by failing to fund and prioritize infrastructure or by relying on outdated standards.

Under my administration, local governments will finally have a partner in Washington. As a former mayor, I know that priority-based budgets made locally are better than budget-based priorities set in Washington. That's why we will ensure that federal funds go to the cities, counties, tribes, towns, and states that need more resources to create good jobs and combat climate change through smart infrastructure investments.

My infrastructure plan achieves three things: opportunity, equity, and empowerment. First, we will create opportunities for individuals and communities, including millions of well-paying union jobs. Second, we will close disparities and ensure that everyone has access to adequate infrastructure like clean drinking water and affordable ways to get to work. Finally, we will empower local communities to lead on infrastructure development so that they can support safe, vibrant, growing neighborhoods.

My administration will invest over \$1 trillion in working with states, cities, and other local governments to build the sustainable infrastructure of the 21st century. We will achieve measurable outcomes for opportunity, equity, and empowerment:

- Create six million well-paying jobs with strong labor protections, especially in underrepresented communities.
- Ensure that every American has access to clean drinking water.

- Lower water bills nationwide, slashing the average bill by 50 percent—the equivalent of over \$600—for 10 million families.
- Protect millions of families from lead in paint and water through a \$100 billion investment
- Update and fix at least half of our roads and bridges in poor condition by 2030.
- Invest in sustainable infrastructure that enables 50 percent of U.S. counties to grow over the next 10 years, as measured by an increase in jobs, businesses, or population.

## JOBS

The infrastructure sector employs over 17 million people, making it the second-largest sector of our economy.<sup>1</sup> These are skills-based jobs, from electricians and construction workers to utility operators and truck drivers, that do not necessarily require college degrees but often provide good pay and benefits.<sup>2</sup> Pete’s administration will create millions of well-paying jobs and work with unions and federal contractors to uphold labor standards. To fuel economic growth, Pete’s plan will:

**Create six million well-paying jobs with strong labor protections.** Pete’s infrastructure investments, including clean energy infrastructure through his [climate plan](#), will create six million well-paying jobs. For every infrastructure project that his administration funds, he will protect and support the Davis-Bacon Act to ensure that workers are paid fair wages and that taxpayers receive the best value for their money. He will vigorously enforce Executive Order 13502 on Project Labor Agreements to protect workers and direct the Department of Labor to launch a pilot program that requires agencies to consider at least two bids that include Project Labor Agreements. This means holding agencies accountable for delivering the best product for taxpayers, rather than just picking the cheapest option. To support domestic manufacturing jobs, he will improve enforcement for Buy America provisions and make the waiver process more transparent. Additionally, he will implement the protections proposed in his [labor plan](#), including joint employer bargaining, multi-employer bargaining, and protecting the right to organize, in all phases of federally funded projects, including operations and maintenance as well as construction.

**Commit \$10 billion to attract and train a skilled workforce.** One of the greatest threats to our infrastructure is a workforce that is approaching retirement.<sup>3</sup> Up to 50 percent of workers in transportation agencies will approach retirement age within 10 years,<sup>4</sup> and another wave of retirements is approaching for water utility workers.<sup>5</sup> To bolster a skilled workforce, Pete will commit \$10 billion to skill development and pre-apprenticeship programs at two- and four-year colleges that collaborate with Registered Apprenticeship programs, as proposed in his [higher education and workforce development plan](#). He will end support for unregulated, industry-driven programs that the current administration has proposed. He will also establish a [National Infrastructure Accelerator](#) and offer \$100 million in grants to support initiatives that introduce K-12 students to infrastructure and clean energy jobs and prepare them for Registered Apprenticeships or degrees that lead to these jobs.

<sup>1</sup> Kane, Joseph. “[Aging and in Need of Attention: America’s Infrastructure and Its 17 Million Workers](#).” Brookings. April 16, 2019.

<sup>2</sup> Kane, Joseph, and Robert Puentes. “[Beyond Shovel-Ready: The Extent and Impact of U.S. Infrastructure Jobs](#).” Brookings. September 2, 2016.

<sup>3</sup> “[Building America’s Infrastructure Workforce Partnering with Industry to Meet the Demand for Skilled Workers](#).” National Skills Coalition. June 2017.

<sup>4</sup> McCarthy, Chris. “[3 Key Strategies for Transit Agencies to Survive the Retirement Cliff](#).” Metro Magazine. August 6, 2019.

<sup>5</sup> “[Aging Water Workforce Spurs Industry Recruiting Efforts](#).” Water News Network. San Diego County Water Authority. May 13, 2019.

**Expand access to infrastructure jobs for underrepresented communities.** Women and communities of color are often underrepresented in the infrastructure sector, especially in winning contracts and reaching leadership roles.<sup>6</sup> Pete will commit \$100 million to expanding Apprenticeship Readiness Programs that help job seekers from underrepresented communities enter apprenticeships and careers. He will work to pass legislation that requires companies bidding for federal construction contracts to set goals for offering a certain number of Registered Apprenticeships and will encourage them to increase women, minority, and veteran workforce participation. His administration will promote initiatives that combine skills training and entrepreneurship training through the U.S. Department of Commerce Minority Business Development Agency. In addition, he will aim to award at least 25 percent of federal contracting dollars to business owners from underserved communities, as described in his [Douglass Plan](#).

**Create a transition fund for workers in a clean energy economy.** Pete’s \$200 billion transition fund for displaced fossil fuel industry workers, laid out in his [climate plan](#), will support programs to align mining and fossil fuel workers with well-paying jobs with strong labor protections in clean energy and sustainable infrastructure. The fund will also assist transportation workers who may be affected by the increasing adoption of autonomous technologies.

## CLEAN WATER

Clean water is critical for drinking, health, farming, and energy. Yet millions of Americans, especially in communities of color, rural counties, Indian Country, and low-income areas lack reliable access to safe drinking water.<sup>7</sup> Pete will vigorously enforce existing laws so that corporations answer to the people and face penalties when they pollute the environment and communities. He will prioritize public engagement and participation when considering infrastructure projects for federal approval, so that rural and tribal communities have their voices heard and their water resources protected. He will also invest in modernizing systems and making water more affordable, so that every American has access to clean water.

**Ensure lead-free water.** Lead exposure has serious health consequences, such as brain damage in children.<sup>8</sup> Yet many American families—from Flint, Michigan to Newark, New Jersey, and over 2,500 other communities—know what it is to live with the risk of lead poisoning.<sup>9</sup> As a Midwestern mayor of an industrial city, Pete understands the severity of this threat and knows that addressing these problems is not easy. Fixing lead pipes, for instance, can strain the resources of municipal governments, water utilities, and local residents alike. That is why Pete will provide the resources to tackle this crisis by establishing a \$100 billion Lead-Safe Communities Fund to address lead in water, paint, and soil. He will consolidate

<sup>6</sup> Stemley, Wendell R. “[Infrastructure Projects Should Include More Minority- and Women-Owned Contractors](#).” Engineering News-Record. March 21, 2018.

<sup>7</sup> Langin, Katie. “[Millions of Americans Drink Potentially Unsafe Tap Water. How Does Your County Stack up?](#)” Science. American Association for the Advancement of Science. February 12, 2018.

Cureton, Emily. “[No Safe Drinking Water On Reservation Leaves Thousands Improvising](#).” NPR. August 10, 2019.

<sup>8</sup> World Health Organization. “[Lead Poisoning and Health](#).” World Health Organization. August 23, 2019.

<sup>9</sup> Benfer, Emily A. “[Contaminated Childhood: The Chronic Lead Poisoning of Low-Income Children and Communities of Color in the United States](#).” Health Affairs. August 8, 2017.

resources across the Environmental Protection Agency (EPA), Department of Housing and Urban Development (HUD), and the Centers for Disease Control and Prevention (CDC) to make it easier for communities to access government support. To ensure lead-free water, he will invest \$20 billion to:

- **Replace three million lead service lines by 2030.** Lead service line replacement ensures that drinking water is lead-free over the long term. Around six million lead pipes are in use nationwide, and replacing these lines is a challenge even for the best-financed utility.<sup>10</sup> Pete’s administration will help communities map and fully replace lead service lines, with funding assistance targeted to low-income communities. He will provide water utilities with resources to make loans that lower the costs to homeowners of replacing service lines on private property. He will also support utilities in piloting innovative financing approaches that maximize benefits to local residents.
- **Invest in corrosion control.** In cities across the country, corrosion control successfully prevents lead from leaching from pipes into water. However, many utilities perform corrosion control incorrectly or inconsistently, and Flint is an example of the damages that result from this.<sup>11</sup> Pete’s EPA will use the latest scientific research to perfect a best-in-class procedure for corrosion control, disseminate this, and provide technical assistance to local water utilities. Through the Lead-Safe Communities Fund, he will offer financial assistance for corrosion control to small rural and tribal water systems as well as urban systems that serve low-income communities.

**Prevent and address PFAS contamination.** Ensuring safe water starts with tackling pollution, including from chemicals like PFAS, or per- and polyfluoroalkyl substances. These pollutants have contaminated groundwater in nearly 1,400 locations in 49 states, including hundreds of military bases and facilities, threatening community health nationwide.<sup>12</sup> Pete’s EPA will research PFAS contamination, establish science-based standards that limit the amount of PFAS in drinking water, and develop safe alternatives to PFAS in commercial use. He will direct the EPA to permit the designation of sites with high levels of harmful PFAS contamination as Superfund sites and will triple the budget for EPA’s cleanup programs, including Superfund, to increase resources for PFAS and other environmental remediation.

**Expand access to basic water and wastewater services.** Two million Americans have no access to running water or indoor plumbing.<sup>13</sup> Many communities—including predominantly Black, rural counties in Alabama and majority Latino towns in California’s Central Valley—suffer from unsanitary conditions and disease outbreaks due to faulty septic systems.<sup>14</sup> As outlined in his [Agenda for Latinos](#), Pete will expand the U.S. Department of Agriculture’s (USDA) Water and Waste Disposal Loan and Grant Program by

<sup>10</sup> [“Where Are the Lead Service Lines?”](#) Environmental Defense Fund. 2020.

<sup>11</sup> [“Strategies to Achieve Full Lead Service Line Replacement.”](#) Environmental Protection Agency. October 2019.

<sup>12</sup> Olson, Erik D. [“Here’s What’s Needed to Fix the EPA’s Outdated Lead in Tap Water Rule.”](#) National Resources Defense Council. October 9, 2019.

Panko, Ben. [“Scientists Now Know Exactly How Lead Got Into Flint’s Water.”](#) Smithsonian Magazine. February 3, 2017.

<sup>13</sup> [“Mapping the PFAS Contamination Crisis: New Data Show 1,398 Sites in 49 States.”](#) Environmental Working Group. October 2019.

Amarelo, Monica. [“New EWG Map: 305 Military Sites That Used PFAS-based Firefighting Foam.”](#) Environmental Working Group. December 10, 2019.

<sup>14</sup> [“Closing the Water Access Gap in the United States.”](#) Dig Deep and US Water Alliance. November 2019.

<sup>15</sup> Del Real, Jose A. [“How Racism Ripples Through Rural California’s Pipes.”](#) The New York Times. November 29, 2019.

Vock, Daniel C. [“People Are Literally Being Poisoned’: How Sewage Problems in Alabama Got So Bad -- and Why Other States Should Worry.”](#) Governing. July 17, 2018.

\$10 billion and also improve coordination with the EPA’s SepticSmart Program. This will help underserved populations including in rural areas, tribal lands, and communities in border towns (often called colonias) expand their water and wastewater services. Pete will collaborate with tribes to ensure that the United States meets its trust and treaty responsibilities to provide safe drinking water.

**Lower water bills for over 10 million families.** It is commonly understood that the EPA considers water and wastewater services unaffordable if they consume over 4.5 percent of household income.<sup>15</sup> This means that water and wastewater services are unaffordable for nearly 14 million households, and this number could triple within five years.<sup>16</sup> In cities like Cleveland and Chicago, water service costs have doubled or even tripled since 2007.<sup>17</sup> Pete will work with Congress to create a \$16 billion 10-year Drinking Water Assistance Matching Fund that coordinates with the Low-Income Home Energy Assistance Program. The Fund will provide a 1:3 federal funding match for states and local water systems that assist low-income families with water bill payments. This would slash the average water bill by 50 percent for 10 million families.<sup>18</sup> Additionally, Pete will direct the EPA to update its metrics for water affordability and provide technical assistance to small water systems like those in rural areas for launching water affordability programs.

**Upgrade drinking water infrastructure.** As the federal government has dramatically cut spending on water infrastructure since the 1980s, many cities have responded to rising water system repair costs by raising rates and making water unaffordable in low-income or majority Black and Latino neighborhoods.<sup>19</sup> To alleviate this financial burden, Pete will invest \$10 billion in the Drinking Water State Revolving Fund, so utilities can make critical upgrades like reducing water leakage and passing cost savings onto consumers. He will also offer \$5 billion in grants through the [American Clean Energy Bank](#) to assist small water systems in building managerial capabilities and developing partnerships to achieve financial sustainability and improve climate resilience.

**Develop innovative approaches for wastewater management.** America’s legacy wastewater systems are stretched beyond their intended capacity, increasing the risk of sewage contamination that can damage community health and the environment. Pete’s hometown of South Bend pioneered the use of “smart” sensors to address the problem of combined sewer overflow (CSO) common in many older cities. Pete will recapitalize the Clean Water State Revolving Fund with \$10 billion to help communities implement innovative approaches to wastewater treatment. He will also triple Water Infrastructure Finance and Innovation Act funding and ensure that advanced technologies like water sensors and data analytics tools are eligible for this funding. He will create a Clean Water Regulatory Innovation Taskforce led by the EPA to update CSO and National Pollutant Discharge Elimination System requirements and will promote less costly approaches to complying with wastewater regulations, such as integrated planning.

<sup>15</sup> [“Developing a New Framework for Household Affordability and Financial Capability Assessment in the Water Sector.”](#) American Water Works Association. April 17, 2019.

<sup>16</sup> Mack, Elizabeth A., and Sarah Wrase. [“A Burgeoning Crisis? A Nationwide Assessment of the Geography of Water Affordability in the United States.”](#) *Plos One* 12, no. 1 (January 11, 2017).

<sup>17</sup> Zamudio, Maria, and Will Craft. [“A Water Crisis Is Growing In A Place You'd Least Expect It.”](#) NPR. February 8, 2019.

<sup>18</sup> Layne, Rachel. [“Water costs are rising across the U.S. — here's why.”](#) CBS News. August 27, 2019.

<sup>19</sup> Eskaf, Shadi. [“Four Trends in Government Spending on Water & Wastewater.”](#) Environmental Finance Blog. Environmental Finance Center. September 9, 2015.

Zamudio, Maria, and Will Craft. [“A Water Crisis Is Growing In A Place You'd Least Expect It.”](#) NPR. February 8, 2019.

**Increase support for public financing approaches that empower communities.** Pete will update financing mechanisms to ensure that local and state governments can fund projects that benefit their residents. He will preserve low-cost, tax-exempt municipal bond financing and offer Climate Action Bonds, described in his [climate plan](#), to incentivize the use of best-available climate science for long-term water infrastructure financing. His administration will also promote innovative financing approaches, where appropriate, that lower the lifecycle costs of infrastructure, not just construction costs.<sup>20</sup> Pete will prioritize public accountability and oversight for all projects.

## TRANSPORTATION

For our communities to thrive, everyone must have affordable options to get to work or school and to meet basic needs like going to the doctor. Yet affordable transportation is out of reach for many Americans, whose options are to spend thousands of dollars on owning and fixing a car or walk miles on dangerous roads to buy groceries because no bus stops are nearby.<sup>21</sup> Low-income households are disproportionately burdened—the average share of income they spend on transportation is nearly twice as high as that of top earners.<sup>22</sup> Pete will ensure that federal agencies make spending decisions that deliver the best value for local communities.

### A. NEW OPTIONS FOR COMMUNITIES

Communities need transportation systems that connect workers to jobs and make it easier to raise families or start businesses. Pete will invest in safe, sustainable transportation that improves access to opportunities, offers Americans more options for travel, and connects states and regions.

**Ensure that federal transportation projects improve access to opportunity.** Pete’s Department of Transportation (DOT) will start a new practice of reviewing every federally-funded transportation project to determine how effectively it connects people to jobs and services or goods to market. Pete will require federal transportation funding recipients to demonstrate how each transportation project expands access to opportunity by improving factors like travel time between residential areas and locations with jobs, schools, and medical facilities. Pete’s administration will set a baseline and a national goal to increase the number of jobs and services that all Americans can affordably access.

**Empower local communities with flexible funding and increased access to expertise.** Pete will double the BUILD program (formerly TIGER) to \$2 billion annually, make it easier for smaller cities and rural areas to apply, and evaluate proposals using new metrics, such as a project’s ability to serve low-income communities. This will empower cities and towns to pursue innovative projects that offer residents more options and modes of transportation. He will create a Local Leaders Office in DOT to invite mayors, county commissioners, governors, tribal leaders, and other local officials to develop solutions for their communities in collaboration with DOT experts.

<sup>20</sup> Carol, Dan. “[Performance-Based Infrastructure: Making the Shift](#).” Northeast Infrastructure Accelerator and Beeck Center for Social Impact and Innovation. March 2017.

<sup>21</sup> Elmer, MacKenzie. “[Refugees in Des Moines Walk Miles to Buy Food](#).” The Des Moines Register, December 19, 2017.

<sup>22</sup> “[Household Expenditures and Income](#).” Pew Trusts. The Pew Charitable Trusts. March 2016.

**Increase collaboration across states and regions.** Pete will establish a \$3 billion per year grant program to help states and metropolitan planning organizations pursue projects of both regional and national significance that serve increasingly interconnected networks of cities and towns.<sup>23</sup> He will provide an additional \$2 billion to expand financing programs for these types of projects, such as the Transportation Infrastructure Finance and Innovation Act and Railroad Rehabilitation and Improvement Financing program. His administration will simplify the grant application process to reduce processing times by 50 percent. He will also immediately finalize the National Multimodal Freight Network, which will make it easier to direct federal funding to initiatives that make freight transportation more efficient and improve connectivity between different modes of transportation.

## **B. PUBLIC TRANSPORTATION**

Expanding access to public transportation helps people get to jobs and services more quickly, easily, and cheaply and decreases greenhouse gas emissions. Furthermore, every dollar invested in public transportation drives about four dollars in economic returns.<sup>24</sup> To address existing needs, we must repair current systems and implement critical new projects that expand and improve service.<sup>25</sup> Pete will invest over \$160 billion in partnering with states, cities, towns, and tribes to improve public transportation.

**Build equitable public transportation in cities and towns.** Pete’s [climate plan](#) provides \$100 billion in grants and loans for cities and towns to bring existing transit systems to a State of Good Repair and expand subway, light rail, intercity rail, and bus rapid transit service. Pete will also double Capital Investment Grant funding so that more communities can get support from this oversubscribed and extremely popular program. He will encourage municipalities to develop comprehensive mobility plans that improve services like bike-sharing and low-cost ride-sharing, which will make travel easier for low-income residents.<sup>26</sup> Pete’s DOT will also map communities where residents have limited transportation access to basic services like grocery stores and health facilities and provide dedicated funds for transportation in these communities.<sup>27</sup> New transportation systems will use zero or low-emissions technologies and, as outlined in Pete’s [plan for a new era of inclusion for people with disabilities](#), be fully accessible.

**Dramatically expand accessible rural public transportation.** Rural counties have more limited public transportation options than urban ones, which creates barriers for many residents, including aging Americans.<sup>28</sup> Pete will dramatically increase funding by \$12 billion to expand rural public transportation. As outlined in his [rural health plan](#), he will improve access to existing options, create new rural transit hubs, and leverage new technologies like ride-sharing services. His DOT will also help states to make

<sup>23</sup> “[Beyond Traffic 2045](#).” United States Department of Transportation. 2015.

<sup>24</sup> “[Public Transportation Facts](#).” American Public Transportation Association. 2020.

<sup>25</sup> “[Public Transportation Infrastructure: Critically Needed Investments of at Least \\$232 Billion](#).” American Public Transportation Association. March 18, 2019.

<sup>26</sup> DeGood, Kevin, and Andrew Schwartz. “[Can New Transportation Technologies Improve Equity and Access to Opportunity?](#)” Center for American Progress. April 27, 2016.

<sup>27</sup> Williams, Joseph P. “[Living in a Transit Desert Can Be Hazardous to Your Health. Here’s Why](#).” U.S. News & World Report. April 24, 2018.

<sup>28</sup> Bliss, Laura. “[Rural America Is Gaining a Base of Captive Transit Riders](#).” CityLab. The Atlantic Monthly Group. October 10, 2017.



commuting to school free or more affordable through initiatives like buying free transit passes for rural, low-income students.

**Invest in electric buses and reduce carbon emissions.** Pete will ensure that America can lead the world in the electric bus market. He will triple funding for the Low or No Emission grant program to increase the use of environmentally friendly buses, such as electric buses.<sup>29</sup> These buses significantly benefit disadvantaged communities with poor air quality that suffer from high rates of asthma and other respiratory and pulmonary diseases.<sup>30</sup> He will ensure that Buy America provisions are enforced and promote new cost-benefit approaches that account for vehicle lifetime savings, not just upfront costs.

**Improve the connectivity and safety of our national rail network.** Railroads not only move passengers and freight quickly and efficiently but are also cost-effective and environmentally friendly.<sup>31</sup> To improve existing service and pursue innovative systems like high-speed rail that can transform communities, Pete will encourage cities and regions to adopt a building block approach by expanding service for city pairs, as well as rural towns between these cities. He will double funding for the Consolidated Rail Infrastructure and Safety Improvements Program and Restoration and Enhancement Grants Program. By 2023, all of the nation's rail systems will implement Positive Train Control technology to prevent rail fatalities. The vast majority of train systems have failed to adopt this system today, despite Congressionally mandated implementation by 2015.<sup>32</sup> Pete will also improve collaboration between Amtrak and the freight railroads, so that passenger trains do not interfere with freight operations, and freight railroads deliver the priority treatment to passenger trains that our existing laws require.

### C. ROADS AND BRIDGES

Safe roads and bridges are essential for our personal safety and for economic efficiency. However, 14 percent of rural roads and 32 percent of urban roads are in poor condition today.<sup>33</sup> To address this, Pete will:

**Cut the backlog of critical road repairs in half over 10 years.** Pete will ensure that 50 percent of roads in poor condition get fixed within 10 years by incentivizing states to use federal formula funds to repair existing roads and bridges. Currently, states can spend formula funds on building new roads rather than fixing roads. This particularly affects low-income communities and those with large minority populations, who wait the longest for badly needed repairs—if they receive them at all.<sup>34</sup> Pete's DOT will strengthen State of Good Repair Performance Management requirements and require states to develop achievable plans for maintaining their roads *before* they use federal funds for new roads or expansions. DOT will evaluate states' progress every year to ensure that they are prioritizing repair and maintenance and also have the flexibility to pursue key expansions.

<sup>29</sup> "[Low or No Emission Vehicle Program - 5339\(c\)](#)." Federal Transit Administration. United States Department of Transportation. November 10, 2015.

<sup>30</sup> Veeder, Christy. "[The Electric-Bus Opportunity](#)." *Governing*. July 30, 2019.

<sup>31</sup> Cresci, Jean Pierre, Kevin Smeets, and Laetitia Plisson. "[Forget Ride-Hailing, Rail Is A City's Most Cost-Effective, Least-Polluting Transport](#)." *Forbes Magazine*, September 25, 2019.

<sup>32</sup> Wallace, Gregory. "[Most US Rail Systems Miss Safety Deadline](#)." *CNN*. January 1, 2019.

<sup>33</sup> Thompson, Cadie, and Mark Matousek. "[America's Infrastructure Is Decaying - Here's a Look at How Terrible Things Have Gotten](#)." *Business Insider*. February 5, 2019.

<sup>34</sup> Bradford, Ben. "[How Potholes and Equity Are Related](#)." *Marketplace*. Minnesota Public Radio. May 15, 2019.

**Repair half of structurally deficient bridges by 2030.** Over 47,000 bridges in the United States are structurally deficient and waiting to be fixed.<sup>35</sup> To make our bridges safer and more reliable, Pete will create a \$50 billion grant program for states to repair bridges. This will enable states to fix at least half of structurally deficient bridges by 2030, with funding prioritized for the most unsafe bridges. His DOT will also develop new recommendations for bridge safety design standards to increase resilience. There will be dedicated funding for smaller states and rural areas to bundle projects together and submit “regional initiative” proposals that can spur greater economic connectivity and opportunity across regions.

**Create an electric vehicle (EV) charging infrastructure to power millions of new EVs.** Pete’s [climate plan](#) will put millions of new electric vehicles on the road, and we must develop the infrastructure to power these vehicles in urban, suburban, and rural areas.<sup>36</sup> Investing in EVs is a tool both to combat climate change and to drive manufacturing job growth.<sup>37</sup> Pete will provide \$6 billion in grants and loans through the [American Clean Energy Bank](#) for states and cities to partner with private companies and unions on installing publicly available charging infrastructure powered by clean energy. His administration will also work with state and tribal public utility commissions to ensure that electricity rates incentivize the expansion of charging infrastructure. At least 40 percent of the funds will be available for projects in multi-unit dwellings and economically disadvantaged communities.<sup>38</sup>

**Make the Highway Trust Fund solvent.** Reliable federal transportation funding is important to connect farming communities, cities, and towns. Yet the Highway Trust Fund has been insolvent since 2008, causing uncertainty about whether states can complete critical projects.<sup>39</sup> Pete will inject \$165 billion into the Fund to ensure that it remains solvent through 2029. He will require his DOT to propose a new and sustainable user fee-based system, such as a vehicle-miles-traveled fee with appropriate privacy protections that is already being piloted by states and can potentially replace the gas tax. Within such a system, discounted rates can be offered on a sliding scale based on income.

## D. ROAD SAFETY

Car crashes are a public health threat, killing over 36,500 people in 2018.<sup>40</sup> Unsafe roads killed almost as many people as gun violence.<sup>41</sup> Pete will commit to a national Vision Zero strategy, which means working towards a goal of zero traffic fatalities and serious injuries, and use proven safety innovations to reduce avoidable deaths.<sup>42</sup> His administration will:

<sup>35</sup> Raphelson, Samantha. “[Report Finds More Than 47,000 'Structurally Deficient' Bridges In The U.S.](#)” NPR. April 5, 2019.

<sup>36</sup> “[Annual Energy Outlook 2019.](#)” United States Energy Information Administration. January 24, 2019.

Cattaneo, Lia. “[Investing in Charging Infrastructure for Plug-In Electric Vehicles.](#)” Center for American Progress. July 30, 2018.

<sup>37</sup> The Business Journals News Network. “[General Motors to Build New Electric Vehicle in Michigan, Add 400 Jobs.](#)” American City Business Journals. March 22, 2019.

<sup>38</sup> Joselow, Maxine. “[Electric Car Advocates Want to Expand Access to Low-Income Communities.](#)” Scientific American. June 20, 2018.

<sup>39</sup> Davis, Jeff. “[Ten Years of Highway Trust Fund Bankruptcy: Why Did It Happen, and What Have We Learned?](#)” The Eno Center for Transportation. September 5, 2018.

<sup>40</sup> “[Traffic Safety Facts: 2018 Fatal Motor Vehicle Crashes Overview, 2018.](#)” U.S. Department of Transportation. October 2019.

<sup>41</sup> Gramlich, John. “[What the data says about gun deaths in the U.S.](#)” Pew Research Center. August 16, 2019.

<sup>42</sup> “[Vision Zero Network.](#)” Vision Zero Network. 2018.

**Build safer roads for all.** Pedestrian fatalities in traffic crashes have soared this past decade, reaching 6,200 in 2018.<sup>43</sup> Native American and Black pedestrians are particularly likely to die in traffic crashes.<sup>44</sup> Pete will provide incentives for states, cities, and counties to build safe, accessible roads and retrofit existing unsafe roads. He will double funding for the Transportation Alternatives Program to install more accessible sidewalks, crosswalks, and bike lanes and will update design standards to maximize safety across transportation types. Pete’s DOT will work directly with tribal communities to ensure that roads in Indian Country are safe for children and families.

**Improve rural road safety.** Pete’s DOT will fund studies to improve road safety on rural roads. These roads account for 50 percent of traffic fatalities and are over twice as deadly as urban roads.<sup>45</sup> Pete will work with Congress to reauthorize the Highway Safety Improvement Program and increase targeted funding for projects that improve rural road safety.

**Connect funding to safety performance.** Pete will require state transportation agencies to set road safety targets that reduce the number of fatalities and injuries caused by traffic crashes. Today, states can legally set annual targets that allow an *increase* in roadway deaths and serious injuries each year.<sup>46</sup> His administration will require states to actively improve their safety records or road design processes, or else lose federal funding for other roadway projects.

**Incentivize safe driving practices.** Pete will increase federal funding to \$1 billion a year for the National Highway Traffic Safety Administration (NHTSA) and Federal Highway Administration to address unsafe driving behavior, research solutions for distracted driving, and strengthen enforcement. He will expand NHTSA programs that encourage safety practices like the use of ignition-interlock devices and seatbelts.

## E. AIR AND SHIPPING

Aviation and shipping are vital to our economy. The aviation sector supports 11 million jobs and \$1.6 trillion in economic output,<sup>47</sup> and ports are critical for international trade that drives 30 percent of GDP.<sup>48</sup> Pete will invest in making airports, ports, and waterways safer and more efficient.

**Repair and modernize inland waterways.** America’s inland waterways transport \$194 billion worth of cargo each year, including 70 percent of our agricultural exports, making them especially critical for Midwestern farmers to get their goods to market.<sup>49</sup> Yet many aging locks and dams frequently need to be shut down for repairs, resulting in costly shipping delays.<sup>50</sup> Pete will invest \$5 billion in repairing and replacing locks and dams for inland waterways and ensure that such repairs and replacements protect natural resources and reserved tribal treaty rights. He will simplify project requirements to ensure timely

<sup>43</sup> [“New Projection: 2018 Pedestrian Fatalities Highest since 1990.”](#) Governor’s Highway Safety Association. February 28, 2019.

<sup>44</sup> Schmitt, Angie. [“The Unequal Toll of Pedestrian Deaths.”](#) Streets Blog USA. January 10, 2017.

<sup>45</sup> [“Traffic Safety Facts: Rural/Urban Comparison of Traffic Fatalities.”](#) National Highway Traffic Safety Administration. April 2018.

<sup>46</sup> [“Safety Performance Management.”](#) U.S. Department of Transportation. November 27, 2019.

<sup>47</sup> [“The Economic Impact of Civil Aviation on the U.S. Economy.”](#) Federal Aviation Administration. November 2016.

<sup>48</sup> [“Ports Primer: 2.1 The Role of Ports.”](#) Environmental Protection Agency.

<sup>49</sup> [“Inland Waterways: Actions Needed to Increase Budget Transparency and Contracting Efficiency.”](#) Government Accountability Office. November 2018.

Campanelli, Bryce. [“Why Inland Waterways Matter For More Than Just Fishing.”](#) Bipartisan Policy Center. August 15, 2017.

<sup>50</sup> [“2017 Infrastructure Report Card: Inland Waterways.”](#) American Society of Civil Engineers. 2017.



completion and encourage design and financial sustainability, which will include renovating key assets to increase climate resilience.

**Invest in cleaner, more efficient ports.** Ports are critical national economic assets that support 23 million jobs.<sup>51</sup> Pete will make funding available through BUILD and his [American Clean Energy Bank](#) to provide ports with additional resources for maintenance and modernization, streamline freight transportation to and from ports, and establish Clean Air Programs for ports.<sup>52</sup> Such programs will improve the health of children in low-income communities, who are five times more likely to sustain lung damage if they live near ports and other transportation centers.<sup>53</sup> He will also support legislation that prevents diverting funds from the Harbor Maintenance Trust Fund for purposes other than port and harbor investment.

**Make our aviation system safer and more accessible for small communities.** To make flying safer and easier for everyone, Pete will ensure that the Federal Aviation Administration (FAA) prioritizes the rulemaking and approvals necessary to implement the Next Generation Air Transportation System. He will push for the passage of the Safe Aircraft Maintenance Standards Act so that the FAA holds both domestic and foreign aircraft repair and maintenance stations to the same safety standards. In addition, he will work with Congress to extend funding for the Essential Air Service program from 2023 to 2030 and enable small and rural communities to access worldwide opportunities.<sup>54</sup> Pete’s administration will also evaluate all proposed airline consolidations for their impact on small- and medium-sized communities.

**COMMUNITY EMPOWERMENT**

Too many communities are suffering from the same workforce trends that South Bend did when Pete took office. Eighty percent of U.S. counties lost working-age adults between 2007 and 2017,<sup>55</sup> while two-thirds of counties lost businesses between 2005 and 2015.<sup>56</sup> Pete knows that the right infrastructure investments, such as safer streets and clean water, are powerful tools to help communities attract jobs and businesses and prepare for the future.

That’s why Pete’s administration will provide communities with more flexible resources to grow and thrive. This means investing in affordable transportation, water, electricity, and broadband, which currently consume nearly a quarter of the average American household’s income.<sup>57</sup> It also means creating local jobs and building safe schools and affordable housing, so families can afford to live closer to work. Pete’s goal is to enable 50 percent of U.S. counties to grow over the next 10 years, as measured by an increase in jobs, businesses, or population.

<sup>51</sup> “[2017 Infrastructure Report Card: Ports.](#)” American Society of Civil Engineers. 2017.

<sup>52</sup> “[Clean Air Action Plan.](#)” Port of Long Beach and the Port of Los Angeles. 2019.

<sup>53</sup> “[Protect the Health of Low-Income Communities.](#)” Natural Resource Defense Council. 2020

<sup>54</sup> “[Essential Air Services.](#)” Government Accountability Office. December 19, 2018.

<sup>55</sup> Ozimek, Adam, Kenan Fikri, and John Lettieri. “[From Managing Decline to Building the Future: Could Heartland Visa Help Struggling Regions?](#)” Economic Innovation Group. April 2019.

<sup>56</sup> Bhandari, Ryan. “[The Opportunity Bank: A Trillion Dollars in New Small Business Lending.](#)” Third Way. February 15, 2019

<sup>57</sup> Tomer, Adie. “[Can people afford American infrastructure?](#)” Brookings. May 9, 2018.

**Protect millions of families from lead paint hazards.** At least 23 million homes in the United States have lead-based paint hazards that can poison families and damage children’s brains.<sup>58</sup> Black children are almost three times more likely than white children to have elevated levels of lead in their blood.<sup>59</sup> Pete’s Lead-Safe Communities Fund will provide \$80 billion for states, cities, tribes, and nonprofits to remediate lead in paint, windows, and soil for homes and public buildings like schools. He will set aside \$50 million for a Lead Innovation Initiative to offer research grants for developing new methods to reduce the cost of lead testing and mitigation.<sup>60</sup> Pete will also ensure that the EPA fully enforces the Renovation, Repair, and Painting Rule.<sup>61</sup> This will yield \$ 4.5 billion in lifetime benefits to children born each year, protect over 200,000 children born in 2018 alone, and create jobs in lead remediation and home renovation.<sup>62</sup>

**Double funding for Community Development Block Grants (CDBG).** CDBG is one of the most flexible funding sources for communities, and infrastructure is a high priority for CDBG applicants.<sup>63</sup> Every dollar of CDBG funding leverages over \$4 in additional public and private funds.<sup>64</sup> Pete will double funding to \$6 billion per year, so states and municipalities can provide families with more services and choices. He will allocate \$1 billion to help rural communities and smaller cities improve their planning capacity and ability to apply for CDBG funding.

**Create jobs in local communities through infrastructure investments.** Pete will ensure that infrastructure projects create local jobs. His DOT will extend the Local Labor Hiring Preference Pilot for another five years to empower more state and local agencies to prioritize local job creation when selecting projects or contractors. He will form an advisory council of federal, state, and local stakeholders to make recommendations on expanding Community Benefit Agreements, which can increase employment in underserved communities.<sup>65</sup> As part of his [rural economy](#) initiative, his DOT and Department of Commerce will support partnerships between small manufacturers and companies executing federally funded transportation projects, so these companies can more easily comply with the Buy America provisions.

**Repair school infrastructure.** [Investing in K-12 education](#) means investing in our schools, so students can learn in a safe and healthy environment. America’s \$46 billion annual funding gap for repairing school buildings harms many students, including students in communities of color who suffer from poor heating and mold in classrooms.<sup>66</sup> Pete will invest \$80 billion in a new school repair program, in which states allocate grants and loans to school districts based on poverty levels. He will provide dedicated funding to help meet U.S. trust and treaty obligations to repair Bureau of Indian Education schools. These resources will enable schools not only to complete necessary repairs, but also to make their facilities more sustainable and energy-efficient.

<sup>58</sup> [“American Healthy Homes Survey: Lead and Arsenic Findings.”](#) U.S. Department of Housing and Transportation. April 2011.

<sup>59</sup> Benfer, Emily. [“Contaminated Childhood: The Chronic Lead Poisoning of Low-Income Children and Communities of Color in the United States.”](#) Health Affairs Blog. August 8, 2017.

<sup>60</sup> Bolser, Ulrich, and Read Holman. [“Get the Lead Out.”](#) Center for American Progress. January 17, 2019.

<sup>61</sup> [“EPA Not Effectively Implementing the Lead-Based Paint Renovation, Repair and Painting Rule.”](#) Environmental Protection Agency. September 9, 2019.

<sup>62</sup> Rogerson, Bethany and Stacey Milet. [“10 Policies to Prevent and Respond to Childhood Lead Exposure.”](#) Pew Trusts. August 30, 2017.

<sup>63</sup> [“Community Development Block Grants Impact and Funding Need.”](#) Community Development Block Grants Coalition. July 2019.

<sup>64</sup> Wallace, Michelle. [“Why Washington Should Invest in Community Development Block Grants.”](#) National League of Cities. July 26, 2019.

<sup>65</sup> [“BYD commits to hiring from communities facing significant barriers to employment.”](#) Metro Magazine. July 18, 2017.

<sup>66</sup> Filardo, Mary. [“State of Our Schools: America’s K–12 Facilities 2016.”](#) Washington, D.C. 21st Century School Fund. 2016.

Jimenez, Laura. [“The Case for Federal Funding for School Infrastructure.”](#) Center for American Progress. February 12, 2019.

**Support communities in experimentation to lower infrastructure costs for families.** Pete will launch an Affordable Cities Challenge, modeled on the Smart City Challenge.<sup>67</sup> He will offer a \$40 million prize to incentivize cities to develop innovative proposals that make transportation, electricity, water, or flood insurance more affordable for low-income families. Additionally, he will provide \$3 billion from his [American Clean Energy Bank](#) for local and state governments to pilot promising proposals and to scale pilots that bring quantifiable benefits like decreased costs for low-income and middle-income communities.

**Mitigate past injustices in transportation planning.** Since the 1950s, highway expansion projects have split apart Black and Latino neighborhoods nationwide and driven up pollution in these communities.<sup>68</sup> Pete’s DOT will work with local stakeholders and nonprofits to create a list of urban communities that require additional investment to mitigate harms from past highway projects. He will encourage cities to use federal highway funds to revitalize and reconnect communities through innovative projects, including new underpass designs, highway caps, and turning underutilized bridges into complete urban streets.

## BROADBAND

In the 21st century, broadband is as critical as roads and bridges for connecting people to opportunities. As described in his [rural economy plan](#), Pete will:

**Invest \$80 billion in expanding Internet access to unserved and underserved communities.** Pete will ensure that everyone has access to high-speed broadband coverage through massive new capital investment and by fostering broadband competition. Broadband will create opportunities for rural and underserved communities to create jobs, access services like telehealth, and invest in the next generation. His administration will invest in more accurate mapping of broadband coverage and offer competitive capital grants to providers, including rural co-ops and Indian tribes, in underserved areas. Pete supports “Dig-Once” policies and will facilitate the deployment of broadband through federal rights of way and ensure that broadband conduit is included in federal transportation projects.

**Ensure that students can use the Internet to learn and succeed.** 70 percent of teachers assign homework that requires Internet, but millions of students lack Internet access at home.<sup>69</sup> To help students succeed, Pete will leverage the federal E-Rate program to increase classroom speeds and expand off-campus Internet use. He will launch a digital device fund, so students in Title I schools have easy access to information, and support digital literacy programs as he did in South Bend.

**Make broadband more affordable, especially for low-income families.** Pete will protect and strengthen the Lifeline Program, which provides vital support for telephone and Internet services to low-income communities for whom the service is too expensive. He will increase the number of participating providers and simplify the enrollment process, so eligible Americans are automatically enrolled when

<sup>67</sup> “[Smart City Challenge](#).” U.S. Department of Transportation.

<sup>68</sup> Miller, Johnny. “[Roads to Nowhere: How Infrastructure Built on American Inequality](#).” The Guardian. February 21, 2018.

Goto, Allyson. “[A Highway, Systemic Injustice, and why we Can’t Stay Silent](#).” Sierra Club Colorado. July 17, 2017.

<sup>69</sup> Rosenworcel, Jessica. “[Bridging the Homework Gap](#).” Huffington Post. June 15, 2015.

applying for other federal benefit programs. To expand access to low-cost broadband, he will require participating providers to offer broadband at an affordable rate.

## CLIMATE AND RESILIENCE

Climate change is an existential threat to all regions in the United States. Sea-level rise, floods, extreme heat, more intense hurricanes, droughts, and wildfires are putting unprecedented stress on our nation's infrastructure. As President, Pete will create a Climate Action Cabinet—including EPA, HUD, DOT, the Department of Defense, and the Department of Commerce—to improve coordination and bring a whole of government approach to the challenge of tackling climate and resilience. Pete's administration will also assess all federally funded infrastructure projects to ensure that when making these essential improvements, we build resilience to the climate challenges we face and also protect sacred sites. We must channel all of our energies into a national project that unifies Americans from every walk of life and seizes the tremendous opportunity for a new era of climate action. To reduce greenhouse gas emissions and deploy resilient and natural infrastructure solutions, Pete will:

**Repair and modernize flood protection systems in every community that needs it by 2030.** Flooding is expected to cause \$20 billion worth of damage to U.S. households *every year*.<sup>70</sup> Age, lack of necessary maintenance, and climate change are putting increased stress on flood protection assets, such as dams and levees, and placing millions of lives and trillions of dollars in property at risk.<sup>71</sup> Pete will work with Congress to create a new \$50 billion Community Flood Protection Fund administered by the Federal Emergency Management Administration (FEMA) and to reauthorize the National Levee Safety Initiative at the level of \$500 million per year. He will improve coordination between federal, state, and local governments and enable collaboration with the private sector where appropriate to manage floodplains like the Mississippi. States, cities, and towns will be able to apply for resources to adopt integrated floodplain management strategies like natural and nature-based infrastructure solutions, which can be more sustainable and cost-effective, as demonstrated in Dubuque, Iowa and Portland, Oregon, for urban flooding.<sup>72</sup> Funds will also be available to repair levees and dams and remove structures that are no longer needed.

**Prepare for rising seas with a Sea Level Defense Fund.** We must start protecting coastal infrastructure now to address rising sea levels. In 25 years, sections of Amtrak's Northeast Corridor, which serves 12 million people annually, will be inundated by tidal flooding.<sup>73</sup> Over a dozen American major hub airports are at risk from sea-level rise and storm surge.<sup>74</sup> Pete will create a \$40 billion Sea Level Defense Fund to help communities deploy both natural and hard infrastructure protections. This will include \$5 billion in direct grants for feasibility studies and pre-development and \$35 billion in loans and grants for coastal

<sup>70</sup> [“Expected Costs of Damage from Hurricane Winds and Storm-Related Flooding.”](#) Congressional Budget Office. April 2019.

<sup>71</sup> [“2017 Infrastructure Report Card: Levees.”](#) American Society of Civil Engineers. 2017.

Griggs, Troy, Gregor Aisch, and Sarah Almukhtar. [“America's Aging Dams Are in Need of Repair.”](#) The New York Times. February 23, 2017.

<sup>72</sup> Fuchs, Matthew. [“Iowa Mitigation Program Leads to \\$1.4 Billion in Flood Prevention Programs.”](#) Pew Trusts. November 19, 2019. Jongmen, Brendan and Suzanne Ozment. [“Using Nature to Prevent Disasters.”](#) World Resources Institute. March 6, 2019.

<sup>73</sup> Flavelle, Christopher and Jeremy C.F. Lin. [“Rising Waters are Drowning Amtrak's Northeast Corridor.”](#) Bloomberg Businessweek. December 20, 2018.

<sup>74</sup> [“Airports Vulnerable to Storm Surge.”](#) National Climate Assessment 2014. 2014.

defense projects. Pete will also strengthen flood protection standards to ensure that infrastructure and buildings rebuilt with FEMA dollars are safeguarded against rising seas.

**Empower communities to develop tailored solutions for resilience.** Pete will invest \$1.5 billion in creating a national network of Cooperative Extensions for Climate and Flood Resilience, based on the USDA’s successful agricultural cooperative extensions. These will be housed at land-grant universities in each state and collaborate with [Regional Resilience Hubs](#). These centers will house infrastructure and resilience experts to support city managers, county officials, and homeowners who are building resilient infrastructure. As outlined in Pete’s [plan for Indian Country](#), the Extensions and Hubs will partner with federally-recognized tribes and other Native communities to combat climate challenges faced by Tribal Nations.

**Increase reliable water supply to mitigate the effects of drought.** To confront increasingly severe periods of drought and water scarcity, especially in Western states, Pete will triple funding for the U.S. Bureau of Reclamation (USBR)’s Water Smart program.<sup>75</sup> This will catalyze innovation in wastewater reuse, stormwater capture, and other water efficiency improvement strategies. He will create a Water Reuse Advisory Council led by USBR to help communities develop and share best practices.

**Expand pre-disaster mitigation programs** for inland and coastal areas, as highlighted in Pete’s [disaster preparedness plan](#). Investments in pre-disaster and hazard mitigation return over six dollars for every federal dollar.<sup>76</sup> Pete will commit \$40 billion to expand critical federal programs such as the Building Resilient Infrastructure and Communities Program and Hazard Mitigation Grant Program, and increase technical assistance for local pre-disaster mitigation projects. His FEMA will ensure that grant recipients have the flexibility to use holistic, multi-hazard approaches for protecting people and communities, rather than being restricted to projects focused on property protection.

**Protect against wildfires.** As climate change accelerates, wildfires in states like California have increased by 800 percent, devastating communities.<sup>77</sup> Pete will recruit 5,000 firefighters and related experts across federal, state, tribal, and local agencies to keep communities safe and create a national expert working group to improve wildfire prevention strategies. He will also expand the U.S. Forest Service fleet of airplanes and helicopters, which has shrunk from 44 to 13 between 2002 and 2018.<sup>78</sup>

**Safeguard our infrastructure from digital threats.** America has experienced cyberattack attempts on dams, power plants, and the electric grid. <sup>79</sup> A successful attack on this critical infrastructure could devastate communities. Pete will create an interagency U.S. Infrastructure Cyber-Protection Taskforce—a joint team between the Department of Homeland Security and the Department of Commerce—that partners with private industry. The Taskforce will help ensure that America’s critical infrastructure at greatest risk meets robust standards, uses up-to-date secure technologies, and has cybersecurity incident response plans.

<sup>75</sup>“[WaterSMART Water and Energy Efficiency Grants](#).” Bureau of Reclamation. November 20, 2019.

<sup>76</sup>“[National Hazard Mitigation Saves: 2017 Interim Report](#).” National Institute of Building Sciences. 2017.

<sup>77</sup> Meyer, Robinson. “[California’s Wildfires are 500 Percent Larger Due to Climate Change](#).” The Atlantic. July 16, 2019.

<sup>78</sup> Gabbert, Bill. “[Air tankers to be cut by one-third in 2018](#).” Fire Aviation. February 16, 2018.

<sup>79</sup> Atherton, Kelsey. “[It’s not just elections: Russia hacked the US electrical grid](#).” Vox. March 28, 2018.

**Build a resilient electricity grid.** Our aging electricity grid is increasingly unable to meet demands. In California, millions of households lost power when utilities attempted to manage the risks presented by aging grids.<sup>80</sup> Pete will work with public agencies, utilities, and grid operators to harden the grid by requiring annual audits of risk and emergency response plans. His administration, led by the Federal Energy Regulatory Commission, will develop regulatory frameworks to modernize the grid by incentivizing distributed generation and storage and smart grid management. He will also increase clean energy deployment to create a zero emissions electricity system by 2035, as described in his [climate plan](#).

**INNOVATION**

To compete in the global economy, the United States must have best-in-class infrastructure developed with modern, secure, and climate-resilient technologies. To build the world’s most advanced infrastructure, Pete will:

**Develop smart and integrated infrastructure.** The United States should be leading the world on offering smart infrastructure technologies to our communities. Pete will establish a Digital Infrastructure Council and task every infrastructure agency with creating a digital infrastructure strategy. As shared in his [rural economy plan](#), Pete will expand the DOT’s Smart City Challenge Initiative, leverage over \$1 billion in public and private funding to develop pilot smart cities, and use smart sensor technologies and data tools to improve water quality. Deploying smart sensors and connected technologies in secure ways can also help to achieve goals like improving traffic flow by up to 25 percent.<sup>81</sup> Such projects can mean less waiting at traffic lights for drivers and safer pedestrian routes in places like Kansas City, Missouri.<sup>82</sup>

**Lead the world in safe and zero-emission autonomous vehicle technology.** Autonomous and automated vehicles can make transportation safer, cleaner, more accessible, and more efficient, while creating thousands of good jobs. Pete will encourage the safe deployment of autonomous technologies by tasking the National Highway Traffic Safety Administration with a strong federal role for regulation and oversight. He will restore the Advisory Committee on Automation in Transportation, which was terminated by the current administration, and invest in foundational artificial intelligence (AI) research to improve capabilities, focus on privacy, and ensure cybersecurity. His EPA will coordinate with municipalities to develop approaches for assessing and reducing emissions from autonomous vehicles.

**Fund innovative infrastructure research to compete and win in the global economy.** Pete wants to ensure that the United States remains the leader in research and development of new technologies for the infrastructure of the future. He will create the Advanced Research Projects Agency-Infrastructure (ARPA-I) at the Department of Transportation. Modeled on the Defense Advanced Research Projects Agency (DARPA), ARPA-I will invest \$100 million per year in R&D to create sustainable and cost-effective infrastructure solutions like road paving materials that minimize flooding. Pete will also dedicate \$5 billion to upgrading our government and national laboratories and our research institutions, which

<sup>80</sup> Penn, Ivan. “PG&E beings power shut-off for 179,000 California Customers.” New York Times. October 23, 2019.

<sup>81</sup> Mankiya, James et al. “Unlocking the potential of the internet of things.” McKinsey. June 2015.

<sup>82</sup> Turque, Billy. “Bringing the Smart City Vision to Kansas City’s Neglected East Side.” The Kansas City Star. October 1, 2018.



have a backlog of research on infrastructure maintenance needs.<sup>83</sup> These investments will produce best-in-class approaches on everything from keeping harmful chemicals from entering our water to decreasing distracted driving. His administration will offer resources to help historically underserved areas and Minority Serving Institutions, including HBCUs and tribal colleges, lead in this research.

<sup>83</sup> [“Rebuilding America’s Research Infrastructure.”](#) American Physical Society. 2019.