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Select Committee on Economic Disparity and Fairness in Growth
U.S. House of Representatives
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Memorandum

To: Members, Select Committee on Economic Disparity and Fairness in Growth

From: Select Committee Majority Staff

Subject: February 9, 2022, Select Committee Hearing entitled, "**Connecting Americans to Prosperity: How Infrastructure Can Bolster Inclusive Economic Growth"**

The Select Committee on Economic Disparity and Fairness in Growth will hold a hearing entitled "Connecting Americans to Prosperity: How Infrastructure Can Bolster Inclusive Economic Growth" on Wednesday, February 9, 2022, at 10:30 AM ET in Room 2167 of the Rayburn House Office Building. There will be one panel with the following witnesses:

- **Dr. Carlos Martín,** David M. Rubenstein Fellow, The Brookings Institution; Director of the Remodeling Futures Program (on leave), Harvard University
- **Dr. Nicol Turner Lee,** Senior Fellow in Governance Studies, Director of the Center for Technology Innovation, Co-Editor-In-Chief of TechTank, The Brookings Institution
- **Mr. Rick Wade,** Senior Vice President of Strategic Alliances and Outreach, the U.S. Chamber of Commerce
- **Ms. Eileen Higgins,** Commissioner, Miami-Dade County, District 5
- **Mr. Neal Crabtree,** Foreman, Pipeline Welder

Introduction: Why Infrastructure Matters to Inclusive Economic Growth

Investments in physical infrastructure (including roads, bridges, public transit, broadband internet, and drinking water) are critical to creating a strong and sustainable economy. Physical infrastructure inherently benefits the public at large and directly contributes to the country's economic productivity. When designed and implemented effectively, sustainably, and inclusively, physical infrastructure connects people to economic and employment opportunities, as well as critical services that significantly improve quality of life.[1]

Past major infrastructure investments expanded our country's macroeconomic capacity and performance, but not all Americans experienced such benefits. Be it logistical or discriminatory factors, infrastructure development failed to reach — and in some cases actually harmed — certain urban and rural communities. The past disparities in infrastructure investment across the country have contributed to uneven economic growth among regions and populations, especially those of color.

[1] OECD. "Sustainable Infrastructure for All."

Recent bipartisan passage of significant federal infrastructure funding presents a generational opportunity to make strategic investments to produce new and expanded paths to economic prosperity. Beyond addressing overdue infrastructure repair to ensure public safety, policymakers must consider how to build infrastructure for the 21st century that broadly distributes the expanded economic benefits it generates.

The Economic Impact of Infrastructure Investment

High-performing infrastructure supports individual household well-being, improves business competitiveness, and helps make local and regional economies prosperous. Without the infrastructure providing clean water, internet access, and effective transportation options, households, workers, and consumers are hindered from participating in the economy and living productive lives. Quality of local infrastructure factors into where businesses decide to open, how accessible they are to their workforce and customers, and whether they earn enough profit to stay open and continue employing staff.[2]

Historically, infrastructure investment has helped boost short- and long-term economic growth and employment.[3] The multiplier effect of infrastructure investments, or the increase in gross domestic product (GDP) per dollar increase in investment, is on average larger than other forms of government spending or tax cuts.[4] That multiplier effect is even larger during economic downturns, both increasing short-term demand for goods and services (hence creating jobs) and building longer-term productive capacity.[5] Some studies indicate that core forms of infrastructure,[6] such as roads, transportation, and utilities, have a larger economic impact than all other types of infrastructure.[7] Further, another study finds building renewable energy infrastructure generates significantly high multiplier effects, noting that "stabilizing climate and reversing biodiversity loss are not at odds with continuing economic advances."[8]

Infrastructure investment can also be an effective policy instrument for job creation.[9] Job opportunities from infrastructure investments are known as employment multipliers, seen in two key ways: first, from new jobs directly created in the construction, operation, and maintenance of

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[2] Weinstock, Lida R. (2021). "Infrastructure and the Economy" Congressional Research Service.
[3] Bivens, Josh. (2017). "The Potential Macroeconomic Benefits from Increasing Infrastructure Investment." Economic Policy Institute.
[4] The World Bank Group. (2022). The effectiveness of infrastructure investment as a fiscal stimulus: What we've learned."
[5] Global Infrastructure Hub. (2020). "Fiscal multiplier effect of infrastructure investment."
[6] Core infrastructure is defined as physical structures and equipment that are directly tied to producing goods and services. For more information on infrastructure typology, please see: Mallett, William J. (2018). "Infrastructure Investment and the Federal Government." Congressional Research Service.
[7] Pedro Bom and Jenny Ligthart. (2015). "What Have We Learned from Three Decades of Research on the Productivity of Public Capital?," *Journal of Economic Surveys*, vol. 28, no. 5, pp. 889-916.
[8] Batini, Nicoletta, Serio, Mario Di, Fragetta, Matteo, Melina, Giovanni, and Waldron, Anthony. (2021). "Building Back Better: How Big Are Green Spending Multipliers?" The International Monetary Fund (IMF).
[9] Bivens, Josh. (2017). "The Potential Macroeconomic Benefits from Increasing Infrastructure Investment." Economic Policy Institute.

infrastructure; and second, from new jobs created economy-wide, stemming from enhanced connectivity and improved technology made by new infrastructure. Broadband infrastructure has a particularly strong employment multiplier and can generate exponential long-term benefits, given the innovation potential and productivity gains it unlocks.[10]

Finally, multiplier effects of infrastructure investments can be amplified, or lead to additional economic activity, by ensuring that more individuals have access to economic opportunity as a result of the investment.[11] New infrastructure investments can generate broader economic participation by lowering barriers to entry for infrastructure occupations[12] – such as telecommunication line installers, water treatment plant operators, and locomotive engineers[13] – and designing forward-looking infrastructure plans that physically or virtually connect communities to economic opportunities. As individual economic prosperity and well-being increase, higher levels of productivity, innovation and sustained aggregate demand stimulate greater economic growth.[14] Furthermore, research indicates that economies grow faster and for more sustained periods when prosperity is more equally distributed within a society.[15]

History of Federal Infrastructure Policies

From 18th century road construction[16] to 19th century financing of canals, railroads, and the transcontinental telegraph,[17] the U.S. federal government has facilitated infrastructure investments that foster expanded economic growth. During the New Deal era, the federal government developed dams, reservoirs, and other infrastructure projects, creating approximately 10 million jobs across three workforce programs (Civilian Conservation Corps, Civil Works Administration, and the Works Progress Administration).[18]

For example, the Tennessee Valley Authority (TVA), a major New Deal innovation, was created to provide for the flood control and improved navigability of the Tennessee River, provide for reforestation and proper use of adjacent lands in the Tennessee Valley, as well as support the agricultural and industrial development of the valley.[19] During World War II, TVA authorized one of the country's largest hydropower construction programs, becoming the nation's largest electricity supplier by the 1950s.[20] Responding to rising fuel prices during the 1970s, the TVA

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[10] Marre, Alexander. (2020). "Bringing Broadband to Rural America."
[11] McKinsey & Company. (2021). "Our Future Lives and Livelihoods: Sustainable and Inclusive and Growing."
[12] Tomer, Adie, Kane, Joseph W., George, Caroline. (2021). "Rebuild with Purpose: An affirmative vision for 21st century American infrastructure." The Brookings Institution.
[13] Kane, Joseph E., Puentes, Robert. (2014). "Infrastructure Jobs, They're More than You Think." The Brookings Institution.
[14] Bivens, J. (2017). "The Potential Macroeconomic Benefits from Increasing Infrastructure Investment." Economic Policy Institute.
[15] Parilla, Joseph. (2017). "Opportunity for growth: How reducing barriers to economic inclusion can benefit workers, firms, and local economies." The Brookings Institution.
[16] Nicholas J. Garber, Lester A. Hoel. (2020). Traffic and Highway Engineering. Fifth Edition. University of Virginia.
[17] U.S. House Budget Committee. Hearing. (2019). "America's Infrastructure – Today's Gaps, Tomorrow's Opportunities, and the Need for Federal Investment."
[18] Britannica.com. "The New Deal.";
History.com. (2021). "Civilian Conservation Corps.";
History.com. (2019). "Works Progress Administration (WPA)."
[19] Tennessee Valley Authority. "Our History."
[20] Tennessee Valley Authority. "Our History."

authorized the development of nuclear power plants, implementing innovative cost-cutting measures.[21] Today, the TVA is the nation's largest public utility, operating 30 dams, 16 natural gas plants, 14 solar energy sites, eight coal plants, and one wind energy site.[22]

Following World War II, the creation of the Interstate Highway System (IHS) spurred significant national economic gains by efficiently connecting communities and facilitating interstate commerce.[23] One study attributes approximately 25% of the nation's productivity gains between 1950 and 1989 to increased investment in the highway system.[24] Another study estimates that without the current IHS, real GDP would be nearly 4% ($619 billion) lower, with a quarter of that loss coming from reduced international market access.[25] Despite its national economic success, the HIS did not reach many remote communities, failing to deliver economic benefits to those areas.[26] Building the IHS has also divided and, in some cases, destroyed urban neighborhoods, especially in communities of color.[27] The Jackson Ward neighborhood in Richmond, Virginia, illustrates this point. Earning the nickname, the "Harlem of the South," Jackson Ward had a thriving African American business community until 1955, when construction of I-95 paved through the neighborhood. [28] Today, the poverty rate in the neighborhood is 38.4%, over two times the poverty rate of the city of Richmond.[29]

Beginning with the U.S. Defense Department's ARPAnet in 1969, the U.S. government also facilitated the creation of the internet through a series of government-funded research ventures.[30] In 1981, the National Science Foundation (NSF) provided networking services to university computer scientists before the technology became increasingly privatized in the 1990s.[31] Through the Telecommunications Act of 1996, the federal government took the lead in expanding the physical infrastructure of the internet to facilitate broad geographic reach of internet technology to all sectors of the U.S. economy.[32]

The internet catalyzed the digital economy, which today grows at a rate over three and a half times the rate of the overall economy.[33] Broadband helps job seekers apply for jobs and access online learning and training opportunities, while businesses reap benefits from e-commerce and

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[21] Tennessee Valley Authority. "Our History."
[22] History.com. (2019). "TVA."
[23] Phelps, Hailey. (2021). "When Interstates Paved the Way: The construction of the Interstate Highway System helped develop the US Economy." Federal Reserve Bank of Richmond.
[24] Phelps, Hailey. (2021). "When Interstates Paved the Way: The construction of the Interstate Highway System helped develop the US Economy." Federal Reserve Bank of Richmond.
[25] Jaworski, Taylor, Kitchens, Carl, and Nigai, Sergey. (2020). "Highways and Globalization." National Bureau of Economic Research.
[26] For example, the I-69 system does not reach communities in South Texas.
[27] Phelps, Hailey. (2021). "When Interstates Paved the Way: The construction of the Interstate Highway System helped develop the US Economy." Federal Reserve Bank of Richmond.
[28] Johnny Miller. (2018). "Roads to Nowhere: How Infrastructure Built American Inequality." The Guardian.
[29] US Census Bureau. American Community Survey-2019: ACS 5-Year Estimates. Table S1701. Accessed on February 5, 2022.
[30] National Science Foundation. "A brief history of NSF and the Internet."
[31] National Science Foundation. "A brief history of NSF and the Internet."
[32] Campbell, Sophia, Castro, Jimena Ruiz, and Wessel, David. (2021). "The Benefits and Costs of Broadband Expansion." The Brookings Institution.
[33] Specifically, the Bureau of Economic Analysis finds that, "In the 2005-2019 period, the digital economy's real value added (its inflation-adjusted contribution to U.S. GDP) saw average annual growth of 6.5 percent, compared with the 1.8 percent growth of the total economy." For the definition of digital economy, please see: https://www.bea.gov/data/special-topics/digital-economy

e-recruiting. The impacts have been particularly powerful in rural areas, where broadband access and adoption is associated with higher rates of new business formation, home values, and population and job growth. Yet, because of historically higher costs of broadband deployment driven by low population density, long distances to existing infrastructure, and the lower average incomes of the residents, access to broadband technology remains much lower in rural areas than in other parts of the country.[34]

The Current State of Infrastructure in the United States

Federal government investment in infrastructure has steadily declined since the 1970s—from close to 1.2% of GDP to less than 0.7% of GDP in 2019.[35] As a result, in early 2021, the American Society of Civil Engineers (ASCE) gave U.S. infrastructure an overall score of C-, classifying it as "poor" and "at risk."[36] The ASCE report finds that 43% of public roadways are in poor or mediocre condition, 65% of counties have average connection speeds lower than the Federal Communications Commission's (FCC) definition of broadband, and 7.5% of the nation's bridges - a total of 46,154 - are considered structurally deficient.[37] The ASCE projects that failing to repair these deficiencies will reduce GDP by $10.3 trillion by 2039, including an approximate reduction of $2.4 trillion of exports and $1.8 trillion of exports.[38]

Finally, failing public infrastructure across the U.S. has perpetuated economic disparities in rural and urban areas and those with significant populations of color, hindering their access to economic opportunity and often posing direct threats to health.[39] Black, Latino, and Native American people are more likely to live in homes lacking clean drinking water or complete plumbing.[40] Communities of color also have fewer transit options and experience longer commutes to and from jobs.[41]

Connectivity gaps, limited digital skills, and a lack of affordable options keeps broadband out of reach for millions of households in rural and urban areas.[42] One study finds that 43% of adults with incomes below $30,000 report not having broadband services at home, compared to only 7% of those earning $100,000 or more.[43] During the COVID-19 pandemic, this digital divide, including along income lines, resulted in 15 million students without broadband internet,

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[34] Marre, Alexander. (2020). "Bringing Broadband to Rural America." Federal Reserve Bank of Richmond.;
Grant, Alison, Tyner, Wallace, and DeBoer. (2018). "Estimation of the Net Benefits of Indiana Statewide Adoption of Rural Broadband.";
Harold. (2019). "Solving the Rural Broadband Equation at the Local Level." State and Local Government Review 51(4): 242-249.
[35] Fair, Ray C. (2021). "U.S. Infrastructure from 1929 to 2019."
[36] Escobari, Marcela, Gandhi, Dhruv, and Strauss, Sebastian. (2021). "How federal infrastructure investment can put America to work." The Brookings Institution.
[37] American Society of Civil Engineers. (2021). "Report Card for America's Infrastructure."
[38] American Society of Civil Engineers. (2021). "Failure to Act: Economic Impacts of Status Quo Investment Across Infrastructure Systems."
[39] Wade, Rick. (2022). "Infrastructure Inclusion: A Tie That Can Bind America Together." US Chamber of Commerce.
[40] US Water Alliance. "Closing the Water Access Gap in the United States."
[41] The Urban Institute (2020). "The Unequal Commute: Examining inequities in four metro areas' transportation systems."
[42] Tomer, Adie, Kane, Joseph W., George, Caroline. (2021). "Rebuild with Purpose: An affirmative vision for 21st century American infrastructure." The Brookings Institution.
[43] Pew Research Center (2021). "Digital divide persists even as Americans with lower incomes make gains in tech adoption."

exacerbating a "homework gap" between school age children with and without high-speed internet at home.[44]

The Future of Infrastructure in the United States

The $1.2 trillion bipartisan Infrastructure Investment and Jobs Act (IIJA) of 2021 was designed to rehabilitate and modernize existing U.S. infrastructure and build new, resilient infrastructure, helping support economic recovery from the COVID-19 pandemic. The legislation provides $550 billion over five years for new investments, including $110 billion for roads, bridges, and major projects, $66 billion for passenger and freight rail, and $11 billion for transportation safety. The IIJA also marks the largest investment in clean energy technology and climate adaptation and resilience, including $7.5 billion for electric vehicle charging stations and another $7.5 billion for clean school buses and ferries. Finally, the legislation aims to close inequities in access to economic opportunity, including $65 billion for broadband, $39 billion for public transit, and $1 billion for projects to remove barriers to opportunity created by past infrastructure projects.

Economists project powerful economic impacts over the next five years:

- Creating 772,400 new jobs per year,[45] including an average of 200,000 jobs just from transportation-related funding by 2027.[46]
- Increasing average disposable income by $232 per household per year from additional transportation infrastructure investment for highways and public transit.[47]
- Every $1 invested in highways and public transit will generate $3.60 and $3.40 in economic activity, respectively.[48]
- Lower inflationary pressures.[49]

To maximize potential gains and ensure economic growth is broadly felt and fairly distributed, policymakers will need to consider forward-looking and economically inclusive solutions. For instance, the projected increase in demand in infrastructure workforce presents an opportunity to implement inclusive recruitment and training practices as well as labor standards and worker compensations that are consistent with a middle-class lifestyle.

Examples of Innovative Infrastructure Policies that Bolster Inclusive Growth

Cities, states, and other countries are pioneering ideas to build smart new 21st century infrastructure that advance inclusive economic growth. The case studies below demonstrate strategies implemented across different levels of government:

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[44] Campbell, Sophia, Castro, Jimena Ruiz, and Wessel, David. (2021). "The Benefits and Costs of Broadband Expansion." The Brookings Institution.
[45] Hersh, Adam S. (2021). "'Build Back Better' agenda will ensure strong, stable recovery in coming years." Economic Policy Institute.
[46] IHS Markit. (2021). "Economic Impacts of Transportation Infrastructure."
[47] IHS Markit. (2021). "Economic Impacts of Transportation Infrastructure."
[48] IHS Markit. (2021). "Economic Impacts of Transportation Infrastructure."
[49] American Action Forum. (2021). Infrastructure and Inflation.

Innovative Use of Traditional Transportation Technologies: Transit-oriented development (TOD) is a development design concept that aims to create compact, pedestrian-oriented, mixed-use communities centered around high-quality transit systems.[50] One promising project in this space is Miami-Dade County's Strategic Miami Area Rapid Transit (SMART) Plan, which aims to address regional traffic congestion and provide alternative transportation choices to South Floridians by connecting residents to economic opportunity through mass transit. The plan proposes six new rapid transit corridors zoned for dense development and seamlessly integrated with the County's existing Metrorail system.

In a county larger than the state of Delaware with a population of more than 2.7 million, commutes can be particularly arduous for low-income residents, particularly communities of color, as they often cannot live close to existing economic hubs given high housing prices. The SMART Plan seeks to address this issue by providing residents throughout Miami-Dade County with affordable, accessible, and reliable transportation options while reducing dependence on single-rider vehicles. For example, the SMART Plan's North Corridor will connect the City of Miami Gardens, a community whose population is more than 97% people of color, to the rest of the Metrorail system, making it significantly easier for residents to compete for jobs outside of their neighborhoods.

The South Corridor's Bus Rapid Transit (BRT) service, a $300 million project funded in roughly equal parts by the Federal Transit Administration (FTA), Florida Department of Transportation, and Miami-Dade County People's Transportation Plan (PTP), will provide a similar benefit to the county's most southern municipality, Florida City, where the poverty level exceeds 40%. Currently, a Florida City resident can spend over an hour simply connecting to the Metrorail system. Once completed, the BRT service will reduce commute times by over 50% and provide a faster ride to some of Miami-Dade's fastest growing communities.

Miami-Dade's use of Transit-oriented Development will spur new economic hubs along mass transit corridors. The County is partnering with the private sector to ensure that a significant portion of the housing units constructed along these corridors are reserved for workforce and affordable units, which will help to reverse the trend of workers being priced-out of the neighborhoods they help build.

Innovations of the Blue Lake Rancheria Tribe: The Blue Lake Rancheria is a federally recognized tribal government leading their region in strategic implementation of climate resiliency and mitigation plans.[51] Among their many successes, the Blue Lake Rancheria developed distributed energy resources onsite in 2013, installed electric vehicle charging infrastructure in 2014, and completed a low-carbon community microgrid in 2017. This low carbon community microgrid project uses solar electric power generation for providing on-site power as well as demonstrated a resilient system for use during critical emergencies. There are also economic and environmental benefits: the microgrid project alone increased local

[50] Institute for Transportation and Development Policy. "What is TOD?"
[51] The White House Office of the Press Secretary. (2014). "Fact Sheet: 16 US Communities Recognized as climate Action Champions for Leadership on Climate Change."

employment by 10% and added 1 MWh of battery storage to the community's microgrid in 2019, supporting both the tribe and surrounding communities.[52]

Climate and Environmental Resiliency: The State of California has one of the largest Cap-and-Trade programs in the world, helping the state meet ambitious goals for greenhouse gas reduction. Program revenues support the Greenhouse Gas Reduction Fund, which has helped the state government implement over 542,000 individual projects, fund over 740 transit agency projects that added or expanded transit service, install over 123,000 home energy efficiency measures, and issue over 399,000 rebates for zero emission and plug-in hybrid vehicles.[53] One program supported by this initiative is Transformative Climate Communities (TCC), which funds community-led development and infrastructure projects that achieve major environmental, health, and economic benefits in California's most disadvantaged communities. TCC helped the City of Fresno, which has long struggled with environmental, health, and economic disparities, develop new electric vehicle and bicycle sharing programs, install solar systems on over 200 homes, develop 56 affordable homes, construct 17 acres of parks and community gardens, and increase frequency of the local electric bus system, among other successes.[54]

Smart Cities and Smart Regions: Since the early 2000s, local and national governments around the world have implemented smart city initiatives to help foster a more resilient and sustainable future. According to the OECD and the World Bank, South Korea is a leading example of adopting the smart city concept at the local and national levels.[55] In the early 2000s, the capital city of Seoul focused on smart mobility to address traffic congestion, reversing the city's trend from car use towards widespread public transit ridership in part through introduction of the Seoul Smart Mobility Reform program.[56] To address waste management and sustainable energy, Seoul implemented the Gangnam Resource Recovery Facility to transform waste into energy, reduce landfill space and provide heating to nearby neighborhoods.[57] Seoul has also engaged the public through open data initiatives to develop innovative solutions to urban challenges.[58] Lastly, information and communication technologies have helped improve quality of life by detecting water resource issues, flood prevention, and warning of urban heat during the summer months.[59] With these smart city initiatives, Seoul has become innovative, resilient, and inclusive through better management of core city functions.

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[52] Blue Lake Rancheria. (2021). "Sustainability and Resilience."
[53] Turner, Melanie. (2021)."Record Year for California Climate Investments: $3.1 Billion Invested in 2020 Across California." California Air Resources Board.
[54] State of California. "Transformative Climate Communities: How does the TCC program Support Community-Led Transformation?"
[55] OECD. (2021). "Measuring Smart City Performance in COVID-19 Times: Lessons from Korea and OECD Countries."; Myunggu Kang. (2020). "How is Seoul, Korea Transforming into a Smart City?" World Bank Blogs.
[56] Myunggu Kang. (2020)."How is Seoul, Korea Transforming into a Smart City?" World Bank Blogs.
[57] Myunggu Kang. (2020)."How is Seoul, Korea Transforming into a Smart City?" World Bank Blogs.
[58] Myunggu Kang. (2020)."How is Seoul, Korea Transforming into a Smart City?" World Bank Blogs.
[59] Myunggu Kang. (2020)."How is Seoul, Korea Transforming into a Smart City?" World Bank Blogs.