



SUSTAINING CAPITALISM

A series focused on nonpartisan reasoned solutions in the nation's interest to the central challenges we face in order to provide prosperity for all Americans.

Strategic Investment in Infrastructure: Priorities for Implementation

This Solutions Brief offers a three-year progress report on the \$1.2 trillion Infrastructure Investment and Jobs Act (IIJA), updating our Solutions Brief [Capitalizing on Infrastructure: Priorities for Implementing Historic Federal Investments](#) issued last year. It also covers certain provisions in the CHIPS and Science Act (CHIPS) and provides recommendations to help ensure that these historic federal investments in the nation's infrastructure and manufacturing capabilities achieve their goals.

Key Insights

- The complexity of IIJA funding—375 programs under 13 departments and agencies—often requires close collaboration between federal officials and state and local public and private stakeholders responsible for implementing project regulations and funding.
- Permitting challenges remain a significant obstacle to project delivery, for instance with clean energy developers citing multiyear delays in getting projects online after completing construction.¹ At the beginning of 2024, more than 11,000 solar, wind, and battery storage projects across the nation, together capable of powering tens of millions of homes, were still waiting to connect to the power grid.²
- Labor shortages remain an obstacle to timely, cost-effective project implementation. Public-private collaboration can build the trained labor force for infrastructure projects. When building out training programs, local workforce needs must be taken into close consideration.

- Transparency for all stakeholders develops best practices, enables more accurate cost assessment, prevents abuse of funds, and increases public awareness of investment. Increasing public awareness of investment already underway is crucial to building public trust and growing confidence that these historic investments will deliver the promised results.
- Additional federal support is scheduled to run out once new funding streams ending primarily in 2026 and 2027 are spent down. Many programs are also subject to annual appropriations. Because Congress has not allocated additional funding to the Affordable Connectivity Program (ACP)—which provided 23 million households with subsidized broadband access—the program has ended.³
- By 2030, 20% of advanced chips will be made in the US.⁴ The rapid growth in this emerging field in under a decade requires a highly skilled tech workforce.

Recommendations

These recommendations are designed to help states and local governments deliver the most cost-effective projects, procure the materials and labor needed for project delivery, mitigate supply chain risks, and identify areas for public-private collaboration.

1 Increase collaboration with state and local governments and the private sector

- Continue to pursue new approaches to federal contracting, applying rigorous cost-benefit analysis. To assist state and local leadership in expediting funding, convene local stakeholders, with technical expertise from federal agencies.
- Pursue public-private partnerships where appropriate, including using collaborative contracting methods to leverage private sector enterprise, deliver projects for the lowest cost, and leverage available funding.
- Clearly designate owners of all project initiatives to promote quality of delivery by the accountable agency or other body.
- Encourage strategic, long-term investment by both the public and private sectors to ensure that funding continues after IIJA and CHIPS funding is exhausted.
- The federal government should consolidate competitive grant applications where possible, focusing on increased accessibility for small businesses.
- Congress should allocate funding to revive the Affordable Connectivity Program (ACP) to ensure the over 23 million low-income households once enrolled in the program still enjoy broadband service.

2 Address regulatory paralysis through modernization and streamlining

- Streamline the regulatory approval process to prevent construction and grid connectivity delays and consider giving states—rather than localities—authority to approve large renewable energy projects.

- Improve coordination between the federal government, states, and localities to speed project delivery; where appropriate, grant greater decision-making authority to states.
- Agencies should invest in hiring and retention of staff skilled in National Environmental Policy Act (NEPA) compliance to improve the efficiency of the NEPA process.

3 Address cost and supply chain issues

- The administration should continue to allow agencies to waive the “Buy American” provisions for construction inputs that may be delayed by these provisions. If imports are used because of concerns over price, their use should align with trade agreements and policy.
- Particularly in the event of shortages, federal trade negotiators should work with trading partners to reach agreements that allow the US to reduce tariffs on key construction inputs.
- Public and private leaders at all levels should work together to determine how best to direct infrastructure funding toward improving supply chains.
- Project designers should coordinate between different types of infrastructure projects in the same location, taking advantage of synergies and addressing potential conflicts early.

4 Transparency for all stakeholders

- The federal government should continue to educate state and local agencies on federal transparency and reporting requirements.
- States should invest infrastructure funds while offering transparency in how federal funding is being used. Similarly, the federal government should continue to update the Build.gov and Invest.gov sites with timeline information on where and how money is being spent.
- Funding opportunities, along with guidance on the application process, should be widely publicized to raise awareness for small businesses of available opportunities.

5 Build out the workforce

- All stakeholders should collaborate on training the workforce for IJJA and CHIPS projects, including through registered apprenticeships. State and local governments should use IJJA program funding that offers support for these efforts.
- To train a workforce skilled in semiconductor production, the public and private sector should collaborate on the recruitment of young people into this field, as well as the reskilling of the current workforce, to fill high-demand jobs at all levels, from manufacturing to engineering.
- In establishing training programs, local workforce needs must be taken into close consideration, especially for roles requiring two-year degrees and certification programs.

- Identify and recognize occupational licenses across state lines in reciprocity agreements for key construction and civil engineering occupations where location has little impact on job substance.
- Congress should enact immigration reform to boost the workforce in skilled trades, construction, and engineering.

Structure and Progress of the IIJA

The IIJA includes \$1.2 trillion in investments, reauthorizing \$650 billion in existing programs and adding \$550 billion in new spending through FY 2026.⁵ The funding is sourced under three categories: the preexisting Highway Trust Fund, essentially given to the Department of Transportation (DOT) to spend over the five years; general funds appropriated by regular appropriations bills; and supplemental appropriations bills that Congress enacts.⁶ The IIJA distributes federal funds through both formula grants to states, often based on population and state size, and competitive grants for which localities can apply directly.

Funding under the bill is expansive in its reach and addresses longstanding infrastructure priorities in roadways and bridges, public transportation, and aviation, as well as the needs of a 21st-century economy and society, such as expanded broadband, a modernized energy grid, and environmental remediation.

The IIJA includes 375 programs—including 125 new programs—under 13 departments and agencies. Overall, formula spending is moving at a steady pace within each of the bill's sectors, which is expected as the law mandates exact spending amounts and a set cadence under these programs.⁷ Many competitive grants are moving more slowly, as these programs require federal staff to annually review processes, publish notice of funding opportunities (NOFOs), and conduct application reviews. In addition, as a general rule, new programs can take longer to disperse funds, particularly if they require pre-award implementation through a notice-and-comment rulemaking process on the program itself.

The administration's main hub for tracking IIJA implementation, Build.gov, shows that agencies have announced or distributed approximately \$481 billion for over 60,000 projects through September 2024. Three years into the five-year spending bill, approximately 58% of the total IIJA funding has been announced, with the majority of sectors standing at, near, or significantly above the three-fifths mark. A more detailed examination of projects and awards to date can be found at Invest.gov, which offers a comprehensive list of projects across all sectors.

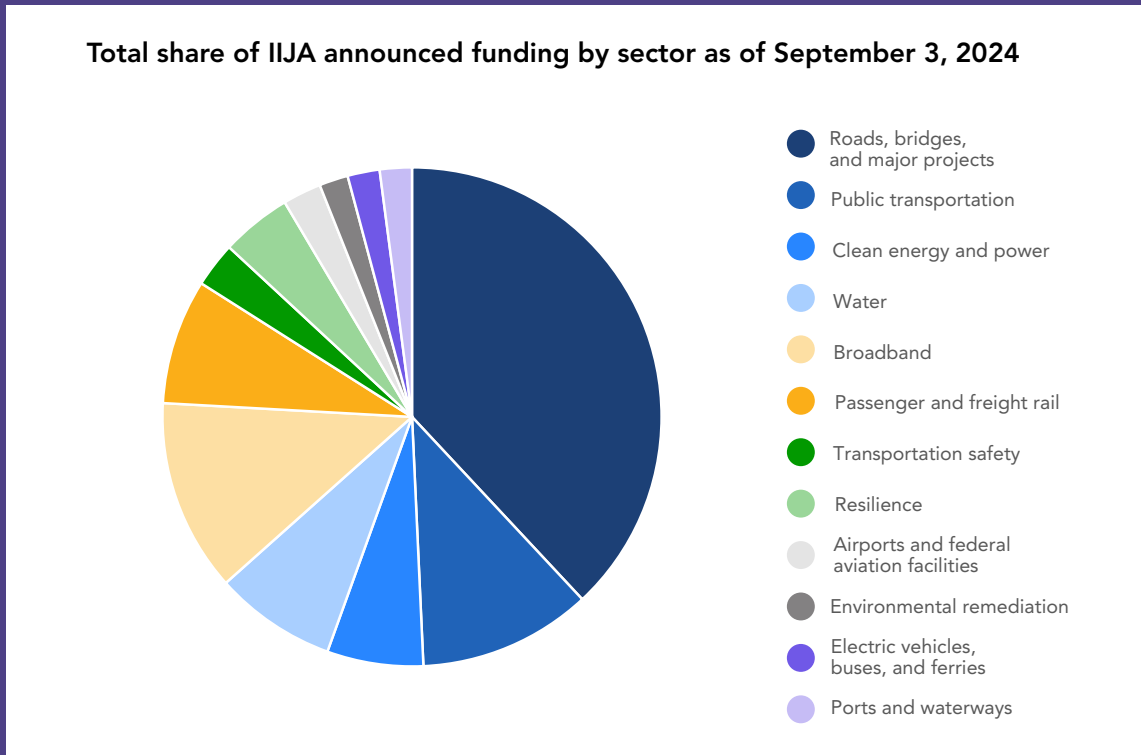
Obstacles to implementation, including permitting challenges, persistent inflation, workforce shortages, supply chain challenges, and a lack of clear accountability, pose risks to a wide range of sectors. For instance, many environmental goals in the IIJA depend on a high-quality electric grid. Electric vehicles need reliable charging, which becomes more challenging when new renewable energy projects cannot be connected to the grid because of permitting delays. Similarly, permitting remains an obstacle to broadband deployment. Without broadband connectivity, either due to residing

in rural regions or high cost, millions of Americans are at risk of falling behind in a 21st-century society.

A further risk involves running out of funding before projects are completed. The risk is heightened as projects are taking longer and costing more than anticipated—in large measure because of the other risks identified above. Solving this challenge requires a multifaceted, multilayered, and intergovernmental approach, which is too often not present even in addressing the largest and most significant projects. As money for projects runs out in later years because of higher costs, it will be essential to think seriously about identifying new sources of funding for these projects—or risk having spent large sums of money to little purpose and with diminished effectiveness. A follow-on infrastructure bill in Congress is one possibility; other possibilities include increased state funding, greater use of public-private partnerships, and continued efforts at driving cost reductions during each of the planning, construction, and implementation phases of a project.

IIJA Announced Funding	Total IIJA Funding (in billions)	Funding Announced (in billions)	Percentage of Funding Announced
Roads, bridges, and major projects	\$326	\$183	56%
Public transportation	\$83	\$54	65%
Clean energy and power	\$75	\$30	40%
Water	\$64	\$38	59%
Broadband	\$64	\$60	94%
Passenger and freight rail	\$63	\$39	62%
Transportation safety	\$38	\$14	37%
Resilience	\$38	\$22	58%
Airports and federal aviation facilities	\$25	\$12	48%
Environmental remediation	\$22	\$9	41%
Electric vehicles, buses, and ferries	\$19	\$10	53%
Ports and waterways	\$17	\$10	59%
Total	\$834	\$481	58%

Figure 2



Sources: The White House, A Guidebook to the Bipartisan Infrastructure Law; Investing in America, Invest.gov

CHIPS Structure and Progress

Congress passed the CHIPS and Science Act of 2022 (CHIPS) to incentivize the domestic production of semiconductors and support applied scientific research in the US. CHIPS authorized and appropriated roughly \$280 billion in new spending through FY2027. This spending falls into two principal categories. First is the authorization of \$174 billion for R&D across both the public and private sectors; science, technology, engineering, and math (STEM) education; and domestic semiconductor workforce development. Second, the Department of Commerce (DOC) is overseeing \$50 billion in investments primarily in basic and applied research and semiconductor manufacturing (with additional funding for the Department of Defense).⁸

According to the White House, dozens of companies have committed over \$395 billion in total semiconductor investments across the country.⁹ These investments have been spurred in large part by the DOC's CHIPS Incentives program, which has signed preliminary agreements with 15 companies across 15 states to provide over \$30 billion in direct funding and roughly \$25 billion in loans for semiconductor manufacturing projects to support the private investment.

Of the \$50 billion appropriated by CHIPS to the DOC, \$39 billion is dedicated to onshore semiconductor manufacturing through incentives. The department began accepting applications in June 2023 and is on track to allocate the remaining funding by the end of 2024.¹⁰ The administration announced in April that it had provided Samsung with up to

\$6.4 billion in grants to expand two plants in central Texas. Intel, once the semiconductor industry's leader, now lags Taiwan Semiconductor Manufacturing (TSMC) in terms of chip density, cost, and power efficiency.¹¹ However, Intel can build one new fabrication facility per year more cheaply than TSMC, thanks to subsidies and co-investors. Still, as the cost of building fabrication facilities keeps rising, it will be important to encourage greater private investment rather than a continued reliance on subsidies.

In July, the DOC issued a Notice of Intent (NOI) to open a competition for new R&D activities that will establish and accelerate domestic capacity for semiconductor advanced packaging.¹² The administration anticipates up to \$1.6 billion in funding innovation across five key R&D areas as outlined in the vision for the National Advanced Packaging Manufacturing Program.¹³ These awards are expected to leverage private sector investment from industry to academia.

Before CHIPS, the US did not produce any advanced chips.¹⁴ Two years after enactment, the US has attracted investment from all five of the world's leading-edge logic, memory, and advanced packaging providers—no other economy has more than two. According to the administration, these fabs will enable the US to produce nearly 30% of the global supply of leading-edge chips by 2032. This rapid increase in production will require a skilled domestic semiconductor workforce. The administration has launched nine Investing in America Workforce Hubs across the country to develop training programs for growing local industry. In April, President Biden announced a preliminary agreement with Micron Technology, investing \$6.1 billion to grow the semiconductor industry and designating the region of Upstate New York as a National Workforce Hub.¹⁵ The budget includes \$200 million to establish new workforce development centers in the region to prepare New Yorkers with the skills needed for the up to 50,000 direct and indirect jobs the project is expected to create statewide.¹⁶

Economic impact

The IIJA and CHIPS together represent historic federal investment in the nation's infrastructure. While the IIJA is structured primarily as direct contract and grant funding, CHIPS is designed to incentivize private sector investment as well as funding from state and local agencies.

Under these bills, the US has launched an industrial policy approach to rebuilding and upgrading the nation's infrastructure and onshoring manufacturing for 21st-century technology. Yet along with this, a plan for long-term, strategic investment is essential for maintaining progress in these areas once federal assistance is exhausted, primarily once new funding streams ending in FY2026 and 2027 run out. State and local governments, as well as companies, should act now to establish long-term business models for currently subsidized projects. CHIPS investments have the catalytic potential to spur economic progress and broad-based growth in regions across the US.¹⁷

Challenges to Implementation

Public-private coordination

Infrastructure projects are highly complex, requiring decision-makers to closely collaborate with a wide breadth of stakeholders. For project implementation to run smoothly with minimal costly delays, government must be able to coordinate with private sector stakeholders, and all levels of government must be able to communicate effectively to minimize unnecessary delays.

Community engagement is an essential component of any infrastructure project. Planning for successful projects must involve collaboration between local leadership and community stakeholders to ensure that the needs of the community are being met. Working with community partners, such as nonprofits and school boards, can help streamline feedback received by local government as well as help decision-makers better understand local challenges to implementation.¹⁸ Factors that can slow project delivery, such as barriers to employment, can be better addressed with the involvement of community partners.

Cooperative development models such as Community Benefit Agreements (CBAs) can benefit both local and state government as well as community groups.¹⁹ CBAs are legal agreements between community groups and developers, stipulating the benefits a developer agrees to implement in exchange for community support for a project. Community benefits can include commitments to hire locally from the community and workforce training initiatives, while developers enjoy reduced risk around issues such as filing for zoning approvals.

A 2020 report by the Congressional Budget Office (CBO) found that public-private partnerships have accounted for only 1-3% of spending for highway, transit, and water infrastructure since 1990.²⁰ Traditional project models feature private firms acting as contractors for a single stage of the project life cycle while state and local governments hold the bulk of responsibility. In public-private partnership models, the private sector is responsible for multiple stages of a project, such as designing, building, and financing, transferring greater risk to the private sector. This transfer of risk—from cost overruns to construction delays—offers incentives for that partner to be more efficient. Private financiers may choose to limit their risk by opting to receive repayment directly from state and local governments rather than from riskier sources such as tolls. CBO found that in the decade leading up to the report, 44% of private financing was to be repaid directly by governments, compared with 17% in the two decades prior.

Alternative project delivery models put these time- and cost-saving ideas into practice.²¹ In July 2023, Ohio Governor Mike DeWine and Kentucky Governor Andy Beshear announced that Walsh Kokosing had been awarded the design-build contract for the \$3.6 billion Brent Spence Bridge Corridor Project,²² designed to improve approximately eight miles of Interstates 71 and 75 through Kentucky and Ohio, including the addition of a new companion bridge to the west of the existing Brent Spence Bridge. The original

design of the new bridge in 2012 called for a width of 172 feet. However, the project team conducted a value engineering study, reducing the width in the current design to 107 feet—a reduction of almost 40%.²³ This refinement, along with the use of retaining walls throughout the corridor, resulted in a 95% reduction in residential relocations in Kentucky.

Administrative challenges and permitting

One of the most time-consuming processes of infrastructure projects is environmental review under the National Environmental Policy Act (NEPA) of 1970. Under NEPA, an environmental assessment (EA) or environmental impact statement (EIS) is required for many projects involving a federal permit. A review by the Council on Environmental Quality (CEQ) found that across all federal agencies, the average EIS completion time was 4.5 years.²⁴ Limited agency capacity to process lengthy environmental reviews risks burdensome delays. Agencies should invest in hiring and retaining staff skilled in NEPA compliance to improve the efficiency of the NEPA process.

On May 1, CEQ finalized Phase 2 reforms to the NEPA process. The new rule aims to broaden EIS to consider climate change and cumulative environmental effects.²⁵ The rule also mandates public participation early in the decision-making process in an effort to improve transparency and community involvement.²⁶ Critics of the revised rule argue that the new requirements will complicate rather than streamline the permitting process. The National Rural Electric Cooperative Association (NRECA) CEO said CEQ's rule will delay key infrastructure projects by prolonging and complicating environmental reviews while increasing litigation risk.²⁷ The American Gas Association expressed concern that delays caused by the new rule would jeopardize US energy and national security and undermine investment in long-term energy projects.²⁸

There is bipartisan agreement in Congress on the need for more comprehensive permitting reform. In July, Senators Joe Manchin (I-WV) and John Barrasso (R-WY) released the *Energy Permitting Reform Act of 2024*.²⁹ *The legislation aims to accelerate the permitting process of critical energy and mineral projects of all types across the US. Industry leaders have expressed support for the legislation.*³⁰ The American Chemistry Council endorsed the bill, noting that it would expedite permitting for all types of federal authorizations for energy and mineral projects “all while strongly retaining important environmental and sustainability safeguards, and building out policies that will advance America’s economic and energy innovation goals and support industry’s efforts for a lower emissions future.”³¹ Beyond this, it will also be important to examine other federal regulations to be sure they are not serving as a barrier to quick implementation of needed infrastructure projects.

Transparency for all stakeholders

Transparency for all stakeholders is critical to ensure that the nation can best benefit from heightened investment. Accurate, accessible information on infrastructure spending is useful for collecting best practices and assessing costs, preventing abuse of funds, and increasing public awareness of investment benefits. Federal officials should leverage the Build.gov site along with the Bipartisan Infrastructure Law Guidebook as resources for program descriptions so that all stakeholders are aware of grant opportunities. Further, the government should educate state and local agencies on federal transparency and

reporting requirements and encourage states to build out project databases that reflect federal funds in use by project.

Increasing public awareness of investment already underway is crucial to building public trust and confidence in this historic investment, and future investment is dependent on that trust. To deliver clarity to the public on how these funds are being spent, government officials at all levels should widely publicize the Invest.org site, which offers a detailed look at the projects and awards to date, including an interactive map. Because long-term, strategic investment from both the public and private sectors is essential to the nation's infrastructure, this level of public involvement is crucial.

Efforts should be made to ensure that small businesses and local governments are aware of available funding. Smaller organizations lack the resources and personnel needed to stay on top of grant opportunities and apply for funding. Funding opportunities and federal guidance on the application process should be widely publicized so that small businesses and regions most in need of this investment can receive it. In April, the CHIPS program issued a NOFO "to seek applications from eligible small businesses to explore the technical merit or feasibility of an innovative idea or technology for developing a viable product or service for introduction in the commercial microelectronics marketplace."³² Opportunities targeting small businesses are only worthwhile if they are accessible.

Another major barrier to small businesses is gaining access to private equity capital investors. In May, DOT's Office of Small and Disadvantaged Business Utilization (OSDBU) launched the Connect to Capital platform as a component of a new comprehensive Access to Capital Initiative to help small businesses.³³

Address cost and supply chain challenges

Higher construction costs reduce what can be bought with money allocated under the IIJA, diminishing the value of transportation investment. An assessment by DOT found that increases in highway construction costs could reduce IIJA funding allocated to transportation up to 40% over the next five years.³⁴ This assessment assumes that construction costs continue to rise at their current rate using the average annual growth from the previous two years (2021 and 2022) under what is considered a High Inflation Scenario. A Modest Inflation Scenario—assuming growth in construction costs is equal to the average annual growth in 2019 and 2021—could lead to a 31% reduction. Increases in the price of crude oil, used to produce asphalt, have been a large contributor to highway construction cost increases. While US crude oil prices have fallen significantly since prices rose to \$114.84 per barrel in June 2022, the second-highest price per barrel on record, this remains a factor to consider.³⁵

Supply chain challenges also continue to be a major obstacle in the timely, cost-effective delivery of infrastructure projects. These challenges in turn cause materials prices to rise, driving overall project costs higher and presenting challenges to implementation. The National Association of Manufacturers (NAM) in April in response to a Request for Comment by the United States Trade Representative (USTR) suggested that US manufacturers and workers undertake a proactive and competitive trade and investment policy.³⁶ The group noted the importance of policy that opens markets, eliminates

barriers, and enables the sourcing of necessary inputs and opportunities for inbound and outbound investment.

At the Rural Telecom Industry Meeting & Expo (RTIME) in February, Secretary of Commerce Gina Raimondo lamented supply chain concerns presenting challenges to broadband expansion in rural areas, citing the Build America Buy America Act as a potential obstacle.³⁷ Buy America provisions require construction materials to be produced in the US to receive federal funding. While prioritizing US-made materials and components is important, doing so threatens to raise project costs, reducing the value of federal investments. The administration should extend the waiver of Buy America provisions for construction inputs, at least in markets where limited suppliers can meet the domestic content threshold or where suppliers can only do so with significant delays.³⁸ If imports are used because of concerns over price, their use should align with trade agreements and policy.

Growing the workforce

Unprecedented investment in the nation's infrastructure—as well as the building out of domestic semiconductor manufacturing capacity—requires a highly equipped workforce. Unfilled job openings in the construction sector in particular threaten the successful implementation of projects and drive up costs. As of July 2024, 8.26 million people were employed in construction, an all-time high and up from 7.587 million in January 2022.³⁹ However, job openings in the construction sector show that as of August 2024, 370,000 positions remain unfilled.⁴⁰

Public-private collaboration can grow the trained labor force for infrastructure projects. When building out training programs, local workforce needs must be taken into close consideration. Community colleges and trade schools should work alongside local industry leaders to better design curricula suited for job openings in construction and manufacturing. This critical step ensures that local communities are developing the workforces needed for current and future projects.

Because federal funding for workforce development has historically flowed through the Department of Labor rather than the several agencies that include workforce development opportunities under the IIJA, many local and state workforce training entities may be unaware of this opportunity.⁴¹ Over 70% of the funding allowing workforce development activities flows through DOT.⁴² Most of this funding will go directly to states through formula grants, making relationships between state transportation departments—and other key agencies—and training entities of utmost importance.

States and localities should make use of the funding for workforce training in the IIJA. Workforce Investment Boards can leverage funding from the Workforce Innovation and Opportunity Act (WIOA) to further extend IIJA funding. In Syracuse, New York, Syracuse Build offers a suite of training programs to help residents gain access to preapprenticeship programs and credentials in high-demand sectors.⁴³ The partnership between nonprofit workforce convener CNY Works and economic development organization CenterState CEO convenes local government, anchor institutions, union apprenticeship programs, and construction firms into a coordinated network of training partners. In Louisville, workforce development board KentuckianaWorks partners with the Louisville

Urban League and the Kentucky Education and Workforce Development Cabinet to create Kentuckiana Builds, a six-week construction training program in which participants earn three national credentials.⁴⁴

Governors in several states have issued executive orders and directives that allocate a percentage of IIJA funding for workforce development or promote the use of Project Labor Agreements. Most recently, in April, Michigan Governor Gretchen Whitmer signed an executive directive calling for a statewide strategy that creates “clear pathways for target occupations, skill sets, and priority populations.”⁴⁵ The directive also funds the training of 5,000 new infrastructure workers over the next six years by dedicating a portion of the total federal funding received for each infrastructure project to workforce development initiatives. States should also recognize occupational licenses across state lines in reciprocity agreements for key construction or civil engineering occupations where location has little impact on job substance and review other areas where they may be able to streamline requirements.

By 2030, 20% of advanced chips will be made in the US, requiring a highly skilled tech workforce. Intervention is needed to grow the US workforce in chips production throughout the entire life cycle, from manufacturing to engineering.⁴⁶ To grow the workforce of the future for these critical sectors, the private sector should consider partnering with high schools to spread awareness and offer internships in chip manufacturing and other high-tech sectors. The nation should also consider immigration reform to boost the US workforce trained in these fields. In the absence of comprehensive immigration reform, Congress should consider increasing the cap on H-1B visas for high-demand STEM fields, especially in chip manufacturing.

Modern Infrastructure

In the 21st-century economy, “infrastructure” can no longer be considered just physical infrastructure such as roads and bridges. Accordingly, building out the electric grid and expanding access to broadband are two critical components of the IIJA.

Power grid and clean energy

The energy transition requires a resilient power grid capable of withstanding threats from extreme weather events and cyber attacks. Further, renewable energy sources such as wind are often located in rural geographic regions, requiring long-range transmission to transport power.

Of the \$75 billion designated by the IIJA for clean energy and power, \$31 billion has been announced as of September 2024, according to Invest.gov data and subsequent agency announcements. The Department of Energy’s (DOE) Grid Deployment Office is administering a \$10.5 billion Grid Resilience and Innovation Partnerships (GRIP) Program to enhance grid flexibility and improve the resilience of the power system.⁴⁷ The program includes its Grid Innovation Program, which provides \$5 billion for FY2022-2026 to support projects that use innovative approaches to storage, transmission, and distribution to enhance grid security and resilience.⁴⁸ The administration announced its first funding opportunity in October 2023, offering up to \$3.46 billion for 58 projects

across 44 states. On August 6, the DOE announced its second opportunity, a \$2.2 billion investment for eight projects across 18 states to safeguard against extreme weather events, lower costs for consumers, and meet growing demand.⁴⁹

Electric transmission facilities, especially those requiring long-range transmission, often cross multiple jurisdictions including federal, state, Tribal, and private lands. Projects that receive federal funding or sit on federal land require developers to seek authorizations from one or several federal agencies. This process is often lengthy, causing considerable costly delays.

The administration has made progress on streamlining permitting at the federal level. Recognizing the need to speed up the permitting process for high-demand transmission projects, in May, DOE released a final rule aimed at significantly improving federal environmental reviews and permitting processes for qualifying onshore electric transmission facilities.⁵⁰ The rule establishes the Coordinated Interagency Transmission Authorizations and Permits (CITAP) Program to better coordinate federal permitting processes and establish a two-year deadline for completion of federal authorizations and permits for electric transmission projects.

Also in May, the Federal Energy Regulatory Commission (FERC) approved two final rules to promote the expansion of interstate electricity transmission to promote grid expansion and bring more clean energy production to the grid.⁵¹ FERC Order 1977, unanimously approved, provides FERC authority to make permitting and siting decisions for interstate transmission projects if a state fails to act on an application within one year.⁵² Order 1920 requires providers to submit long-term planning and cost allocation for transmission projects, assessing transmission needs over a 20-year horizon.⁵³ FERC's initiatives to expedite the buildout of transmission capacity and improve planning represent a significant effort to advance construction and interconnection of the nation's grid infrastructure.

Despite these efforts, permitting challenges remain a significant obstacle, with clean energy developers citing multiyear delays in getting projects online after completing construction.⁵⁴ At the beginning of 2024, more than 11,000 solar, wind, and battery storage projects across the nation, together capable of powering tens of millions of homes, were still waiting to connect to a power grid, according to Lawrence Berkeley National Laboratory's annual report.⁵⁵

For instance, Wisconsin's Saratoga Solar Project, a 150-megawatt solar farm that was expected to be completed by the end of 2024, has yet to begin construction.⁵⁶ The project, expected to bring 400 jobs to the area, faces severe delays due to what developer Savion cites as "delays in the interconnection study process," setbacks in reaching an agreement to connect to the interstate regional power grid, and a three-year waiting period to receive critical pieces of equipment because of supply chain issues. State commissioners granted an extension in June, giving Savion until April 2027 to start construction.⁵⁷

Several Midwestern states, including Minnesota, Illinois, and Michigan, have passed laws aimed at shortening the permitting process for clean energy projects. Michigan in 2023 passed legislation that gave the state—rather than counties and municipalities—siting

authority for large renewable energy projects to reduce the number of jurisdictions in which developers would need to get approval.⁵⁸ The two-bill package includes amendments that would require companies to work with municipalities that have permitting processes similar to that of the state. The amendments give the two parties 120 days (with a possible 120-day extension) to reach an agreement, allowing electric providers to submit a permitting application to the Michigan Public Service Commission if the affected locality fails to respond to an application in a timely manner.

Another significant challenge is streamlining the approval for new nuclear power plants, particularly for new designs such as small modular reactors, as discussed in CED's Solutions Brief [The Role of Markets in Reaching Net Zero](#).

Broadband

Congress allocated the majority of broadband funding in the IIJA to two major programs: the National Telecommunications and Information Administration's (NTIA) Broadband Equity, Access, and Deployment (BEAD) Program, funded at \$42.5 billion; and the Federal Communications Commission's (FCC) Affordable Connectivity Program (ACP), funded at \$14.2 billion.⁵⁹ Other programs include \$2 billion for Tribal broadband through the NTIA, a \$2 billion rural broadband program through the Department of Agriculture, and \$2.6 billion in digital equity grants through the NTIA.

The ACP, which provides eligible households with \$30 per month toward broadband service of their choice, grew to enroll 23 million households with incomes below 200% of the poverty line.⁶⁰ The program also provides a one-time subsidy of \$100 toward the purchase of a laptop, desktop computer, or tablet. Over two-thirds of ACP survey respondents (68%) reported they had inconsistent internet service or no internet service at all prior to ACP.⁶¹ The majority of this group cited affordability as the reason for having inconsistent or no service (80%).

In April, the FCC announced reduced maximum reimbursements for May 2024 because Congress had not provided additional funding.⁶² The Affordable Connectivity Program Extension Act introduced in both the House and Senate in January has bipartisan support of over 230 co-sponsors and would provide ACP \$7 billion. No further action has been taken on either bill. Because Congress had not appropriated funds sufficient for the ACP's current enrollment and there was no additional funding, the program ended on June 1.⁶³ Congress should allocate funding to revive ACP to ensure the over 23 million households once enrolled in the program still enjoy broadband service.

Some states are responding. Internet providers will soon be required to offer plans to low-income residents in New York for as low as \$15 per month.⁶⁴ New York's Affordable Broadband Act, passed as part of the state's budget in 2021, was quickly challenged in court by industry groups.⁶⁵ The first-in-the-nation law was revived in April 2024 when a federal appeals court ruled against the groups' argument, stating that federal communications law did not preempt states from regulating broadband rates.⁶⁶ Following the decision, industry groups released a joint statement saying that "[the law] not only discourages the needed investment in our nation's infrastructure, but also potentially risks the sustainability of broadband operations in many areas."⁶⁷ In August 2024, New York Governor Kathy Hochul announced that the New York State Public Service Commission

had reached an agreement with Charter Communications Inc. requiring the company to reestablish a \$15/month for 50 Mbps download speed for four years to New Yorkers benefiting from other assistance programs.⁶⁸

After enactment of IIJA, states submitted data from which the FCC developed a map of nationwide broadband coverage. Following adoption of the map, the DOC began BEAD funding allocations in June 2023. However, states did not immediately receive access to these funds. The NTIA required eligible entities to submit an Initial Proposal consisting of two separate volumes: Volume I is focused on the Eligible Entity's challenge process; Volume II consists of the remainder of the Eligible Entity's BEAD implementation plan. All Eligible Entities had submitted their Initial Proposals for NTIA approval by December 2023. As of August 13, 2024, 35 states and territories have received approval from Volume II.⁶⁹

Broadband infrastructure stakeholders across the country repeatedly name the same challenges to implementation, including the supply chain of key materials, the availability of trained workers, and the ability of small providers and local governments to engage with administrative requirements.⁷⁰ Permitting was the largest challenge, as the scale of BEAD and its unique federal requirements pose new hurdles.⁷¹ As the law requires BEAD-funded projects to provide broadband service to end users within four years of receipt of funds, the tight time frame presents a heavy burden on state and local permitting offices. In an attempt to mitigate delays caused by overextended staff, the broadband offices of several states, including Alaska, Kentucky, and New Mexico, have added new permitting coordinator positions to process the rise in requests for utility pole attachments from BEAD projects. Others should follow their example.

As the FCC has recognized, reaching rural customers with advanced broadband will require use of all available technologies to meet this challenge: fixed terrestrial, fixed wireless, mobile, and satellite.

Conclusion

This historic federal investment in the nation's infrastructure and manufacturing capabilities provides a once-in-a-generation opportunity to lay the foundation for a strong 21st-century economy. To achieve the goals outlined by these laws, strategic investment is needed. Once IIJA and CHIPS funding is exhausted, both public and private investment must continue in this crucial space, as these initiatives are not sustainable without ongoing support.

While many of the sectors under the IIJA are distributing funding programs on schedule, significant work remains to be done to ensure that these investments are deployed effectively. This goal requires public-private collaboration to execute planned projects successfully through cost-benefit analysis and the implementation of best practices. Looking further ahead, federal and state regulators should develop practical plans to work together effectively, speeding implementation.

Appendix

This Appendix provides an overview of implementation progress for the major sectoral investments under the IIJA, as categorized and quantified by the Building a Better America guidebook by Build.gov, and the data made available on that website and Invest.gov. It also includes data from agency announcements not yet reflected on those two websites. Please note that the following detail does not include investments made under the CHIPS and Science Act or the IRA. The information in this Appendix is correct as of September 3, 2024.

Roads, bridges, and major projects

Total funding: \$326 billion

Total announced: \$183 billion

As of September 3, DOT has released at least \$183 billion of the \$326 billion in funds appropriated in the IIJA, on par with expected funding levels of approximately \$185 billion by the end of FY 2024. The IIJA reauthorizes surface transportation programs for five years and contains significant new funding for roadways, bridges, and other major projects funded by the Federal Highway Administration and the Department of Transportation. Much of the bill's funding comes from existing grant programs, but new programs make up a significant amount of program funding as well. The Bridge Formula Program, the largest new program, provides formula funding to states to replace, rehabilitate, preserve, protect, and construct bridges on public roads.

The competitive grant process for all major programs is underway. The largest new competitive grant program under the bill is the Bridge Investment Program, at \$12.5 billion over the five-year period.⁷² In December 2023, DOT's Federal Highway Administration (FHWA) opened a new rolling funding opportunity for the Bridge Project Grants category of the Program, which funds projects up to \$100 million. Preceding this, in September 2023 FHWA issued a rolling funding opportunity for the Large Bridge Project category for projects larger than \$100 million. According to Invest.gov data, the Bridge Investment Program has announced only \$2.4 billion in funding, putting it behind schedule. The Surface Transportation Block Grant program, a formula program that provides flexible funding to states and localities, has announced \$42.3 billion in funding, putting it on par with expected funding levels.

Passenger and freight rail

Total funding: \$63 billion

Total announced: \$39 billion

After initial delays, the Federal Railroad Administration (FRA) is beginning to make progress in the release of funding opportunities. In December 2023, the FRA announced \$8.2 billion for 10 passenger rail projects across the country.⁷³ Projects announced through the Federal-State Partnership for Intercity Passenger Rail (FSP), the largest program under this sector with \$36 billion in designated grant funding, will advance two high-speed rail corridors and fund improvements to existing rail corridors. The FRA plans to open a NOFO for FY2024 FSP National Program (for projects not located in the Northeast Corridor).⁷⁴ A NOFO was published for FY2024 FSP projects located on the

Northeast Corridor in May 2024 and closed in July.⁷⁵ The FRA in March opened a NOFO for FY2023 and FY2024 Consolidated Rail Infrastructure Safety Improvements (CRISI) grants.⁷⁶ Funding under the CRISI program aims to improve the safety, efficiency, and reliability of intercity passenger and freight rail. The funding period closed in May.

Public transportation

Total funding: \$83 billion

Total announced: \$54 billion

DOT is responsible for all public transportation grants, most of which are being distributed in preexisting formula grants, including the Urbanized Area (\$33.4 billion) and the State of Good Repair (\$21.6 billion) grants. Distribution of funds for the two programs is underway and, according to September Invest.gov data, on schedule. Only two of the larger programs under this sector are new: the Ferry Service for Rural Communities (\$2 billion) and the Rail Vehicle Replacement (\$1.5 billion) grants. According to September Invest.gov data, the ferry program has only announced 35% of its funding. The rail competitive grants are ahead of schedule with \$1.33 billion already announced. The rail program in February 2024 announced \$631 million in grant awards in response to an October 2023 NOFO.⁷⁷

Airports and Federal Aviation Administration facilities

Total funding: \$25 billion

Total announced: \$12 billion

DOT is responsible for all three programs funding airports. Two of the programs are grant programs: \$15 billion for Airport Infrastructure Grants and \$5 billion for the Airport Terminal Program. According to September Invest.gov data, both programs are on schedule, and the Federal Aviation Administration (FAA) has announced \$11.6 billion in IIJA funds between the two programs as of September. The third program contains \$5 billion, \$1 billion per year, for FAA facilities. \$3 billion under this program was made available during FY2022-FY2024 to upgrade FAA air traffic facilities, with the largest amounts going toward the replacement of towers (\$1.1 billion) and updating power systems (\$534 million).⁷⁸

Ports and waterways

Total funding: \$17 billion

Total announced: \$10 billion

Ports and waterways funding in the IIJA is largely for federally operated projects, with the bulk of funding reserved for the Army Corps of Engineers for the construction of coastal ports, inland waterways, and other water infrastructure, as well as operation and maintenance, totaling \$8.8 billion. As of September, \$5 billion of the funding has been announced. A major program under this sector is the Port Infrastructure Development Program (PIDP), a discretionary grant program administered by the Maritime Administration (MarAd, part of DOT). The grants are awarded on a competitive basis. The IIJA provided \$2.25 billion for the PIDP program over the five years, significantly expanding funding for this program.⁷⁹ \$450 million was made available in

FY2024 with an additional \$50 million in the FY2024 Appropriations Act, bringing the year's total to \$500 million. MarAd issued a NOFO for FY2024. Responses were due in May, but funding has been slow. As of September, a total of \$882 million of IIJA PIDP funding has been announced.

Transportation safety

Total funding: \$38 billion

Total announced: \$14 billion

DOT is responsible for implementing the many programs in the transportation safety sector. Much of the funding goes to preexisting programs, including the reauthorization of the Highway Safety Improvement Program at \$15.6 billion. New competitive grant opportunities include Safe Streets for All (\$5 billion), Railroad Crossing Elimination Program (\$3 billion), and Pipeline Modernization Program (\$1 billion). The Highway Safety Improvement Program is on track with \$9.13 billion in funding announced. In FY2022 and FY2023, the Safe Streets for All program provided \$1.7 billion in funding to over 1,000 communities in all 50 states and Puerto Rico. The NOFO for FY2024 closed in August for the Safe Streets for All program, the NOFO for FY2023-FY2024 for the Railroad Crossing Elimination program is scheduled to close in late September, and the NOFO for FY2024 for the Pipeline Modernization Program closed in June.

Electric vehicles, buses, and ferries

Total funding: \$19 billion

Total announced: \$10 billion

Funding for or related to EVs in the IIJA is concentrated in five new major programs: Low or No Emission Bus Grants (\$5.6 billion), the National Electric Vehicle Infrastructure (NEVI) Formula Program (\$5 billion), the Clean School Bus Program (\$5 billion), the Charging and Fueling Infrastructure Grants (\$2.5 billion), and the Electric or Low Emitting Ferry Program (\$250 million). The Environmental Protection Agency (EPA) is responsible for the Clean School Bus Program, while DOT is implementing all other major programs. The EPA announced FY2023 awards for its school bus grant program late last year, awarding \$965 million to replace 2,737 school buses.⁸⁰ The awards are the second round of funding under the program, following \$400 million announced earlier. With slightly over half of program funding announced at the three-year mark, the overall sector is behind schedule.

Clean energy and power

Total funding: \$75 billion

Total announced: \$30 billion

The clean energy and power sector of the IIJA covers four major areas: delivering clean power (\$21.3 billion); clean energy demonstrations (\$21.5 billion); energy efficiency and weatherization retrofits for homes, buildings, and communities (\$6.5 billion); and funding for clean energy manufacturing and workforce development (\$8.6 billion). The majority of programs under these focus areas are housed under the DOE, with several under the Department of Agriculture, the Department of the Interior, and the Department of Homeland Security.

One of the largest energy funding components of the IIJA featured a trio of electric grid programs announced in October 2023: \$3.5 billion for 58 selected projects under the Grid Resilience and Innovation Partnership Program (GRIP) and \$1.3 billion for three inter-regional transmission projects under the Transmission Facilitation Program.⁸¹

Among the largest programs in the sector is the Regional Clean Hydrogen Hubs Program (\$7 billion), funded under a larger \$8 billion hydrogen hub program. After missing its initial NOFO deadline in Summer 2022, projects selected for award negotiations for the program were announced in October 2023.⁸² In July 2024, the Office of Clean Energy Demonstrations began awarding hubs to begin work on Phase 1 to solidify planning, development, and design activities.

Water

Total funding: \$64 billion

Total announced: \$38 billion

The majority of funding under the water sector falls under State Revolving Funds (SRFs), at \$43 billion through the Clean Water and Drinking Water SRFs.⁸³ The EPA quickly distributed those funds to states, Tribes, and territories, though it remains up to recipients to allocate those funds quickly and effectively. The program operates as a capitalization grant, with states contributing an additional 20% to match the federal grants in providing low-interest loans to eligible recipients for water infrastructure projects.

Other major programs in this category include the Indian Health Service Sanitation Facilities Construction Program under the Department of Health and Human Services (\$3.5 billion) and the Aging Infrastructure Account under the Department of the Interior (\$3.2 billion). As of September, the two programs have dispersed \$2.1 billion and \$1.4 billion, respectively.

Resilience

Total funding: \$38 billion

Total announced: \$22 billion

Resilience funding under the IIJA contains funding for a wide range of hazards, including cyber, climate, and hazardous fuels. The largest program is DOT's Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) formula grant at \$7.3 billion. Funding under the program is apportioned to states to assist them in shoring up transportation infrastructure against disasters, especially evacuation routes, routes to hospitals, and modes of transportation that would be critical in a disaster.⁸⁴ Funding is well underway and on schedule with \$4.3 billion in awards announced as of September.

The second-largest program under this sector is the Federal Emergency Management Agency's Flood Mitigation Assistance Program (\$3.5 billion) which offers financial and technical assistance to states and communities to mitigate flood risk. The competitive grant program, which apportioned \$700 million for each fiscal year, is behind schedule

with only \$944 million announced as of September 3, 2024. A NOFO for \$800 million for FY2023 opened in October 2023, missing the fiscal year.⁸⁵

Environmental remediation

Total funding: \$22 billion

Total announced: \$9 billion

Funding for environmental remediation falls into four main programs: Abandoned Mine Reclamation Fund (\$11.3 billion); Orphaned Well Plugging, Remediation, and Restoration (\$4.7 billion); Superfund site cleanup (\$3.5 billion); and Brownfield remediation and revitalization (\$1.5 billion). The mine program and the well program both fall under the Department of the Interior, with the Superfund and Brownfield Projects programs under the EPA. All programs have begun dispersing funding, with the Superfund program having announced all of its funding. The mine program is significantly behind schedule, with just \$2.2 billion in funding announced as of September.

Broadband

Total funding: \$64 billion

Total announced: \$60 billion

Congress allocated the majority of broadband funding in the IIJA to two major programs: NTIA's BEAD Program, funded at \$42.5 billion; and the FCC's ACP, funded at \$14.2 billion.⁸⁶ Other programs include \$2 billion for Tribal broadband through the NTIA, a \$2 billion rural broadband program through the Department of Agriculture, and \$2.6 billion in digital equity grants through the NTIA.

In April, the FCC announced reduced maximum reimbursements for May 2024 due to a lack of additional funding from Congress.⁸⁷ Because Congress has not appropriated funds sufficient for the ACP's current enrollment, and without additional funding, the program ended, effective June 1.⁸⁸

The sector's largest program, BEAD, apportions funding to states, territories, and the District of Columbia to expand broadband infrastructure to improve access among unserved or underserved communities. The funding is distributed directly to states according to a formula that evaluates states based on unserved locations, with additional weight on unserved locations in high-cost areas. After delay, BEAD funding allocations were announced in June 2023, informed by the FCC's broadband coverage map.

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