

## **Infrastructure Investment and Jobs Act**

### **Recommendations for Effective Implementation**

The Infrastructure Investment and Jobs Act (IIJA) represents a historic bipartisan achievement and the largest investment in our nation's critical infrastructure systems in a generation. With this \$1.2 trillion investment, the federal government can restore its critical partnership with cities and states to modernize our nation's roads, bridges, transit systems, drinking water systems, sewer collection pipes, school facilities, broadband, ports, airports, and more. To optimize the investment of over 100 new programs and many more existing programs across these sectors, the American Society of Civil Engineers (ASCE) has developed key recommendations for Congress, the Administration, and state and local governments to consider as implementation of the IIJA gets underway.

#### **1. Incentivize Asset Management and Life Cycle Cost Analysis**

As new competitive grant programs are developed across federal agencies, these programs should provide incentives for asset management and life cycle cost analysis as a routine part of the planning process. There are a growing number of state and local governments and private sector infrastructure owners demonstrating the long-term advantages of employing comprehensive asset management practices. However, asset management plans are not required or incentivized by the federal government in many sectors, including wastewater. By encouraging the development and regular update of asset management plans and life cycle cost analysis as a condition to receive new federal funding, we can ensure programming and planning for operations and maintenance are part of every new infrastructure project. Furthermore, by providing prioritization for those agencies already using asset management practices, the federal government can ensure additional state and local agencies develop asset management plans and implement life cycle cost analysis.

ASCE has identified several programs in the IIJA that are taking a step in the right direction by expanding the requirement for asset management plans as a condition to receive federal funding. One such example is the Federal-State Partnership for State of Good Repair Grant Program, which requires any public transit entity that owns infrastructure used for intercity passenger rail on the Northeast Corridor to develop an asset management system that can inform Amtrak's capital improvement program. Additionally, there is some funding available for small public water systems looking to create asset management plans. However, there are many additional programs that do not include that requirement and should. ASCE recommends federal agencies assess each new and existing IIJA program to determine whether requiring an asset management plan is feasible and would provide value for stakeholders. Additionally, ASCE encourages infrastructure owners that already have asset management plans to regularly update them so that these tools remain useful for decision-making.

There are examples of state and local agencies and programs already making good use of asset management best practices. Those programs that are most successful provide clear guidelines and requirements and include a rigorous quality review, such as Michigan's Stormwater, Asset Management, and Wastewater Program. Since 2013, the Michigan program has helped municipalities develop, update, and improve asset management plans for their wastewater and stormwater systems, which has led to better services, more accurate project prioritization, and a more informed understanding of the current and future needs.

## **2. Prioritize Projects Dedicated to Maintaining and Improving Existing Assets**

ASCE urges federal, state, and local governments to prioritize projects that will maintain, upgrade, and improve our existing assets.

ASCE's *2021 Report Card for America's Infrastructure* found that the nation's overall infrastructure grade is a "C-" and that it will cost an additional \$2.5 trillion over the next decade to bring all of our infrastructure into a state of good repair. The IIJA represents a down payment that can help bridge the growing infrastructure investment gap, but funds must be spent wisely.

Fortunately, many programs in the IIJA are already dedicated to improving existing assets, such as the Bridge Replacement, Rehabilitation, Preservation, Protection, and Construction Program, which will provide nearly \$27 billion to states to fix approximately 15,000 bridges most in need of repair across the country. This program will be critical to ensuring that the overall number of poor bridges in this country does not continue to rise as those bridges age in place. Additionally, the IIJA includes \$15 billion to replace lead service line connections to customers, a critical investment to ensuring that our existing water systems are protecting public safety.

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*Deferred maintenance has been an issue across the infrastructure sectors for decades. The 2021 Report Card for America's Infrastructure found that:*

- *There is a broken water main every two minutes, and an estimated 6 billion gallons of treated water lost each day in the U.S. That's enough to fill over 9,000 swimming pools.*
- *Growing deferred maintenance on our nation's roads has left 43% of our public roadways in poor or mediocre condition.*
- *In 2020, 7.5% of our nation's bridges were considered structurally deficient, meaning they were in "poor" condition.*

*The opportunity afforded by the IIJA will allow agencies to address pressing maintenance needs in the near future, thereby staving off worsening conditions and keeping communities safe.*

ASCE recommends that additional programs created under the IIJA also allocate funding with a lens that examines how we can improve our existing assets, while understanding that some programs, such as those dedicated to grid modernization and port development, will need to build additional capacity. Some of these programs that should fix and modernize existing infrastructure include the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant program, the Bridge Replacement, Rehabilitation, Preservation, Protection, and Construction Program, and the Federal-State Partnership for State of Good Repair Grant Program.

### **3. Require the Use of the Most Up-to-Date Codes and Standards and Regularly Fund Climate Data Updates**

The most reliable way to ensure our nation's infrastructure is resilient and that we are truly building back better, is the widespread adoption and enforcement of modern, up-to-date building codes. Therefore, ASCE strongly encourages federal agencies to incentivize the use of up-to-date codes and standards, which can mitigate risks of climate or manmade events such as hurricanes, fires, sea level rise, and more.

Additionally, while ASCE urges new federal programs to incentivize the use of up-to-date codes and standards, ASCE also supports the development, adoption, and enforcement of a national model code as a key method of minimizing climate impact and creating disaster resilience in communities. Programs like the Federal Emergency Management Agency's (FEMA) Building Resilient Infrastructure and Communities (BRIC) grant program are already requiring the use of up-to-date codes and standards and can serve as a model for other programs across the federal government. For example, the Department of Energy should require that any new projects dedicated to modernizing and hardening the electric grid follow *ASCE 74, Guidelines for Electrical Transmission Line Structural Loading*.

The following ASCE documents and standards should also be utilized for new projects that are receiving IIJA funds. These same documents serve as a basis upon which such a model code can be developed:

- *ASCE 7, Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-22)*, currently an integral part of U.S. building codes, describes the means for determining soil, flood, tsunami, snow, rain, atmospheric ice, earthquake, and wind loads, and their combinations for resilient structural design;
- *ASCE 24, Flood Resistant Design and Construction*, prescribes a standard for cost effectively increasing resiliency by reducing and eliminating risks to property from flood hazards and their effects;
- *ASCE 41, Seismic Evaluation and Retrofit of Existing Buildings*, standardizes methods for the retrofit of existing buildings to increase resiliency in communities after a seismic event;
- *ASCE Manual of Practice 140, Climate-Resilient Infrastructure: Adaptive Design and Risk Management*, provides guidance for and contributes to infrastructure analysis/design in a world in which risk profiles are changing due to climate change per the Fourth National Climate Assessment.
- *ASCE Manual of Practice 74, Guidelines for Electrical Transmission Line Structural Loading*, provides guidelines for the interpretation of ASCE 7 specifically for overhead power lines and includes updated wind and ice loadings that all overhead transmission and distribution lines should be designed for with the consideration of current climate change data.
- *ASCE Manual of Practice 141, Wood Pole Structures for Electrical Transmission Lines: Recommended Practice for Design and Use*, provides guidelines for the proper design and analysis of wood pole structures used in our distribution and transmission grid infrastructure.

In the wake of Hurricane Harvey, the City of Houston voted to require all new construction in the city's floodplains be built two feet above the 500-year floodplain. Florida, meanwhile, has made a series of updates to their building codes over the past twenty years, including the mandated use of stronger nails, relocation of vents, and more thorough inspection processes. These are strong examples of how codes can be modernized and ASCE standards can be incorporated to strengthen a city or state's resilience.

Therefore, while many state and local government agencies are leading the way, to fully realize the benefits of the IJJA, ASCE encourages federal agencies and Congress to support and incentivize the widespread adoption and enforcement of up-to-date building and infrastructure codes. The recent creation of the National Initiative to Advance Building Codes, which will focus on helping state and local governments adopt the most up-to-date building codes and standards,



indicates that federal officials understand the importance of these codes and standards for resilience. ASCE stands ready to support the work of the initiative. Additionally, we urge Congress to provide robust funding to federal agencies like the National Oceanic and Atmospheric Administration (NOAA), FEMA, and the National Institute of Standards and Technology (NIST), whose missions include both developing the data necessary for ensuring standards can address the impacts of climate change and preparing and implementing a national model code that considers increasingly strong storms.

Currently, the only data set that receives reliable federal funding to update is seismic data through the National Earthquake Hazards Reduction Program (NEHRP) authorization. FEMA and NOAA do not receive regular funding to update flood and rain data, so even with storms becoming stronger, in many cases the latest available rainfall data is decades old. This means, for example, that our nation's dams and levees are often being designed based on rainfall data from the 1970s, while buildings are being designed without the latest seismic and wind data that is necessary to build resiliently. While some states have taken it upon themselves to update data sets, such as rainfall data, this has led to a piecemeal approach and fails to recognize that floodplains and other hazards do not end at state lines, putting at risk communities across the country. We cannot build resiliently relying on backward-looking data and, therefore, strongly urge Congress to fund these critical programs.

#### 4. Collaborate with the Engineering Community to Develop Technical Assistance for Disadvantaged and Rural Communities

The IJJA took great strides to acknowledge the inequities that were created or exacerbated by our nation's built environment. Programs like the new Reconnecting Communities Pilot Program at the Department of Transportation, investments in Superfund and brownfields remediation, and

set-aside funds for rural and disadvantaged communities throughout many of the water and broadband infrastructure programs will be critical to both begin to address past inequities and ensure that new investments are not perpetuating existing problems. Combined with the Administration's commitment to Justice40, which seeks to deliver 40% of overall benefits from relevant investments to disadvantaged communities, new funding has an opportunity to bring about change in many of these communities.

To meet this mission, the federal government will need to partner with state and local governments and the engineering community to not just identify these disadvantaged communities but ensure that they have the tools necessary to compete for new funding.

Additionally, ASCE and the engineering community stand ready to work with federal agencies to help expand upon the technical assistance programs that many rural and disadvantaged communities will rely upon to receive competitive grants. Agencies should coordinate with the nation's engineers to help identify those communities that need assistance and determine what type of assistance is needed, whether it is grant preparation, identifying suitable projects that will bring community benefits, or long-term capacity building within agencies or jurisdictions.

## **5. Dedicate Resources to Grow the Pipeline of Skilled Workers**

To realize the potential of this five-year legislation, it is critical that we have the civil engineering workforce in place to design, build, and maintain the nation's infrastructure. The American Council of Engineering Companies found that the industry will need to add 82,000 full- and part-time engineers to implement the IIJA. Infrastructure owners, including state and local departments of transportation and water utilities, as well as consulting engineers, cannot effectively utilize the influx of funding if they do not have the workforce in place.

Congress continues to recognize workforce needs with recent provisions dedicated to advancing science, technology, engineering, and mathematics (STEM) education in the House and Senate America Creating Opportunities for Manufacturing, Pre-Eminence in Technology, and Economic Strength (COMPETES) bills. However, Congress and the Administration must continue to encourage state and local governments to include skilled workers in their long-term workforce development plans. The Department of Labor and the National Science Foundation should partner with the engineering community to develop programs that can assist state STEM education and workforce plans to solve this ongoing challenge in the industry.

Some limited funds in the bill support workforce development activities and address gaps, but we must continue to grow a diverse pipeline of skilled workers. Specifically, we must bring students into the industry and keep engineers in the United States. Even more importantly, funds can and should be directed to include targeted outreach to disadvantaged and minority communities in order to address the ongoing gender, racial, and ethnic diversity gap that persists in the engineering field.

## **6. Streamline the Engineering Contracting Process**

In recent years, many projects around the country have been slowed down due to increased change orders during the contracting process. The Engineers Joint Contract Documents Committee (EJCDC), a joint venture of ASCE, the National Society of Professional Engineers,

and the American Council of Engineering Companies, publishes documents related to engineering, construction, design/build, construction manager as advisor, construction manager at risk, and procurement. The use of the EJCDC documents reduces potential errors, redundancies, or conflicts in construction contracts. EJCDC updates its documents approximately every five years to reflect industry trends, court decisions, and changes in applicable laws and regulations. The EJCDC has developed contracts for scoping, preliminary design, final design, construction, and commissioning. Therefore, the EJCDC has contracts that are ready to expeditiously move projects through the process when utilized appropriately.

ASCE emphasizes that EJCDC construction contract forms that will effectively deliver projects under a variety of project delivery methods funded under the IIJA are available. Even more importantly, ASCE urges federal and state agencies to accept the current versions of the documents without exception. Additionally, it is necessary to ensure that smaller, rural, or disadvantaged communities are aware of these contract forms and have access to them. Therefore, ASCE recommends that all federal agencies follow the U.S Department of Agriculture's (USDA) Rural Utilities Service (RUS) model, which has preapproved certain standard EJCDC engineering and construction series documents for use in projects funded under the RUS Water and Waste Disposal program. By preapproving EJCDC documents, the USDA has eliminated the need for applicants to purchase the separate Funding Agency edition of the documents and therefore has streamlined the process and made these documents more accessible for rural or disadvantaged communities. Local agencies are also relieved of the burden of drafting and editing documents for later approval by federal and state agencies.

Furthermore, ASCE supports qualifications-based selection procedures outlined by the Brooks Architect-Engineers Act, the numerous similar state and local laws, and the American Bar Association's Model Procurement Code for State and Local Governments for engagement of engineering services. As the IIJA is implemented, ASCE strongly recommends that the application of the Brooks Act is upheld.

## **7. Fund Research and Development to Accelerate Innovation**

Comprehensive legislation focused on the nation's commitment to research and development (R&D) is a critical complement to the IIJA. Coupling the IIJA with R&D legislation like the America COMPETES Act will support the development of new and innovative materials and processes, cut project costs, and facilitate a durable, secure, sustainable, and resilient infrastructure network. ASCE urges Congress to further fund critical R&D programs at NIST, the National Science Foundation (NSF), the Department of Transportation, and the Department of Energy and urges those agencies to prioritize R&D investments that will make our infrastructure more resilient and equitable for communities in the future.

## **8. Cut Red Tape and Increase Transparency Across Government Agencies**

ASCE has identified areas where the federal government should work with industry stakeholders to ensure projects are not delayed due to overly burdensome and often redundant red tape. First, while ASCE supports the intention of the Buy America language in the IIJA, we need to ensure that language does not hamper innovation, cause unnecessary project delays and cost increases, or further constrain markets. While guidance from the Administration related to Buy America is

helpful, there is still concern that the waiver process will be overly burdensome and significantly slow down projects that require a waiver to be filed.

Second, ASCE is encouraged by the IIJA codifying One Federal Decision, which will lead to cost reductions, and applauds the Administration for developing a Permitting Action Plan to further accelerate the federal permitting and environmental review process. One of the key recommendations in the *2021 Report Card for America's Infrastructure* was to streamline the project permitting process across infrastructure sectors, while ensuring appropriate safeguards and protections are in place. Therefore, ASCE believes that the most recent plan is a step in the right direction to ensure that projects can be delivered on time, and on budget, while maintaining the rigorous environmental review process.

Finally, the federal government has a responsibility to ensure that IIJA funds are properly managed. The historic scope of the IIJA and the large number of partners needed to deliver the legislation, such as state and local governments, contractors, consultants, non-profits, and even the public, means the federal government will face a complex challenge to reduce the risk of waste, fraud, and abuse. Therefore, transparency will be key, especially in areas like the grant selection process. To minimize risk and increase transparency ASCE recommends five actions:

- Develop and implement a comprehensive IIJA Financial Risk Plan;
- Ensure the U.S. Strategy on Countering Corruption is effectively implemented and resourced;
- Clearly define risk responsibilities of all partners responsible for delivering the IIJA
- Establish financial performance measures and monitor those measures throughout implementation;
- Utilize proven, effective tools such as ISO 37001 Anti-Bribery Management Systems

## **Conclusion**

In closing, ASCE remains dedicated to ensuring the IIJA is implemented efficiently and effectively. The nation is on the precipice of a long-awaited infrastructure decade; however, if we fail to make smart investments, create unnecessary project delays, build to outdated standards, or fail to fill the nation's workforce gaps, we will not realize the full impact of the historic investments made by the bipartisan infrastructure law.

The nation's engineers stand ready to maintain, modernize, and build the infrastructure required for the next generation and are prepared to work with federal, state, and local officials to make sure these investments are spent wisely.