INFRASTRUCTURE FUNDING REPORT



OUR COMMITMENT

My career as an engineer has spanned almost a half-century, with nearly all of those years spent here at Dewberry. Much has changed in design and construction during that time, but our effort to provide ongoing industry leadership and help our clients and communities navigate these changes has remained consistent. As technology, project delivery methods, and environmental priorities such as sustainability and resilience have evolved, we strive to be at the forefront, helping our clients realize the advantages these advances represent.

Alternative project delivery is a prime example. When design-build first emerged over two decades ago, we immediately saw advantages for our clients in this new delivery method. We were among the first in the mid-Atlantic to form partnerships and put this option to the test. Today, with more than 130 design-build projects completed across the U.S., we bring our clients the knowledge and proven experience that enables this approach to be successful, time after time.

The services we now offer are also much broader in scope than when I first started out in my career. This has been driven by industry forces but mostly out of our desire to help clients solve challenges and improve their communities for future generations.

As I write this, I am transitioning from my role as chief operating officer to an advisory role. This allows me to ease into my future retirement while remaining engaged in mentoring and leadership development. I've been fortunate to enjoy a long and rewarding career, with exceptional colleagues and clients. Among them, of course, is Dewberry's founder Sid Dewberry. Mr. Dewberry led this firm for decades and willingly shared his knowledge and encouragement with young engineers — whether authoring an industry-leading textbook or calling me on Sunday evenings to check in and give me words of encouragement. He influenced and inspired the careers of thousands of professionals. I will miss his words of wisdom and his warm and generous spirit.

I look forward to seeing the many achievements of the next generation of leaders, who will continue to follow Sid Dewberry's example and position our firm at the forefront of our professions.

DAN PLEASANT Senior Consultant



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PASSENGER RAIL INVESTMENTS WILL EXPAND SERVICE NATIONALLY

by Steve Santoro, Director of Rail and Transit



FUNDING WILL ALSO SUPPORT RAIL SAFETY AND ACCESSIBILITY

1

The Bipartisan Infrastructure Law (BIL) will provide a substantial boost in funding for our nation's railways, including Amtrak and regional transit networks. New federal spending includes \$66 billion for passenger and freight rail improvements designed to help make this mode of travel safer and more reliable, resilient, sustainable, and equitable.

The funding will aid in consolidated rail infrastructure and safety improvements, railroad crossing elimination, federal-state partnerships for intercity passenger rail, and restoration and enhancement projects. Amtrak will see an unprecedented increase in funding, enabling America's only national passenger rail service to expand for the first time in decades. The success of this expansion, anticipated to include nearly 40 new routes, hinges on negotiating track access with private railroad companies. A model for this lies in Amtrak's partnership with CSX in Virginia, where a major expansion has been announced.

EXPANDING OPERATIONS AND REDUCING LIABILITY

The Amtrak funding will also support significant improvements to existing networks, including those in the Northeast Corridor. Priorities include track, platform, and station rehabilitation; new equipment; and a host of upgrades to meet Americans with Disabilities Act (ADA) requirements. State and regional transit agencies such as the New York Metropolitan Transit Authority and NJ TRANSIT will also see significant investments to fund repair work, signal improvements, and ADA compliance upgrades.

On the West Coast, California will receive nearly \$10.2 billion in BIL funding over the next five years to enhance its public transportation systems. Priorities will include continuing the construction of the nation's first high-performance, statewide rail system, which will feature electric train sets capable of speeds in excess of 200 miles per hour. The California High-Speed Rail Authority currently has 119 miles under construction in the Central Valley, with plans to expand the network farther.



Dewberry is currently supporting the Anaheim Transportation Network with its ambitious plans to improve public transit in advance of the 2028 Olympics in Los Angeles.

Efforts are also underway to complete a broad array of transit improvements in the Los Angeles area in advance of the 2028 Olympics. The Los Angeles County Metropolitan Transportation Authority has numerous projects under construction, including a subway extension, a light-rail line, and an underground connector that will link multiple rail lines beneath the downtown area.

CHALLENGES AHEAD: ADVANCING PROJECTS AND ATTRACTING NEW RIDERS

Transit and transportation agencies from coast to coast will face a number of challenges to expedite improvement projects within the BIL's five-year funding timeframe. Locating experienced engineers and contractors, addressing a shrinking labor force due to retirements within the agencies, and the need for fast-tracked project schedules will place additional burdens on operations. These challenges will require agencies and their consultants and contractors to be creative and collaborative and will often lead to the selection of alternative project delivery methods such

and long-distance travel.

as design-build to move projects forward quickly. It will also be important to engage private developers in planning processes to help bring integrated, multimodal systems to communities.

The success of transit systems nationwide depends heavily on expanding ridership. Although the pandemic and a recent surge in telecommuting led to decreases in ridership over the past two years, surveys point to a national preference for more public transportation options for commuting and long-distance travel. Navigating changes in ridership as well as funding deadlines will require rail and transit agencies to be nimble and proactive in their response so they can retain riders and attract new users to passenger rail systems.

As always, transit agencies must put customer needs first. Riders expect rail service to be safe, clean, accessible, and easy to navigate, and to get them where they want to go when they want to get there. The new federal funding available through the BIL should go a long way toward bringing these systems up to date and attracting riders back to pre-pandemic levels and beyond.

Surveys point to a national preference for **more** public transportation options for commuting

DELIVERING WITH DESIGN-BUILD: MAKING THE MOST OF INFRASTRUCTURE INVESTMENTS

by Dave Mahoney, PE Executive Vice President and Operations Unit Manager



Design-build requires close collaboration and trust among partners, as well as the specialized experience to take on complex, time-sensitive projects. Industry projections point to a continued increase in the use of alternative project delivery (APD) methods nationwide. The Design-Build Institute of America estimates, for example, that design-build construction spending in non-residential market segments, such as transportation and water/wastewater, will reach as high as 47% of the total spending by 2025.

These projections come as no surprise. While design-build has frequently been used in the mid-Atlantic over the past 20 years, particularly in transportation, we are now seeing public agencies embrace this approach from coast to coast. With billions in federal investment dollars available through the Bipartisan Infrastructure Law (BIL), we anticipate that more states will turn to design-build as a preferred delivery method.

New York, for example, will receive \$13.6 billion over five years in federal highway formula funding for highways and bridges. Pennsylvania will see \$13.2 billion for highways and bridges, and New Jersey will receive \$8.1 billion. Significant funding is also available for passenger and freight rail improvements and airport infrastructure development, including \$685 million for airports in New York alone. With these investments in place and the need to move quickly, Northeastern states and other regions throughout the U.S. are certain to look to the expedience of design-build.

PROVEN PARTNERSHIPS AND BEST PRACTICES

After two decades, we are fortunate to have achieved industry leadership in APD, including design-build. Over the past 20 years, we have completed more than 130 design-build projects nationwide, representing over \$20 billion in construction value. Our first project—improvements to Virginia State Route 28 near Washington Dulles International Airport—taught us a lot, and we have learned from every design-build project since.

We recognized early on, for example, the importance of establishing solid partnerships with contractors and other team members. Design-build requires close collaboration and trust among partners, as well as the specialized experience to take on complex, time-sensitive projects.

Close working relationships with experienced contractors lead to greater innovations and timely problem-solving, while minimizing risks. These productive partnerships create a win-win situation for our clients and team members. That has proven true on the many small-scale projects we've completed for municipalities as well as ambitious, multi-phase initiatives such as the 11.4-mile Dulles Corridor Metrorail (Silver Line) project we completed with Capital Rail Constructors for the Metropolitan Washington Airports Authority. Clients including the U.S. Army Corps of Engineers, the Port Authority of New York and New

The \$1.18-billion second phase of the Dulles Corridor Metrorail, also known as the Silver Line, is an 11.4-mile extension by the design-build team of Capital Rail Constructors for the Metropolitan Washington Airports Authority.



Jersey, the Long Island Rail Road, and the New York State Department of Transportation are among the agencies who have also embraced design-build as a preferred delivery method for many projects.

Experience in the field is another important ingredient. We have provided construction administration and quality assurance on most of our major design-build projects, and this knowledge informs our work as designers. Sophisticated project controls, including project dashboards, package trackers, and scheduling, help keep design-build projects of all sizes on budget and schedule. We have also introduced a monthly project review process that supplements our regular meetings and enables us to monitor projects closely.

TAKING OUR EXPERTISE COAST TO COAST

Leveraging our experience, knowledge, and resources, we have successfully transitioned our design-build expertise nationwide. We've expanded our portfolio with many projects in the water/wastewater market as well as new projects in architecture and the federal market. As we assist clients in optimizing federal funds through the BIL and other sources, this experience will be vital in rehabilitating and improving highways, bridges, airports, transit systems, and water/wastewater facilities. Design-build for public projects is now practiced in 26 states and the District of Columbia, and will only continue to grow as an industry standard.

ALTERNATIVE PROJECT DELIVERY STRATEGIES FOR WATER INFRASTRUCTURE IMPROVEMENTS

by Katie Jones, PE, Assoc. DBIA, Associate Vice President and Practice Segment Leader and Todd Shafer, PE, Associate Vice President and Water Market Segment Leader



For decades, water utility owners and private companies nationwide have relied on various alternative project delivery (APD) methods to streamline the development of infrastructure projects. In addition to the many advantages of active collaboration between owners, contractors, and engineers throughout the life cycle of a project, APD can benefit schedules, procurement, budgets, and risk mitigation.

With more than 20 years of experience in leveraging APD, we've delivered nearly \$1 billion in constructed value on water infrastructure projects using progressive design-build (PDB), construction management at-risk (CMAR), fixed-price design-build, and other APD methods. By fostering a collaborative team environment, listening carefully to a client's project needs, continuously communicating, and crafting a delivery strategy that optimizes results, we help clients enhance water infrastructure systems to better serve their customers. For an APD project to be successful, it's important to have a holistic understanding of the complexitie inherent to the design, construction, and commiss of water projects—whether it's a greenfield waste treatment facility, a drinking water supply system, a pumping station, or emergency repair of a prestre concrete cylinder pipeline. With the many challeng today's project delivery environment, from supply limitations and labor shortages to loss of institutio knowledge, owners face unprecedented headwind delivering water projects. APD is one effective met to address these challenges.

OPTIMIZING PROJECT BUDGETS AND FAST-TRACKING TIMELINES

When a robotic inspection confirmed that the 1.5-mile-long Colsman Tunnel near Denver, Colorar showed signs of serious deterioration, the Southga Water and Sanitation District knew it had a major capital improvement project on its hands. The tunnel, which conveys 100% of the district's

Despite the complex construction required to repair the Colsman Tunnel, we delivered a creative solution that mitigated traffic impacts and saved the district tens of millions of dollars by using APD methods.



t es sioning ewater a essed ges in v chain	12.4-million-gallons-per-day (MGD) sanitary peak flow under a densely populated suburb, would require either a major repair or a complete replacement. Along with long-time partner Garney Construction, we capitalized on the PDB delivery method to slipline the tunnel, saving the district tens of millions of dollars and expediting a potential multi-year timeline, all while maintaining continuous utility service to customers.
onal ds in thod	In Virginia, we are partnering again with Garney Construction on a large design-build project to design and construct a large diameter sewer forcemain across a major river. Moving this project along in an efficient and cost-effective manner using the APD method is critical to support the client as they work to meet the needs of their growing community.
ado, gate 5.	Leveraging APD methods can help clients and communities overcome challenges that are often associated with the traditional design-bid-build delivery approach. Today with an influx of new funding in many communities, the broader use of APD provides great opportunities to improve water infrastructure by introducing innovative technical approaches along with cost and schedule-saving project delivery strategies.

IMPROVING WATER INFRASTRUCTURE IN RURAL COMMUNITIES

by Leslie Mantiply, PE, Project Manager and Paul Longo, PE, Senior Associate and Senior Project Manager



PROJECTS WILL ENHANCE PUBLIC HEALTH AND QUALITY OF LIFE

The Bipartisan Infrastructure Law (BIL) of 2021 provides the single largest investment in water infrastructure in the nation's history. The legislation includes \$55 billion for water/wastewater projects over five years. A significant portion of this funding will make its way to smaller, rural communities that must begin planning now to improve utility services for their customers.

Most of the BIL funds will be distributed through the Environmental Protection Agency's (EPA) Drinking Water and Clean Water State Revolving Fund programs, administered by each state. In addition, \$5 billion dollars has been allocated to the Small and Disadvantaged Communities grant program to address emerging contaminants.

OPTIMIZING FUNDING SOURCES TO ADDRESS RURAL CHALLENGES

Remote rural communities face unique challenges in trying to provide solutions to upgrade and expand water and wastewater systems. Often, the small customer base of these communities limits the ability to cover project costs through user rates that local homeowners and residents may not find affordable. Priorities often include historic or disadvantaged

^{\$}1 TRILLION estimated cost of needed water infrastructure investments in the U.S. over the next 20 years

areas where failing residential septic systems or private wells can potentially lead to public health emergencies. While the overall scale of these projects is smaller, the same engineering challenges—such as wastewater collection and water distribution layouts, land acquisition, permitting, and treatment system design—are required to provide a holistic solution.

BIL funding will help address these rural water infrastructure needs largely through low-interest loans to utilities. Planning and design are also eligible expenses, so communities don't need to have the projects ready for construction to gualify. Many communities may still need to seek additional funding assistance to offset debt incurred, factoring in the expense of long-term operations and maintenance as well. If projects involve emerging contaminants and drinking water lead pipe replacement, the BIL funds offer loan forgiveness provisions, no state match requirements, and set-asides for disadvantaged communities.

THE "RURAL PLAYBOOK:" **GUIDING COMMUNITIES THROUGH** THE FUNDING PROCESS

In April 2022, the *Bipartisan Infrastructure Law Rural* Playbook was released, developed to guide state, local, tribal, and territorial governments in rural areas through the process of applying for the BIL federal investments. The Rural Playbook describes the steps to apply and identifies more than 100 programs funded under the law with federal cost-share flexibilities and matching requirement waivers.

The administration advises that public water authorities and other potential recipients start now to identify capital project priorities, engage stakeholders, and contact state program representatives to begin positioning projects for BIL funding. With estimates on needed water infrastructure investments in the U.S. ranging as high as \$1 trillion over the next 20 years, it's crucial that utilities in communities of all sizes prepare to move quickly to identify and deliver vital projects with the aid of the unprecedented boost in funding now available.

\$55 BILLION

in BIL funding for water/wastewater projects over the next five years

ADVANCING ENVIRONMENTAL JUSTICE IN RURAL AREAS

Executive Order 14008, *Tackling the Climate* Crisis at Home and Abroad, tasks the federal government with advancing environmental justice and spurring economic opportunity for disadvantaged communities. Throughout the country, many states and localities are also taking the initiative to deliver much-needed projects to support underserved communities. Often, these projects involve creative engineering solutions to help address public health needs.

As one example, the historically African American community of Howardsville, Virginia, which dates to 1874, did not have sewage systems and instead relied on private septic systems and outhouses with limited indoor plumbing. Working with Loudoun County and Loudoun Water, we designed, permitted, and supported the construction of a new wastewater collection system and pump and haul tank for the four-acre, 15-parcel community that will eliminate existing septic systems, outhouses, and privy systems. Future improvements will include a packaged wastewater treatment system and drainfield, all designed to deliver a safe, reliable, and affordable system for this underserved community.

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GRANTS AS A FUNDING SOURCE

by Rebecca Neilon, PE



Last year, we helped procure nearly \$40 million in grants for our transportation clients in California. These funds will go primarily toward improving community infrastructure systems, such as roadways, bike and pedestrian paths, highways, and associated environmental engineering services throughout the state.

Municipalities across the country are frequently challenged with adequate infrastructure funding, as well as staff time, or awareness when it comes to the grant research, writing, and submission process, which can be complex, multi-faceted, and long. It's helpful when navigating grant sources to have a general understanding of the process, what reviewers are looking for, and how to proceed after an eligibility determination of funds has been made.

THINK BROADLY ABOUT **OPPORTUNITIES**

Identifying grants for your projects can be challenging but thinking broadly opens possibilities that could be easily overlooked.

Grants.gov

This site posts federal grants and other financial assistance programs. It features ways to get started, such as seeking federal grants that align with your work. You can save searches and receive alerts based on search parameters.

• The Guidebook to the Bipartisan Infrastructure Law (BIL)

BIL provides funding for transportation, water, resilience, and other infrastructure projects. Download the data into a helpful spreadsheet and sort to determine what might be available for your project.

• State and local funding agencies

State and local funding opportunities are less publicized than federal, so monitor these agencies (councils of government, state departments of transportation, etc.) for grant and low-interest loan programs.

CREATE A CLEAR AND CONSISTENT SCOPE

Without a clear understanding of the project's intended scope, the waters can get muddled when preparing a grant application. We've found it helpful to use questions to define the project's parameters, such as:

- Why is the project needed?
- What are the limits and features?
- What exactly is being built or designed?
- Why is the project important to the community, and what impacts will it have?
- What are the selling points and merits for the project?
- Is this project the result of operational deficiencies or safety concerns?

Prior to writing the application, outline these items to gain a precise understanding of the project and its relevance to the community. If the grant writer and project team aren't clear about this, it's likely that the





1 Stanislaus County, CA

Assisted in developing a financial plan for the **\$800 million North County Corridor project,** which included a



person reviewing the grant application won't be either, which could hurt your chances of being awarded important funds.

FOCUS ON COMMUNITY

Is there an impactful story tucked deep within your grant application? A few years ago, I worked on a grant to help a community turn a specific corridor into a pedestrian trail. Residents spent hours of their own time clearing the area of brush and debris—even their children pitched in to help. This was a powerful story that showed the application reviewer how invested the community was in making this project come to fruition.

MOVE FORWARD WITH LESSONS LEARNED

Debriefs are a strategically important part of a grant application process to understand how your application resonated with the agency, especially if you aren't awarded funds. Many agencies are glad to share feedback with your team about why you weren't selected for the grant—perhaps your scope wasn't clear, or you didn't showcase a strong community impact. Asking these questions will help improve your application for next time.

There are billions of dollars out there just waiting to be granted to communities. Knowing your grant opportunities, how to procure them, and not letting a "no" defeat the process, are all key parts of securing the money your community needs to improve infrastructure, advance community facilities and transportation corridors, and in the long term, prepare for economic growth.

2 City of Martinsville, VA

the Smith River Interceptor **Rehabilitation**, securing a

interest loan and

MILLION EDA grant

3 City of New Haven, CT

Helped secure funding to **repair** flood control structures through

MILLION in hazard mitigation

grant funds

"BUY AMERICAN" PROVISIONS PRESENT OPPORTUNITIES, CHALLENGES FOR INFRASTRUCTURE ACT PROJECTS

by Caroline Whitehead Federal Marketing Manager: Research and Analysis





Increased demand and supply chain issues have led to a

cost increase

construction materials and products

Federally funded infrastructure projects have long provided mechanisms to benefit other parts of the U.S. economy. The most familiar examples are "Buy American" provisions that require the use of domestically sourced iron, steel, and other materials wherever possible. The Build America, Buy America Act (BABA), enacted last November as part of the Bipartisan Infrastructure Law (BIL), expands that coverage to other construction materials, including non-ferrous metals, plastic and polymer-based products (e.g., polyvinylchloride, composite building materials, and polymers used in fiber optic cables), glass (including optic glass), lumber, and drywall.

While the intent of these provisions is certainly clear, implementing them has proven problematic. As a result, the U.S. Department of Transportation (USDOT) issued a 180-day suspension of BABA on May 19, 2022 to address guestions and concerns while allowing other facets of the infrastructure act to move forward. Other agencies are exploring similar waivers.

AVAILABILITY AND COST OF MATERIALS

The most challenging issues involve availability and cost. Increased demand and supply chain issues have made many transportation materials harder to find and more expensive. Some products cost as much as 21% higher, based on estimates by the U.S. Bureau of Labor Statistics. And as BIL funds are dispersed to states and eligible projects are scheduled, it's expected that the market for infrastructure construction materials will lose little of its current volatility.

Compounding the added cost is the fact that many suppliers of these materials, as well as the specialty contractors that use them, are small businesses that don't always have the reach or resources to cover the added expenses, including having staff available to review compliance with BABA provisions. Potentially, many of these small enterprises could miss out on project opportunities as a result. For contractors, alternative supply sources may be available, but the process of locating them, negotiating purchase prices, and securing delivery is sure to have a ripple effect on project schedules and budgets.

BABA has raised other questions as well. Many elements of domestically produced construction materials originate overseas, making the final products ineligible for meeting BABA requirements. Other new and current materials may qualify but have yet to receive federal certification for use under those provisions. And with a fiscal year 2026 deadline to fully allocate the BIL funding,

Information will be key to helping communities and project owners stay aware of what is sure to be a dynamic construction maximum benefit from the BIL's landmark funding opportunities.

> many industry organizations have publicly questioned whether some of the more complex issues associated with BABA can be resolved in time.

WHERE BABA STANDS NOW

At this writing, USDOT has given no indication that it will extend the current six-month waiver of BABA beyond December. But that doesn't mean the agency is ignoring the challenges. In response to the public comments when the waiver was first proposed this spring, USDOT published language in its final rule saying that the agency's Made in America Office "will issue further guidance" on certain provisions, including identifying initial manufacturing processes for each type of construction material.

The agency also acknowledged the need to collect more data to inform standards, and hinted that, following expiration of the current waiver, it might be amenable to refine specific elements of BABA over time as information becomes available and processes run their course, rather than waiting for every issue to be resolved before moving forward with implementation.

Though such an approach would facilitate optimal resolutions to BABA's many issues, changes could come quickly as the process unfolds. Information will be key to helping communities and project owners stay aware of what is sure to be a dynamic construction environment as they seek to help their citizens receive maximum benefit from BIL's landmark funding opportunities.

CREATING A BETTER MODEL FOR PERMITTING AND ENVIRONMENTAL REVIEWS

by Jeff Bray Senior Associate and Department Manager



The Biden Administration launched the Biden-Harris Permitting Action Plan in early 2022, which calls for a more "effective, efficient, and transparent permitting process" to accelerate a new generation of infrastructure projects. That means expediting permitting and environmental reviews while still following "the best science, information, and complete environmental effects analysis."

As a result, environmental leadership during the permitting phase has never been more critical. Organizations launching new infrastructure projects must improve how they work with federal and state agencies responsible for permitting; and must reconsider how to meet community needs for environmental protection, equity, and inclusion as infrastructure projects go forward.

ADAPTING TO NEW ENVIRONMENTAL STANDARDS

Upon establishing stronger climate and safety standards, the plan calls for creating sector-specific teams to accelerate permitting and improve environmental reviews to avoid redundancy. In states such as California, Florida, and New York, which have their own environmental laws, this is especially challenging because permitting requires coordination with both state and federal agencies concurrently. Changes to federal and state regulations must be interpreted at the state level, where staff members are repeatedly required to retool their understanding of new federal requirements.

Fortunately, "complex, capital intensive" projects may be covered under the federal FAST-41 permitting process, which can "accelerate information sharing and troubleshooting, and help agencies remedy near-term resource shortages for permitting." The plan describes how proactive, early, and ongoing engagement with the public and state, local, tribal, and territorial partners

is a core value. Organizations may find new resources available to them as they work to meet these more stringent environmental permitting requirements.

INCLUDING EQUITY IN INFRASTRUCTURE DEVELOPMENT

Prioritizing the environment involves reducing a project's carbon footprint and minimizing its impact on local air and natural ecosystems. But it also includes equity among people—that is, the consideration and inclusion of people affected by new transit and other infrastructure projects.

The plan gives the Federal Permitting Improvement Steering Council (FPISC) new authority when facilitating infrastructure projects that involve diverse populations, including Native American tribes and vulnerable communities. Acquiring input from local populations during the permitting process is a priority; for example, the plan directs agencies to "invite Tribal Nations to serve as cooperating agencies in environmental review processes" when appropriate.

These principles were already codified at the state level, to an extent. California is home to Native American tribes of all types, sizes, and levels of economic and civic participation. California's Assembly Bill for Tribal Cultural Resources (AB 52) calls for tribal coordination for all infrastructure developments.

Now, we're making progress in standardizing the review and permitting process at the national level so that all affected communities have a seat at the table. Specifically, the plan calls on project leaders and agencies to engage all stakeholders in infrastructure development as permitting begins. Under no circumstances should these communities be an afterthought or a "box to check" after projects begin.

MEETING MODERN STANDARDS FOR SUCCESS

Environmental leadership will continue to be an important asset to infrastructure development. Through a future-forward approach to environmental protection, equity, and inclusion, we can protect public interests and improve the quality of life for everyone. We must focus on safe, reliable, and sustainable projects that will benefit future generations and reflect the needs and priorities of all concerned.

EXPANDING OUTREACH: A VIRTUAL PUBLIC **INFORMATION CENTER**

During the preliminary engineering phase of the \$95 million project to improve a busy interchange at I-80 and Route 15 in Morris County, the New Jersey Department of Transportation (NIDOT) was faced with the challenge of conducting public outreach during the pandemic. The National Environmental Policy Act (NEPA) requires federally funded projects such as this to include a Public Information Center (PIC) as part of the environmental review process, but the agency was unable to host in-person public meetings.

As a result, NJDOT Government & Community Relations specialists teamed with Dewberry to create a virtual PIC that engaged stakeholders, presented key issues, and collected feedback from the public. It was widely advertised through local and state government websites and the news media. Dewberry created a 14-minute video to explain the project, using animation to depict project features.

The online information was available for two weeks, drawing a much larger attendance than an in-person meeting would have achieved. More than 1,700 people visited the site and viewed the video. The positive results led to the creation of a set of best practices for virtual PICs, including use of online surveys, leveraging the power of social media, and engaging local municipalities.

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OPTIMIZING RETURN ON INFRASTRUCTURE INVESTMENT THROUGH RESILIENCE AND SUSTAINABILITY

by Mathew Mampara, PE, Vice President and Department Manager and Antoinette Quagliata, ENV SP, LEED AP, Associate and Manager Sustainability Services



Our country's seven-year streak of at least ten more than \$1 billion disasters has created human suffering and a costly toll on infrastructure that has been damaged or destroyed. As infrastructure owners at the local, state, and regional levels take stock and respond to this continuing threat, there is growing recognition that our investments need to address these challenges.

While indicators abound, the sizeable holes in state and local budgets driven by expensive emergency repairs are leading to a wholesale shift in infrastructure planning. Owners now recognize that the best way to secure a positive return on investment is to address both resilience and sustainability in the project planning stages. By considering both aspects up front, owners can work with planners and designers to deliver infrastructure projects successfully while moderating the consequences of material choices and energy needs. Such an approach creates efficiencies by addressing a project's ability to resist climate stressors while considering building, structure, and energy consumption performance.

OPPORTUNITIES AT THE COMMUNITY AND STATE LEVELS

We have supported efforts to address climate resilience at the community, state, and federal levels. Through our contributions to innovative initiatives such as the New York City Climate Resiliency Design Guidelines, we have seen firsthand the positive return on investment by integrating future climate loads into infrastructure design. This type of effort offers useful guidance for the opportunities available as part of the Bipartisan Infrastructure Law (BIL), which will support programs that strengthen our nation's sustainability and resilience, particularly through infrastructure.

We are seeing these efforts at all levels of government. One example of available funding is a U.S. Department of Transportation (DOT) Federal Highway Administration (FHWA) program called Promoting Resilient Operations for Transformative, Efficient and Cost-Saving Transportation (PROTECT). This program allocates \$7.3 billion in formula funding and \$1.4 billion in competitive grants to states to support planning, resilience improvements, community resilience, evacuation routes, and at-risk coastal infrastructure.

THE TRANSPORTATION SECTOR IS LEADING THE WAY

The transportation sector, in particular, has been forward-focused in its approach to addressing resilience and sustainability. Transportation owners are considering tools such as policy communications, asset management, vulnerability assessments, and design guidance to deliver the optimal level of service over the life of a project. In addition to the renewed focus on resilience measures, many transportation projects are incorporating sustainability principles throughout design, influencing choices on siting, building materials, construction practices, stakeholder engagement, and energy considerations to help with a project's return on investment.

Projects such as the Lake/Orange Expressway (SR 516) for the Central Florida Expressway Authority (CFX) and the 495NEXT for the Virginia Department of Transportation are being designed for third-party verification by Envision[®], a rating system developed by the Institute for Sustainable Infrastructure (ISI). This rating system considers several sustainability criteria such as community impact, resource allocation, natural world implications, and climate and risk factors.

We are helping CFX pursue Envision verification for a proposed limited access toll road that involves powering some of the infrastructure with solar arrays, implementing an in-road electric vehicle charging pilot project, constructing a pedestrian trail, eliminating traffic signals through the implementation of free-flow interchanges, and instituting a xeriscape landscaping program. Our design-build team for the 495NEXT project is leading the Envision effort to incorporate sustainable, resilient, and equitable solutions, which include reducing the number of stormwater management facilities from 19 to three, revising the design to reduce both environmental and right-of-way impacts, and providing more onsite treatment than the original design.

On the resilience side, many DOTs are interested in integrating climate change into their design efforts but have struggled to understand how to proceed. To address this gap, our team led an effort for the Transportation Research Board (TRB) to pilot a design practices guide that DOT engineers can apply to account for climate change for both coastal and inland infrastructure design. The research has yielded valuable insight and effective practices that, working with the American Association of State Highway and Transportation Officials (AASHTO), will advance agency efforts to address climate change.

FULLY CHARGED: CREATING A NATIONWIDE EV CHARGING INFRASTRUCTURE

by Dave Revette, PE, Associate and Project Manager and Tanja Brix, PE, Senior Associate and Senior Project Manager



The Biden Administration has established a goal of achieving a 100% clean electrical grid by 2035 and net-zero carbon emissions by 2050. To prepare for the millions of electric vehicles (EVs) that will steadily replace internal combustion vehicles, the nation will require the installation of thousands of vehicle charging ports, involving careful planning, permitting, and design.

The demand for EV programs, from individual users to full commercial fleets, has the potential to create a significant reduction in carbon emissions and is critical to our progress on climate change. Both the federal government and the state of California have published aggressive climate action plans that are focused on incentivizing drivers to make the shift from gas to electric-powered vehicles.

A NATIONWIDE APPROACH TO EV ADOPTION

The Bipartisan Infrastructure Law (BIL) aims to help establish a network of 500,000 publicly accessible charging stations nationwide by 2030. The law establishes the National Electric Vehicle Infrastructure Formula Program (NEVI Formula) that includes \$5 billion for states to build a national charging network, as well as \$2.5 billion in competitive grants to support community and corridor charging,



improve air quality, and increase EV charging access in underserved areas. The development of charging infrastructure in rural areas is especially important, as nearly 70% of America's road miles lie in rural areas with fewer public transportation options.

NEVI Formula funding requires each state to submit an Electric Vehicle Infrastructure Deployment Plan, with a goal of creating charging infrastructure and building an interconnected network to facilitate data collection, access, and reliability. The U.S. Department of Transportation partnered with the U.S. Department of Energy to create guidance for states and localities to help meet market demand, address connections to the electric grid, and foster public-private investment.

In addition to the federal guidelines, many states are looking to California as a model for the zero-emission vehicle (ZEV) market. California currently leads the nation in ZEV metrics, including the highest level of public funding, the largest EV market share percentage, and the most extensive public charging infrastructure. The state has announced plans to invest \$10 billion to ramp up electric vehicle adoption and infrastructure with a goal of 100% of in-state sales of new cars and passenger trucks being zero-emission vehicles by 2035.

DESIGNING EV INFRASTRUCTURE

Many municipalities, businesses, and energy providers are launching programs to install public charging stations near office buildings, shopping centers, civic buildings, multi-family housing complexes, sports fields, and highway travel plazas. The installation of EV charging stations requires a comprehensive set of services, including program management, due diligence, planning, engineering design, permitting, and construction oversight. We have helped utility

2035 100% clean

2050 Net-zero carbon emissions

companies, vehicle manufacturers, transit agencies, municipalities, campuses, and technology providers with installations throughout the U.S., including the design of more than 6,000 stalls and 600 EV charging stations in 26 states at greenfield sites, existing parking lots, and in parking garages.

Knowledge of jurisdictional regulations is key, including local zoning restrictions, codes, and ordinances; review processes; and applicable state legislation. For example, California requires that projects meet strict, state-level accessibility codes in addition to meeting federal standards. Through our partnership with one of the largest private EV charging networks in the U.S., we have assisted in designing charge stations in accordance with these codes before submitting to local review agencies in order to streamline permitting.

THE FUTURE OF CARS IS ELECTRIC

According to BloombergNEF, which researches the global energy and transportation market segments, passenger EV sales are predicted to reach 8.5 million units worldwide by 2025. Key factors that will enhance vehicle pricing and popularity include the decreasing costs of batteries, improvements to the flexibility and reliability of the electric grid, and the growing availability of charging stations throughout the country, from dense urban districts to remote rural areas.

Today, there are more than two million EVs and 115,000 chargers on the road in the U.S. With continued public and private investment to expand this infrastructure, the nation is well positioned to transition to an all-electric future in transportation—adding new jobs, reducing emissions, creating cleaner air, and continuing to address the challenges of climate change.

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APPLYING FUNDING TO IMPLEMENT A ZERO EMISSIONS POLICY

by James Heeren, PE, ENV SP Senior Associate and Department Manager

Signed in December 2021, Executive Order 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,* intends to accelerate America's clean energy economy through national leadership and by example. The executive order aims for the U.S. to lead in reducing emissions across federal operations, investing in clean energy, and planning for resilient communities.

Goals for federal government agencies now include:

- 100% carbon-pollution free electricity by 2035
- 100% zero-emission vehicle acquisitions by 2035
- Net zero emissions from federal procurement and all federal contracts by 2035
- Focusing on renewable energy, such as transferring vehicles from diesel to hydrogen

Coinciding with this initiative, the U.S. Department of Energy received \$63 billion under the Bipartisan Infrastructure Law (BIL) to improve grid reliability and resilience through clean energy demonstrations and research hubs with the goal of reaching net zero emissions by 2050. The department's Office of Energy Efficiency and Renewable Energy supports the deployment or demonstration of technologies focused on:

- Decarbonizing the electricity sector through offsetting emissions by low-carbon energy sources
- Transportation across all modes, with a heavy focus on electric vehicle charging infrastructure
- Reducing the carbon footprint of buildings

With these ambitious goals in place, rating systems such as the Institute for Sustainable Infrastructure's Envision[®] can help us meet the new objectives for infrastructure projects. These systems support building infrastructure that aligns with the aforementioned department goals. As an example, Envision values 64 different credits to guide project development, with 10 credits dedicated to climate and resilience. Through model programs, demonstrations, ongoing research, and evaluation tools, local and state governments will now have ample resources and guidance to become "Clean Energy Champions."