2023

STATE OF THE ROAD BUILDING INDUSTRY:

THE GREEN DREAM

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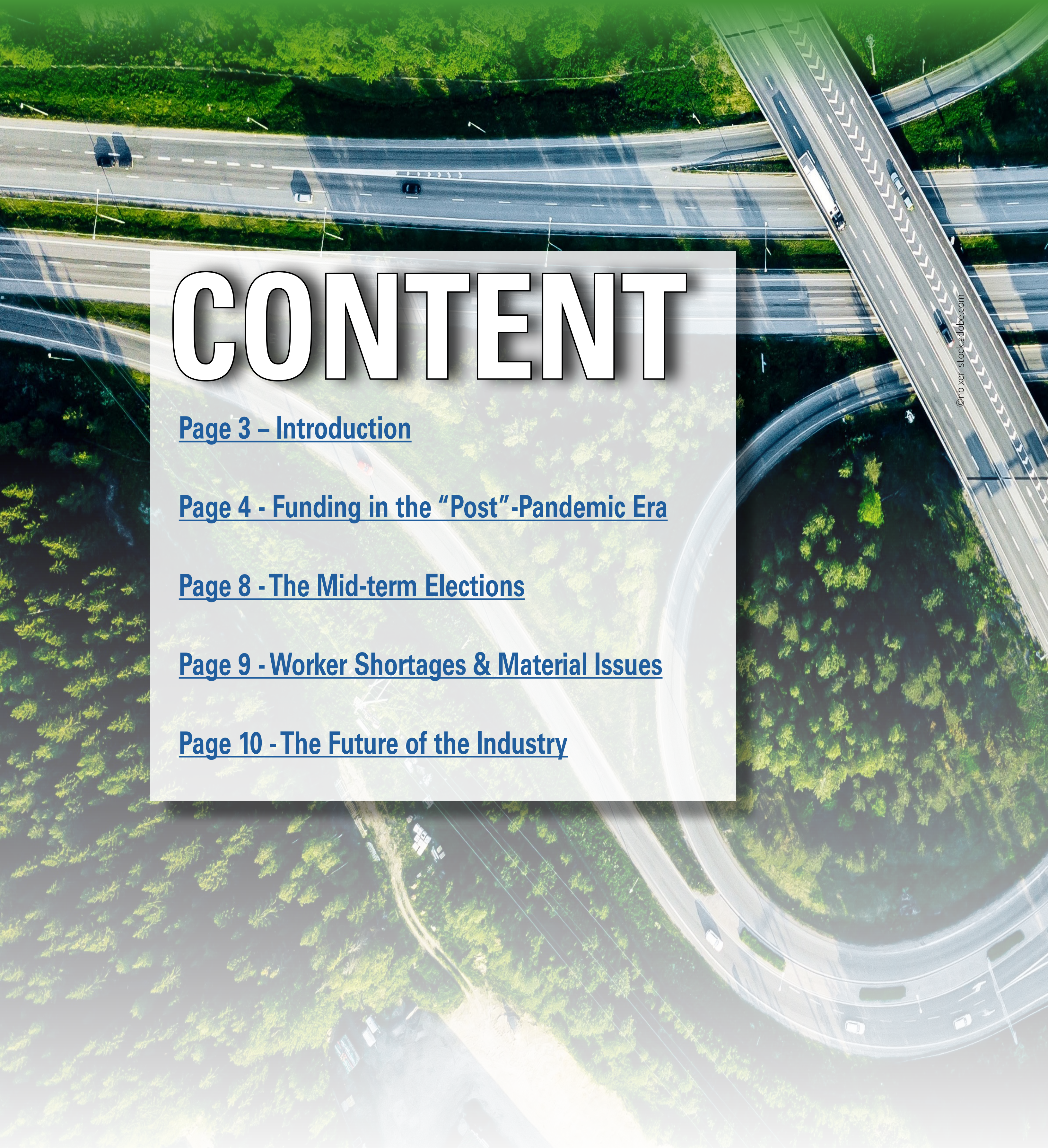
ASPHALT CONTRACTOR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INTRODUCTION

Every year, Asphalt Contractor Magazine reaches out to several experts within the industry, people with deep understanding and experience, to help us shed light on what the year ahead might bring. In 2022, the Infrastructure Investment and Jobs Act (IIJA) was officially the law of the land for a full year. This enabled a huge wave of work to get underway with its historic investments in infrastructure initiatives all across the country. Now, with the passage of the complimentary **Inflation Reduction Act (IRA)**, the federal government aims to influence, not just the road building industry, but other adjacent industries, as well, to take more aggressive and innovative steps against climate change and environmental disaster.

Meanwhile, the namesake of the bill continues to be a big factor in everything from production timelines and job bids, to staffing gaps and retention rates. Throughout the year, the expectation was that, eventually, a corner would be turned concerning the continuous problems with employment. That still hasn't happened, and questions remain about whether or not 2023 will be materially any different. New technology seems poised to make major gains, but their practicality and their adoption aren't always in-sync.

One thing seems a consistent through-line, despite the various challenges faced by manufacturers, contractors, employers and laborers, the industry feels alive and active. Right now, there's an energy and a momentum that makes it feel like a great time to be a part of this vibrant community of hardworking people.

"Right now, there's an energy and a momentum that makes it feel like a great time to be a part of this vibrant community of hardworking people."

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FUNDING IN THE "POST"-PANDEMIC ERA

Q With the passage of the Inflation Reduction Act, what are some of the biggest immediate or expected impacts? Is there enough awareness through the industry about its programs/funding opportunities?

Are next year's infrastructure prospects expected to improve under the legislation or will supply chain/employment gaps still hamper progress?

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The Inflation Reduction Act: A Summary

On August 7, 2022, the Senate passed the bill on a 51–50 vote, with all Democrats voting in favor, all Republicans opposed, and Vice President Kamala Harris breaking the tie. On August 12, 2022, the bill was passed by the House on a 220–207 vote, with all Democrats voting in favor and all Republicans voting against it. On August 16, 2022, the bill was signed into law by President Joe Biden.

The Inflation Reduction Act of 2022 will make a historic down payment on deficit reduction to fight inflation, invest in domestic energy production and manufacturing, and reduce carbon emissions by roughly 40 percent by 2030. The bill will also finally allow Medicare to negotiate for prescription drug prices and extend the expanded Affordable Care Act program for three years, through 2025.

Here is a selection of some of the spending included in the bill relevant or adjacent to the asphalt industry:

- It will invest $391 billion in provisions relating to energy security and climate change
- This includes $270 billion in tax incentives, and $27 billion for a green bank created by amending the Clean Air Act
- $128 billion for renewable energy and grid energy storage
- $13 billion for electric vehicle incentives
- $37 billion for advanced manufacturing
- $32 billion for investments in rural economies
- $3 billion to reconnect neighborhoods harmed by infrastructure potentially via freeway removal & requires that the government reduce embedded emissions in its procurement process

The investments made by the law would reduce net emissions 42 percent below 2005 levels, compared to 27 percent under current policies (including the Infrastructure Investment and Jobs Act).

Dr. Audrey Copeland, President and CEO, National Asphalt Pavement Association: IRA is a significant legislation addressing deficit reduction, healthcare, taxes, environmental justice, and domestic energy production. For asphalt producers and suppliers, the biggest impact will be felt from the provisions dealing with climate change. IRA takes a carrot-versus-stick approach to addressing greenhouse gas emissions. IRA does not tax carbon or establish penalties for exceeding targets. Rather, IRA takes the approach of investing in low-carbon technologies through grants and incentives.

The legislation encourages the industry to decarbonize by providing grants to businesses to acquire environmental product declarations (EPDs), grant funding to upgrade plant facilities, and tax credits to reequip plants to reduce carbon emissions. The most significant issue will be the authority granted to the EPA to define a "low carbon asphalt pavement mix" eligible for procurement by the Federal government and states under the Federal-aid highway program. NAPA is continuously working all of these issues and maintains updated resources on AsphaltPavement.org/IIJA.

Dr. Alison Black, Senior Vice President & Chief Economist, American Road & Transportation Builders Association: The Infrastructure Investment and Jobs Act (IIJA) provided a significant boost in federal transportation investment, which impacts every state highway, bridge, and transit program over a multi-year period. On average, federal investment accounts for over 50 percent of state spending on capital outlays.

The IIJA supported over 25,000 new highway and bridge construction projects in 2022. Typically states commit their federal funds, and projects are awarded. Construction work will begin and may continue for a multi-year period. We saw this dynamic in the first year of the IIJA. States obligated their formula federal-aid highway program funds and put projects out to bid. Over the course of the year, state and local highway contract awards were up 20 percent compared to 2021 as projects got into the spending pipeline. As work on these projects began, highway construction activity increased over 8 percent in 2022.


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Asphalt and The Environment in The Inflation Reduction Act

The IIJA and the Inflation Reduction Act (IRA) were both originally part of the same overall legislative vision from the Biden administration referred to as Build Back Better. They were separated in April of 2021, as part of a House-backed effort to pass the mammoth spending bill in a piecemeal way. The IIJA focused on the literal physical infrastructure, and what would become the IRA, as a bill more focused on the human element. However, the IRA is known as the largest single spending measure in U.S. history in regards to addressing climate change through sustainability efforts and incentives.

While the IRA attempts to address a sprawling number of issues facing the country including deficit reduction, health care, tax revisions, environmental justice, and domestic energy production — the provisions that are of greatest concern to the asphalt industry are in regard to climate change and emissions reduction. There are seven of these key funding opportunities with billions of dollars in incentives for the industry. And while the IRA does set clear targets for these incentives, it doesn't include carbon-taxes or penalties for exceeding these targets. Instead, it opts for broad investments in carbon-reducing technologies through grant programs.

- **Environmental Product Declaration Assistance** - To support the development, enhanced standardization and transparency, and reporting criteria for EPDs which include measurements of the embodied greenhouse gas emissions of the material or product associated with all relevant stages of production, use, and disposal, and conforms with international standards for construction materials. Grants will also be used to develop and verify EPDs and provide technical assistance. $250 million to remain available until September 30, 2031.

- **Low-Embodied Carbon Labeling for Construction Materials** - To identify and label construction materials and products that have a substantially lower levels of embodied greenhouse gas emissions associated with all relevant stages of production, use, and disposal, as compared to estimated industry averages of similar materials or products as determined by EPA based on EPDs, or as verified by State agencies as verified by EPA. $100 million to remain available until September 30, 2026.

- **Use of Low-Carbon Materials** - To procure and install materials and products used in construction or alteration of buildings under the jurisdiction of GSA that have substantially lower levels of embodied greenhouse gas emissions associated with all relevant states of production, use, and disposal as compared to estimated industry averages of similar materials or products, as determined by EPA. $2.15 billion to remain available until September 30, 2026.

- **General Services Administration Emerging Technologies** - For emerging and sustainable technologies and related sustainability and environmental programs. $975 million to remain available until September 30, 2026.

- **Low-Carbon Transportation Materials Grant** - To reimburse or provide incentives for the use, in projects, of construction materials and products that have substantially lower levels of embodied greenhouse gas emissions associated with all relevant stages of production, use, and disposal as compared to estimated industry averages of similar materials or products, as determined by the EPA. The amount of reimbursement shall be equal to the incrementally higher cost of using such materials relative to the cost of using traditional materials. The incentive amount shall be equal to 2 percent of the cost of using low-embodied carbon construction materials and products. The total federal payable share of a project for which a reimbursement or incentive is provided shall be up to 100 percent. $2 billion to remain available until September 30, 2026.

- **Advanced Industrial Facilities Deployment Program** - To award grants on a competitive basis for projects designed to accelerate greenhouse gas emissions reduction progress to net-zero at eligible facilities that (1) purchase, install or implement advanced industrial technologies or (2) retrofits, upgrades, or provides operational improvements at an eligible facility, or (3) engineering studies and other work needed to prepare the facility for such a project. The grant may be up to 50 percent of the cost of the project. The DOE shall give priority for projects on the basis of expected greenhouse gas emissions reductions to be achieved, the extent to which the project would provide the greatest benefit for the greatest number of people within the area, and whether the eligible entity participates or would participate in a partnership with purchasers of the output of the eligible facility. $5.812 billion to remain available through September 30, 2026.

- **FEMA Build Materials Program** - To provide financial assistance for the cost of using low-carbon materials and incentives that encourage low-carbon and net-zero projects. Existing Budget, No New Funding.

Bob Huitt, President, Asphalt Emulsion Manufacturers Association (AEMA): I think the Act does more to fund studies on how we can reduce carbon emissions than actually reducing them or impacting state/local projects. Also, as with most federal funds it comes with a lot of strings attached which are not good for our industry.

Chuck Ingram, President, International Slurry Surfacing Association (ISSA): In our area it seems that the rollout of this funding is slow to come. Maybe it is due to the awareness or communication. I don't get the impression that preservation will benefit greatly from this initiative. As with all aspects of the industry, supply chain and employment issues are sure to affect progress here.

Q

With the support for EV growing, including the national charging network in progress, gas tax revenues that were already in real trouble, are now in even worse shape.

What can be done right now at the federal level to help State DOTs feel more confident?

What alternatives to gas-taxes are currently available and what alternatives aren't being discussed?

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Copeland: For years, advocates have promoted replacing the fuel tax with a vehicle miles traveled (VMT) fee. A VMT fee is a user charge based on miles driven in a specific vehicle. The fee could be applied based on distance travelled and potentially vary based on geography, whether the vehicle was personal or commercial, vehicle weight, and time of day.

Such a tool could be a practical replacement for fuel taxes, which have not been raised at the federal level since 1993; the purchasing power of these user fees has fallen significantly over the past 30 years, due to factors like inflation and the introduction of electric vehicles.

Several states and regions have implemented VMT pilot programs, including Utah, Oregon, the Eastern Transportation Coalition, and others. None have tested the concept at the federal level. But with the passage of the Infrastructure Investment and Jobs Act (2021), the U.S. Secretary of Transportation is required to establish a national VMT pilot to "test the design, acceptance, implementation, and financial sustainability" of such a system.

Advancement of a national VMT system will require adequate system development, generating nationwide awareness and informing public opinion, combining state and federal efforts into a unified national concept, and resolution of key issues learned from the initial pilot programs. A national VMT pilot is a valuable effort to test the effectiveness and acceptability of a potential future VMT system.

That is why NAPA, through its coalition partners, the Americans for Transportation Mobility and the Transportation Construction Coalition, is funding research being conducted by the Eno Center for Transportation to create a series of key performance indicators that can measure how well the pilot works in terms of administrative costs, participant satisfaction, social equity, and other factors as determined through our previous work. The performance indicators will include a discussion of the rationale, the data needed for evaluation, and benchmarks to determine success.

The goal of the research is not to recommend a permanent VMT fee structure, but to inform the ongoing pilot. Having smart, data-driven performance indicators and parameters in the pilot will be critical to making an informed policy decision in the next surface transportation law about whether to make such a fee permanent.

Huitt: You are just going to have to charge based on usage. There is no other way. It should be done similar to income taxes where you pay as you go based on an estimate of your mileage. Paying it to your insurance company is a good way to collect it. Then at the beginning of the next year you square up with either additional payment or a refund. If you don't pay, you don't have insurance and can't drive.

Ingram: I'm not seeing a ground swell of interest in EV growth here. I just don't see that technology taking off in a huge way. Alternative funding streams here at home include vehicle registration fees and tolling. The infinite wisdom of our elected has removed some of the funding mechanisms that were in place.

Q

A lot of the IRA funding was tied to incentive-based measures, looking to help businesses who make the move towards sustainable resource, materials, and processes.

Will it be enough to move the industry towards desperately needed climate goals and projections for emission reductions? Are the financial incentives enough of a driving factor?

Copeland: There are several readily available technologies and practices to reduce the carbon footprint of asphalt pavements that are economically viable, but the industry is often constrained by external factors that it has limited ability to control, such as agency limitations on the use of reclaimed asphalt pavement (RAP) in new asphalt mixtures. With so much attention focused on reducing greenhouse gas emissions, we are starting to see some agencies that are willing to revise their specifications to allow for asphalt mixtures with lower embodied carbon. This is very encouraging.

On the other hand, we know that a significant amount of research and development will be needed to achieve deeper decarbonization goals. At the plant level, this includes technologies like low-carbon burner fuels, electrifying thermal processes, and cold central plant recycling. Looking up the supply chain, this may include carbon capture, utilization, and storage (CCUS) in the petroleum industry and even the use of alternative (bio-based) feedstocks for asphalt binders. The IRA funding is an important step toward funding these initiatives. But continued and more significant investment will be needed to achieve net zero greenhouse gas emissions.

Notes from NAPA: The Road Forward

With much attention on equity, climate, resilience, innovation, and disruption, I'd be remiss if I didn't acknowledge how the industry has coalesced behind The Road Forward, our collective initiative to achieve net zero carbon emission asphalt pavements by 2050. The Road Forward was designed by members, for members, as well as the entire U.S. asphalt industry. NAPA launched The Road Forward in early 2022 having already identified a decades-long work plan, because it will take a concerted, industry-wide effort to achieve that audacious goal. Afterward, we saw an outpouring of support from the industry, with public and private companies stepping up to contribute. In the program's first year, we welcomed 25 funding partners of all types: mix producers, additive suppliers, equipment manufacturers, and technology innovators. Their experience with each other and with agencies and road owners will truly inform this work. I expect the partnership to grow, bringing all of these and more industry partners together to solve one of the most important issues of our time.

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Huitt: The financial incentives are probably not enough to be a driving factor. We are going to have to figure out how to make the free-market system address sustainability.

THE MID-TERM ELECTIONS

Q We know that each party has very different views on how they would approach funding/taxes, but, as a matter of generalization, which stated policy type most directly benefits the immediate future for the industry? If legislative power were to change hands, how might this impact the road building market? Would continuing stability in that regard be better?

Black: Lawmaker support for improving road, bridges and public transportation remains strong as improvement projects get underway in every congressional district. If Republicans take control of the House, it will result in a majority who did not vote for the IIJA or were not in office when it was approved, which could create uncertainty surrounding the FY 2023 appropriations process.

However, regardless of who controls the Senate, it will still have a majority of IIJA supporters. This, combined with an ever-looming presidential veto threat, suggests funding levels are unlikely to significantly change.

That said, it is imperative that the transportation construction industry be prepared to push back on any future threats to the law's funding. If Republicans are in the majority in either chamber, a greater focus on ensuring state flexibility and monitoring regulatory action is expected. Implementation of project delivery reforms, a key Republican IIJA priority, will also be a likely area of focus.

Copeland: The good news here is that IIJA is Public Law. IIJA sets the funding levels and establishes the highway programs that are now in place through 2026 irrespective of who controls the levers of power in Washington. The focus over the next year will be implementation of IIJA.

Huitt: Right now we are printing money we don't have. We need to figure out who is going to pay for these initiatives. I think a change in legislative power will change that. I don't know how our legislators expect to keep the gas tax the same and yet improve or even maintain our infrastructure given the inflation over the last 20 years.

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WORKER SHORTAGES & MATERIAL ISSUES

Q Companies continued to see rising costs related to materials, and still, some see the availability of those materials as inconsistent. Are American suppliers stepping up to fill some of those gaps? Have contractors seen any improvements over last year? What's the forecast for these shortages into 2023?

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Black: The impact of rising costs and the availability of materials is an issue that has impacted every industry in the U.S. economy, including highway construction. The average cost of highway and street construction input is up about 13 percent compared to last year, according to data from the U.S. Bureau of Labor Statistics. While this is largely driven by the rising cost of energy and fuel, prices are up for most goods, services, and commodities.

The impact on state construction programs can vary significantly, depending on the region and type of project. This was underscored in a survey of ARTBA state chapter affiliates. Forty-eight percent reported state DOTs had canceled, delayed, or pulled projects from the schedule because of issues with material costs or availability. Fifty-two percent reported that had not been the case in their state.

Nearly all respondents agreed that engineers' estimates have been less accurate because of rising material costs. Research by ARTBA on state bid patterns suggests that overall, low bids are coming in about ten percent above engineer's estimates. Meanwhile, the value of state and local highway and bridge contract awards is up 20 percent. This suggests that while material prices and rising costs are an issue, there is still real growth in the market.

Huitt: Most of the material shortages are starting to ease. Lead times are still an issue. Issues with China may hurt a lot going forward.

Ingram: While material costs have certainly risen significantly, the availability has not been dramatically affected. Like everywhere else, the throughput of these costs to the customer has affected the amount of work that can be accomplished due to budgets not keeping track in many situations.

Fritz: Shortages are easing, and that has a lot to do with overall supply chains. International shipping costs have fallen dramatically due to lower energy prices, decreased global demand, and a reduction in covid-restrictions at ports around the world. As the global economy weakens heading into 2023, pressures on materials prices and availability should abate, freeing up supply for domestic contractors.

Copeland: As an essential public service, the asphalt pavement industry has been very resilient over the years, even during recessionary periods. The fact that Congress enacted the largest public works ever when IIJA was signed into law by President Biden guarantees highway project funding through 2026. What we are seeing at the end of 2022 is that many projects have either been obligated or put out to bid, with the expectation that these projects will be carried out next year. Backlogs are at record levels and that will keep the industry busy even if the country dips into recession next year. There is no doubt that the recession may impact private markets, but we do not anticipate a significant downturn in the public markets, which represent the majority of the asphalt pavement industry's funding source.

Notes from NAPA: Resiliency
NAPA is a leader in tackling the pavement resilience issue. In 2019, we funded a collaborative workshop with agencies, industry, and academics to get a better understanding of what resilience means in the context of asphalt pavements. We have hosted webinars and published reports on this topic, available at AsphaltPavement.org/Resilience. The primary lessons can be distilled to three broad topics.

First, asphalt pavements can be adapted to changing climate conditions through routine maintenance activities. For example, agencies can change the specified asphalt binder grade in response to expected changes in temperature extremes. Second, asphalt pavements can be designed for resilience during initial construction and reconstruction through Perpetual Pavement design and other approaches that strengthen the entire pavement structure. Finally, the reality is that no agency will have the funding to strengthen and adapt their entire pavement network to every potential hazard. So when disaster strikes, asphalt's ability to be constructed and open to traffic in hours is an incredibly important tool for quickly putting damaged roads back into service.

THE FUTURE OF THE INDUSTRY

Q There has been murmurings by some economists that 2023 could see a potential recession. In either case, whether the economy goes into recession or not, how might that impact our industry as it currently stands?

Huitt: I feel our industry is relatively recession-proof although not completely. If the government embarks on a public works program to offset the recession, that could be a positive.

Ingram: In our part of the industry, pavement preservation, we may not be affected quite as significantly as the construction side.

Fritz: Privately financed nonresidential construction stands to be negatively impacted by a recession in 2023, especially in already beleaguered categories like office and commercial jobs. While the residential segment will likely be negatively impacted, it will be difficult to separate the impacts of the highest borrowing costs in decades, which have brought home-buying to a standstill, from the effects of a recession. One potential benefit of a recession is that it could potentially ease labor constraints, helping contractors to increase staffing levels while reducing upward pressure on wages.

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Q If the road building industry is recession proof, in part or in certain areas, how is that reflected?

Black: States plan to increase highway and bridge capital spending by 13 percent in 2023, according to an ARTBA analysis of state Department of Transportation budgets, driven in large part by the IIJA. While transportation construction is not immune from broader economic trends, the multi-year investment levels in the IIJA provide some stability for the industry.

In addition to growing federal investment, state and local governments continue to increase their own transportation revenues.

On November 8, voters approved nearly 88 percent of 380 transportation funding measures on the ballot. Since 2010, voters in 44 states have approved an average of 85 percent of nearly 3,000 state and local ballot measures.

Ingram: Historically, road agencies may not have the needed funding to increase capacity or build new infrastructure, but they have an obligation to maintain what is already in their inventory. Some of the best years in the pavement preservation industry have come during economic downturns.

Fritz: While spending in the highway and street category held up nicely during the Great Recession (2008-2009), it fell back to earth during 2013, likely due to strained government financing. So, while road building may fare well during recessions, it might simply be feeling the harmful effects on a lag.

In a time of rapid change, like the last few years, have there been procedures that have changed for the better (i.e. use of more e-ticketing and online collaboration software)? How is this benefiting contractors?

Copeland: Tools that aid in communication are changing the industry the fastest. Software that allows real-time communication and documentation between different parts of the project team means people can make more-informed decisions and set the stage for a better understanding of pavement performance. As construction is digitally documented, as the pavement comes to the end of its usable life, future engineers will be able to choose appropriate rehabilitation strategies for ensuring the pavement continues to give back to the driving public.

Ingram: E-ticketing and other technological ways to streamline communication (not only with the agency, but the traveling public through outreach), document submittals, etc. has helped in all facets of project management and closeout. All that helps expedite payment as well!

Has the pandemic/post-pandemic helped or hindered technology adoption for the industry in the future?

Copeland: The pandemic spurred some technology adoption, such as e-ticketing. Including e-ticketing as part of FHWA's Every Day Counts initiative was a direct response to the pandemic. In the early days of the pandemic, we still did not have much information about how the virus spread, and people did not want to be passing paper tickets between parties and needed to maintain social distancing. Therefore, e-ticketing was an off-the-shelf solution that companies began to implement.

Huitt: It should help. The pandemic has a lot to do with worker shortages, so companies will want to automate to provide relief.

Ingram: We have learned many lessons in the past 2-3 years on how to use technology for our benefit. From an old school perspective, we have also learned how to "hide". It is still construction here, people need to get back to work and be present when decisions have to be made.

Notes from NAPA: Industry Innovations
The shift toward Buy Clean policies is poised to have a significant impact on our industry. Through the Inflation Reduction Act, funding is available and agencies will be willing to pay a premium for construction materials with lower embodied carbon. Requirements to submit environmental product declarations (EPDs) will become the new normal. This is a paradigm shift for the asphalt paving industry, which has traditionally been a low-bid environment.

Balanced mix design (BMD) is the most innovative, currently available force for change. BMD empowers state agencies to relax prescriptive specifications and instead focus on performance. Contractors have been designing asphalt mixtures using volumetrics for decades, but a shift toward performance could allow contractors to become more innovative or use local materials or even more recycled materials—benefitting the public through better pavement performance, the agencies through potentially lower costs, and the environment through use of local, recycled, and/or novel materials

Q How can contractors be prepared for change and what can help them adapt faster?

Copeland: Asphalt mix producers can prepare for upcoming Buy Clean policies by learning about and developing EPDs for their asphalt plants. See AsphaltPavement.org/EPD. Contractors need to familiarize themselves with what is happening in their state and region.

NAPA's BMD Resource Guide (AsphaltPavement.org/BMD) provides information on what states are doing and which tests are being considered. Additional tools are available to help contractors enter this new era of mix design with a better understanding of how to succeed.

Huitt: They should stay in close contact with their customers, and ask a lot of questions. Get involved with their industry associations.

Ingram: There always will be ways to adjust what we do, but again, in this industry if we focus on doing what we do better, like communicate on all levels, adapt to new needs of employees and provide customer satisfaction (imagine that!), we will be fine.

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