SUMMER 2020

ENGINEERING INC.

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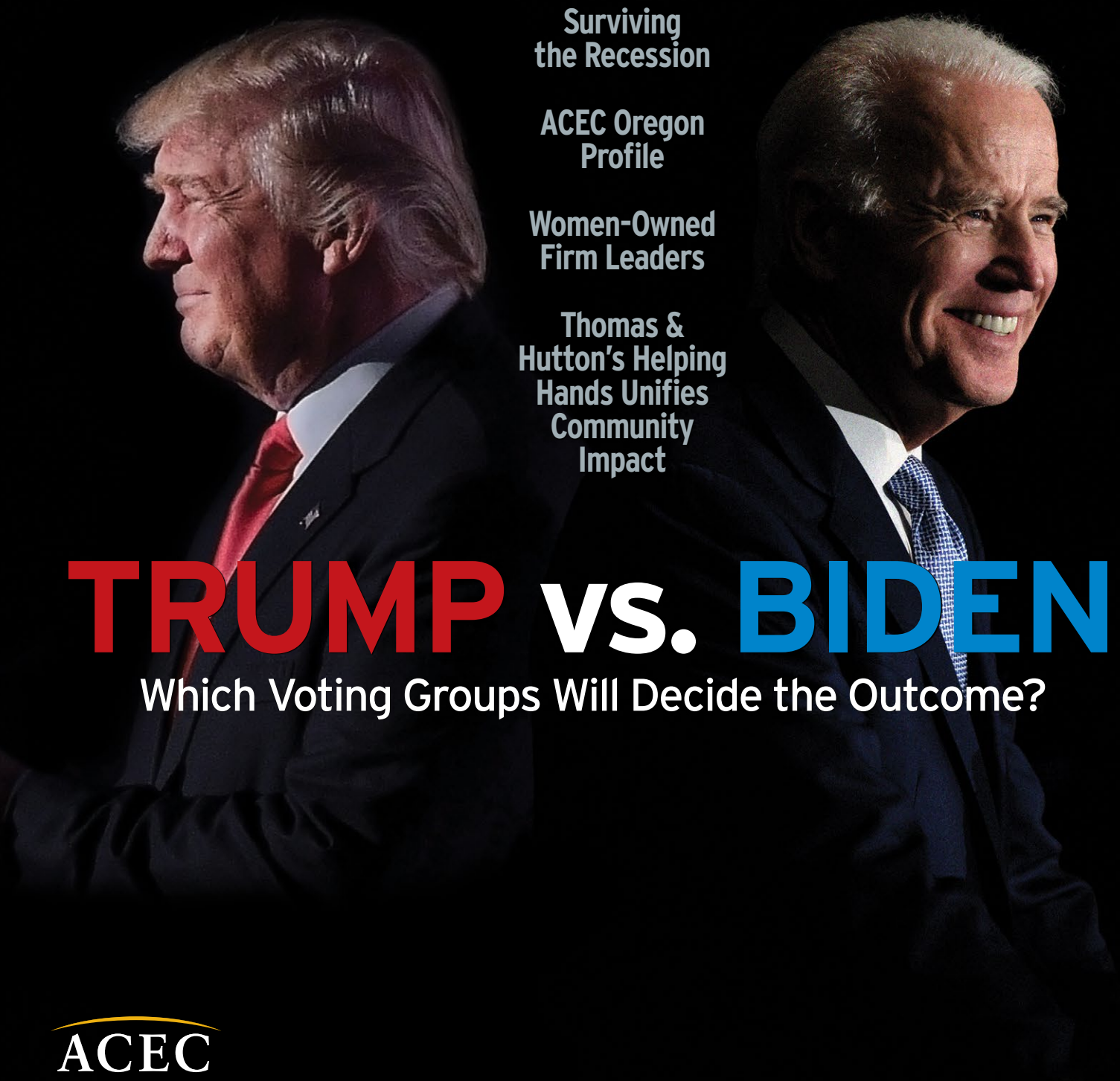

Surviving the Recession

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Women-Owned Firm Leaders

Thomas & Hutton's Helping Hands Unifies Community Impact

TRUMP vs. BIDEN

Which Voting Groups Will Decide the Outcome?

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Survey statistician
Zogby Analytics

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WHAT FACTORS WILL DETERMINE THE 2020 PRESIDENTIAL ELECTION?

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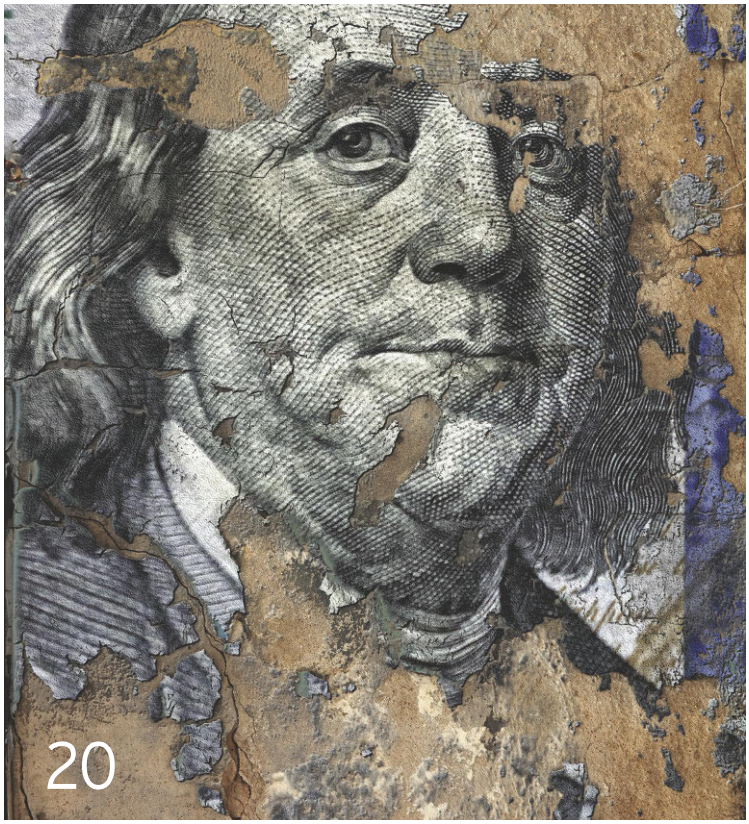

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COVER: GETTY IMAGES

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ACEC's award-winning quarterly magazine *Engineering Inc.* provides expert analysis on all issues affecting the overall business of engineering. Other highlights include in-depth interviews with major policy makers whose decisions impact bottom lines; updates on critical advocacy issues and industry news, best practice management trends and marketplace projections, along with member firm innovations and announcements.

The articles and editorials appearing in this magazine do not represent an official ACEC position or policy unless specifically identified as doing so.

Innovation Takes Center Stage in New Normal ACEC/PAC Fundraising

Among the many Council operations that have been impacted by COVID-19, few have adapted to the pandemic's restrictions as well as ACEC/PAC.

Traditional and successful ACEC/PAC fundraising occasions—such as in-person events at the Annual Convention and Fall Conference, sweepstakes drawings, themed receptions, and the new, popular Pinewood Rally—had to be put on hold. Also affected were fundraising efforts at the state level such as golf outings, sweepstakes drawings, raffles, and auctions.

Since April, State Organization executives, along with PAC Champions throughout the nation, have frequently conducted virtual meetings to develop innovative PAC fundraising campaigns, all to continue progress in meeting the over $1 million national goal.

The results have been impressive, highlighted by a summerlong "World's Largest Golf Tournament"—where ACEC members play golf, network with colleagues, and compete for prizes.

Also held were a PAC Walk for Infrastructure, with a photo contest for Best in Wildlife, Landscape, and Distressed Infrastructure, in addition to virtual online raffles, cooking shows, whiskey clubs, trivia competitions, and a virtual "dialing for dollars."

It shows that support for ACEC/PAC—the Council's primary tool for political engagement—has remained strong, despite challenges of the new normal.

Our *Engineering Inc.* cover feature provides expert analysis of the voter categories that will largely determine the outcome of the upcoming presidential election *(see page 14)*. Also included are a profile of Member Firm owners who are women (*see page 24*) and a report on how to keep your firm's business health strong throughout the recession *(see page 20)*.

We have a fantastic lineup of speakers and business management education options in store for viewers of the Council's first-ever virtual 2020 Fall Conference (Oct. 28–30). That will be followed a few weeks later by the virtual 2020 Engineering Excellence Awards Gala, on Dec. 1.

Looking forward to seeing you, virtually of course.

Charles J. Gozdziewski
ACEC Chairman

Linda Bauer Darr
ACEC President & CEO

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Engineering Inc., Volume 31, Number 3 (ISSN 1539-2694), is published quarterly by the American Council of Engineering Companies (ACEC), 1015 15th Street, NW, 8th Floor, Washington, D.C. 20005-2605. Periodicals postage paid at Washington, D.C., and at additional mailing offices. Annual subscriptions are $24 for members (included in dues as a non-deductible amount); $45 for U.S. non-members; $65 for institutional subscriptions. Back issues are $15.

POSTMASTER: Send address changes to *Engineering Inc.*, c/o ACEC, 1015 15th Street, NW, 8th Floor, Washington, D.C. 20005-2605.
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The revitalized Betasso Water Treatment Facility in Boulder, Colo., by HDR, is proof that rehabilitating old infrastructure can be done economically and efficiently.

Optimism Remains in Water Sector Despite Need for Additional Funding

By Gerry Donohue

In the face of the huge economic impact of the COVID-19 pandemic, the water sector has come through relatively unscathed. And despite the likelihood of a deep and extended recession along with the gaping chasm between desperately needed water infrastructure improvements and the resolve to fund them, there are reasons to be optimistic.

LITTLE SHORT-TERM IMPACT

"Water and wastewater utilities are essential services, and our work for them is an essential service, so the market has been minimally impacted," says Rich D'Amato, CEO of Brown and Caldwell, a nationwide environmental engineering and construction firm. "The vast majority of projects are continuing because they were already budgeted for. In fact, many of our clients accelerated projects to prepare for anticipated stimulus."

"We've probably had as much proposal work as we've ever had," says Cindy Wallis-Lage, president of Black & Veatch's water business. "These are projects that are already in the queue, and the clients are pushing them ahead to get them moving while they have funding."

Not only does accelerating these projects pump up the local economy and create jobs, which are desperately needed in this time of high unemployment, many of these organizations learned a lesson from the 2008–2009 economic meltdown, according to Wallis-Lage. "If the federal government goes big, and we get additional stimulus money focused on infrastructure," she says, "they want to have projects that are shovel-ready."

UNCERTAIN FUNDING

Even if the federal government comes through with a substantial stimulus package, states and municipalities will still face daunting financial challenges because they account for 96 percent of the funding. According to the most recent report from the Congressional Budget Office, of the $113 billion in public spending on water and wastewater in 2017, the federal government contributed only $4 billion (less than 4 percent). And even if all of that federal share went to capital improvements, it still amounted to less than 14 percent of the $31 billion spent on water infrastructure in 2017.

"A major consequence of the pandemic has been the destabilization of our economy," says Chance Lauderdale, drinking water market sector director at HDR. "Traditionally, utility revenues and demand projections were relatively stable and allowed for reliable planning. Capital projects could be identified and prioritized across a decade or more without major concern for uncertainty."

"Now, however," he adds, "we have observed cases of significant revenue loss related to water demand, bill nonpayment, and decreased new connection fees."

Financial implication to utilities "largely depends on how they are funded," says D'Amato. "If it is through the general fund, with the community collecting taxes and allocating them to different needs, utilities may experience shortfalls through reduced tax incomes. If, on the other hand, they are special districts that collect revenues directly allocated to the water utility, they are more likely to see less of an impact."

HEAVY LOAD

U.S. water systems allocate most of their revenue toward meeting the day-to-day needs of their customers. Of the $113 billion in water and wastewater spending in 2017, $82 billion (73 percent) went to maintenance and operations.

"Most systems are funded adequately for day-to-day operations, but that is different than long-term sustainability," says Lauderdale. "Much of our critical water infrastructure is due for significant repair or replacement."

Estimates for what it will cost to rebuild America's water and wastewater infrastructure range from several hundred billion dollars to $3 trillion. And it gets more expensive with each passing year.

A primary reason behind this shortfall is that since 1977, federal funding for water systems has fallen by 77 percent in real terms. At the same time, utilities have had to fund numerous infrastructure upgrades to comply with federal regulations and consent decrees.

Just raising rates to bridge the gap is not a viable option because there is an upper limit to how much utilities can charge for water. In May, *The Guardian* newspaper reported that in 12 U.S. cities, the combined price of water and sewage increased by an average of 80 percent between 2010 and 2018. As a result, more than two-fifths of residents in some cities faced "unaffordable" bills, which the newspaper considered as average annual cost exceeding 4 percent of annual household income.

Water system operators have long complained that they suffer from an out of sight, out of mind problem. People can see a pothole in the street and want it filled; they cannot relate to a pipe leaking underground.

Ironically, the COVID-19 pandemic—as well as the highly publicized incidents of lead in the water in Flint, Mich.; Newark, N.J.; and other cities—may lead to an increased public willingness to fund water infrastructure. "If there ever was a time when the importance of water to the safety of the community has been highlighted, it's now," says Wallis-Lage. "Clean water and sanitation are critical to controlling this disease and safeguarding public health."

"We now have increased public awareness on this industry and the role it serves," says Lauderdale. "My hope is that we leverage these concerns into an opportunity to advocate for additional water sector investment at the state and federal level."

A rendering of the tertiary treatment facility in Sacramento County, Calif., by Brown and Caldwell, currently under construction to produce Title 22 irrigation water.

FUTURE FUNDING

In looking at the longer-term future of the water sector, these experts agree that substantial changes must take place.

"Every crisis has risk and opportunity, and we have to choose what to do with that," says Wallis-Lage. "We have an opportunity to deal with infrastructure differently and not just do what we did in the past. We can design systems that are more resilient to the many challenges we face, such as weather, financing, and health."

One change that is already occurring is a new way of looking at how we utilize water. "The One Water paradigm recognizes water as a resource across the hydrologic and urban water cycles," says Lauderdale. "It takes a holistic view of drinking water, wastewater, stormwater, and other water resources to prioritize projects that provide multiple benefits."

D'Amato believes consolidation would help the industry. "We have approximately 3,300 electric utilities in the U.S., yet there are more than 50,000 water utilities. I understand that communities want to control their water supply," he says, "but it would make a lot more sense to reduce that number to take advantage of economies of scale and share costs across a larger customer base." ■

***Gerry Donohue** is ACEC's senior communications writer. He can be reached at gdonohue@acec.org.*

ACEC Research Institute Becomes New Driver for Industry Thought Leadership

After its official launch in April 2020, the new ACEC Research Institute, formerly the Research and Management Foundation, wasted little time in fulfilling its mission of becoming the industry's leading source of knowledge, research, and thought leadership for creating a more sustainable, safe, secure, and technically advanced built environment.

Led by its Chairman, John Carrato, president and CEO of Alfred Benesch & Company, and Vice Chair Michael J. Carragher, president and CEO of VHB, as part of a 12-member Institute Board of Directors, the Institute first collaborated with FMI Capital Advisors on a survey on ownership transition. It revealed engineering firm owners believe they are better prepared for ownership transition and management succession than they actually are.

That initiative was followed by a comprehensive seven-part *COVID-19 Business Impact Survey,* conducted March 17 through May 29, which generated more than 4,200 Member Firm leader responses.

Key survey findings included: Nearly nine out of 10 engineering firms (88 percent) applied for the Small Business Administration (SBA) Paycheck Protection Program (PPP), and nearly all (94 percent) were approved. Also, a strong majority of firm leaders (71 percent) would not allow staff air travel to meetings or events attended by more than 10 people, as a result of COVID-19.

The Institute's mission to provide effective thought leadership was boosted when the Institute coordinated a three-part Future of Engineering roundtable series featuring some of the nation's top industry and business analysts. Topics included *The Impact of Technology on Engineering,* where panelists predicted a heightened awareness of infrastructure in the future; another session focused on *The Buildings We Live and Work In,* where panelists described why buildings must be adapted for the COVID-19-fueled new normal, and finally *Funding in the New Normal,* where panelists predicted that it could take years for many major engineering markets to recover from COVID-19's impact.

"It's encouraging how the Institute, even in its infancy, has already generated and presented valuable insights from so many business and industry leaders on what they see is happening regarding day-to-day operations and the marketplace," says Carrato. "The Institute has, and will continue to provide, extremely valuable business intelligence for our Member Firm leaders."

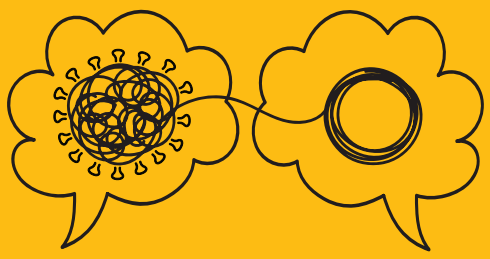
John Carrato

Looking ahead, the Institute will embark on several more thought leadership initiatives, such as:

- **QBS:** An update of the initial QBS project completed in 2009 through a quantitative analysis and expansion to include local governments, as well as provide case studies.
- **Design-Build:** An examination of the D/B project delivery process and development of metrics to compare traditional design-build to newer D/B approaches.
- **Industry Census:** This project will provide a thorough understanding of the market and a set of key metrics for ACEC and its members. It will also give members industry benchmarking statistics that they can use to target new markets, anticipate market risks, and compare own-company performance.
- **Economic Impact:** As a comprehensive measure of the industry's contribution to the national economy, this report will break out the industry's economic impact into its direct, indirect (supply chain), and induced (income/ripple effect) components.

As the Institute's new promo video describes, "If knowledge is truly power, then precise knowledge of those threatening business issues, along with growing business opportunities, must be available at a moment's notice for our members and our industry."

For more information on the ACEC Research Institute, visit **www.acecresearchinstitute.org**. ■



More than 4,200 Member Firm leaders provided responses to the Institute's seven-part *COVID-19 Business Impact Survey*

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CHARLIE COOK
Editor and Publisher of *The Cook Report* and Columnist for the *National Journal*

BEN NEMTIN
Co-Founder of The Buried Life Movement

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House Approves $1.5 Trillion Infrastructure Package

In early July, the House of Representatives passed an ACEC-supported five-year, $1.5 trillion infrastructure investment bill, the Moving Forward Act (H.R. 2), on a largely party-line vote. The bill featured investments in a range of infrastructure programs and sectors, including transportation, water, schools, public housing, health care facilities, and broadband deployment.

The centerpiece of the legislation is a five-year, $494 billion reauthorization of federal surface transportation programs to replace the expiring FAST Act. The bill includes $319 billion for federal highway programs, $105 billion for transit, and $60 billion for passenger rail. It extends current programs through fiscal year (FY) 2021 and adds $14.7 billion for highways and $6.75 billion for transit, as well as waiving the non-federal match for FY 2021. New programs and policy changes would go into effect in FY 2022.

NICHOLAS KAMM/AFP VIA GETTY IMAGES

U.S. House Speaker Nancy Pelosi speaks during the unveiling of the Moving Forward Act, legislation to rebuild the country's infrastructure, at the U.S. Capitol in Washington, D.C.

H.R. 2 also increases annual Airport Improvement Program funding to $4 billion and authorizes an additional $17.5 billion in supplemental airport funding over five years, subject to appropriations.

Wastewater programs would be funded at $40 billion through the Clean Water State Revolving Fund, and the Drinking Water State Revolving Fund would receive $25 billion. An additional $130 billion would be directed to public school construction and improvements, $100 billion to address backlogs in affordable housing, $100 billion to promote broadband deployment, and $20 billion for hospitals, community health centers, and other medical facilities.

The Moving Forward Act also features a wide range of energy infrastructure investments, including $700 million annually in electricity grid modernization projects, and other tax credits and incentives for renewables and energy efficiency improvements.

"We need to invest today for long-term growth tomorrow," wrote Council President and CEO Linda Bauer Darr to lawmakers. "With passage of this bill, Congress has an opportunity to address years of deferred maintenance while modernizing our infrastructure networks to lay the groundwork for a post-pandemic economic recovery."

Following House passage, ACEC directed its advocacy attention to the Senate, where separate pending transportation and water resources bills could form the basis for bipartisan negotiations.

ACEC Defeats Problematic Insourcing Amendments to House Transportation Bill

As the House of Representatives developed its $1.5 trillion infrastructure package, ACEC worked to defeat two problematic amendments that would have constrained the ability of state departments of transportation and other agencies to contract out for engineering and design services.

BILL CLARK/ROLL CALL VIA GETTY IMAGES

Rep. John Garamendi (D-Calif.)

Rep. John Garamendi (D-Calif.) filed amendments during the Transportation & Infrastructure Committee consideration of the surface transportation bill to require DOTs to conduct a cost-benefit analysis before contracting out for engineering and design services, and to mandate that only public employees be allowed to perform construction inspection services.

ACEC lobbied the committee heavily against the amendments and rallied its member organizations and firms to contact committee members in opposition. The cost-benefit amendment was not offered, and the prohibition on contracting out inspection services was offered but withdrawn. The Council also worked aggressively to kill the construction inspection amendment again when the bill came to the full House for a vote.

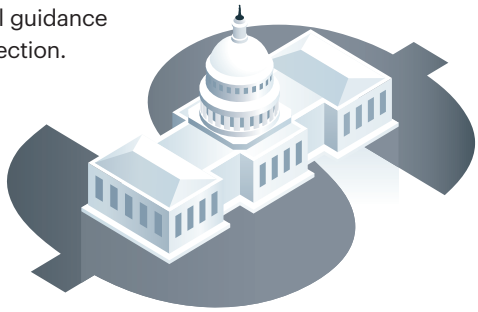
Potential Vote on New Stimulus Package in September

While Congress failed to reach agreement on a new stimulus package in response to the COVID-19 crisis prior to the August recess, talks continue that keep open the possibility of a vote in September.

Senate Republicans floated a proposal in August that would extend pandemic unemployment benefits, provide additional stimulus payments to families and individual taxpayers, grant funds to schools, extend the Paycheck Protection Program (PPP), and offer a liability safe harbor for employers that follow governmental guidance on coronavirus protection.

House Democrats passed more extensive legislation at the end of May that would not only extend unemployment benefits and PPP loans, but would also provide significant funding for state and local governments, among other provisions. The House also met in August and approved emergency funding for the U.S. Postal Service to address concerns about the timeliness of mail-in ballots.

With few legislative days in September, Congress is expected to approve a continuing resolution to fund federal agencies and an extension of the FAST Act, which could present an opportunity to include additional COVID response measures.



MATHISWORKS/GETTY IMAGES

ISSUES ON THE MOVE	WHAT'S NEXT
H.R. 2/Infrastructure Package	Possible Senate action in the fall
H.R. 7575/Water Resources Development Act	Final vote possible in September
Section 889/Chinese telecom ban	Final resolution with passage of defense bill in the fall

ACEC Urges Delay of Looming 889 (B) Deadline

ACEC has urged Hill leaders to delay the implementation of a regulation banning several telecommunications items that is scheduled to take effect on Aug. 13.

Section 889(a)(1)(B) of the National Defense Authorization Act for Fiscal Year 2019 bans numerous Chinese-made telecommunications products and services and would prevent engineers from working on federal contracts if their firms cannot comply with the ban.

ACEC understands the national and economic security goals underlying Section 889, including the need to take action to limit the presence of covered suppliers in the digital infrastructure of companies supporting federal agencies.

The industry is concerned, however, that the inability of engineering firms and other federal contractors to achieve compliance by the implementation date will have a detrimental impact on the ability of federal agency clients to procure critical products and services.

In a letter to Hill leaders, ACEC urged that the deadline for compliance be extended, giving the federal contractor industry time to work with agency clients to achieve the goals envisioned in the law while also ensuring that critical services on behalf of the taxpayer may continue.

House Clears ACEC-Backed Water Package

The House passed the Water Resources Development Act (WRDA) at the end of July, including funding for flood control, storm damage, and other water-related infrastructure projects. It could set the stage for negotiations with the Senate and final passage when Congress returns in September.

H.R. 7575 would authorize approximately $17 billion for 34 navigation, flood control, and storm damage projects, including $3.03 billion for flood risk management and ecosystem restoration in New York, $1.4 billion for hurricane and storm damage risk reduction near Norfolk, Va., and many other projects throughout the country.

House leaders are expected to include financial assistance to wastewater systems through the reauthorization and expansion of the Clean Water Act State Revolving Fund (SRF) program. The House Transportation and Infrastructure Committee passed legislation last fall—H.R. 1497—that authorized nearly $14 billion for the wastewater SRF program, and committee leaders may use this legislation as the House position in negotiations with the Senate.

The Senate has a companion bill under consideration—S. 3591, the America's Water Infrastructure Act of 2020—which includes numerous Corps of Engineers project authorizations and $7.5 billion for wastewater.

Leaders in both the House and Senate hope to vote on a final water package when Congress returns in September.

ONYXPRJ/GETTY IMAGES

For More News

For legislative news, visit ACEC's *Last Word blog* online at www.acec.org.

Data Center Demand Remains Strong

By Erin McLaughlin

Data center design and construction is expected to be one of the few markets that will experience growth over the next few years—and may be the most resilient during the current pandemic-caused recession. According to Market Data Forecast, the global data construction market was valued at $20.11 billion in 2019, and is projected to reach $32.5 billion by 2025, representing an impressive expected annual growth rate of more than 8 percent.

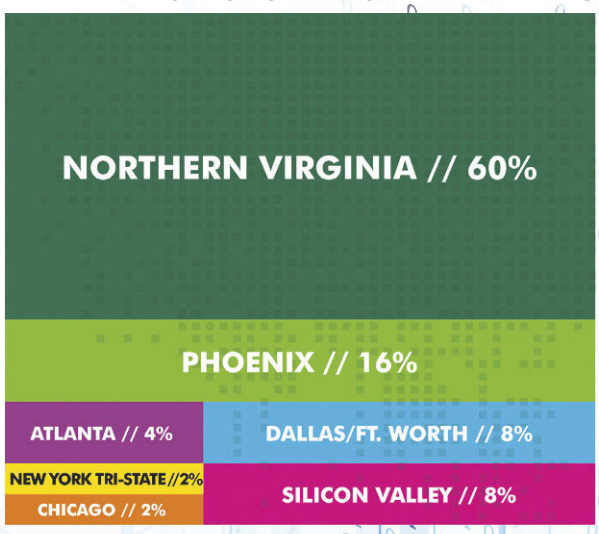
Once considered a niche commercial real estate market, data centers have increasingly become mainstream, fueled by the advancement of connected devices and the massive amounts of data moving across the internet. More specifically, the uptick of this market can largely be attributed to the growth of colocation for data servers, cloud services, the Internet of Things (IoT), as well as the expectation of 5G impacts.

The work-from-home environment of the COVID-19 era and watching television and movies from internet-based applications has only increased internet traffic, with Zoom calls and streaming from home increasing rapidly. Analysis by the Uptime Institute finds that media streaming represents the biggest portion of global traffic and it is in fact the "energy guzzler of the internet" (source: *Facility Executive* magazine). According to their analysis, "streaming a 2.5 hour high-definition (HD) movie consumes 1 kilowatt-hour (kWh) of energy. But for 4K (Ultra HD) streaming—expected to become mainstream in 2020—energy consumption will be closer to 3 kWh. Expected increases in demand will drive greater cloud, colocation and data center development, and energy consumption. The rollout of 5G, with its increased bandwidth requirements, will substantially accelerate the data use and energy trends."

This increasing demand resulted in 2019 being a record year for data center leasing and construction completions, according to CBRE. The United States has the largest data center infrastructure globally, with seven primary geographic markets (see chart below), and the Northern Virginia market is the largest in the world. Demand domestically is driven by large enterprises and cloud users who continue to locate near subsea cable landing stations and key internet exchange points (see call-out box of Top Data Center Owners and Top A/E/C Firms for Data Centers).

With their unique requirements for siting, cooling, and energy redundancy, data centers have unique design requirements, and engineering innovations are key to data center evolution. These innovations

THE 7 KEY DOMESTIC DATA CENTER MARKETS



Source: CBRE

TOP A/E/C FIRMS FOR DATA CENTERS:

RANK	ARCHITECTURE	ENGINEERING	CONSTRUCTION
1.	Corgan	Vanderweil Engineers	Whiting-Turner Contracting Co.
2.	HDR	ESG	Turner Construction
3.	Gensler	kW Mission Critical Engineering	Holder Construction
4.	AECOM	Jacobs	DPR Construction
5.	Page	EXP	Fortis Construction
6.	HED	Morrison Hershfield	HITT Contracting
7.	Highland Associates	WSP USA	STO Building Group
8.	DLR Group	Syska Hennessy Group	JE Dunn Construction
9.	KZF Design	Salas O'Brien	Hensel Phelps
10.	Stantec	Dewberry	AECOM

Source: *Building Design + Construction* magazine, *2019 Giants 300 Report*

TOP DATA CENTER OWNERS

Apple
Amazon Web Services (AWS)
CyrusOne
Digital Reality
Equinix
Facebook
GDS Holdings
Google
Interxion
Microsoft
NTT Communications

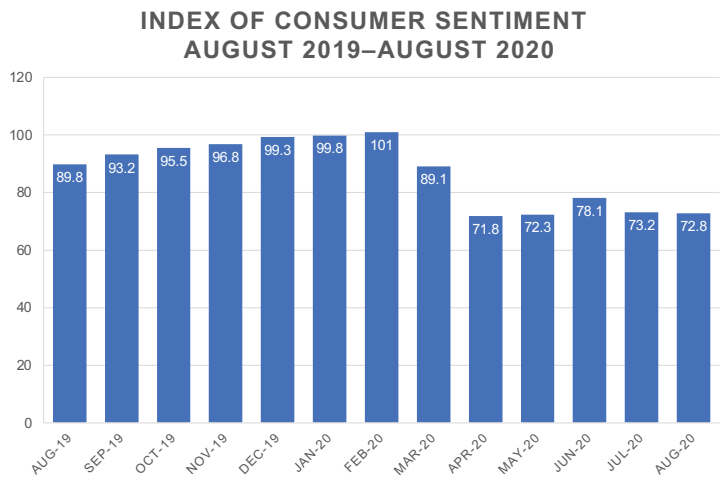
Source: Data Center Construction Market – Global Outlook and Forecast 2020-2025

include: developing on-site water treatment plants designed with dual piping; adoption of air- and water-cooled chillers that facilitate partial cooling of the facility using outside air; on-site energy generation from a variety of sources; and deriving energy from renewable and sustainable sources such as solar, wind, waste-to-energy, and natural gas fuel cells. The continual need for data centers to decrease carbon emissions (largely due to increasingly stringent state and local requirements) offers considerable opportunities for the engineering community. Large data center owners—not unlike others in the commercial real estate industry—have set their own targets in response to climate change, such as Microsoft, which has announced a goal of being carbon negative by 2030.

KRULUA/GETTY IMAGES

Consumer Behavior Drives U.S. Economy, Commercial Design

The U.S. economy started becoming consumer focused as early as the 1920s when the middle class began emerging. However, the current level of consumer spending, which accounts for about 70 percent of U.S. economic activity, really began in the 1980s. As a result of this heavily consumer-driven economy, the service and retail sectors grew considerably, greatly impacting urban and building design, and elevating the importance of the "third space" (social spaces outside of homes or workplaces, such as a coffee shop). The importance of commercial spaces and the social experiences we have in them is significant; how the coronavirus pandemic will change consumer attitudes, and therefore design of such spaces, is largely to be determined. Consumer sentiment is an economic indicator to watch closely (see chart below), as it will likely offer clues to changes in our economy, and to the public's desire to fully interact once again in the "third space." ■

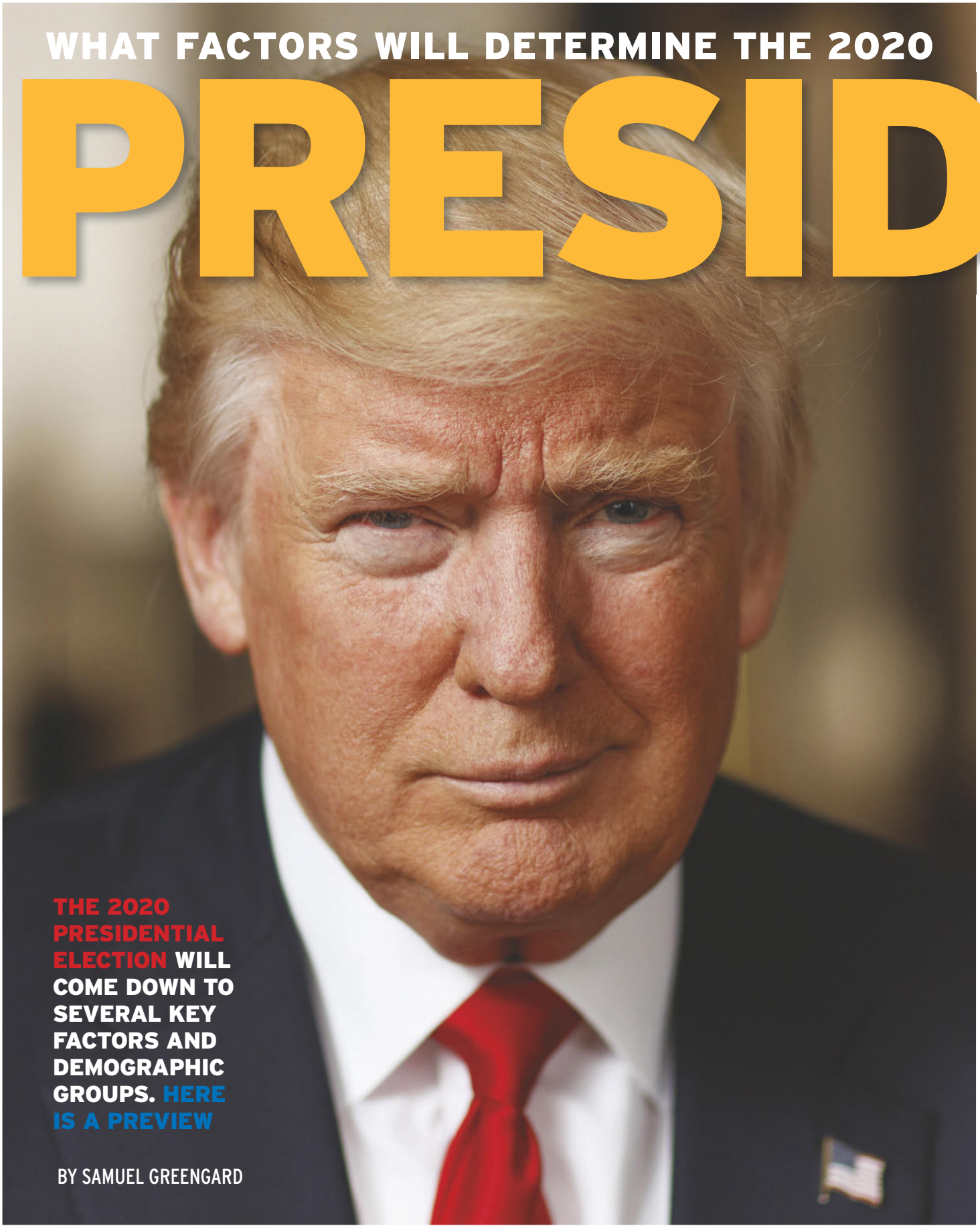


Source: University of Michigan

Commercial & Residential Real Estate | Intermodal & Logistics | Energy & Utilities | Health Care & Science+ Technology | Economic Outlook | Public-Private Partnerships (P3s)

The Private Side is a regular department of *Engineering Inc.*, focusing on the private-sector markets listed above, and information and insights on public-private partnerships and economic data relevant to the industry. For more on these topics, subscribe to ACEC's bimonthly *Private Industry Briefs*: **https://programs.acec.org/industrybrief/**.

Erin McLaughlin *is ACEC's vice president of private market resources. She can be reached at* ***emclaughlin@acec.org****.*



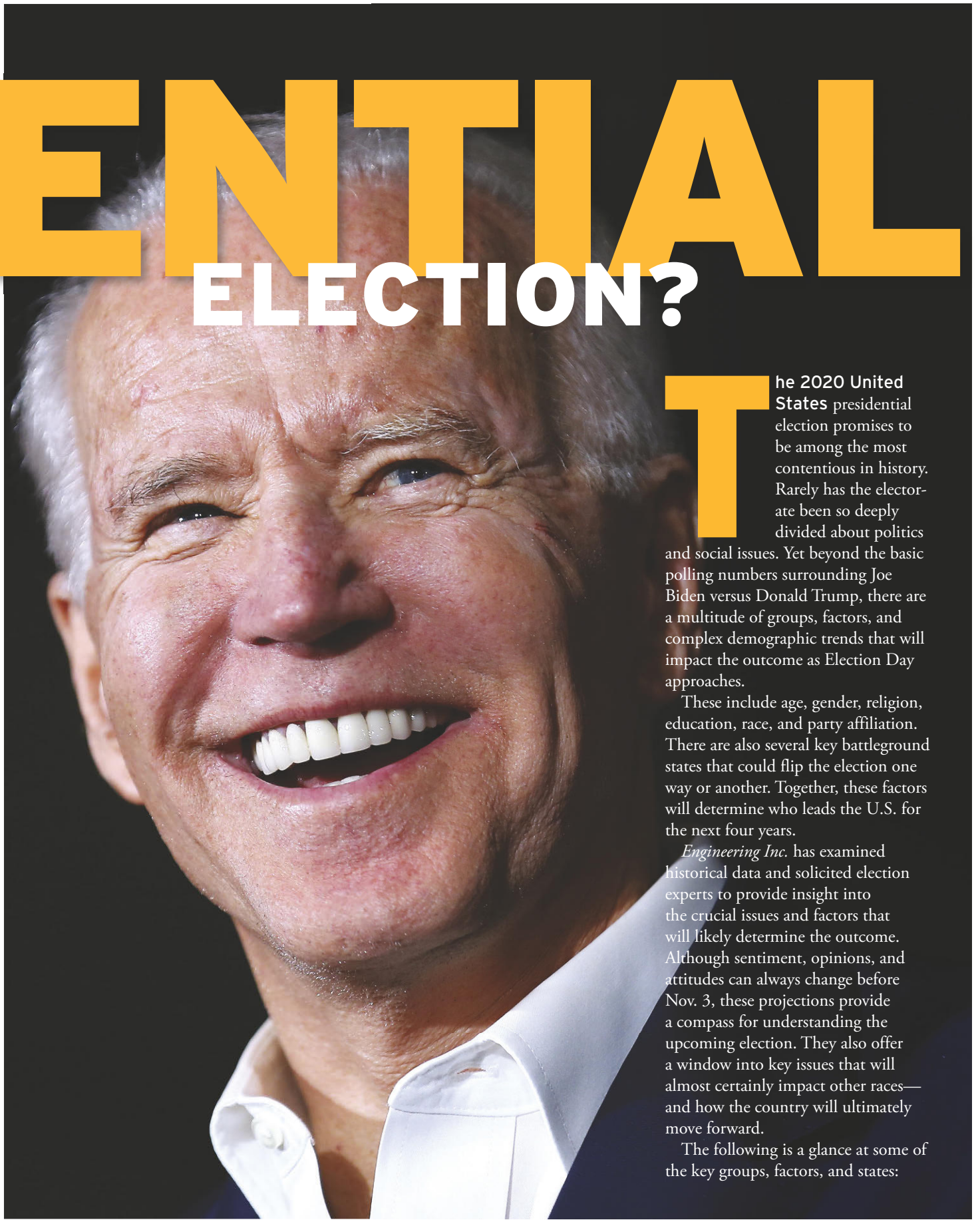
WHAT FACTORS WILL DETERMINE THE 2020 PRESID

THE 2020 PRESIDENTIAL ELECTION WILL COME DOWN TO SEVERAL KEY FACTORS AND DEMOGRAPHIC GROUPS. HERE IS A PREVIEW

BY SAMUEL GREENGARD

DAVID HUME KENNERLY/GETTY IMAGES

ENTIAL ELECTION?



JONATHAN BACHMAN/GETTY IMAGES

The 2020 United States presidential election promises to be among the most contentious in history. Rarely has the electorate been so deeply divided about politics and social issues. Yet beyond the basic polling numbers surrounding Joe Biden versus Donald Trump, there are a multitude of groups, factors, and complex demographic trends that will impact the outcome as Election Day approaches.

These include age, gender, religion, education, race, and party affiliation. There are also several key battleground states that could flip the election one way or another. Together, these factors will determine who leads the U.S. for the next four years.

Engineering Inc. has examined historical data and solicited election experts to provide insight into the crucial issues and factors that will likely determine the outcome. Although sentiment, opinions, and attitudes can always change before Nov. 3, these projections provide a compass for understanding the upcoming election. They also offer a window into key issues that will almost certainly impact other races—and how the country will ultimately move forward.

The following is a glance at some of the key groups, factors, and states:

Democratic presidential candidate Joe Biden meets workers as he tours the Fiat Chrysler plant in Detroit on March 10, 2020.

THE NATIONAL BACKDROP

The dynamics that propelled Trump to office in 2016 are changing. RealClearPolitics notes that Trump's job approval ratings trail both George Bush and Barack Obama as they approached reelection. But there are also overarching trends that reflect how the U.S. is changing.

"Even before Trump, a split has been emerging among white voters—white voters without a four-year college degree have been trending Republican, while white voters with a four-year degree have been trending Democratic," says Kyle Kondik, managing editor of the newsletter *Sabato's Crystal Ball* run by the University of Virginia Center for Politics.

"Working-class whites in the Rust Belt and Hispanics in the Sun Belt remain key groups for both candidates."

ZELJKA BUTUROVIC
SURVEY STATISTICIAN
ZOGBY ANALYTICS

"Trump tapped into these trends in 2016, when he won several key swing states in part because they have higher-than-average shares of white voters without a college degree," Kondik adds. "However, Trump's problems with white college voters appear to be deepening, and he may not be making commensurate gains with white-non-college voters to make up what he is losing."

It is no secret that COVID-19 and the death of George Floyd have significantly altered the equation—though Trump garnered only 8 percent of black voters in 2016, according to Gallup. In early 2020, Trump's odds of being reelected were high. After the impeachment trial in January, his approval rating reached a three-year high in the upper 40 percent range. However, since then, Biden has won the Democratic nomination, gained ground on Trump, and stretched his lead in national polls from about 5 percent to double digits in mid-June.

Although Trump may win back some support as the election approaches, Zeljka Buturovic, a survey statistician for Zogby Analytics, agrees that things are different now compared to four years ago.

"2016 was a year of the working-class white voter. This group comprises a large number of voters in the Rust Belt, and thus even small swings within this group can have tectonic consequences for the Electoral College," says Buturovic. "By all appearances, including our own data, Vice President Biden's standing among these voters is much better than Secretary Clinton's was in 2016."

THE STATES

Because of the peculiarities of the Electoral College, the 2016 presidential election came down to three key states: Wisconsin, Michigan, and Pennsylvania, all of which have leaned toward Democrats in the past. Although Hillary Clinton won the popular vote by nearly 2.9 million, these states flipped the election for Trump. The 2020 election could display equally unconventional results, according to Buturovic.

Several key swing states could play a role in determining the outcome of the election. In addition to Michigan, Wisconsin, and Pennsylvania, these include Colorado, Florida, Minnesota, Virginia, Ohio, Nevada, New Hampshire, and North Carolina.

"The 2016 presidential election has upended our understanding of swing states, suggesting a possibility of realignment," Buturovic says. "Prior to 2016 it was widely assumed that there existed a 'blue wall'—safe Democratic states such as Pennsylvania, Michigan, and Wisconsin that Secretary Clinton could not lose. This time around, nobody assumes this. All these states are considered to be in play."

Likewise, previous Republican-leaning states are now up for grabs, including Arizona, Georgia, and Florida. Even Texas is a possibility. Research firm FiveThirtyEight showed that Trump is slightly favored to win Texas as of September (51.3 percent to Biden's 47.7 percent). According to Buturovic, this means Trump could win reelection on a completely different electoral path—one that relies on the Sun Belt versus the Rust Belt. "However, at this moment it looks like he could be obliterated in both old and new swing states," she adds. "Working-class whites in the Rust Belt and Hispanics in the Sun Belt remain key groups for both candidates."

Cook Political Report, a nonpartisan, independent newsletter that analyzes campaigns, notes that Biden currently needs about 25 percent of toss-up states to win, while Trump needs about 75 percent.

FiveThirtyEight founder and editor-in-chief Nate Silver wrote, "So while a Biden landslide is possible if he wins all these swing states, so is a Trump Electoral College victory, depending on which way the race moves between now and November."

MANDEL NGAN/AFP VIA GETTY IMAGES

KEY DEMOGRAPHIC GROUPS

Overall, voters with college and advanced degrees tend to support Democrats, while evangelicals tend to vote Republican. According to a 2014 study by *Religion News*, 76 percent of white evangelicals identify or lean Republican. In 2016, Trump captured a whopping 80 percent of the white evangelical vote, according to exit polls conducted by *The Washington Post*.

Trump also has the support of Catholics and other Christian groups, according to Newsweek.com. These trends are likely to largely hold up, though Trump's support among Christians has faltered recently.

Similarly, LGBTQ groups and minorities—especially African Americans—are more likely to vote Democrat. A 2016 Pew Research Center study found that 82 percent of LGBTQ people, who make up about 5 percent of the overall electorate, are registered as Democrats.

However, if you peel back income statistics and trends, a few interesting observations emerge. "Well-off voters in blue states tend to support Democrats while, traditionally, well-off voters in red states tended to vote Republican. We are not seeing much movement among those categories," Buturovic says. "Instead, older voters, white voters, and Hispanics seem to be most persuadable in this cycle."

With 32 million eligible Hispanic voters, they are indeed a coveted prize. In August, Biden led 63 percent to 35 percent among this group, according to the Pew Research Center.

Buturovic adds that Trump so far has not garnered enough support among older voters to win the election, and Biden may be more appealing to older voters.

It is an important point because senior citizens are the most reliable of all voters, and in recent years they have leaned Republican compared to younger cohorts, according to Kondik.

"But some polling has indicated Biden may be leading narrowly with senior citizens, which could have big ramifications in several key states," he says. Kondik also believes this is a trend to watch because Trump needs to win among seniors to return to the White House.

According to August data from Pew, among male registered voters, Biden held a narrow 50 percent lead (over Trump's 48%), and women supported Biden by a 56 percent to 42 percent margin.

Meanwhile, 45 percent of independents favor Biden versus 42 percent for Trump, according to Zogby research. The same poll found that moderates prefer Biden to Trump 51 percent to 42 percent. Among younger voters, ages 18 to 24, the preference for Biden is 48 percent to 40 percent. When the age range is extended from 18 to 29, the figure is 48 percent, and it hits 42 percent when all age groups are factored into the equation. Among voters age 30 plus, the preference reverses to Trump by a 54 percent to 41 percent margin. Finally, among suburban voters, Trump holds a slight 46 percent to 44 percent advantage, though suburban women prefer Biden 45 percent to 43 percent.

Of course, who shows up on Election Day is just as important as underlying preferences and trends. According to Kondik, this will likely hold a key to which candidate prevails.

"Generally speaking, older, whiter, and more educated are demographic traits that generally suggest higher turnout levels," he says. "Latino and Asian-American voters tend not to turn out at rates as high as white voters. Black voters are somewhere in between, although black turnout was at higher levels, even as high as whites, when Obama was on the ticket."

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NEWS EVENTS

One factor that impacts nearly all demographic groups is the current round of news events, which may or may not fade away by the November election. COVID-19, Black Lives Matter protests, and the economy are all factors. There is some indication they have already played a significant role in shifting perceptions and attitudes about society and the candidates.

"Public opinion is very much in flux," Buturovic says. "Never in recent history has such a wide range of possible outcomes been within the realm of possibility."

While the political consequences of the COVID-19 pandemic are not clear over the long term, what is apparent is that the issue has become highly politicized. A May YouGov poll found that 67 percent of Democrats believe that wearing a mask in public is important while 54 percent of Republicans concur. Similarly, 83 percent of Republican respondents thought Trump's response to novel coronavirus was either excellent or good, while only 18 percent of Democrats believe he has done a good job.

But again, demographics tell a more detailed and complicated story.

"In our data, we did see that, at the height of the crisis, older voters, which are typically supportive of President Trump, were less supportive of his handling of COVID-19, pointing to a possible weakness that Vice President Biden could exploit," Buturovic says.

Ironically, younger voters were more aligned with the president about reopening the economy. The X-factor? "A second wave of the virus, new lockdowns, a vaccine, or a failure to return to pre-COVID employment numbers could all completely change the public's perception," Buturovic says.

Because the pandemic overlaps with the economy—the U.S. is now officially in a recession and could be headed for a depression—there are implications and ramifications for both candidates, though an incumbent president has historically been punished for a recession in election years.

"Ultimately, COVID-19 probably hurts the president because it basically has hurt the economy and made Americans' lives worse," Kondik says. Speeches, tweets, and statements will not change the basic situation. "2020 is shaping up as a bad year in American history—that naturally hurts the incumbent party, though it also does not make the November results a foregone conclusion," he adds.

Still another factor is the death of George Floyd and the protests it spawned.

"The protests have generated some of the largest swings in public opinion that we have ever seen. At the moment, Black Lives Matter is seen positively by a majority of American adults—a change of more than 20 points from just a few years ago," Buturovic says.

As the presidential election approaches, how Trump responds to this change in values is critical, according to Kondik.

"Trump and the Republicans, who generally are on the side of police in criminal justice matters, have felt the need to at least try to offer some reform measures on policing," he says. "They recognize that the public is more sympathetic to reformers' concerns now than the public was four or five years ago."

"Ultimately, COVID-19 probably hurts the president because it basically has hurt the economy and made Americans' lives worse."

KYLE KONDIK
MANAGING EDITOR
SABATO'S CRYSTAL BALL
UNIVERSITY OF VIRGINIA CENTER FOR POLITICS

ALEX WONG/GETTY IMAGES

President Donald Trump speaks at an event on the environment at the White House on July 7, 2019.

PUTTING ALL THE PIECES TOGETHER

Cook Political Report noted that Trump's chances for returning to the White House hinge heavily on his job approval ratings.

"The closer he sits to 46–48 percent job approval rating in October, the better chance he has to squeak out another narrow Electoral College win. But, when he gets much below 45 percent, his path to Electoral College victory gets more and more narrow," wrote Amy Walter, national editor at *Cook Political Report*.

Of course, both candidates are now well-known entities. However, Trump no longer has the potential attraction of running as a Washington outsider. Biden also does not have the negativity rating that Clinton suffered from in 2016.

An NPR story noted: "Biden's ceiling is higher than Trump's."

According to Kondik, in the end, it is a tough race to call and there are still plenty of laps left.

"We have to remember that the news cycle moves fast. That which seems vitally important today may be forgotten by tomorrow. At the same time, perceptions of Trump have been pretty steady, and Biden's national lead has not been huge, but it has been fairly stable." ■

***Samuel Greengard** is a technology writer based in West Linn, Ore.*

HOW THE CANDIDATES STACK UP ON 5 KEY ISSUES FOR ENGINEERING FIRMS

BIDEN

Healthcare

Supports the Affordable Care Act (ACA) and expanding it, including adding a public option. Opposes Medicare for All.

Energy

Supports the Green New Deal, an initiative designed to fight climate change. Opposes the extraction of fossil fuels on public lands. Proposes to spend $1.7 trillion over 10 years in pursuit of his goals.

Infrastructure

Backs major investments in infrastructure, including ubiquitous high-speed broadband and modernizing highways. Proposed spending $50 billion during the first year of his administration as well as tapping smart-city technology and stabilizing the Highway Trust Fund, possibly through a vehicle-miles-traveled model.

Global Trade

Proposes to back off the current trade war with China and other countries and negotiate deals by working with allies.

Taxes

Proposes eliminating tax breaks for "special interests" and "eliminating capital gains loopholes for multi-millionaires." This includes reversing tax cuts for corporations instituted by Trump.

DARRYL ESTRINE/GETTY IMAGES

TRUMP

Healthcare

In favor of dismantling the ACA; has not proposed an alternative. Signed an executive order expanding alternatives to the ACA. Opposes Medicare for All.

Energy

Opposes the Green New Deal, describing it as too expensive and a threat to jobs and the economy. Supports the extraction of fossil fuels on public lands.

Infrastructure

Has proposed $2 trillion in funding for updating and modernizing infrastructure in the U.S., including highways, bridges, and tunnels. Focused on engaging the private sector through public-private partnerships or direct private investments.

Global Trade

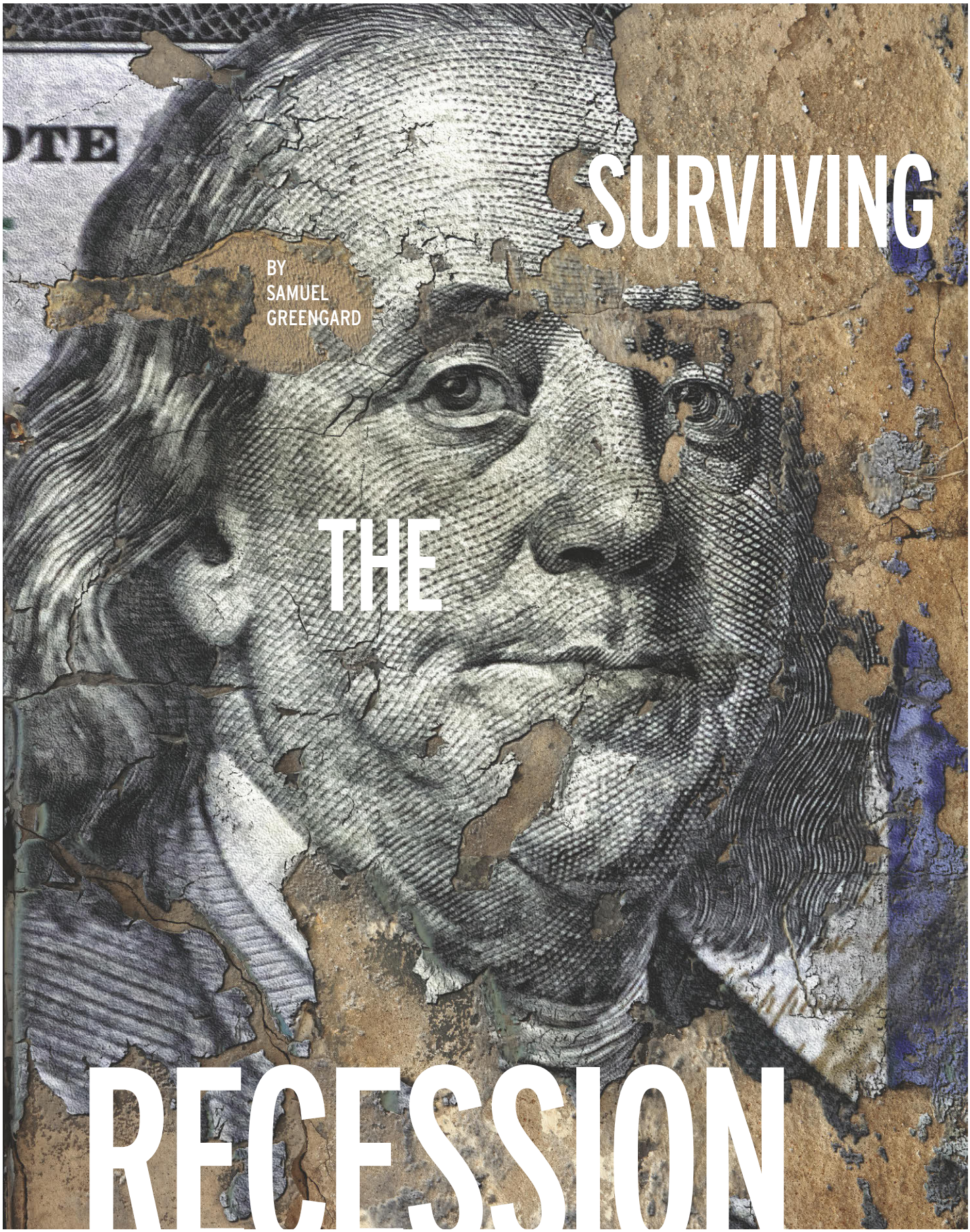
Has sought to restructure and realign trade relationships based on the aggressive use of tariffs. Continues to support this approach.

Taxes

The Tax Cuts and Jobs Act of 2017 lowered the corporate tax rate from 35 percent to 21 percent, providing tax relief for engineering firms organized as C corporations, including personal services corporations. The law also created the Section 199A 20 percent tax deduction for passthrough firms, including S corporations, partnerships, and sole proprietorships.

SURVIVING THE RECESSION

BY SAMUEL GREENGARD



SADIK DEMIROZ/GETTY IMAGES

The long-predicted recession is finally here, and firms that properly prepared will be better positioned to navigate

CONTRACTION PAINS

Sometimes the best way to prepare for the future is to look at the past. When the last major U.S. recession occurred—officially from December 2007 through June 2009—many firms were caught off guard as the overall GDP plummeted by 4.3 percent.

"They were sailing along and then, all of a sudden, the downturn hit," says Steve Gido, principal at financial advisory firm ROG Partners. "The engineering industry essentially suffered a depression and shrunk by double digits over a few years. There were difficult times that included layoffs, office closings, and a dire outlook."

At the heart of the problem is basic human psychology—and hesitancy to make meaningful adjustments until it is too late.

"There is a tendency for people to think the good times will continue perpetually. Business leaders often ignore the warning signs when things are going well," says Bill Siegel, former CEO of Kleinfelder and managing director at consulting firm McMahon|Siegel Group.

During pre-pandemic months, several economic signals were flashing yellow. In 2019, U.S. Treasury bonds displayed an inverted yield curve—meaning that interest rates for short-term bonds exceeded long-term bonds. This method has telegraphed virtually every past recession. Meanwhile, the American Recovery and Reinvestment Act, designed to jump-start the economy, largely failed to make an impact. In fact, the manufacturing sector in the U.S. officially entered a recession in September 2019.

According to Hoffman, changes in GDP activity over the last year correlated with a downturn. An economic study completed in the last recession shows a 0.96 r-squared correlation of engineering fees with GDP change, three times the effect, two years in advance. The GDP change from 2018 to 2019 was -0.4 percent. This predicts there will be a -1.2 percent change in net engineering fees in late 2021.

Since the pandemic appeared, the engineering and construction industry has taken notice. A PwC Pulse survey conducted in April 2020 found that 41 percent of respondents in the engineering and construction industry reported that COVID-19 will have an impact on their workforce and possibly reduce their productivity.

Meanwhile, 40 percent said they expect to see a decrease in demand, 23 percent expect supply chain disruptions, and 19 percent believe they will have difficulties with funding.

According to the survey, "The most immediate impacts are being felt at the subcontractor middle market of the industry, as the specter of potential widespread construction site shutdowns loom."

On the other hand, interest rates remain low and the stock market remains relatively strong. "The outlook is very nuanced," Gido says.

The threat of a recession, often heard during pre-pandemic months, is no longer a threat. It is real.

According to the National Bureau of Economic Research, the nation's historic economic expansion—lasting 128 months—is now over after peaking in February. With double-digit unemployment and plunging economic output, the nation has been sliding into a pandemic-driven recession with an "unprecedented decline in employment and production, and its broad reach across the entire economy."

Recession is arguably one of the most frightening words any business leader can hear. When the economy turns down, stress levels go up. For engineers, project backlogs decrease or evaporate, client payments slow, and overhead may swell. The end result can be a heaping dose of anxiety, and, in a worst-case scenario, an engineering firm may find itself fighting to survive.

It is no secret that the United States has enjoyed the longest period of uninterrupted economic expansion in history. The last recession occurred more than a decade ago. Yet, warning signs began to appear and the question became not *whether* the economy will slow, but *when*.

The onset of the COVID-19 pandemic has further heightened concerns. A survey conducted by the National Association of Manufacturers (NAM) from Feb. 28 to March 9, 2020, found that 78 percent of respondents believe COVID-19 will have a negative financial impact on their businesses. NAM also found that challenging business conditions have led to a historic drop in optimism to 34 percent.

Says Terry Neimeyer, chairman of the board at KCI Technologies, "Firms must plan ahead and have a strategy in place to deal with a downturn when it happens."

How can engineering firms best prepare for a recession? What steps can they take to cushion the impact? And what are some of the lessons learned from the previous economic slowdown?

Although there is no one-size-fits-all approach for navigating a recession, there are ways to minimize the pain.

"The firms that engage in strategic planning will be better positioned to ride out the turbulence and build a stronger business over the long run," says Rod Hoffman, CEO of management and leadership consulting firm S&H Consulting, LLC.

"It is wise to be on the defensive and fully understand how your business and labor requirements change. It is very easy to go out and overhire during a boom."

TERRY NEIMEYER
CHAIRMAN OF THE BOARD
KCI TECHNOLOGIES

In December 2019, Bloomberg predicted that the probability of a recession within 12 months was 30 percent. Others, using different models, had tossed out odds of 70 percent or higher for the next year or two.

"There is a need to conduct overall strategic business planning but also engage in specific recession and scenario planning," Siegel says. "The latter specifically looks at the extent of an economic downturn, how it will impact a business, and how to course correct based on different circumstances."

COURSE CORRECTION

While no one can predict how broad and deep the recession might be, there is little doubt that the pain will be palpable for engineering firms. According to the U.S. Bureau of Labor Statistics, the A/E industry lost roughly 95,000 jobs during the 2008 and 2009 economic downturn. During the same period, the U.S. Department of Commerce reported that spending for private commercial construction dropped more than 20 percent.

A starting point for coping with a recession is to operate as if a recession may be around the corner, says Bob Pence, chairman of the board at Freese and Nichols. Analysis and number crunching are critical.

"Review your efficiencies in operations and corporate support and make sure they are adequate but lean," says Pence. "Revisit the initiatives the firm is engaged in and make sure they make sense and that the upside is commensurate with the risk. Review your corporate support ratios of staff supported per corporate staff and that they are aligned with industry. Take a hard look at your booking projections by client, and shore up any areas of concern. Balance your hiring with your backlog and maintain your backlog at least at 110 percent of staffing."

In fact, staffing is among the critical considerations during a recession.

"While ongoing shortages of skilled engineers are a problem for the industry, things can whipsaw quickly during a recession," Neimeyer says. "It is wise to be on the defensive and fully

When the last major U.S. recession occurred—officially from December 2007 through June 2009—many firms, including engineering, were caught off guard as the overall GDP plummeted by 4.3 percent

7 PROVEN WAYS TO WEATHER A RECESSION

1. **Develop a specific recession plan.**
It is not enough to have a business plan; you need to develop a recession plan that specifically deals with a downturn. It should focus on key operational elements and risk factors.

2. **Optimize staffing.**
Be careful not to overhire prior to the recession. Look for ways to create a more flexible workforce. This may include voluntary job sharing and incorporating part-time retirees and independent contractors.

3. **Review office space.**
Real estate is among the costliest items for a business. It is also tough to cut costs until a lease runs out—and subleasing space is tough in a recession. Examine your office space, especially during this time when working remotely is quickly becoming a component of the new business normal, to ensure you will not wind up with overcapacity. If space is tight, consider office sharing and increased telecommuting programs, at least over the short term.

understand how your business and labor requirements change. It is very easy to go out and overhire during a boom."

One way to diminish the uncertainty is to establish a flexible workforce. This includes using independent contractors and flex employees for specific jobs, tapping retired engineers part time, and implementing voluntary job sharing. The least beneficial approach is laying off engineers and key staff.

"This impacts the future performance of the company," Pence says.

During past recessions, firms with different geographic and greater sector exposure fared better than less diversified counterparts, according to Hoffman. However, diversification needs to be addressed well before a recession strikes.

"Right before a downturn is often the most expensive time to acquire a firm or talent. The market tends to be overvalued," Hoffman says.

An advantage for firms equipped to deal with a recession is that they may be able to acquire other firms at a significant discount when prices drop.

"It takes a couple of years to build talent or integrate an acquisition. It must be part of a broader strategic arc," Neimeyer says.

"Business leaders often ignore the warning signs when things are going well."

BILL SIEGEL
MANAGING DIRECTOR
MCMAHON|SIEGEL GROUP

MIND THE MONEY

When a recession strikes it is easy to get caught up in the carnage and allow fear to run rampant. Just as investors stubbornly cling to stocks in a bear market and then sell at the bottom of the market, engineering firms can slash costs too deeply, sell off assets below market value, and make myriad other bad decisions as things worsen. It is also easy to get sloppy about business processes, costs, collections, working capital, and more when times are good. Once a recession starts, it is tough to reel in the excesses.

For example, collecting on aging receivables can prove frustrating, if not impossible, when others are reeling from the downturn. The resulting cash crunch can magnify operational and staffing problems.

For engineering companies, a 10 percent drop in revenue typically results in a 50 percent decline in profits, according to Pence. The ripple effect quickly becomes obvious.

"This will impact the firm's ability to reward staff. This can result in a further erosion of the quality of the staff. It can seed a concern among employees that the leadership is not on top of things, and all of this can erode confidence," Pence says.

During a recession, focusing on employees and clients, as well as addressing cultural issues, is imperative, according to Hoffman. This includes communicating with people honestly. "Uncertainty breeds fear and it undermines performance," Hoffman says.

In the end, the right blend of long-term strategic planning and specific scenario planning in advance can keep a firm on course—even under the most difficult conditions, such as the current pandemic. While there is no way to eliminate the anxiety and pain, minimizing them is possible.

"You have to understand how to adjust to a recession, plan for different scenarios, and understand how to react if and when they occur," Siegel says. "If you have a plan in place, you will have the information you need to make the adjustments you require. You will be equipped to deal with whatever comes your way." ■

Samuel Greengard *is a technology writer based in West Linn, Ore.*

4 **Update your technology.** It is easy to overlook information technology, but more efficient systems can squeeze out costs. This includes project management software, accounting systems, human resources, and emerging digital technology.

5 **Stay on top of collections.** Don't become lax about bills and collections. In some cases, it may be advantageous to push income into the next year. But during a recession, these bills may become impossible to collect on, thus leading to a cash crunch.

6 **Mind your marketing.** A good marketing program can pay enormous dividends during a downturn. When a downturn takes place firms move into a market share fight. Those with a strong marketing focus are at an advantage.

7 **Address cultural issues.** Fear and uncertainty rule during a recession. Stay calm and avoid impulsive moves when problems occur. This sets a tone for the firm. Also, communicate with employees and provide honest appraisals of where the firm is at and where it is going.

A Behind-the-Scenes Look at Women-Owned Firm Leaders

Five pioneering women engineers describe their paths to leading their own firms and the career obstacles they have overcome

VECTOR ARTIST/GETTY IMAGES

BY STACY COLLETT

As a college student in the early '90s, Elizabeth Stolfus was one of only four women in her engineering program. But the lack of women colleagues and role models did not stop her from blazing her own trail and eventually launching and leading her own firm.

Today, Stolfus—along with fellow engineering firm owners Tricia Ruby, Lauren Evans, Karen Friese, and Cathy Ritter—spearhead the ACEC Women in Leadership (WIL) Working Group to promote and develop diversity within the industry. WIL provides women with opportunities for professional growth, networking, and connection with other women in engineering as well as the first WIL educational sessions that were held at the 2019 Fall Conference.

Together, WIL promotes the idea that diversity broadens the outlook, input, advocacy, and value of all ACEC Member Firms.

WIL has attracted 87 members as of April, according to Friese, founder and president of K Friese + Associates. She expects that number to grow in the future.

"We look forward to coordinating with ACEC's larger strategic plan goals for diversity and inclusion," she says.

In conjunction with the initiative, *Engineering Inc.* is exploring the leadership and professional histories of those five women engineering firm owners.

"Understand what is important to you. If the firm you are in is not the firm you are meant to lead, find one that is a better fit, or create one of your own."

Elizabeth Stolfus, President

Stolfus & Associates, Inc.
Greenwood Village, Colo.

At her first engineering job after college, Elizabeth Stolfus noticed a lack of women in top positions in the office.

"There were women, but certainly not in leadership roles. All of the leaders were men," says Stolfus. "My first job was with a midsize, full-service engineering firm. The expectation for me or the other women in the group of new graduates was that we would not be there for very long. They were certainly open to giving us an opportunity, though. The training I received was on par with my male peers at the time. But culturally, I needed to learn how to golf and enjoy drinking beer to fit in."

After two and a half years at her first job, Stolfus went to work for a smaller Colorado firm.

"I felt that I would fit in better. There still were not many women mentors, but the men that I was working with felt it was important to promote women, and the mentorship I got from those men was extraordinary," she says. "At the time, my plan was to stay and run that firm. However, I ended up feeling like I was not becoming the person I wanted to be. I had to be so consumed by the chase of the next project that I was no longer connected to why I wanted to be an engineer in the first place."

Stolfus began to question the vision of her future career in addition to her life path, and asking herself, "Would pursuing the corner office cost myself the chance to be a dedicated spouse and a parent?"

"Unfortunately, going to a different firm would not solve my problem," Stolfus says.

In response, she started her transportation engineering firm in 2003 with $30,000 and no clients.

"I had to push down my introvert self and get on the phone and talk to people from all the relationships I had built," she says. "I got my first sizable project in a few months."

A year later, she hired her first employee, who is still at the firm today.

Stolfus & Associates now boasts $4.5 million in gross revenue with 18 engineers, 10 of whom are women. Her husband, also an engineer, joined the firm in 2011, and together they balance life at work and home while raising two children.

Her advice to other women engineers: "Understand what is important to you. If the firm you are in is not the firm you are meant to lead, find one that is a better fit, or create one of your own."

"A professional network is so important. You cannot do it all by yourself, and you should not have to."

Tricia Ruby, President and CEO

Ruby + Associates, Inc.
Bingham Farms, Mich.

Tricia Ruby never expected she would someday run the family firm when she started her engineering career in 1994. But a series of events led her to Ruby + Associates, which was launched in 1984 by her father, David.

While living in Atlanta in December 2001 and on leave from her engineering job after the birth of her son, Ruby got a call from her father. Ruby + Associates was in trouble because someone had embezzled money from the firm.

She packed up the family and headed to the firm's headquarters in Michigan for what she thought would be a couple of weeks to help out. The visit turned into a full-time position where she had to untangle and rebuild the business.

Ruby eventually righted the ship and took over as president in 2011. Her toughest challenge was getting comfortable leading a structural engineering firm with her industrial and manufacturing background.

"I remember feeling so self-conscious about being in charge but not being a structural engineer," says Ruby.

She attended an ACEC event and met firm leaders who assured her, "'None of us practice. We are all busy running our firms, so get over that.' It was lovely to have that reassurance that it is OK," she says.

Today, Ruby has transformed the firm and its culture, with 290 percent revenue growth and a 140 percent increase in staff. Today the firm employs 32 engineers, seven of whom are women. She credits part of her success to her mentor at her first engineering job.

"I got really lucky with an amazing, supportive boss who opened doors for me, supported me, challenged me, and saw potential in me that I did not see," she says. "I only worked for him for one year, but it was just one of those really lucky relationships to have starting out in your career."

Ruby's advice to women engineers: "Leadership takes courage. Nobody talks about the courage that is required to sit in this chair, but it has helped me take action when I was hesitant. Also, be an ally and find an ally—and it is not always a woman. A professional network is so important. You cannot do it all by yourself, and you should not have to."

"Prepare well. ... I made sure to learn all aspects of the business."

Lauren Evans, President and CEO

Pinyon Environmental, Inc.
Lakewood, Colo.

The environmental remediation sector had just emerged when Lauren Evans received her engineering degree in 1982 from the Colorado School of Mines.

"There was a pretty bad economic downturn at the time, but it was one of the industries you could get a good job in because they needed people," says Evans. "Those first jobs were very male dominated. I was not married, and they paid the men more because they had families to support, even though I was supervising."

She also grew frustrated as the companies she worked for kept getting acquired by bigger firms.

"Back then, they paid no attention to the firm's culture. They were just buying companies and then would tell us how we were doing everything wrong," Evans says.

Her father, also an engineer, had always encouraged Evans to start her own firm.

"After another conversation with him, I went in and quit the next day," Evans says.

In July 1993, she founded Pinyon Environmental, named after the hearty piñon evergreen grown in the West, with an Anglicized spelling.

A few months later, working out of her garage office, Evans won a contract with the City of Denver for underground storage tanks, and she hired her first employee. The business eventually grew steadily.

"In 1999, we were doing a lot of M&A work. We had over 20 employees in an office. Then the dot-com bubble burst, and we backed down to 10," Evans says.

To manage the downturn, she started making use of the woman-owned business designation, part of the federal Disadvantaged Business Enterprise Program.

"We set a goal of getting into public sector transportation work, and that spurred on some growth," Evans says.

In 2010, Evans created middle management positions to bring in additional work from new markets.

"The company really exploded as we went from 15 employees to over 50 in a couple years," she adds.

Since then, Pinyon Environmental has grown from $2 million to $9 million in annual revenue, with 70 employees, more than half of whom are women scientists, chemists, and engineers.

Her advice for starting your own firm: "Prepare well. You cannot always afford to pay someone to help you out in the early days. I made sure to learn all aspects of the business."

"Find the people who will be honest with you; surround yourself with them."

Karen Friese, Founder and President

K Friese + Associates
Austin, Texas

Karen Friese spent the first 20 years of her career as "an engineer who happened to be a woman." After she founded her firm in 2003, some people saw her as "a woman who was also an engineer." She prefers to let her firm's work speak for itself.

"We never wanted to be the best woman-owned firm that people put on teams. We wanted to win work as the prime or sub on our own merit and make sure the work could compete with any other large firm out there," says Friese.

Leading her own firm was never something Friese planned to do, but when her longtime employer in Austin, Texas, was acquired by a national firm, she started thinking about it.

"Suddenly the 'home office' was in Florida. I was designing large water and wastewater infrastructure-type projects, and I wanted to keep doing that, but doing it locally," Friese says.

In 2003, K Friese + Associates was formed. "I used to say my first office was worldwide because I could meet clients in any Starbucks. A year later, we had our first real office that sat 10 people," she says.

"I was fortunate to have great male mentors who gave me opportunities. They were really instrumental in helping me identify my strengths and weaknesses, and making sure I understood what it was going to take to succeed," Friese says. "It does not matter if a mentor is male or female as long as they are giving you opportunity and helping show you the way."

Today, K Friese + Associates has grown to 75 employees in three offices, with a fourth Texas office planned to open this summer. About half of the firm's engineers are women.

Friese's advice for starting your own firm: "Focus on the quality of your product and service. Be passionate about what you want to build and why. Find the people who will be honest with you; surround yourself with them. As a friend warned me, your first year will be easy because everyone wants to help you. It is your second year that you need to be thinking about. You will get some work to get off the ground, and then you have to fly on your own."

For more information on the Women in Leadership Working Group or to join, contact Katharine Mottley at **kmottley@acec.org.** To review ACEC's resource page dedicated to inclusion, diversity, and equity, go to **programs.acec.org/inclusion-and-diversity**

"Find somebody who has your back—not just for the firm, but for you as an individual—somebody out there that you can call."

Cathy Ritter, President

Constellation Design Group, Inc.
Timonium, Md.

Not many women have blazed more trails in engineering than Cathy Ritter. She was the first woman to graduate from the civil engineering program at Kansas State University in 1975, the first and only woman engineer at her first engineering job in Baltimore, the first and only woman ACEC/MD president, and the first woman ACEC national vice chair.

It is no surprise Ritter never felt like she was missing a female mentor as she traversed her career. In fact, she was the mentor.

"I have always been more of a leader than a follower, so it was obvious that if I wanted to be part of decision-making, then maybe I should try it on my own," says Ritter.

The tipping point came in 1981 when her employer had been acquired by another firm.

"It was an uncertain time for us," she says. "It was also a time when the state of Maryland started a Disadvantaged Business Enterprise Program."

Several colleagues suggested she start her own firm.

"The timing was right. I was not married and did not have any kids, so I thought, 'If you are going to do something, do it now,'" she says. "I went into it thinking I would give it a year or two, and if it does not work, there are other engineering firms."

This year, her civil engineering firm, Constellation Design Group, celebrated its 38th anniversary.

"In 1982, my first office was a room in my apartment. I worked by myself for about a year and got help from engineering friends," she says. Her first contracts came through the Disadvantaged Business Enterprise Program. "After the first one or two contracts, the rest of it fell into place with repeat customers."

Her biggest challenge with leading the company is being a sole owner.

"When you do not have a business partner who is going to help you make decisions about health insurance or employees—to divvy up those issues and concerns—it can be lonely at the top," Ritter says. "Also, I have never really been on a vacation where I did not I check my email every day or stay up late in a hotel room someplace trying to get a proposal finished. I have never 'checked out.'"

Today Constellation Design employs 45 people in design and construction inspection, a number of whom are women.

Her advice for leading a firm: "Find somebody who has your back—not just for the firm, but for you as an individual—somebody out there that you can call. Also, give yourself permission to enjoy the professional journey and life."

***Stacy Collett** is a business and technology writer based in Chicago.*

Sweep the Hooch in 2019

AMPLIFYING

BY UNIFYING THEIR EFFORTS, NINE REGIONAL BRANCHES OF THOMAS & HUTTON ARE ADVANCING

Habitat for Humanity's Women Build

Charleston Center for Birds of Prey in 2018

Habitat for Humanity's Women Build in 2020

IMPACT

THEIR LONG TRACK RECORD OF COMMUNITY PHILANTHROPY

Employability Greenhouse in 2020

BY CALVIN HENNICK

One Friday in August 2019, a number of employees at Savannah, Ga.-based engineering firm Thomas & Hutton wore jeans to work.

Thomas & Hutton employees who participate in the weekly Jeans Day Fridays make a donation of at least $5 into the company's nonprofit fundraising pool. On this particular Friday, the money went to the Myrtle Beach Therapeutic Riding + Vaulting Club, a nonprofit that provides horseback riding and vaulting for people with special needs.

But the firm's involvement did not stop there. First, the $500 in donations were doubled by The Matching Fund through Donate2it, both run by Steve Dudash, regional director of Thomas & Hutton's Charleston, S.C., office. The result was $1,000 in scholarships for families in need. Finally, employees in the company's Myrtle Beach, S.C., regional office volunteered at the Myrtle Beach Therapeutic Riding + Vaulting Club, performing facility upkeep activities as part of the T&H Helping Hands program.

At Thomas & Hutton, this story repeats itself over and over again, with small actions across the company that eventually add up to a sizable impact for a bevy of nonprofit organizations.

"Giving back to our communities is one of Thomas & Hutton's core values," says Cecilia Arango, marketing manager at Thomas & Hutton and founder of T&H Helping Hands. "It is the essence of what we do as engineers, designing for a better quality of life. T&H Helping Hands is the embodiment of this part of our culture. It allows us to give back to the communities where we work and where our employees live."

The firm's philanthropic relationship with local communities dates to its very beginnings in 1946, when it was started by founders who were active in the service organization Rotary International.

"The company, for as long as I have been here, has always been very involved in the community," says Sam McCachern, president

"We are a professional services organization, and making communities better is part of what we are called to do."

SAM MCCACHERN
PRESIDENT AND CEO
THOMAS & HUTTON

and CEO of Thomas & Hutton, who has been with the organization for 35 years. "We are a professional services organization, and making communities better is part of what we are called to do."

Although the firm's employees have been volunteering in their communities for many decades, the firm launched T&H Helping Hands in 2017 as a way to formalize those efforts and help spread the word about service opportunities. The company aims to organize events monthly or bimonthly in its larger offices, with its employees at the smaller regional offices hosting projects two to four times a year and frequently traveling to nearby offices to participate in T&H Helping Hands events.

According to McCachern, the program has given employees the chance to take more ownership over the firm's community service activities.

"We talk about the people at Thomas & Hutton being responsible for their experience here," he says. "What excites me about our volunteer activities is that this is not something where I am saying, 'Go and do this.' It is anybody in the company raising their hand and saying, 'I want to go and do this.' That is the exciting part."

DRIVING IMPACT

In 2019, the company raised close to $30,000 through fundraising efforts that benefited more than two dozen organizations. An average of 50 employees each month participate in T&H Helping Hands activities, and so far they have contributed "sweat hours" to more than 20 nonprofits in Georgia, North Carolina, South Carolina, and Tennessee through the program.

One of those nonprofits is Coastal Empire Habitat for Humanity, which serves Chatham County, Ga. Thomas & Hutton has been working with the nonprofit since the chapter's founding in 1983.

According to Harold Tessendorf, former executive director of Coastal Empire Habitat for Humanity, Thomas & Hutton employees and executives have enhanced their efforts since the launch of the T&H Helping Hands program. He notes that McCachern has participated in two builds for executive leaders, Arango led women employees in three annual Women Build projects, and multiple Thomas & Hutton officials have served on the chapter's board of directors. T&H has also helped sponsor several Habitat for Humanity fundraisers and promoted the affiliate through its internal communications.

"They encourage their members to not only volunteer with their hands and feet, but also on committees and boards," Tessendorf says. "The company has really supported those staff members to be effective board members, and that includes financial support. Because they have that investment through a staff member, it gives the company greater confidence in the nonprofit and creates a positive giving loop."

"Their culture of giving is one that, if replicated by other organizations, could be something that really drives impact in our community," Tessendorf adds. "We have been very appreciative of that."

Dudash attributes the high level of interest in T&H Helping Hands to the firm's "family" feel.

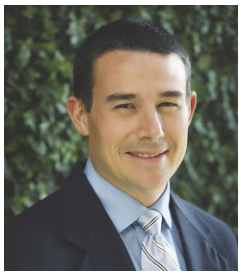
"The overall culture of the company is more like a family," he says. "That comes from both the top down and the bottom up. When something is important to one person, other people want to step in and help them out. It is woven into the DNA of the company."

According to John Giordano, a project manager in Thomas & Hutton's Savannah office, the mix of fundraising, hands-on vol-

PACK (People of Action Caring for Kids) in 2019

"Their culture of giving is one that, if replicated by other organizations, could be something that really drives impact in our community."

HAROLD TESSENDORF
FORMER EXECUTIVE DIRECTOR
COASTAL EMPIRE HABITAT FOR HUMANITY



"You are helping the community, but you are also bonding and building relationships."

JOHN GIORDANO
PROJECT MANAGER
THOMAS & HUTTON

unteering, and board service helps to provide opportunities for all employees to give back. Giordano has served on the Board of Directors for the Savannah Red Cross as well as the Campaign Cabinet and Allocations Committee for the United Way of the Coastal Empire and also leads volunteering projects like a recent greenhouse build for a nonprofit that teaches job skills to people with disabilities.

In his role with United Way, Giordano helped review various agencies' requests for funding and properly allocate United Way Campaign funds to support local nonprofits. In addition to supporting the local United Way Campaign, Thomas & Hutton also directly partners with local charities, hosting fundraisers, encouraging staff participation on local boards and organizing volunteer opportunities.

"Different things spark interest in different people," Giordano says. "Some people want to write a check, because they know it is important to get funding to the organization. Other folks might not have the monetary capacity to donate, but they realize that they can go out and build a greenhouse, and what they are doing is every bit as important. And other folks may want to do a combination of both and can be involved by sitting on a board, helping to steer the organization and advance its mission. Everyone has the ability to be involved and make a difference."

BUILDING CAMARADERIE

In addition to making a positive impact on their communities, volunteering also creates stronger bonds between people within the company, according to Giordano.

"It is something that allows employees to connect outside of the office," he says. "You are helping the community, but you are also bonding and building relationships."

Thomas & Hutton believes in the benefits of volunteering so strongly that T&H Helping Hands is actually a part of the company's employee wellness program.

"We thought that was an important part of being healthy and having a healthy community," says Arango. "We really want well-rounded employees. Not only are you focusing on your own health and well-being but the health and well-being of our communities, as well. You are adding more value to yourself, to the company, and to the community when you volunteer."

The firm's Atlanta office organized a river cleanup project shortly after the office opened in 2019. But because the office was so new, there were only a handful of local employees to participate. Employees from around the company pitched in to help, creating connections between regions and helping the new office start off its service programming on the right foot.

"We had people from four locations go up there and help them do the river cleanup," McCachern says. "That was good to see."

McCachern adds that volunteering activities promote team building for employees within regions, as well. Even as the company's physical offices were shut down during the coronavirus crisis in the spring of 2020, employees packed boxes of food at Second Harvest Food Bank in Savannah. They worked alongside one another to help get food to those in need, even while maintaining social distancing protocols.

"That is a team of five that now has that common bond," McCachern says. "They know they have done some good for their fellow man." ■

__Calvin Hennick__ is a business, technology, and travel writer based in Milton, Mass.

GOING FOR GOLD

Inspired by a classic episode of *The Office*, Thomas & Hutton each summer holds Office Olympics, with employees competing for bragging rights and fantastic prizes (custom medals made out of spray-painted CDs). People pay to play, and the event has raised several thousand dollars for organizations such as the Leukemia & Lymphoma Society.

The 2019 Office Olympics benefited AMBUCS Bowlapalooza and included the following events:

Split Happens: Team members take turns bowling, trying to knock down all of the bowling pins at the end of the hallway.

The "Bored" Meeting: Players shoot rubber bands in an attempt to land them in a coffee mug placed in the middle of a conference table.

Do Not Talk to Me Until I Finish My Coffee: In this "caffeine rush" relay race, team members run with a coffee cup full of water, handing off to each other, trying to finish the race with a full cup.

Is This Parking Lot Bicycle Friendly?: This is another relay race, with participants cycling around a parking lot island and handing off child-sized bikes between team members.

Tie Breaker: All ties for events such as those above are settled in a Hula Hoop-off competition.

"We are unique in Oregon," Alison Davis, executive director of ACEC Oregon, says with a laugh. "I will say that."

ACEC Oregon's relaxed culture reflects the "casual atmosphere" of the state, according to Davis. It is a state more known for counterculture than for booming business, a state where the largest city's unofficial slogan is "Keep Portland Weird." And yet, ACEC Oregon has a lengthy track record of successfully advocating for its members' business interests.

Steeped in history, ACEC Oregon has a rich tradition of achieving profound advances on behalf of the state's engineering industry

BY CALVIN HENNICK

Founded in 1956, ACEC Oregon helped to define consulting engineering in the state. Today, ACEC Oregon is developing engineering leaders of the future and helping Member Firms adapt to rapidly changing conditions in the time of COVID-19. In between, the Member Organization has helped to secure state funding for enormous projects, provided education for Member Firms' employees, and fought for legislation and regulations that have helped create a more favorable business climate for engineers.

"Early on, I recognized how well organized and effective ACEC was," says Erik Peterson, ACEC Oregon national director and president of Peterson Structural Engineers. He has been involved in the state Member Organization for more than two decades. "It is the quality of the programming, the quality of their advocacy, and just the quality of the people. Every time I turn around, I get more impressed with what they are able to do."

Larry Fox, president of ACEC Oregon and COO of DOWL, has been involved with the Member Organization since the mid-1990s. Fox says he was initially drawn in by the prospect of valuable professional development. But over time, he has come to place a higher value on the advocacy and networking opportunities provided by ACEC Oregon.

"As I have matured and been involved in the organization, I very much recognized the benefit to our industry on a political front, both on a national level and then locally here

SEAN PAVONE/GETTY IMAGES

ACEC OREGON AT-A-GLANCE

ACEC Oregon's membership includes 120 firms representing approximately 3,700 employees, as well as 30 affiliate Member Firms that provide ancillary business services to consulting engineers. The Oregon Member Organization was founded in 1956.

ACEC Oregon is led by Executive Director Alison Davis, President Larry Fox, and National Director Erik Peterson.

in Oregon," Fox says. "That is a huge part of what ACEC does: advocate for our industry's interests. People also appreciate the networking aspect. I have developed great relationships with my competitors, quite honestly. On one project, we are competing head-to-head, and on the next, we are teaming up, with one firm as the prime and one as the sub. There is a lot of camaraderie."

ADVOCATING FOR INDUSTRY

A constant focus of ACEC Oregon's work in recent decades has been the state's QBS law, which requires public agencies to evaluate and select firms on the basis of their qualifications, rather than their fees. The state Member Organization (previously known as the Consulting Engineers Council of Oregon) advocated since at least the late 1980s for the first version of the law, which Gov. John A. Kitzhaber signed in 1997. In 2011, ACEC Oregon successfully lobbied for a stronger version of the law. But in 2019, legislators appeared poised to strip the law of much of its effectiveness, and the state Member Organization negotiated a replacement that preserves many of the previous law's protections.

"A bunch of cities and counties fought back about there not being a price element in the law, and they got a few legislators to write a bill that would have basically decimated QBS and brought us back to the days of pure price selection," Peterson says. "They would have still used some qualifications, but it would have basically taken the QBS law and thrown it in the trash. Our choices were to walk away and let the legislature kill the QBS law completely, or find a way to work with them."

"We chose a path to engage and work together with folks whom we had previously had an adversarial relationship with," he says. "We helped build a coalition of folks from the professional design community and folks from the cities and counties and spent the better part of a year meeting, discussing, and ultimately writing legislation which worked out a compromise which provided elements of price information combined with a high level of qualifications-based selection (QBS) and organizational requirements for solicitations where a price element was desired. Passing that legislation was a success for both sides of the issue."

"Early on, I recognized how well organized and effective ACEC was."

ERIK PETERSON
NATIONAL DIRECTOR
ACEC OREGON
PRESIDENT
PETERSON STRUCTURAL ENGINEERS, INC.

That sort of advocacy—playing defense to maintain industry protections that were put in place years ago—is something that is invisible to many people, even though it has a dramatic impact on engineering firms throughout the state.

"To me, one of the things we struggle with sometimes is being able to articulate the value of being a member of ACEC," Fox says. "It is sometimes hard for people to see the value proposition. But once they get involved, they start to see it."

PARTNERING WITH THE PUBLIC SECTOR

ACEC Oregon has also lobbied for billions of dollars in funding for transportation projects over the past two decades. In 2017, it helped push for $5.3 billion in transportation funding, much of which is going toward projects involving Member Firms. The organization has worked closely with the Oregon Department of Transportation (ODOT) to coordinate on such bills and to ensure the state has the capacity to complete the work.

"We have a very strong relationship with ODOT," says Fox. "They were fairly standoffish when I was first involved in the industry, but ACEC has created a great forum, where we have a liaison committee with the leadership of ODOT. The relationship has morphed into high-level people at ODOT coming to the table and working with industry to solve problems."

For the 2017 transportation package, ACEC Oregon collaborated with ODOT on a white paper on how the state would be able to deliver the program if funding were approved. The organization has also advocated for ODOT leaders and employees to receive fair compensation and has even pushed for more hiring at the state agency to facilitate the completion of large projects.

"That may sound like an odd thing for consultants to do, but we recognized they needed more staff to manage this program," Fox says.

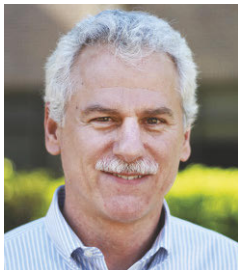
According to David Kim, statewide project delivery manager for ODOT, the three words that come to mind when he thinks of ACEC Oregon are "partnership, innovation, and capacity."

He notes that the $5.3 billion transportation package requires the state to outsource around 70 percent of the engineering work to consultants, including ACEC Member Firms.

"The partnership is so strong," Kim says. "We have bimonthly meetings, where we have over 100 attendees, with a good mix of consultants and ODOT staff. And then there are smaller working groups that focus on issues and hurdles that industry and ODOT have encountered. The dynamic is great."

While relationships between private consultants and public agencies can sometimes become adversarial, Kim notes that ACEC Oregon Member Firms and ODOT are ultimately working toward the same objectives.

"At the end of the day, we all have the same goal in mind, and that's serving the public with good infrastructure projects," he says. "As long as the state and industry both focus on that, it will create more opportunities for investment. If we can demonstrate a positive track record through partnership and delivery, only good things will come out of that."

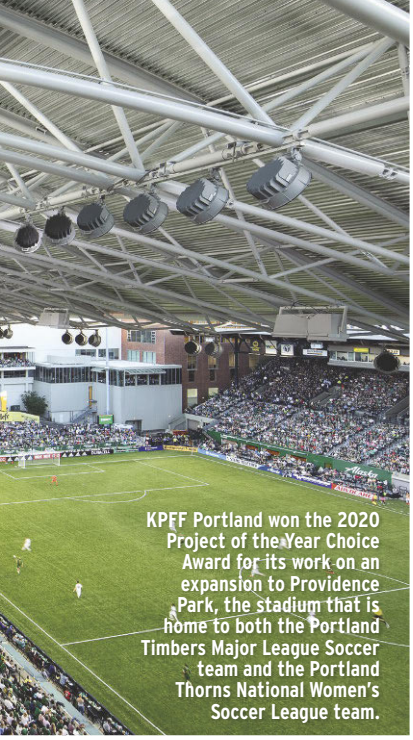


"I very much recognized the benefit to our industry on a political front, both on a national level and then locally here in Oregon."

LARRY FOX
PRESIDENT
ACEC OREGON
COO
DOWL

WORKING ON LANDMARK PROJECTS

ACEC Oregon members have a long track record of working on some of the most prominent projects in the state, some of which are recognized through the Member Organization's Engineering Excellence Awards. The competition recognizes engineering firms for projects that demonstrate an "exceptional degree of innovation, complexity,



KPFF Portland won the 2020 Project of the Year Choice Award for its work on an expansion to Providence Park, the stadium that is home to both the Portland Timbers Major League Soccer team and the Portland Thorns National Women's Soccer League team.

achievement, and value," and the event creates a "red carpet" experience that celebrates the otherwise largely unheralded work that goes into complex engineering projects.

The 2020 Project of the Year Choice Award went to KPFF Portland for its work on an expansion to Providence Park—the stadium that is home to both the Portland Timbers Major League Soccer team and the Portland Thorns National Women's Soccer League team. The project added 4,000 seats in three tiers above existing seating, renovated public infrastructure, and improved site sustainability. The result is visually striking, with floating rakers and a 120-foot cantilevered superstructure.

Jinae Linsenmeyer, marketing manager for KPFF Portland, notes that the simplest way to complete the expansion would have been to place giant posts inside the stadium—but that solution would have obstructed views for hundreds of spectators at every game. The more aesthetic solution was also vastly more complex, and Linsenmeyer notes it is gratifying for the firm to be recognized for its work.

"Engineers solve problems, and a lot of their work goes unnoticed by the public if they are doing their jobs right," Linsenmeyer says. "So to be recognized for this—on a project where the engineering is such a contribution to a dazzling landmark that is going to stand for years and years—is really important."

Last year, top honors at the state's Engineering Excellence Awards (EEA) went to Vancouver Waterfront Park, a project submitted by four firms. The park, which opened in September 2018, is part of the Vancouver Waterfront master plan, created to connect Vancouver, Wash., to the Columbia River. The project features plazas, an extended Vancouver Renaissance Trail, viewpoints, a water feature, a playground, an urban beach, and the Grant Street Pier—a concrete, cable-stayed structure projecting almost 100 feet over the Columbia River. It also received an Honor Award in the national 2019 EEA competition.

The 2018 Project of the Year award went to Anderson Perry & Associates, Inc., for its work on Crooked River Wetlands for the city of Prineville. The project, which uses natural processes to treat wastewater, saved an estimated $54 million compared to the cost of constructing a mechanical treatment plant.

In 2017, ACEC Oregon helped push for $5.3 billion in transportation funding, much of which is going toward projects involving Member Firms

"That is a reason to belong to ACEC Oregon—the networking opportunities, working with other Member Firms, getting to know each other."

ALISON DAVIS
EXECUTIVE DIRECTOR
ACEC OREGON

LOOKING AHEAD

Although steeped in history, ACEC Oregon remains nimble, ready to respond to the changing needs of the organization's members. Currently, Davis is looking to find the best ways to support Member Firms as they navigate COVID-19. The organization has continued to hold online networking events, even as in-person meetups have been put on hold.

"That is a reason to belong to ACEC Oregon—the networking opportunities, working with other Member Firms, getting to know each other," Davis says. "That is one of the benefits of membership, really, and we are figuring out ways to do all this online."

In addition to seeking an alternative to its annual Fall Conference, ACEC Oregon is figuring out how to support its Leadership Development Series, a program introduced several years ago to support the development of new leaders in the industry.

Lindsi Hammond, an associate at GRI, participated in the series and notes that the sessions gave her exposure to aspects of the industry that at the time were outside the scope of her day-to-day work—including legislative advocacy, marketing, and even topics such as emotional intelligence.

"Through that program, I have built relationships with other engineers," says Hammond. "It is a safe space to explore all these new topics, and it helped me become a better leader, manager, and consulting engineer."

The program, according to Hammond, pushed her to move beyond the "number crunching" that she loves and helped her to discover a new side of her professional self.

"I find such fulfillment in figuring out how I can help young engineers find their passion and build their skill sets," she says. "Without doing a program like this, it would be hard to know that I have the tools to do that. It helped grow that passion that I did not even know was there." ■

***Calvin Hennick** is a business, technology, and travel writer based in Milton, Mass.*

2020–2021 EXCOM CONFRONTS NEW BUSINESS NORMAL

In looking ahead to address challenges and opportunities facing the industry, the 2020–2021 ACEC Executive Committee (ExCom) is looking back at its strategic plan.

From embodying diversity and inclusion to providing essential value to society, ACEC's strategic plan provides an increasingly relevant path forward—even in the midst of the COVID-19 pandemic.

"The plan was thoughtfully crafted to include goals that are equal in value to ACEC," says **ExCom Chair Charles Gozdziewski**, chairman emeritus of Hardesty & Hanover.

ExCom members anticipate soon seeing results from ACEC's new strategic plan, which was unveiled at the 2019 Fall Conference. They are also eager to address challenges of a business environment that is coping with the economic repercussions of the worldwide health crisis.

When ExCom developed its strategic plan, it called all members of the profession to advocate more urgently for investments in the built environment, notes **Senior Vice Chair Keith London**, president and CEO of Kennedy Jenks Consultants.

"Now, in the midst of a global pandemic, it is more critical than ever that engineers advance solutions and create a future where communities can thrive," London says. "We must foster innovation and new technological design solutions more urgently, recruit more broadly to create diverse teams that can collaborate without barriers, and fully embrace the roles of science and technology."

STRATEGIC PLAN: DIVERSITY AND INCLUSION

"We recognize that our purpose is to advance a business environment for our Member Firms," Gozdziewski says. "But we must do so while we embody inclusion, diversity, and equality. We will continue to communicate our essential value to society and engage a broader representation of Member Firms and more individual participation in ACEC."

Indeed, one of the key facets of the strategic plan is

BY BOB VIOLINO

PEOPLEIMAGES/GETTY IMAGES

embodying inclusion and diversity, and several ExCom members cited this as a highlight.

"When I was interviewed to serve as chair, there was discussion about how diversity at ACEC needed to include acknowledgment and inclusion of the diversity of Member Firm demographics," says **ExCom Chair-elect Robin Greenleaf**, CEO of Architectural Engineers, Inc. "Diversity has been an issue of mine for many years. I plan to devote a significant effort to forwarding this aspect of the plan."

"Our industry is at a crossroads with respect to diversity, as is our nation," says **ExCom Vice Chair Michael Cooper**, president and managing principal of HED. A strong focus on inclusion and diversity will support all other ACEC strategic objectives, he notes.

"The significance of inclusiveness as a pillar for ACEC is huge because it encompasses so many aspects of who we are and, more importantly, who we want to become," says **ExCom Chair Emeritus Mitchel Simpler**, managing partner of Jaros, Baum & Bolles.

WHAT DO EXCOM MEMBERS CONSIDER THEIR MOST MEANINGFUL PROFESSIONAL ACCOMPLISHMENT?

"Being a practicing professional engineer is very rewarding in many ways. It is a great experience to be a part of an infrastructure project from the planning, scoping, design, budgeting, and through construction. Being a leader in these great projects has made me feel that I have contributed to the built environment for the benefit and good for all."

—Charles Gozdziewski, chair

"I had the opportunity to work on the Veterans Affairs (VA) replacement hospital in New Orleans several years ago. For nearly a year, I attended planning meetings in New Orleans, immediately after Hurricane Katrina destroyed the original VA hospital. The exposure to the needs of the medical professionals, patients, and hospital staff left an indelible impression on me that the beauty of engineering lies in the understanding of the impact that we can have on the lives of the people who live and work in the buildings and structures we design."

—Robin Greenleaf, chair-elect

"Being named CEO of Kennedy Jenks, a national water and infrastructure firm. It was not necessarily a role I sought but given the responsibility to serve as caretaker of a now 100-year-old company was an honor. I see my job as taking an organization that was a gift from our predecessors and helping the organization remain enduring and successful, so generations in the future can reap the benefit of working for an employee-owned engineering firm."

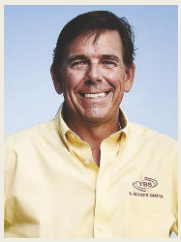
—Keith London, senior vice chair

"A career accomplishment I am proud of is to succeed my father in leading a 115-year-old firm and being a leader in ACEC, the association that safeguards the practice of consulting engineering. I consider being in ACEC leadership a humbling honor to serve our industry and practice."

—Matthew Hirst, treasurer and vice chair

"I have been fortunate to work with an incredibly talented leadership team that grew our firm from 210 to 760 employees and from five offices in four states to 37 offices in 17 states over the last 10 years. I am very proud of our collaborative management style and to have played a small part in our success."

—John Carrato, vice chair

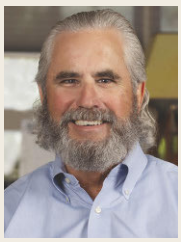


"Our multidiscipline firm recently completed its 107th year. I represent the third generation of Smith family leadership. Within this time frame, we had had over 2,500 people be a part of our firm, offering them a fulfilling place to work, allowing them to grow professionally and personally. We call it investing in people to enhance communities."

—Kenneth Smith, vice chair

"My efforts to mentor and develop our professional staff over the years to help them take on greater responsibility within the firm is something I am incredibly proud of. My efforts to support charitable organizations in Southeast Michigan—with both time and money—and to inspire others to do the same, are part of the ongoing revitalization of the metro Detroit area."

—Michael Cooper, vice chair



"I love the profession and the career it has offered me. Sure, there are challenges and obstacles, but there are successes too. I cannot really point to anything, yet, that I would say is my greatest civic or professional achievement. My wife says I suffer from 'restless dissatisfaction.' I am never quite satisfied. I am always thinking, 'How can I do that better, how can I improve this or that?'"

—Dr. Gary W. Raba, vice chair

STRATEGIC PLAN: MORE HIGHLIGHTS

The strategic plan is a major step forward for ACEC.

"I believe for the first time the plan is truly strategic, and I look forward to ACEC becoming the industry's thought leader and the prime voice of engineering," says **National Association of Engineering Council Executives (NAECE) President James Smith**, executive director of ACEC/NC. "Engineering is the driver of infrastructure and society in general."

Another strategic plan highlight is the call to provide essential value to society.

"Because of the nature of our work, infrastructure, most of the time if we do our job correctly society never knows what we did or have done," says **ExCom Treasurer and Vice Chair Matt P. Hirst**, president and CEO of CRS Engineers, Inc.

"As long as the traffic is manageable, the water is flowing from our faucets, and our toilets flush, society is happy with infrastructure," Hirst says. "As we elevate our position with policymakers, decision-makers, and other influencers, I hope to help them remember that we are human capital, not a faucet-like resource that can be activated based on demand only."

ACEC was due for a new strategic plan, and the process and execution were well done, notes **Vice Chair Ed Alizadeh**, president and CEO of Geotechnology, Inc.

"Interestingly, the plan holds up despite the massive and unforeseen changes in our world," Alizadeh says. "The vision to be the thought leader driving the delivery of valued engineering and other professional services for a better world is spot on."

Meanwhile, **Vice Chair Kenneth Smith**, CEO of T. Baker Smith, is most optimistic about the development of the ACEC Research Institute. "It is a new and different type of tool in the 'ACEC toolbox' that will drive the accomplishment of several aspects of the plan," Smith says. "It will separate us as a true thought leader in the built world, which will enhance the essential value that our profession offers to society."

EMERGING INDUSTRY OPPORTUNITIES

Although many businesses are still trying to figure out how to operate in an environment where communities are coming out of lockdown, ExCom members look forward to emerging industry opportunities in a post-COVID-19 business world.

"I believe the work-from-home phenomenon will transform the way that many of our firms do business," Greenleaf says. "We have discovered that we can work very successfully outside of the office environment. The perfect storm of available technology, COVID-19, and a workforce which can manage work-from-home demands is going to push transportation, commercial office use, residential design, K–12, and higher education design in new directions."

Additionally, the data center market will be active, Cooper predicts, as the dependence on data and intelligence continues to increase.

"The manufacturing industry will be active, as we strive to shore up our nation's supply chains and modernize to effectively compete in the global marketplace," Cooper says. "The warehouse and distribution industry also will be active as the demand for more immediate purchase and delivery continues to grow."

The built environment will change in response to new societal norms, Alizadeh adds. "One obvious growth area is e-commerce, and there are great opportunities for Member Firms to be involved in the entire package distribution system, which relies on typical infrastructure as well as many new and converted warehouses including more refrigerated spaces," he says.

Post-COVID-19, upcoming engineers will shoulder the responsibility to re-engineer society to make life easier, according to **Vice Chair Dr. Gary W. Raba**, president of Raba Kistner, Inc. "For this to occur, our engineering colleges and educators must address more cross-functional discipline programs," he says.

For instance, Member Firms will need to provide innovative solutions to workplace space guidelines.

"For owners and developers, it may be innovative building access entrances and queuing; building lobbies transformed; screening and health checks; building systems to address fundamentally dynamic ways to filter new and recirculated air; and occupant movements regarding elevators, fire wells, and cleaning," Raba says.

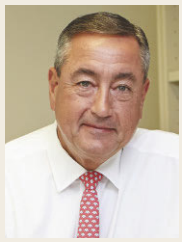
The same holds true for airports and hospitals, adds **Vice Chair John Carrato**, president and CEO of Alfred Benesch & Co. "Improvements to air handling systems will play a major role in safety as well," he says. "There could very well be a push to do more manufacturing in the United States that may bolster private sector work. Resiliency in our Member Firms and the built world will be of paramount importance."

Events such as the pandemic are often transformational, according to London. "Recovering from COVID-19 can help us reinvent or accelerate trends, and the next few years should see a real surge in innovation," he says. "Just look at the innovation that is occurring relative to the development of a vaccine or treatment for COVID-19. The world is accelerating, and engineers are accelerating with it."

"There is a new mindset on how we think and act in society, and it will affect our industry," Gozdziewski says. "There will be more reliance on technology and telecommuting. All types of commercial and institutional properties will require redesign. Mass transit will have challenges. All these changes will require Member Firms to become the thought leaders in developing solutions. Wherever there is change there will be opportunities for engineers."

Reflecting on changes that lie ahead, **ACEC President and CEO Linda Bauer Darr** pointed to the accomplished perspectives of the 2020-2021 ACEC ExCom as illustrative of the Council's ability to help navigate challenges and opportunities presented by the new business normal. "While issues that threaten to stymie growth or success for our industry will be challenging, the multi-talented Executive Committee will be a tremendous asset in achieving our advocacy, education, and thought-leadership goals," she says. ■

***Bob Violino** is a business and technology writer based in Massapequa Park, N.Y.*



"My tenure as chair of ACEC was the culmination of so many other career accomplishments that ultimately prepared me for, and led me to, that position. More importantly, as ACEC chair I was surrounded and supported by such incredible and dedicated professionals—both volunteer as well as paid staff—who enabled me to move ACEC in a new and broader direction through the new strategic plan."

—Mitchel Simpler, chairman emeritus

"I still feel vibrant and fully expect that my greatest accomplishment is yet to come. For now, I just try to be a positive force in every business and community endeavor and every personal relationship. Do good, be good, think good."

—Ed Alizadeh, vice chair

"Being an engineer and having practiced in the industry for nearly 40 years, I consider my position as executive director of ACEC/NC as the culmination of my career. I have always enjoyed helping those around me achieve success, and now I am able to help our Member Firms throughout the state achieve success."

—James Smith, NAECE president

BLACK & VEATCH TAPS MILLENNIALS TO RECRUIT MILLENNIALS

BY GERRY DONOHUE

ARTISTEER/GETTY IMAGES

New Black & Veatch podcast encourages millennials to choose engineering

Who better to inspire millennials to pursue a STEM career than other millennials? That is the foundational principle behind the *Close of Business* podcast hosted by three young engineers at Black & Veatch (B&V).

Since 2018, Kevin Flaker, Becca Schmidt, and Ryan Karlin have presented more than three dozen episodes of the podcast, offering insights about getting into the engineering industry and sharing how fascinating it can be once you are there.

"We felt like there is this perception of what engineers and people working in the STEM industry are like," says Schmidt, a mechanical engineer and associate client account manager at B&V. "We wanted to present what it is actually like to be an engineer. That it is really cool and exciting, and it does not have to be super-nerdy."

FIRM SUPPORT

In 2017, Black & Veatch was looking for ways to better engage with the community. The firm held a series of staff roundtables to brainstorm.

"I threw out the idea that we could create a podcast," says Flaker, an electrical engineer in B&V's solar design practice. "It would be a way for us to engage with the community by highlighting cool industry technologies that were emerging, as well as the different things that Black & Veatch was doing."

From the start, the presenters were adamant that the podcast could not just be an ad for their firm.

"In all honesty, that would be a turnoff," Flaker says. Instead they wanted to focus on "any really cool thing going on in the STEM industry and utilize Black & Veatch's knowledge when applicable."

"We are really fortunate that the firm leadership supports innovation," Schmidt says. "They saw the value in what we wanted to do and were willing to take a chance on us and help us through this project and see where it could go."

From the first episode, it was clear the presenters are enthralled with engineering and love to talk about it.

"That is how we came up with the name *Close of Business*," says Karlin, a civil engineer in B&V's power delivery group. "It refers to the end of the day, and you go to happy hour and sit around talking about the latest news or STEM-related stuff in an informal way. We try to re-create that, being informative yet fun."

Over the past two years, the podcast has covered a lot of issues, but a mainstay has been helping millennials chart a course through a STEM career.

"We want to grow and influence STEM in younger generations, whether they are college students or are graduates flirting with the idea of getting into STEM," Flaker says. "It is scary and daunting at first, so we are trying to bridge that gap. We ask the questions that they would be asking."

"We are learning just as much preparing these episodes as our listeners do," Karlin adds.

Early episodes focused on the challenges for millennials getting into the industry, with titles such as "The College Experience," "New Hire Survival Guide," and "Office vs. Field." Later episodes have explored further afield, such as autonomous vehicles, hyperloops, and engineering in the developing world, but running through all of them is the recurring theme that engineering can be a fun and exciting career.

Early guests tended to be B&V experts, including Chairman and CEO Steve Edwards, because their access was limited. Increased support from the firm allowed them "to buy fancy equipment or go to conferences," Karlin says. As a result, recent episodes have featured Bruce Betts, chief scientist and LightSail program manager of Bill Nye's Planetary Society, Erik Anderson, CEO of Topgolf Entertainment Group, and Prukalpa Sankar, co-founder of Atlan.

"Sankar is a woman who is dominating the STEM industry at such a young age," Karlin says. "She is on her second company right now, focusing on big data and AI. That is going to be the

"We in the millennial generation are really motivated by a kind of greater calling. I do not come to work every day just to respond to emails and do calculations. I come to contribute to a better society, a better community, and better infrastructure, so that we as a community can live a healthier, more comfortable life."

BECCA SCHMIDT
MECHANICAL ENGINEER, ASSOCIATE CLIENT ACCOUNT MANAGER
BLACK & VEATCH

dominating technology coming in the next 10 to 15 years, and she's already at the helm."

MILLENNIAL ADVICE

Given the rapid influx of millennial engineers into the workplace, firms would be well served by understanding and supporting their unique outlook, according to Schmidt.

"We in the millennial generation are really motivated by a kind of greater calling," she says. "I do not come to work every day just to respond to emails and do calculations. I come to contribute to a better society, a better community, and better infrastructure, so that we as a community can live a healthier, more comfortable life."

Adds Karlin, "A lot of the people we have interviewed are passionate about motivating and giving ownership to young people."

Learning from their own experience, Flaker advises fellow millennials, "If you have a good idea, in any successful company you are going to have leaders that would support you. The biggest thing is speaking up, expressing your idea, and then following through."

Close of Business is available on many podcast services, including Apple Podcasts and Spotify. ■

***Gerry Donohue** is ACEC's senior communications writer. He can be reached at gdonohue@acec.org.*

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Re-Engineering The Talent Shortage

Member Firms creating 'Great Places to Work' to keep and attract valuable employees

BY GERRY DONOHUE

LAYLABIRD/GETTY IMAGES

Sullivan Engineering has always prioritized people over profit.

SULLIVAN ENGINEERING

Today's employees are different from previous generations. Millennials, who now make up the largest cohort in the job market, have developed a reputation for being job hoppers, ready to move to a new firm at the drop of a hat.

And they are not alone. Numerous surveys of engineering firm leaders over the years continuously rank the shortage of talent as a major threat to both firm and industry success. In addition to struggling to find new engineering talent, firms lose employees to the aggressive recruiting efforts from other firms.

Losing an employee can be traumatic for a firm. Not only are workflows interrupted and client relationships disrupted, but also you lose institutional knowledge and continuity. In a service firm, employees are the most valuable competitive advantage. In today's tight job market, replacing an employee is hard and expensive. Industry analysts put the cost of replacing an employee at 50 percent of their annual salary.

All told, engineering firms are better off keeping current employees.

BEST PLACES TO WORK

Not surprisingly, firms that are successful at retaining employees score well in the many Best Places to Work surveys that regional and industry media run. The three firms featured in the main article regularly enter these surveys, using the results for the public relations and recruiting value and to improve.

"It's useful to know who we are competing with in our market and our industry," says Brian Bowers, president, Bowers + Kubota in Honolulu.

"We learn what we could do better in our firm in order to keep our employees from going elsewhere," says Paul Grosser, CEO, P.W. Grosser in Bohemia, N.Y.

Bowers says he always pays extra for the detailed report of these surveys because he gets a much more granular sense of what his employees like and do not like.

"We look at the suggestions, and then we give feedback to our employees about what we'll do and what we don't do," says Bowers. "We see these surveys as yet another opportunity to engage with our employees and to learn what they think we need to change to become a better firm."

Bowers + Kubota invests time, energy, and money to build a family atmosphere among staff members, who are located across the Hawaiian islands.

To learn how firms can better retain their employees, *Engineering Inc.* spoke with Mark Goodale, principal at the management consulting firm Morrissey Goodale, LLC as well as leaders of three firms that have long-tenured teams, Brian Bowers, president, Bowers + Kubota in Honolulu; Paul Grosser, executive chairman, P.W. Grosser in Bohemia, N.Y.; and Brian Sullivan, principal, Sullivan Engineering in New York.

"When you create a great place to work, it's a no-brainer that people will stay."

BRIAN SULLIVAN
PRINCIPAL
SULLIVAN ENGINEERING

NO STATUS QUO PRIORITIES

"Millennials come to the workplace with a different set of priorities," Goodale says. And those priorities may be the reason for their wanderlust, which ultimately has little to do with recruiting by the firm down the street, he adds.

"They want to work for a firm that has a higher purpose, and they want the opportunity to master their skills and improve the firm's work," he says. "If you're a 'that's the way we've always done it' type of firm, they are going to leave."

Changing that mindset and instead operating as a firm that prioritizes soft issues like "a higher purpose" can pay off with more than just millennials. Firms that have an employee-centric focus have substantially better customer relationships, higher productivity, better retention, fewer accidents, and a better bottom line, according to Gallup. Specifically, the highest quartile of "employee engagement" firms has 21 percent higher profitability than those in the bottom quartile.

A NICE PLACE TO WORK

When Sullivan started his structural engineering firm in New York more than a decade ago, he prioritized people over profit. "It was always about the people rather than the revenue," he says. "I wanted to be part of something more than just providing good quality engineering services."

"The idea was to have a nice place to work," says Grosser in regard to P.W. Grosser, a 70-person environmental engineering firm. "We hired people whom we knew and liked, and that's largely how we've grown." People who came on as interns are now vice presidents, and we're starting to have people age out of the company."

Such a hiring strategy tends to yield a staff that enjoys working together and shares similar values. And when that happens, employees stay with the company.

In the hiring process, Sullivan Engineering focuses on the person rather than professional capabilities. "We can train them in technical skills, but if they don't have the same core values that we do, it's not going to be a good fit," says Sullivan.

The firm has five core values: empower people, honesty and integrity, forward thinking, humbly confident, and entrepreneurial mindset.

"We have a three-interview process," Sullivan says. "In the first interview, we focus on our core values and the person. In the

second, we get a little more technical, but we revisit our core values. In the third interview, we come back to those core values. By that point, we have a good sense of whether we're a match."

In such a tight job market, it may seem that these firms are restricting themselves by searching for very specific character traits, but Bowers says the opposite is true.

"Clients like to hire firms that take care of their people."

PAUL GROSSER
EXECUTIVE CHAIRMAN
P.W. GROSSER

"We're a very small market and a very remote market, and we have the second lowest unemployment rate in the country, so recruiting can be very difficult," says Bowers, who leads the 200-person firm. "However, we established a reputation as a great place to work, so good people want to join us."

One caveat is that the hiring process tends to be arduous. He recalled having to conduct 30 interviews to find the right two project managers. "But these are people who will stay with us and help us grow and challenge us to grow," says Sullivan.

Grosser says the firm's reputation as a great place to work has also reaped benefits in the marketplace. "Clients like to hire firms that take care of their people," he says. "They feel good about hiring you."

A FAMILY ATMOSPHERE

Bowers + Kubota expends a lot of time, energy, and money building a family atmosphere among its widely dispersed staff. "We have offices on all the islands, so staying connected is a challenge," says Bowers. "Three times a year we bring all the employees and their families together, a picnic in August, our holiday party, and our annual ESOP owners meeting."

In addition, the firm sponsors regular wellness and health events and a variety of community service projects, such as Adopt a Highway initiatives on each island. All the events and projects are organized and managed by employee committees.

Any firm looking to retain good employees must also start with a competitive compensation package. "We're always scanning the market to make sure that we are near or at the top," says Bowers. "One thing that I know is important is health care, and we go well beyond."

Once the requirements for employee compensation and benefits are met, if the employees are satisfied with the work environment, they will likely exhibit a profound loyalty to the company.

"Good compensation is critical," says Sullivan, "but if it's just about compensation, people are going to leave to chase a few dollars more. When you create a great place to work, it's a no-brainer that people will stay. Our employees tell us that firms have tried to recruit them, and they didn't even go to talk to them."

These three firms also shine the light on the individual. All hold regular employee reviews—Bowers + Kubota and P.W. Grosser schedule them twice a year and Sullivan Engineering does them quarterly—but none of them focuses on past performance.

"These aren't about telling people what they did wrong," says Grosser. "We discuss their career path, talking about the things they need to do over the coming months to continue their growth."

Furthermore, defining how an employee's career path interconnects with the company's end goals is critical.

"We have open-book management," adds Sullivan. "Our employees know our end goals, and they know the opportunities that will open for them in the future. They can go as far as they want to go within the organization."

GOING THE EXTRA STEP

These firms are not resting on their laurels. They are constantly on the lookout for ideas to augment their employee engagement.

The firm has even started its own leadership training program. "We're training our next crop of emerging leaders in what it takes to be a leader and successful at Bowers + Kubota," Bowers says.

P.W. Grosser is reaching out to employees at both ends of their careers. "We're starting to have some people age out," says Grosser. "They want to slow down but not retire, and we want to keep their experience and wisdom in the company, so we are working with them to reduce their hours and responsibilities."

Industry analysts put the cost of replacing an employee at 50 percent of their annual salary

For younger employees, P.W. Grosser has set up a counseling program to help them manage their student loans.

Sullivan Engineering has formalized its internal training program, mandating that every employee earn 12 continuing education credits annually. "We didn't used to hold everyone accountable, but this year we are," says Sullivan. "We want them to grow and learn."

The firm also gives each employee two paid days off each year for volunteer work. "We're pushing that a little harder too," he says. "The benefits of volunteering are long term for the person."

Ultimately investing in employees can be expensive; however, the end results are immeasurable. "We spend a lot of money on our culture," says Sullivan, "We don't expect to be able to see the return on a line item. We're confident that we're getting a good return on our investment." ■

***Gerry Donohue** is ACEC's senior communications writer. He can be reached at gdonohue@acec.org.*

COVID Slows Engineering Industry M&As but Deal-Makers Carry On

BY NICK BELITZ

Channeling the high energy of 2019 that helped drive transactions to record levels, ACEC deal-makers started 2020 carrying the same hectic pace. But that momentum—driven by years of sustained profits, robust backlogs, and optimism created by the demand for engineering services—ran into a wall of uncertainty in the form of the COVID-19 pandemic.

While deal-making in the U.S. in the first quarter of 2020 actually outpaced the activity in the first quarter of 2019—Morrissey Goodale tracked 104 deals this year as compared to 95 deals last year—the widespread uncertainty spurred by the collapse of economic activity caught up to deal-makers in the second quarter. Between April and June of 2020, Morrissey Goodale tracked 40 deals in the U.S., which represents a more than 50 percent decrease from the 84 deals tracked over the same period a year earlier.

Despite this downturn in deal-making, early indications show the lull may be temporary as transactions begin to come back. Industry mergers and acquisitions were down 19 percent year over year for much of July but, as of this writing, activity is down 18 percent, and the 12-month rolling average of industry deals in the U.S. has begun to rise.

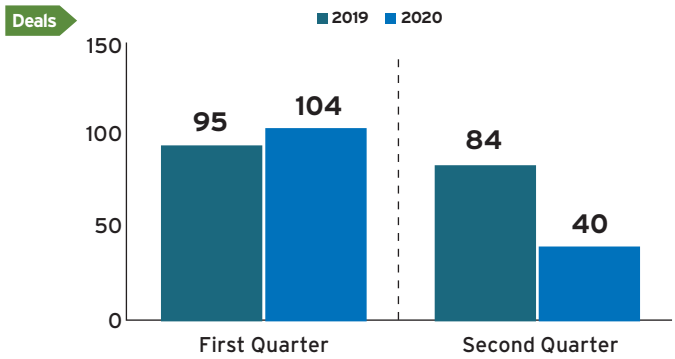
Based on that leading indicator and conversations with contacts around the engineering world, Morrissey Goodale anticipates we will begin to see more deals in the latter part of 2020. Why? The long-term drivers of M&As—buyers' need to expand into new markets and capture new applications of technology plus sellers' need to transition owners and find opportunities to differentiate themselves in a competitive market—are still very much at work and, in some cases, intensified by the pandemic.

Also, relative to other sectors of the economy, the engineering industry is in many ways living in an alternate economic reality in the time of COVID-19, with firms enjoying high utilization, projects deemed essential, and backlog being maintained. Even now, amid a worldwide pandemic, leaders of well-performing firms in a range of markets have chosen to explore sales, and savvy buyers are actively pursuing them.

As the engineering industry—and the world around it—adjusts to the new reality of life in the time of COVID-19, two critical fundamentals will drive M&As in 2020 and the next several years:

1. **Private equity is about to remake the engineering industry.** From 2009 through February 2020, private equity recapitalizations and acquisitions grew from 5 percent of all engineering industry M&A transactions to 25 percent. Since COVID-19 took hold in the U.S. in March, private equity acquisitions and recapitalizations have jumped to 35 percent of all industry M&A transactions. Further, of the 69 U.S. transactions closed since the beginning of March 2020, 29 involved buyers ranked in the *ENR* Top 500, but 20 deals—almost as many—involved a private equity firm. Private equity is steadily becoming the preferred equity model for many successful A/E and environmental firms. In addition, recessionary environments like the one we have now favor skilled, well-capitalized acquirers. This includes private equity firms and family offices, as the core function of such investment firms is to make strategic investments in both good times and bad. On the other hand, we see employee-owned firms as being relatively less acquisitive over the next three years as management teams face capitalization challenges stemming from depressed profits and stalled internal ownership transition plans. This imbalance will create the landscape for private equity to further grow in the engineering industry in the short and medium term.

U.S. Deals by Mid-Year in 2019 and 2020



2. **Innovation still drives deals.** Even in a challenging deal environment, ACEC deal-makers found ways to make transactions happen and support their corporate strategies. Among the deals noted below, we see a distinct thread of mergers and acquisitions either driven by technology or by opportunities where applications of technology were critical factors in the deal. As examples, see the transactions below by industry leaders **WSP** (Montreal), **Wunderlich-Malec Engineering** (Eden Prairie, Minn.), and **Tetra Tech** (Los Angeles). Even in the radically changed environment of 2020, technology- and innovation-driven deals offer buyers more opportunities to diversify services and offer sellers the chance to push for—and receive—higher prices.

While there is no question COVID-19 has affected the entire industry and will continue to reshape the way ACEC firms do business and deals, the pandemic also offers firms a unique opportunity to position themselves for the post-COVID future. ■

ACEC DEAL-MAKERS

JULY 2020

Process Results (Saline, Mich.), a process engineering firm with proficiency in the chemical, pharmaceutical, specialty process, industrial, and consumer product industries, joined **IMEG Corp.** (Rock Island, Ill.). IMEG Corp. is an ACEC member.

ACEC member **IMEG Corp.** (Rock Island, Ill.) announced geotechnical engineering services provider **Whitney & Associates** (Peoria, Ill.) joined the firm.

Private equity firm **Round Table Capital Partners** (New York) completed an investment in leading environmental and engineering consulting firm **Hull & Associates** (Dublin, Ohio), an ACEC member.

ACEC member **KCI Technologies** (Sparks, Md.) acquired civil and environmental engineering company **Hulsey McCormick & Wallace** (Piedmont, S.C.).

ACEC member **David Evans and Associates** (Portland, Ore.), a recognized leader in the design and management of complex transportation, land development, water resources, and energy projects, acquired the assets of **CHS Engineers** (Bellevue, Wash.).

JUNE 2020

ACEC member **WSP** (Montreal) and **Altus Group** (Toronto), a leading provider of software, data solutions, and independent advisory services, finalized the combination of their respective geomatics businesses to form GeoVerra.

Urban planning consultant **Team Better Block** (Dallas) joined industry leader **WGI** (West Palm Beach, Fla.), which is an ACEC member.

IMEG Corp. (Rock Island, Ill.) acquired **Cardno Structural Engineering** (Houston). Both firms are ACEC members.

LRE Water (Denver) acquired **Resource Engineering** (Glenwood Springs, Colo.), an eight-person firm providing water resources engineering and hydrologic consulting services to municipalities, water districts, and private clients throughout the West. Both firms are ACEC members.

ACEC member **Wunderlich-Malec Engineering** (Eden Prairie, Minn.) acquired the staff and patented mGrid technology of **IPP Connect** (Elmhurst, Ill.), a firm focused on providing innovative solutions, technology, and tools for achieving aggressive energy cost reduction, efficiency, and renewable goals.

MAY 2020

ACEC member **Stanford White** (Raleigh, N.C.) joined industry-leading facilities planning and design firm **Salas O'Brien** (Santa Ana, Calif.)

ACEC member **Towill** (Concord, Calif.), a leading provider of geomatics services and technologies in the western U.S., acquired **Cunha Engineering** (Pinole, Calif.). The acquisition will augment and diversify Towill's land surveying services in the San Francisco Bay Area and throughout the state of California.

ACEC member **P2S** (Long Beach, Calif.), a provider of professional engineering, commissioning, and construction management services, acquired mechanical design firm **Notkin Mechanical Engineers** (Seattle).

To view the most up-to-date and "live" versions of the M&A heat maps, and to see who are the buyers and sellers in each state, go to www.morrisseygoodale.com.

Nick Belitz is a principal with Morrissey Goodale, LLC, a management consulting firm that specializes in the A/E industry and provides strategic business planning, merger and acquisition, valuation, executive coaching, leadership development and executive search services. He can be reached at **nbelitz@morrisseygoodale.com**.

ACEC member **RESPEC** (Rapid City, S.D.), a leading North American specialist in mining, energy, water, environment, and technology, acquired **PDC Engineers** (Fairbanks, Alaska).

Nova Geotechnical & Inspection Services (Las Vegas) joined **Universal Engineering Sciences (UES)** (Orlando, Fla.), a move that initiates the westward expansion of UES. Both firms are ACEC members.

ACEC member **EPS Group** (Mesa, Ariz.), a full-service consulting firm offering a broad range of land development, design, and infrastructure solutions, acquired civil engineering and land surveying firm **Azimi & Associates** (Fountain Valley, Calif.).

ACEC member **Volkert** acquired **Bolt Underwater Services** (St. Petersburg, Fla.), expanding its underwater diving bridge inspection services.

APRIL 2020

DeSimone Consulting Engineers (New York) aligned with ACEC member firm **Henderson Rogers Structural Engineers** (Houston), a structural engineering firm specializing in aviation, education, and health care facilities.

MARCH 2020

Power engineering consultant **Sargent & Lundy** (Chicago) acquired **Summit Engineering Services** (Englewood, Colo.), an independent multidiscipline design engineering firm dedicated to the oil and gas industry. Both firms are ACEC members.

ACEC member **ISG** (Mankato, Minn.) expanded its pre-K to 12 education design offerings through the acquisition of **Architects Rego + Youngquist** (St. Louis Park, Minn.).

ACEC member **P.W. Grosser Consulting** (Bohemia, N.Y.) acquired environmental and land consulting services provider **KGO Consulting** (Uniondale, N.Y.).

ACEC member **Schnabel Engineering** (Glen Allen, Va.) acquired **Deere & Ault Consultants** (Longmont, Colo.), a water resources, civil, and geotechnical engineering services firm.

ACEC member **Maser Consulting** (Red Bank, N.J.), a national multidiscipline engineering design firm, entered into an agreement to partner with **Colliers International** (Toronto), a global commercial real estate services and investment management firm.

ACEC member **ECS** (Chantilly, Va.) acquired geotechnical, environmental, and materials testing firm **Solar Testing Laboratories** (Brooklyn Heights, Ohio).

On the Move

John C. Robak has been named CEO of Chicago-based **Greeley and Hansen**. Robak now directs all business affairs of this 20-office global firm and oversees international growth operations in Latin America, Africa, and the Middle East. He previously served as president and COO.

Haddonfield, N.J.-based **Remington & Vernick Engineers** announced the following leadership promotions: **Leonard A. Faiola** has been named president and CEO of the firm. Faiola most recently served as COO. **Annina Hogan** has been named executive vice president and COO for the firm. She formerly served as executive vice president and director of municipal and engineering services. **Craig Remington** and **Edward Vernick** have assumed the roles of vice chairman and chairman, respectively, after leading the firm as vice president and president and CEO for several decades. Vernick remains a senior advisor to the RVE management team. **Edward F. Brennan**, Esq. serves as the firm's general counsel and corporate secretary.

Highlands Ranch, Colo.-based **Arcadis** has named **Kathleen Abbott** president of its U.S. environment business. Abbott most recently served as executive vice president and director of client development and technical solutions for the business.

New York City-based **WSP USA** announced the following appointments: **Denise Turner Roth** has been promoted to president of U.S. Advisory Services, succeeding **John D. Porcari**, who accepted a leadership role outside WSP, but will continue as a senior advisor. Roth, who previously served as chief development officer since 2018, is the first woman, and the first African American woman, to lead a business line at WSP USA. **Corey Dade** was appointed vice president of communications and is the first African American to lead communications at the company. He most recently served as global manager of external communications and social responsibility for Bechtel. **Kosal Krishnan** has joined the firm as a senior vice president and national maritime leader. Based in Orange, Calif., Krishnan formerly served as Southern California operations manager and West region maritime leader for AECOM. **Jacqueline (Jackie) Peduzzi** has been promoted to alternate delivery leader for the West region, which includes Alaska, California, Nevada, Oregon, Washington, and Hawaii. She currently serves as a vice president and area manager for construction services in Denver. **Derich Sukow** has been named vice president and construction services lead for the Southwest district, which includes Southern California and Nevada. Sukow formerly served as the Southern California vice president for the construction engineering and inspection group of TRC Companies.

Kansas City, Mo.-based **TranSystems Corp.** announced the following appointments: **Camilo Rocha** joined the firm as West region senior vice president, where he will oversee sales and operations of five California offices. He is based in the Santa Ana, Calif., office. **Howard Lyons** joined the company as assistant vice president and Texas construction services leader. He will build the firm's Construction Engineering and Inspection (CEI) practice in Texas. He is based in the Austin, Texas, office. **Darryl W. Moser** joined the company as assistant vice president and federal sector east business leader and is based in the Roanoke, Va., office.

New York City-based **STV** announced the following appointments: **Richard M. Amodei** has been named executive vice president of the company's Transportation & Infrastructure Division (T&I) and will oversee its operations and growth. He succeeds **Martin F. "Marty" Boyle**, who is retiring but will continue in an advisory capacity on key projects. **Anthony Kreis** joined the company as senior vice president, mergers and acquisitions, and is based

John C. Robak

Leonard Faiola

Annina Hogan

Kathleen Abbott

Denise Turner Roth

Corey Dade

Kosal Krishnan

Jacqueline (Jackie) Peduzzi

Derich Sukow

Camilo Rocha

Howard Lyons

Darryl W. Moser

in the firm's Chicago office. **Ron Deverman** joined the company as vice president and national director for environmental planning in the Transportation & Infrastructure (T&I) Division. He also will further development of the Chicago and Midwest planning practice. **Christopher Hertz**, chief communications system engineer in the firm's Transportation & Infrastructure Division (T&I), has been promoted to vice president. Hertz joined STV in 2002 and is based in the Philadelphia office.

Babylon, N.Y.-based **GPI** named **Jason Stern** vice president and director of structural engineering for its Babylon and Manhattan, N.Y., offices. Stern succeeds **Deborah Chase**, who now serves as a senior technical advisor within the GPI organization. Stern has served on the Design-Build and Emerging Leaders committees for ACEC New York.

Watertown, Mass.-based **VHB** announced the following appointments: **Kris Dramby** has been promoted to vice president and energy market leader. He is based in the Williamsburg, Va., office. **Maxine Hill** joined the firm's New York City office as the Northeast region transportation market lead and managing director. Hill previously served as New York area manager at WSP USA.

Ron Deverman

Christopher Hertz

Richard M. Amodei

Anthony Kreis

Jason Stern

Kris Dramby

Maxine Hill

WILLIAMS NAMED 2020 DELAWARE ENGINEER OF THE YEAR

Ted C. Williams

Former 2012–2013 ACEC Chairman **Ted C. Williams**, president of Landmark Science & Engineering in Newark, Del., was named the 2020 Delaware Engineer of the Year by the Delaware Engineering Society.

Awarded at the annual Engineers Week Banquet in February, Williams was recognized for his tireless work on behalf of the public, clients, and staff, and for his commitment to family, sports coaching, and advocating for STEM-based education.

Williams has served on and led numerous local and national committees and boards and addressed the General Assembly in support of improvements to Delaware's infrastructure and for STEM-based education for all middle and high school students.

Williams is chairman of the Council on Transportation, president of Committee of 100, and previously served on the Department of Education's Construction Committee and as vice chair of the Delaware Interscholastic Athletic Association.

Welcome New Member Firms

ACEC Arizona
Innovative Climatic Technologies, Inc.
Scottsdale
RockSol Consulting Group, Inc.
Tucson

ACEC Arkansas
Crow Group, Inc.
Morrilton
HSA Engineering Consulting Services, Inc.
Fort Smith

ACEC California
CCE Design Associates Inc.
Camarillo
Darin Fong & Associates
Brea
Engel & Company Engineers
Bakersfield
IDS Group, Inc.
Irvine
KCM Engineering, Inc.
Sacramento
Skyline Structural Engineering, Inc.
Clovis
Sun Mountain, LLC
Walnut Creek
Wexco International, LLC
Marina del Rey

ACEC Colorado
Lamb-Star Engineering
Golden
Sterling Land Surveyors, LLC
Littleton

ACEC-FL
Absolute Engineering, Inc.
Tampa
Chipola Engineering Group, Inc.
Marianna
Keystone Civil, Inc.
Wesley Chapel

ACEC Georgia
Innovative Engineering Strategies, LLC
Forsyth
KEY Engineering Group
Hapeville
Planners & Engineers Collaborative
Norcross
Platinum Geomatics, LLC
Buford
W&A Engineering
Athens

ACEC of Idaho
ALLWEST
Hayden

ACEC Illinois
Milhouse Engineering & Construction, Inc.
Chicago
S.T.A.T.E. Testing, LLC
East Dundee

ACEC Indiana
Moench Engineering, P.C.
Plainfield

ACEC/Iowa
Braun Intertec Corporation
Cedar Rapids
Quigg Engineering, Inc.
Walcott

ACEC-KY
Bryant Engineering
Owensboro

ACEC of Louisiana
Atlas Technical Consultants, LLC
Baton Rouge

ACEC/MD
iCivil, Inc.
Woodstock
Kim Engineering, Inc.
Beltsville
Zest, LLC
Laurel

ACEC/MA
Comprehensive Environmental, Inc. (CEI)
Bolton
Luna Engineering, Inc.
Leominster
Meridian Associates, Inc.
Beverly
Triunity Engineering and Management, Inc.
Denver, Colo.

ACEC/MW
Remington & Vernick Engineers
Laurel
Restl Designers, Inc.
Washington, D.C.

ACEC/Michigan
Cincar Consulting Group
Detroit
Ciorba Group, Inc.
Plymouth

ACEC/Missouri
Tepa Engineering Services
Kansas City

ACEC-Montana
Fussell Engineering
Missoula

ACEC Nebraska
Garver
Lincoln

ACEC Nevada
J-U-B Engineers, Inc.
Reno

ACEC-NH
Cornerstone Energy Services, Inc.
Manchester
Weston Solutions, Inc.
Concord

ACEC of New Jersey
Gedeon Engineering, PC d/b/a Gedeon GRC Consulting
Princeton

ACEC New Mexico
Carollo Engineers, Inc.
Albuquerque
INTERA Incorporated
Albuquerque
T2 UES, Inc. dba T2 Utility Engineers
Albuquerque

ACEC New York
UrbanTech Consulting Engineering, P.C.
New York, N.Y.

ACEC Ohio
Chagrin Valley Engineering, Ltd.
Cleveland
Sands Decker CPS, LLC
Columbus
The Markosky Engineering Group, Inc.
Steubenville

ACEC/PA
Kittelson & Associates, Inc.
Harrisburg

ACEC-SC
GEL Solutions, LLC
Charleston
Mattern & Craig, Inc.
Roanoke, Va.
MC Squared, Inc.
Columbia
Stewart Engineering, Inc.
Columbia
T2 UES, Inc. dba T2 Utility Engineers
Peachtree Corners, Ga.

ACEC Texas
Haag Engineering Co.
Irving
Intertek/PSI
Austin
JDJR Engineers & Consultants, Inc.
Irving
Manhard Dallas, LLC dba Manhard Consulting
Dallas
Root 3 Engineering, LLC
Abilene
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El Paso

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Midlothian
Wallace, Montgomery & Associates, LLP
Midlothian

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Casseday Consulting
Kirkland
Ergosynch
Seattle
Welch Comer & Associates, Inc.
Coeur d'Alene, Idaho

ACEC Wisconsin
Spann & Associates, LLC
Germantown

Welcome New National Affiliate Members

Construction - Integrated Engineering Services
Asesoría Técnica y Proyectos Industriales de Monterrey, S.A. de C.V. (ATPIMSA)

Technology – Cloud Service Provider
IronOrbit

For further information on national affiliate members, go to: http://bit.do/ACEC-natl-affiliate-memb or contact Michael Pramstaller at 703-328-3242 or mpramstaller@acec.org.

CALENDAROFEVENTS

OCTOBER 2020

27 Building Effective Collaborative Aligned Teams (online class)

28 Suddenly Virtual: Business Models for the New Professional Services Marketplace (online class)

28-30 2020 ACEC Virtual Fall Conference

NOVEMBER

3 A Path Forward: How High-Impact Teams Emerge From Crisis (online class)

4 Effective Teaming Agreements Between Design-Builders and Consulting Engineers in Design-Build (online class)

5 Business Storytelling: How to Use Stories to Boost Your Bottom Line (online class)

10 Engineering Ethics: Engineers and Fiduciary Duties (online class)

11 Email Marketing Rules: How to Plan, Develop, and Execute a Stand-Out Email Marketing Program for Your Firm (online class)

12 Start Leading (online class)

17 Workforce Development Challenges and Opportunities for Engineering Firms (online class)

18 How to Leverage a CRM System to Increase Sales and Client Retention (online class)

19 How I Learned to Stop Worrying and Love Public Speaking—and How You Can, Too (online class)

24 Working From Home: Focus and Balance (online class)

DECEMBER

1 2020 ACEC Virtual Engineering Excellence Awards Gala

1 Game Changed: The New Priority in B2B Selling (online class)

2 Effectively Managing Conflict in Organizations (online class)

To sign up for ACEC online seminars, go to **www.acec.org/education.**

Additional information on all ACEC activities is available at www.acec.org.

Coalitions' Virtual Summer Education Series

ACEC's Coalitions hosted their first Virtual Summer Education Series. With roundtables and education sessions dedicated to specialized interests, this series was complimentary for all Coalition members and offered them the opportunity to earn personal development hours and meet on pressing topics.

Kicking off the first half-day of this series with an advocacy update, attendees progressed to a timely session on "Unconscious Bias in Today's Workplace." Day two of the series featured an update from ACEC leadership, Chairman Charlie Gozdziewski and President and CEO Linda Bauer Darr. The morning closed with Coalitions-specific roundtable discussions on project designs/teams/specifications, digital signatures, 3D design and deliverables, and data integrity. The final set of breakout sessions featured risk management and business practices, including BIM360 usage and contract language with industry experts.

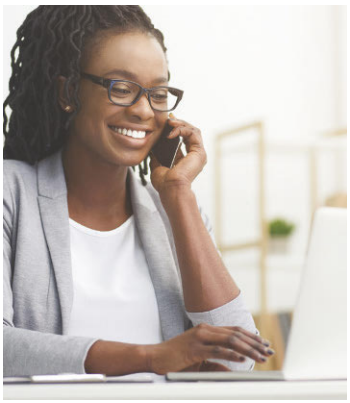
Questions about the Coalitions can be directed to Heather Talbert, ACEC's director of Coalitions, at **htalbert@acec.org**.

HAKINMHAN/GETTY IMAGES

NEW YOUNG PROFESSIONAL SERIES AND ONLINE COMMUNITY

As firm leaders focus on managing output, operations, and the bottom line, it becomes increasingly difficult for project engineers to identify how they can be most productive and remain indispensable, particularly if they are working remotely.

Recognizing these unique challenges, ACEC has initiated a series of education sessions focused on helping young professionals navigate remote work and personal development. Featuring roundtables, presentations, and open discussion, this series aims to help junior employees adapt to shifting client needs, capitalize on their role, communicate with firm leadership, and contribute to the new goals of the firm.



PROSTOCK-STUDIO/GETTY IMAGES

ACEC Education has also launched the Young Professionals Online Community. The forum will feature virtual discussions, resources, and recordings of past education series. Those looking to connect with other early career engineers can contact Katie Goodman, director of leadership programs, at **kgoodman@acec.org**.

INCLUSION AND DIVERSITY VIRTUAL SERIES AND RESOURCES

Larry Fink, CEO of BlackRock, a global investment management firm, described in his open letter to CEOs how "a diverse mix of genders, ethnicities, career experiences, and ways of thinking have, as a result, a more diverse and aware mindset. They are less likely to succumb to groupthink or miss new threats to a company's business model. And they are better able to identify opportunities that promote long-term growth."

With this in mind, ACEC launched a new series on inclusion and diversity (I&D). Featuring a roundtable and two virtual presentations, the series allowed participants to engage in a discussion of lessons learned and best practices surrounding I&D programs, including overcoming blind spots and biases and evolving leadership development to foster lasting positive change to firm culture.

ACEC has created a resource page dedicated to inclusion and diversity that hosts information on these past recorded webinars as well as upcoming I&D education opportunities and newly released reports and articles. To view the webpage, go to **https://programs.acec.org/inclusion-and-diversity**.

The Design Professionals Coalition Diversity & Inclusion Working Group also released a summary report to help ACEC firms create more inclusive environments. A free copy of the report is available at **https://bit.ly/dpc-diwg-report**. ■

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ACEC's Business Resources and Education Department provides comprehensive and online-accessible business management education.

Visit ACEC's online educational events calendar at https://www.acec.org/education/online-classes/ or call 202-347-7474, ext. 349, for further information.

ANNOUNCING

THE ACEC BIT PROGRAM'S NEW PROFESSIONAL LIABILITY EXCHANGE

Now Offering Best-in-Class Professional Liability Insurance

The ACEC BIT and Greyling Insurance Brokers are pleased to announce the Program's new Professional Liability Insurance Exchange, featuring pre-negotiated, best-in-class policy terms, conditions, and enhancements with 4 different industry leading professional liability insurance carriers.

Program Features

- Only one application – or use your existing application – will allow us to approach all carriers in the exchange
- We provide risk consulting which includes contract reviews. Our staff includes former general counsels of some of the largest architectural and engineering firms in the country
- Offered through the website acecbit.org, Greyling also has extensive risk management resources available, specifically focused on the engineering industry, to help your firm reduce risk in your daily operations.
- And our service doesn't just end with the sale of the policy. We can help with claims reporting, management, counsel selection, and resolution, in the unfortunate event your firm experiences a claim.
- Customized Risk Management training programs including educational webinars.
- The Professional Liability coverage is offered through a vetted panel of carriers with best-in-class coverage enhancements.

The ACEC BIT Program's new Professional Liability Insurance Exchange **could result in significant premium savings and enhanced coverages**.

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