

FALL 2021

# ENGINEERING INC.

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## CURBING CAUSE OF CLIMATE CHANGE

ENGINEERS TAKING LEAD  
ON LOW-CARBON EFFORTS

First All-Woman  
Leadership at ACEC

ACEC Coalitions  
Navigating Pandemic-  
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CEC Civil Servants  
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Fall 2021

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GUNNAR HUBBARD  
PRINCIPAL AND SUSTAINABILITY PRACTICE LEADER  
THORNTON TOMASETTI

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COVER: SHUTTERSTOCK

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## Council Efforts Pay Off, President Biden Signs Historic Infrastructure Bill

**A**fter months of negotiation, advocacy, and legislative bargaining, the Infrastructure Investment and Jobs Act has been signed into law. This landmark legislation represents the single largest investment in our built environment in a generation. The \$1.2 trillion bill sets a new baseline for surface transportation programs and goes further to deliver billions more in new additive funding to invest in our electrical grid, expand access to broadband, establish EV-charging infrastructure, and more.

This is a long-awaited and desperately needed robust investment in the nation's infrastructure. The ACEC Research Institute estimates that the legislation will support 82,000 new engineering jobs and support the creation of 250,000 new jobs downstream.

"Our members and everyone in our country who relies on our roads, bridges, transit, air transport, maritime transport, clean water, broadband, and energy development and transmission will benefit enormously from this," says ACEC President and CEO Linda Bauer Darr.

"The ACEC federation and our Advocacy team in Washington, led by Senior Vice President Steve Hall, have worked tirelessly to get this bill over the finish line. They deserve our thanks and appreciation," says ACEC Chair Robin Greenleaf. (For more details, see *Legislative Action* on page 10.)

This issue of *Engineering Inc.* also includes how engineers are taking an important lead role in creating a low-carbon economy worldwide to mitigate the impact of climate change (see page 14).

Additionally, we report on how for the first time, women hold the three top ACEC leadership positions, a rarity in the business world, and the significance of such an achievement (see page 24).

Finally, for the first time since 2019, the Council was able to hold a live in-person national event. The 2021 Fall Conference at Marco Island, Fla., featured top national speakers, state-of-the-art business education, and a plethora of social activities and was truly a "Welcome Back" celebration for all participants. It was a fantastic event that we recap on page 20.

The holiday season is now upon us. We hope that everyone enjoys their individual celebrations with family and friends. We've all earned it.

*Robin S. Greenleaf*  
Robin S. Greenleaf  
ACEC Chair

*Linda Bauer Darr*  
Linda Bauer Darr  
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# Water Engineering in a Mega-Drought



BY GERRY DONOHUE

**T**he American Southwest is in the midst of what scientists say is the worst drought in the past 1,200 years. With only a few brief moist interludes, the region has had higher average temperatures and lower annual rainfall totals since 2000. This sustained mega-drought has put huge pressure on the parched region's already overburdened water supply.

Lake Mead offers a stark illustration. Dedicated in 1935, Lake Mead is the largest reservoir in the country and provides electricity and water to more than 25 million people in several states. It supplies 90 percent of Las Vegas' water. Water levels in the lake have been receding for the past 22 years, falling to just 36 percent of capacity. And according to the Bureau of Reclamation, lake levels will continue to fall for at least two more years.

These sustained dry conditions pose big challenges for utilities and for the water and wastewater engineering firms that work with them. Not only must they continue to meet the water

needs of an ever-expanding customer base despite the vagaries of the climate, but they must also design systems that are resilient in these increasingly harsh conditions.

Jill Hudkins, One Water Initiative leader at Tetra Tech, describes the challenges facing many clients in the region. "They start with traditional groundwater or surface water supply sources, and over time are forced to look for alternatives to sustain supplies for future population growth. They may consider a variety of water management approaches such as aquifer storage and recovery (ASR) or importing water from another region. They may also turn to alternative supplies such as wastewater reuse, brackish water, or seawater desalination.

"Increasingly, our clients are focusing on diversifying their water supply," she says. "Rather than having one water supply solution, they are looking at all available sources with a goal of providing water supply resiliency. One Water strategies, intelligent planning, and automation advances have facilitated our ability to integrate and manage multiple sources at any given time."

In this scarcity environment, integrated water management strategies have become the norm.

"It's all about managing finite resources to provide long-term resilience," says Katie Vanyo, an environmental engineer at Brown and Caldwell. "Historically, planning looked at just water, wastewater, or stormwater. Now we look at all of those together and work to leverage the existing supplies of each to have a better outcome."

Long-term infrastructure planning is even more of a challenge. Because their facilities may still be operating 40 or 50 years from now, utilities in the region must navigate through future supply-and-demand projections and a myriad of uncertainties about the intensity and duration of the drought.

"Many of our clients are leveraging tools such as scenario planning," says Vanyo. "We work with them to explore a range of future scenarios, such as an extended drought or continued water quality degradation, and then develop strategies to mitigate those risks. It's a much more flexible approach to strategic planning."

As the drought has lengthened, groundwater aquifer levels have fallen dramatically, and in many places the water has become increasingly brackish. Even in the Arizona desert, Vanyo says, aquifers are becoming saltier in some areas.

Fortuitously, says Hudkins, the desalination technologies developed for seawater have proven to be very cost-effective for treatment of brackish groundwater.

"Because the salinity is a fraction of seawater, brackish groundwater desalination plant construction is less expensive, and then you benefit from lower energy costs once you're up and running," she says. "And in many states, it's still a fairly available and reliable water resource."

A significant challenge with groundwater desalination in land-locked areas is what to do with the salt. "Disposing of brine concentrate can take up a lot of land area and pose significant costs," says Vanyo. "But we're seeing some technologies hitting the market now that promise to reduce brine volumes to more manageable levels."

## PR PROBLEMS

Beyond the technical challenges, firms face a significant public relations problem because people take their drinking water seriously.

"Sometimes when our clients develop these alternative water supply sources, such as advanced wastewater treatment for potable reuse, our biggest challenge can be explaining to the public that they're getting the same high-quality water at the tap," says Hudkins, "even when we invest in more robust and expensive treatment systems and demonstrate final water quality."

"As engineers, we can explain the technology and the quality, but the public has a really hard time trusting us on the public health aspect," says Vanyo.

She recounts a recent presentation on how water engineers working in El Paso, Texas, broke through this impasse. "They brought in a doctor to give the public the confidence that the water was safe to drink, and suddenly everyone was very trusting."

"Going forward, we need to step up our levels of communication as engineers, but we can also leverage the expertise of others, get their buy-in, and communicate that to the public." ■

*Gerry Donohue is ACEC's senior communications writer. He can be reached at [gdonohue@acec.org](mailto:gdonohue@acec.org).*



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# Strong Industry Support Highlights Institute's Anniversary and Accomplishments

**T**he ACEC Research Institute celebrated its first anniversary earlier this year. What a year it has been. The Institute:

- Released nine *COVID-19 Business Impact Surveys* throughout the pandemic, a survey regarding ownership transfer and management succession (OTMS) trends in partnership with FMI, and most recently the *Industry Impact Series*, a landmark research series measuring engineering's impact on the U.S. economy and society.
- Developed a series of roundtable discussions with leading experts to explore intelligent solutions to tackle major financial obstacles, seek more proactive approaches to predict an uncertain future, and pursue strategies to remove barriers to create that future.
- Partnered with Accelerator for America to take a deep dive into a new playbook of national infrastructure policy developed by a diverse group of America's mayors.
- Advanced the profession by increasing its education scholarship fund for individuals pursuing a career in engineering.

Moving forward, the Institute will continue to fulfill its mission of delivering knowledge and business strategies to guide and



elevate the engineering industry, and of being the leading source of knowledge and thought leadership for creating a more sustainable, safe, and technically advanced built environment.

Critical to the Institute's early achievements and future plans has been the financial support from members, firms, and affiliates in all sectors of the industry.

"We're delighted to have such strong industry support," says Institute Chair John Carrato. "Our donors' generous contributions demonstrate their commitment to the advancement of the industry and their belief in the ACEC Research Institute. Their support will allow the Institute to provide new and valuable research and build the resources engineers need to analyze and tackle the challenges we face as a society."

In addition to the individuals and firms that made inaugural multi-year commitments (see adjacent page), the ACEC Research Institute wishes to extend its sincere appreciation to our Contributors Circle of donors that over the past year have donated through the scholarship fund, annual prize drawing, Giving Tuesday, and online. ■

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The ACEC Research Institute has pledge levels that provide opportunities for members, firms, and affiliates from all sectors of the industry to engage. Pledges can be spread over multiple years, making it possible for members at every level to participate in the great work of the Institute while enjoying the benefits of their participation. Learn more today at [ACECResearchInstitute.org](http://ACECResearchInstitute.org).

The ACEC Research Institute provides the engineering industry with cutting edge research, trend data, and economic analysis to help firm owners make decisions and delivers thought leadership that advances engineering's essential value to society.

**The ACEC Research Institute wishes to extend  
its sincere appreciation to its generous contributors.**

*As of November 2021*

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# Congress Passes Historic \$1.2 Trillion Infrastructure Package

**A**CEC has secured enactment of comprehensive infrastructure legislation totaling \$1.2 trillion over five years. The Infrastructure Investment and Jobs Act includes \$550 billion in new supplemental funding across federal transportation, water, energy, and environmental programs.

“The bipartisan bill will unleash the ingenuity and talent of America’s engineering industry to design smart, connected, and resilient infrastructure,” says Council President and CEO Linda Bauer Darr. “Americans will feel these improvements every day, resulting in a better quality of life, a cleaner environment, new job opportunities, and untold potential for economic development in their communities,” Darr told lawmakers in support of final passage.

“Americans everywhere deserve safe drinking water, secure and efficient energy sources, and reliable bridges and roads that are resilient against today’s cyber, extreme weather, and climate challenges. This bill will provide the funding necessary to improve lives today and unlock our potential for a brighter tomorrow,” says ACEC Chair Robin Greenleaf.

The law provides more than \$350 billion for highways, with substantial increases for bridge rehabilitation and reconstruction, resilience, and safety programs. More than \$90 billion is directed to transit programs, with formula funding growing from \$13.36 billion in F.Y. 2022—an increase of \$3.2 billion above current levels—to \$14.64 billion in F.Y. 2026, plus an additional \$8 billion supplemental funding for capital investment grants.

Rail programs grow significantly, totaling \$66 billion over five years. Major focus areas include federal-state partnership grants for intercity passenger rail, Amtrak capital projects on the Northeast Corridor and improvements to the national network, and railroad crossing elimination and other safety infrastructure needs.



THAM/KOGETTY IMAGES

The bipartisan infrastructure package includes a total of \$25 billion in supplemental funding for aviation infrastructure between F.Y. 2022–2026. Of that amount, \$15 billion is designated for airside Airport Improvement Program projects, \$5 billion for competitive grants for airport terminal development projects, and \$5 billion for FAA Facilities and Equipment. The bill appropriates \$2.25 billion over five years for port infrastructure improvements.

The package also includes \$12.5 billion for national infrastructure investments through U.S. DOT, including \$5 billion for megaprojects and \$7.5 billion for RAISE (formerly known as BUILD, formerly known as TIGER) competitive multimodal grants.

The bill funds over \$50 billion in resilience to address effects of extreme weather and cyberattacks. This includes funds to adapt to droughts and floods and provides for major investment in weatherization.

For water infrastructure, it funds a \$55 billion investment in wastewater and drinking water, including dedicated funding to replace lead service lines and remove emerging contaminants, including PFAS. The bill also funds \$21 billion in environmental remediation, including cleanup of Superfund and brownfield sites, reclamation of abandoned mine land, and capping of orphaned oil and gas wells.

The bill provides \$73 billion to fund clean energy projects, including electricity transmission projects to facilitate the expansion of renewable energy. The bill creates a new grid development authority, invests in research and development for advanced transmission and electricity distribution technologies, and promotes grid modernization to deliver operational flexibility and resilience. The bill also funds demonstration projects and research hubs for technologies such as advanced nuclear, carbon capture, and clean hydrogen.

## ACEC Secures Partial Waiver in House of FAR Credit for Forgiven PPP Loans

**T**he House of Representatives approved a targeted waiver of a provision in the Federal Acquisition Regulation that is forcing A/E firms to provide credits for forgiven Paycheck Protection Program (PPP) loans on contracts

with state departments of transportation (DOTs). Enactment of the provision would address a significant challenge facing small firms working on State DOT and local transit projects.

The amendment, sponsored by Rep. Anthony Brown

(D-Md.) and co-sponsored by Reps. John Katko (R-N.Y.), Troy Balderson (R-Ohio), Rodney Davis (R-Ill.), and Raja Krishnamoorthi (D-Ill.), was passed by voice vote and included in the annual National Defense Authorization Act.

The Brown amendment

states that “no cost reduction or cash refund shall be due to the Department of Transportation or to a State transportation department, transit agency, or other recipient of assistance” based on forgiveness of the payroll costs of a covered PPP loan.

# ACEC Engages on Vaccine Mandates

**A**CEC is working with a coalition of contractor and business organizations to address concerns over new actions to require COVID-19 vaccinations for firms of a certain size and those working for federal agencies.

In September, President Biden signed Executive Order 14042, *Ensuring Adequate COVID Safety Protocols for Federal Contractors*. The executive order requires employees of federal contractors to have proof of COVID vaccination, masking, and physical distancing while in workplaces, and the designation of a person to coordinate COVID workplace safety efforts, unless the employee qualifies for a religious or medical exemption. The order impacts federal contractors of all sizes, affecting staff working directly on projects as well as those in support staff roles, such as HR, IT, and invoicing.

ACEC organized a letter that was joined by other contractor organizations requesting that the White House delay implementation of the order. The letter included other recommendations to ease compliance, emphasizing that implementation would be extremely difficult and result in considerable disruptions in the services contractors provide to federal clients. Since then, the White House pushed back the date of implementation to Jan. 18, 2022, by which covered contractors must be fully vaccinated.



WILD PIXEL/GETTY IMAGES

The federal contractor order was accompanied by a six-point *Path out of the Pandemic*, which included a directive to the Occupational Safety and Health Administration (OSHA) to draft an Emergency Temporary Standard (ETS), requiring weekly testing or proof of COVID vaccinations for all companies with 100 or more employees.

ACEC has engaged OSHA on their policy, as well as the White House and the Office of Management and Budget (OMB), raising concerns that the policy would sideline key employees and add to the labor shortage of engineers needed to meet the demands of public and private sector clients. The Council will be submitting further comments to the agency in an effort to shape the policy and ease compliance.

The OSHA policy was challenged in court and is to date on hold pending further review. With close to a dozen suits filed nationwide, the Judicial Panel on Multidistrict Litigation consolidated the various suits into one case, giving another appeals court an opportunity to issue the controlling decision. Regardless of the outcome in the lower court, the Supreme Court will likely have the final word on this critically important issue.

"This is a huge victory for our members," says ACEC Chair Robin Greenleaf, CEO of Architectural Engineers in Boston, who testified about the issue at a House Small Business Committee hearing in March. "When we get this through the Senate and signed into law, we'll finally correct this unintended outcome and

make sure our businesses are not saddled by this unfair burden."

ACEC is coordinating with lead sponsors in the Senate, including Sens. Mike Braun (R-Ind.), Tammy Duckworth (D-Ill.), Dick Durbin (D-Ill.), and Tammy Baldwin (D-Wis.), on securing final passage of the amendment.



Anthony Brown (D-Md.)

THE WASHINGTON POST/GETTY IMAGES

| ISSUES ON THE MOVE         | WHAT'S NEXT                               |
|----------------------------|-------------------------------------------|
| PPP Fix                    | Senate vote on House-passed bill          |
| New Infrastructure Program | Implementation and regulatory actions     |
| Wetlands                   | Regulatory action on potential new policy |

## WOTUS Turmoil Continues

**O**n Aug. 30, a Federal District Court in Arizona issued a decision concerning the federal Navigable Waters Protection Rule (NWPR) defining "Waters of the United States" (WOTUS). The EPA and U.S. Army Corps of Engineers ceased implementation of the NWPR and are interpreting WOTUS consistent with pre-2015 regulatory regime until further notice. The agencies initiated a process for stakeholders to nominate slates of participants to be selected for one of 10 regional roundtables.

The decision complicates the EPA's plan to revisit the NWPR in a two-step process of repeal and replacement. The ruling has captured the attention of U.S. business, as projects are known to be adversely affected.

ACEC has a history of engaging in WOTUS rulemakings and has supported the NWPR. ACEC member interest is rising now because of immediate project impacts from implementation of the court decision. The legal questions are many and remain outstanding, and immediate resolution of some of these questions is likely to affect ongoing projects.

Application of the decision is unclear, prospectively or retrospectively. Questions include the scope of the order, the outcome of a likely appeal, and how the order may impact the federal agencies' efforts to propose and finalize an intended replacement WOTUS definition. The decision may accomplish the Biden Administration's goal for step one: Repeal the NWPR and replace it with the pre-2015 regulatory definition of WOTUS. That would appear to cut the time for replacement dramatically.

For ACEC members dealing with WOTUS permitting and related environmental review issues, ACEC will provide updates and opportunity for engagement on relevant legislative, judicial, and regulatory developments. Contact Lynn Schloesser at [lschloesser@acec.org](mailto:lschloesser@acec.org) for more information.

# Understanding Residential Growth With a Leading Indicator

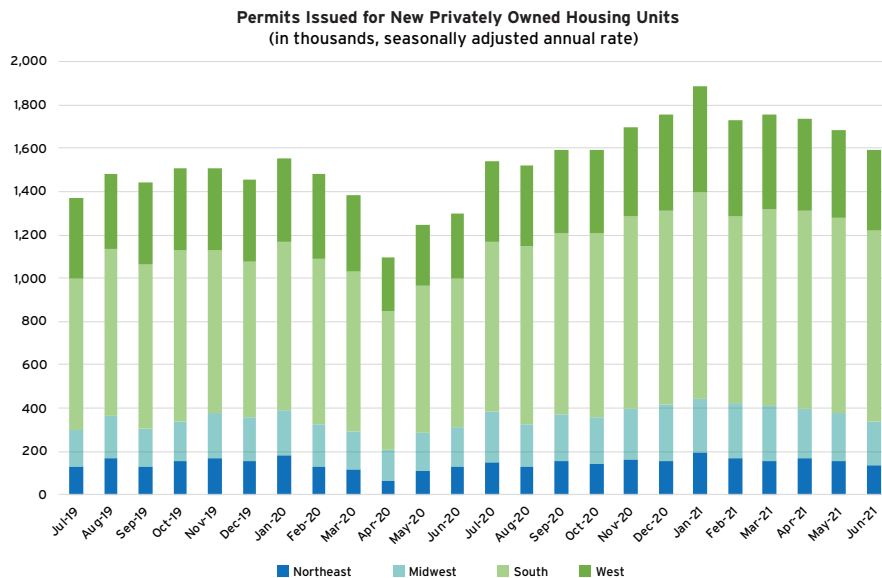
By Erin McLaughlin



**W**ith the strength of the residential market driving much of the U.S. economy, it is key for engineering firms—and not just those providing land development services—to understand key economic indicators and regional variances. One leading indicator is the Building Permits Survey (BPS). Sourced from the U.S. Census Bureau, BPS provides the annual rate of new privately owned housing units authorized by building permits. Recent data tells us the rate has exceeded 1.6 million

units nationwide since November 2020, with a recent peak of nearly 1.9 million units in January 2021 (a number not seen since May 2006).

With data provided monthly and broken down geographically, BPS provides insights regarding *where* and *at what growth rate* new U.S. housing is being built. This data can inform engineering firms regarding markets that are strong for land development and surveying firms. But beyond that, the data shows what municipalities and metropolitan areas are adding residents. New residents in an area often precede new community infrastructure



Source: U.S. Census Bureau

## WHAT STATES ARE IN WHAT CENSUS REGION?

**Northeast:** CT, MA, ME, NH, NJ, NY, PA, RI, & VT

**Midwest:** IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, & WI

**South:** AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, & WV

**West:** AK, AZ, CA, CO, HI, ID, NM, MT, NV, OR, UT, WA, & WY



## A/E Revenues Rebound

Total A/E revenues fully rebounded to pre-pandemic 2019 levels in the second quarter of 2021, according to the U.S. Census Bureau's Quarterly Services Survey. The "advance estimate" of quarterly revenues was \$91 billion in Q2 2021, a 9.8 percent increase from the previous quarter and a 14.3 percent increase over the same quarter in 2020, which was the first full quarter of the pandemic-caused recession.

This growth is a complete recovery from the decline A/E firms experienced in 2020. A/E revenues were flat for most of 2020, after decreasing about 11 percent during the recession. The rebound began at a moderate

pace of about 4 percent during Q1 of 2021 before growing more significantly in the second quarter.

Economic analysts credit the rebound the A/E and other sectors are experiencing to vaccine access, ongoing federal fiscal stimulus, and increased consumer spending. Optimism is shared by the 49 professional forecasters who make up the National Association for Business Economics (NABE) regular outlook panel, which predicted growth in its second quarter Outlook Survey.

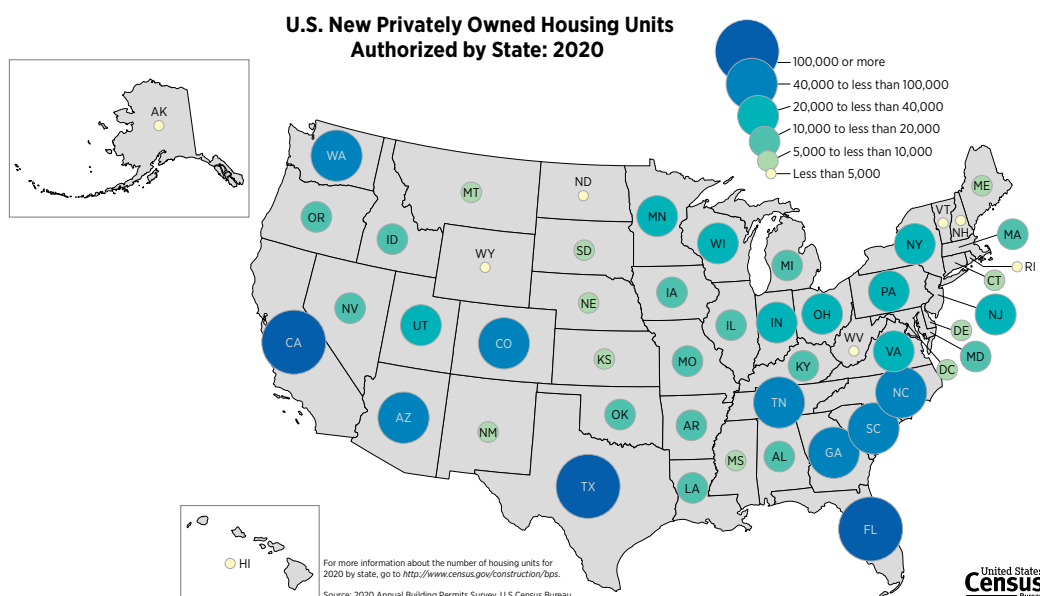
"NABE panelists have grown more optimistic about the prospects for economic growth in 2021," according to NABE President Manuel Balmaseda, chief economist at CEMEX, a building materials company. "The median forecast calls for an 8.5 percent annualized growth rate in the second quarter of 2021. The panel has become

design and construction opportunities (and new property taxes collected). New residents also often mean growth in market sectors, including water/wastewater, secondary roadways, schools, and civic facilities such as police and fire stations, recreation centers, and libraries. Within the private sector, it is often said that “retail follows rooftops,” so opportunities in commercial design would also follow many new residential developments. Such data on growth of developments in certain areas can not only inform an engineering firm’s business development strategy, but also its strategies around acquisitions and opening offices in new geographies.

Although the current housing boom has

provided growth to every region in the United States, not all are growing at the same rate. Analyzing the last 24 months of available data from the Census Bureau (July 2019 through June 2021) shows that the number of authorized housing units grew by 16.4 percent nationally. The South grew the fastest at 25.4 percent; the Midwest followed with 20.6 percent growth; and there was only 3.8 percent growth in the Northeast and 1.9 percent in the West during the past two years. The featured map shows growth by state during 2020.

To dive into the BPS data yourself—including by metropolitan area—visit [census.gov/construction/bps](https://census.gov/construction/bps).



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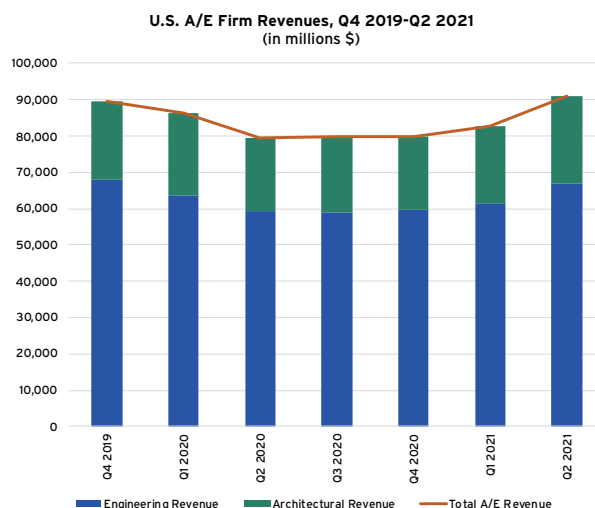
### The Private Side is a regular department of *Engineering Inc.*,

focusing on the private-sector markets listed above, and information and insights on 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 [emcloughlin@acec.org](mailto:emcloughlin@acec.org).

significantly more bullish about 2021 as a whole.”

The panelists predicted a median real GDP growth estimate for 2021 at 6.7 percent in the May Outlook Survey, up from the 4.8 percent GDP growth predicted in the March survey. However, many analysts are increasingly cautious in their optimism, due to the delta variant of COVID-19, which has increased infection rates across much of the United States.



An illustration of a green landscape featuring mountains, wind turbines, solar panels, and city buildings. The scene is set against a light blue background with stylized clouds. The text 'Mitigating' is in white, 'Challenges' is in large grey letters, 'of' is in small white letters, 'climate' is in large white letters, and 'Change' is in large grey letters.

# Mitigating Challenges of climate Change

TO DEAL WITH ACCELERATED GLOBAL WARMING, A LOW-CARBON ECONOMY IS NEEDED

BY SAMUEL GREENGARD



**T**hroughout history, architects and engineers have consistently found ways to take buildings—and materials used to create them—to new limits. They've pushed structures upward to the sky, made them more resilient to the forces of nature, and introduced innovative and iconic designs.

But now, climate change poses an increasingly alarming threat. In a world where atmospheric warming and sea level rise are accelerating at a rapid rate, and the threat of extreme heat waves, droughts, storms, and flooding continues to surge, there's an urgent need for more efficient and resilient structures that support a low-carbon economy.

The construction industry has been part of the problem—but also is part of the solution.

"The impact of construction activities—and the energy they use—is enormous," says Jennifer Layke, global director for energy at the World Resources Institute, an organization focused on developing sustainable systems. "There's a recognition that the building and construction sector has an important role to play in driving change. It's both an opportunity and an obligation."

There's a growing focus on building materials and their carbon footprint. Architects and engineers are also looking to make buildings healthier for occupants (see sidebar).

"We are reaching an inflection point, where the materials, technologies, and the desire to make changes exist," says Brent Trenga, director of sustainability at Kingspan Insulated Panels North America, a sustainable building materials manufacturer.

## TWO MAJOR PROBLEMS: CARBON AND CONCRETE

Sustainability and climate change involve two increasing concerns. An August 2021 report from the United Nations' Intergovernmental Panel on Climate Change found that the world could hit the critical threshold of 1.5 degrees Celsius temperature increase by 2034, far earlier than previously expected. The U.N. secretary general labeled the situation "code red" and experts warned that drastic steps are required to curtail carbon emissions.

The engineering and construction sector has a particularly large carbon footprint. The United Nations' *Global Status Report 2020* reported that the building sector contributed 38 percent of global CO<sub>2</sub> emissions in 2019. That included greenfield development, cement production, and the burning of fossil fuels over the lifespan of projects. By contrast, transportation produced 24 percent of total CO<sub>2</sub> emissions.

There are two key pieces to the carbon puzzle. First, there's the CO<sub>2</sub> generated from the production and transport of building materials, which is often referred to as the "embodied" carbon in a structure. It accounts for about 11 percent of total carbon

emissions in the building sector. The second factor is the day-to-day operation of buildings and other infrastructure. This comprises 28 percent of the sector's CO<sub>2</sub> output, according to the nonprofit Architecture 2030.

Some building materials, such as concrete, are especially problematic. According to Carbon Brief, a website that tracks developments in climate science and carbon reduction, approximately 8 percent of global CO<sub>2</sub> originates from cement. "Concrete requires an enormous amount of energy to produce, and it requires a substantial upfront investment," observes Sheila Hollis, acting executive director of the United States Energy Association.

Getting to net-zero carbon by 2050, an ambitious goal to limit climate change, won't be easy. The U.N. *Global Status Report* projects 230 billion square meters of new construction over the next 40 years. That's the equivalent of adding the city of Paris to the planet every week. The energy intensity per square meter of the global buildings sector needs to improve on average by 30 percent from 2015 to 2030 to meet global climate goals.

## BUILDING ON INNOVATION

Carbon reduction goals revolve primarily around a few crucial areas. First, there's a need to lower the overall carbon impact of building materials such as concrete, metal, and glass. Second, it's critical to adopt energy-efficient systems that incorporate alternative power sources such as solar and wind, and inch toward grid-neutral structures. Third, efficient construction methods that reduce site waste are essential. This includes water management systems and materials recycling.

Technologies are emerging to address these issues. For example, insulated metal panels that use steel skins with an insulated foam core can replace concrete to lower the embodied carbon of the wall system. They produce a carbon footprint that's more than 28 percent lower, with improved performance and only minimal design changes, Trenga says. "These materials also boost resilience and the durability of the structure," he adds.



"Concrete requires an enormous amount of energy to produce, and it requires a substantial upfront investment."

**SHEILA HOLLIS**  
ACTING EXECUTIVE DIRECTOR  
UNITED STATES ENERGY ASSOCIATION

# A Healthier Approach

Sustainability is a primary factor driving the use of new materials in buildings. But there's a secondary issue: human health. "People are looking to work in spaces where they can breathe clean air and avoid materials that are known to cause health problems," observes Ben Thompson, director of sustainability at Autodesk.

Health problems can result from an array of substances, including polyvinyl chloride plastics, polyurethane spray foam and construction adhesives, volatile and semivolatile organic compounds, epoxy resins used as adhesives and glues, different types of mineral fibers, and paint fumes. Risks can also involve materials that release toxins during a fire.

Although government regulations have eliminated some toxic substances, incorporating green building materials into walls, floors, ceilings, and more is gaining momentum. This may include natural organic compounds such as wood and plant fibers, which have the added benefit of reducing non-renewable resources and boosting sustainability.

The use of hybrid bio-based biocomposites rather than petroleum-based composites could reduce the impacts on human health more than 50 percent, according to a study in the *International Journal of Environmental Research and Public Health*.

Says Gunnar Hubbard, a principal and sustainability practice leader at Thornton Tomasetti: "Ninety percent of our time is spent indoors. There is a growing recognition that we have to understand the impact buildings have on what we are breathing and make spaces safer."

New and more sustainable types of concrete are also available. For example, Solidia has developed a curing process that uses CO<sub>2</sub> rather than water to produce high-performance concrete that cures in 24 hours rather than 28 days. Other techniques have emerged that excavate fly ash—a byproduct of burning coal for energy—from landfills to use for concrete production, notes Alfred Gardiner, concrete technical leader and principal engineer at consulting and testing firm Braun Intertec. "As the production of fly ash declines due to the phaseout of coal production power plants and greater regulation, this could prove to be a valuable resource," he says. Braun Intertec recently received a Grand Award in the national ACEC Engineering Excellence Awards competition for its ASTM Test Methods: Cements Hardened by Carbonation project.

Squeezing carbon out of the equation isn't only about substituting materials, notes Gunnar Hubbard, a principal and sustainability practice leader at Thornton Tomasetti. There's also a growing focus on integrating technologies into building designs. This includes smart glass that relies on electrostatic methods to filter light energy and improve the energy efficiency of buildings, and new use of alternative energy sources such as solar and wind, sometimes built into structures, he explains.

More holistic thinking about buildings is taking shape. "There's a need to get the orientation of a structure right to increase the thermal performance of the envelope. We are also looking at innovative ways to reduce the loads and increase sustainability," says Hubbard, a licensed architect. This might include placing solar panels on roofs and embedding photovoltaic cells in the skin of a south-facing exposure. It might also require changing the depth of window overhangs—or making them adjustable—for maximum cooling and minimum heating during different seasons. It's also possible to shift excess heat from a data center or atrium to other zones in need of heating and design interior walls and air delivery systems to improve airflows while reducing energy consumption.



For example, buildings in nearly any climate should incorporate operable windows that can bring in outdoor air on a nice day. “The challenge—and the opportunity—is balancing the air intake with humidity, temperature, acoustics, and in some places pollen or particulates,” Hubbard explains. Such designs have an ancillary benefit of improving the air quality of a space and making it potentially safer during a pandemic. “There are many different elements that must be layered into these structures to

produce super-high-performance buildings. There’s a need to fundamentally rethink the way we approach the design and build process,” he adds.



“There’s a recognition that the building and construction sector has an important role to play in driving change. It’s both an opportunity and an obligation.”

**JENNIFER LAYKE**  
GLOBAL DIRECTOR FOR  
ENERGY  
WORLD RESOURCES  
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recognize that higher-quality projects lead to increased property values. Finally, some engineering and construction firms understand that sustainability can be a selling point. It can help them win bids and enhance their business.”

Today, powerful design and engineering tools—software, simulations, and emerging technology such as digital twins—can provide deep and broad insights about a building’s design, along



The energy intensity per square meter of the global buildings sector needs to improve on **average by 30 percent** from 2015 to 2030 to meet global climate goals.

with its energy and sustainability fingerprint over 30 or even 50 years. Yet the right tools also aid in understanding how various products and materials fit together to produce superior results—whether it’s triple-pane glass, electrostatic windows, green roofs, or new types of concrete or building panels. “The combination of products, technologies, and choices has a major impact on a structure,” Thompson says.






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“There’s growing demand for sustainable spaces. We’re seeing that 70 percent of institutional real estate investors have explicit environmental, social, and governance criteria in place.”

**BEN THOMPSON**  
DIRECTOR OF SUSTAINABILITY, AUTODESK

The biggest challenges, Gardiner says, are phasing new technologies into the mix and ensuring that they are available and suitable at a local level. While the industry attempts to slog through the process of finalizing standards and specifications for new materials, many companies simply aren’t aware of the options that exist and what benefits they provide. In addition, “There are a lot of materials out there that show a lot of potential, but the question is: Can they be produced in sufficient volumes, and what will happen with industry specifications?” Gardiner says.

Nevertheless, architects and engineers are increasingly committed to building carbon-efficient structures. “There is a growing recognition that the industry has to move to a more sustainable framework,” Thompson says. “It’s hard and it’s complex, but architects and engineers already have the digital tools available to better understand novel solutions for total carbon management and streamline their approaches.” Adds Layke: “Sustainability has to be part of building and infrastructure projects. Many large companies that are industry leaders already understand this. The challenge now is to push the concept of sustainability into the mainstream.” ■

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



“There’s a need to get the orientation of a structure right and think about innovative ways to improve energy use and sustainability.”

**GUNNAR HUBBARD**  
PRINCIPAL AND SUSTAINABILITY PRACTICE LEADER  
THORNTON TOMASETTI



## 9 Keys to Becoming Carbon Neutral

- Update and modernize urban planning policies to match sustainability initiatives.
- Improve performance to existing buildings through retrofits and renovations.
- Convert more existing buildings to net-zero operating emissions.
- Improve energy management in all buildings.
- Decarbonize building energy sources through renewables.
- Reduce embodied energy and emissions through a life cycle approach.
- Reduce energy demand from appliances.
- Upgrade adaption and reduce climate change risks through more resilient buildings.
- Increase awareness through education, support, and training.

Source: U.N. Environment Programme

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Former ACEC Chairman Dick Wells receives the championship trophy from a local Boy Scout troop for winning the ACEC/PAC 2021 Pinewood Rally. It was the second consecutive in-person Fall Conference where Wells has won the race.

# FALL CONFERENCE BECOMES 'WELCOME BACK' CELEBRATION

**M**ore than 800 members and guests relished the weather and scenery at the 2021 ACEC Fall Conference in Marco Island, Florida—the first in-person national Council event since the pandemic halted all national gatherings in March 2020.

“As a first-time attendee, I was surprised how well attended the Fall Conference was,” said Holly Buck, principal, Felsburg Holt & Ullevig, in Greenwood Village, Colorado. “I really appreciated the Medium Firm CEO Roundtable. The attendee perspectives were very useful and insightful. I’m also an SEI graduate, and it was great to see and reconnect with my fellow graduates in person.”

“I’m primarily at the Fall Conference for Pathways to Executive Leadership, which is a wonderful program,” said Scott Whitsett, vice president, Jewell Associates Engineers, in Spring Green, Wisconsin. “I thought the hotel was a wonderful facility. The program sessions were great, and it was really nice to see members having a great time.”

Conference highlights include:



Fall Conference General Session attendees listen to Keynote Speaker Mitch Joel.

## ACEC PRESIDENT AND CEO DARR REPORTS ON STRONG INDUSTRY, COUNCIL PERFORMANCE

At the ACEC Board of Directors meeting, ACEC President & CEO Linda Bauer Darr gave a buoyant report on the engineering industry and the Council.

"The state of our industry is strong," Darr said. "A/E revenues have fully rebounded to pre-pandemic levels, many firms enjoyed record profits in 2020, and productivity in our industry seems to have soared."

Economists forecast continued expansion, she said, despite concerns about inflation, the supply chain, and most pressing, the tight labor market.

And with the signing of the historic infrastructure bill by President Biden, Darr said, "Our industry, and in fact our entire nation, will reap the benefits from such an ambitious initiative."

"We have found strength through fighting together on shared legislative challenges," she said. "Strength through collaboration, communication, and cooperation. And power from a singular strategic vision."



ACEC President & CEO Linda Bauer Darr addresses the Board of Directors at the Fall Conference.



ACEC Chair Robin Greenleaf welcomes the Board of Directors back to the first in-person Council national meeting since 2019.



Best-selling author Mitch Joel said business disruptions were inevitable despite the pandemic.

## MITCH JOEL SEES OPPORTUNITIES FOR FIRMS IN 'THE GREAT COMPRESSION'

All the disruptions brought on by COVID-19 over the past 18 months were in the works for years, Mitch Joel told the audience at the opening general session at the Fall Conference, but the pandemic accelerated their onset.

"It was The Great Compression," said Joel, a best-selling author on the impact of technology. "The virtual world, remote work, all of that. They were coming. COVID just amplified and distributed them more widely."

In a wide-ranging address—from Apple to a small guitar store in Tarzana—Joel sought to demonstrate to the audience that innovative leveraging of technology can open new revenue streams and opportunities.

Applying this concept to engineering, Joel suggested that firms look to develop subscription models for their services and expand their reach into adjunct markets.

## SINGER/SONGWRITER ONDRASIK USES MUSIC TO PROVIDE LIFE INSIGHTS

Attendees were treated to a blend of story and songs about competition, achievements, and self-determination during the Fall Conference's keynote address.

Noted singer, songwriter, and producer John Ondrasik, whose collection of heartfelt songs have earned a permanent place in The

Great American Songbook, opened his presentation at the piano while performing his biggest hit “Superman”—the worldwide Platinum-selling single which won a Grammy and became an anthem for healing in the aftermath of Sept. 11.

“I certainly understand the struggles the engineering industry is having with the labor shortage, and also how to effectively evolve your business with new digital technology,” he said.

Between performances of his double-platinum “100 Years” and the certified gold “Chances” he also emphasized the importance of engineers. “I have a great love for engineers, and I come from a family of engineers,” he said, noting that his father is an astrophysicist, and he himself is a software engineer.

Ondrasik also urged attendees not to underappreciate the power of storytelling, “If you don’t tell your story, no one is going to hear your song.” On competition, he said, “Competition is healthy and can drive a person to greater accomplishments.”

#### ACEC RESEARCH INSTITUTE RELEASES HIGHLIGHTS OF NEW FIVE-YEAR INDUSTRY FORECAST

Engineering industry revenues will grow by 8.1 percent for 2021, a big snapback from the 7.2 percent drop in 2020, according to a new five-year engineering industry forecast from the ACEC Research Institute.

Joe Bates of the Research Institute and Erin McLaughlin, ACEC vice president for private market resources, presented the highlights of the forecast. The Institute will publish the full forecast in the coming weeks.

In the baseline forecast for 2022 through 2026, the engineering industry will average 2.5 percent annual growth. Recent passage of the Infrastructure Investment and Jobs Act should increase A/E output by \$132 billion over the next five years, which represents an average 5.6 percent annual increase in A/E economic activity over the forecast period.

McLaughlin reported that the primary driver behind the growth in 2021 and a continued strong performer in the coming years is the residential market, specifically the single-family home. The mar-



Grammy Award-winning singer/songwriter John Ondrasik captivates the audience at the Fall Conference.

ket drives a lot of activity for engineering firms, including new transportation infrastructure, water systems, and commercial and retail construction.

In the coming weeks, the Research Institute will also release its inaugural sentiment survey for the design services industry, and Bates reported that firm leaders’ optimism about their firms’ current performance is “off the charts.” Large firm leaders were the most optimistic, as were those in the South and Midwest.

#### GINNY CLARKE EXPLAINS WINNING THE NEW AGE WORKPLACE

The workplace of the future will require a new approach to talent evaluation and recruitment, according to Business Leadership Consultant Ginny Clarke.

The former director of executive recruitment for Google noted how the workplace of the recent past has been altered by issues such as the pandemic and social unrest, which first prompted changes in societal perspectives and procedures and is now blending into the future workplace.

“Winning the future workplace is not a human resources issue, but really a top leadership issue,” Clarke noted, while adding that a major change needs to occur regarding hiring, while she emphasized outdated procedures.

“We need to get away from the hierarchal control and demand approach that has been the hiring method for decades,” she said.



Young engineers discuss what they like about the industry and their firms with Keynote Speaker Ginny Clarke moderating (far right).

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Past ACEC Chairman Mitch Simpler (right) uses ACEC Fellows Medallion worn by Rick Toole of Benesch (center) to emphasize the significance of achieving Fellow status to 2021 ACEC Scholar of the Year Alexander Dukart.

Clarke added that the usual norm was for a firm to seek the best talent. “What does that really mean since it is so subjective?” she said. “The best in pedigree, the schools, and the grades have never been linked to success in a role.”

She instead urged attendees to consider what is best for the company and evaluate more effectively through competences as to hiring based solely on domain expertise. “Competences are different than skills,” she said, adding that a prospective recruit may be brilliant in a specific domain, but lacking in another, such as leadership.

### YOUNG ENGINEERS REVEAL WHAT EXCITES THEM ABOUT THE INDUSTRY

A panel of four young member firm engineers named the future impacts of engineering as a primary reason they remain enthused about engineering.

The General Session panel was co-moderated by keynote speaker Ginny Clarke and ACEC President & CEO Linda Bauer Darr. Panelists were Kathleen Keen, VHB; Brian Pietryka, AECOM; Richard Shimino, Raba-Kistner; and Jason Webber, Kimley-Horn.

Topics included the debate between remote versus in-office attendance, and panelists seemed adaptable to any company mandate, and is it true that young engineers have a heightened sense to help save the world, which all agreed did exist, just more overtly in some than others.

Most agreed that the culture of their firm was important to them staying. “As engineers we have confidence in our expertise, and if we’re working well with colleagues, we know we can provide solutions,” said Richard Shimino of Raba-Kistner.

When asked what excites them about the industry, the responses were distinctly varied, but echoed a similar theme—the industry’s potential future impact on making a positive difference.

“The industry’s growing technological development, and its growing ability to make an impact going forward is what excites me,” said Keen of VHB. AECOM’s Pietryka said the “shifting priorities of what clients need, resulting in changes in how the industry will respond,” is what encourages him.

Kimley-Horn’s Webber pointed to the “enhanced visibility and growing awareness of the importance of engineering,” as what excites him most about the industry. ■



Keith London, left, CEO of Kennedy Jenks, appears on the ACEC Engineering Influence podcast immediately after receiving the 2021 Chair Emeritus Award. The interview was conducted by ACEC Vice President of Communications and Marketing Jeff Urbanchuk.

## KEITH LONDON LEADS DISTINGUISHED LIST OF ACEC AWARD WINNERS

At the Annual ACEC Awards Luncheon, Kennedy Jenks CEO Keith London received the Council’s most prestigious award, the 2021 Chair Emeritus Award, for providing outstanding service and support to the Council.

Other awards presented include:

### COALITIONS DISTINGUISHED SERVICE AWARD

- Matthew Murello, Lewis S. Goodfriend & Associates, Chester, New Jersey

### COMMUNITY SERVICE AWARD

- Scott Sibley, Gannett Fleming, Valley Forge, Pennsylvania

### COLLEGE OF FELLOWS INDUCTEES

- Ralph Guida, Guida Surveying, Irvine, California
- Peter Moore, Chen-Moore and Associates, Fort Lauderdale, Florida
- John Nelson, Wright Pierce, Topsham, Maine
- Melvin Williams, Terracon Consultants, Charleston, South Carolina
- Randal Van Natta, Becher-Hoppe Associates, Wausau, Wisconsin

### YOUNG PROFESSIONALS OF THE YEAR

- Victoria Ballesterio, ATCS, Largo, Maryland
- Brett Belzer, RESPEC Company, Rapid City, South Dakota
- Samantha Brummell, Thornton Tomasetti, New York, New York
- Molly Dee-Ramasamy, Jaros, Baum & Bolles, New York, New York
- William Klingner, Klingner & Associates, Quincy, Illinois

### 2021 ACEC RESEARCH INSTITUTE SCHOLARSHIP PROGRAM WINNERS

- ACEC Scholar of the Year—Alexander Dukart, University of Nebraska-Lincoln
- ACEC Life/Health Trust Scholarship—Timothy Kohany, Manhattan College
- a/e ProNet Engineering Scholarship—Jillian Brislin, Northeastern University
- Professional Liability Agents Network Scholarship—Daniel Mueller, The Ohio State University
- College of Fellows Scholarship—Connor Kagamida, University of Hawaii at Manoa
- Small Firm Coalition Scholarship—Regan Kelly, Northeastern University
- Coalition of American Structural Engineers Scholarship—Celeste Carmignani, Colorado School of Mines

A photograph of three women standing in front of a building entrance with large glass doors and a stone wall. The woman on the left is wearing a dark suit and a patterned scarf. The woman in the middle is wearing a black dress with a high collar and long sleeves. The woman on the right is wearing a black dress with a gold chain pattern. They are all smiling and have their arms crossed or hands clasped.

# History in

**For the first time,** women hold the three top ACEC leadership positions. The impact extends even further

From left to right, ACEC Chair Robin Greenleaf, ACEC President & CEO Linda Bauer Darr, and NAECE President Beth Bauer making Council history together.

CABLE RISSON

# the Making

BY CAIT SOBOTKA

**T**he milestone snuck up on Beth Bauer. First elected to the National Association of Engineering Council Executives (NAECE) in 2018, she went through a three-year “ladder of succession” to becoming president, in 2021. During that time, Linda Bauer Darr was named president and CEO of ACEC, and Robin Greenleaf was appointed the 2021–2022 chair.

“Shortly after Robin’s election, colleagues pointed out that the three of us now make a trifecta of women at the top,” Bauer says. “The fact that others were talking about it made it clear to me that this is an important achievement for ACEC, signaling that we’ve broken through that barrier as a national organization.”

ACEC’s highest positions reflect a larger trend toward more women in leadership roles. The number of women leading the nation’s top 3,000 companies has more than doubled in the past decade, according to a 2020 *Wall Street Journal* analysis. But those 167 women-held leadership positions still represent less than 6 percent of the total—meaning there’s much ground to go. Yet only 1 in 4 organizations makes the advancement of women a top 10 priority, according to a 2021 IBM report.

## THE POWER OF DIVERSITY

ACEC’s history-making moment is something to celebrate—but it also wouldn’t be possible without a deep emphasis on women leaders throughout member firms, Greenleaf says.

Roughly half of the Member Organizations have women serving as a chief staff member, and many have had women serve as the chair of the board of directors. “It’s a positive move, bringing more balance and diversity of views to the important work of ACEC,” Bauer says.

Research supports the importance of greater diversity. A McKinsey & Company study found that organizations in the top quartile for gender diversity on executive teams were 25 percent more likely to have above-average profitability than companies in the fourth quartile. And the more an organization increases gender diversity, the stronger its competitive edge: Those with more than 30 percent women executives were 48 percent more likely to outperform the least gender-diverse organizations.

“Diversity breeds innovation,” says Holly Sydnor, co-founder and COO of the consulting group All Women Leadership. “Different backgrounds, perspectives, and approaches mean greater variety to solving problems and helping initiatives. And that diversity helps shape a culture that encourages a broader range of leadership styles.”



“Remember that women carry a lot of magic. We aren’t all the same, but we have some strains that run through many of us that are common.”

**LINDA BAUER DARR**  
PRESIDENT AND CEO, ACEC

Breaking out of the cookie-cutter assumption of what a leader looks like creates an environment where everyone (yes, including men) can feel more confident bringing their authentic selves to the table. In addition to the three women in top leadership positions, ACEC is “one of the most colorful teams anywhere,” according to Darr. “We have an engineer doing accounts receivable and an architect doing accounts payable. We have a guy who is an aquarium hobbyist and a woman who worked for the NFL. We have some of the most musical people on our team. And these different perspectives and experiences make us richer and stronger. What’s better than that?”

#### TAKE IT FROM THE TOP

As women ascend into leadership positions, they naturally become role models for other women in the organization and industry, showing career ladder ascension is possible. But there’s something subtler—and potentially even bigger—that also takes place. Default assumptions about what it takes to effectively lead are tested, stretched, and reshaped.

“Women leaders do not all act in the same way,” says Naomi Cahn, a professor at the University of Virginia School of Law. As women are promoted, their differing leadership approaches create a powerful feedback loop: Differing styles don’t only hit the same standard of success but potentially push past those old markers. This affirms and validates that leadership isn’t a one-size-must-fit-all standard to meet—but a powerful and public shift that can affect an entire organization.

“Diversity serves to signal a company’s value, both internally and externally,” Cahn says. “Studies show that diverse management is correlated with more inclusive cultures.”

“I enjoy taking on problems and issues, and working to strategize with stakeholders. However, sometimes you just have to voice a strong opinion and move the issue along while being mindful that leadership does not equal dictatorship.”

**ROBIN GREENLEAF**  
CHAIR, ACEC



Most people learn leadership through example. That was true for Greenleaf, who spent a few years working at a large engineering firm on the West Coast before taking over her father’s Boston-based company, Architectural Engineers, at the age of 28.

At the first firm, “I was very good at figuring out who was being successful in their roles, and I began to mimic what worked for them,” she says. But once in Boston, she cast a much wider net of leaders to learn from, in part by joining ACEC. “What happened immediately was that I had access to other presidents and CEOs of similar firms, and so my mentors were essentially colleagues and competitors.”

Her exposure to leadership styles widened dramatically, and she found her own approach evolving. “It’s been anything but a straight line,” Greenleaf says. Even a few years ago, she would have described her style as more collaborative, listening to diverse opinions and then helping to craft solutions. “Now, I enjoy taking on problems and issues, and working to strategize with stakeholders. However, sometimes you just have to voice a strong opinion and move the issue along while being mindful that leadership does not equal dictatorship.”

Others notice—and respond—to how leaders get things done. Darr points out that Greenleaf doesn’t have a dominating voice, or even a loud one. “She is quiet, so people need to lean in to hear, which can be an asset in gaining the attention of the group. And she’s very much a fan of communication and alignment of expectations. Not because she is afraid to rock the boat or to be bold, but instead because she is intent on paving the way to success with shared expectations on the outcomes. I think all these characteristics are more common in female leadership styles.”

Greenleaf prides herself on the diversity of leadership styles and perspectives in her firm’s C-suite. “When you put us all together, it creates a great team with a lot of bandwidth for planning, decision-making, and trust.”

A similar thread runs through Bauer’s background. She describes her early days in the aerospace industry as a command-and-control environment, run by retired military leaders.

# Battling Biases

Bias and discrimination are nothing new for women leaders. But women of color often face a multilayer cake of stacked biases, discrimination, and restricted opportunities that can make career ascension that much more difficult, according to IBM.



**34 percent**  
of all women  
say they have  
experienced  
race-based bias



**28 percent**  
of all women  
say they've  
experienced  
gender-based bias



**86 percent**  
of Hispanic women say  
they've experienced  
discrimination because  
of their ethnicity



**70 percent**  
of Hispanic women  
report they've experi-  
enced discrimination  
because of their gender



**Only 41 women**  
are CEOs of companies on  
the *Fortune* 500, though  
that's an all-time record  
achieved in 2021. Just two  
of those women are Black.

But while earning an MBA, she began networking in other industries and with other types of leaders. “It was the leap into non-profit work that showed me how to manage differently, with persuasion and encouragement, and that stuck with me,” she says.

Command and control would get her little traction in her current role, as NAECE’s president. “In my role, you don’t tell any volunteer to do anything,” she says. “I spend most of the time with people who already have full-time responsibilities to their firm but also want to serve their industry and their profession. To be successful, it takes a little persuasion and encouragement and some accountability.” When Member Organization volunteers feel empowered to do something and understand that others are relying on them to get the task done, the follow-through is incredibly high. That’s her leadership approach in a nutshell, Bauer says.

## THIS WAY FORWARD

Bauer’s method—focusing on motivation and morale, creating a shared vision, and guiding implementation through inspiration—is known as transformational leadership. But it’s not the only way. Women in leadership must find or evolve the leadership approach that feels comfortable and fitting for them, Sydnor says.

Don’t be afraid to do what works for you, she says. “If you expend additional energy playing a role, people will eventually see that you’re not being authentic, and that will be more detrimental to your leadership than being abrasive or domineering.”

Alongside mentorship and networking, coaching can be a powerful tool to help

women hone their individual leadership styles, Sydnor adds. But for best results, a focus on both individual and organizational change is needed.

At ACEC Indiana, for instance, the last strategic plan, adopted four years ago, included initiatives to increase diversity for those serving on committees, as committee chairs, and on the board of directors. This year, women lead more than half of the State Organization’s committees, more women serve on the board, and more women are rising through the firms participating in the group’s young professional and engineering leadership events. “It’s encouraging to see the progress our Member Organizations have made through deliberate actions,” Bauer says. “And we will keep pushing these leaders up to ACEC to get involved and become leaders on a larger stage.”

There’s clear momentum for more women to assume leadership positions, but in any group, the pace of change is guided by both intention and follow-through. So even as organizations celebrate the changes that are happening, they must eye the horizon for what future leadership—more diverse, more expansive, more transformational—might look like.

“Remember that women carry a lot of magic,” says Darr. “We aren’t all the same, but we have some strains that run through many of us that are common. We see people through a different lens. We value harmony, and we can calm the water. Or we can stir things up when that’s called for. Flexibility, adaptability, strength. Doesn’t that sound like leadership?” ■

**Cait Sobotka** is a business and finance writer based in Chicago.



**“It was the leap into nonprofit work that showed me how to manage differently, with persuasion and encouragement, and that stuck with me.”**

**BETH BAUER**  
PRESIDENT, NAECE

# CULTURAL TRANSFORMATION

Diverse and inclusive workplaces outperform their peers. Here's how to move beyond biases and effect lasting change

BY SAMUEL GREENGARD

**T**he winds of societal change are gusting through the engineering industry. Throughout history, it was enough to focus on core areas such as technical acumen, strategic business procurement, budgeting, and managing the risks associated with projects. Aside from expertise, the composition of a workforce and a company's cultural values were mostly an afterthought.

But the times, they are a-changin'. Many organizations now see the value of having a diverse workforce that better reflects the general population. "If you appear out of step with society, you risk being dismissed," observes Lauren Stiller Rikleen, president of the Rikleen Institute for Strategic Leadership and author of *The Shield of Silence: How Power Perpetuates a Culture of Harassment and Bullying in the Workplace*.

Navigating this fast-evolving landscape can be daunting—even for the most progressive firms. Not only is it vital to support cultural diversity within an organization, it is critical to stare into the soul of the enterprise to understand how systemic racism, gender inequality, generational differences, and longtime accepted negative behaviors factor into every aspect of the business.

Yet the benefits of diversity and inclusion are clear. A growing body of research shows that organizations that cultivate a broader spectrum of perspectives and ideas benefit bottom lines. In addition, these firms are more likely to attract and retain talent, says Doug Harris, CEO of diversity, equity, and inclusion consulting firm The Kaleidoscope Group. "We have moved beyond cultural transformation as a tool to correct the wrongs of the past. It has evolved into the idea that a more effective, creative, and innovative business benefits everyone."

## RETHINKING FIRM CULTURE

It is no fluke that corporate America has embraced diversity and cultural transformation. McKinsey & Company reports that companies in the top quartile for racial and ethnic diversity on leadership teams are 33 percent more likely to have financial returns above their respective national industry medians. And companies in the top quartile for gender diversity on leadership teams are 21 percent more likely to have financial returns above their respective national industry medians.

The reason these companies outperform their peers is relatively simple, Rikleen says. "Diversity of thought and perspectives leads to better solutions. A group of people who think and act in a similar way bring a narrower view. They aren't as likely to approach problem-solving with the same level of creativity."

Yet, hiring people of different races, sexual preferences, and backgrounds, while important, will not alone solve the fundamental problem. What is more, simply adhering to basic legal requirements is a recipe for failure, says Stephanie Price, senior principal and director of human resources at Terracon. “Cultural transformation is about more than a hiring policy and a training program,” she explains. “There must be an actual cultural shift in values.”

Make no mistake, movements such as #MeToo and Black Lives Matter have changed the way the public, the press, and other businesses think and act. Rikleen says that it is vital to:

- Focus on engagement and respect
- Reduce implicit and unconscious bias
- Strengthen multigenerational teams
- Encourage bystander intervention when something unacceptable occurs

“If you ignore these things, you increase the risk of diminished morale, lower productivity, attrition, and even lawsuits,” she warns.

### MOVING BEYOND BIAS

Dealing with unconscious bias is often at the center of effective cultural change. Too often, racial, gender, and age stereotypes remain—even if they go unrecognized. As a result, people are afraid to speak up, microaggressions occur, and workers feel marginalized or disrespected. Not surprisingly, biases can filter into organizational structures and policies, including advancement opportunities.

“It’s not necessarily intentional,” Harris says. “People are more comfortable with those who are similar, and their behavior is ingrained.”

For example, a black engineer might deliver a presentation and a member of the audience might believe that saying, “You’re very articulate” is a compliment. While the intention is good, the underlying message is that this person is an exception. A better approach is to say: “That was an excellent presentation.”



“Cultural transformation is about more than a hiring policy and a training program.”

**STEPHANIE PRICE**  
SENIOR PRINCIPAL AND DIRECTOR OF HUMAN  
RESOURCES  
TERRACON



Likewise, a woman may feel reluctant to speak up at a meeting if she has received comments about her looks or is asked to fetch snacks or handle more menial tasks.

Over time, these and other problems can accumulate. As word gets out and past employees post reviews online, it may also become more difficult to attract and retain talent.

Additionally, while there is a need to focus on the broader culture, it is also important to identify employees who act on their biases, Rikleen warns. “A person can be an excellent engineer or a great business development manager. They are a valuable asset, so it’s tempting to look the other way or rationalize their behavior. But if you don’t hold them accountable and take appropriate steps to resolve conflicts, you may find that they severely damage the firm.”

Oftentimes, issues may be hidden or lurking just beneath the surface, says Carolyn Kitts, director of human resources for Gresham Smith. Consequently, bystanders must understand how to respond to off-color or inappropriate comments, and what to do if a supervisor or client steps over a line.

“If there isn’t a way for people to report a grievance, and there’s no mechanism for dealing with the problem, situations can linger or grow worse,” she says. “Employers have the responsibility to provide both physical and psychological safety for employees.”

## LISTENING TO EMPLOYEES

A starting point for any journey to cultural transformation involves the recognition that a formal framework is paramount. At Terracon, the focus is on approaching the task holistically, Price says. Developing a “culture of inclusion and trust” serves as the foundation for the initiative. “There’s a strong business case, but there’s also a moral imperative to do the right thing,” she explains.

The firm has clearly defined what fairness, equality, and respect look like—and has taken steps to identify and act on problems. “We encourage people to speak up for themselves and others when they feel that something inappropriate has taken place,” Price says. If a boss or client is the source of friction, there are mechanisms in place to deal with the conflict.



“Diversity of thought and perspectives leads to better solutions.”

LAUREN STILLER RIKLEEN  
PRESIDENT  
RIKLEEN INSTITUTE FOR  
STRATEGIC LEADERSHIP

Companies in the top quartile for racial and ethnic diversity are **33 percent more likely to have financial returns above their respective national industry medians,** according to McKinsey & Company

“We have created multiple ways to report a problem.” This includes talking to someone in HR or the legal department. If the problem is extremely sensitive, there is also a confidential hotline managed by an external vendor.

Terracon also relies on employee engagement surveys for ongoing feedback—and is working on plugging the data into key diversity metrics to identify progress and remaining gaps. “The data tells us where we are at and where we need to go and what we need to understand at a deeper level,” Price explains. The firm also offers training on inclusion, cultural sensitivity, and

how to best act and react to situations. “We want everyone to feel good about working here. We increase our odds when we achieve our goals,” she adds.

At Gresham Smith, cultural transformation is also a top priority. It too relies on more than training. “People must feel they can grow, excel, and achieve their goals regardless of their background, their beliefs, and their lifestyle,” Kitts explains. Communication and dialogue about race, gender, and generational topics are central to the process.

A core piece of the puzzle is the firm’s Employee Advocate program. This internal team of six employees keeps management

## 5 WAYS TO SPEED YOUR CULTURAL TRANSFORMATION

### Adopt a holistic approach.

Advancing a culture requires a focus on more than education and training. It is also about hiring practices, advancement opportunities, diversity metrics, direct feedback, surveys, and rewards. It is also not about setting quotas but embracing what society looks like and giving everyone an equal opportunity.

### Be aware of unconscious bias.

It is easy to hire or promote people who look and act in similar ways, says Doug Harris, CEO of Kaleidoscope. But the problem can run deeper. For instance, some firms undermine diversity by becoming overly reliant on referrals from existing employees. Managers might also give tougher or better assignments to people they “trust,” which in no way equates to ability.



**“Employers have the responsibility to provide both physical and psychological safety for employees.”**

**CAROLYN KITTS  
DIRECTOR OF HUMAN RESOURCES  
GRESHAM SMITH**

informed about what people within the company are thinking and how the firm can improve. By combining this feedback with results from pulse surveys and input from four Employee Resource Networks made up of women, LGBTQ+ employees, parents and caregivers, and multicultural groups, “it’s possible to obtain a fairly clear idea of how and where we can improve diversity and inclusion,” Kitts says.

### **ACHIEVING TRANSFORMATION**

Of course, cultural transformation means dealing with often complex issues surrounding perceptions and behavior. In many cases, people view situations differently, they react differently, and they move forward after an event differently. “The No. 1 thing to focus on is that people have diverse sensibilities, experiences, and values. The vast majority of the time they aren’t

approaching a situation or a person with malice,” Harris says.

While bringing in a mix of talented people points an organization on the right path, it is critical to recognize that building a more evolved culture takes hard, intentional, and ongoing work. “We all have biases and stereotypes. It doesn’t help to demonize them,” Harris explains. Harsh responses, mocking, and punishment often feed fear and anger. “These can also result in people becoming defensive and even doubling down on negative behavior and attitudes,” he continues.

Harris suggests approaching problems from a perspective of growth versus correction. This means explaining how and why specific words or actions could be viewed as a problem and helping develop empathy for the person who feels targeted.

If the situation is complicated by a business relationship, Rikleen says that senior-level executives should be prepared to speak with a client—and if that does not help, they should consider dropping the client. “Someone in a high place needs to let the offending party know it’s not acceptable,” she states.

Successful cultural transformation pays ongoing dividends, Price says. “It can be a powerful motivator for people to work at the firm, blend into the culture, and promote it to others. It can be attractive to prospective clients as well as existing partners and clients. There’s a lot of neuroscience that shows our brains are hard-wired to move toward a feeling of belonging. When people feel like they are part of a positive culture, it’s a powerful thing. Real transformation is possible.” ■

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

#### **Pay attention to microaggressions.**

Too often, what appears to be a compliment is not one. Telling a person of color that he or she is “smart” can imply that others from the same race or background are not, warns Carolyn Kitts, director of human resources at Gresham Smith. It is better to focus on specific actions, such as, “That was an excellent report” or “You did a great job with that presentation.”



#### **Promote nondefensive communication.**

Let staff know that a request is not a personal threat and that accommodating a reasonable request from a co-worker does not take anything away from anyone. In fact, it can be a gain for all involved. If it is awkward to confront a person, create a mechanism to address the problem, such as a confidential hotline.

#### **Focus on creating a culture of inclusion.**

When people feel comfortable and included, productivity increases, and retention soars, says Lauren Stiller Rikleen, president of the Rikleen Institute for Strategic Leadership. However, inclusion means more than simply saying the right things. It is important to have diversity among a firm’s leaders and partners. This helps demonstrate a commitment to cultural inclusion and boosts a firm’s appeal to potential and existing employees and clients.



**ACEC Coalitions:**

# Addressing Challenges, Embracing Opportunities

BY BOB VIOLINO

## There's no need to reinvent the wheel.

ACEC Coalitions provide best practices and valuable insights for specific disciplines

**T**he current marketplace is presenting numerous challenges—as well as opportunities—but leaders of ACEC's seven Coalitions say they are prepared to deal with them.

The Coalitions, groups of firms organized by practice, are a foundation of ACEC and represent a variety of market sectors. The wealth of experience, insights, and energy they bring to the table helps member firms navigate a tumultuous marketplace and ACEC target its advocacy efforts in Washington.

“Our goal for Coalitions is growth, in both membership and opportunities to engage and educate,” says Coalitions Director Michelle Kroeger, who since joining ACEC has sought to highlight the importance of Coalitions and their connection to ACEC's success.



“By bringing more member voices and experiences to the table, we build a stronger, more impactful Coalition,” Kroeger says.

Overall, Coalition firms have sustained themselves well during pandemic-fueled economic challenges, says **Matthew Murello**, **former Coalition chair** and president of Lewis S. Goodfriend & Associates.

“Coalition firms have remained focused on the health and well-being of our employees, all while continuing to provide exemplary engineering services to our clients throughout the pandemic,” Murello says. “Many of our firms continue to work in a hybrid arrangement but have learned how to remain productive even without staff working in the office. As the restrictions have eased across the country, more and more engineering firms are returning to working in an office environment, but just about half are still using a hybrid office model.”

Coalition firms have been able to sustain themselves using one of their great strengths, says **Dave Mykins**, **Coalition chairman** and president of Lynch Mykins Structural Engineers.

“Each Coalition is a group of peers that do the same type of work and are willing to openly share their experiences in an effort to simply help each other get through the tough times,” Mykins says. “Throughout the Coalitions, firm leaders have gotten together to share information and ideas on how to deal with

everything from working from home and PPP [Paycheck Protection Program] loans to vaccinations and returning to work.”



**Matthew Murello**



**David Mykins**



**Paul Navarro**



**Brent White**

## DEALING WITH DISRUPTION

One of the biggest challenges has been adapting to the new work environment brought on by the pandemic and remote work.

“The marketplace today, in large measure propelled by COVID-19, made our in-person interaction nonexistent from March 2020 until August 2021,” says **Paul Navarro**, **chair of the Land Development Coalition (LDC)** and president and CEO of Navarro & Wright Consulting Engineers. “But those challenges were mitigated by the wide use of virtual tools that rapidly became the main communications platform for many professional firms.”

As with many professions and industries, “the challenge of conducting business with restrictions in workplaces and meeting places was an initial hurdle,” says **Brent White**, **chair of the Coalition of American Structural Engineers (CASE)** and president and senior principal at ARW Engineers.

“Consulting engineers quickly learned how to conduct business virtually as well as work remotely,” White says. “Most of us already had the ability in some fashion but just needed to apply what we already knew with new or enhanced tools to allow business to proceed. CASE has had conferences and seminars virtually that have allowed members to continue to

connect and experience the networking opportunities that the Coalitions provide. We just finished our first in-person meeting in 18 months, and it was great to interact personally again.”

Remote work has made networking more difficult to some extent. “One of the value propositions of ACEC and the Coalitions is networking and establishing relationships,” says



# Upcoming Initiatives

## COALITION OF AMERICAN MECHANICAL AND ELECTRICAL ENGINEERS (CAMEE)

"To help our members with retention and staff development, we are preparing a publication that will describe technical and leadership competencies for the various job position levels for the mechanical and electrical disciplines," says John Burns, chair of CAMEE. "This can be used as a foundation for a development plan for staff and a retention tool by focusing on their advancement."

CAMEE is also developing tools to limit exposure for mechanical and electrical engineering firms to the new set of risks with design-build. This includes teaming agreement templates and standard contract language to address unreasonable cost recovery attempts, deliverable definition and expectations, and other areas of exposure.

## COALITION OF AMERICAN STRUCTURAL ENGINEERS (CASE)

"We are supportive of efforts in states across the country that are moving closer to structural engineering licensure, and encourage our membership to be involved with this effort," says Brent White, chair of CASE. "We see structural engineering licensure as important not only from the technical aspects but as critical for risk management in the structural engineering field."

## COALITION OF PROFESSIONAL SURVEYORS (COPS)

"I believe the most vital initiative is addressing the staffing and educational issues," says Joe Romano, chair of COPS. "Relating to staffing, COPS is now taking steps to engage school guidance counselors and the public to inform them of the exciting future a profession in surveying can provide. That information is being extended to the other professions and clients."



Jeff Gebhard



John Eddy



John Burns



Joe Romano



Bill Lloyd

**Jeff Gebhard, Geoprofessional Coalition (GEO) chair** and vice president and principal engineer at Braun Intertec. "This has proven more difficult remotely. We tackle this through hybrid meetings and relying on those who see value meeting in-person to have that opportunity."

The Design Professionals Coalition (DPC), similar to others, has had to make strategic shifts to accommodate changing market conditions.

"Considering the major shifts of the last 18 months—social, health and safety, economic, political—DPC's member firms have successfully retooled their operating models to best serve their clients and staff and keep everyone healthy," says **John Eddy, Design Professionals Coalition (DPC) chair** and principal at Arup. "Retooling has touched their corporate communications and policies, how we stay close to clients and win work, collaboration techniques, and creative ways of engaging with staff."

Some of the challenges brought on by the worldwide health crisis and its effect on the economy relate to individuals' careers. "An interesting impact of the pandemic has been a career reset for some," says **John Burns, chair of the Coalition of American Mechanical and Electrical Engineers (CAMEE)** and COO and senior vice president of Burns Engineering.

"People are taking this opportunity to change careers, change location, and be more flexible in how and when they work," Burns says. "CAMEE, through our roundtables, has been a great sounding board for our members to share experiences and best practices to assist firms in navigating this change."

The scarcity of talent across the civil engineering industry has created an increase in staff movement and is exerting salary pressure in many regions of the country, Navarro says. "This will only be compounded once the infrastructure program moving through Congress is unveiled."

An ongoing equipment shortage presents a big challenge for some.

"At this stage I believe we have all adapted to the evolving marketplace," says **Joe Romano, chair of the Coalition of Professional Surveyors (COPS)** and principal at Langan Engineering. "That said, in talking with other surveyors around the country, the staffing shortage continues as well as an unexpected impact of a shortage of equipment. We are all seeing long lead times to acquire everything from field vehicles to survey equipment and from computers to data collectors. Staff and equipment shortages have an impact on a firm's growth and on responsiveness to clients."

Small Firm Coalition (SFC) members face many difficulties as they settle into the post-pandemic marketplace, says **Bill Lloyd, Small Firm Coalition (SFC) chair** and president of Great West Engineering.



"The rapid implementation of the work-from-anywhere business model has emphasized the need for improved IT—cybersecurity, cloud services—and human resources," Lloyd says. "While the need for more efficient and comprehensive IT and HR services was apparent before the pandemic, the move to remote work forced many firms to increase the speed of implementation."

Many small firms choose to outsource IT and HR to ensure that staff needs are addressed and regulatory requirements are satisfied, Lloyd says. "Firms that offer these services in-house were required to quickly implement new cybersecurity, collaboration, and employee wellness tools," he says.

## THE BRIGHT SIDE

While they're addressing challenges, Coalition firms are also embracing opportunities.

"There are opportunities in many market sectors for new projects," Navarro says. "Logistics, health care, food and beverage, and housing seem to be at the forefront. Accelerated design and construction timeframes accompany many of these projects."

Design automation of building mechanical and electrical systems continues to evolve, Burns says, and CAMEE is working directly with a top industry vendor as an information conduit with the design community. Items discussed include functionality of the current software tools and prioritization of future software features.

CASE is always trying to provide value to member firms, White says. "We are continuing to develop new tools, guidelines, and contracts to meet new and changing needs," he says. "We continue to provide essential risk management and business management education with sessions at ACEC Conferences as well as other structural engineering conferences."

The shift to a work-from-anywhere environment has allowed many SFC members to better recognize and embrace the benefits of the agile workspace, Lloyd says.

"Firms are expanding client services through diversification of staff and work locations," Lloyd explains. "The shift to remote work necessitates better online collaboration and cybersecurity tools. The Small Firm Coalition is working with our partners to offer webinars and online training opportunities to support our member firms."

DPC is looking at big opportunities in the coming months. "Think of the amazing challenges our clients are asking us to help solve: massive shifts to renewable energy and electrification to reduce our carbon footprint; connectivity and mobility for all; the strain on our infrastructure if there is mass migration and the same strain on our infrastructure if there isn't; changing the lens of project development to include addressing years and years of inequity; too much and too little water; and the list only gets longer," Eddy says.

The lack of staffing has created opportunities for those that can be more flexible and responsive to project needs, Romano says. "Aside from the current supply issues, as in the past, new technologies often lead to new opportunities," he says. "Access to drones, compact LiDAR systems, scanners, and other tools can often add to current and new engagements. In addition, leveraging aligned services can provide entry to a new market."

"ACEC and the Coalitions are tackling many of the business issues related to emerging issues and opportunities," Gebhard says. "From new legislation to emerging technologies creating opportunities, our Coalition works closely with internal ACEC groups and holds roundtables to understand our members' needs and learn from our peers." ■

**Bob Violino** is a business and technology writer based in Massapequa Park, New York.

## DESIGN PROFESSIONALS COALITION (DPC)

"We are programming sessions on corporate responsibility and reporting and continue to share insights on cybersecurity, succession planning, new technology, project procurement, and lessons learned on just about every aspect of our business," says John Eddy, chair of DPC. "With the talent shortage likely to run for many years, DPC's agenda will include shifting the civil engineering business model to align with our members' hopes of compensating their respective employees on par with competing industries."

## GEOPROFESSIONAL COALITION (GEO)

"We are engaging our environmental engineering members with education seminars focusing on the unique business issues related to environmental consulting," says Jeff Gebhard, chair of GEO. "We are partnering with local organizations to carry the message of ACEC and the Geoprofessional Coalition to local membership and similar organizations."

## LAND DEVELOPMENT COALITION (LDC)

"The LDC Executive Committee created several work groups, each of which focuses on a specific area," says Paul Navarro, chair of LDC. This includes the education work group, membership work group, and publications work group. "Each sets specific goals for each year and is focused on three areas: the remote workforce, cybersecurity, and employee retention," he adds.

## SMALL FIRM COALITION (SFC)

"Offering relevant continuing education and professional development opportunities for our members is an important value proposition initiative for the Small Firm Coalition," says Bill Lloyd, chair of SFC. "We are working with our partners to develop regular webinar programs that would be offered at no cost to SFC members. The Small Firm Coalition continues to advocate on issues of importance to the A/E/C industry and small business."



CEC President Doug Glenn and CEC Tulsa employees' annual partnering with United Way Day of Caring.

# CONNEC

## Hearts and

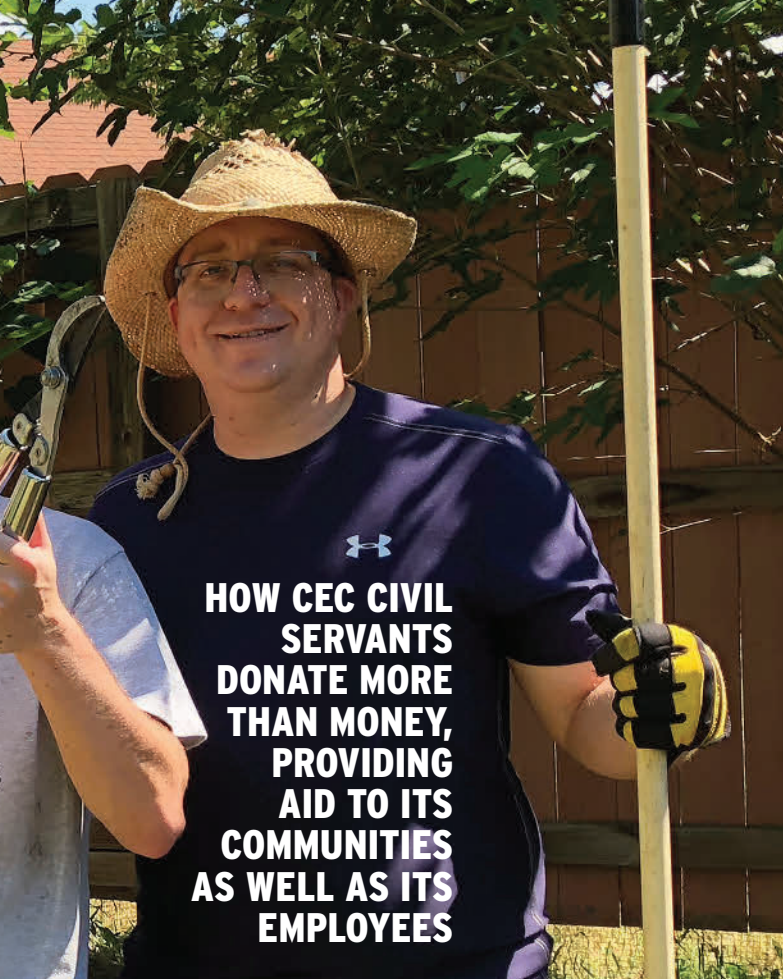
BY MICHELE MEYER



Matthew Phillips and CEC Tulsa employees join together for CEC Season of Serving 2020 at a food pantry in Owasso, Oklahoma.



Jeremy Stahle and his CEC Municipal Group team-building event at the Community Market of Pottawatomie County in Shawnee, Oklahoma.



# TING Hands



Maria Wilson and CEC employees with donations to Citizens Caring for Children's Back2School event.

**M**arty Hepp admits being cynical at first when invited to a conference called Generous Giving a decade ago. "I wondered what they wanted from us," says the chairman of the board of Oklahoma City-based CEC. Yet that conference transformed his approach to life and work. "Generous Giving's only purpose was to promote generosity," Hepp says. "I hadn't realized that money is the easiest thing to give. We need to give of our lives."

So he embraced the conference's goal to give "LIFE"—as in labor, influence, finances, and expertise. "When you give LIFE, you keep pure to your mission."

The business mission of CEC, launched in 1966, is to "Get Stuff Built Right": relationships, communities, families. With offices in Oklahoma City, Tulsa, and Duncan, Oklahoma, as well as in Allen, Texas, CEC provides planning, design, and inspection services to eliminate aging infrastructure and drive community growth. It is a multidisciplinary firm, working in all facets of infrastructure: transportation, power delivery, water/wastewater, and facilities. Beyond its business achievements, CEC also has become known for its philanthropy.

## COMING TOGETHER

Just as he learned from that conference about the importance of giving, Hepp wanted his employees to give, too—of themselves as well as their pocketbooks. But how could he organize and facilitate that?

"I realized that CEC's giving would come and go because business would get in the way. Then he hired Melissa Meadows-Leyba in accounts payable in 2011.

"I was so excited to get paid to do what I'm passionate about: giving to the community," Meadows-Leyba says. "It's been a dream job to encourage others to serve."

Thus, CEC Civil Servants, a community service, employee development, and giving organization, was born, devoted to the mission of "Connecting Hearts and Hands" to make a difference in the community.

As administrator for CEC Civil Servants, Meadows-Leyba develops systems, inspires staff, and scouts nonprofits throughout Oklahoma and North Texas to learn their needs and to organize volunteers and donation drives.

"This is the first company I've ever worked at that had the passion of truly wanting to make a difference," she says. "Our company has core values we try to live by: humility, honesty, self-control, and generosity. How many companies have that?"

Sixty percent of CEC employees now participate, giving their time, labor, expertise, and money to benefit others.

CEC Civil Servants aims to improve living conditions for those in need, focusing on homes, surroundings, food, clothes, and education.

"We get so many requests, and it's hard to say no," Hepp says. "We have a committee that scores the requests according to our goals."



"This is the first company I've ever worked at that had the passion of truly wanting to make a difference.

Our company has core values we try to live by: humility, honesty, self-control, and generosity. How many companies have that?"

MELISSA MEADOWS-LEYBA  
ADMINISTRATOR, CEC CIVIL SERVANTS

### 'JOY ON THEIR FACES'

One partner is Central Oklahoma Habitat for Humanity. "Site supervisors and families all have high praise for CEC," says its volunteer coordinator, Rick Lorg. "They're not here because they have to be but because they want to be."

He says CEC Civil Servants' volunteers stand out not only for their varied skills—including surveying land and moving permits through red tape—but also for their work ethic and caring.

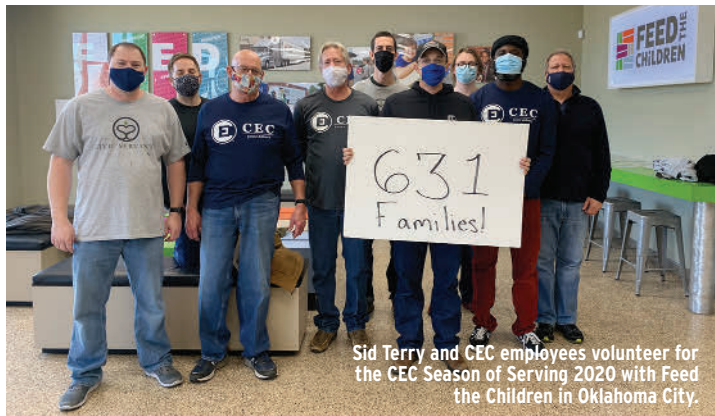
CEC Civil Servants also provides volunteer help and \$4,000 yearly to Citizens Caring for Children to deliver foster children with new clothes, backpacks, and school supplies.

"When they meet their foster families, their clothes often are torn, dirty, and not the right size, and they've never seen shoes in a box," says Abby Werth, director of development and communications at the charity. "It's wonderful seeing the joy on their faces as they show their foster parents what may be the first new clothes they've ever worn."

She says the group is a small nonprofit that relies heavily on volunteers. "Without CEC Civil Servants, we'd lack the manpower to serve the 600 kids we do."



Sid Terry and the CEC Power Group annual team-building event with the Salvation Army Angel Tree Program in Oklahoma City.



Sid Terry and CEC employees volunteer for the CEC Season of Serving 2020 with Feed the Children in Oklahoma City.



Amber Steel and CEC employees at the quarterly volunteer event, serving lunch to the homeless with The Jesus House in Oklahoma City.

Other charities helped by CEC Civil Servants include Oklahoma Baptist Homes for Children; Community Market of Pottawatomie County; Iron Gate, a food pantry in Tulsa; Regional Food Bank of Oklahoma; North Texas Food Bank; Lawton Food Bank; Tulsa's Community Food Bank of Eastern Oklahoma; and Hope's Kitchen at the Regional Food Bank.

Hepp says a big part of CEC Civil Servants "is lifting people up so they have hope—which has become even more important during the pandemic. When you deliver food to people in cars lined up for miles at a food bank, you see their gratitude. To help is touching for all of us."

## 4 WAYS TO MAKE GIVING SUSTAINABLE

While Marty Hepp's intentions were good, his record of maintaining generosity long term significantly improved when he made these company changes:

**1 Let employees' passions determine their charity of choice.** They'll be more likely to continue giving—and motivating fellow workers to join in.

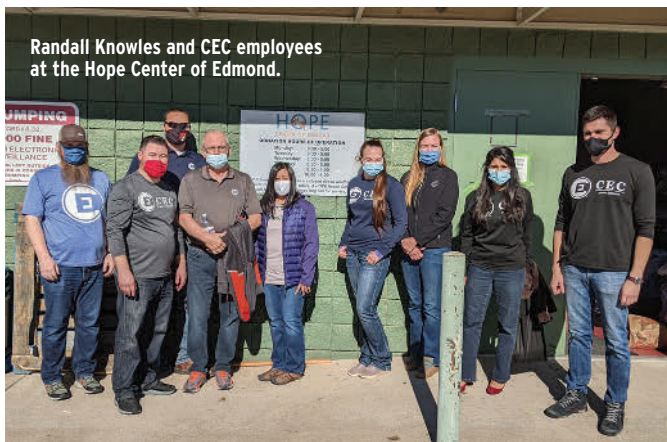
**2 Create a mission statement for your community service program, just as you have one for your company.** It gives you direction to choose your giving.

**3 Don't forget your employees' needs.** Create an emergency fund to help them with unforeseen or major medical expenses or home repairs.

**4 Pay it forward.** On occasion, Hepp gives his workers and grandchildren an extra \$50 during the holidays to give away, then asks them to report back on the impact they had. "Over 70 percent of our employees took us up on the offer and were so moved they created their own season of giving with their families."



Craig Ireland and CEC employees at the Community Food Bank of Eastern Oklahoma in Tulsa.



Randall Knowles and CEC employees at the Hope Center of Edmond.

And they give more than time: This summer, CEC also donated \$25,000 to food banks in Oklahoma and Texas.

The company boosts employee participation by making community service a key performance indicator that's as vital as raising profits or bringing return clients.

"You cannot succeed at our company without giving," Hepp says. "It's entwined in our strategy, not just something that's done on the side."

Indeed, volunteerism is scheduled during workdays, so employees' kindness is on the clock.



"Site supervisors and families all have high praise for CEC. They're not here because they have to be but because they want to be."

**RICK LORG**  
VOLUNTEER COORDINATOR  
CENTRAL OKLAHOMA HABITAT FOR HUMANITY



"You cannot succeed at our company without giving. It's entwined in our strategy, not just something that's done on the side."

**MARTY HEPP**  
CHAIRMAN OF THE BOARD, CEC

### A FAMILY TO EACH OTHER

At CEC, workers also are encouraged to pay into a benevolence fund started in 2015, with the company matching their donations. So far, \$50,000 of the \$69,000 raised has helped workers to pay for funerals, medical care, utilities, flood damage, and tornado repairs.

"We're family to each other, and we help each other through hard times," Meadows-Leyba says. "Life happens, and we don't want employees to have to choose between paying for the electricity and their child's emergency dental work."

Most rewarding to Hepp is the realization that "we've made an impact in communities where we work, and employees realize how rewarding it is to serve others."

"There's a brotherhood and sisterhood that happens when you're working side by side with other people," he adds. "As you sweat

together, friendships are deepened, new relationships are formed, and your impact is so much greater."

Volunteering as part of a team also provides the company with an unexpected and rich payoff, Hepp says. "Teams communicate better, work harder, and succeed more."

"Everyone has something to give," according to Meadows-Leyba. "Once you get that first taste, you're hooked."

CEC Civil Servants envisions even higher goals. Expanded community service is specifically detailed as part of its strategic plan and growth initiatives.

"It's a reminder that we all need each

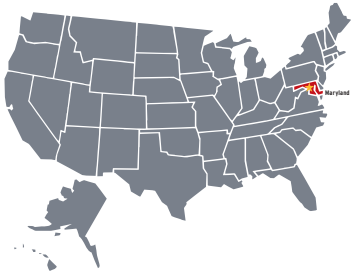
other to reach our goals," Meadows-Leyba says.

Hepp believes people have become self-absorbed by sharing their lives on social media.

"Look beyond that and you may realize saving for a pool or a new car isn't so important. Stuff never satisfies you," he says. "We have to get outside of our bubbles and intersect more with other people's lives. That is so rewarding. That is the richness which fulfills your life." ■

**60 percent of CEC employees give their time, labor, expertise, and money to benefit others.**

**Michele Meyer** is a management and marketing writer based in Houston. She has written for Forbes, Entrepreneur, and the International Association of Business Communicators.



# MARYLAND

**ON THE CUSP OF NEW LEADERSHIP, THE MARYLAND MEMBER ORGANIZATION PULLS NO PUNCHES AT THE STATE HOUSE WHILE DELIVERING ON ITS MISSION TO ENGAGE, SUPPORT, AND EDUCATE ENGINEERS AND THE PUBLIC**

BY STACEY FREED

**T**he world was very different in 1957 when ACEC/MD was incorporated. Sputnik would carry a dog into orbit that year. President Dwight Eisenhower signed into law The Civil Rights Act of 1957, which was the first federal civil rights legislation passed by the United States Congress since the Civil Rights Act of 1875. The birth control pill was invented.

And engineers were working on major projects: Interstate 270 connecting Frederick, Maryland, to Washington, D.C.; the Baltimore Beltway; and the Baltimore Harbor Tunnel—one of the longest tunnels in the United States and called an engineering marvel.

So much of what has happened in the past 64 years has relied on science and engineering. But as Isaac Asimov said, “Science can amuse and fascinate us all, but it is engineering that changes the world.”

ACEC/MD’s mission has been and continues to be helping propel those changes and contribute to America’s prosperity by advancing the business and professional interests of its members. For the past 33 years, the organization has been led by Executive Director Jim Otradovec III, who will retire at year’s end. He will leave a legacy of legislative victories, increased membership, and strong relationships with the state’s General Assembly and professional organizations.



## ACEC/MD AT-A-GLANCE

Founded in 1957, ACEC/MD represents more than 90 firms, with 7,000 employees.

The Member Organization is led by Executive Director Jim Otradovec III, who was hired by ACEC/MD in 1988, President Sean McCone, and Vice President Melinda Peters.



# LAND

Maryland  
State  
House,  
Annapolis

## ON A (LEGISLATIVE) MISSION

Otradovec has a degree in biology and came to ACEC/MD from logistics work for a defense contractor. He already had ACEC/MD in his blood, though: His father served as the organization's first executive director. Since taking on the role, the younger Otradovec has skillfully worked with the various ACEC/MD presidents throughout his tenure and recognizes the hard work that members put in by serving on committees. "It's the lifeblood of our organization," he says. He is particularly proud of the work done by the legislative committee.

Prior to Otradovec's arrival, one major win for ACEC/MD was the battle for Qualifications-Based Selection (QBS). In 1972, the federal government passed the Brooks Act, which established a QBS process whereby contracts for architects and engineers are negotiated on the basis of demonstrated competence and qualification; with price not considered in the selection process.

But just two years later, in the wake of the Spiro Agnew scandal, when the former vice president was disbarred for evading income taxes while governor of Maryland, that state switched back to a price selection process. "While everyone appreciates that engineering is about working with clients to develop mutual scope and price, it was a major lobbying effort to get QBS passed," Otradovec says. That effort by ACEC/MD took a decade, with QBS eventually passing in 1984. But in 1989, legislation was again introduced to revert QBS back to price competition. Otradovec was involved, along with ACEC/MD's outside lobbyist, in helping to defeat that legislation. "We educated elected officials in the fact that they were not procuring a pen, a defined object. Engineers are problem solvers. They offer solutions."

Still, QBS remains on ACEC/MD's legislative agenda today—as some local jurisdictions are following a low-bid system. ACEC/MD continues to lobby in the State House.

GETTY IMAGES



“Both the leadership and membership are very engaged, and willing to roll up their sleeves and pull together for the industry and the citizens of Maryland.”

**JIM OTRADOVEC III**  
EXECUTIVE DIRECTOR  
ACEC/MD

## CONTINUING EFFORTS

The legislative committee, composed of 35 members, has most recently been “struggling with duty to defend legislation, which will be a long-term battle,” says Jeff McBride, past president of ACEC/MD and principal at EBL Engineers. “Agencies have been putting language into contracts that says that in the event of litigation as a result of a project, you have the duty to defend the client. It’s established before there’s even an issue. That triggers an uninsurable clause. We can’t buy insurance for duty to defend.”

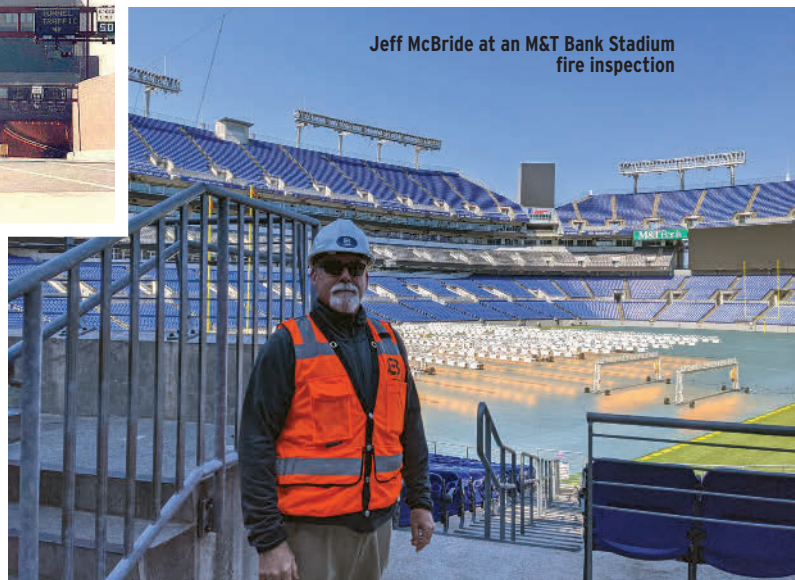
ACEC/MD continues to lobby legislators to amend Section 5-401 to change duty to defend clauses in contracts to fairly assign fault to the responsible party. “In the last two years, we’ve had a legislator sponsor bills for us. They get filed, but we haven’t been successful in getting them through,” McBride says. He is confident that ACEC/MD will eventually overcome: “It is such a risky contract requirement that we must keep this in front of them until we get some protection. We are not giving up.”

The organization, however, has seen plenty of wins over the past few decades:

- In 1992 and again in 2007, ACEC/MD was able to kill legislation that would have applied a 6 percent sales tax to engineering services.
- It also was able to kill the initial version of a bill that would have required engineering firms to obtain a permit, sometimes called a Certificate of Authorization in other states. “The first year this was introduced, it had problematic requirements related to the definition of ‘responsible engineer in charge’



Baltimore Harbor Tunnel



Jeff McBride at an M&T Bank Stadium fire inspection

and ambiguous professional licensing and insurance requirements,” McBride says. “We worked with the initial bill sponsors and supporters to change the language and get a better bill through.”

- ACEC/MD convinced the state to raise its sales tax on fuel to a higher rate and include a scheduled increase. This allowed the state to better fund the Transportation Trust Fund (TTF), the primary funding source for road design and construction. Just as QBS needs constant attention, so too does TTF. “The next challenge will be a new funding model probably based on vehicle miles traveled revenue due to the coming increase in electric cars and, eventually, trucks,” McBride says.

The legislative committee, the next executive director, and Sean McCone, the recently installed ACEC/MD president and executive vice president at Johnson, Mirmiran & Thompson, have their work cut out for them. But McCone, who has been working on TTF for years, says he has learned patience and strategy as he has watched the legislative process unfold. “Sometimes there’s more art in relationships and compromise than there is logic in politics,” he says. “It’s a good lesson for engineers to remember.”

## VALUABLE SUPPORT

Beyond the legislative front, ACEC/MD supports its members in myriad ways. “From a business standpoint, it’s essential to join,” says Aneesha Griffin, principal and co-owner of CST Engineering, a four-year-old company with 26 employees.

Griffin, who chairs the Small Business Enterprise Committee,



“Sometimes there’s more art in relationships and compromise than there is logic in politics. It’s a good lesson for engineers to remember.”

**SEAN MCCONE**  
PRESIDENT, ACEC/MD  
EXECUTIVE VICE PRESIDENT  
JOHNSON, MIRMIRAN & THOMPSON



**"ACEC provides a conduit for small firms to have our voices heard and to also be a shield so that it's not you, an individual, being 'whiny.' It's, 'Hey, this is a problem multiple firms are experiencing.'"**

**ANEESHA GRIFFIN**  
**CHAIR, ACEC/MD SMALL BUSINESS ENTERPRISE COMMITTEE**  
**PRINCIPAL AND CO-OWNER, CST ENGINEERING**

## LEARNING AT EVERY LEVEL

The power of an organization lies in the collaborative efforts of all its participants. As many members point out, one of the most important benefits is the ability to learn from others. "Even if people are working in different sectors, they are dealing with health care coverage, life insurance issues, benefits structures, and challenging employee issues," notes McBride. That ability to meet with peers facing similar

says ACEC/MD gives small businesses access they can't achieve on their own. For example, she says, "the ability to have direct communication with clients. Normally my firm operates in a subconsultant role. And because of that, everything we do goes through our prime. We don't have the ability to effect any sort of change."

But membership in ACEC/MD amplifies Griffin's voice. "ACEC provides a conduit for small firms to have our voices heard and to also be a shield so that it's not you, an individual, being 'whiny.' It's, 'Hey, this is a problem multiple firms are experiencing.' Membership gives a little bit of leverage."

And, by volunteering on committees, Griffin believes she gets even more value from the organization. While networking opportunities are available to all members, those who sit on committees get to form long-lasting relationships with other firms of all sizes and disciplines. "You can meet people who might be your primes one day," she says. "When you contact them, you're not some random person; you're the person who served on a committee with them."

Networking can also lead to mentor-mentee relationships, says Cathy Ritter, 30-year veteran of ACEC/MD and president of Constellation Design Group. She was mentored by Sandy Whitney, the principal in charge at WBCM, when Ritter left her company to start her own firm. "Sometimes you just click with somebody," Ritter says. "He and I ended up doing a lot of legislative work and ended up in the same locations."

situations is priceless. "Whenever I go into a meeting with my ACEC peers, I walk out with a takeaway...every time."

There are many training opportunities, a young members committee for those under 40, as well as initiatives to do community outreach in schools. Griffin says she sends junior staff members to training sessions and allows them to get networking exposure. She, herself, went through ACEC/MD's leadership program when she worked for a previous employer. "It helped to introduce me

to basic financial terms, risk and insurance issues, grassroots issues, and political ideas. You couldn't find an online course for these things that are specifically tailored to the engineering industry."

McCone is working toward getting each committee to have a younger member as a vice chair paired with an older member who is the chair. This also ties in with initiatives on diversity and belonging. "Often the chairs are so busy with their own businesses they don't get to

action at times. We're hoping to use that diversity of skill sets so we come out stronger together every time," McCone says.

While the COVID-19 pandemic took its toll, firms are coming back strong, and there will be new emphasis across the nation on infrastructure. McCone says ACEC/MD is upgrading its website, increasing local political action committee contributions, and doing more outreach via annual events that are "more purposeful and not just for tradition's sake"; e.g., sharing knowledge in public forums and symposiums and showcasing best practices and solutions for the local market.

Otradovec is sad to leave all this activity behind, but he says it's "time to give someone else an opportunity" at the helm. It's an organization of "wonderful, dedicated people. Both the leadership and membership are very engaged, and willing to roll up their sleeves and pull together for the industry and the citizens of Maryland. We're good at coming together and balancing everyone's interests. I am excited about the future of the organization." ■



Chesapeake Bay Bridge



**"Whenever I go into a meeting with my ACEC peers, I walk out with a takeaway...every time."**

**JEFF MCBRIDE**  
**PAST PRESIDENT, ACEC/MD**  
**PRINCIPAL, EBL ENGINEERS**

**Stacey Freed** is a writer based in Pittsford, New York, who has contributed to *This Old House*, *Professional Builder*, and *USA Today*.

# ACEC HONORS 2021 YOUNG PROFESSIONALS OF THE YEAR

## Five future industry leaders making their mark in engineering

**A**t this year's Fall Conference in Marco Island, Florida, ACEC presented five engineers with the prestigious 2021 Young Professional of the Year Award.

All employed by member firms, the recipients were selected by the College of Fellows for already demonstrating outstanding contributions to the engineering profession despite being in the early stages of their careers.

"These are the future leaders of our industry," said ACEC President and CEO Linda Bauer Darr. "They are the bright young men and women who are always ready to take on a new project, and whose intelligence and fresh perspectives bring new insights to our built environment."

To qualify for the award, nominees must have been 35 years of age or younger on Dec. 31, 2020, and be a Registered Professional Engineer. Nominations are made through ACEC's 52 state and regional Member Organizations. Nominees are evaluated and the winners selected by the Awards Subcommittee of ACEC's Committee of Fellows.

The 2021 Young Professionals of the Year are:



Molly Dee-Ramasamy (left) with JB&B field team members reviewing mechanical room plans onsite.

### **MOLLY DEE-RAMASAMY**

JAROS, BAUM & BOLLES (JB&B)

New York

As a New York City policy to reduce carbon emissions from all city buildings by 80 percent by 2020 took shape, Dee-Ramasamy, head of deep carbon reduction at JB&B, initiated a process of assessing how clients' buildings could conform to such a regulation. She led the formation of an in-house Deep Carbon Reduction working group to formulate business strategy and thought leadership around the issue.

She has led more than a dozen complex building decarbonization and building electrification studies for large commercial, institutional, and cultural buildings, and won two competitive innovation projects, including the Energy Efficient Indoor Air Quality Study.



William Klingner (far right) talking with Missouri Rep. Sam Graves and the Fabius River Drainage District Board about levee repair efforts in October 2019.



Brett Belzer chairing the South Dakota Engineering Society 2019 Fall Conference.

**BRETT BELZER**  
RESPEC COMPANY  
Rapid City, South Dakota

With his background in structural and geotechnical engineering, Belzer, a project engineer and supervisor, has been consulting with the South Dakota Department of Transportation since 2012 on a research project that involves testing deep foundation piles across the state to support SDDOT's deep foundation design methodology.

He has also helped manage and coordinate efforts to perform third-party testing and instrumentation in support of the Deep Underground Neutrino Experiment at the Sanford Underground Research Facility.

**WILLIAM KLINGNER**  
KLINGNER AND ASSOCIATES  
Quincy, Illinois

In his role as a project engineer, Klingner was recognized for his work managing the rebuilding of levees and flood protection infrastructure damaged by the Fabius River 2019 flood.

During that flood, he continuously briefed the U.S. Army Corps of Engineers, local river drainage district officials, industry leaders, and local stakeholders about river conditions, projected crests, weak points, and the allocation of flood-fighting supplies.

When erosion nearly destroyed 1,000 feet of the Fabius levee, Klingner implemented emergency procedures that saved the levee, as well as stretches of two highways and BNSF Railroad facilities.

**SAMANTHA BRUMMELL**  
THORNTON TOMASETTI  
New York

As senior project engineer for Thornton Tomasetti, Brummell has experience in construction and renovation of health care, residential, and commercial projects. Her experience also encompasses a variety of building materials, including steel, concrete, and terra cotta.

She is an advocate for young professionals and women in engineering. Brummell is a founder of the Young Members Group in the Structural Engineers Association of New York and is active in Thornton Tomasetti's women's group.

In 2020, *Civil + Structural Engineer* selected her as a Rising Star, one of three structural engineers recognized nationwide.



Samantha Brummell arriving at her newest project, a 23-story steel office building in Brooklyn, New York.



Victoria Ballestero visits with Nicholas Multari to tour Clarkson University's mobile remediation lab, where faculty and DMax Plasma are developing a commercially scalable and viable plasma reactor capable of reducing toxic PFAS from water sources.

**VICTORIA BALLESTERO**  
ATCS  
Largo, Maryland

As vice president and operations manager, Ballestero was recognized for launching her firm's Prince George's County office and leading a team of professional engineers, planners, and land surveyors in the local residential, commercial, mixed-use, institutional, and industrial markets.

Besides managing the growth of the office, she is responsible for technical design leadership and project management.

Ballestero also is a corporate champion for continuing education, professional development, women leadership, and diversity and inclusion programs, as well as a mentor to junior staff across the organization. ■

# All We Can Say Now Is “Unprecedented”

BY NICK BELITZ

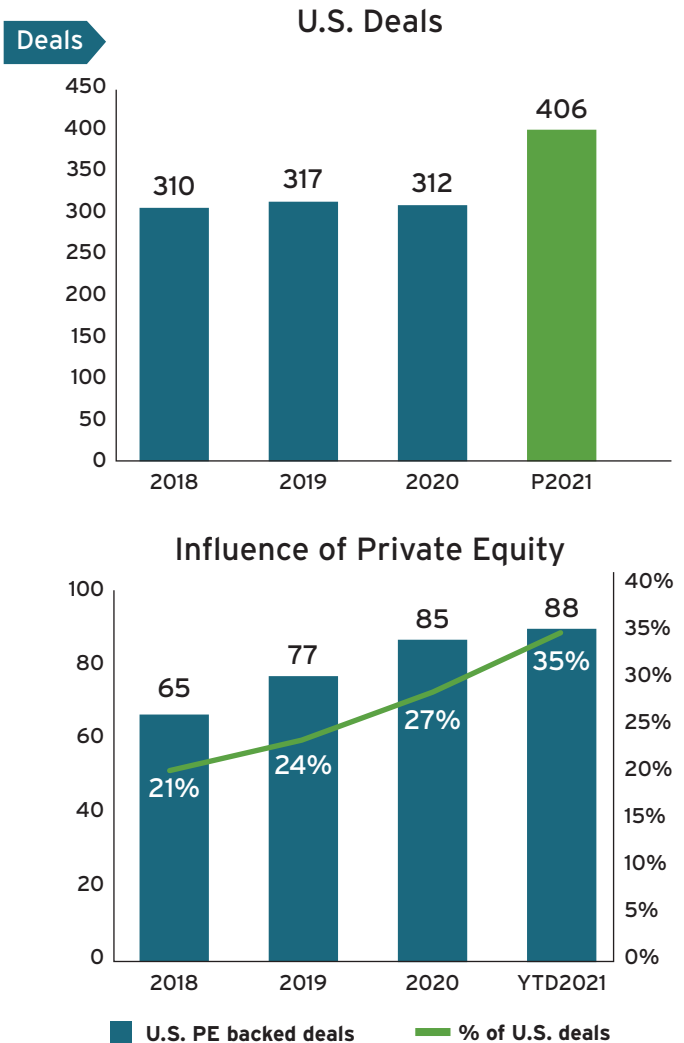
**A**s long-time observers of merger and acquisitions in the engineering industry, we here at Morrissey Goodale have become adept in recent years at finding new ways to describe the ever-escalating number of transactions. As the deal counts piled up with each successive trip around the sun, we consulted our thesaurus and went from describing the market as “active” to “very active” to “hot” to “sizzling” to “red hot” and to—get this—“*white* hot.” But now, the story of 2021 is that we’ve nearly run out of adjectives to describe industry M&A activity such that we have just this word left: *unprecedented*.

In today’s social media-driven world that seems to above all else push for hyperbole, we acknowledge using the U-word may be fraught with peril, but there is just no other way to describe what we see. In our previous column just a few months ago, the trajectory of deal-making based on data from early 2021 led us to predict 340 sales of firms headquartered in the U.S. for the full year. That represented a 20 percent increase over the highest-ever annual total in 2019. But the latest 2021 data, showing 254 U.S. transactions as of mid-August, leads us to forecast **more than 400 deals** for all of 2021, a figure largely driven by the prolific success of ACEC deal-makers from coast to coast. To put this in perspective, not too long ago, in 2015, the industry closed 240 deals—or about what we saw through the first seven months of 2021—but took *the entire year* to do it. Where we now stand is truly unprecedented.

A variety of factors are driving this never-before-seen surge in consolidation, but in 2021, we have two unique factors in play, both related to the federal government. First, the prospect, and eventual signing of the \$1.2 trillion infrastructure bill has motivated strategic and financial buyers to position themselves to capture spending and has incentivized sellers to seek strategic partnerships. Second, the current administration and Congress are openly talking about a change in tax rates to help fund a “human infrastructure” bill passed through budget reconciliation. Deal-makers are no doubt pushing to close transactions this calendar year with known, quantifiable taxes before Congress enacts any changes.

A review of the transactions over the last several months gives us insight into how ACEC deal-makers are thinking right now as they combined to close a whopping 51 transactions just from April through July, which we’ve listed below. Here is what the data tells us:

**1. Private equity and family office investment is robust and growing.** Private equity’s momentum from 2019 and 2020 continued through the first half of 2021 in the engineering



industry. In 2019, 24 percent of deals were either an acquisition by a private equity-backed operating firm or recapitalization by a private equity group, and in 2020 this percentage rose to 27 percent. The trend has only accelerated in 2021, with 69 U.S. deals backed by private equity dollars, representing 34 percent of all industry transactions. We need to give a special shout-out to a handful of these firms, all ACEC members, that closed and announced transactions this year. Leading the pack is PE-backed **Universal Engineering Sciences** (Orlando, Fla.) (*ENR* #85) with five deals in the first half of 2021. Other PE-backed strategic buyers that made a deal in the first six months of this year include **TranSystems** (Kansas City, Mo.) (*ENR* #83) and **Hull & Associates** (Dublin, Ohio) (*ENR* #256).

**2. Sellers are large and small, but a number are quite large.** In the first quarter of 2021, seven *ENR Top 500* design

firms sold or recapitalized, including five in the Top 100. In the second quarter, four more leading design firms partnered with strategic or financial buyers, including familiar ACEC member **Westwood** (*ENR* #122) as the firm announced a strategic investment from **Endurance Partners** (New York). Firms outside of the *ENR* Top 500 are also attractive suitors to private equity. In May, **Prime Engineering** (Atlanta) received a strategic investment from **Godspeed Capital** (Washington, D.C.) and then quickly welcomed architecture, engineering, and surveying firm **Austin Brockenbrough & Associates** (Richmond, Va.) to the portfolio. Meanwhile, Long Arc Capital (New York) made a majority investment in **Braun Intertec's** (Minneapolis) (*ENR* #114) **Agile Frameworks**, representing both an industry acquisition and a technology-oriented play.

### 3. Buyers are at work within and without state borders.

Inter-state deal-making, classified as a transaction in which buyer and seller are headquartered in different states, eclipsed its highest level on record in the first half of 2021. This type of deal-making generally speaks to buyers feeling confident in using M&A as a growth strategy, often willing to pay premiums across state borders to get where they need to go. Through June, inter-state deal-making accounted for 68.5 percent of all deals. California saw the most activity of any state through the first half of 2021 with 34 firm sales, followed by Texas (19 deals), Florida (15 deals), Indiana (8 deals), and Connecticut and Virginia (7 deals each). ACEC members **Tetra Tech** (Pasadena, Calif.) (*ENR* #4), **HDR** (Omaha, Neb.) (*ENR* #6), **NV5** (Hollywood, Fla.) (*ENR* #27), and **RRM Design Group** (San Luis Obispo, Calif.) acquired in California in the first six months of 2021. That said, we also note deal-makers this year have been happy to stay close to home and find deal partners headquartered in the same state. Below we report a number of transactions with ACEC member firms coming together in Pennsylvania, Maryland, Michigan, Ohio, Wisconsin, Texas, Washington, and California.

While we expected the upward trajectory of transactions coming into the year, we still marvel at the unprecedented acceleration of consolidation in 2021. Industry decision-makers have embraced M&A as part of their strategic plans and show no signs of slowing down.

## JULY 2021

ACEC member **Universal Engineering Sciences (UES)** (Orlando, Fla.) (*ENR* #85) announced that **BDT Capital Partners** (Chicago) has entered into an agreement to make a significant strategic investment in the company through an affiliated fund. BDT will become the majority shareholder of UES.

Engineering, architecture, and land surveying firm **Abonmarche** (Benton Harbor, Mich.) acquired engineering and surveying firm **Milanowski & Englert** (Grand Haven, Mich.). Abonmarche is an ACEC member.

*ENR's* #17 ranked global design firm and ACEC member, **Mott MacDonald** (Croydon, England), acquired **The Kercher Group** (Newark, Del.), a firm specializing in transportation asset management and engineering with extensive expertise in pavement, bridge, and maintenance management. The company continued its U.S. expansion through the acquisition of **Pacific**

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](http://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](mailto:nbelitz@morrisseygoodale.com).

**Groundwater Group** (Seattle), a hydrogeology, groundwater/surface water interactions, modeling, soil, sediment, water chemistry, and regulatory strategy services firm.

**Horizon Engineering Group** (Maitland, Fla.), a specialist in roadway, transportation design, structural design, and stormwater management, joined design firm **Greenman-Pedersen, Inc. (GPI)** (Babylon, N.Y.) (*ENR* #64). Both firms are ACEC members.

For its sixth deal of 2021, fast-growing **Universal Engineering Sciences** (Orlando, Fla.) (*ENR* #85) acquired **Geotechnology** (St. Louis) (*ENR* #407), a firm specializing in applied earth and environmental sciences, exploration, geotechnical engineering, and underground consulting services. Both firms are ACEC members.

*ENR's* #15 ranked construction management-for-fee firm, **Atlas Technical Consultants** (Austin, Texas), acquired **O'Neill Service Group** (Redmond, Wash.), a construction quality assurance and environmental services firm. Both firms are ACEC members.

ACEC member **RESPEC** (Rapid City, S.D.) acquired **Progressive Water Resources** (Sarasota, Fla.), a water resource consulting firm with extensive experience in multiple aspects of ground and surface water resource development and management.

Multi-disciplinary consulting firm **Pennoni** (Philadelphia) (*ENR* #91) acquired **Cocciardi and Associates** (Mechanicsburg, Pa.), a firm that provides safety, industrial hygiene, environmental, public health, and emergency preparedness services. Pennoni is an ACEC member.

## JUNE 2021

ACEC member **NMP Engineering Consultants** (Hunt Valley, Md.), a provider of engineering, landscape architecture, planning, and environmental design services, merged with **Progressive Engineering Consultants** (Hunt Valley, Md.), a construction management and inspection firm focused on the transportation industry.

Infrastructure planning and design firm and ACEC member **KLJ Engineering** (Bismarck, N.D.) (*ENR* #179) acquired **Zillgitt Civil Design** (Zumbrota, Minn.), a civil engineering and surveying firm focused on public infrastructure and land development services.

Project management services firm **Versar** (Springfield, Va.) acquired the Environmental Services Business Unit of **Black & Veatch** (Overland Park, Kan.) (*ENR* #13). The acquisition will strengthen Versar's Environmental Services Group by enhancing its capabilities within environmental remediation and site restorations. Black & Veatch is an ACEC member. ■

# On the Move

**Michael Baker Engineering, Inc.**, the New York-based affiliate of **Michael Baker International**, has named **Magdy Hagag** CEO and president. In his expanded role, Hagag will provide direction and oversight to all engineering, business, marketing, and financial operations throughout New York. Hagag also serves as Michael Baker International's Northeast regional director and senior vice president.

**Lochner** Board Chairman **Terry A. Ruhl** has been named incoming CEO, effective Jan. 3, 2022, following the retirement of current president and CEO **Jeanne Cormier**. Ruhl, a 32-year A/E industry veteran, previously served as a member of CH2M's board of directors and corporate leadership council, as well as president of the company's transportation business and national governments client sector.

**Eric Michel** has been named CEO of Bismarck, N.D.-based **KLJ Engineering**

**LLC (KLJ)**, succeeding **Barry Schuchard**, who passed away in March. Michel rejoins KLJ, where he previously served as the vice president of energy and natural resources. He will be based out of the company's Saint Paul, Minn., office. The company also named **Martin Fritz** chief administrative officer, who will be responsible for overall company operations, including safety programs and procedures, strategy development, legal, risk management, insurance, office/facilities leasing and construction, and related administrative management.

**Jeff Hill** has joined San Diego-based **Kleinfelder** as executive vice president and East Division director. Hill will be based in the company's Pittsburgh office.

**Tina Wenzel** has joined Plymouth, Minn.-based **VAA** as CFO and director of operations, where she will also manage the firm's human resources, information technology, and administrative departments.

**James (Jim) T. Powers** has joined **H2M architects + engineers (H2M)** as the chief development and growth officer who will manage the firm's strategic direction and expand into communities across the East Coast.

Kansas City, Mo.-based **TranSystems Corp.** announced the following promotions: **Rich Markwith** has been named executive vice president of strategy, where he will lead the development of market sectors and key services, overseeing the top line side of the business, including the project pipeline, wins, and sales.

**Evan Lowell** has been named East Region senior vice president, where he will oversee the top and bottom-line performance, which encompasses 17 offices in eight states. **Greg Murphy** has been named market sector leader for its government sector, which supports Departments of Transportation, tollways, and municipalities.



Magdy Hagag



Terry A. Ruhl



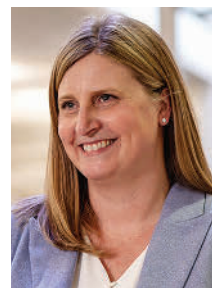
Eric Michel



Martin Fritz



Jeff Hill



Tina Wenzel



James (Jim) T. Powers



Rich Markwith



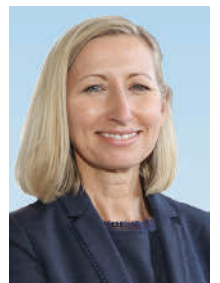
Evan Lowell



Greg Murphy



Gus Maimis



Caroline Decker

**Gus Maimis** has joined New York City-based **STV** as a senior vice president and business development director of its construction management practice in the Eastern Region.

**Caroline Decker** has joined **WSP USA** as vice president of federal affairs. Decker succeeds **Cathy Connor**, who retired in June after 32 years with WSP. She is based in the Washington, D.C., office.

**Debra James** has joined Nashville-based **Barge Design Solutions, Inc., (Barge)** as a vice president and a client service leader, where she will support the firm's strategic initiatives of investing in growth of market share in Georgia.

**Tracy Ekola** has joined Walnut Creek, Calif.-based **Brown and Caldwell** as vice president and senior director of client services for the Midwest. Ekola will have operational responsibilities for Brown and Caldwell's Minnesota, Wisconsin, Iowa,

Missouri, and Illinois operations, and serve clients in the municipal and private water, wastewater, and stormwater sector. She is based in the Saint Paul, Minn., office.

Dayton, Ohio-based **Woolpert** has named **Suzette Stoler** as vice president and buildings sector leader. She will be responsible for leading the firm employees who serve Woolpert's private, public, and federal markets and guide them to innovate the built environment through smart planning, programming, and design.

Chicago-based **Clark Dietz** announced the following vice president promotions: **Emily Basalla**, area manager, Southern Wisconsin; **Andrea Bretl**, team leader, civil/environmental, Central Illinois; **Kevin Hetrick**, area manager, Central Indiana; **Nirav Patel**, team leader, mechanical/electrical, Illinois; and **Tonia Westphal**, area manager, Northern Wisconsin.



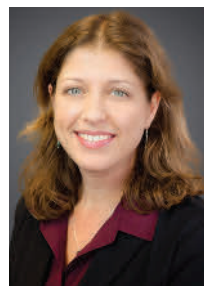
Debra James



Tracy Ekola



Suzette Stoler



Emily Basalla



Andrea Bretl



Kevin Hetrick



Nirav Patel



Tonia Westphal

## Statement of Ownership, Management, and Circulation

*Engineering Inc.* (USPS 0007395) is published (quarterly) four times a year by the American Council of Engineering Companies.

The mailing address of the publication is 1015 15th Street, NW, 8th Floor, Washington, D.C. 20005. The mailing address of the publisher is 1015 15th Street, N.W., Washington, D.C. 20005-2605. The publisher is the American Council of Engineering Companies, the editor is Andrea Keeney, and the managing editor is Matthew Wright. The owner of the publication is the American Council of Engineering Companies.

There were 12,353 copies of *Engineering Inc.* published for Summer 2021 issue; the average for the preceding 12 months was 12,410. The paid/requested outside county mail subscriptions for the Summer 2021 issue were 11,957; the average for the preceding 12 months was 11,894.

The other classes mailed through USPS for the Summer 2021 issue were 115; the average for the preceding 12 months was 103. Total distribution for the Summer 2021 issue was 12,218; the average for the preceding 12 months was 12,209. Copies of *Engineering Inc.* that were not distributed during the Summer 2021 issue (office use, leftovers) was 135 and the average number of copies not distributed during the preceding 12 months (office use, leftovers) was 201. The percent paid/requested circulation for the Summer 2021 issue was 98%. The average percent paid/requested circulation for the preceding 12 months was 98%.

**Richard Mueller**, former chairman, president, and director of design and administration of Baltimore-based Mueller Associates passed away on Sept. 17 in Florida at the age of 92.

Mueller joined the firm shortly after its establishment in 1966 and served as president from 1968 until 1984, when he transitioned



Richard Mueller

to the role of chairman. He retired in 1995.

A mechanical engineer and project manager, Mueller helped build

the fledgling mechanical, electrical, and plumbing engineering firm into one of the mid-Atlantic region's most prominent consulting practices serving clients in the cultural, higher education, and civic markets.

Major projects during his tenure included building systems design for the Lyric Opera House and the Washington National Cathedral. Mueller was instrumental in the development of long-term client relationships including the Baltimore Museum of Art, the Smithsonian Institution, and consulting work for Northrop Grumman that began in 1976; to date the firm has completed more than 1,000 projects for the global contractor.

Mueller was also a director of ACEC/MD.

# Welcome New Member Firms

## ACEC Arizona

Kennedy Jenks Consultants  
Phoenix

## ACEC Arkansas

Building & Earth Sciences, Inc.  
Springdale  
Fisher Arnold  
Jonesboro

## ACEC California

CriticalArc  
Carlsbad  
Garing, Taylor &  
Associates, Inc.  
Arroyo Grande  
Haley & Aldrich, Inc.  
Oakland  
Phoenix Civil Engineering, Inc.  
Santa Paula

## ACEC Colorado

Basis Partners  
Colorado Springs  
Foothills Bridge Co.  
Boulder

## ACEC-CT

Martinez Couch &  
Associates, LLC  
Rocky Hill  
Sound Engineering  
Associates, LLC  
Fairfield

## ACEC-FL

Alfka  
Tampa  
Alliant Engineering, Inc.  
Jacksonville  
American Testing  
Materials Engineering  
Hialeah  
Coke Consulting, LLC  
Lake Worth  
CPH, Inc.  
Sanford  
Griner Engineering Inc.  
St. Petersburg  
Harold Hart & Associates, Inc.  
Tampa  
Polmann Consulting  
Dunedin  
Powerserve Technologies, Inc.  
Jupiter  
Spicer Bridge Consultants  
Orlando  
Starr Trask Consulting  
Clearwater

## ACEC Georgia

Long Engineering, LLC  
Atlanta

## ACEC Hawaii

Kraig K. Otani &  
Associates, LLC  
Honolulu

## ACEC of Idaho

Kimley-Horn and  
Associates, Inc.  
Boise  
Precision Engineering  
Eagle

## ACEC Illinois

Facet Engineering  
Chicago  
SRF Consulting Group, Inc.  
Chicago

## ACEC Indiana

CKL Engineers, LLC  
Indianapolis  
Commonwealth Engineers, Inc.  
Indianapolis  
GEOTILL Inc.  
Fishers  
Intertek/PSI  
Indianapolis  
R.E. Dimond and Associates  
Indianapolis  
Volkert, Inc.  
Indianapolis

## ACEC/Iowa

Collins Engineers, Inc.  
Granger  
Strand Associates, Inc.  
Dubuque

## ACEC Kansas

Kimley-Horn and  
Associates, Inc.  
Kansas City

## ACEC-KY

CDM Smith  
Lexington  
DDI Engineering and  
Land Surveyors  
Russellville  
Metric Environmental  
Lexington  
Technical Horizons  
Lexington

## ACEC of Louisiana

Infrastructure Consulting &  
Engineering  
Baton Rouge

## ACEC of Maine

Trillium Engineering Group  
Yarmouth

## ACEC/MD

Prudent Engineering, LLP  
Baltimore

## ACEC/MA

GM2 Associates, Inc.  
Somerville  
Jaros, Baum & Bolles  
Consulting Engineers,  
LLP (JB&B)  
Boston

## ACEC/MW

Green Powered Technology  
Arlington, Virginia  
Kimley-Horn of DC  
Washington, D.C.  
Rhino Fire Protection  
Engineering, P.L.L.C.  
Reston, Virginia  
Sorba Engineering  
Reston, Virginia

## ACEC/Michigan

Greenman-Pedersen, Inc.  
(GPI Michigan, Inc.)  
Grand Rapids  
Infrastructure  
Engineering, Inc.  
Detroit  
Modjeski and Masters, Inc.  
Grand Rapids

## ACEC/MN

Benham, a Haskell Co.  
Saint Paul  
Hardesty & Hanover, LLC  
Roseville  
M Squared Engineering, LLC  
Centerville  
Steen Engineering, Inc.  
Crystal  
Windsor Engineers  
Duluth

## ACEC/MS

ABTS Consultants, LLC  
Madison  
Fenstermaker  
Biloxi

## ACEC's 'Engineering Influence' Wins Best Association Podcast

ACEC's *Engineering Influence* podcast won the gold medal for best podcast in the 2021 Trendy Awards, sponsored by Association Trends. The Trendy Awards honor the best marketing and communication pieces in the association and nonprofit community.

ACEC has recorded more than



200 episodes on a wide variety of engineering industry issues, which have been downloaded more than 50,000 times, and is helping establish ACEC as the industry's hub for thought leadership.

To listen and subscribe to the *Engineering Influence* podcast, go to <https://acecnational.podbean.com/>.

**ACEC/NC**

Crowley Professional Engineers, Inc.  
Wake Forest  
Delta Airport Consultants, Inc.  
Charlotte  
DJG Inc., of North Carolina  
Raleigh  
High Country Engineering, PC  
Asheville  
T.Y. Lin International, Inc.  
Alexandria, Virginia  
VN Engineers, Inc.  
Raleigh

**ACEC Nebraska**

Nexus Alliance NA  
Omaha  
RJN Group, Inc.  
Omaha

**ACEC New Mexico**

Engineering Analytics, Inc.  
Raton  
Parkhill  
Bernalillo

**ACEC New York**

IH Engineers, P.C.  
New York, N.Y.

**ACEC Ohio**

Compass Infrastructure Group  
Westerville  
Etegent Technologies  
Cincinnati  
Halle's Engineering & Design, LLC  
Akron  
JEO Consulting Group, Inc.  
Lewis Center  
Quality Engineering Solutions, Inc.  
Columbus  
True Inspection Services  
Urbana

**ACEC Oregon**

Hardman Geotechnical Services Inc.  
Tigard  
Morrison-Maierle, Inc.  
Redmond  
RDH Building Science Inc.  
Portland  
STV Incorporated  
Lake Oswego

**ACEC/PA**

Fisher Associates,  
PE, LS, LA, DPC  
Canonsburg

**ACEC-RI**

FR Engineering  
Warwick  
Moffatt & Nichol  
Newton

**ACEC-SC**

Catlin Engineers and Scientists  
Charleston  
Facility Strategies Group, LLC  
Fort Mill  
Kleinfelder  
Charlotte, N.C.  
SEPI Engineering and Construction  
Charleston  
Southern Steel Engineers, LLC  
Lexington  
Traffic Planning and Design, Inc. (TPD)  
Greenville

**ACEC Tennessee**

Griner Engineering  
Sevierville  
LJA Engineering  
Chattanooga  
Wiss, Janney, Elstner Associates, Inc.  
Brentwood

**ACEC Texas**

BCC Engineering, LLC  
Bedford  
BD Energy Systems, LLC  
Houston  
E&C Engineers & Consultants, Inc.  
Houston  
George Butler Associates, Inc.  
Austin  
Gonzalez Shah Smith, Inc.  
Austin  
Holistic Engineering and Land Management  
Phoenix, Arizona  
Hughes Surveying  
Cameron  
Schnabel Engineering, Inc.  
Austin

Vernon E. Falconer  
Tyler  
WEST Consultants, Inc.  
Coppell

**ACEC Utah**

AGEC - Applied GeoTech  
Sandy  
American Land Consulting  
Washington

**ACEC Virginia**

Koontz Bryant  
Johnson Williams  
Richmond  
Mattern & Craig, Inc.  
Roanoke

**ACEC Washington**

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Bainbridge Island  
Cobb, Fendley & Associates, Inc.  
Houston, Texas  
CT Engineering, Inc.  
Seattle  
DPChem Consulting Inc.  
Auburn  
G6 Engineering LLC  
Kennewick  
Kimley-Horn and Associates, Inc.  
Seattle  
Morrison-Maierle, Inc.  
Spokane  
MW Consulting Engineers, PS  
Spokane  
Parr Excellence  
Bingen  
Saez Consulting Engineers, Inc.  
Bainbridge Island  
Schnabel Engineering, Inc.  
Tukwila  
TRAFX LLC  
Bellevue

**ACEC Wisconsin**

Chastain and Associates  
Beloit  
Quandel Consultants, Inc.  
Madison

**ACEC/WV**

Larson Design Group, Inc.  
Morgantown

**ACEC-Wyoming**

Masterminds  
Engineering LLC  
Gillette

## FIDIC HONORS ACEC FOR ADVOCACY AND RESEARCH PROGRAMS

ACEC was recently honored by the International Federation of Consulting Engineers (FIDIC) in their Member Association Excellence Awards: Best Advocacy Campaign for its work on PPP loan fairness for the engineering industry and Best Publication or Website for ACEC's Private Market Briefs.

In the Best Advocacy Campaign Award, ACEC won for its ongoing PPP Fairness effort (<https://programs.acec.org/pppfairnessnow>), which centers on the application of the PPP FAR credits clause on forgiven PPP loans taken out by engineering firms.

The effort has been featured in Roll Call (<https://bit.ly/3AAQ4T5>) and is driven by a comprehensive integrated advocacy communications effort spanning direct lobbying, video production, social media engagement, and print, digital and targeted advertising.

In the Best Publication or Website Award, ACEC won for its series of Private Market Briefs (<https://bit.ly/36Wio5P>), which are researched, produced and distributed for free by ACEC's internal Private Markets research team. The briefs focus on: commercial and residential real estate, intermodal and logistics, energy and utilities, health care and science and technology, and education.

The briefs are supported by the Private Markets team's new monthly economic updates, which are published on YouTube (<https://bit.ly/3ADfy21>) and regular *Private Market Update* podcasts (<https://bit.ly/30eQrWF>) on the Council's *Engineering Influence* podcast series.

## Welcome New National Affiliate Members

**Accounting & Tax Services**

Cherry Bekaert LLP  
Architecture/Interior Design  
INTEC Group, Inc.  
Construction - Integrated Engineering Services  
Tunnel Services Corporation - Ghella USA Division  
Consultants - Business Mgmt.  
River House Management Consulting

**Consultants - Finance**

Forrest W. Cameron, CPA, PC  
Consultants - Strategic Planning/Insurance  
Borislow Insurance/Captivated Health  
Financial Planning & Services  
JP Morgan Chase

**Technology - Cloud Service Provider, Software/Hardware, Web Services**

Shadow Team VFX  
SlashNext  
Wrench Solutions  
Training/Technical Support to Civil Engineering and Transportation Professional  
UF Transportation Technology Training (T2) Center

For further information on national affiliate members, go to: <http://bit.do/ACEC-natl-affiliate-memb> or contact Erin Wander at 440-281-0464 or [ewander@acec.org](mailto:ewander@acec.org).

# Business of Design Consulting to Be Held in Atlanta in March 2022

**M**anaging your A/E business for success requires technical know-how and a broad awareness of today's best multi-disciplinary business practices. Firm managers must understand the rules of management and finance and how they work in the real world. To meet the business challenges in the current economy, managers need to:

- Understand the intricacies of human relations and related legal elements;
- Create and manage client relationships and client expectations;
- Manage risk and draft and adapt contracts; and
- Understand ownership transition and employee satisfaction factors.

ACEC's highly regarded Business of Design Consulting course is a unique playbook for building leadership and managing your firm at the most effective levels. Join us in Atlanta on March 29–31, where ACEC's expert faculty of industry practitioners will cover contemporary best practices and critical operational management methods.

For more information and to register, visit <https://programs.acec.org/bdc2022>.

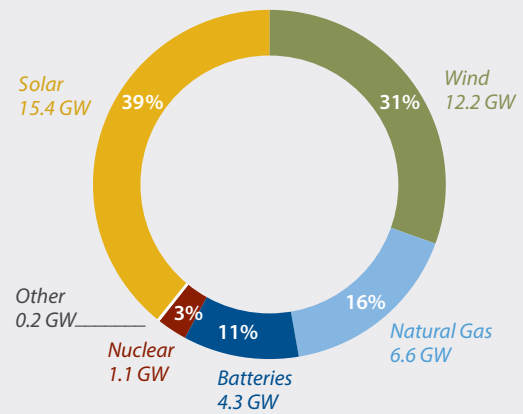
## RENEWABLES HIGHLIGHTED IN ACEC PRIVATE INDUSTRY BRIEF

Future growth in the energy market will come from renewables, according to the latest outlooks by the U.S. Energy Information Administration (EIA) and the International Energy Agency (IEA). As the United States—and the world—grapples with the COVID-19 pandemic and emerges from the short pandemic-caused recession, renewables have proven a bright spot. Solar and wind are expected to make up 70 percent of utility-scale electricity generation capacity domestic additions in 2021 (see chart) and will grow to 42 percent from their current 21 percent in total contribution to electricity generation by 2050. Internationally, the outlook is similar, with IEA calling renewables “the success story of the COVID-19 era,” with an 8 percent expansion expected in 2021, the fastest year-over-year growth since 1970. For more insights, check out <https://www.acec.org/publications/private-market-resources/>.

## NEW AND UPDATED COALITION TOOLS AND PUBLICATIONS NOW AVAILABLE

The ACEC Bookstore now has new and updated tools and publications available for land development, mechanical and

## 2021 Planned Utility-Scale Electricity Generating Capacity Additions



Source: U.S. Energy Information Administration (EIA)

electrical engineering, professional surveying, and structural engineering firms.

Coalition publications focus on Marketing & Business Development; Project Management; Financial Management; Risk Management; and Business Management. Many publications include practical worksheets, templates, and practice guidelines covering critical processes and procedures for a successful project.

The following publications were recently released: Coalition of American Mechanical and Electrical Engineers (CAMEE)

- CAMEE Tool 2-4: Accounts Receivable Management
- Coalition of American Structural Engineers (CASE)
  - CASE Tool 1-4: Creating a Culture of Recruitment and Retention (*new*)
  - CASE Tool 3-6: Career Path Planning (*new*)
  - CASE Tool 7-3: Additional Service Tracking (*new*)

Coalition of Professional Surveyors (COPS)

- COPS Baseline 4.8: Digital Data Release Form (*new*)

Land Development Coalition (LDC)

- LDC 4-2: Risk Balance Sub-consulting (*updated*)
- LDC 5-3: Remote Work Staffing (*new*)

All publications are available for immediate download at the ACEC Bookstore at [bit.do/coalition-docs](https://bit.do/coalition-docs) and are complimentary for Coalition members. To learn more about Coalitions, visit [acec.org/coalitions](https://acec.org/coalitions) or contact [coalitions@acec.org](mailto:coalitions@acec.org). ■

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