

MAY/JUNE 2018

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**Keys to Drive  
Smart Cities**

**KCI  
Technologies'  
Hands-On  
Benevolence**

**Louis Berger  
Helping to  
Power Up  
Puerto Rico**

## RIISING ABOVE

Bayonne Bridge: Raising the Roadway  
Leads 2018 Engineering Excellence Awards

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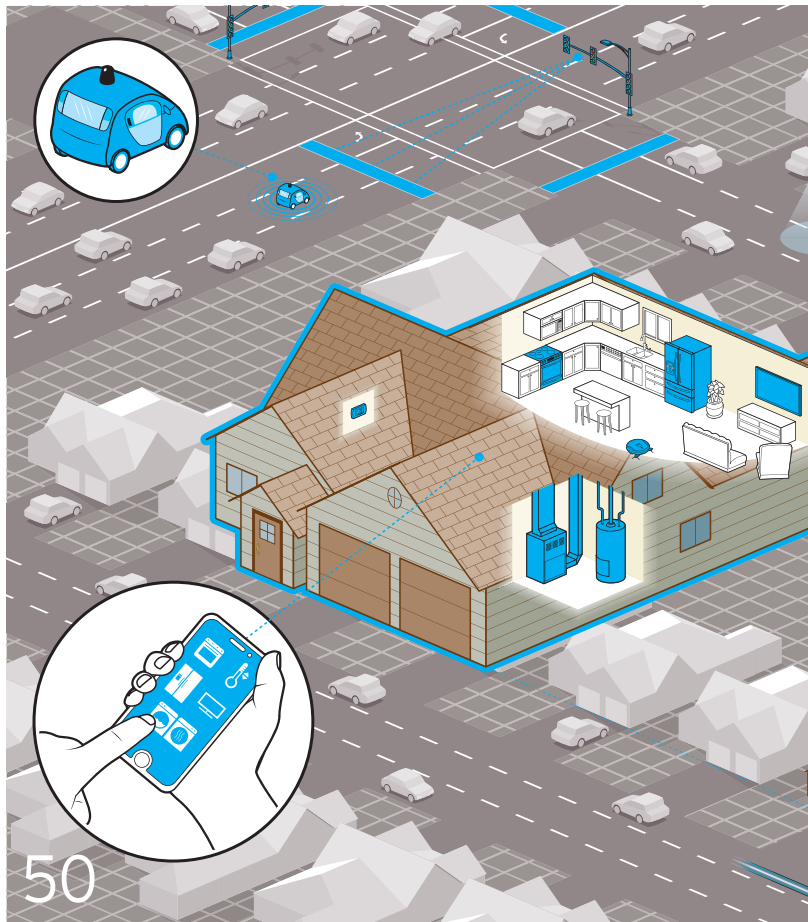
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146 engineering projects from around the world honored at ACEC's annual EEA Gala in Washington, D.C.

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COVER: ALAN SCHINDLER



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# Citizen Lobbyists Making Their Voices Heard

**A**mong the nearly 1,500 ACEC Annual Convention attendees at the end of April were the more than 350 members who lobbied on Capitol Hill for infrastructure funding and regulatory reforms. Their activities produced remarkable results: Only a few days after the Convention, the House acted on a key Council priority in passing the FAA reauthorization bill that included an expansion of Qualifications-Based Selection (QBS), provisions to facilitate additional commercial uses of unmanned aircraft systems and \$1 billion in new annual airport infrastructure grants.

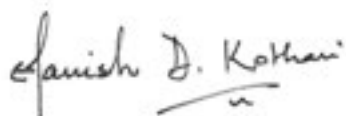
With Congress soon expected to take up the Water Resources Development Act (WRDA), ACEC members also advocated for critical water infrastructure priorities including more funding for the State Revolving Fund (SRF) program for drinking water projects, and reauthorization and expansion of the Water Infrastructure Finance and Innovation Act (WIFIA) to aid communities in financing water projects.

The Council's citizen lobbyists present a powerful united voice on these important policy issues—and will continue to be a major factor in achieving our legislative agenda.

Highlights of our Convention and the Engineering Excellence Awards begin on page 10.

Congratulations to all 2018 winners, especially to the team of HDR and WSP USA for the year's most outstanding engineering achievement for their Bayonne Bridge Raise the Roadway project.

This issue also includes a report on engineers taking the lead in the smart cities and smart neighborhoods market (*see page 50*) and how clear, concise messaging is essential in the art of persuasive business communications (*see page 56*).



Manish D. Kothari  
ACEC Chairman



David A. Raymond  
ACEC President & CEO



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# More Than Water Infrastructure Design

By Gerry Donohue

**T**he water utility market is remarkably bifurcated. Of the more than 51,000 community water systems in the United States, 17 percent serve 92 percent of the population, according to industry data. These systems are in urban and suburban areas, boast diverse and growing rate-paying bases and have the size and expertise to access both public and private funds to invest in their infrastructure.

The remaining 43,000 systems sit at the opposite end of the spectrum. They tend to serve small communities—fewer than 10,000 customers—face a shrinking rate structure, struggle to comply with myriad federal regulations and have difficulty pursuing outside funding opportunities.

“When I meet with the utility general managers, I ask what keeps them up at night,” says Craig Close, national director of HDR’s Utility Management Services Business Unit. “The bottom line is they have so many needs. They don’t know what to prioritize.”

Of the more than **51,000** community water systems in the United States, 17 percent serve 92 percent of the population

The challenges the utilities face are an opportunity for engineering firms. In addition to providing traditional design services, Close believes engineering firms can act as a public works department of sorts, providing a broad spectrum of services to the small community water systems.

“We wear many different hats,” says John McCarthy, president of water for Arcadis North America. “We provide financial consulting services, long-range planning, bond finance strategies, rate hike planning, regulatory compliance and asset management.”

## ROCK AND A HARD PLACE

According to a recent Rand Corp. report, local utilities fund the design and construction of more than 95 percent of the nation’s water infrastructure, primarily through municipal bonds. State governments pick up most of the rest. To cover the maintenance and operations costs, as well as to service the debt, the systems rely on customers.

For many small community utilities, however, the numbers don’t add up.

First, rates in the vast majority of systems don’t cover the maintenance and operations and debt costs, and there appears to be no path to reach that equilibrium. “Unfortunately, the value of

water still does not resonate with most citizens and stakeholders,” says McCarthy. “They see water as a product, rather than an asset that underpins the social, environmental and economic pillars of society.”

Second, America’s smaller cities, towns and rural areas have been losing population for decades, so they have fewer customers to cover the cost of their existing infrastructure, let alone make new investments.

Third, while urban systems tend to be densely packed, small town and rural systems have far fewer customers per mile of pipe, making maintenance and repairs more expensive.

Finally, the 2008 economic crisis hit municipal water systems hard. Between 2009 and 2014, capital spending fell by 22 percent, statistics show. It has since rebounded—in fact, municipal bond offerings are at an all-time high—but they dug themselves a deep hole.

## BRIDGING THE FUNDING GAP

Municipal water systems face a lot of rate-rise resistance—going back to the failure to articulate the value of water—but Close says they have no option. “Rates will have to go up to afford what they

Estimated Construction Put in Place 1st Quarter 2018 Forecast	
Change from prior year—current dollar basis	
Water Supply	
2013	3%
2014	-2%
2015	-2%
2016	-5%
2017	-9%
2018	-3%
2019	2%
2020	3%
2021	3%
2022	2%
Sewage and Waste Disposal	
2013	1%
2014	3%
2015	5%
2016	-7%
2017	-13%
2018	-1%
2019	2%
2020	3%
2021	3%
2022	4%

Source: FMI



New ACEC Chairman Manish Kothari (second from right), president/CEO, Sheladia Associates, Inc., participated in a panel discussion on opportunities and best practices for securing global projects at the recent Discover Global Markets (DGM): Design + Construct Forum in Kansas City, Missouri. DGM is the U.S. Department of Commerce's flagship event series to build international opportunities for U.S. firms. Also pictured (from left) moderator Diane Willkens, Development Finance International, Inc.; Preston Winter, Millennium Challenge Corp.; and John Mogge, Jacobs.



need. They need help determining what their funding gap is and how to bridge this gap," he says.

Utilities are turning to engineering firms to help them build the case for a rate increase.

"In the past, water systems were not equipped to provide customers with information that could demonstrate why rate increases were necessary, so they simply asked customers to trust them," says McCarthy. "As the world becomes more digital, the information becomes more accessible. Through innovation, we empower utilities to leverage data to help illustrate the depth and breadth of the factors that drive rate increases."

Engineering firms then help with public outreach. "I've attended a lot of public outreach sessions over the past 20 years," says Close. "There's much more interest and involvement than 20 years ago. People are asking much tougher questions."

Water systems are also counting on firms to help them in issuing municipal bonds and private activity bonds, and applying for federal and state grant programs.

Both McCarthy and Close say the best option for these communities is to combine a variety of projects into a single infrastructure program.

"Rather than approach a flood protection project as a standalone investment, we may add a recreation area to tap into park funding and a multiuse trail to get transportation money," says McCarthy.

Close offers the example of a water system with a very high leakage rate but no access to funds to fix it. "We find they're spending \$1 million per year in power costs just to pump the water that is leaking away," he says. "Now we can bundle water grants, energy grants and even something for improving water quality. By putting all of those together, we can get the job done." ■

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

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# ACEC Secures QBS Expansion, Airport Funding Increases in House FAA Bill

**T**he House of Representatives passed an aviation infrastructure bill that expands the use of Qualifications-Based Selection (QBS) on federally funded airport projects, a key priority for ACEC's "citizen lobbyists" during the ACEC Annual Convention lobbying effort. The Federal Aviation Administration (FAA) Reauthorization Act (H.R. 4) also increases funding for airport infrastructure and provides additional tools and flexibility for the FAA to permit expanded commercial operations of unmanned aircraft systems.

The House adopted an amendment sponsored by Reps. Bruce Westerman, R-Ark., and Dan Lipinski, D-Ill., to modify existing A/E procurement rules for airports using Airport Improvement Program (AIP) funds. The revision would ensure that if any stage of a project is funded with AIP dollars, then the engineering and design portion must follow a QBS process. The amendment is designed to discourage airports from segmenting A/E contracts with local funds to avoid federal QBS requirements.

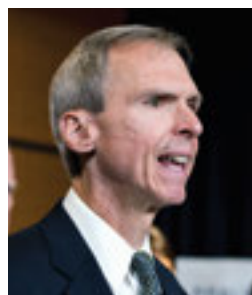
Lawmakers also approved an increase in AIP funding, up from the current level of \$3.35 billion. The bill authorizes a new competitive grant program, funded from the General Fund and subject to annual appropriations, which would supplement existing formula funds for small and midsize airports. The program would grow from \$1.02 billion in F.Y. 2019 to \$1.11 billion in F.Y. 2023.

In addition, ACEC supported provisions in the House bill related to unmanned aircraft systems, including a risk-based permitting process for expanded commercial operations, and additional research and development into new and emerging technologies.

The short-term extension of current FAA programs is set to expire on Sept. 30. The Senate may debate its version of the bill during the summer.



Rep. Bruce Westerman, R-Ark.



Rep. Dan Lipinski, D-Ill.



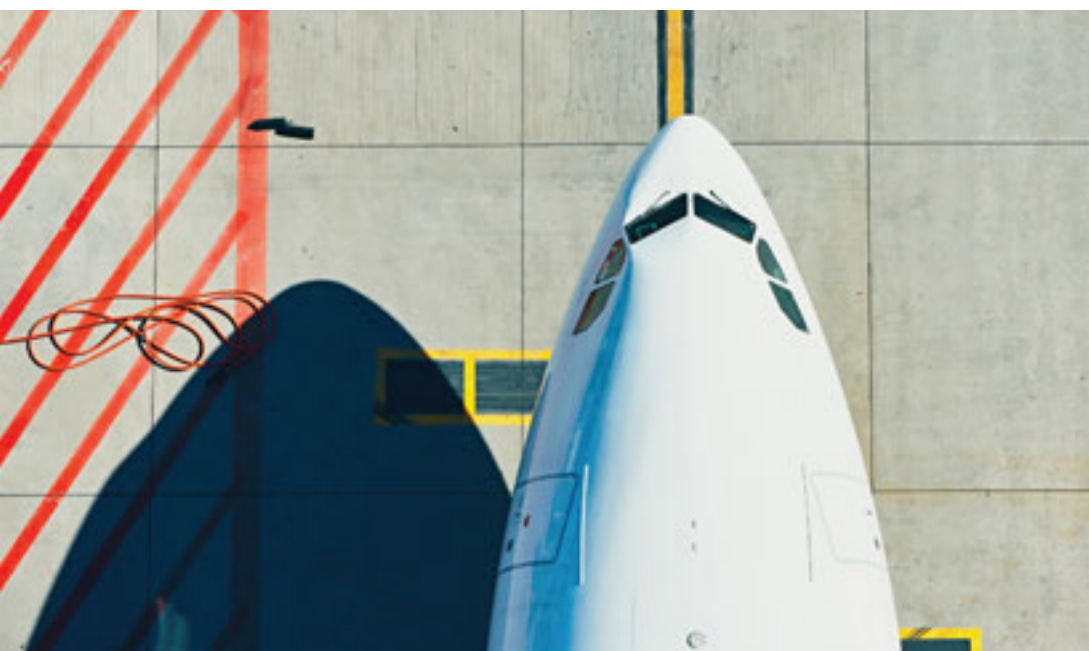
GREG FLEISCH/GETTY IMAGES

## Omnibus Spending Bill Retains ACEC "Buy American" Language

The recently passed F.Y. 2018 Omnibus appropriations bill includes ACEC-requested language adopted in the House and Senate that urges the U.S. Agency for International Development (USAID) to "increase the use of United States professional engineers and architects in the design, build and oversight of construction projects funded by this act."

The bill also directs the agency to report on progress made to correct problems cited in a 2014 construction assessment report, which highlighted, among other issues, the lack of proper engineering oversight of agency construction projects.

The language in the spending package is the latest step in an ongoing effort by ACEC to require the agency to engage American engineering firms to support infrastructure projects abroad that are funded by U.S. tax dollars. The Council will continue to work closely with Congress this year on this issue, expanding beyond USAID to include the Millennium Challenge Corp.



JARONIR CHALABALA/EYEM/GETTY IMAGES



# ACEC Engages World Bank, GIF and EFCA

Members of ACEC's International Committee participated in recent meetings with the World Bank and the Global Infrastructure Facility (GIF) Advisory Council to provide engineering industry perspectives on successful project outcomes and risk reduction strategies.

Council members met with Joaquim Levy, GIF co-chair and World Bank managing director, stressing the need for using standard contract language, best practices documents and training programs to foster consistency and reduce risk on infrastructure projects around the world.

GIF is a partnership of governments, multilateral development banks, private sector investors and financiers that seeks to facilitate collaboration to better carry out complex infrastructure projects. ACEC is represented on the GIF Advisory Council to provide the engineering industry's perspective on how technical and performance risks can balance financial and insurance risks when assessing projects for investment.

Leaders of ACEC and the European Federation of Engineering Consultancy Associations (EFCA) signed a memorandum of understanding on April 17 to promote networking, information exchange and best practices. MOU signers included: ACEC President/CEO Dave Raymond, ACEC Chair Manish Kothari, former ACEC Chair Sergio "Satch" Pecori, EFCA President Kevin Rudden and EFCA General Secretary Jan van der Putten.



Joaquim Levy, GIF co-chair and World Bank managing director

## ISSUES ON THE MOVE

FAA Reauthorization

Tax Extenders

Project Streamlining Reforms

## WHAT'S NEXT

Senate action possible in June

Possible action before the end of the year

Pending aviation, water bills possible vehicles for reforms

## ACEC Recommendations Accepted in Federal MOU to Speed Up Project Reviews

Twelve federal departments and agencies signed a memorandum of understanding (MOU) on infrastructure project delivery that is largely consistent with recommendations ACEC submitted to the administration last year. Signatories include the U.S. Department of Transportation, Environmental Protection Agency, Department of the Interior, Department of Energy and U.S. Army Corps of Engineers.

Under the MOU, the agencies agree to work together under a designated lead agency to develop a single

permitting timetable with project milestones for preparing a single environmental impact statement and signing a single record of decision. Agencies committed to conducting all necessary reviews concurrently and adhering to the project timetable.

The MOU outlines the roles and responsibilities for the lead, cooperating and participating agencies, and sets expectations for preliminary project planning, scoping and concurrence points. The overall goal is a two-year deadline for permitting decisions.

## ACEC Urges Action on Tax Extenders, Technical Fix for P3 Projects

ACEC has asked the House Ways and Means Committee to support legislation that will extend several key tax code provisions that expired at the end of December 2017.

Those expired provisions include the Section 179D energy-efficient commercial buildings tax deduction, as well as the production tax credit for certain renewable resources such as biomass and geothermal.

ACEC supports a multiyear extension of these tax provisions so businesses can rely on them and plan effectively.

The Ways and Means Committee

held a hearing to review the measures in the context of the newly revised tax code. Committee leaders have publicly expressed interest in

eliminating most of the expired provisions following passage of the Tax Cuts and Jobs Act (TCJA). ACEC is advocating for their extension in the next tax legislation considered by Congress.

Separately, ACEC is working with a coalition of infrastructure groups to address an unintended consequence of the tax reform law on P3 projects. Prior to passage of the TCJA, businesses

could fully deduct interest expense. The new law limits the deductibility of interest to 30 percent of adjusted taxable income. However, P3 project companies are generally structured so they do not have significant income but often have high borrowing costs. The result will be significantly higher effective tax rates and costs associated with these projects.

The coalition is asking the Treasury Department to include P3 projects in the TCJA's real estate exception for the purposes of implementing the new law's limits on interest deductibility. If these regulations do not adequately address the problem, ACEC and coalition partners will approach Congress for a legislative solution.



DAVIDEISON/THINKSTOCK

## For More News

For weekly legislative news, visit ACEC's *Last Word* online at [www.acec.org](http://www.acec.org).



ACEC President/CEO  
Dave Raymond greets  
Convention guests at  
the Welcome Dinner.



# ENGAGING &

**N**early 1,500 ACEC members attended the Annual Convention held at the Marriott Wardman Park Hotel in Washington, D.C., in April.

Top public policy, industry and media leaders were highlights of the four-day event, which also included the 51st Engineering Excellence Awards Gala.

“This is my first time attending the Annual Convention in Washington, and the entire event was wonderful,” said Michael Brown, vice president, Inberg-Miller Engineers, Riverton, Wyoming.

“I really liked hearing updates on where we are on the major issues and how the political winds are blowing,” said Troy Bowers, executive vice president, Murraysmith, Portland, Oregon. “Seeing how elected officials respond to ACEC is a testament to how ACEC is making a difference for us.”

“This is the first time I have been to the EEA Gala,” said Jeffery Sockel of Benesch, Omaha, Nebraska, “and it was tremendous fun—wonderful projects and a tough competition.”





# INSIGHTFUL

GOP political strategist Steve Schmidt (left) listens as Fox News Channel host Tucker Carlson makes a point about the era of Trump.

## TUCKER CARLSON, STEVE SCHMIDT AND NATION'S "FRACTIOUS TIMES"

In a highly illuminating general session, Fox News host Tucker Carlson and Republican political strategist Steve Schmidt addressed "these fractious times in American politics."

On the nation's partisan divide, Carlson said, "President Trump did not get us here." Rather, his election was the logical progression of the "core problem that an ever-shrinking pool of people in this country is getting richer and more powerful," and those left behind wanted a voice, Carlson said.

Schmidt agreed. "There is a profound disconnect between elites and the people in this country," he said. He added that the trend toward identity politics exacerbates the damage. "No country becomes happier through tribalism," he said.

Addressing infrastructure, Carlson said the Trump administration made a mistake when it didn't address infrastructure early in Trump's term. "Politically, it is a winner," Carlson said. "Not doing so went against what the election was decided on—the very real concerns of middle America."



## KOTHARI SUCCEEDS PECORI AS ACEC CHAIR; NEW EXCOM INDUCTED

Sheladia Associates President and CEO Manish Kothari took the gavel as 2018-19 ACEC chair at the ACEC Convention, succeeding Sergio "Satch" Pecori of Hanson Professional Services, Inc.

New members of the Executive Committee are: Chair-elect Mitch Simpler, managing partner, Jaros, Baum & Bolles; Art Barrett, senior vice president, Gannett Fleming; Stephanie Hachem, senior vice president, Kimley-Horn and Associates; Keith Jackson, senior vice president, HNTB Corp.; and Jay Wolverton, president and CEO, Wolverton & Associates.

They join current ExCom members: Charlie Gozdziwski, executive chairman, Hardesty & Hanover; Keith London, president and CEO, Kennedy/Jenks Consultants; Gayle Roberts, president and CEO, Stanley Consultants; and ACEC President and CEO Dave Raymond. ACEC/Georgia Executive Director Michael "Sully" Sullivan will serve as the NAECE representative.



Outgoing ACEC Chairman Sergio "Satch" Pecori.



Incoming ACEC Chairman Manish Kothari.

## CEO PANEL SAYS ELECTRICAL GRID MODERNIZATION WILL PROVIDE PLENTY OF CHALLENGES AND OPPORTUNITIES

Member Firm CEOs at the ACEC Convention emphasized the need to modernize the nation's power grid.

"The grid as we know it was not established to handle the increasing variety of sources today," said POWER Engineers Chairman Jack Hand. "New grid-resilient projects will become increasingly popular and will provide fabulous opportunities for engineers."

Black & Veatch Chairman and CEO Steve Edwards said, "We are challenged with doing a better job of incorporating distributed energy to the grid. At the same time, it will mean the need for more transmission lines and more substations."

Kiewit Engineering President Dan Lumma said the instability of the grid will drive energy innovation. "The market is currently trying to catch up to advancing technology. Going forward, for example, we will not see renewable systems built without a significant battery storage component," he said.



Sarah Ladislaw (right) of the Energy and National Security Program at the Center for Strategic and International Studies moderates a panel on energy market challenges. From left: Dan Lumma, president, Kiewit Engineering; Jack Hand, chairman, POWER Engineers; and Steve Edwards, chairman and CEO, Black & Veatch.

## FHWA'S HENDRICKSON TELLS CONVENTION ATTENDEES THAT ADMINISTRATION INFRASTRUCTURE PROGRAM WILL "HAVE LIGHTER TOUCH"

Federal Highway Administration Acting Administrator Brandye Hendrickson told ACEC Convention-goers that the administration's \$1.5 trillion

infrastructure proposal calls for a "lighter federal touch and more private investment" but emphasized that "financially speaking, everything is on the table."

FHWA's current focus, she said, has been on "reducing the regulatory burden that has long delayed critical infrastructure projects."



FHWA Acting Administrator Brandye Hendrickson discusses the Trump administration's commitment to infrastructure funding.





U.S. Energy Department Under Secretary Paul Dabbar describes an expanding energy market and anticipated future opportunities for engineers.

### ENERGY UNDER SECRETARY: "SIGNIFICANT EXPANSION IN ENERGY INFRASTRUCTURE"

Energy Department Under Secretary Paul Dabbar told ACEC's Convention audience that the U.S. energy industry is thriving and is only going to get better.

"Opportunities to expand is very high for many energy processes, which means more jobs will become available as the industry continues to grow. That expansion will mean the need for more energy infrastructure," he said.

Dabbar pointed to significant growth and innovation in solar and wind efficiency, substantially reduced production costs in oil and natural gas, several new LNG terminals under construction and rapid advances in battery technology.

"Innovation is driving us forward," he said. "We are competing with innovation rather than price, and it is working."



EEA Gala host Kevin Nealon introduces a surprise video tribute to Dave Raymond by former longtime Gala host Ross Shafer.

### TRIBUTES FOR RAYMOND'S 20 YEARS AT HELM; SEARCH FOR NEW CEO ONGOING

ACEC members paid numerous tributes to ACEC President and CEO Dave Raymond's nearly 20-year "reign" at the Council with special recognition at various Convention functions, including the Board of Directors meeting, Opening General Session, Chairmen Emeritus Dinner, Engineering Excellence Awards Gala and the Coalition Leaders meeting.

At the Board of Directors meeting, ACEC Chair Sergio "Satch" Pecori announced that the conference room at ACEC National office will be named the David A. Raymond Board Room, with a commemorative plaque that recounts Raymond's achievements. Also, at the Board Meeting, as well as the Opening Reception and EEA Gala, Pecori presented various videos on Raymond's tenure.

Following the Convention, incoming ACEC Chair Manish Kothari held a surprise party for Raymond, with more than 100 attendees, including numerous past ACEC chairs and international guests.

Former ACEC Chair Gregs Thomopulos, who heads the search committee for Raymond's successor, updated the Board of Directors on the search process. After a selected candidate withdrew at the last moment, Thomopulos said the timeline is now to have a new candidate selected by the end of July, with onboarding in August. Raymond has agreed to extend his time in office while this process is underway.



## CONGRESSIONAL LEADERS BEMOAN LACK OF CONSISTENT TRANSPORTATION FUNDING

Agreeing on the need for federal transportation funding reform, four U.S. representatives said that the current structure of the Highway Trust Fund is unsustainable.

"We clearly have to modernize the Trust Fund and find an innovative way to transition to today's vehicles," said Elizabeth Esty, D-Conn., who suggested readjusting the new lower corporate tax rate and collecting repatriated money to fund an infrastructure bank.

John Faso, R-N.Y., said a user-fee system would be the most equitable way to pay for transportation and emphasized that any program must include those not paying gas taxes.

"Electric vehicles are not paying, and it is just not fair. Everyone has skin in this game," he said.

Rob Woodall, R-Ga., touted his state's recent infrastructure successes including a \$16.3 billion I-95 rebuild. "I honestly have not seen a big drive to create new revenue at the federal level," he said. "Lots of discussion, but not much after that."

Oregon Democrat Rep. Earl Blumenauer said he was just plain tired of just talk. "We are not stepping up. We need fewer studies, fewer hearings and more action," Blumenauer said. "The simple fact is you cannot base surface transportation on gallons of fuel consumed. The bottom of the Trust Fund paradigm is about to fall out."

Former Politico reporter and Axios co-founder Mike Allen (right) leads a discussion on the politics of infrastructure featuring U.S. Reps. (from left) John Faso, R-N.Y.; Elizabeth Esty, D-Conn.; Rob Woodall, R-Ga.; and Earl Blumenauer, D-Ore.

## ACEC/PAC CELEBRATES RECORD FUNDRAISING

ACEC/PAC set a record for total dollars raised during the 2018 Annual Convention and Legislative Summit—\$284,500. As a result, ACEC/PAC has surpassed \$460,000 in year-to-date receipts, keeping the PAC ahead of last year's record setting pace.

From the more than 1,300 tickets sold for the Spring Sweepstakes, **Harry Hughes** of Owl Creek Engineering, Thermopolis, Wyoming, won the grand prize of \$10,000; **Michael Jelen** of VHB, Silver Spring, Maryland, and **James Longest** of Beam, Longest and Neff, Indianapolis, each won \$5,000; and **Lee Cammack** of J-U-B Engineers, Kaysville, Utah, and **Tamre Passmore** of NOVA Engineering, Kennesaw, Georgia, won \$2,500 each.

There were ten \$1,000 winners: **David Bills** of Bills Engineering, Honolulu; **Roseline Bougher** of A.D. Marble, King of Prussia, Pennsylvania; **Harvey Floyd** of KCI Technologies, Sparks Glencoe, Maryland; **Chris Magaldi** of Thomas & Hutton, Mt. Pleasant, South Carolina; **Janice Marsters** of Hart Crowser, Honolulu; **John Nelson** of Wright-Pierce, Topsham, Maine; **Michael Planer** of PES Structural Engineers, Atlanta; **Thomas Sprehe** of KCI Technologies, Sparks Glencoe, Maryland; **Dick Wells** of Kleinfelder, Greensboro, North Carolina; and **Karen Wood** of HMB Professional Engineers, Frankfort, Kentucky.

ACEC/PAC, Parsons PAC and **Kevin Peterson** of P2S co-sponsored a fundraiser for U.S. Rep. Jeff Denham, R-Calif.

Congressman Bob Gibbs (center) meets with members of ACEC/Ohio during the Convention. From left: Matt Johnson, Palmer Engineering; Beth Easterday, executive director, ACEC/Ohio; Congressman Gibbs; Jim Kleingers, The Kleingers Group; and Rich Iafelice, CT Consultants.





## CONVENTION PANEL HIGHLIGHTS BENEFITS, LIMITATIONS OF P3S

Illinois Tollway Chairman Bob Schillerstrom said, “The world has changed. The days of going to Washington, D.C., to get funding are gone. We need to be looking at new ways of funding projects. We need to figure out how to bring in private-sector funds.”

P3s work better in bigger, more complicated projects, said Georgia DOT Commissioner Russell McMurry. “And they are best suited for projects with a revenue generating component,” he said. Georgia will soon be issuing a request for qualifications for a P3 project to install broadband along its interstate highways.

Beverly Swaim-Staley, president and CEO of Washington, D.C.’s Union Station

Redevelopment Corp. (and former Maryland DOT secretary), said, “Each P3 project is unique. You cannot think about them in a standardized way.” In addition to bringing in private sector funds, she said P3s “are a great way to bring innovation and experience into the project.” ■

Simon Santiago (left), a partner with the law firm Nossaman, spearheads a debate on the pros and cons of P3s that featured (from left) Russell McMurry, commissioner, Georgia DOT; Bob Schillerstrom, chairman, Illinois Tollway board of directors; and Beverly Swaim-Staley, president and CEO, Union Station (D.C.) Redevelopment Corp.



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# 2018

## ENGINEERING EXCELLENCE AWARD WINNERS

The 2018 Engineering Excellence Awards Gala—known as the Academy Awards of the engineering industry—showcased 146 projects from across the country and around the world at a black-tie event on April 17.

A panel of 35 judges representing a wide spectrum of built environment disciplines had selected 36 top winners—including 20 Honor Awards, 15 Grand Awards and a Grand Conceptor Award for the year's most outstanding engineering achievement.

Comedian and actor Kevin Nealon again hosted the Gala, which was attended by more than 600 members, guests and dignitaries.

ALAN SCHINDLER



Joe LoBuono (left), HDR director of major bridges, and WSP USA Senior Supervisory Engineer Roger Haight (right) react at the EEA Gala after their project Bayonne Bridge: Raising the Roadway was named the 2018 Grand Conceptor Award winner, signifying the year's most outstanding engineering achievement.





# 2018 Grand Conceptor Award

Bayonne Bridge: Raising the Roadway  
Bayonne, New Jersey & Staten Island, New York  
**HDR | WSP USA (Joint Venture)**  
New York, New York

Imaginative engineering delivered a new highway 64 feet above the highway it was to replace, all within the tight confines of the same arch bridge. The bridge's 151-foot navigation clearance was too low to accommodate the huge Panamax ships that will soon be plying the river, so the project increased the clearance by constructing a roadway above the existing one, which was then demolished. More than 4,000 tons of steel strengthening plates were needed to support the structure's temporary double-roadway condition during construction. Adding to the challenge, both the original roadway and the critical underlying shipping channel had to be kept open. In addition to increasing the vertical clearance, the bridge now has wider lanes, concrete medians, a shared-use path and can incorporate a light-rail line in the future.







**150 North Riverside**  
Chicago, Illinois  
**Magnusson Klemencic  
Associates**  
Seattle, Washington

A dazzling example of superstructure design, this new 54-story office building has transformed a previously barren, undeveloped site into a vibrant public complex. To overcome extremely tight site constraints, the project team developed a cutting-edge, blade core design that requires half the support pilings of a comparable building. At 750 feet, the 1.25-million-square-foot tower balances atop a base that is only 39 feet wide. Twelve water tanks at the top of the building contain 700 tons of water to help minimize building sway in strong wind conditions. A precast, prestressed concrete lid atop nearby railroad tracks provides space for a new public park featuring an amphitheater, pedestrian pathways and retail venues.







**Tempe Town Lake  
Downstream Dam  
Replacement**  
Tempe, Arizona  
Gannett Fleming  
Phoenix, Arizona

As a shining example of innovative dam design, the new 880-foot-long dam is one of the largest hydraulically controlled hinged steel-gate dams of its kind. The dam replaces a previous structure that failed, draining 1 billion gallons of water from the lake within 24 hours. The dam has eight hydraulically operated steel gates, each weighing approximately 300,000 pounds. The new dam allows the river to flow during high-water events to prevent upstream flooding and maintains the lake's key role in the city's economy. Expected to last at least 50 years, this essential infrastructure ensures that Tempe Town Lake will remain a destination for recreation and center of economic development.



**Second Avenue Subway—Phase 1**  
New York, New York  
AECOM & Arup (JV), New York, New York

The 1.8-mile project is the first major expansion of New York's subway system in 50 years, with three new stations at 72nd, 86th and 96th streets, and upgrades to the existing 63rd Street station. The stations rank among North America's largest underground excavations, at nearly 64 feet wide, 100 feet deep and 1,600 feet long. The project team overcame the challenges of building below some of the world's most congested infrastructure and dealing with difficult ground conditions. The \$4.45 billion project was completed on time and within budget—a major accomplishment for a project of this scope and size.





▲  
**Dixie Drain Phosphorus  
Removal Facility**

Parma, Idaho

**Brown and Caldwell**

Boise, Idaho

An addition to the existing Dixie Drain—an agricultural and groundwater drain that discharges into the Boise River—has led to 50 percent more phosphorus being removed from treated water before it's discharged into the river, which is a key provider of economic, aesthetic, wildlife and recreational benefits. The new facility processes up to 130 million gallons of ground and surface water daily while removing 140 pounds of phosphorus per day. The result is a cost-effective solution, resulting in significantly greater water quality and a model for other areas facing similar pollutant removal concerns.

▶  
**University of Massachusetts  
Design Building**

Amherst, Massachusetts

**Simpson Gumpertz & Heger**

Waltham, Massachusetts

One of the largest timber-framed buildings in the United States, the new UMass Design Building includes glue-laminated beams and columns and a cross-laminated timber composite with a concrete topping slab for the flooring. Combined, they provide the strength and the ductility needed to meet building code and user requirements. The structure also incorporates several sustainable design features, including rainwater retention systems, a green roof and natural lighting, while encouraging the use of timber framing for other large building applications.







## Basin Creek Water Treatment Plant

Butte, Montana

HDR; Robert Peccia & Associates

Missoula, Montana

The new \$30 million treatment plant is the first in the United States to use a cutting-edge ceramic membrane filtration system. Common in Japan and Europe, ceramic is more durable and chemical resistant, and has a longer life expectancy than commonly used polymer filters. Ceramic filters also waste significantly less water, resulting in 99.95 percent backwash recovery, well above the standard 85 to 95 percent recovery rate of conventional treatment technology. The treatment plant can process up to 7 million gallons of water per day and employs gravity to reduce energy consumption and make it unnecessary to pump water to the distribution system, except in instances of extreme demand.





### **35th Street Pedestrian Bridge**

Chicago, Illinois

**EXP**

Chicago, Illinois

The striking 620-foot-long structure is Chicago's longest pedestrian bridge and one of only a few mono-cable, self-anchored suspension bridges in the United States. Replacing a deteriorating structure that was inaccessible to those with physical disabilities, the new bridge provides an eye-catching crossing of Lake Shore Drive and Metra railroad tracks. It is anchored by a central pylon soaring more than 120 feet above Lake Shore Drive, with suspension cables anchored at the ends of the deck rather than in massive anchor blocks at abutments. The design also features a reverse horizontal curve to provide visitors with a panoramic view of the scenic lakefront area.



### **Crum Creek Viaduct** Swarthmore, Pennsylvania

**Figg Bridge Engineers**  
Exton, Pennsylvania

The new five-span, 735-foot-long steel girder structure replaced an outdated rail viaduct bridge over Crum Creek by being slid into place. Before closure of the obsolete 121-year-old bridge, the project team assembled the superstructure and precast deck adjacent to the existing bridge supported by straddle bents built under the older structure. During the 11-week shutdown, the project team demolished the old bridge and laterally slid the new structure across the pier caps and onto permanent bearings using hydraulic jacks. Installation of rail connections, catenary transmission lines and signals quickly followed. Busy commuter train service resumed as scheduled on a safer and more contemporary structure.







**Chicago Riverwalk**  
Chicago, Illinois  
**Benesch & Infrastructure  
Engineering**  
Chicago, Illinois

A testament to imaginative infrastructure design and construction, the new Chicago Riverwalk connects downtown with the Chicago River's natural amenities. The Riverwalk is supported by an innovative system of canopied piers, or "underbridges," that connect the walkway at six historic bridges. The precast walkways were installed atop drilled shafts that extend 70 feet beneath the water's surface. New build-out sections ranging from 25 to 50 feet between each bridge provide diverse attractions and gathering spaces for people to enjoy the river and the enhancements to Chicago's second shoreline.





▲  
**Bahá'í Temple of  
South America**  
Santiago, Chile  
**Simpson Gumpertz & Heger**  
Waltham, Massachusetts

Envisioned to “capture the sunlight and be transformed by it” during daylight and “glow with a dreamlike serenity” at night, the breathtaking Bahá'í temple more than accomplished its goals. Located in the foothills of the Andes Mountains outside of Santiago, Chile, the temple's superstructure is composed of nine translucent wings. The underlying structures are free-form tubular space trusses rising to a top ring at the structure's oculus. The space trusses are clad on the outside with borosilicate glass panels and on the interior with Portuguese marble panels. The project team constructed this complex, free-flowing design in a remote site with high seismic activity, creating one of the world's most breathtaking centers of worship.







**Lotte World Tower**  
Seoul, South Korea  
**Syska Hennessy**  
**Group**  
New York, New York

Ranked as the world's fifth-tallest building and the tallest in South Korea, the Lotte World Tower is also a technical marvel. The 1,821-foot-tall, 123-story state-of-the-art superstructure features geothermal, photovoltaics and windspire turbines to supplement conventional power with renewable energy sources. High-tech controls monitor and adjust power usage, external shading and dimming systems to fine-tune interior temperatures and light levels. The 3.2-million-square-foot tower features a luxury hotel, a shopping mall, offices, residences and entertainment venues.



**Augmentation & Relief Sewer**  
Columbus, Ohio  
**DLZ Corporation**, Columbus, Ohio

The new relief sewer reduces combined sewer overflows in the rapidly growing Columbus downtown area and brings the city into compliance with new clean water regulations. Nearly 2 billion gallons of combined sewage that previously overflowed directly to the Scioto River each year now flows through a new 23,000-foot-long, 20-foot-diameter tunnel for proper treatment at a nearby treatment plant. The additional storage volume eliminates the need for future above-ground structures and treatment systems, saving the city as much as \$175 million.



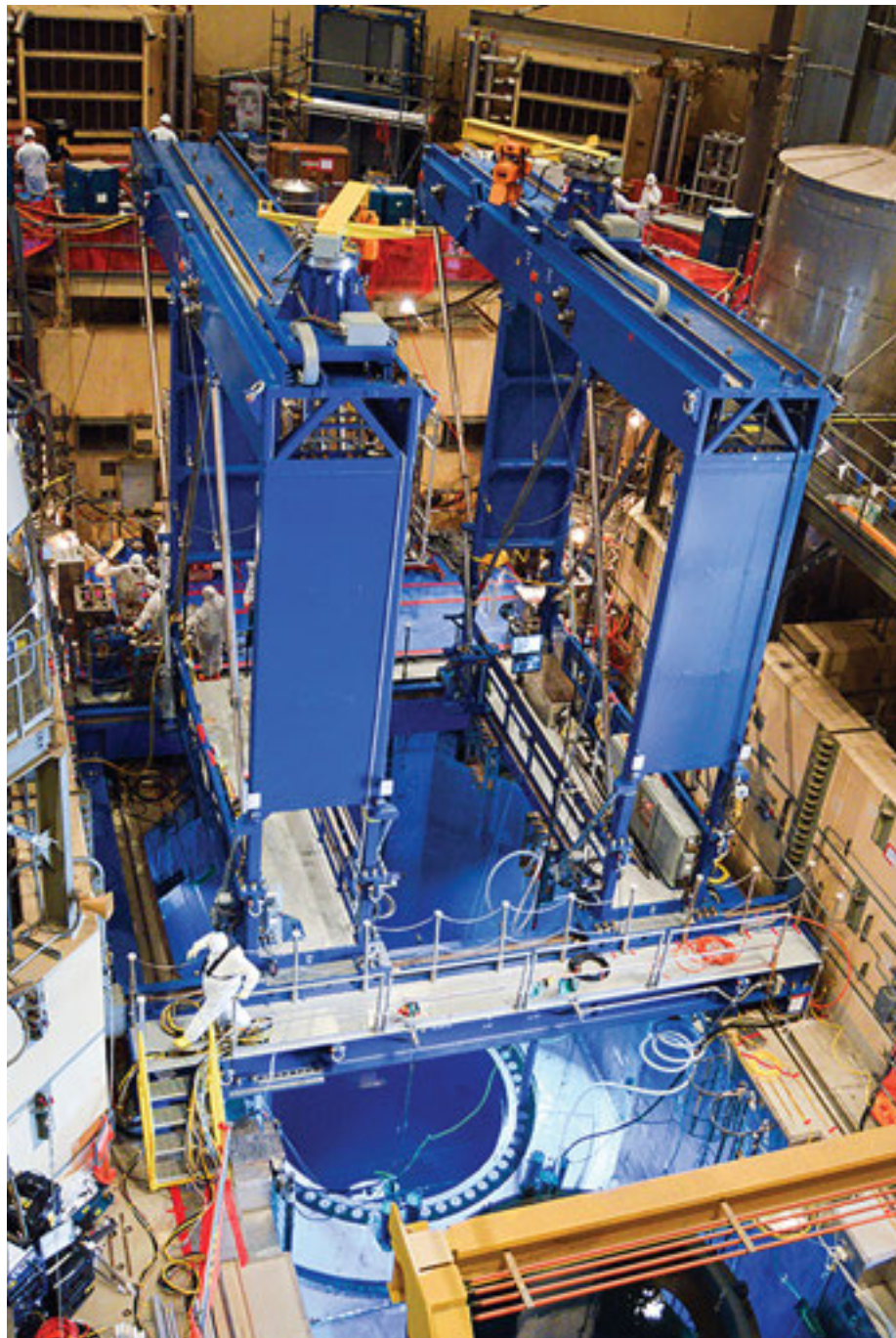


▲  
**Washington Wabash  
Elevated Train Station**  
Chicago, Illinois  
EXP  
Chicago, Illinois

The striking new elevated train station features canopies of skeletal steel and faceted glass that undulate along Chicago's Jewelers Row while producing a dynamic play of light on the platform and street below. The project team implemented unique construction phasing and sequencing to build the station in a dense urban environment, maintain active transit service in a heavily traveled corridor, and minimize the impact on vehicular and pedestrian traffic. The station serves as a beautiful gateway to downtown Chicago attractions while enhancing perceptions of public transportation.







### **Water Jet Peening Bridge Crane System** Burlington, Kansas Merrick & Company Greenwood Village, Colorado

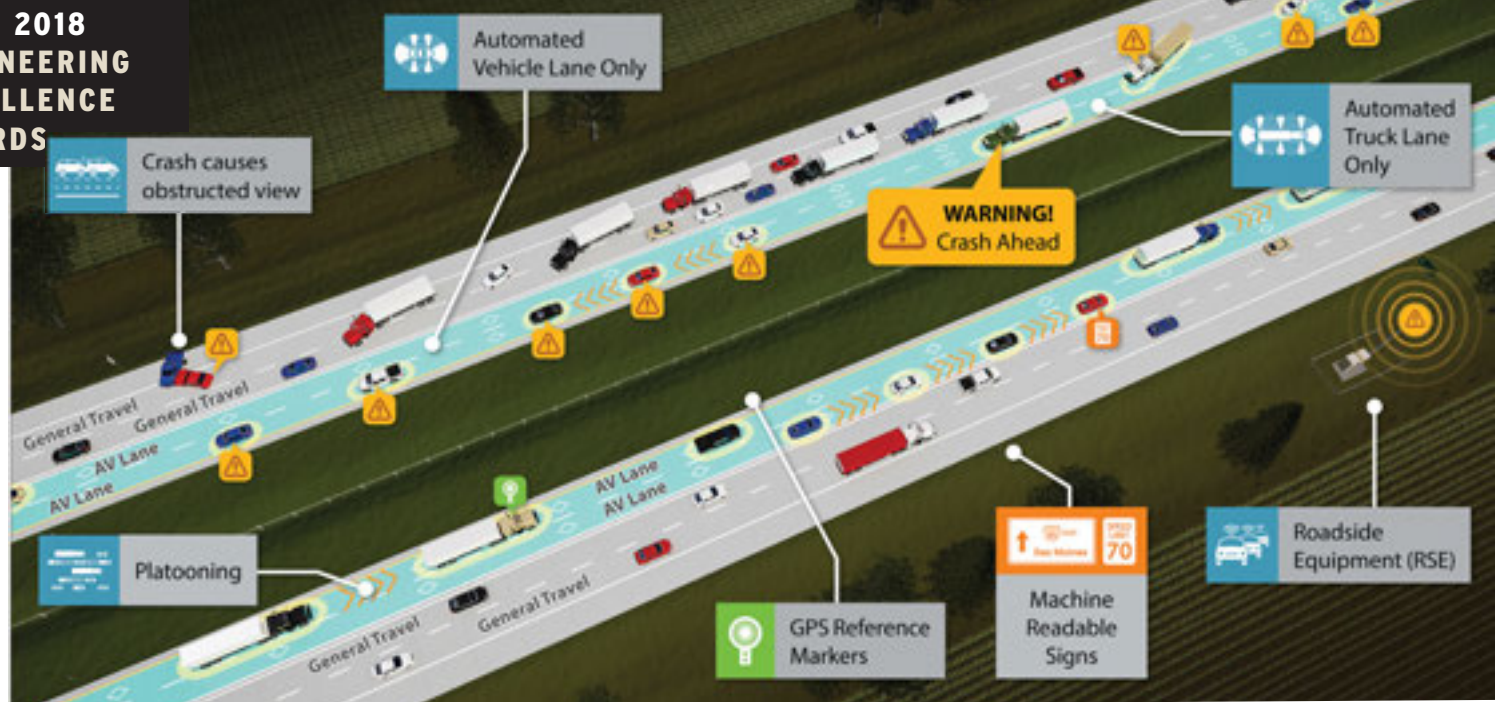
A unique specialty crane deploys a process called Water Jet Peening (WJP), which extends the operational life of key nuclear reactor components by preventing corrosion and cracking. Weighing more than 179,000 pounds and operated by remote control, the specialty crane—which can hoist 3 tons—lifts, lowers, positions and supports two WJP tools—each the size of a small car—into the reactor vessel during an outage. The process uses only water to relieve stresses thus eliminating the potential for any foreign materials entering the reactor pool. The combined crane and WJP process reduces maintenance and operation costs, shortens outage durations, extends reactor life and minimizes risk to both the reactor vessel and plant personnel.



### **I-91 Brattleboro Bridge Improvements** Brattleboro, Vermont Figg Bridge Engineers Exton, Pennsylvania

Soaring 100 feet above the West River, the new three-span, 1,036-foot-long arching bridge provides a dynamic gateway to Vermont. The innovative design includes two “quad wall” piers made of concrete columns that curve symmetrically outward in two directions. The quad wall system provides stability and allows the segmental construction of the bridge superstructure to be assembled from above without temporary falsework in the river. The bridge’s landmark aesthetics and innovative structural design will safely and reliably serve regional motorists for at least 150 years.





▲  
**Interstate 80  
Automated Corridors  
Planning Study**  
Statewide, Iowa  
HDR  
Omaha, Nebraska

Advanced engineering helped the state of Iowa align its future transportation strategy to correspond more effectively with rapidly progressing transportation technologies, such as the growing use of autonomous vehicles. The project team analyzed a 300-mile portion of I-80—one of the state's most critical east-west links—to determine design and operational requirements to preserve and enhance safety, mobility and travel-time reliability. The study identified strategies for balancing mobility and access, along with designing for future needs, and right-sizing the corridor. Study results will give the state added flexibility for incorporating transportation technologies in the future.



▲  
**Interdisciplinary Science and  
Engineering Complex**  
Boston, Massachusetts  
Arup  
Boston, Massachusetts

A former brownfield site is home to a new science facility that affirms Northeastern University's status as a premier research institution. The 234,000-square-foot Interdisciplinary Science and Engineering Complex houses four research disciplines—engineering, health sciences, basic sciences and computer science. The facility far surpasses current standards for energy efficiency—a difficult goal for laboratories, which typically require significant energy to ensure precise, consistent conditions for research. The complex achieves 33 percent energy-cost savings and 75 percent energy savings compared with typical laboratories.







**The Bridge at Cornell Tech**  
 New York, New York  
**Thornton Tomasetti;**  
**Weiss/Manfredi | Turner**  
**Construction**  
 New York, New York

The six-story, 240,000-square-foot building blends Cornell Tech academic facilities with offices of private technology firms to more effectively “bridge” educational and private technology sectors and improve collaboration. The bridge features two separate towers, connected at each floor by a central causeway, which provide spectacular views of midtown Manhattan and Long Island City. The glass facade exposes the building’s unique structural system, which allows the upper five stories to cantilever up to 80 feet above the landscaped campus, reflecting Cornell Tech’s aspirational and innovative mission in striking fashion.



**Davis Barracks, U.S. Military Academy**  
 West Point, New York  
**Clark Nexsen**  
 Virginia Beach, Virginia

The design of a new military barracks—the first new residential facility built at West Point since 1972—raises the standard for the next generation of military housing. The six-story, 287,000-square-foot facility houses up to 975 cadets and features innovative building systems that use only half the energy of a comparable structure. Advances include a 100 percent solar-heated hot water system and radiant floor heating and cooling providing 50 percent savings in energy consumption. Integrated with its neighboring buildings in a unified style, scale and form, the barracks support West Point’s goal of a net-zero energy campus.



**Olin Library Transformation**  
 St. Louis, Missouri  
**Alper Audi & Geotechnology, Inc.**  
 St. Louis, Missouri

The historic campus library needed additional space for its special collections and rare traveling exhibits. Full facility replacement was not possible. The most feasible option was to expand the 50-year-old building downward 30 feet. The project team crafted an innovative temporary steel shoring system to support upper floors while piers were removed and replaced. The library remained in use throughout the excavation and subsequent phases of the construction.





▲ **California Incline Bridge & Idaho Avenue Pedestrian Overcrossing**  
Santa Monica, California  
**T.Y. Lin International**  
San Diego, California

A picturesque new 750-foot-long bridge now carries vehicles, pedestrians and bicyclists from atop the bluff slopes of Pacific Palisades Park down to the Pacific Coast Highway near Santa Monica State Beach. The California Incline Bridge is designed to withstand the site's corrosive marine environment and high seismic demands, including up to 20 feet of potential bluff erosion that could occur over its life span. The Idaho Avenue Pedestrian Overcrossing is an aesthetic, curving structure with a V-shaped pier that emerges from the historic Idaho Trail and spirals down to connect to a multiuse bicycle and pedestrian path.



▲ **Governors Island Park and Public Space**  
New York, New York  
**Hart Crowser**  
Seattle, Washington

The languishing landscape on Governors Island has been transformed into an exciting new park destination for New York City. Since 2012, the 10-acre island near lower Manhattan had been a dumping ground for construction fill dirt from a new subway line. The project team creatively converted mounds of fill dirt into steep man-made hills that soar approximately 80 feet above the nearby harbor. Innovative soil reinforcement and specialty surface elements help maintain slopes and promote protective vegetation. More than a million people visit the island annually to enjoy unobstructed views of the Statue of Liberty, the New York City skyline and the Brooklyn Bridge—all from a height similar to an eight-story building.

▲ **Lake View Dual Zone Reservoir**  
Madison, Wisconsin  
**Short Elliott Hendrickson**  
La Crosse, Wisconsin

A complex new water supply storage tower features two separate storage tanks within a single reservoir structure to uniquely accommodate two supply zones and two pressure levels. The system provides storage of 300,000 gallons of water for one pressure zone and 1 million gallons of water for the other. The project required the demolition of a 55,000-gallon water tower, a process that was complicated by the proximity of a busy airport, a historically significant building and multiple cellular communications systems. Now seamlessly integrated into the environment, the unique dual-zone water tower will serve Madison for more than 100 years.





**Meriden Green**  
Meriden, Connecticut  
**Milone & MacBroom**  
Cheshire, Connecticut

Creative engineering transformed a long-existing flood zone into a vibrant catalyst for Meriden's downtown economic revival. The project team repurposed a long-closed shopping mall and parking lot—which also was a major contributor to flooding problems—into a new centrally located urban open space that doubles as a flood storage area. The conversion also restored 1,700 linear feet of once-buried Harbor Brook, creating a new, more natural channel and floodplain. The site now includes an outdoor amphitheater, a naturally flowing waterway, accessible walkways and an expansive great lawn for hosting seasonal events.



**New York Harbor Water Siphon**  
New York, New York  
**Mott MacDonald & CDM Smith**  
Iselin, New Jersey

Dredging deeper channels in New York Harbor to accommodate the huge Panamax ships in the Port of New York and New Jersey threatened two critical water mains, called siphons, that deliver drinking water to Staten Island. The project team incorporated a 2-mile-long, 72-inch diameter steel siphon inside a tunnel bored at more than 100 feet beneath the Hudson River, preserving the water supply and allowing dredging to proceed. It prepared the nation's third-largest port for the next generation of cargo mega-ships.





▲  
**Division 14 Rail  
Operations and  
Maintenance  
Facility**  
Los Angeles,  
California  
**HDR & Maintenance  
Design Group**  
Pasadena, California

A new state-of-the-art maintenance facility supports the latest extension of the Expo light-rail line, which provides service from Los Angeles to Santa Monica. Within a constrained site of less than 10 acres, the project team delivered a facility that provides a multitude of cutting-edge enhancements. It features a complete track network for rail car storage and maintenance, six service and inspection positions with upper- and lower-level work platforms, mechanical and electronics shops, and room for administration offices, operations and training. Early collaboration with residents mitigated issues regarding noise, vibration, safety and aesthetics, so the facility seamlessly blends into its surroundings.



▲  
**Biosolids Dryer Facility**  
Detroit, Michigan  
**Wade Trim Associates & NEFCO**  
Detroit, Michigan

As the largest of its kind in North America, the new 47,500-square-foot facility provides a sustainable alternative to the incineration and landfilling of biosolids produced during the wastewater treatment process. The system consistently produces high-grade biosolids that can be safely sold for agricultural and landscaping uses. The facility also features advanced air pollution, noise and odor control systems that reduce impacts on adjacent areas. Completed \$8 million under budget, the facility is on track to pay for itself in less than nine years through operations and maintenance savings.







**St. Croix Crossing**  
Oak Park Heights, Minnesota, and  
St. Joseph, Wisconsin  
**HDR - COWI**  
Minneapolis, Minnesota

The nation's longest extradosed bridge replaces a historic but outdated vertical-lift bridge while providing a blueprint for integrating major new infrastructure into a sensitive natural setting. To address environmental concerns, the project team optimized its mile-long, structurally complex design by eliminating two towers from the water and adding piers that resembled reeds and cattails. Extreme care was needed to prevent disturbances to nearby bald eagle nests, and to relocate mussels and endangered flowers. The new bridge reduces congestion and is a model for environmental stewardship.



**Dallas Horseshoe Design-Build**  
Dallas, Texas  
**WSP USA**  
Dallas, Texas

This massive new highway infrastructure in downtown Dallas replaces a collection of severely deteriorated highways, bridges and support components dating back to the 1950s. The four-year project includes construction of more than 73 lane-miles of new highway, 37 conventional bridges, more than 60 retaining walls and two major long-span river crossing bridges. All lanes of traffic were preserved throughout construction, with freeway closures conducted overnight to minimize inconveniences to travelers. Despite multiple lengthy rainstorms and floods that forced temporary halts to construction, the project was completed on schedule and on budget.



**South 200th Link Extension**  
Seattle/Tacoma, Washington  
**HDR**  
Bellevue, Washington

The extension of Seattle's popular transit system adds 1.6 miles of elevated rail line from Sea-Tac Airport to downtown and features the Northwest's first net-zero light-rail station. The new station includes solar reflectance roofing and photovoltaic arrays to offset electrical demand. The project also includes street improvements, bicycle and pedestrian access, transit-oriented development sites and public art. The light-rail extension will reduce nearly 26 million vehicle miles traveled annually, saving well over a million gallons of gasoline and eradicating more than 6,000 tons of greenhouse gases.





▲  
**Union Station Western  
Expansion**  
Kansas City, Missouri  
**Burns & McDonnell**  
Kansas City, Missouri

The center of civic and commercial life early in the 20th century, Kansas City's 1914-era Union Station needed a massive upgrade. The project team's solutions included a new vehicular and pedestrian bridge that for the first time connects the main building directly to an adjacent parking garage, a semicircular pedestrian plaza, a raised and wide pedestrian walkway to the building and a new 90,000-plus-square-foot outdoor event space for concerts, festivals and other large events. The project succeeded in both renovating Union Station for the 21st century and restoring its place as a first-class regional transportation hub.

►  
**The Left Overloop**  
Lexington, Kentucky  
**Qk4**  
Louisville, Kentucky

Innovative redesign eliminated a treacherous intersection where traffic accidents occurred daily in the heart of Kentucky's scenic horse farm region. Constrained by nearby land belonging to historic Calumet Farm and the Keeneland Race Course, the intersection included two precarious curves that had become more hazardous over time. Installing traffic lights was deemed too obtrusive, and multiple flyovers were too expensive.

The project team instead incorporated a first-of-its-kind "left overloop," which realigned the interchange's existing right turn loop into a left-turn overpass. The ramp eliminated the traffic hazard at significantly less cost than full reconstruction while also meeting the region's aesthetic concerns.

◀  
**Space Launch System Test Stands**  
Huntsville, Alabama  
**Merrick & Company**  
Decatur, Georgia

Groundbreaking engineering has yielded two new launch stands critical for propulsion tank testing prior to spaceflight. To validate that a rocket's liquid hydrogen and liquid oxygen fuel tanks can handle the thrust loads and stresses of launch and travel, the project team custom-designed 215-foot and 85-foot-tall test stands and associated substructures that can withstand millions of pounds of thrust under a variety of test scenarios. Unlike other similar structures worldwide, these new test stands can also be relocated or reconfigured as propulsion system technology evolves.







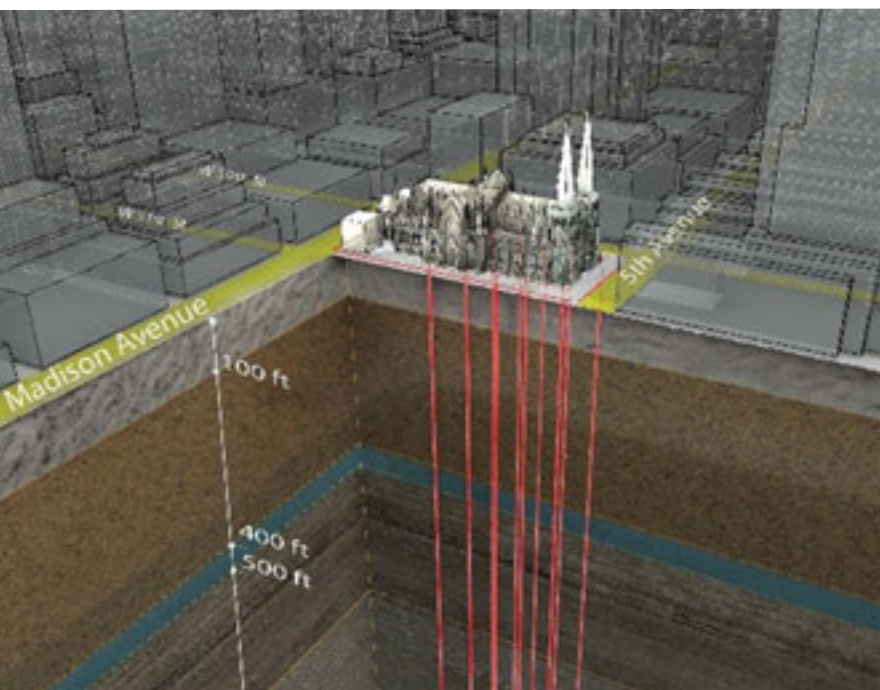
## **Marshalltown Generating Station**

Marshalltown, Iowa

**HDR**

Ann Arbor, Michigan

The new 650-megawatt generating station uses state-of-the-art gas turbine technology to power more than half a million homes and businesses at a cost—\$645 million—that is only half that of a comparable coal-fired facility. The system also significantly reduces carbon dioxide, nitrogen oxide, sulfur dioxide and mercury emissions compared with traditional coal-fired plants. The new station requires 90 percent less water supply than older natural gas units. It is the first facility in Iowa to receive the Envision Platinum Award for excellence in sustainability design from the Institute for Sustainable Infrastructure.



## **St. Patrick's Cathedral Geothermal Heating & Cooling System**

New York, New York

**P.W. Grosser Consulting & Landmark  
Facilities Group**

Bohemia, New York

The venerable New York City landmark's energy costs have been cut 25 percent by tapping into the earth's natural heat. Ten geothermal wells were drilled from the terrace level to an average depth of 1,650 feet to power the new chilled and hot water piping distribution system. Existing hot water radiators were replaced with fan-coil units, while ornamental enclosures were re-used to blend the new technology into existing building interiors. The city's largest geothermal system heats and cools the cathedral, along with the Parish House, Rectory and Cardinal's Residence but is so compact that it is virtually invisible to the public.

FIRM NAME	PROJECT NAME	FIRM NAME	PROJECT NAME
<b>ACEC/ALABAMA</b>		<b>ACEC/CONNECTICUT</b>	
CERM	Manufactured Gas Plant Remediation Project	Milone & MacBroom	Meriden Green
GARVER	Wastewater Treatment Plant Improvements	<b>ACEC/FLORIDA</b>	
Larry E. Speaks & Associates	Retrofitting a Dormant Mall	DRMP	Auxiliary Airfield Surveying and Mapping Services
<b>ACEC/ALASKA - C/O BBFM ENGINEERS, INC.</b>		HDR	I-75 at University Parkway
HDR	Strategic Management Plans	Kimley-Horn	Divergent Diamond Interchange
<b>ACEC/ARIZONA</b>			The Ballpark of the Palm Beaches
Gannett Fleming	Tempe Town Lake Downstream Dam Replacement	<b>ACEC/GEORGIA</b>	
GHD	Bell Road Force Main Improvements	Atkins North America & Arcadis (JV)	North Avenue Smart Corridor
<b>ACEC/CALIFORNIA</b>		Kimley-Horn	SunTrust Park and the Battery Atlanta
Arup	The Rainbow Bridge at Seaside Way	Merrick & Company	Space Launch System Test Stands
Burns & McDonnell	Big Canyon Restoration and Water Quality Improvements	<b>ACEC/IDAHO</b>	
HDR & Maintenance Design Group	Division 14 Rail Operations and Maintenance Facility	Brown and Caldwell	Dixie Drain Phosphorus Removal Facility
Kjeldsen, Sinnock & Neudeck	Mule Creek State Prison Infill Complex	POWER Engineers	Pomona Energy Storage Facility
Michael Baker International	I-5/La Novia Roundabout	<b>ACEC/ILLINOIS</b>	
T.Y. Lin International	California Incline Bridge & Idaho Avenue Pedestrian Overcrossing	Baxter & Woodman	Wastewater Treatment Plant Combined Heat & Power Improvements
<b>ACEC/COLORADO</b>		Benesch & Infrastructure Engineering	Chicago Riverwalk
AECOM	Biotreatment Plant for Contaminated Soil	Crawford, Murphy & Tilly and Larson & Darby	Aircraft Maintenance and Overhaul Facility
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			I-90 Rebuilding and Widening
		<b>ACEC/INDIANA</b>	
		HNTB	Southport Wastewater Treatment Plant Expansion
		Jacobs Engineering Group	Ohio River Bridges
		Jacobs Engineering Group	Downtown Crossing
		Lochmueller Group	Ohio River Bridges
			East End Crossing
			I-69 Section 4 Mitigation Plan
		<b>ACEC/IOWA</b>	
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Qk4	East Campus Roundabout & Gateway	<b>ACEC/NEW YORK</b>	
Qk4	The Left Overloop	AECOM & Arup (JV)	Second Avenue Subway–Phase 1
<b>ACEC/MAINE</b>		AKF Group	Zaha Hadid, 520 West 28th Street
Hardesty & Hanover	Gut Bridge Replacement	Arup	The Chrysalis at Symphony Woods
<b>ACEC/MASSACHUSETTS</b>		Delta Engineers, Architects & Land Surveyors	Campus Master Systems Management and Virtual Models
Arup	Interdisciplinary Science Engineering Complex	Gannett Fleming	Bay Park Sewage Treatment Plant Improvements
CDM Smith	Turnpike All-Electronic Tolling System	Hardesty & Hanover	Van Wyck Expressway Improvements
Gannett Fleming	Springfield Railcar Assembly Facility	Hazen and Sawyer	Multi-Facility Residuals and Biosolids Master Plan
Nitsch Engineering	Johnson Building Renovation	HDR   WSP USA (JV)	Bayonne Bridge: Raising the Roadway
Simpson Gumpertz & Heger	Bahá'í Temple of South America	HNTB	Kosciuszko Bridge Replacement Phase 1
Simpson Gumpertz & Heger	University of Massachusetts Design Building	Jaros, Baum & Bolles	N.Y. University Langone Health Science Building
STV	Boston Landing Station	Langan Engineering & Environmental Services	1501 Voorhies Avenue
<b>ACEC/METROPOLITAN WASHINGTON</b>			
Alpha Corporation	Structural Investigation and Report		
Rummel, Klepper & Kahl	Anacostia Riverwalk Trail, Kenilworth Section		
Sheladia Associates	MGM National Harbor		
<b>ACEC/MICHIGAN</b>			
Benesch	I-96 at Cascade Road Diverging Diamond Interchange		
HDR; Progressive AE and Zachry Group (JV)	Holland Energy Park		
HNTB	U.S. 23 Flex Route		
Wade Trim Associates & NEFCO	Biosolids Dryer Facility		
<b>ACEC/MINNESOTA</b>			
American Engineering Testing and Ericksen Roed & Associates	Downtown East		
HDR – COWI	St. Croix Crossing		
HGA Architects and Engineers	United Methodist Church of the Resurrection Sanctuary		
Kimley-Horn	Terminal 1-Lindbergh Landside Expansion		
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<b>ACEC/MISSOURI</b>			
Alper Audi & Geotechnology, Inc.	Olin Library Transformation		
Burns & McDonnell	Union Station Western Expansion		
Crawford, Murphy & Tilly	Wastewater Treatment Plant Design-Build		
<b>ACEC/MONTANA</b>			
DJ&A, P.C.	South Reserve Pedestrian Bridge		
Great West Engineering	Water Treatment Plant Intake		
HDR	Capitol Interchange – Cedar Interchange		
HDR	Compressed Natural Gas Fueling Station		
HDR; Robert Peccia & Associates	Basin Creek Water Treatment Plant		
<b>ACEC/NEW JERSEY</b>			
Boswell Engineering	Patroon Island Bridge Rehabilitation		
Dewberry	Hudson River Feasibility Study		
Langan Engineering & Environmental Services	Accurate Box Headquarters Expansion		
Langan Engineering & Environmental Services	Cranbury Logistics Center		
Langan Engineering & Environmental Services	Dwight-Englewood School Improvements		
Mott MacDonald	Clinton Road Bridge Replacement		
WSP USA	Route 37 EB Mathis Bridge Rehabilitation		



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FIRM NAME	PROJECT NAME	FIRM NAME	PROJECT NAME
<b>ACEC/NEW YORK (cont.)</b> Mott MacDonald & CDM Smith P.W. Gresser Consulting & Landmark Facilities Group Stantec STV/Tishman & AECOM (JV) Syska Hennessy Group Syska Hennessy Group	New York Harbor Water Siphon St. Patrick's Cathedral Geothermal Heating & Cooling System Inner Loop East Transformation Moynihan Train Hall—Phase One Lotte World Tower World's First 3D-Printed Commercial Office Building The Bridge at Cornell Tech	Michael Baker International Michael Baker International STV	King Khalid Air Base Lower Hill Infrastructure Project Betsy Ross Bridge Interchange Reconstruction
Thornton Tomasetti; Weiss/Manfredi   Turner Construction WSP USA  WSP USA & HNTB (JV)	Inspection and Load Rating for Brooklyn-Queens Expressway Conversion to Open Road Tolling at RfK Bridge	<b>ACEC/SOUTH CAROLINA</b> HDR  Michael Baker International  SAM Companies  Thomas & Hutton	Road Evaluations Over Flood Damaged Dams Steeplechase Industrial Boulevard Extension South Main Street Streetscaping Improvements Program, Design & Construction Management, Volvo Industrial Site
<b>ACEC/NORTH CAROLINA</b> CDM Smith	McAlpine Creek Wastewater Plant CHP Improvements	<b>ACEC/TENNESSEE</b> AECOM	Gallatin Environmental Integrity Program
<b>ACEC/OHIO</b> DLZ Corporation Palmer Engineering	Augmentation & Relief Sewer U.S. 20 Bridge Replacement	<b>ACEC/TEXAS</b> GARVER  GARVER  Gunda Corporation  Jacobs Engineering Group KSA Engineers Parkhill, Smith & Cooper VRX Walter P Moore WSP USA	Army Radar Approach Control Renovation Wastewater System Master Plan and Modeling Project Levy Park 2.0 Reconstruction & Revitalization Combined Heat and Power Plant Whitehouse Dam Improvements Reverse Osmosis Plant 35Express Segment 3 Mosaic Stadium Dallas Horseshoe Design-Build
<b>ACEC/OKLAHOMA</b> GARVER  Mead & Hunt Tetra Tech	I-244 Multimodal Bridges Over Arkansas River Broken Bow Diversion Tunnel Chickasaw Nation "Inkana" Bridge	<b>ACEC/UTAH</b> HDR	Great Salt Lake Causeway Improvements
<b>ACEC/PENNSYLVANIA</b> Figg Bridge Engineers Figg Bridge Engineers	Crum Creek Viaduct I-91 Brattleboro Bridge Improvements	<b>ACEC/VIRGINIA</b> Clark Nexsen  Gannett Fleming HDR  WSP USA	Davis Barracks, U.S. Military Academy Norchester Pump Station Solving Industrial-Sized Wastewater Challenges, Phase 2 Dominion Boulevard Improvements
		<b>ACEC/WASHINGTON</b> COWI North America & Jacobs Engineering Group Hart Crowser HDR HDR Magnusson Klemencic Associates Parsons	Abraham Lincoln Bridge  Governors Island Park and Public Space Factoria Recycling and Transfer Station South 200th Link Extension Wells Hatchery Modernization 150 North Riverside Elliott Bay Seawall Project
		<b>ACEC/WISCONSIN</b> GRAEF  Mead & Hunt  Short Elliott Hendrickson Strand Associates	University of Wisconsin-Madison Memorial Union Water Utility Operations Center Improvements Lake View Dual Zone Reservoir Verona Road Reconstruction Stage 1



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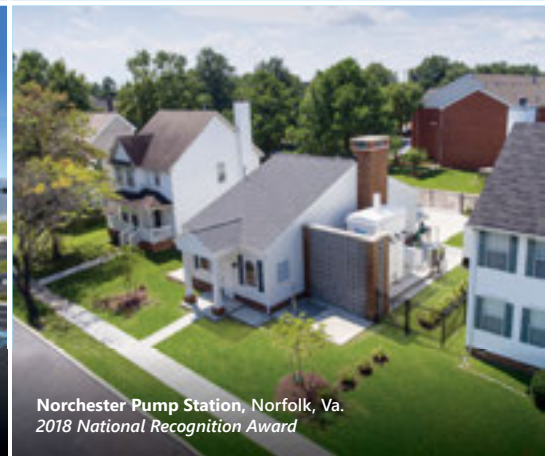
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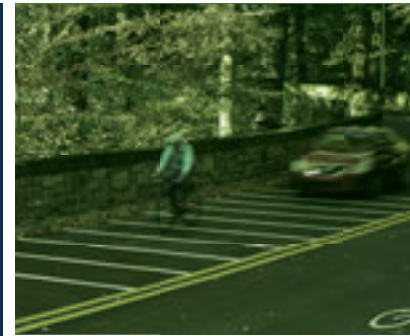


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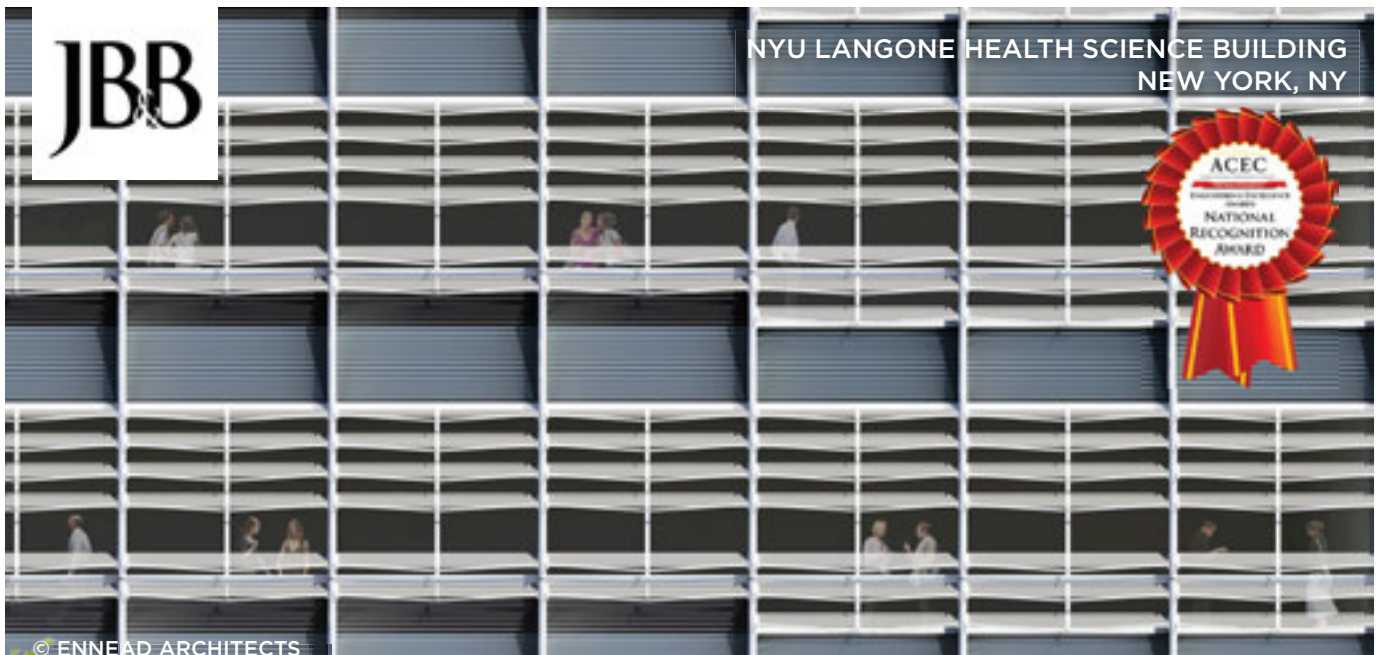
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# NAVIGATING A SMART FUTURE

Municipalities and even neighborhoods throughout the world are embracing “**smart city**” solutions that incorporate connectivity, data analytics and sustainability—resulting in new opportunities and challenges for engineering firms

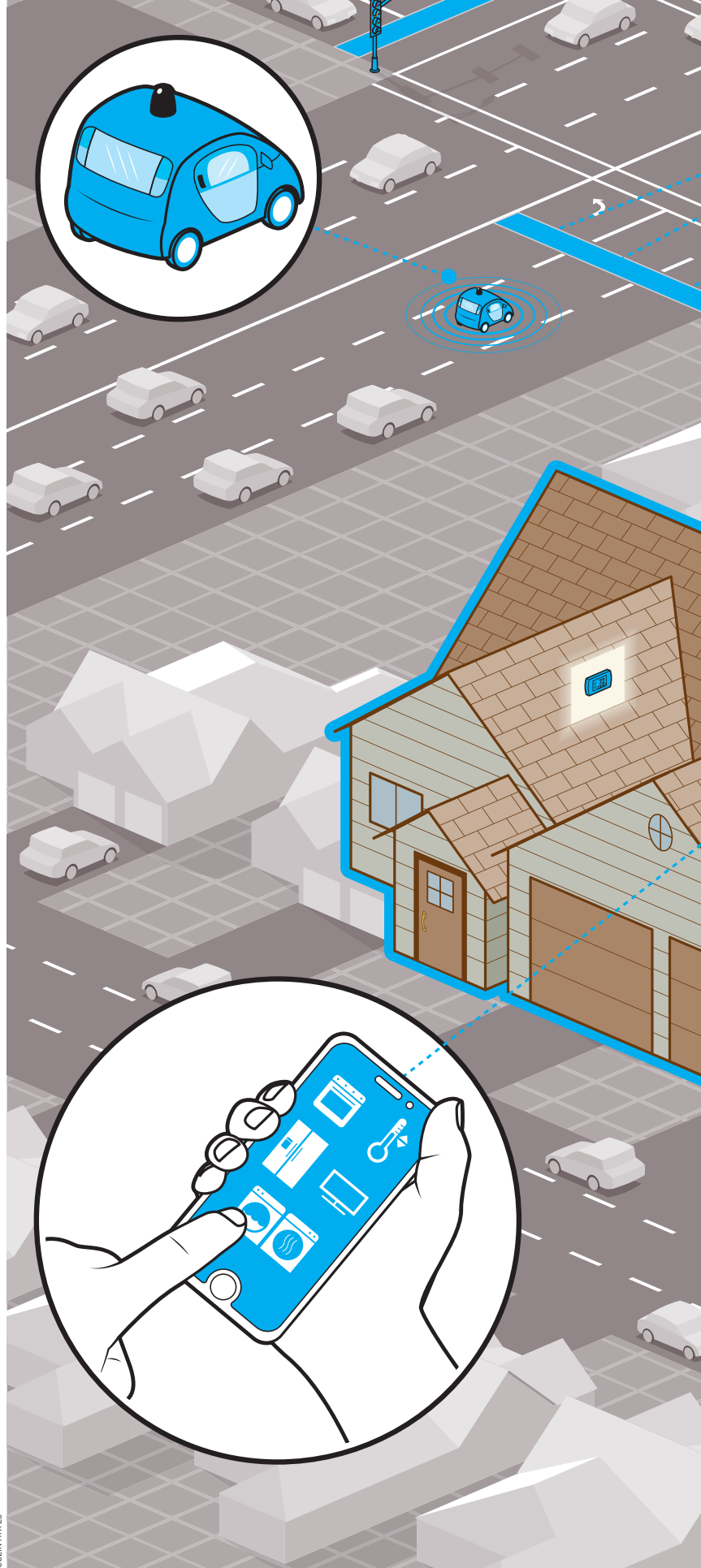
BY CALVIN HENNICK

While technology vendors paint a picture of autonomous vehicles seamlessly connecting to infrastructure, and IP-connected fire hydrants that report leaks, cities often struggle to implement even simpler smart solutions.

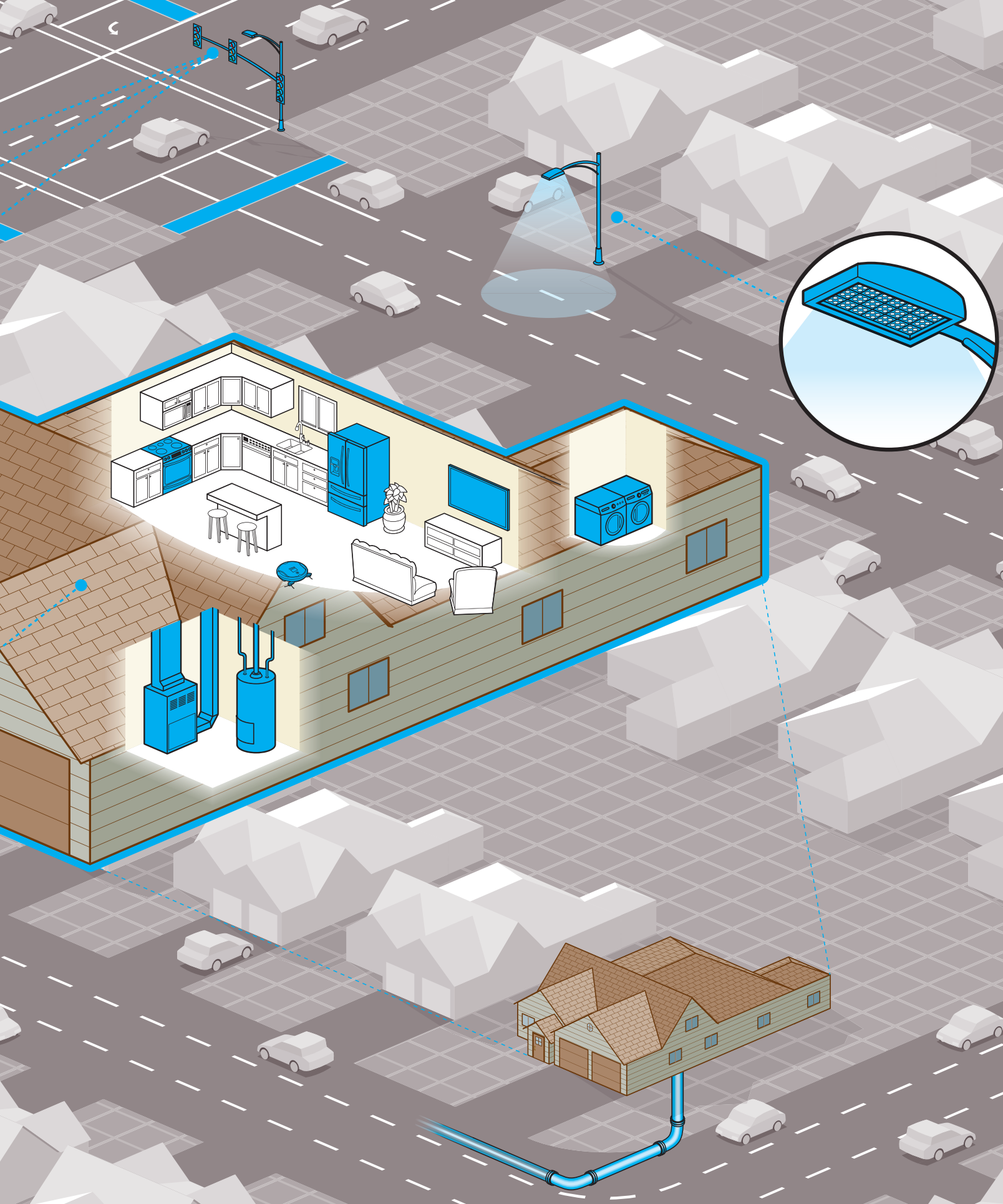
The rapidly shifting landscape can create confusion, but it also presents an opportunity for engineering firms, which have the expertise to help developers and public agencies craft workable real-world solutions that create both value in the present and capacity for the future.

In suburban Birmingham, Alabama, 62 homes in the Reynolds Landing neighborhood are connected to the first community-scale microgrid in the Southeast. The homes are all outfitted with connected and efficient appliances and HVAC and water heating systems, which homeowners control with apps on their smart devices. So far, the houses are up to 40 percent more efficient than most other new homes in the area.

The project is the result of a partnership between the utility Alabama Power, the developer Signature Homes, Oak Ridge National Laboratory and several technology vendors. Although the homes are expected to all be occupied by this summer—and all of the technologies used in the homes are available on the consumer market—the









Just outside Birmingham, Alabama, 62 homes in the Reynolds Landing neighborhood are connected to the first community-scale microgrid in the Southeast.

are undeniably changing the way cities and neighborhoods operate—or will have a significant impact in the near future.

“Everybody likes to talk about things that are ‘smart,’ but the joke is, if you put 100 engineers in a room, you’ll get 100 different definitions,” says Michael Beehler, a vice president at Burns & McDonnell. “If we’re going to talk about advancements in technology, we ought to be able to tell each other—and certainly tell laypeople—about the things we have a vision for.”

For Beehler, the phrase “smart city” connotes the interconnectedness of basic infrastructure, such as water and waste-

development is more of a crystal ball to help stakeholders see into the future than it is a model for the present.

“We really wanted to try to get an understanding of how policy changes and technology developments might change our business,” says Jim Leverette, a lead research engineer on the Smart Neighborhoods project team for Alabama Power. “We decided the best way to do that would be to work with partners to build a facility, to create as much of one possible future today, to see how it could change the way a utility serves customers in the real world. Without real customer interactions, you’re forced to rely on assumptions about how people will act, which is a huge variable.”

Alabama Power is far from the only organization scrambling to get a handle on the future. At conferences and in marketing materials, “smart” is the word of the day, especially for city- and neighborhood-scale development where data analytics and connected systems can yield huge efficiencies. But presently, a gap exists between rhetoric and reality.

“There are a lot of interdependencies between really big systems,” says Scott Stallard, a vice president at Black & Veatch. “Engineers, through our tools and processes, are helping people understand how to work across system boundaries.”

The engineering community needs to be active and knowledgeable and drive the conversation around smart cities, says Nancy E. Clanton, president of Clanton & Associates. “I can see some huge opportunities, and there’s no one better to delve into this than engineering firms,” Clanton says. “We’re innovators. Let’s innovate the city of the future.”

## GETTING ‘SMART’ STARTED

The “smart” label has been derided by critics who see it as a meaningless buzzword. But the term applies to several real measures that

water, transportation and mobility, energy, and communications. Typically, the term also applies to data analytics initiatives, as well as to efforts to make cities more sustainable and resilient.

Beehler acknowledges that more civic leaders are talking about smart solutions than implementing them. Part of the problem is that new solutions are constantly emerging, and the marketplace is still sorting out winners from losers as well as standardizing the frameworks for tying different technologies together.

“If we’re looking at technology that churns every 18 to 24 months, but we’re building infrastructure that’s going to last for 40 or 60 years, there’s a real challenge there,” he says.

Beehler says engineering firms should be designing systems today that have the capacity for added intelligence tomorrow. Engineering firms, he says, should also live by the motto, “Think big, start small, move fast.”

“We advocate for innovation neighborhoods that are no more than 1 square mile,” Beehler says. “You can roll things out on a very small scale and see how they work.”

The city of Pittsburgh recently put out a request for proposals to convert to LED streetlights, which Beehler calls the “low-hanging fruit” of smart city solutions. But, he notes, the city is also using the upgrade as an opportunity to build out a broadband network that will support untold future use cases.

That’s exactly the approach recommended by Clanton, whose firm specializes in illumination and has worked with cities including San Jose, San Diego, Anchorage, Seattle and Denver.

“All of your streetlights are potential nodes for a smart city,” Clanton says. “We’re proposing that cities run fiber to every single pole. Every time you’re tearing up or repaving a road, just make sure you get that fiber in. If you don’t know what you’re going to do with it yet, that’s OK.”



“If we’re looking at technology that churns every 18 to 24 months, but we’re building infrastructure that’s going to last for 40 or 60 years, there’s a real challenge there.”

MICHAEL BEEHLER  
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The payback window for converting streetlights to LED bulbs typically ranges between three and five years, making the move an attractive step for cities. LEDs do decrease energy costs, but Clanton explains that most of the overall savings is achieved through reduced maintenance. Clanton says that resiliency efforts, such as distributed power initiatives, are another move with a potentially quick return on investment, as they can prevent huge productivity losses during major storms.

While LED bulbs may not be as glamorous as autonomous vehicles, it makes sense that communities want to invest resources in projects with immediate benefits. Clanton also says that cities are already finding new ways to improve civic life with the IP-connected lighting. In San Jose, for example, the city dims the lights after a certain hour, and then brightens them again after bars close, to encourage people to clear off the streets and sidewalks. “The police departments love it,” she says.

## THE ROLE OF ENGINEERING

Paul Doherty, president and chief executive officer of the digit group, inc., says that engineering firms are playing an integral role in helping cities to sift through lofty vendor claims and find workable solutions. Far from being a pessimist about smart solutions, Doherty is involved with several smart city projects around the globe, and he predicts the data generated by smart developments will one day be more valuable than the physical real estate itself—a claim that sometimes generates a skeptical silence when he makes it at conferences.

“The problem is, vendors are so good and convincing about what they can do with the internet of things, and they create these beautiful scenarios about how I’ll get up in the morning and my toast is already done, and then I’ll get into my autonomous vehicle,” he says. “Then they get these contracts and say, ‘We know nothing about infrastructure, we know nothing about buildings.’”

“Guidance is going to be huge,” Doherty adds. “It’s about getting down to brass tacks and delivery.”

VHB first dipped its toe into “smart” waters in 2015 when it helped the city of Orlando, Florida, apply for a federal smart cities grant. The city didn’t win the award, but VHB is continuing to advise Orlando as it updates its sustainability program. Late last year, the firm formalized its own smart cities practice by bringing together different disciplines such as transportation, infrastructure and environmental sustainability. VHB is also working on land development for the Union Point smart city project outside of Boston, which will incorporate solar arrays and high-tech traffic sensors.

“The gap between talk and action is getting closer,” says David Mulholland, southeast regional manager for VHB. “People are moving toward wanting to have resilient cities with more communications, efficiency and connectivity, whether that’s broadband, the use of LED lights or smart parking areas and highways with motion detection. It’s all evolving, and people are still trying to figure out what can be done. But it’s actually increasing faster even in the last year than it was in the previous five years.”

One way engineering firms can lead the way is to help communities gather information and then make sense of it, according to Mulholland. His firm has been collecting third-party traffic data for several years and has found that even high-ranking state transportation officials are often unaware of basic findings, such as the most

## SMART USA

Cities across the country are using data in innovative ways to improve services. Here are some examples:

**Boston**—Through a competition called “Boston’s Safest Driver,” Boston used a smartphone app to track participants’ safety metrics. The program resulted in a 47 percent reduction in phone use while driving and a 35 percent reduction in speeding for the top quartile of users.

**Chicago**—The city developed an algorithm that processes 11 different variables to prioritize restaurants for health inspections, resulting in a 15 percent increase in the number of critical violations found.

**New Orleans**—By looking at Census Bureau data, officials identified the city blocks most likely to contain homes without smoke detectors, then targeted those areas for its smoke detector distribution program.

**Kansas City, Missouri**—Along a 2.2-mile light-rail line, sensors gather data about traffic and available street parking, which residents can access to gain real-time information about traffic volume and open parking spots.



Kansas City, Missouri's  
2.2-mile light-rail line.

congested areas on highways. As a result, VHB has been able to suggest projects that alleviate problems states didn’t even know they had.

“Data is the new gold,” Mulholland says.

Beehler says the ability to evolve and adapt will be essential as engineering firms wade into an exciting but uncertain future. “There are lots of opportunities out there, and a business needs to make a lot of small bets,” he says. “You make lots of small bets, and you count on one or two of them being something that’s going to carry the company forward in the years to come.”

“We don’t know when all these things are going to happen, but we do know that they are going to happen,” Beehler adds. “We need to position for them and be ready.” ■

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



A background image of a city skyline at sunset, with a river in the foreground. Overlaid on the image are several white, glowing arcs that connect various points, resembling a network or data flow diagram.

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A man in a dark suit is seen from the back, standing at a podium and speaking into a microphone. He is addressing an audience seated in a lecture hall with wooden paneling and green upholstered seats. The audience members, including men and women in business attire, are looking towards the speaker. The scene is brightly lit, suggesting a professional or academic setting.

BY SAMUEL GREENGARD

# MASTER

the Art of Persuasive Business





Communication and persuasion are at the center of business success, yet engaging audiences and achieving wins can prove elusive

# ING

## Communications

CORBIS/VEG/GETTY IMAGES

**I**t sometimes seems as though business is little more than an endless stream of pitches and presentations, yet transforming all the speeches and slide decks into bottom line results can seem overwhelming. Too often, listeners grow bored or impatient. They misunderstand points, and they don't share the same passion about the topic.

The challenges are particularly nettlesome for engineers, who frequently deal with complex technical topics. Translating data, specs and concepts into understandable images and words can be arduous. Persuading clients, executives and colleagues to take action can seem daunting. Too often, engineers wind up presenting large volumes of information yet mistakenly lose their audience.

"There can be an inconsistency between what someone says and what people hear," states Rose Venditto, principal at Beyond Words Consulting, an international presentation skills training firm based in West Palm Beach, Florida. "You lose listeners when you don't communicate effectively. It's critical to understand who your audience is and what is important to them."

To be sure, successful communication requires a range of intrapersonal and interpersonal skills that revolve around speaking, listening, questioning, analyzing, observing and evaluating. As David Stone, owner of blüStone Marketing, a Savannah, Georgia, firm puts it: "The single most important skill for business developers is emotional intelligence—the ability to know and manage your own emotions and then recognize and respond appropriately to the emotional reactions of others."

### COMMUNICATION BREAKDOWN

Effective and persuasive communication addresses the needs, values and desires of an audience. That much is indisputable. But transforming the concept into reality can prove extraordinarily difficult. There's a need to understand specific roles, expectations and requirements.

"The language of the CEO or CFO is very different than the language of the COO or a project manager," says Jessica Hickey, founder and president of professional training firm 1029 Consulting in Lynnwood, Washington, and author of *Stop Pushing String: Getting Decisions Made With the Five Languages of Business*.

Hickey says there are five key elements to effective business communication. These revolve around *vision*, *finance*, *execution*, *change* and *strategy*. It's crucial for a presenter to focus on these issues and provide the right level of information for a specific audience. "You need to connect with your audience versus going into 'data dump' mode," Venditto says.

Another problem is speakers who frame things in their own terms rather than trying to create relevancy and value for the audience. "Just because you think you're communicating effectively doesn't mean you are succeeding," she says.

One issue, Venditto says, is that presenters sometimes speak too fast and fail to gauge feedback from their audience and adjust their style. When giving a presentation, you want your listeners to feel engaged. If you feel there's a lull in your presentation, ask a question. Get your audience to re-engage.

J.D. Solomon, a practice leader for Jacobs Engineering Group in Raleigh-Durham, North Carolina, and author of *Communicating Reliability, Risk and Resiliency to Decision Makers*, says providing too much information to decision-makers and presenting slide decks that are poorly organized or downright boring is a recipe for disaster.

"You have to make sure you aren't delving into unnecessary or irrelevant details," says Solomon. "The goal is to deliver a punchline with essential supporting information so the executive or client can make a decision."

Solomon, who also conducts seminars for ACEC members, believes that persuasion can easily be mistaken for manipulation. An overly aggressive or contrived approach can come across as too one-sided and unnecessarily focused on what the presenter wants—or how the presenter benefits—rather than what's best for the recipient or for both parties. "Engineers should be less interested in persuading others than making sure the information and concepts are understood. If you come across as a trusted adviser, your chances of succeeding are a lot greater," he explains.

Body language is also critical, according to Hickey, who also has led ACEC professional development seminars. While a certain amount of movement is beneficial, too much movement is distracting. "It's important to recognize that everyone who speaks in front of a group is nervous. Some people simply know how to hide their nervousness or channel it positively. One way to relax is to know the topic; another is to practice a presentation. One difficulty is that you may forget lines and freeze. The other is that you come across as wooden," she says.

#### TALK IS CHEAP

The best communicators—and those who are the most successful in winning over audiences—understand how to home in on what's truly important, and they know how to establish an emotional connection with their audience, Venditto says. This requires an understanding of the group or the key decision-makers—something achieved through research or by conferring with colleagues. For example, a CFO might aid a presenter by framing key financial information, and an operations manager might help translate a mountain of data into the practical business benefits.

Staying focused on the primary message for each group is also paramount. Solomon says that starting with the conclusion and working

backward is a highly effective way to draw in an audience and maintain a focus. Venditto suggests adopting a "rule of three," which places all data and information into three primary topics or buckets. This will enhance the clarity of information delivered and make it easier for listeners to retain this information. "People must be able to receive information in a retainable way. Retention is increased when you keep it interactive and engaging. They have to be able to walk out of a meeting and know the main points." She says that humor and anecdotes are fine as long as they closely align with the message and help advance the presentation. "However, it has to be relevant, and should make a point related to the topic. If you toss out superficial stories or cute stories for the sake of cute stories, you may lose credibility."

It's also important to step into a presentation with a flexible mindset—and adjust and adapt, if necessary. This includes eye contact with audience members, recognizing when people are becoming bored or distracted, or when they are uncomfortable with a message. All of which may require a speaker to take a different tack or ask a question or two to get back on track. Dealing with a difficult or aggressive member of the audience also requires some finesse. Venditto recommends maintaining a strong voice and presence and focusing on the entire audience when answering a question.

"When answering a tough question, deliver your answer to all versus to the person asking the question. Reply by looking at the person initially but then look at others. Too much eye contact with the person asking the question creates an invitation for them to challenge you again," says Venditto.

Sometimes the methods for effective communication seem counterintuitive, Stone says. Outstanding speakers know how and when to stop and listen. "As long as you're talking, you learn nothing. The best salespeople learn early on that selling is about listening, not talking."

He offers an example: "If the mayor of Podunk is in the news because lower Main Street is flooded again, she doesn't want to hear about the great waste treatment plants you design. But tell a couple of stories about your successes in stormwater management, and she'll want to talk with you all day."

Solomon says that PowerPoint presentations and other visuals should never become a crutch. They should merely support a presentation. "You may need a picture, but you don't need



"When you are in tune with your audience and have a very clear idea how to communicate a message to them, you are in a position to win them over and achieve your goals."

JESSICA HICKEY  
1029 CONSULTING



"If you come across as a trusted adviser, your chances of succeeding are a lot greater."

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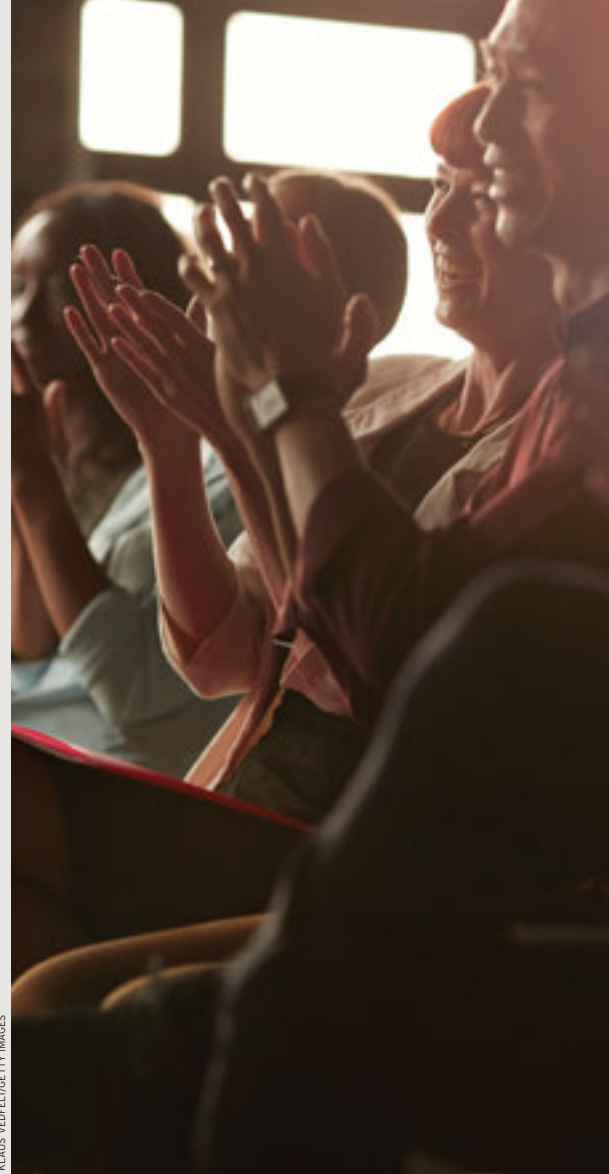
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# 6

## WAYS TO MAKE YOUR PRESENTATIONS SING

- 1. Understand the audience.** It's simple: If you don't know your audience, you will almost certainly fail. No two groups are the same. Spend time researching what is important to the audience and tailor your presentation and messaging accordingly.
- 2. Know your message, and keep it simple.** A successful presentation nearly always comes down to communicating a few crucial points. Every fact, figure and shred of evidence should be organized accordingly. Otherwise, your audience will drift and detach.
- 3. Offer compelling information and evidence.** Business decision-makers won't pull the trigger on a project or initiative without key facts. However, the information must be tailored to their specific needs. When you get it right, you may achieve buy-in almost instantly.
- 4. Establish an emotional connection.** Facts and logic are useful, but humans are both left brain and right brain creatures. "An emotional connection is powerful and gives you credibility," says Rose Venditto at Beyond Words Consulting. "You can have the greatest presentation, with the most interesting facts and logic, but how you deliver your message is critically important to being heard and getting buy-in from your audience."
- 5. Practice.** Great speakers and persuasive presenters are rarely born. They work on their delivery, including their inflection and body language. When you know your stuff and you are confident, you also settle the jitters associated with public speaking.
- 6. Stay composed.** If you stumble, dust yourself off and continue. Toss out a self-deprecating joke, which may help the audience connect with you. Don't let contentious audience members get the best of you. Stay in control, and pull the conversation back on your grounds.



KLAUS VOEFEL/GETTY IMAGES

20 pictures. Keep it simple because the average person doesn't understand technical diagrams, squiggly lines and data-laden tables. Anything more than a simple illustration or graphic becomes noise."

### THE FINAL WORD

A winning approach to communication ultimately comes down to balancing three primary factors, Stone says.

The first is *ethos*, which deals with establishing authority and honesty. "If you can convince your audience that you are qualified or authorized to address the topic, they'll give you the benefit of the doubt. That trustworthiness can be achieved with recognized credentials, a vested interest or particular knowledge about the topic or an ability to speak with obvious authority on the subject."

The second factor is *pathos*, which translates into a need to appeal to the emotions of the audience. "A touching story, a passionate delivery or showing that you're aligned with an underlying audience value will get them to invest emotionally with your topic," Stone explains. "Pathos can appeal in a positive way with excitement and hope, or it can induce fear by painting a decidedly unpleasant picture." Too much pathos can undermine tech-

nical presentations, but it's still essential. "Without it, you'll be dull, flat and unappealing," Stone says.

Finally, there's *logos*, which incorporates reason, backed up by facts and figures. "This is especially important when you are trying to explain a technical issue to an audience. A purely emotional argument is going to make you look like you don't know what you're talking about, you're trying to bamboozle us, or both," says Stone. He adds that too many technical professionals, including engineers, rely too heavily on logic. "But it can only take you part way."

Developing a strong emotional intelligence is vital, Stone says. When a presenter can tie together self-awareness, social awareness and self-management techniques that guide thinking, responses and interactions, it's possible to take pitches, presentations and speaking engagements to the next level.

"When you are in tune with your audience and have a very clear idea how to communicate a message to them, you are in a position to win them over and achieve your goals. Public speaking and presentations are skills that can be mastered with work and practice," says Hickey. ■

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





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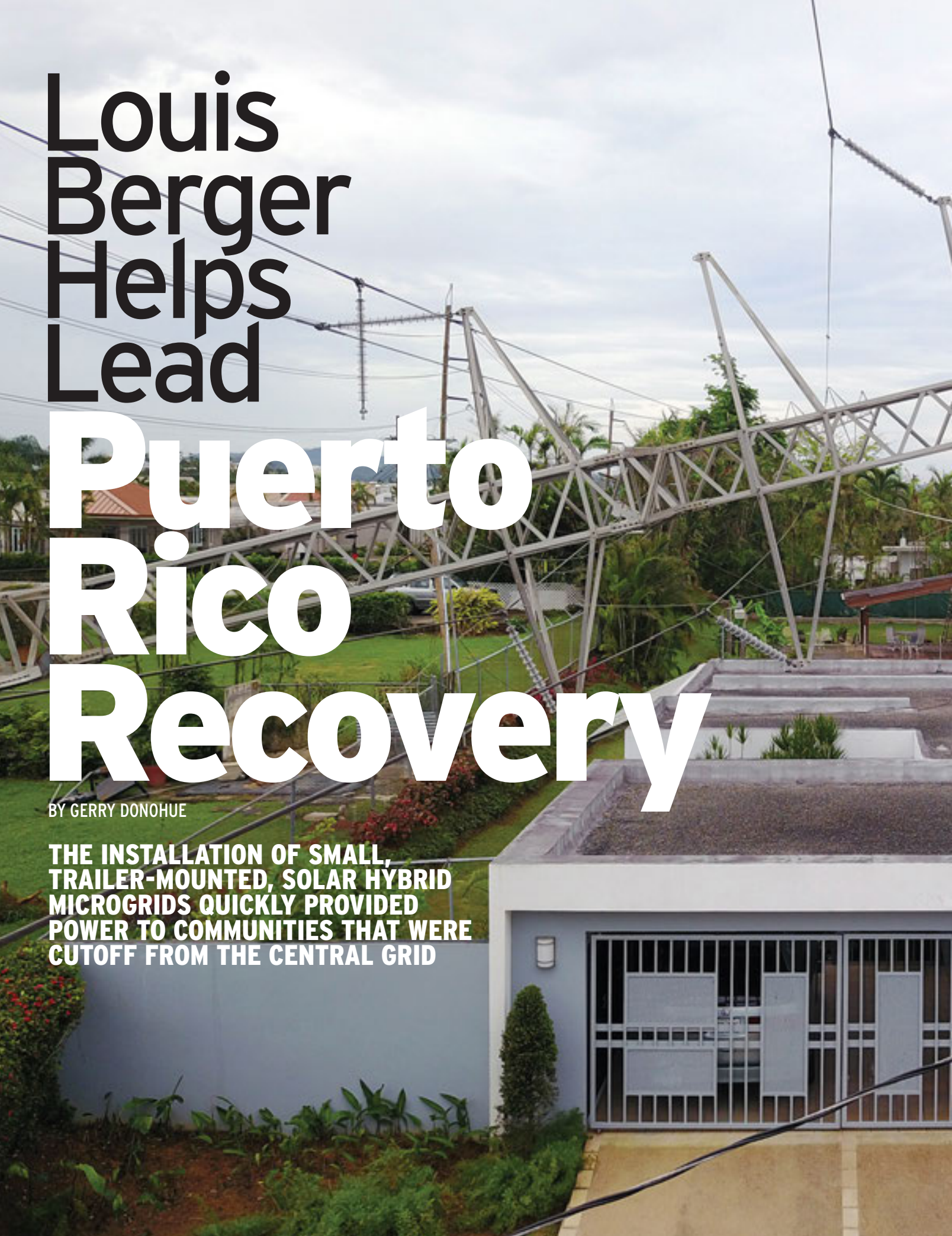
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# Puerto Rico Recovery

BY GERRY DONOHUE

**THE INSTALLATION OF SMALL, TRAILER-MOUNTED, SOLAR HYBRID MICROGRIDS QUICKLY PROVIDED POWER TO COMMUNITIES THAT WERE CUTOFF FROM THE CENTRAL GRID**





A power line tower downed by Hurricane Maria lies on top of a house in San Juan, Puerto Rico, in November 2017.

RICARDO ARDUENGO/AFP/GETTY IMAGES

**A**fter Puerto Rico and the U.S. Virgin Islands were devastated by hurricanes Irma and Maria in September 2017, numerous ACEC Member Firms were among the first responders on the ground. Operating under on-call contracts with the U.S. Army Corps of Engineers (USACE) and the Federal Emergency Management Agency (FEMA), the Member Firms set about repairing the transportation system, restoring the water supply, investigating the structural integrity of homes, buildings and infrastructure, and rebuilding the power grid, which was almost completely destroyed.

One of the first Member Firms to arrive on-site following the hurricanes was Louis Berger. “Even several months after the storms, many rural communities in Puerto Rico still have no power,” says Tom Lewis, president of the U.S. Division of Louis Berger. “Poles are down everywhere, and transformers are laying on the ground. The only way you know where there is power was if you hear the sound of a generator.”

Under its on-call contracts, Louis Berger has installed nearly 1,000 generators throughout Puerto Rico and the U.S. Virgin Islands, typically in critical public facilities such as city halls, police stations, wastewater and drinking water systems, clinics and hospitals.

“Under normal circumstances, the generators are only supposed to run for a few weeks, but the scope and scale of the need is unprecedented,” says Lewis.

Work continues on restoring transmission lines and distribution lines, but many communities in the rural and remote areas are difficult to reach. Further complicating the situation is the perilous financial situation in



“Poles are down everywhere, and transformers are laying on the ground. The only way you know where there is power was if you hear the sound of a generator.”

TOM LEWIS  
LOUIS BERGER



One of the more than 1,000 emergency backup generators delivered to restore power in Puerto Rico.

“In storm-prone areas, we believe small, trailer-mounted, solar hybrid microgrids are the wave of the future,” says Lewis. “Distributed power generation offers many advantages over sole reliance on a central grid. It’s cleaner, mobile, resilient and cost-effective.”

To test this belief, Louis Berger is self-funding a distributed solar hybrid power project in Puerto Rico through its Give Back Campaign, which is part of the firm’s corporate social responsibility program.

In partnership with WestGen, AEG and the Zofnass Program for Sustainable Infrastructure at Harvard University, Louis Berger is providing microgrid systems to power the La Perla de Gran Precio shelter for women and the Hogar El Pequeno Joshua shelter

for children in the remote mountain village of Barrio Nuevo, located in the municipality of Bayamon.

The WestGen SolaRover systems provide the power equivalent of a 24kVA gas/diesel generator. They can operate in as low as 30 percent sunlight, yielding a 60 percent charge.

“These systems can have multiple sources of generation:

Puerto Rico as well as plans to scale back federal recovery efforts.

Given this situation, Louis Berger proposed a different strategy to the Puerto Rican government. Rather than putting everything back together and hoping that future storms won’t be as severe, Louis Berger suggested installing new systems that can weather major storms.

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diesel, solar, battery storage and possibly wind in certain locations,” says Lewis. “Because they are redundant, resilient and more localized, these systems are much easier to keep in operation. If they ever do go down, they can be brought back up very quickly.”

Lewis says both USACE and FEMA have expressed interest in the demonstration projects. “These types of systems would be another tool in their toolbox,” he says. “They are open to ways to do things differently.”

The systems could also be a means for attracting private funds to disaster recovery efforts.

“Investors would cover the upfront capital costs of equipment, materials and labor for construction of the new microgrids,” says Lewis. “Their return on funding would be through a long-term agreement with the microgrid power purchaser.” ■

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



Louis Berger restored power to Hogar El Pequeno Joshua using mobile solar hybrid power technology.

**“In storm-prone areas, we believe small, trailer-mounted, solar hybrid microgrids are the wave of the future.”**

TOM LEWIS, LOUIS BERGER

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# Personalized VOLUNTEER

**KCI Technologies set a strong example of charitable giving and volunteering, inspiring employees to take ownership over their own social responsibility initiatives**





KCI Technologies CEO Terry Neimeyer (second from right) works with employees and other volunteers from the Alliance for the Chesapeake Bay and the Maryland Environmental Service at Cox and Swan creeks to collect more than 2,000 pounds of trash.

PHOTOS COURTESY OF: KCI TECHNOLOGIES

# RISM

BY CALVIN HENNICK

**A**t KCI Technologies, corporate social responsibility isn't just a top-down effort.

Company leaders at the 1,400-employee Sparks, Maryland-based firm, are encouraged to serve on nonprofit boards and give to charity at a high level. And much of KCI's fundraising and volunteering efforts revolve around a companywide, three-decade commitment to supporting the United Way, which helps create a centralized focus on the importance of philanthropy.

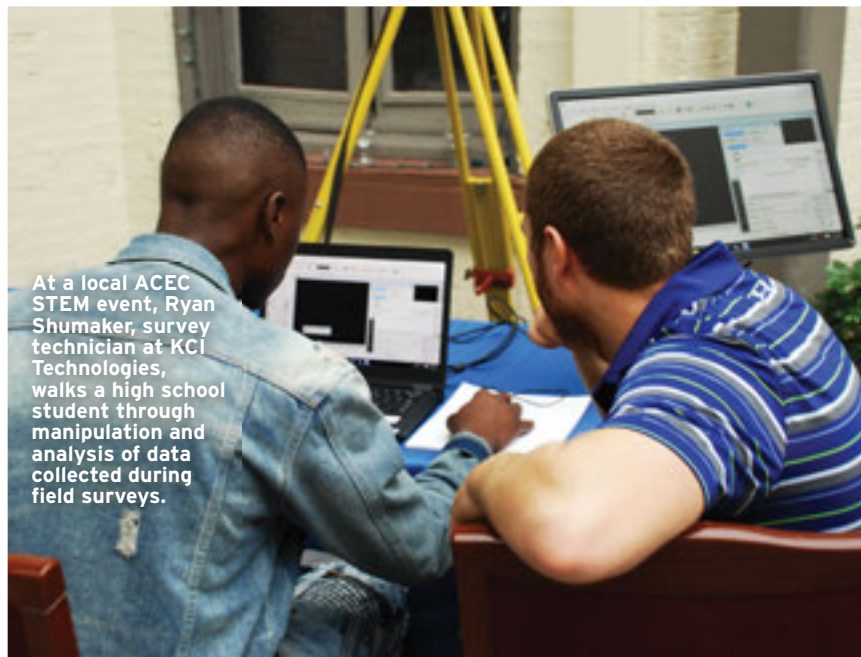
But going a step further, employees are encouraged to spearhead their own charitable initiatives and take part in a companywide vote each year to pick a new nonprofit group to support.

"The importance of giving back was embedded in me when I started here in 1977," says Terry Neimeyer, CEO at KCI. "It's something that was expected. We've always looked at it as, if we're receiving profits from the community through our work, we should find a way to give back to those in need, in a way that is organized and structured."

Neimeyer has sat on multiple nonprofit boards and encourages senior KCI leaders to be "leading givers." But he says that rank-and-file employees within the company—especially younger workers—not only support the firm giving back, they demand it.

"The millennial generation, our younger employees, grew up with a mission to make the world a better place," Neimeyer says. "If you don't have that kind of mission, they don't work for you for long." Nathan DeRose, communications and social media coordinator at KCI, is one of those younger employees. He was barely out of college when he nominated St. Jude Children's Research Hospital as the employee-selected charity several years ago. "Being a newer employee, it allowed someone who was green in the industry to take on a leadership role," he says. "That was my opportunity to support a charity in a big way—having access to such a large company with so many people who were willing to support it."

KCI's emphasis on charity results in more engaged leaders and employees, says Dierdre Crowl, assistant chief knowledge officer who manages the United Way giving campaign. "I think it makes for well-rounded leaders," she says. "At the same time, we're 100 percent employee-owned, so we try to have a very employee-centric culture. We could come in every day and just do great work, but if we can also pull together as a team and give back to our communities, that gives you such a deeper sense of commitment and connection to your firm."



At a local ACEC STEM event, Ryan Shumaker, survey technician at KCI Technologies, walks a high school student through manipulation and analysis of data collected during field surveys.

## ENGAGED GIVING

In 2017, KCI raised more than \$140,000 for the United Way and has brought more than \$500,000 to the organization since 2009. The totals are the result of a heavy emphasis on automatic giving through payroll deductions (including a substantial number of “Leadership Givers” who donate \$1,000 or more per year), as well as periodic fundraising events such as casino nights, raffles and the firm’s annual Pumpkin Chunking event.

For the past seven years, KCI employees have gathered with sponsors and vendors for a competition to launch pumpkins as far as possible with homemade trebuchets, catapults and even oversized slingshots. Entry fees and other revenue generated by the event go to charity. The fall 2017 Pumpkin Chunking event raised around \$1,700.

“We’re an engineering firm, so it’s perfect for us,” Crowl says. “It allows teams to work together outside of client-based projects. It builds teamwork, and it raises money for a good cause. If you can engage not only the desire to give back but get people active and fully engage all of their senses, they’re more willing to give. Plus, it’s fun.”

Franklyn Baker, president and CEO of United Way of Central Maryland, calls KCI a “partner we can rely on.”

The company has been focused on increasing its giving rate. “As a company, they are truly a role model in many ways, and it starts on the top. They lead by example,” Baker says.

DeRose was inspired to nominate St. Jude as the firm’s annual employee-picked charity in part because a friend was treated for leukemia at a children’s hospital when DeRose was in college. “He was surrounded by children under 10 years old who were dealing with cancer,” DeRose recalls. “That was a devastating experience, to see that.” DeRose and his co-chair helped raise more than \$27,000 for St. Jude, much of it coming from events such as 50/50

payday raffles and silent auctions.

The fact that employees vote on and are in charge of the fundraising for a new charity each year helps create a more personal investment in the effort, DeRose says. “Knowing the company is supporting an organization because of an employee’s personal connection or beliefs, that makes me more motivated to donate,” he says. “I feel like it’s a twofold donation. I’m supporting a charity, but I’m also supporting a co-worker in their passion.”

## HANDS-ON HELP

Throughout the firm, employees are also encouraged to tackle volunteer projects for causes important to them. Neimeyer says the hands-on work is not only personally fulfilling, but it creates bonds between colleagues that can carry over into the workplace. “It’s a tremendous get-to-know-you experience,” he says. “You may not know the person who sits two doors down from you, but if you paint a gymnasium with them, you’re going to know what they like, dislike, if they have kids.”

For the past four years, KCI has sent a group of around 14 employees to perform volunteer work on the Thomas Point Shoal Lighthouse, a historic lighthouse in the Chesapeake Bay. Employees have scraped and painted, installed spikes to keep birds off the structure and performed work to restore the lighthouse’s historic appearance. Last fall, the firm even sent a dive team to inspect the underwater portion of the structure.

“It really does help to build a sense of teamwork with your staff,” says Christopher Overcash, vice president and practice leader at KCI, who organizes the annual volunteer day. “If an employee has a cause that they’re committed to, KCI gives the opportunity to the employee to run with that concept.”

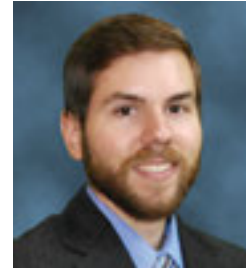
Crowl says that KCI employees have also participated in stream cleanups, blood drives and school supply collections, in addition to other volunteer programs.

“The feeling that you get definitely makes up for an hour or two of your time,” says Crowl. “It’s absolutely worth it.”

## LOOKING AHEAD

Neimeyer encourages employees to participate in mentorship activities, which he refers to as “filling the pipeline.”

“When our employees go out to high schools and talk about STEM education, it helps us fill the pipeline by converting kids one at a time,” he says. “We’re going to need these engineers in the



“Knowing the company is supporting an organization because of an employee’s personal connection or beliefs, that makes me more motivated to donate.”

NATHAN DEROSE  
KCI TECHNOLOGIES

## Two Decades of Benevolence

For the past 20 years, KCI employees have voted annually on a new charity to support. Organizations benefiting from the employee fundraising efforts include:

- Alzheimer’s Association
- American Breast Cancer Foundation
- American Diabetes Association
- American Society for the Prevention of Cruelty to Animals
- Autism Society
- Convoy of Hope
- Cystic Fibrosis Foundation
- Epilepsy Foundation
- Habitat for Humanity
- Helping Hometown Heroes
- JDRF
- Make-A-Wish Foundation
- Ronald McDonald House Charities
- St. Jude Children’s Research Hospital
- Stephen Siller Tunnel to Towers Foundation
- Wounded Warrior Project



future. As baby boomers retire, we don't have enough millennials to replace them."

Eric Martz, regional practice leader and structural engineer in KCI's Harrisburg, Pennsylvania, office, has mentored interns, visited local schools, spoken to teachers about career opportunities in engineering and made trips back to his alma mater, West Virginia University, to share his experiences in the field.

"Just about any statistic you look at regarding the STEM fields shows a shortage of candidates, based on current enrollment and expected future enrollment," Martz says. "There's just a huge shortage. I feel that it's part of my job, not only as an engineer but as a person who has some experience in life, to pass on my knowledge and try to spark interest in younger generations."

Martz says that managers and employees have the company's full support to take time to mentor the next generation of engineers. "It's almost expected that you'll take advantage of these opportunities and give back where possible," he says.

The social responsibility comes from the top of the organization, and being an employee-owned company means that those values get instilled into each employee, Martz adds. "We feel like one big team, and we want KCI to be known not only as a great company and a great place to work, but a great community partner," he says. "We're all invested in making sure KCI is viewed as a great company, both inside and outside the work environment." ■

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



Kerry McMahon, geospatial analyst at KCI Technologies, painted railings while divers performed an underwater and surface inspection of the historic Thomas Point Shoal Lighthouse.

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# Corporate Matchmaking in 2018 on a Record-Setting Pace

BY NICK BELITZ

**A**nnouncements of corporate marriages abounded in the first part of the year and, as shown in the list of deals below, ACEC Members were no exception. Morrissey Goodale's own data shows 133 industry deals completed as of this writing, putting 2018 on pace to exceed the total number of deals completed in 2015, the banner year for industry M&A (See chart).

In addition to sheer volume, and, based on the types of firms buying and selling, deal-makers have array of interests. Recent trends favoring environmental consulting, civil infrastructure, transportation and public works firms are holding up given widespread needs in the public and private sector, but we also see acquisitions of firms offering architecture and M/E/P services for various market sectors, plus land development services. The broad-based nature of these deals indicates a market for engineering and related services expanding on all fronts, but a closer look at the data reveals some interesting trends at work.

First, the numbers reveal a preponderance of deals with sellers based west of the Mississippi River. The usual hotbed of M&A activity—Texas and California, perennially sought in corporate matchmaking given the large sizes of their respective economies and presumed long-term needs for engineering design—continue to lead the pack.

Judging by the number of deals, buyers seem to be spending a lot of time in the Golden State in particular. ACEC members, however, also made deals in Colorado, Utah, Arizona, Idaho, Wyoming and Alberta, Canada. This indicates a healthy demand for the Rocky Mountain West firms and, by extension, the civil, water, environmental and commercial markets they serve.

Secondly, while publicly traded engineering firms maintain a strong interest in acquisitions, other firms such as NV5 and Stantec looked overseas to broaden services and diversify client

bases. These two firms combined for deals in the U.K., New Zealand and Hong Kong while Tetra Tech and Arcadis acquired in Australia and the U.K., respectively. WSP also left its North American base to make a large acquisition in Norway. Given the overall health and attractiveness of engineering markets in the U.S. and Canada, North American buyers making international acquisitions suggests a willingness to parlay profits earned at home into new ventures or expansions in other, more geographically distant markets.

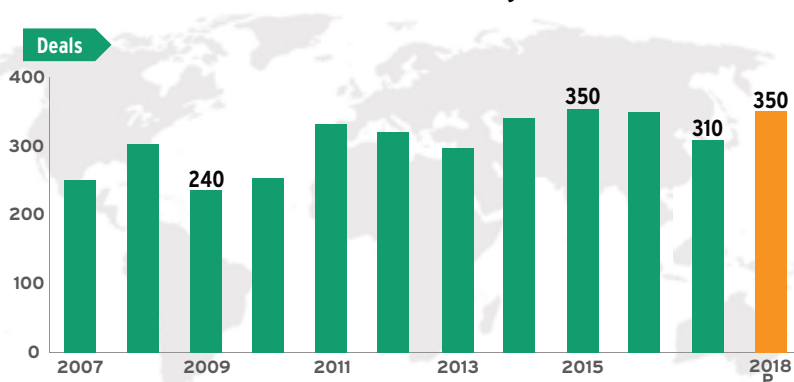
What is happening in the engineering industry is a reflection in the rest of the business world. *Kiplinger's* reported overall M&A activity in the general economy is off to a "sizzling pace" and up 60 percent in the first quarter of 2018 as compared with 2017.

Across economic sectors, deal-making was down in 2017 relative to the previous year, and the engineering industry, while showing robust activity of 310 global deals, was still off the pace of the previous year. While *Kiplinger's* noted companies may have waited for tax reform to become law in 2017 before pursuing M&A transactions, what is clear today is deal-making across industries is off to a much stronger start than what we saw in 2017.

So why the corporate love-fest? Recent data and Morrissey Goodale's own experience point to a combination of three critical factors: a strengthening economy in the U.S. and abroad, with U.S. growth expected to be just under 3 percent but with global growth reaching 3.8 percent; and a monetary environment with interest rates that are still low but projected to rise over time. Finally, lower tax rates in the U.S. make more cash available for firms to invest in other businesses.

Despite the current robust M&A activity, we caution against any judgment that says we are working in either a buyer's or seller's market. While the large number of deals may indicate a rush to corporate marriage, our experience suggests that with numerous buyers and sellers, both sides in a deal are dedicating ample time and resources to evaluate before making a commitment.

Global M&A—2007 to Projected 2018



## RECENT ACEC DEAL-MAKERS

### APRIL 2018

ACEC member **Engineering Consulting Services (ECS)** (Chantilly, Va.) acquired GEM Engineering, Inc. (GEM) (Louisville, Ky.). GEM, a geotechnical engineering, construction materials testing and environmental services firm, will become the Louisville location of ECS Southeast.



## MARCH 2018

Global design firm and ACEC member **Stantec** (Edmonton, Canada) acquired **ESI Consulting** (Shrewsbury, U.K.), an environmental consulting firm with capabilities in groundwater, land and sustainable development. ESI Consulting has more than 50 employees across three offices in England and Wales.

ACEC member **WSP** (Montreal, Canada) acquired design and technical advisory firm **UnionConsult Gruppen AS** (Oslo, Norway) and its affiliated entities. UnionConsult, a 160-person firm, specializes in providing mechanical, electrical and plumbing services to the buildings sector.

ACEC member **Civil & Environmental Consultants, Inc. (CEC)** (Pittsburgh), acquired **KGBE** (Austin, Texas), a 38-person civil engineering and land development firm. The acquisition expands CEC's operations in Austin and adds an office in Oklahoma City.

**Stantec** (Edmonton, Canada) signed a letter of intent to acquire **Norwest Corp.** (Calgary, Canada), a 140-person energy and resources firm. The acquisition will add a mining practice to Stantec's portfolio in Western Canada.

Civil engineering firm and ACEC member **TREKK Design Group** (Kansas City, Mo.) acquired mobile LiDAR provider **Terramatrix** (Omaha, Neb.), which provides traditional land surveying for transportation, water, wastewater and stormwater projects.

**Trihydro Corp.** (Laramie, Wyo.) acquired ACEC member **Steamboat Technical Services** (Sheridan, Wyo.), a civil and environmental engineering firm. The companies previously pursued joint opportunities, having worked together on solid waste and infrastructure projects.

ACEC member **GZA GeoEnvironmental** (Norwood, Mass.) acquired dam engineering firm and fellow ACEC member **Civil Dynamics** (Stockholm, N.J.). GZA also acquired **Emery & Garrett Groundwater Investigations** (Meredith, N.H.), a groundwater exploration, development, management and protection firm.

ACEC member **WSB & Associates** (Minneapolis) acquired land development engineering firm **Legacy Engineering** (Castle Rock, Colo.) and **Rogers Design Services** (Austin, Texas), a public infrastructure engineering firm.

## FEBRUARY 2018

ACEC member **CT Consultants** (Mentor, Ohio), an engineering, architecture and planning firm, acquired **GGC Engineers** (Gahanna, Ohio). GGC is a 10-person firm offering land development, construction inspection, water and wastewater services.

ACEC member **CP&Y** (Dallas) acquired **Meeting the Challenge (MTC)** (Colorado Springs, Colo.), an accessibility consulting firm specializing in federal disability law compliance services. MTC will operate as a wholly owned subsidiary of CP&Y.

**R2H Engineering** (Henderson, Nev.) joined **Horrocks Engineers** (Pleasant Grove, Utah), a leading civil engineering firm. R2H offers civil and structural engineering services for the water, wastewater, commercial and transportation markets. Both firms are ACEC members.

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).



ACEC member **PRIME AE Group, Inc.** (Baltimore), acquired the 25-person architecture firm **Braun & Steidl** (Akron, Ohio), which specializes in hospitality, housing, religious, education and historic restoration projects.

ACEC member **Johnson, Mirmiran & Thompson** (Hunt Valley, Md.) acquired **RCG Architects** (Baltimore), which serves the health sciences, higher education, cultural and commercial markets.

**Stantec** (Edmonton, Calif.) signed a letter of intent to acquire consulting transportation engineering firm **Traffic Design Group (TDG)** (Lower Hutt, New Zealand). TDG has more than 80 employees throughout its offices in New Zealand and Australia.

ACEC member **Salas O'Brien** (San Jose, Calif.) acquired **T-Squared Professional Engineers** (Vista, Calif.) and **Axiom Commissioning Group** (San Marcos, Calif.).

ACEC member **NV5** (Hollywood, Fla.) acquired **CSA Consulting Engineers** (Hong Kong), an MEP sustainable design firm with 60 employees.

ACEC member **Rettew Associates** (Lancaster, Pa.) acquired geophysics firm **Enviroscan, Inc.** (Lancaster, Pa.). Enviroscan has been operating since 1992 and specializes in nondestructive, non-intrusive investigations.

Environmental engineering and construction firm **Brown and Caldwell** (Walnut Creek, Calif.) acquired **J4 Engineering Group** (Boise, Idaho), an industrial water services firm. Both companies are ACEC members.

**DBi Services** (Hazleton, Pa.) acquired **HDR | CA Asset Management**, a subsidiary of ACEC member **HDR** (Omaha, Neb.). The division provides comprehensive highway asset management services to government agencies and local market contractors.

ACEC member **Environmental Resources Management** (London) acquired **Michael Pisani & Associates** (New Orleans), an environmental consultancy that provides contaminated site management and litigation support services. ■

*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).*



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# On the Move

**Chris Young** was named president and CEO of Fort Worth, Texas-based **Alan Plummer Associates, Inc.** Young formerly served in several managerial positions at MWH Global, now part of Stantec. He is based at the headquarters office.

**SENER** named **Mercedes Sierra** CEO of its U.S. operations. Sierra joined the company in 1985 and held several management positions, most recently serving as the head of innovation. She is based at the U.S. headquarters in Los Angeles. Former CEO **Angel Ares** was appointed to lead the development of SENER's infrastructure design and build business in the rail and transit sector.

**Matt Emerson** has been named president of Anchorage, Alaska-based **PDC Engineers**. Emerson succeeds Royce Conlon after a two-year transitional period. Emerson will step down as chairman from company's board of directors, allowing Doug Murray to fill the spot. Conlon will stay on at PDC to serve as treasurer.

**Wayne Swafford** was promoted to president of Houston, Texas-based **Lockwood, Andrews & Newnam, Inc. (LAN)**, succeeding **Dennis Petersen**, who served as the firm's president for the last 20 years. Petersen will continue as president of LEO A DALY, LAN's parent company. Swafford, who previously served as executive vice president of LAN, also served as vice president of ACEC/Illinois.

**Clark Dietz** announced the following leadership transition: **Charles Craddock** as president and COO; **John I. Boldt**, who previously held the title of president, remains CEO and chairman; **Jerry Payonk** was re-elected executive vice president; **Wes Christmas** was elected treasurer and promoted to senior vice president; and **Mustafa Emir** was elected secretary and promoted to senior vice president.

**Tom Valaitis** was promoted to executive vice president of operations of Woodridge, Illinois-based **V3**. He joined

the company in 2004 and most recently served as director of construction engineering. He is based at the headquarters office.

New York City-based **Thornton Tomasetti** announced the following appointments: **Jim Dray** joined the company as chief information officer. Dray formerly served as corporate vice president of information technology at AECOM. He is based in New York. **Derya Thompson** joined the firm's Weidlinger Transportation practice as a senior vice president and U.S. West Region leader. She formerly served as director of complex bridges and structures at Jacobs Engineering Group. She is based in Los Angeles.

Pittsburgh-based **Michael Baker International** announced the following appointments: **Jeffery R. Kullman** joined the firm as senior vice president and regional director for the firm's Mountain Region, which includes Denver; Idaho Falls, Idaho; Salt Lake



Chris Young



Mercedes Sierra



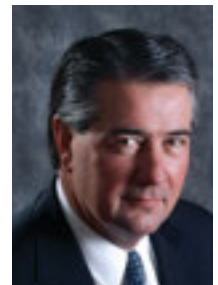
Matt Emerson



Wayne Swafford



Charles Craddock



John I. Boldt



Jerry Payonk



Wes Christmas



Mustafa Emir



Tom Valaitis



Jim Dray



Derya Thompson

City; and Anchorage, Alaska. He previously served as the vice president and West Sector manager, Department of Transportation business unit for Atkins. Kullman is based in the Denver office. **Malcolm Dougherty** joined the company as senior vice president and national transportation practice lead. He formerly served as director for the California Department of Transportation. He is based in the Santa Ana, California, office.

**Michael Mangione**, senior vice president at New York City-based **WSP USA**, was named national director of highway/bridge services. He is based in the Briarcliff Manor, New York, office where he recently served as manager.

New York City-based **STV** announced the following appointments: **Sam Yu** was promoted to senior vice president. Yu formerly served as STV's Construction Management Western Territory manager. He is based in Los Angeles.

**Sheri Williamson** was promoted to vice president. She previously managed STV's business operations and business development in South Carolina. She also serves on the board of directors for ACEC/ South Carolina. She is based in the Rock Hill, South Carolina, office. **Paul J. Tyrell** was promoted to vice president. He will serve as STV's deputy project manager for the \$1 billion Massachusetts Bay Transportation Authority's Green Line Extension. He is based in Boston.

**Gregory Reuter** has been promoted to vice president of geotechnical engineering at St. Paul, Minnesota-based **American Engineering Testing**. He is based in the headquarters office.

Kansas City, Missouri-based **TranSystems Corp.** announced the following appointments: **Jim Dubea** joined the company as vice president and ports and maritime lead. A 22-year United States Coast Guard veteran, Dubea recently served as deputy executive director of

government and strategic partnerships with the Canaveral Port Authority. **Gail Woods** joined the company as assistant vice president and client manager. She recently served as a transportation department manager for WBQ Design & Engineering. Both are based in the Orlando, Florida, office.

**Yurfa Glenn** joined Camp Hill, Pennsylvania-based **Gannett Fleming** as vice president and southeast water business line leader. Glenn previously served as client service manager for the Miami-Dade Water and Sewer Department. She is based in the Miami office.

**Charles Melvin Harvey** joined Hunt Valley, Maryland-based **Century Engineering, Inc.**, as vice president and Fairfax office director where he will lead transportation and infrastructure initiatives in Virginia and Washington, D.C. Harvey previously served as area construction engineer for the Virginia Department of Transportation.



Jeffery R. Kullman



Malcolm Dougherty



Michael Mangione



Sam Yu



Sheri Williamson



Paul J. Tyrell



Gregory Reuter



Jim Dubea



Gail Woods



Yurfa Glenn



Charles M. Harvey



# Welcome New Member Firms

## ACEC/Alabama

Edmonds Engineering  
Birmingham

## ACEC/California

Aegis Engineering  
Management  
San Diego  
BHA, Inc.  
Carlsbad  
Dennis Bethel &  
Associates, Inc., dba Bethel  
Engineering  
Santa Maria  
ECS Value Engineering and  
Design Review  
Solana Beach  
Famand, Inc., dba Indoor  
Environmental Services  
Sacramento  
Hopper Engineering  
Associates  
Redondo Beach  
HSA & Associates  
La Mirada  
Polaris Consulting  
Carmel Valley  
Sharrah Dunlap Sawyer, Inc.  
Redding  
VSCE, Inc.  
Oakland

## ACEC/Colorado

Kiewit Engineering Group  
Englewood  
Kilgore Engineering, Inc.  
Englewood  
PLS Corp. dba PLS Group  
Loveland

## ACEC/Georgia

Bennett & Pless, Inc.  
Atlanta  
Carter & Sloope, Inc.  
Macon  
Carter Engineering Group  
Macon  
R2T, Inc.  
Dunwoody

## ACEC/Illinois

Ecology and Environment  
Engineering, PC  
Chicago  
Lakeshore Engineering, LLC  
Chicago  
McCleary Engineering  
Peru  
Rubino Engineering, Inc.  
Elgin

## ACEC/Kentucky

McGhee Engineering, Inc.  
Guthrie  
P&A Engineers and  
Consultants, Inc.  
Louisia  
Parsons Electric, Inc.  
Lexington

## ACEC/Louisiana

Alabama Land Surveyors,  
Inc.  
Prattville  
Design Office, LLC  
New Orleans  
Gaea Consultants, LLC  
New Orleans  
The Water Institute of the  
Gulf  
Baton Rouge

## ACEC/Michigan

Paradigm Design  
Grand Rapids

## ACEC/Nebraska

EAD Management Services  
Omaha

## ACEC/Nevada

Aspen Engineering  
Reno

## ACEC/New York

First Environment, Inc.,  
dba B. Tod Delaney, PE PC  
in NY  
New York City

## ACEC/North Carolina

D&A Wolverine, PLLC  
Charlotte

## ACEC/Ohio

Lanham Engineering, LLC  
Powell  
Onyx Creative/BlueStreak  
Consulting  
Cleveland  
Tekton Engineering, LLC  
Berlin

## ACEC/Oklahoma

CM Engineering Solutions  
Norman  
Glenn Sullivan &  
Associates, Inc.  
Norman  
Standard Testing &  
Engineering Co.  
Oklahoma City

## ACEC/Oregon

Epoch Geospatial and Land  
Surveying Services, LLC  
Ashland

## Focused Engineering, LLC

Eugene  
Western Testing, LLC  
Roseburg

## ACEC/Rhode Island

BL Cos.  
Warwick  
VJS Transportation  
Consultant, LLC  
Jamestown

## ACEC/South Carolina

Wurster Engineering &  
Construction, Inc.  
Greenville

## ACEC/Tennessee

Trestles, LLC  
Nashville

## ACEC/Texas

DTS Engineering, Inc.  
The Woodlands  
Flores Geotechnical, LLC  
Round Rock  
IMES Group, LLC  
Austin  
Lynn Clark Associates, Inc.,  
dba LCA Environmental, Inc.  
Farmers Branch  
NCGI, Inc., dba Nelson  
Jones  
Flower Mound

## ACEC/Washington

1 Alliance Geomatics, LLC  
Bellevue  
Century West Engineering  
Corp.  
Federal Way  
Smart City Traffic, LLC  
Issaquah  
Vector Engineering, Inc.  
Tumwater

## ACEC/Wisconsin

Oneida ESC Group, LLC  
Milwaukee

## ACEC/Wyoming

Engineering & Consulting  
Alliance  
Cheyenne  
Graham, Dietz & Associates  
Cody  
Mike Robinson, LLC  
Ten Sleep  
Novel Structures, LLC  
Cheyenne

## JUNE 2018

- 20** How to Lead Without Authority  
(Even When You're Boss)  
(online class)
- 21** Identifying and Developing  
Your Future Business  
Development Leaders  
(online class)
- 26** Spearin and the Standard of  
Care: How Good Does a Design  
Have to Be?  
(online class)
- 27** Public Outreach and  
Communications: A True Value-  
added Service for Your Clients  
(online class)

## JULY

- 10** The Prominent Role of AIA's BIM/  
Digital Practice Documents in  
the AIA 2017 Contract Document  
(online class)
- 11** The Economic and Market  
Trends Shaping the 2018  
Engineering Industry  
(online class)
- 12** Generational Differences in  
the Workplace  
(online class)
- 18** M&A Trends, Tactics and  
Outlook for Engineering Firms  
(online class)
- 25** Engineering Infrastructure for a  
Changing Climate: Business and  
Technical Impacts (online class)
- 31** Take Control of Your Time and  
Get the Right Things Done  
(online class)

## AUGUST

- 1** E-mail—The Seven Deadly Sins  
(online class)
- 7** Taking the Board to the Next  
Level (online class)

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For a complete listing of available topics and savings pack details, visit <http://bit.do/acec-ondemand>.

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by the National Council of Examiners for Engineering and Surveying and ACEC, RCEP is now administered by ACEC with the support of the American Society of Civil Engineers.

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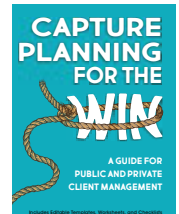
Contact La'Creshea Makonnen at 202-682-4338 for more information.

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ACEC's newest publication, *Capture Planning for the Win: A Guide for Public and Private Client Management*, is a step-by-step, scalable capture and pursuit management guide that will help you evaluate and improve your firm's business development capabilities. The publication includes customizable templates, worksheets and checklists in Microsoft Word for benchmarking business development activities, capture planning and effective Go/No-Gos. With this guide, firms pursuing both public- and private-sector work will have a client-focused toolbox for identifying and understanding key stakeholders and decision-makers and developing and reinforcing competitive positions to help firms write winning proposals—and even sole-source work more frequently.

Readers will also find 11 additional areas for plan development and evaluation: strategic and operations planning; leadership and communications; budgeting and marketing planning; client maintenance and service; integrated marketing planning; new markets penetration; community involvement and networking; internal marketing and support; measuring results and accountability; business development culture; and training and development.

*Capture Planning for the Win* is available in both print and digital formats. For complete details, visit <http://bit.do/acec-capture-planning>. ■



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# ACEC RT members by state

## ALABAMA

Christy Cobb, Inc.  
Krebs Engineering, Inc.

## ALASKA

VEI Consultants  
Winco-Corthell-Bryson

## ARIZONA

Augsburger Komm Engineering, Inc.  
CK Group, Inc.  
Entellus, Inc.  
Gervasio & Associates, Inc.  
LSW Engineers  
Martin, White & Griffis Structural Engineers  
Wood, Patel & Associates, Inc.

## ARKANSAS

Crist Engineers, Inc.  
McGoodwin, Williams & Yates, Inc.  
Pack Engineering, Inc.

## CALIFORNIA

ACEC of California  
Acosta Engineering Solutions  
Advanced Earth Services  
American Rail Engineers  
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Lane Engineers, Inc.  
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Gebau, Inc.  
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Maxson Engineering  
MGA Structural Engineers, Inc.  
MKK Consulting Engineers, Inc.  
NEI Electric Power Engineering, Inc.

Pinyon Environmental, Inc.  
Shaffer Baucom Engineering & Consulting  
Studio 8.18 Engineering  
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