

SEPTEMBER/OCTOBER 2019

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## THE PRICE OF CONGESTION

In 2021, New York will become the first city in the United States to implement traffic congestion pricing.

"We need this plan to be successful... Congestion pricing is a double-edged sword that pierces both the revenue needs for transit and solves the traffic problem."

Sam Schwartz  
CEO  
Sam Schwartz Engineering



# PARTNERS IN SAFETY

## A Safer Path

### Crash reduction on KY 1194 in Lincoln County



Prior to construction, KY 1194 had narrow lanes, which made it easy for vehicles to drop tires off the side of the roadway.



The EA Partners plan widened KY 1194 to 20 total feet throughout the 6.6-mile route, added a fresh coat of asphalt, bright striping, signage and rumble strips to improve the safety of the roadway. Since completion, there have not been any injury crashes along the route.

### By the numbers

(Yearly averages **before** construction)

**10** crashes

**3.6** injury crashes

**0** fatalities

(Yearly average **after** completion)

**7** crashes

**0** injury crashes

**0** fatalities

When EA Partners, PLC, of Lexington, was tasked with improving the safety of Kentucky 1194 in Lincoln County—that's exactly what they did, keeping within a strict budget and time frame.

The 6.6-mile route had been characterized as a poor safety performer by the Kentucky Transportation Cabinet District 8. As a consultant, EA Partners developed an effective plan within about 13.5 months. The project was let for construction, with a bid of \$1.1

million, and was completed within a year—quickly creating a safer roadway for Lincoln Countians.

"I think the reduction of injury crashes easily makes the case that this project was a success," said Mike Vaughn, HSIP coordinator for KYTC. Normally, KYTC would have three years of data before making a "before-after" comparison, but Vaughn said, "zero injury crashes in the 22 months of the 'after' period is a very strong case that the project was, and will continue to be a success."



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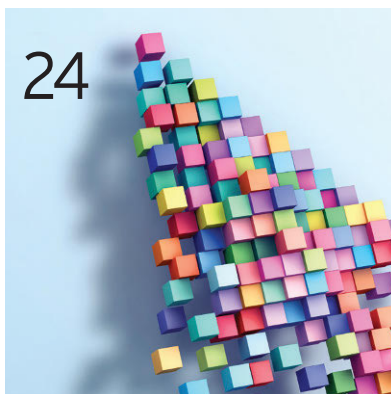
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COVER: TRAVEL WILD / ISTOCK / GETTY IMAGES



# New ACEC Podcast Becomes Potent Communications Tool

**A**CEC's new podcast, *Engineering Influence*, has in a few short months become a valuable method for promoting Council events, emphasizing Council legislative positions, and hearing directly from Council and other industry leaders.

The podcast was originally launched at the Annual Convention in May coinciding with the development of a new fully functioning ACEC studio. The podcast now offers a host of updates on Council programs, industry news, private markets, and advocacy. The podcast's lineup is highlighted by the recently introduced *Chairman's Corner* featuring ACEC Chairman Mitch Simpler. It is currently our most popular podcast in terms of downloads closely followed by our *Government Affairs Update* episode.

As of Aug. 1, the *Engineering Influence* podcast had exceeded the 1,000 downloads mark, with episodes downloaded 472 times during the previous 30 days alone.

The podcast is also on the go. Next scheduled stops include the FIDIC International Infrastructure Conference at Mexico City in September and the ACEC Fall Conference in Chicago. The podcast can be accessed through the ACEC homepage, or just bookmark <https://acecnational.podbean.com>. It is really something special.

This issue of *Engineering Inc.* highlights an innovative system for increasing the nation's investment in infrastructure. New York is set to launch a congestion pricing program beginning in 2021. It will be the first such U.S. implementation of a system that has been used for years in several foreign cities such as Singapore, London, and Stockholm (see page 12).

This issue also includes a report on how renewable energy, once extremely dependent on political winds for its potential growth, is now moving into the mainstream of the U.S. energy picture.

An exciting collection of renowned political and business experts await attendees at the Fall Conference, Oct. 13-16 in Chicago. Noted speakers include *Washington Post* national political reporter Robert Costa on American politics through the 2020 election; economist Anirban Basu, chairman/CEO of the Sage Policy Group, Inc., on the economic outlook; Sekou Andrews, who *Forbes* has called "the de facto poet laureate of corporate America"; and Keller Rinaudo on his company Zipline International, which uses drones to transport medical supplies to remote locations.

The Conference also features more than 30 business management sessions and the annual ACEC Awards Luncheon.

Do not miss out!



Mitchel W. Simpler  
ACEC Chairman



Linda Bauer Darr  
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# Opportunities in Nuclear Still Remain Despite Dwindling Power Output

BY GERRY DONOHUE

SMILEUS / SHUTTERSTOCK

**N**uclear power plant output in the United States hit an all-time high in 2018, generating 807.1 million megawatt-hours (MWh) to top the previous high set in 2010. But that statistic is deceiving; it masks the reality that the U.S. nuclear sector is in decline.

In fact, that peak was reached through a combination of efficiency upgrades and improved refueling and maintenance systems.

Only one new domestic nuclear power plant has come online in the U.S. since 2010. The Tennessee Valley Authority (TVA) turned on Watts Bar Unit 2 nuclear power reactor in 2016, generating 1.2 gigawatts (GW) of power. Two reactors at Georgia's Vogtle plant are scheduled to enter service in 2021 and 2022 and will add 2.2 GW to the grid.

Contrast that growth with the eight plants that have been retired since 2013, removing more than 6.0 GW from the system. In addition, the reactor at Three Mile Island will go offline on Sept. 30, 2019, and 10 more reactors could be mothballed by 2025, taking another 10.5 GW out of the grid.

In order to maintain its long-standing share of U.S. electricity production, nearly 20 percent, the nuclear industry has relied on uprates, in which upgrades to the plant increase its generating capacity, and shorter refueling and maintenance cycles. In the early 1990s, the average reactor was out of service for more than 100 days each year; in 2018, the industry had cut that downtime to 25 days.

Still, given the planned plant closings and the limited opportunities to squeeze more efficiencies out of the remaining plants, the U.S. Energy Information Administration (EIA) projects a 17 percent drop in electricity generated from U.S. nuclear power reactors by 2025.

## MARKET FACTORS

The biggest factor behind the decline of the U.S. nuclear market has been the natural gas revolution.

"In the early 2000s there was a renaissance of sorts for nuclear power," says Delfo Bianchini, executive vice president and director of nuclear power at Sargent & Lundy, one of the most active engineering firms in the nuclear market. "We were seeing a lot of activity in the sector and then natural gas prices started dropping, and it fizzled out."

In June 2008, the domestic natural gas price was \$12.69 per million British thermal units (Btu), according to EIA; in June 2019, the price was \$2.40 per million Btu.

Most nuclear plants operate in deregulated energy markets where power generators bid to provide electricity to the grid. Because of their high fixed operating costs, these nuclear plants are struggling to compete. To keep plants in their states viable, New York, Illinois and New Jersey are providing subsidies in the form of zero emission credit programs, which compensate nuclear generators for providing carbon-free electricity.

Newer nuclear plants using the latest technology produce cheaper power, and in countries around the world, plants are being built at a rapid pace. In the U.S., not so much. One reason is in other countries, most of the large producers of nuclear power are owned or largely funded by the national government. U.S. nuclear power plants are investor-owned—except for TVA—and the huge cost of building a new plant (upward of \$10 billion) is beyond their reach.

Layer on top of that the recent poor track record in building domestic nuclear plants.

"A critical problem for nuclear power in the U.S. has been the cost and schedule overruns," says Ashley Finan, executive director of the Nuclear Innovation Alliance.

Overruns led directly to South Carolina's decision to stop construction on its V.C. Summer Nuclear Station project after more than 10 years and \$9 billion in costs. In 2018, Georgia Power decided to keep building the two new reactors at its Vogtle plant, despite the project being five years behind schedule and \$13 billion over budget.



Finally, although nuclear power has a stellar safety record, it continues to be perceived by the American public as potentially hazardous. The partial meltdown at the Fukushima plant in Japan in 2011 and the recent airing of the miniseries “Chernobyl” keep that perception alive.

“The evidence is there that nuclear is one of the safest ways to produce electricity,” says Finan, “but everyone in the industry knows that a nuclear accident anywhere is a nuclear accident everywhere.”

## MARKET OPPORTUNITIES

Despite these challenges, significant opportunities remain for engineering firms in the nuclear market. There are still 59 plants across the country and 97 operating reactors. And with the growing number of plant retirements, decommissioning is a big business.

Sargent & Lundy was involved in the design of a large portion of the domestic nuclear plants, but with the dearth of new projects, the firm has been focusing its efforts supporting the operating units.

“We are an ‘Engineer of Choice’ at 85 of the operating nuclear units in the United States,” Bianchini says. “Our bread and butter are implementing upgrades and refurbishments. Some of these plants are 40 years old, and we can extend their life and efficiency by installing new technologies.” Other services the firm provides are safety enhancements, cybersecurity, maintenance optimization to reduce outage times and license renewal.

SNC-Lavalin, another firm involved in the market, recently formed a joint venture company with Holtec to focus on decommissioning nuclear plants.

“Comprehensive Decommissioning International (CDI) specializes in accelerated decommissioning,” says Sandy Taylor, nuclear sector president at SNC-Lavalin. Using drones, robots, virtual reality software, internally developed equipment and the decades of project management experience from its two parent companies, CDI “can bring a plant to its final state in 10 years versus leaving it in safe mode for 50 years or more,” according to Taylor.

CDI has already signed contracts to decommission the Oyster Creek plant in New Jersey, the Pilgrim plant in Massachusetts and the Palisades plant in Michigan.

## TECHNOLOGICAL SOLUTIONS

Given the challenges facing the market, most analysts do not expect to see any large-scale nuclear plant projects in the U.S. in the near term.

“Never say never, but given the huge capital costs, it is unlikely,” says Thomas Behringer, senior vice president, Sargent & Lundy.

Instead, many in the industry are banking on the development and commercialization of small modular reactors (SMRs). True to their name SMRs are small nuclear units—generating less than 300 MW. They are factory built and shipped to the site where they can be deployed individually or grouped together. They have applications for remote locations or can replace peaker plants in the grid.

“They are less expensive, easier to implement, eliminate a lot of equipment—both electrical and safety related—and most will be designed to shut down by themselves,” says Behringer.

Sargent & Lundy, along with Fluor, has invested in NuScale Power, one of the first SMR developers. Each NuScale SMR module is 60 MW in capacity. NuScale is in the midst of the approval

U.S. Projected Electricity Generation by Nuclear Power	
Year	(Billion Kilowatt Hours)
2017	805
2018	809
2019	797
2020	785
2021	762
2022	724
2023	697
2024	698
2025	672

Source: United States Energy Information Administration (EIA)

process to build the first SMR in the U.S. at the Department of Energy’s Idaho National Laboratory.

“NuScale expects to get approval in September 2020,” Behringer says. “It is progressing well with no showstoppers. That is a big deal because it means the design will have been approved by the Nuclear Regulatory Commission for implementation, which will provide assurance to international utilities that are interested in this technology.”

If everything proceeds on schedule, Behringer says the first NuScale 60 MW module of the 12module plant will come online in 2026, with the remaining modules in 2027, generating 720 MW of electricity.

SNC-Lavalin is also looking at SMRs, but Taylor has reservations about their use in the U.S. “I do not think the U.S. will be the place where SMRs are first deployed or ultimately take off,” he says. “Many other countries will move on SMRs before the U.S.”

## FUTURE PROJECTIONS

No one is predicting a short-term turnaround in the U.S. nuclear power market, but proponents believe its eventual expansion is inevitable.

“The potential is immense,” Finan says. “It is clear that nuclear can play a critical role in affordable decarbonization. There is no doubt that we need it and that it will contribute to reducing carbon in the U.S. and globally.”

“Natural gas is the next coal,” Taylor says, suggesting its negative environmental impact will eventually become too much to bear. “Nuclear is starting to be recognized as a clean fuel. We still have long-term waste issues that we have to deal with, but it is a long-term, carbon-free source of energy.”

He adds, however, that for nuclear power to flourish in the U.S., the federal government will need to assume a bigger role.

“To take a new concept through to prototype scaling requires amounts of money that typically exceed the capability of the private sector,” he says. “It is going to be very difficult to get the next generation of reactors into the market without some amount of government support.” ■

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





DAN REYNOLDS PHOTOGRAPHY / GETTY IMAGES

## ACEC Working Toward Fall Passage of USMCA

As lawmakers returned from the August recess, a major budget and debt ceiling impasse appear to be in the rearview mirror, leaving few remaining must-pass items on the agenda.

The United States-Mexico-Canada Agreement (USMCA), the trilateral agreement with Canada and Mexico, is expected to be transmitted to Congress in September, to pass in an up or down vote. Members of Speaker Nancy Pelosi's working group met four times with United States Trade Representative Robert Lighthizer, issuing a set of principles that need attention before passage of the measure: access to affordable medicine, labor and environmental reforms,



MARK REINSTEIN / GETTY IMAGES

and enforcement of the trade agreement.

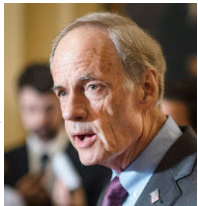
Canada and Mexico are also moving toward ratification, with Mexico ratifying the deal in June while working toward reforming its labor and environmental laws. The Canadian Parliament began its process in May with the hope of passage by summer's end.

ACEC has been visiting with House and Senate offices and working with the business community urging its passage and will ramp up its effort as Congress returns in September.

## Key Senate Committee Advances 5-Year Transportation Reauthorization Bill

**T**he Senate Committee on Environment and Public Works unanimously approved a five-year bill to increase federal highway program funding by a total of 27 percent above the FAST Act. The \$287 billion legislation—America's Transportation Infrastructure Act—was approved 21-0.

More than 90 percent of the spending under the bill—\$259 billion—would be distributed to states via funding formulas largely carried over from current law. The funding increases would be front-loaded, with a 17 percent jump in the first year and 2 percent annual growth in FY 2022-25.

MARK REINSTEIN / GETTY IMAGES  
John Barrasso, R-Wyo.PETE MAROVICH / GETTY IMAGES  
Tom Carper, D-Del.

ACEC expressed immediate and strong support for the bill. "America's Transportation Infrastructure Act provides critical resources necessary to upgrade our roads and bridges to address years of deferred maintenance and modernize our transportation networks," wrote Council President/CEO Linda Bauer Darr in a letter to Committee Chairman John Barrasso, R-Wyo., and ranking member Tom Carper, D-Del., before the vote. "The programs in the bill will equip our public sector partners to accommodate growth in population and freight movement, incorporate new technologies, improve safety, and enhance resilience and sustainability."

The legislation expands funding and eligibility for existing programs, including highway and freight projects, and creates new grant programs for bridge rehabilitation and replacement, safety improvements, and resilient infrastructure. Nearly \$5 billion is authorized over five years to help states improve the resiliency of roads and bridges from natural disasters, extreme weather events, and sea level rise. Additional funds are available for carbon emission reduction incentives and alternative fuel infrastructure such as hydrogen, natural gas, and electric vehicle charging stations.

The bill also aims to facilitate more efficient project delivery by codifying core elements of the "One Federal Decision" policy. It establishes a two-year goal for completion of environmental reviews, a 90-day timeline for related project authorizations, and a single environmental document and record of decision to be signed by all participating agencies. It also encourages wider utilization of categorical exclusions and the exercise of other flexibilities available under current law.

Three other Senate committees need to act on their portions of a surface transportation bill before it goes to the full Senate for a vote: The Commerce Committee (safety, rail and commercial vehicle programs), the Banking Committee (transit), and the Finance Committee (revenue).

Based on current projections, approximately \$110 billion in additional revenues would be needed to maintain the solvency of the Highway Trust Fund. Barrasso and Carper both expressed confidence in persuading their colleagues to support additional user fees necessary for the funding increases in the bill.





## ACEC Urges USACE to Rethink its ID/IQ Policy

In July, at the urging of the Federal Agencies and Procurement Advocacy Committee, ACEC wrote to the U.S. Army Corps of Engineers (USACE) objecting to changes member firms were experiencing.

Specifically, the USACE began competing at the task order level of A/E Indefinite Delivery Contracts (IDC). This includes competing tasks among holders of multi-award, multi-agency, and even single-award IDC (including indefinite delivery/indefinite quantity contract holders), with similar scopes of work across districts and even agencies.

Per ACEC's letter to USACE, "We disagree with the contention that every task order be fully recompeted, based on our analysis of the FAR [Federal Acquisition Regulation]. Requiring such competitions will add cost and time to the award of each task order, both for the A/E industry and more importantly for the government."

For many ACEC members, this could add a significant cost and up to several weeks to each task order award/negotiation. In discussions with numerous levels of USACE staff, ACEC believes these competitions would add an unsustainable burden in both cost and time at the government level. A process that fully recompetes every task order would make working for USACE less attractive to industry and thereby, in fact, limit competition.

ACEC worked with a legal team to provide recommendations to update EP 715-1-7, the engineering pamphlet that provides guidance to USACE staff on A/E contracting.

## Energy Bills are Moving

House and Senate Committees passed numerous energy or energy-related bills in July. Respective committee leadership declared that these efforts would address climate change. The simultaneous bipartisan committee actions strongly suggest House and Senate floor action to follow, perhaps as early as the fall.

On July 16, the Senate Energy and Natural Resources

Committee advanced a slate of 22 bipartisan energy bills.

The bills are part of an "all of the above" energy strategy to address climate change, according to Sen. Joe Manchin, D-W. Va.

Notable among the bills is S. 903, the Nuclear Energy Leadership Act, which supports advanced nuclear reactors, and S. 816, the Small Scale LNG Access Act of 2019, which expedites, without delay, the export of small amounts of liquefied natural gas. Other bills that advanced included measures to develop a pilot program on the identification of security vulnerabilities in the electric power sector; a smart manufacturing plan; critical minerals on federal lands; and a carbon capture and storage research and development program for emissions from natural gas-based power generation.

On July 17, by bipartisan voice votes, the House Energy and Commerce Committee reported 10 energy bills. Beyond bills to enhance workforce development, reauthorize weatherization programs, and improve public building energy efficiency, several bills seek to improve water efficiency, smart building development, grid modernization and security, energy emergency functions, and resiliency of natural gas and related systems.

Together the House and Senate Committee actions suggest optimism on near-term Congressional action on an energy package.



Sen. Joe Manchin, D-W. Va.

CHIP SOMODEVILLA / GETTY IMAGES

## ACEC Workforce Priorities

The Department of Labor is expected to finalize its new rule on overtime pay under the Fair Labor Standards Act by the end of 2019. ACEC submitted comments in support of the proposed rule, which would raise the overtime pay salary threshold to \$679 weekly/\$35,308 annually. The proposal also retained the current duties test for determining whether an employee who earns more than the salary threshold is exempt from overtime pay.

In Congress, support is building for the Employer Participation in Repayment Act (H.R. 1043/S. 460), which would allow employers to provide up to \$5,250 per year in student loan payments without that being

a taxable benefit for the employee. ACEC citizen lobbyists asked their members of Congress to support the legislation during the Annual Convention and Legislative Summit in May. The congressional sponsors are looking for a legislative vehicle to advance their bill.

The ACEC Retirement Trust is also moving forward with a program to allow participating employers to make a contribution to the retirement savings account of employees who make a student loan payment. This plan is designed to help employees, particularly recent graduates, who may find it difficult to make their student loan payments and save for retirement at the same time.

### For More News

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

# Student Housing: A Stable and Growing P3 Sector

By Erin McLaughlin



The value of P3s among higher education institutions and the private sector soared to **\$3.1 billion** in 2016 from less than \$1 billion in 2010

Although considered a mature sector within the larger public-private partnership (P3) market, student housing continues to grow, providing opportunities for A/E firms. According to EY-Parthenon, the value of P3s among higher education institutions and the private sector soared to \$3.1 billion in 2016 from less than \$1 billion in 2010.

P3 project delivery is a good fit for universities—particularly large, cash-strapped public institutions—as it allows them to divert money to academic priorities, and “user fees” are certain from students’ tuition and fee payments. Although the majority of millennials enrolled in higher education have cycled through, future student enrollment is predicted to

steadily increase. The U.S. Department of Education forecasts undergraduate college enrollment will be 17.4 million by 2027, a 3 percent increase from 2016.

Typically, new student housing projects exceed \$100 million and feature styles and amenities that resemble boutique hotels, complete with pools, cafes and gyms as a way to attract students to campuses.

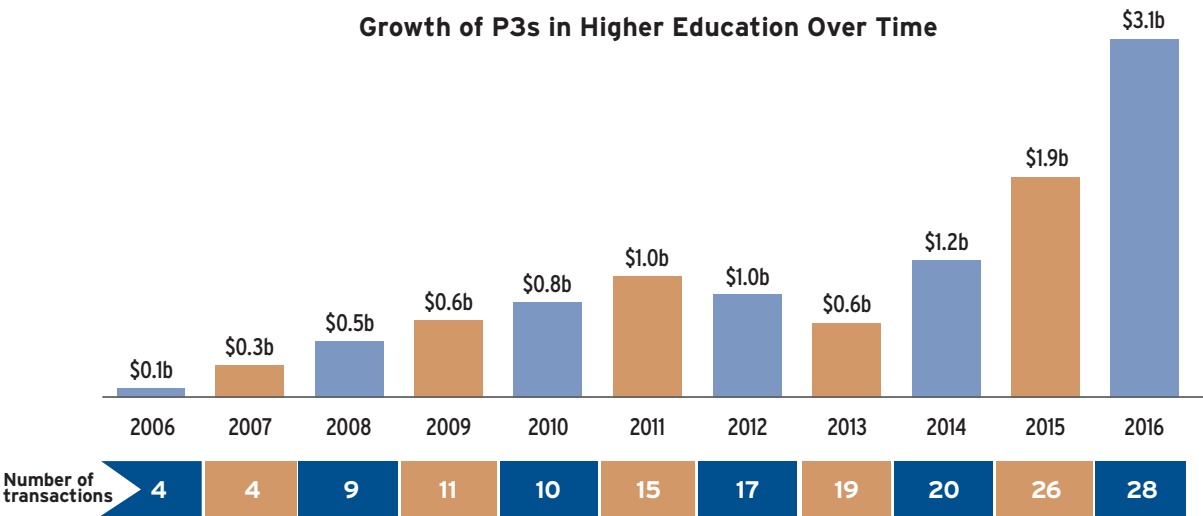
A recent survey by *Student Housing Business* revealed that more than 175,000 beds are planned for delivery between 2019 and the fall of 2022. The list below features the top 10 most active developers in the student housing industry, their headquarters location, and the number of beds each has in development over the next three years.

Top 10 Student Housing Developers

Rank	Developer	Headquarters	Beds in Development, 2019-2022
1.	Landmark Properties	Athens, Ga.	23,316
2.	CA Ventures	Chicago	15,906
3.	Aspen Heights Partners	Austin, Texas	15,428
4.	American Campus Communities	Austin, Texas	13,744
5.	Harrison Street Real Estate Capital	Chicago	13,190
6.	Core Spaces	Chicago	11,978
7.	RISE: A Real Estate Co.	Valdosta, Ga.	8,118
8.	Gilbane Development Co.	Providence, R.I.	7,825
9.	The Michaels Organization	Marlton, N.J.	7,678
10.	Sterling Student Housing	Houston	7,200

SOURCE: STUDENT HOUSING BUSINESS

Growth of P3s in Higher Education Over Time



SOURCE: EY-PARTHENON





# Wind Energy Market Growth Strong

Wind-generated electricity is pulling ahead as the leading renewable source, according to a U.S. Energy Information Administration (EIA) report, and the outlook for further development is strong. EIA data from May 2019 shows that wind-generated electricity provided 8 percent of total electrical output. For the first time, all renewables (wind, solar, and hydropower) collectively ranked in second place among the major generating sources, providing more electricity than either coal, nuclear or oil. Renewables were only exceeded by natural gas.

According to EIA, wind capacity additions for 2019 are expected to total 12.7 gigawatts (GW), which will exceed capacity additions for the last six years, but fall just short of the 2012 record of 13.3 GW.

For engineering firms, the scope of work included in wind projects is not unlike other energy projects and includes site assessments, surveys of land or sea beds, geotechnical assessments, environmental surveys, and design plans for construction, in addition to wind resource assessments.

U.S. consumption of wind energy has increased 12 percent since 2016, according to the EIA report. Currently, the largest wind energy producing state is Texas, accounting for more than a quarter of the nation's production. The other top wind producing states—which together with Texas produce more than half of all wind energy—are Oklahoma, Iowa, and Kansas. The following five states provided an additional 20 percent of 2018's wind energy: California, Illinois, Minnesota, North Dakota, and Colorado.

Because of the geography of these states, the current wind energy is not coming from offshore turbines. However, many analysts expect that offshore wind production will be responsible for the future growth of domestic renewable energy.

States that comprise a portion of the East Coast—many of which have aggressive renewable energy targets—are



ALIN MILITARU / GETTY IMAGES

attempting to catch up with offshore wind energy development. According to McKinsey & Co.'s June 2019 report, *Building an Offshore Wind Industry Along the U.S. East Coast: The Role of State Collaboration*, states from Maine to South Carolina have committed to a combined 20 GW of offshore wind energy by 2035. However, there are concerns that progress may not be smooth.

For example, final permitting for the first large-scale U.S. offshore wind project may be uncertain. Two federal agencies are conflicted on whether the proposed project, Vineyard Wind, contains sufficient measures to protect the U.S. fishing industry. The project is scheduled to begin construction in 2019, 14 miles off the coast of Massachusetts. If completed, the project is expected to power 400,000 homes by 2021. ■



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Economic Outlook



Public-Private Partnerships (P3s)

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

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**Erin McLaughlin** is ACEC's senior director of private market resources. She can be reached at [emcloughlin@acec.org](mailto:emcloughlin@acec.org).

NEW YORK CITY  
TO IMPLEMENT

# CONGESTION PRICING

LEGENDARY 'GRIDLOCK SAM' AND

BY GERRY DONOHUE

**T**he route to bringing congestion pricing to New York City was long and circuitous, and even in the final hours before the Legislature voted, its fate remained uncertain. “We were holding our breath,” says Sam Schwartz, the legendary transportation author and columnist known as “Gridlock Sam” who also authored many of the key components in the congestion pricing plan. “It was up and down. First, we were going to get it, and then we were not. When we finally did, there was elation but also some disbelief. Did it finally happen?”

On April 1, New York Gov. Andrew Cuomo signed into law the congestion pricing system for New York City. Beginning in 2021, drivers entering the city’s central business district (CBD) south of 60th Street will pay a daily fee.

The details of the plan including fee levels will be worked out over the next 18 months, but the law mandates that the plan raise at least \$1 billion annually, which will be leveraged to bring in as much as \$15 billion in financing to fix the city’s ailing transit system.

STEVEN PIETZER / GETTY IMAGES





## ACEC NEW YORK ARE KEY ADVOCATES



## EARLY EFFORTS

Schwartz, CEO of Sam Schwartz Engineering, has been a vocal proponent of congestion pricing for decades, but the issue did not resonate until 2008 when former Mayor Michael Bloomberg put it on the table.

The proposal did not get very far, according to Alex Matthiessen, a senior adviser to the FixOurTransit coalition. "It is hard to raise new revenue politically absent a crisis," he says.

Congestion in the city was bad, the subway system was deteriorating and air pollution from all the vehicles stuck in traffic was graying the sky, but nothing was so bad that people were willing to pay more to fix it.

**Only 118,000 commuters, or 4 percent of working residents from the boroughs outside of Manhattan, would have to pay the congestion fee, and only 5,000 of those would be low-income**

Matthiessen, Schwartz and other transit experts realized, however, that trends in the city were moving toward a crisis. Schwartz developed a model congestion pricing plan for the city, and Matthiessen launched the Move NY coalition, a group that included environmental and transit groups, community organizations and business and labor groups advocating for congestion pricing as the best solution to create a functioning, reliable and affordable transportation system in the city.

ACEC New York was one of the first business organizations to join Move NY. "ACEC New York came on in support of congestion pricing very early," says Matthiessen. "That was big for us because they have strong relationships in Albany,

## Current Systems and Future Possibilities for Congestion Pricing

**N**ew York City will be the first U.S. city to implement congestion pricing, but systems have long been in place in several foreign cities, including Singapore, London and Stockholm.

In those three cities, the congestion pricing programs faced initial skepticism and anger from commuters and businesses prior to implementation, but those reactions quickly changed, and all three have been relatively successful at reducing traffic congestion and improving air quality.

Singapore introduced congestion pricing in the mid-1970s, but its current program dates to 1998. All vehicles are fitted with an electronic device that automatically records their fees when they pass under one of more than 80 gantries surrounding the central business district.

While Singapore traffic volume has continued to grow, the transit use has grown almost three times faster. According to *The New York Times*, congestion increased by 22 percent from 2004 to 2014. During that same period, transit trips increased more than 63 percent.

London started its system in 2003, cordoning off an 8-square-mile zone in the center of the city. A system of cameras around the zone records the license plates of vehicles entering the zone, and the city sends owners a monthly bill.

London enjoyed substantial traffic reductions in the early years, but congestion has become progressively worse for two reasons. First, the system went into effect prior to the ride-sharing boom. For-hire vehicles have been lumped into the same category as cabs, which are exempt from the con-

gestion charge. As a result, the use of Uber, Lyft and other ride-sharing services has exploded inside the congestion zone. Second, trucks delivering online purchases block the city's many narrow roads.

"Nonetheless, overall traffic volumes remain lower than in 2003, and the city has taken advantage by adding pedestrian plazas as well as bus and bike lanes," says Sam Schwartz, CEO of Sam Schwartz Engineering.

Stockholm's congestion pricing started in 2007, using gantries and cameras to record vehicles entering the downtown area. Traffic in the zone dropped by about 22 percent in the first year and has remained around that level.

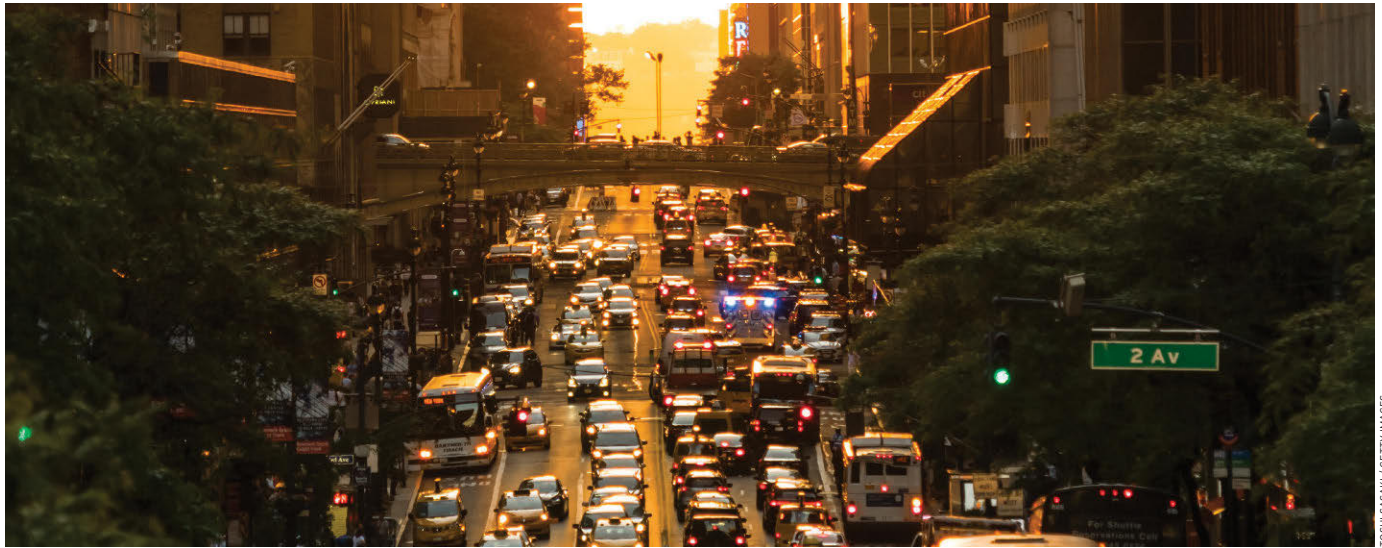
Several U.S. cities are reportedly considering congestion pricing.

"Los Angeles put out an RFP in April for a feasibility study to look into congestion pricing," says Ali Chaudhry, senior vice president and chief development officer at AECOM. In May, the Washington, D.C. City Council proposed a \$495,000 study to analyze the costs and benefits of congestion pricing. "Seattle and Chicago could also be good jurisdictions," Chaudhry adds.

However, New York City's experience will play a huge role in the future of congestion pricing in this country, he says.

"How New York implements and administers this new system will serve either as an example to cities or as a cautionary tale," Chaudhry wrote in an op-ed article in *The New York Times*. "New York cannot afford to get this wrong. If we can make congestion pricing work here, we can make it work anywhere."





TOSHI SASAKI / GETTY IMAGES

and they understand the dynamics and strategies for getting things accomplished in the capitol.”

Over the next several years, Move NY built support for the model congestion pricing plan to fix the Metropolitan Transit Authority (MTA) system. “The most important effort was our grass roots organizing,” says Matthiessen. “Advocates were able to channel the increasing frustration of transit riders.”

One peculiarity about MTA is that the governor and the state Legislature—rather than city officials—oversee the system. “It was important to make sure the governor felt the appropriate pressure to make this a priority,” Matthiessen says.

Concurrently, Move NY continued to fine-tune the congestion pricing plan that Schwartz developed. Primary pieces of the plan were a one-time daily cap on tolls into the CBD, which would be variable depending on the time and the day, lower tolls for bridges and tunnels serving the outer parts of the city and targeting a portion of the revenue toward improving service in “transit deserts,” areas of the city with little or no access to transit.

**Traffic in the CBD  
had also gotten  
worse, with the  
average speed  
in Midtown  
falling to  
4.7 mph**

that only 118,000 commuters, or 4 percent of working residents from the boroughs outside of Manhattan, would have to pay the congestion fee, and only 5,000 of those would be low-income.

“The CSS study found a 38:1 ratio in terms of low-income benefiting because the vast majority use transit versus those who may have to pay the charge,” says Schwartz.

In 2016, Schwartz began talking with Ali Chaudhry, who

Opponents of the plan focused on the impact congestion pricing would have on lower-income New Yorkers who must drive to work or live in the CBD. Move NY countered with a report by the Community Service Society (CSS), a nonprofit that supports congestion pricing, which found



**“For New York City  
to grow, we need a  
good, strong transit  
system, stable funding  
and relief from the  
paralyzing traffic.”**

**SAM SCHWARTZ  
CEO**

**SAM SCHWARTZ ENGINEERING**

at the time served as counsel to Cuomo. He later became the deputy secretary of the NY Department of Transportation and then in 2018 joined AECOM as senior vice president and chief development officer.

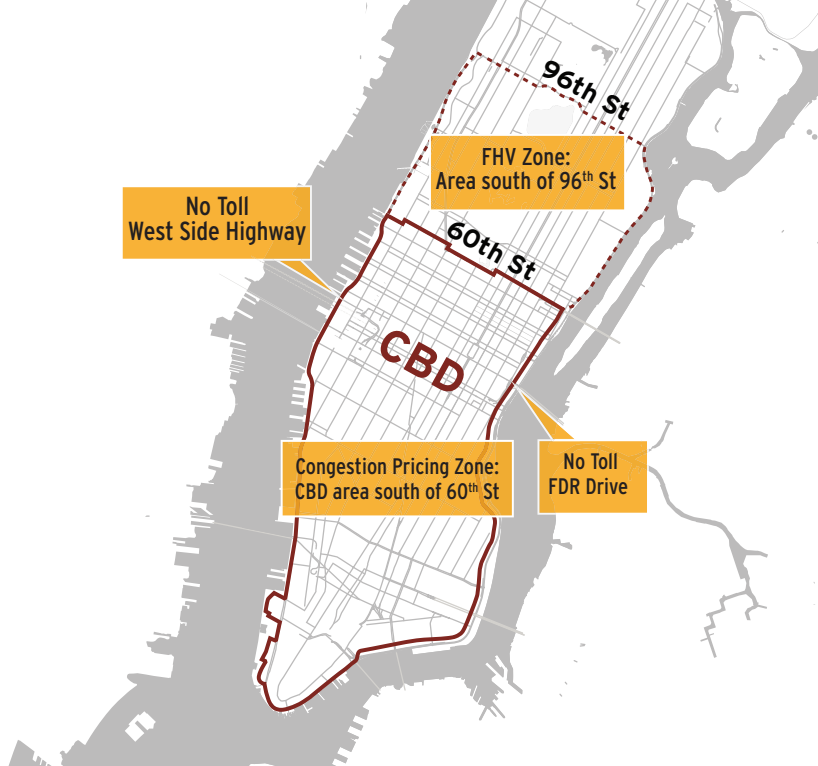
“We worked through his Move NY plan, flagging legal issues and pieces that might not be politically palatable,” Chaudhry says. “We got the plan to the point where it could be viable for the governor to contemplate endorsing.”

#### **WINNING PASSAGE**

All the while, the city’s transit system was getting worse and falling into a death spiral in which decreasing ridership forced fare hikes which further decreased ridership and required even higher fares. According to *The New York Times*, Cuomo suggested that without a new source of revenue, subway and bus fares in the city would have to increase by 30 percent.

Traffic in the CBD had also gotten worse, with the average speed in Midtown falling to 4.7 mph. According to INRIX, a transportation analytics firm, the average speed in the nation’s downtowns is 15 mph.

The crisis had arrived, and Move NY was ready. When Cuomo embraced the plan and signaled that he would lead it, Matthiessen moved to expand support. “We ultimately changed our name to FixOurTransit,” he says. “It is the same coalition



## CONGESTION PRICING

- FHV charge began Feb. 2019 South of 96<sup>th</sup>
  - \$2.75 Uber/Lyft • \$2.50 • \$0.75 Shared Rides
- Traffic Mobility Act—Passed 4/1/19
  - CP all vehicles South of 60<sup>th</sup>
  - Revenue goal = \$15B bonds
    - 80% Subways & Buses
    - 20% Railroads
- Fee??
- Traffic Mobility Board report due Nov. 2020 (after elections)
- Earliest date Jan. 2021
- Exemptions:
  - FDR Drive & Westside Highway thru trips
  - Vehicles transporting disabled
  - CBD residents income < \$60K

but broader and more diverse. For example, we added Uber, the Real Estate Board of New York and several more unions.”

When the measure passed and was signed into law by the governor, Schwartz took a moment to enjoy the success and went back to the office because “there was still a lot of work to do.”

### THE HARD PART

Over the coming year-and-a-half, the MTA and a yet-to-be-appointed six-member Traffic Mobility Review board will put the meat on the bones of the congestion pricing system.

There are three stages for implementation, according to AECOM’s Chaudhry. The first stage, which began in February, was adding a \$2.50 to \$2.75 per ride user charge on for-hire vehicles south of 96th Street. The charges are expected to raise \$400 million annually.

“A portion of that revenue will go to fund immediate improvements in the city’s transit deserts,” he says. The MTA will need to add new bus services before congestion pricing goes into effect, so drivers will have options other than climbing in their cars.

The second stage will be setting up the pricing structure.



“The system needs to work seamlessly, not disrupt people’s lives. The success of the system depends on people buying into it.”

**ALI CHAUDHRY**  
SENIOR VICE PRESIDENT AND  
CHIEF DEVELOPMENT OFFICER  
AECOM

“They have to determine how the system will work,” says Matthiessen. “What amounts will they charge? What hours? Will there be peak and off-peak pricing? Just two tiers or multiple tiers?”

Finally, the installation and construction of the system. “The linchpin in this program will be technology,” Chaudhry says. “The system needs to work seamlessly, not disrupt people’s lives. The success of the system depends on people buying into it.”

One significant issue popped up before the ink on the governor’s signature was even dry—exemptions. Numerous groups are lobbying that they should not have to pay the congestion charge, including Manhattanites, residents of the outer boroughs, New Jersey residents, truckers, motorcyclists and cab drivers. The plan currently provides for only three exemptions, for emergency vehicles, low-income residents living inside the zone and vehicles carrying people with disabilities—but the political pressure to grant more will be intense.

“I am a hard-liner when it comes to exemptions,” Schwartz says. “We have 15 toll crossings in New York City today, and we have hardly any exemptions at those facilities. I think we should hold that line.”

As the plan comes together, Matthiessen and Schwartz say the advocates still have a major role to play, keeping the pressure on officials, making sure the process is transparent and protecting the key principles of congestion pricing.

“We need this plan to be successful,” says Schwartz. “For New York City to grow, we need a good, strong transit system, stable funding and relief from the paralyzing traffic. Congestion pricing is a double-edged sword that pierces both the revenue needs for transit and solves the traffic problem.” ■

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



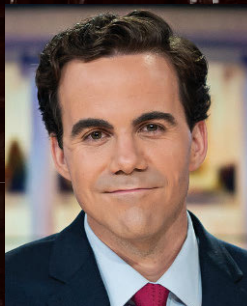
# ACEC

AMERICAN COUNCIL OF ENGINEERING COMPANIES

## 2019 FALL CONFERENCE

October 13-16, 2019  
Sheraton Grand Chicago

### FEATURED SPEAKERS



National Political Reporter for *The Washington Post*, **ROBERT COSTA** will speak on "Inside American Politics: Now Through 2020"



The Creator of "Poetic Voice" and Inspirational Speaker, **SEKOU ANDREWS**, will discuss **D.I.Y. Innovation**



**ANIRBAN BASU**, the Chairman & CEO of Sage Policy Group, Inc. will give an **Economic Outlook**



**KELLER RINAUDO**, Founder and CEO of Zipline, International

**#ACEC2019CHICAGO**




The Block Island Wind Farm, a series of five wind turbines off the coast of Rhode Island, is the first offshore wind farm of its kind in the United States. More than 1.5 GW of offshore wind is slated for operation off the Atlantic Coast by the end of 2020. POWER Engineers designed a 20-mile undersea cable connecting Block Island to Rhode Island and worked on environmental monitoring and compliance, and is preparing for an increase in demand for associated services.

# RENEWABLE ENERGY FO

BY SAMUEL GREENGARD



A photograph of several offshore wind turbines in the ocean. The turbines are white with yellow bases, and the water is a deep blue. The sky is not visible.

# POWERS RWARD

**Political winds may shift, but renewable energy is rapidly moving into the mainstream**

**Renewable energy** has always lurked in the shadow of fossil fuels. It has long been regarded as an ancillary energy source that is rooted in the green movement. But over the last few years—at a time when a renewed push toward coal and oil has become politically fashionable—renewable energy has suddenly powered its way into the mainstream.

“The technology has advanced, and the cost of producing renewables has dropped. We are now at the point where renewable energy is sometimes a better investment than conventional energy,” says David Bernier, vice president of the power division at Stantec.



Kizildere-2 is one of the largest geothermal plants in Turkey, a country that recently installed more than 1 GW of geothermal capacity. POWER Engineers worked on both Kizildere-2 and Kizildere-3, part of a long history of international geothermal design.



ZORLU ENERJİ

## CO<sub>2</sub> emissions are down **28 percent** from their peak in the U.S., partly due to increased adoption of renewables

state in the U.S. now has wind farms under construction or in operation and capacity has reached record levels. Offshore wind is also emerging as a viable energy source. Meanwhile, solar, hydroelectric, biofuels and other renewable sources continue to advance.

For ACEC members, all of this represents an enormous opportunity. Wood Mackenzie predicts that solar and wind power combined will make up 23 percent of the global power market by 2035. Yet, it is not only new windfarms and solar power facilities that beckon. New types of energy facilities, including microgrids, will unleash additional changes in the

Bernier is not the only one to take notice of a rapid shift toward renewables. Energy consulting firm Wood Mackenzie noted in 2017: Wind and solar are poised to radically reshape energy markets with annual growth rates of 6 percent for wind and 11 percent for solar over the next 20 years.

The real world evidence of this changing energy landscape is also apparent. Every

marketplace. Battery-storage technology promises to make renewables more attractive, including in areas where wind or sun are not consistently available.

“We have reached an inflection point with renewable energy sources,” says Barry Worthington, executive director of the United States Energy Association (USEA).

### WINDS OF CHANGE

The appeal of renewable energy is not difficult to understand. In an era of growing concerns about climate change and carbon emissions, it represents a cleaner and more sustainable approach to energy. The problem with alternative sources of energy—wind, solar, geothermal, biofuel, hydroelectric and others—is that, in the past, they have not been economically viable on their own accord. In the U.S., federal and state governments have found it necessary to provide subsidies and tax credits to promote development and adoption of the technology.

Many of these incentives are ending, at least at the federal level. But far more efficient turbines and solar cells have flipped the economics. According to Wood Mackenzie, returns on renewables have reached a respectable 7 percent to 10 percent annual rate.

“Technological advances have come much faster than anticipated,” Bernier says. Consequently, states are embracing

renewables and some, such as California, are promoting widespread adoption through new laws and regulations. Beginning in 2020 for example, all new homes in California must be equipped with solar panels. In fact, the nation’s most populated state has set a goal of adopting



“We are now at the point where renewable energy is sometimes a better investment than conventional energy.”

**DAVID BERNIER**  
VICE PRESIDENT, POWER DIVISION  
STANTEC

DEWBERRY



100 percent renewable energy by 2045. Hawaii has passed a similar law, and Massachusetts is considering a similar approach.

“Attitudes toward renewable energy development seem to be on the upswing, for all types of renewable generation. There is a renewed emphasis on moving toward a clean energy future, definitely overseas but also in the U.S.,” says Greg Clark, senior project manager at POWER Engineers. Two primary factors account for the change, says Clark. The first is a heightened awareness of the need to reduce carbon emissions. The second is a dramatic decrease in the cost of levelized wind and solar energy over the last decade.

“Many states are updating their renewable portfolio standards and adopting much more aggressive goals for renewable energy,” Clark says.

Furthermore, states that only a few years ago would have



“Attitudes toward renewable energy development seem to be on the upswing, for all types of renewable generation.”

**GREG CLARK**  
**SENIOR PROJECT MANAGER**  
**POWER ENGINEERS**

displayed disinterest—and possibly disdain—for various forms of renewable energy are now embracing wind, solar, waste-to-energy and other renewable energy projects.

“We are now seeing greater interest in states that have otherwise experienced little renewable energy growth, such as Michigan, New York, Mississippi and Florida,” says Nicholas DeNichilo, president and CEO at Mott MacDonald.

USEA’s Worthington points out that CO<sub>2</sub> emissions are down 28 percent from their peak in the U.S., partly due to increased adoption of renewables.

The scope of projects is also expanding. Although wind farms



The Camden, New Jersey, headquarters complex of Campbell Soup Co. is the site of a 4.4-MW solar installation.





“There is high demand for development of economical and reliable energy storage along with commercial development of smart grid technology.”

**JOE ESTRADA**  
SENIOR PROJECT MANAGER  
DEWBERRY

operate independent of utility grids but connect to them. These systems use solar, wind, hydroelectric and other energy sources to generate power for a business, university or hospital. Many of these facilities also use batteries to store power and balance load demand.

“These organizations benefit from a cost perspective, but

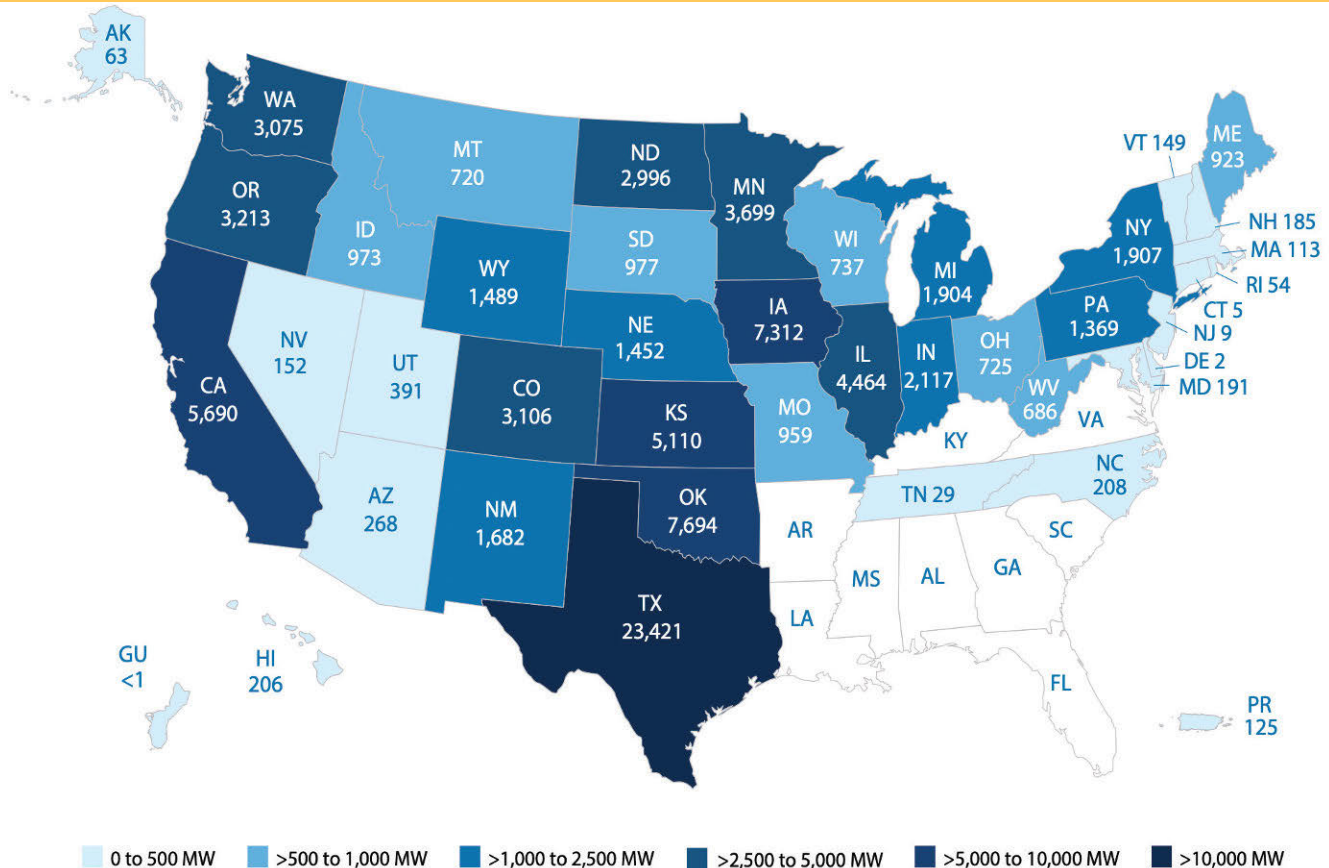
have become a common sight on land as well as off the coast of Northern Europe, they are now spreading to the U.S. In December for example, three energy companies bid a record \$405 million to secure rights to offshore wind farms near Massachusetts. Other projects are on the drawing boards. Only a few years ago there were no offshore wind farms supplying the U.S. The nation’s first offshore wind farm was built in 2015 near Block Island, Rhode Island, a 30-megawatt facility that Mott MacDonald aided in engineering. By contrast, the 390,000-acre Martha’s Vineyard farm is expected to produce 4,100 megawatts, enough to power approximately 1.5 million homes.

“Businesses are adding renewable energy to their operating models,” DeNichilo says. This includes smart microgrids that

they also create a more dependable power supply and they have emergency power during a natural disaster such as a hurricane or earthquake,” Bernier says.

Make no mistake, the desire to embrace renewables is growing—and adoption is spiking. According to the U.S. Department of Energy, 41 percent of all new energy capacity installed in the U.S. involved wind power in 2015. If solar is added, the figure rises to 66 percent. At the same time, the U.S. Energy Information Administration projected in December 2018 that the U.S. will end 2018 with the lowest coal consumption level since 1979. It attributed the change to cheap and cleaner-burning forms of energy, particularly natural gas. It also cited tighter pollution rules that have led to the shutdown of older and dirtier coal plants.

## U.S. WIND POWER CUMULATIVE INSTALLED CAPACITY, BY STATE



American Wind Energy Association | U.S. Wind Industry Third Quarter 2018 Market Report | Public Version



## FUELING THE FUTURE

A different mindset about renewables is emerging.

"Some industry experts originally saw renewables as a disruptor to the grid," says Joe Estrada, senior project manager at Dewberry. "However, the outlook has shifted toward more innovative operations with a big focus on research and development toward technologies to improve system stability for solar and wind generation."

According to Estrada, the bottom line is that engineering firms are well-equipped to address these new projects, including microgrids. "There is high demand for development of economical and reliable energy storage along with commercial development of smart grid technology," he says.

These projects require increasingly specialized expertise. "No two energy facilities are quite the same. Expert engineering and consulting will be needed to design plants that make the best use of a location, reliability of the energy source, type of energy required and challenges of getting the energy to where it is needed," Estrada says. "Engineers will be needed for preliminary and detailed design, construction oversight, and operations and maintenance. The advent of renewable generation in the U.S. has increased demand for new ways of maintaining a stable grid."

Despite these advances, challenges remain. Shifting political frameworks, changing regulations and permitting requirements and local stakeholder involvement can result in complex processes and long delays. Clark suggests that ACEC members keep a close eye on policy developments but also technologies, including battery and energy storage systems.

"Renewable power generation is a dynamic market today, and we are seeing rapid changes that can have a dramatic effect on the use and proliferation of renewables," Clark says. Even with recent tariffs on solar panels imported from China and the reduction of tax incentives, Clark expects the market to advance.

DeNichilo says renewable energy generation will likely become the norm over the next decade. Continued advances in the technology, lower cost production methods for solar, wind turbines and other components and changing views about carbon emissions and green energy all factor into the equation.

Estrada believes that energy producers and power companies also see huge benefits in diversifying and expanding their energy portfolios from both economic and social perspectives. "Utilities are responding to customers' desire that they have a 'green portfolio,' but they also are looking to include new generation alternatives that economically compete with traditional generation methods," he says.

In the end, it is clear that renewables along with large-scale battery storage could fuel enormous changes in the way energy is produced and consumed over the coming decade. In addition, the continued use of nuclear power with more advanced hydroelectric, geothermal and biofuels could further tilt the equation toward alternative energy.

Renewable resources such as solar and wind often need a backup power source. A battery energy storage site in Pomona, California, provides a fast-reacting, 20 MW/80 MWhr source to help prevent outages and brownouts.



"We could see a massive shift take place," Worthington says. "When you have facilities generating inexpensive energy and storing it to produce inexpensive kilowatt hours, the dynamics and economics of power generation change dramatically." ■

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

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IN SEARCH OF



# Website Brilliance

EFFECTIVE TIPS TO ENSURE YOUR FIRM HAS A STRONG  
ONLINE PRESENCE

BY BOB VIOLINO





**F**or many engineering firms in the digital age, the chance to make a first impression may come from the company's website.

A website is the anchor for a firm's imaging, marketing and business development efforts. Therefore, the site should make an immediate and effective impression on the intended audience. The key is understanding whether or not the site maximizes its effectiveness regarding an engineering firm's operations and brand.

Given the increasing visual technology and other development tools available today, there is no excuse for a website that looks like it was produced in the 1990s.

What do firms need to do to create an effective and modern website? Below are 10 ways you can improve your firm's online front door to make it more interesting, helpful and useful, based on the input from technology and engineering industry experts.

## **1. DEVOTE SUFFICIENT TIME TO WEBSITE FUNCTIONALITY**

How well your website functions is vital. What is the point of having a beautiful site if visitors get frustrated with its performance and functionality and leave after a few minutes?

"If your website does not function flawlessly, it negatively affects your credibility as an engineering firm. I would equate a broken feature on a website to a math error on engineering drawings," says Brian Byer, vice president, general manager of Blue Fountain Media, a Pactera Co.

"No matter how much thought and effort you put into website strategy, the user experience or overall design, if your site does not function efficiently, prospects and existing customers will go elsewhere," says Byer. "Additionally, a suboptimal website demands more effort and time from your own team to monitor and troubleshoot. Ultimately, it will be more difficult to update, change or navigate."

How do you know if your site is functioning correctly? "Conduct a website audit, using volunteers from within and outside the engineering industry," says Byer. "Have them note pain points, dead links or other obstructions on your website. Even if the website is technically functioning, ask where they feel the resource lacks appeal or leaves them underwhelmed."

## **2. KEEP FLEXIBILITY IN MIND WHEN DESIGNING THE WEBSITE**

The internet—and technology in general—is not static. Change is constant, and engineering firms must be ready to continuously update their websites.

"My first rule is to always design with flexibility in mind and avoid any design choice that applies some kind of restriction or limitation," says Bill Kloster, CIO at Short Elliott Hendrickson (SHE). "You never know when you are going to need to add another button, paragraph, column or row."

Firms should avoid any modules that require leveraging some minimum or maximum number of assets, according to Kloster. “As an example, one of your engineering service pages may currently have zero completed projects to showcase, just one or perhaps a hundred,” Kloster says. “Design your page templates and content types in a way that can accommodate any scenario so you never have to say ‘Our website was not designed for that.’”

### 3. AIM FOR A CLEAN AND ECONOMICAL WEBSITE LAYOUT

No website, especially an engineering firm’s website, should be cluttered, according to Benjamin Portman, founder and president of Orphus, Inc., a provider of web design and development services.

“The content should economically utilize the screen real estate and combine compelling images, modern fonts and other design elements such as icons and animations,” says Portman. “These make your content more engaging and attractive to web visitors.”

The website’s navigation should also be simple and intuitive, so the audience can easily find the content they are seeking.

### 4. LEVERAGE UNIQUE ASSETS AND CONTENT

Being unique and innovative is key to success. “While your firm may not have employed a cookie-cutter design template to create its web presence, did you differentiate yourself from competing firms?” Byer asks.

A key, influential component of a strong marketing communication program is highlighting a differentiator between your firm and competing firms. “Make sure you call out strengths loudly, clearly and often throughout your website. If you cannot do it visually, do it with compelling, but bold and succinct text,” Byer says.

But firms often fail to make the most of the opportunities on their website or social media to reach potential clients. For instance, many firms abandon blogs after six months or so finding them burdensome to maintain, according to Byer. “That is a big mistake,” he says. “A blog, podcast or a frequently updated Instagram account are all great ways to amplify your unique approach to engineering projects and the results you produce for your clients.”

### 5. BUILD A WEBSITE DESIGNED TO SUPPORT MOBILE DEVICES

Anyone with a smartphone has likely experienced websites that look as if they were designed before the advent of smartphones.

That is a big problem, because if the website is not mobile ready visits will likely be short and ineffective.

“The most dramatic evolution in websites in recent years has been the shift from an audience almost entirely on desktop and laptop computers to a majority mobile device audience,” says Portman. “As mobile device usage continues to increase, companies in all industries must ensure the mobile experience is as good as or better than the desktop experience,” he adds.

“Your site should not only look great on desktop and mobile, but also on all sizes in between such as small laptops, tablets and mobile devices,” says Portman. “All website functions should also be gesture enabled, so they function correctly on mobile and tablet.”



“While we want to highlight our company’s remarkable thought leadership, our most popular, and shared, content tends to revolve around the daily lives of our people.”

**BILL KLOSTER**  
CIO  
**SHORT ELLIOTT  
HENDRICKSON**

### 6. KEEP CONTENT INTERESTING—AND PERSONAL

When it comes to marketing content, the audience tends to skew toward feel-good, employee-related stories, advises Kloster.

“While we want to highlight our company’s remarkable thought leadership, our most popular, and shared, content tends to revolve around the daily lives of our people,” says Kloster.

That includes items about new hires, promotions, award winners and “day in the life” articles. “It is important to find your right balance of people stories in relation to thought leadership stories,” says Kloster.

Furthermore, personalization will be a key attribute of future websites, predicts Kloster. That includes the ability to account for actions that website visitors have already taken. “For example, if I visited a website and downloaded an eBook, I should not see a pop-up ad for that very same eBook upon my next visit,” he says.

Instead, the website should offer a follow-up survey, a bonus offer or additional download. “Something that demonstrates my presence has had an impact on the landscape of the website,” says Kloster. “Moving forward, every visitor’s experience on your website should be personal and unique.”

### 7. DO NOT OVERLOOK THE CALL TO ACTION

Oftentimes commercial services websites fail to move past being something other than a flashy

portfolio of promising solutions and past accomplishments, according to Byer.

“While that type of visual resume makes for great brand marketing, the firm will actually miss out on a lot of potential sales leads by failing to drive qualified traffic, convert leads and inspire repeat visitors,” says Byer. “Aside from spotlighting capabilities, a sophisticated engineering website needs to be designed so that it entices the visitor to share their contact information or make a call to the firm.”

According to Byer, some effective ways to accomplish this



include supplying numerous opportunities to involve potential leads in email marketing campaigns; nurturing leads with an offer of free case studies, video how-tos, white papers, e-newsletters or blog update notifications; baking into every page some call to action, whether it is signing up for more info or calling the firm; and making sure to display contact information at the same spot on every page, so visitors do not have to search to find it.

## 8. CREATE AN ENGAGING VALUE PROPOSITION HEADLINE

You have less than five seconds to capture someone's attention before they leave your website, according to Portman. Therefore, boiling down your entire organization's value proposition to a short mission statement that is memorable and effectively explains to visitors what services your engineering firm offers before they lose interest is critical.

This can be five to 15 words that accurately describe your business. "Website visitors typically reward tasteful creativity in this area," says Portman.

## 9. MAKE SECURITY AND RELIABILITY HALLMARKS OF THE WEBSITE

Websites not only need to look nice and include interesting and informational content, they also need to be reliable and secure.

"The complexity of reliability and security needs will vary depending on your firm and how the site is used," says Rick Nystrom, director of IT at Degenkolb Engineers. "An e-commerce website that captures and stores customer information will need a much more robust level of reliability and security than an informational site."

If the website has a form to collect data such as contact information, Nystrom recommends the use of a Captcha to filter out bots and cut down on phishing emails.

## 10. BE DYNAMIC AND ALLOW FOR INTERACTION

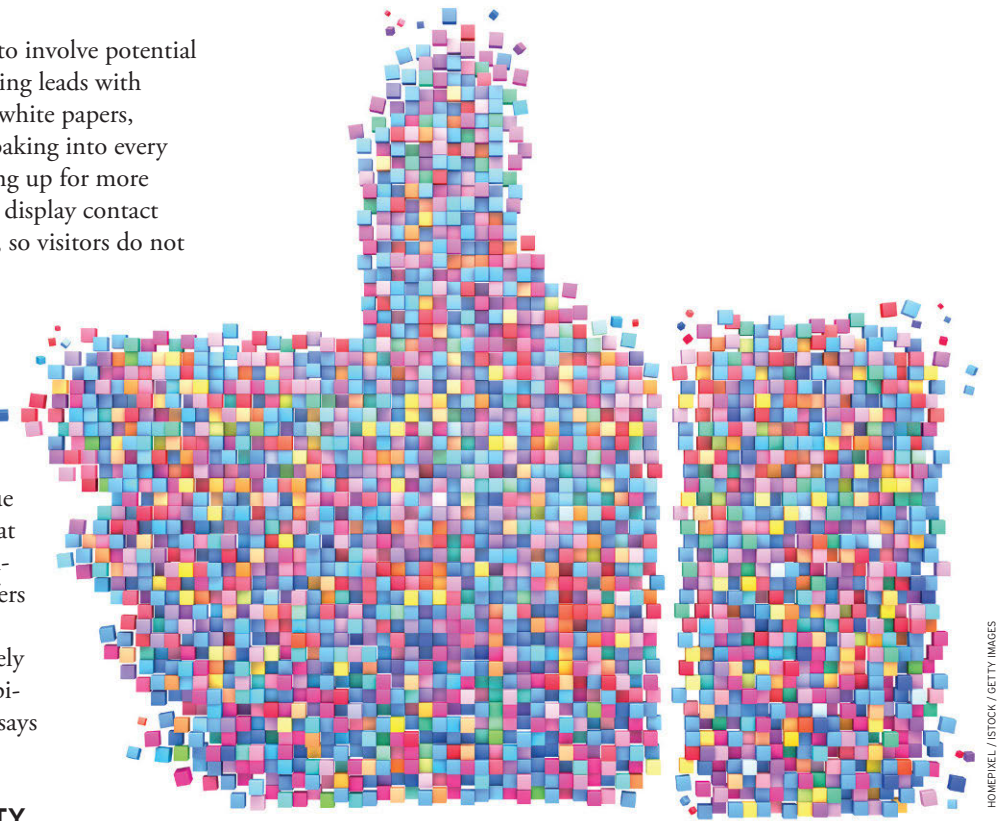
"In concert with the move to mobile, we have also seen websites becoming far more interactive and dynamic," says Portman.

It is now common for organizations to incorporate animations and even 3D elements that change perspective when the user interacts with them, according to Portman. "Searchable pages also now load search results using asynchronous scripts that do not require the page to reload, and results can even update on each key press if the search is text or keyword based," he says.

In the future, Portman expects to see broad adoption of front-end JavaScript libraries such as React, Angular and Vue in nearly all modern websites. Websites built with these frameworks are capable of much faster page load speeds than traditional websites, he adds.

"These libraries can pre-load content in the background, use the web visitor's CPU power to do more heavy lifting and make a very snappy impact when contrasted against sites with two-to-five second page load times," says Portman.

The visual dynamic of the website should accurately convey



HOMEPixel / iStock / Getty Images



"While your firm may not have employed a cookie-cutter design template to create its web presence, did you differentiate yourself from competing firms?"

**BRIAN BYER**  
VICE PRESIDENT, GENERAL MANAGER  
BLUE FOUNTAIN MEDIA

the energy and culture of the firm and the language has to set a professional and personal tone, according to Jeffrey Essmann, marketing communications website and staff writer at engineering firm Jaros, Baum & Bolles.

"Of course, it has to distinguish itself from the hundreds and thousands of other dynamic websites in the same industry competing for attention," says Essmann. "But the dynamic of a firm is not determined so much by its philosophy or by its success as by its personality. The trick is to somehow capture that personality and let it guide the potential client or employee through the site." ■

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







HOW TO CREATE

# COMPELLING PROPOSALS

**A GREAT PROPOSAL CAN SWAY CLIENTS AND WIN NEW BUSINESS,  
BUT FINDING THE RIGHT FORMULA IS THE CHALLENGE**

BY SAMUEL GREENGARD

# W

inning a new business deal is always a deeply satisfying moment. It means that an engineering firm can keep staff engaged, systems operating and revenues flowing. Yet the quest for new projects often leads a firm into unsure and unpleasant territories. Proposals require substantial time, energy and resources—sometimes extending into hundreds of hours and thousands

of dollars—with no guarantee that a firm will wind up with a signed contract and earn even a penny.

“Producing a proposal is a time consuming and sometimes expensive process that requires attention to detail. It also requires some creativity, an ability to write well and a need to present the proposal in an appealing format,” says Jim Creedon, president of Creedon Management Associates, a consulting firm that provides strategic business guidance to architectural, engineering and construction management firms. “Proposals often take engineers into a zone they are not entirely comfortable with and not always prepared to handle.”

Indeed, engineers often view proposals as a tedious, tiresome, frustrating, even annoying but necessary task. Furthermore, when they generate proposals the focus can be fuzzy, the format may be distracting or the proposal’s main points are buried, missing or unreadable. Too many engineering firms continue to pump out sub-par proposals, according to industry consultants, but it does not have to be this way.

“Firms that tune into client needs and take the time to produce great proposals are at a distinct advantage,” says Curtis McHale, a business coach and consultant who heads the firm SFNDesign.

## A MODEST PROPOSAL

It is true that a proposal can steal time away from existing projects and billable hours, and can often seem like a merry-go-round that leads nowhere. But adopting a negative view of proposals and attempting to take shortcuts or minimize the time and energy required to produce them almost guarantees failure.

“You have to start with a recognition that it is a time-consuming process. A good proposal requires considerable attention to detail,” says Creedon.

Firms that bang out proposals quickly and formulaically are almost certain to fail. “You cannot just check the boxes. You have to do the background research, understand the client’s needs and develop a proposal that tells the story of how you can specifically benefit the client,” says Meghan Stiklestad, marketing director at Mead & Hunt. “For example, instead of merely stating that a firm has 50 offices, something that communicates no intrinsic value to the client, you make it relevant by also noting you have an office five miles from the jobsite, which means your project manager can be there within minutes to address any issues that may arise, helping provide a smooth project delivery,” she says.

Communicating value for the client hinges on reading the RFP closely, asking necessary questions and even studying the specific words and terms used in the request and mining them for clues about how the company is thinking.

“You have to do more than say you will deliver benefits; you have to provide specific proof that you have handled this type of project in the past,” says Stiklestad. “It is important to deliver hard evidence, particularly quantitative data, that clearly demonstrates you have delivered positive results—and proof that you can apply past knowledge and expertise to the current project.”

A strategic framework for developing proposals is essential, according to Nicole Sparks, director of marketing at Simpson Gumpertz & Heger (SGH). “Defined processes are important to make sure your firm is balancing technical detail, effective writing and compelling visuals to produce a responsive, tailored proposal,” she says.

SGH strives to understand as much as possible about the client—along with the firm’s history with the client—before diving into a proposal. “Ideally, we will have a kickoff meeting to develop a strategy for our proposal,” says Sparks. From that point forward, the technical and marketing team members work together to address key points but also ensure the client is the focal point of the proposal. In some cases, depending on the circumstances, this same team may work together to prepare for a short-list interview or presentation.

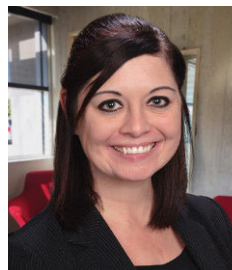
## PRESENTING A CASE

A great proposal is more than a collection of the pertinent facts, figures and technical information, it is presenting the case in a logical, readable and appealing format. According to Creedon, too often the impact is diminished because a proposal lacks focus. This may occur for a few different reasons. An engineering firm may rely on old, inflexible or poorly constructed templates. Or the writing may lack clarity and come across as too obtuse or confusing. Still another possibility is that the proposal lacks organization and focus.

Addressing these issues is paramount. The executive summary is a make-or-break proposition, Creedon advises. “It serves as the road-map for the proposal. It must encapsulate the key issues and clearly articulate what value a firm brings to the project,” he says. A series of bullet points is not sufficient. “You want someone to read the section and understand why they want to work with your firm. You have to communicate what you are offering and how you can address specific requirements.”

A complete proposal may vary from 10 pages to 100 pages or more. According to McHale, the proposal typically involves six key sections:

1. Identifying the current problem
2. Stating two or three primary objectives



“You have to do the background research, understand the client’s needs and develop a proposal that tells the story of how you can specifically benefit the client.”

**MEGHAN STIKLESTAD**  
MARKETING DIRECTOR  
MEAD & HUNT



# 7 Essential Steps to Building a Best Practice Proposal

**1. Understand the RFP.** Does it hinge on legal requirements? A new service or process? A company looking for a new contractor or partner? Is there an internal requirement? "Understanding the 'why' can help guide your strategy," says Jim Creedon, president of Creedon Management Associates.

**2. Spot Warning Signs.** Is the RFP the same as the last RFP? What is the timeframe for the response? What is required in terms of materials and experience? "Sometimes, it is wise to say 'no' upfront and put your energy elsewhere," says Creedon.

**3. Look for Clues in the RFP.** Does the RFP make multiple requests for certain information? Does it refer to previous projects? What is the time period for questions, responses, review and presentations? Who is on the selection committee and what selection criteria will they use? These factors provide clues about how to structure the proposal.

**4. Focus on Key Factors that Make a Proposal Effective.** Clarity is critical. Avoid the obvious and present ideas that motivate the reader to obtain more information. Package the information in a digestible format. "Finally, if you are not qualified for the project, do not try to make it up. It is OK to say 'no,'" says Creedon.

**5. Make the Proposal Interesting.** Include a crisp and clear executive summary, present fresh ideas, make the ideas compelling and show how your firm will generate value for the client. Avoid clichés. "Help the client imagine success," says Creedon.

**6. Make Basic Information Interesting.** All references to projects should be real and highlight relevant challenges and issues. Use tables, graphics, illustrations, videos and other images to help illustrate concepts. Avoid dull stock images. Confront the challenges of the project directly and demonstrate how your firm can solve them, using proof points from past projects.

**7. Avoid Sounding Like Everyone Else.** Avoid jargon like "industry leader" and "largest" or "nationally recognized." Also eschew meaningless terms such as "committed to meeting standards" or "an experienced team."

3. Identifying criteria or metrics that will be used to measure success
4. Options for completing the project such as a low-cost bare-minimum version and a more elaborate but value-focused approach
5. The timeline for the project
6. A list of accountabilities so both parties are clear on their specific responsibilities

A good proposal answers a client's questions and alleviates concerns.

The ability to be concise and focused is critical. "You never want to inundate your client with information," Stiklestad says. "You do not have to explain how everything works. You simply want to deliver the information required for the client to make an informed decision and, preferably, select your firm."

At Mead & Hunt, engineers and marketers work together to ensure a proposal does not veer into a technical swamp but that it offers a strong engineering framework and avoids marketing hype.

Avoiding grammatical, punctuation and spelling errors is also important. Simply running the document through a spell check program is not sufficient. It may find some mistakes but also ignore errors because the word in question is legitimate or it may change a misspelled word into the wrong word.

Another problem Stiklestad points to is lackadaisical proofreading. In some cases, old boilerplate paragraphs may refer to the wrong client or to the wrong project. "Sloppy proposals with a lack of attention to detail are a huge turn-off. Someone must proofread and edit the document before it goes out," she says.

In some cases, graphics may enhance a proposal. A chart, photo, video, infographic or animation can sometimes help readers better understand a complex aspect of a project. In fact, a good graphical element can eliminate a few hundred words of text and answer basic questions about how a sophisticated window treatment or wastewater system works, though it is important to avoid overusing images, according to McHale. "You have to ask whether each element is actually building your case," he says.

## SELLING THE PROPOSAL

In an increasingly competitive industry, standing out from the crowd and thinking creatively are vital. The final proposal should be informative and attractive. It should let a client know what your firm has to offer and why yours is the right company for the project. Whether the proposal is distributed as a PDF or printed, it must make an impact and leave an indelible mark on decision makers.

Sparks says that while most proposals at SGH are produced and distributed via PDFs, the firm hopes to use microsites and digital software platforms to produce more interactive proposals in the months and years ahead. "Digital formats offer the opportunity for more engaging and highly customized proposals," she says.

In the final analysis Sparks says, it is critical to have talented and skilled people overseeing the proposal process and ensuring that any and every document reflects the technical expertise and overall image of the firm. Ultimately, a proposal is not about the engineering firm; it is about understanding and addressing the client's challenges and needs.

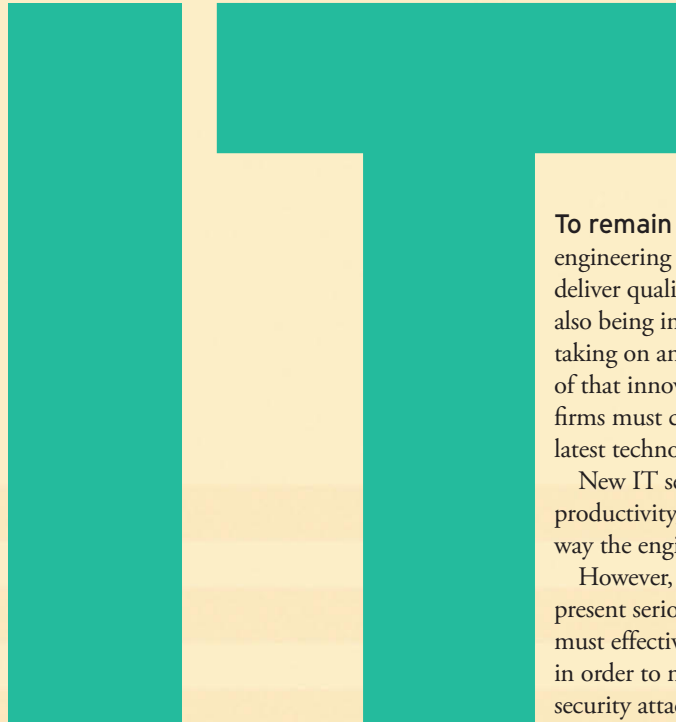
"It is our job to put our best face forward with a professional and polished proposal," says Sparks. ■

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

# LATEST

BY BOB VIOLINO

**IOT, DIGITAL  
TWINS AND 5G  
ARE AMONG  
THE NEWER  
TECHNOLOGIES  
FIRMS CAN  
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TO GAIN AN  
ADVANTAGE**

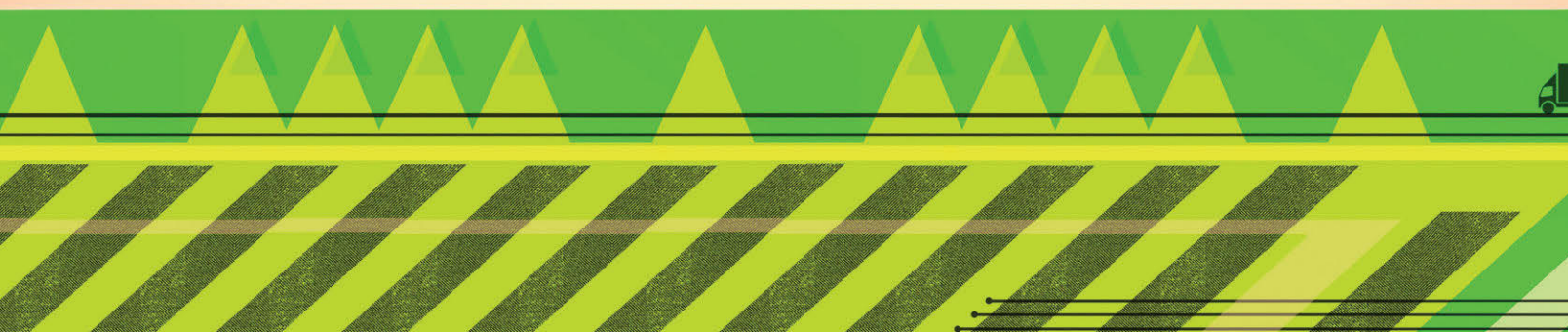


To remain competitive in today's engineering market, ACEC members must deliver quality projects at the right price while also being innovative in their approach to taking on and completing these projects. Much of that innovation comes in the form of IT, and firms must continuously explore and deploy the latest technologies to gain an advantage.

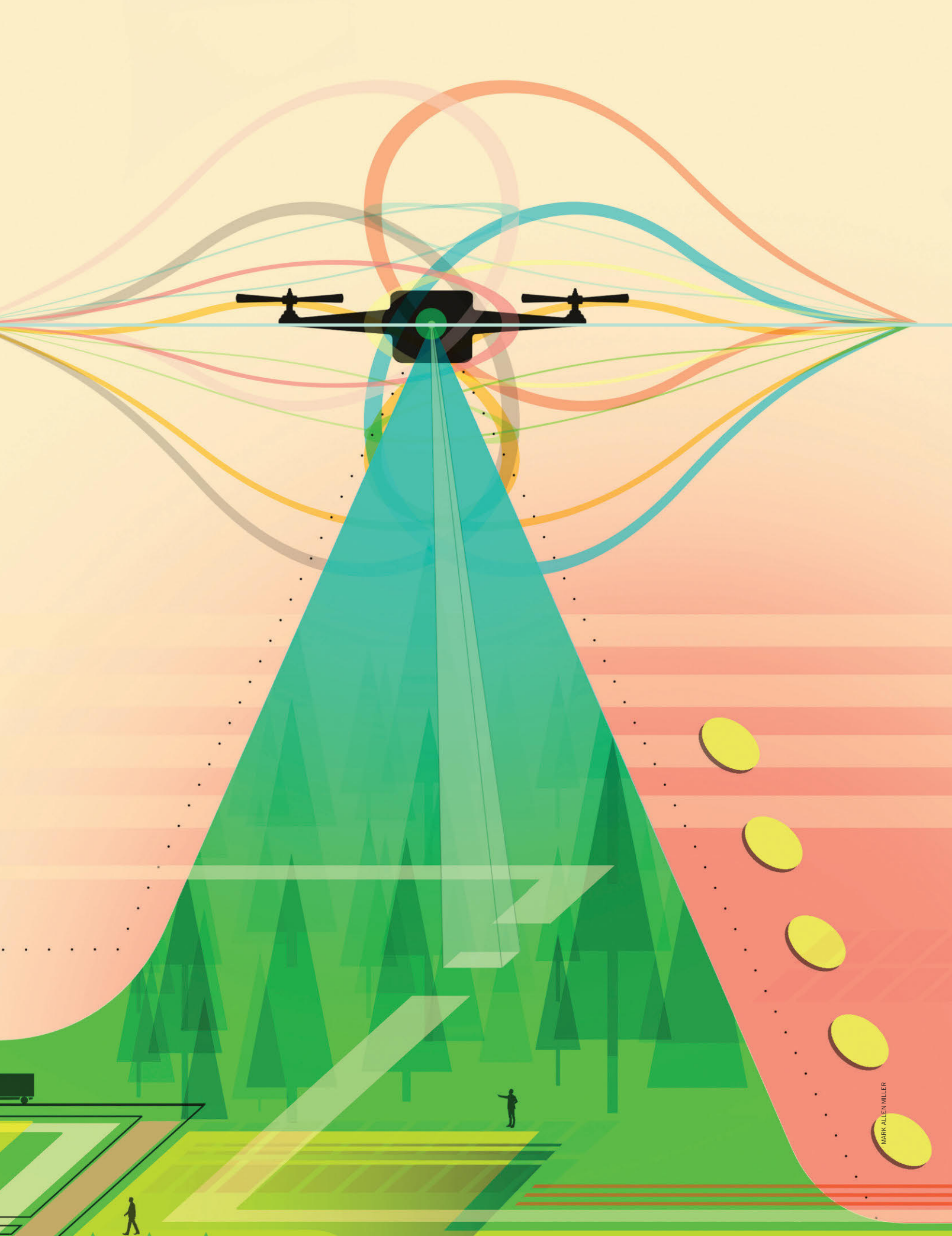
New IT services can help firms increase productivity, improve security and change the way the engineering industry conducts business.

However, some of the newer technologies present serious challenges. As a result, firms must effectively address those challenges in order to mitigate risks such as cyber-security attacks.

## INNOVATIONS FOR ENGINEERING







## THE KEY TO INNOVATION

“One of the key technology trends is the push for aerial intelligence,” says Terry D. Bennett, owner and chief innovation strategist at Infra Foresight Consulting.

“On-demand capture via drones with sensors for photogrammetry, thermal or multispectral imagery, and laser scanning are producing powerful workflows that dramatically shrink the built environment capture-to-analysis timeline,” says Bennett.

With this technology, firms can gain more and better insight in far less time than the past.

Another new technology gaining traction is software and intelligent data that produce 3D digital twins—digital mirrors of the physical world. With this capability, firms can create digital models that get closer every day to duplicating the physical world in a virtual environment.

“This opens doors to powerful capabilities and downstream uses in planning, design, construction and operations,” Bennett says.

With the ability to extend and enhance these digital twins into augmented reality and virtual reality environments, interact with and interrogate them using artificial intelligence (AI) and machine learning, or iterate on their future with generative design software, the engineering industry can try an unlimited number of alternatives or account for multiple variables or criteria and build stakeholder consensus simultaneously, according to Bennett.

## INTERNET OF THINGS

Another technology trend is the internet of things (IoT), in which countless devices, products, sensors and other objects are interconnected via the internet.

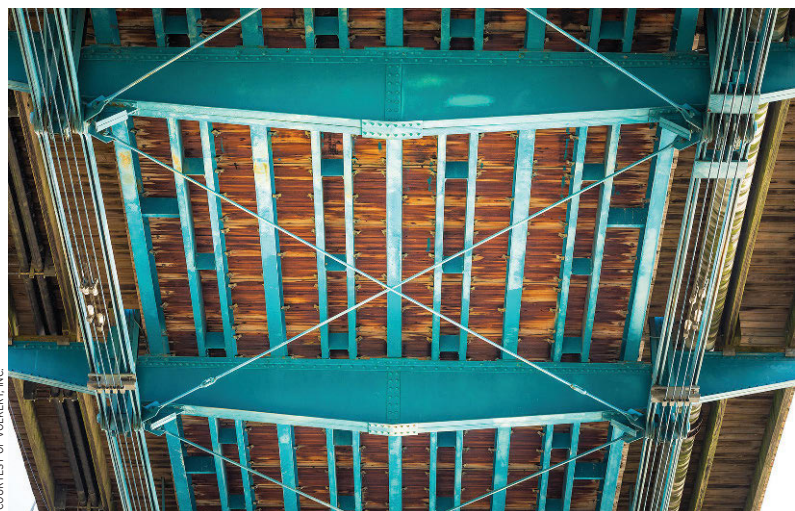
“IoT technologies are very much happening right now,” says James Stanger, chief technology evangelist at CompTIA. “We have tracked technology implementations, and IoT is on the top at almost 30 percent of companies we polled.”

As a result, there is a need for additional network support to manage the IoT devices.

“All IoT devices generate a lot of traffic that needs to be managed,” says Stanger. “That traffic creates data that needs to be turned into information. So, we need not only network pros to manage the traffic with software-defined networking solutions, but also data analysts.”

One firm, Pennoni, is significantly expanding their offerings to help clients better manage valuable assets.

“For our smaller municipalities, private companies, schools and health care providers, we are looking for ways to help them incorporate asset management principles,” says Markus Weidner, chief innovation officer at Pennoni. “We offer smart solutions



COURTESY OF VOLKERT, INC.

Drone footage during the restoration of the Historic Walnut Street Pedestrian Bridge spanning the Tennessee River in Chattanooga. Volkert is providing design and construction engineering and inspection services to the City of Chattanooga for the rehabilitation and improvements.



“For our smaller municipalities, private companies, schools and health care providers, we are looking for ways to help them incorporate asset management principles.”

**MARKUS WEIDNER**  
CHIEF INNOVATION OFFICER  
PENNONI





COURTESY OF VOLKERT, INC.

to our clients through our work with sensor technology in our intelligent infrastructure systems group.”

Specifically, Pennoni recently implemented roadway scanning technology that uses machine learning to identify defects in the street surface. This technology allows Pennoni to create a prioritization-based maintenance and replacement system.

Other initiatives include the use of virtual reality to help clients see their projects in context; indoor and outdoor 3D laser scanning to accurately collect site information and create 3D models; and a variety of hosted and on-premises asset management platforms that lets clients see building-based assets and their performance over time.

“The implementation of these innovative solutions has added extreme value for our clients,” says Weidner. “One municipal client has experienced up to a 30 percent cost savings through the implementation of our proprietary

OPTICS energy procurement platform.”

For some firms, the cloud offers new capabilities and conveniences not possible or not as feasible with on-premises systems.

Volkert recently conducted a firm-wide conversion to Microsoft Office 365, which gives its entire workforce a host of communication and collaboration tools.

“We are evaluating what integrated programs we should implement firm-wide,” says Jerry Stump, president and CEO of Volkert.

To increase employee productivity, the firm has also implemented a new cloud-based intranet.

“A cloud-based intranet has made a number of business processes much easier to perform. This replaces our old intranet, which was designed for desktop users and provided not much more than storage of reference documents,” says Stump.

“Because it is cloud-based, employees in the field can access the same information using their mobile app. It is too early in the adoption process for us to measure cost savings on these initiatives. But anecdotal feedback indicates that we have made a number of business processes much easier to perform.”

## MOVING TO 5G

A big trend that will make many IT innovations possible in the coming years is the shift to 5G. The faster successor to 4G, communications carriers are set to launch 5G networks for mobile devices in 2019.

Eventually, 5G will be implemented in machines, cars, IoT devices, drones and infrastructure equipment. The move to 5G will allow machines to make long-distance data calls to other mechanical and electrical devices at speeds faster than current internet connections.

“The capabilities of 5G will make it possible to more fully



“A cloud-based intranet has made a number of business processes much easier to perform.”

**JERRY STUMP**  
PRESIDENT AND CEO  
VOLKERT

support IoT,” says Stanger. “We are also seeing how IoT has increased the use of IPv6 [internet protocol version 6].”

This is possible because IPv6 provides more addresses. But more important, according to Stanger, it processes IoT traffic more efficiently.

“Instead of asking the routers to process all of that traffic, the IoT and mobile devices will do more of that under IPv6,” says Stanger. “This will enable more devices but with less congestion at the routers.”

The new 5G generation of wireless data services is expected to have 10 times less data latency, 50 times more speed in transfer and 1,000 times more capacity than 4G/LTE, according to Bennett.

“When you combine the last two capabilities, a 50 times speed increase and 1,000 times capacity, all the IoT uses—for example, smart cities and connected vehicles, smart agriculture and homes, live feeds from drones, connected health, smart media or industrial tools and applications—will be redefined for the better,” he says.

## How UEM Helps Firms Mitigate Risk

IT policies oftentimes cannot keep pace with the rapidly increasing number of devices in use within engineering firms. Employees in the field might leverage a variety of devices, regardless of the policies in place, increasing the risk of exposure for corporate data and infrastructure.

One potential solution to the problem is unified endpoint management (UEM), which can help enterprises secure and control the entire IT environment and all of its endpoints. That includes smartphones, tablets, laptops

and desktops, as well as apps, content and data.

UEM is software that provides a single management interface for mobile, PC and other devices.

“UEM can help resolve traffic management and security issues,” says James Stanger, chief technology evangelist at CompTIA. “This is because endpoints are where the action is when it comes to hacks today. That is where the attackers are concentrating. So it is natural to devise a centralized monitoring solution that focuses on them.”



“It is not hard to understand that as our digital footprint grows and expands, so do the risks and challenges of safeguarding that information from unauthorized uses or sharing.”

**TERRY D. BENNETT**  
OWNER AND CHIEF INNOVATION STRATEGIST  
INFRA FORESIGHT CONSULTING

### ADDRESSING THE CHALLENGES

New technologies can also bring a host of challenges for firms.

“One of the biggest challenges in adopting technology is to find a way to recover the cost of the investment,” Weidner says. “Clients often expect advancements to lower the cost of the product, yet that is a reverse incentive for the industry to be creative and evolve the way it delivers infrastructure projects.”

Infrastructure is increasingly linked to technology, and due to the proliferation of connectivity technologies such as IoT and 5G, almost everything we design today is part of a large technological system, according to Weidner.

“Consumer expectations around simplicity and ease of use set us up with a difficult task: to assist our clients in the discovery and understanding of how complex information solutions can help them better manage their businesses, assets, and citizen or customer relationships,” he says.

Protecting systems and data against cybersecurity threats is a major concern of firms adopting newer technologies. Trends such as the rise of cloud computing, mobile devices and apps in the workplace and the growth of IoT are dramatically expanding attack surfaces of modern IT infrastructure. This makes it more difficult than ever for IT and security leaders at firms to secure the infrastructure.

“It is not hard to understand that as our digital footprint grows and expands, so do the risks and challenges of safeguarding that information from unauthorized uses or sharing,” Bennett says. “Every data file or device becomes a potential entry point that could be exploited.”

With the emergence of 5G networks, new cloud and virtualization technologies such as software-defined networking and network function virtualization is taking place, according to Bennett.

“Due to their open nature, it could create more security concerns,” he adds. “If focus is placed on the security of 5G systems as they are rolled out, such as leveraging the use of blockchains as part of the solution,

we may have a way to improve and modernize capability while increasing security at the same time.”

“As multiple technologies are being connected with each other, we are seeing the potential for really cool things or really bad things,” Stanger says. “The really cool things include the ability to gather data and process it into information more quickly than ever before. The really bad things involve a lot of questionable IT and development practices where multiple systems are connected in suspect ways.”

Ways to address these issues as well as cybersecurity concerns include taking true control of the software development cycle to connect technologies properly; using multifactor and two-factor authentication more efficiently for cloud and mobile services; and continuous network monitoring, according to Stanger.

Despite any challenges that might arise, firms need to be diligent about staying on top of the latest technology developments.

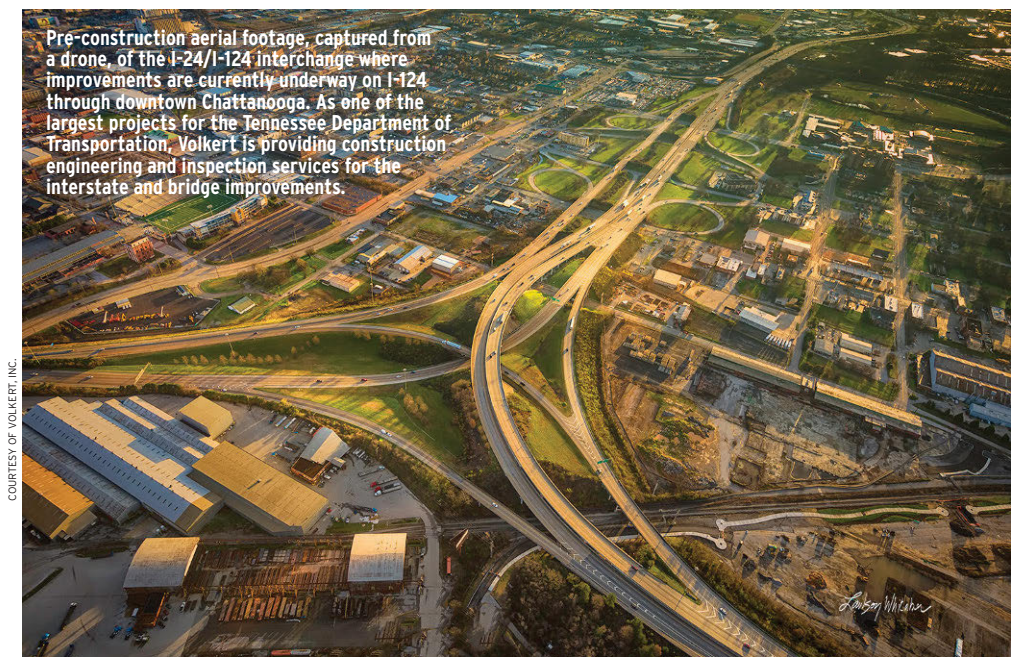
“Given these technology and process disruptions and the power they deliver at our fingertips—at both the industry and practitioner level—we must start

thinking about how we will do business in this era of constant disruption,” says Bennett. ■

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

The new 5G generation of wireless data services is expected to have **10 times less data latency, 50 times more speed in transfer and 1,000 times more capacity than 4G/LTE**

Pre-construction aerial footage, captured from a drone, of the I-24/I-124 interchange where improvements are currently underway on I-124 through downtown Chattanooga. As one of the largest projects for the Tennessee Department of Transportation, Volkert is providing construction engineering and inspection services for the interstate and bridge improvements.



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# RESTORAT

**After years of helping a variety of causes, Aspect Consulting**

Aspect Consulting employees volunteered their time by helping Stewardship Partners to plant nearly 1,000 shrubs and trees along the Snoqualmie River.





# LIVE SPIRITS


**formalized the firm's philanthropic efforts to amplify their collective impact**

**S**ince the firm's founding in 2001, Aspect Consulting executives and employees have donated time, money and expertise to worthy causes. But for years, the philanthropic efforts were largely chosen by the company's leadership, according to Tim Flynn, president and co-founder of the firm which has seven offices in Washington state and Oregon and specializes in sustainable development and restoration.

"Historically, we have given a part of our proceeds to charity and also provided some pro bono consulting," Flynn says. "We became more organized about it around five years ago as part of our strategic planning process. Community giving came up as an important goal, and we wanted to involve a broader cross section of our staff."

That strategic planning process resulted in the Aspect Community Team (ACT). The group organizes a handful of volunteering events each year, and Flynn hopes to grow ACT's role over time with employees eventually helping to decide where the firm's charity dollars are donated. According to Flynn, Aspect Consulting has always tried to keep its corporate donations above industry benchmarks while also encouraging employee involvement. But with the ACT group, Flynn hopes to create a companywide culture that emphasizes corporate responsibility.

"We are trying to engage our staff, as opposed to it being a top-down process," Flynn says. "It is a meaningful thing for folks to be able to share the gifts that we have, and those gifts can be anything from our time to our dollars to our expertise. There are a lot of needs out there, and not enough resources to cover those needs. It is rewarding to help out."



Lisa Maeda, of Aspect Consulting's human resources team, helps with treeplanting along the Snoqualmie River.



## THE BROADER PICTURE

The ACT group consists of a small, core set of employees who plan and coordinate volunteer events. Owen Reese, a senior associate water resources engineer at Aspect, was one of the earliest members of the group. However, Reese credits Meilani Lanier-Kamaha'o, a project geologist at Aspect, for bringing new life to the effort when she joined the firm two years ago. Together, the duo serve as co-leaders of ACT.

According to Reese, the group has made an effort to partner with organizations that can either make use of employees' valuable skill sets or at least have some sort of thematic tie-in to Aspect Consulting's environmental work. For instance, the ACT group has done several projects with Stewardship Partners, a Seattle-based land and water protection organization.

"It is very intentional," Reese says. "We had an early discussion about, 'Do we want to get involved with a broad range of organizations, or do we want to have a narrow focus?' We decided we wanted to work on things that line up with Aspect's focus on earth and water resources, and we felt there was real value in helping where we can bring more than just



"It is a meaningful thing for folks to be able to share the gifts that we have...from our time to our dollars to our expertise."

**TIM FLYNN**  
**PRESIDENT AND CO-FOUNDER**  
**ASPECT CONSULTING**



Aspect Consulting staff donated engineering expertise as well as labor to design and help plant a pair of rain gardens for Carnation Elementary School.

labor, where we can bring our expertise and skill sets."

Lanier-Kamaha'o believes volunteer events like habitat restoration feel meaningful for Aspect employees because of the connection to their day-to-day work.

"Our employees all spend time working on projects that deal with the downstream impacts from upstream waters," she says. "Something as simple as planting a tree—anyone can do that. But doing upstream habitat restoration with a team of colleagues that you regularly work with on urban cleanup sites is a very powerful reminder of the broader goals of our firm."

## LOCAL IMPACT

In one of the first big projects organized by ACT, employees helped Stewardship Partners design and build two rain gardens at an elementary school in Carnation, Washington. The goal of the project was to replace invasive vegetation, create wildlife habitat and infiltrate runoff from approximately 6,500 square feet of the school's roof.

"A lot of people in our company have described how much they enjoyed doing that work," says Lanier-Kamaha'o. "We are lucky. We are in the right spot where we have the skills, and we

## Aspect in Action

In addition to the ACT team's activities, a number of Aspect Consulting employees volunteer for their own individual causes and passion projects. Here's a sampling:

**Bureau of Fearless Ideas** – Jen Koogler, a technical editor and marketing coordinator with Aspect, has volunteered with the Greater Seattle Bureau of Fearless Ideas (BFI) for over a decade. BFI is a nonprofit writing and tutoring center, and Koogler works with a group of high school students that tutors younger kids.

**Engineers Without Borders** – Dave Cook, principal geologist and part owner of Aspect, has been involved with Engineers Without Borders-USA for a dozen years. He has assumed many roles, from chapter president, student mentor, served on the board of directors, was board president in 2016, and currently serves on the board of directors for EWB-Guatemala (EWB's first in-country office). Aspect has also made financial contributions to EWB.

**All Hands Volunteers** – Henry Haselton, principal geotechnical engineer with Aspect, has worked with All Hands Volunteers to help rebuild schools that were destroyed due to the Nepal earthquake in 2015. Haselton provided pro bono engineering services to the organization, helping with site development and foundation recommendations for schools such as the East Point Academy in Melamchi, about 25 miles northeast of Kathmandu.



can do something more specific than a general fundraiser or a supplies drive for the school.”

When the firm’s Seattle office moved in 2018, Aspect employees took advantage of the downtime by helping Stewardship Partners with a riparian restoration effort along the Snoqualmie River, planting nearly 1,000 shrubs and trees—including western red cedar and cottonwood trees and snowberry and salmonberry shrubs. The plantings provide cooling shade, control erosion and provide habitat for hundreds of fish and wildlife species, in addition to absorbing carbon from the air and helping to mitigate climate change.

By agreeing to perform ongoing maintenance work, the ACT group has “adopted” the habitat and is planning more rain garden projects.

Chris LaPointe, director of ecological restoration at Stewardship Partners, says ACT’s combination of technical expertise and manual labor makes its contributions especially helpful.

“They were able to produce this wonderful map and schematic for the rain garden project,” says LaPointe. “We do not have access to engineering software, and I had been racking my brain trying to create something beyond a hand-drawn map. That was a huge weight off of our shoulders, and it makes the overall project look much more professional, especially when we are pitching it to various grant sources.”

“When Aspect comes out to the field to volunteer with us, there is a common bond, because they are working with the earth and with water all the time, and so are we,” LaPointe adds. “That is huge to creating a successful partnership.”

Since the ACT group was created, employees have also participated in activities such as food drives, school science nights and environmental cleanup projects. “It is rewarding when you can see the benefits right in your community,” Lanier-Kamaha’o says.



Villagers from the town of San Francisco Jolomtaj in front of new water tank, which provides better emergency supply options and filters for blocking contaminants.



“We are in the right spot to help because we have unique technical skills to address specific needs rather than something more general like a fundraiser or a supplies drive.”

**MEILANI LANIER-KAMAHA'O**  
PROJECT GEOLOGIST  
ASPECT CONSULTING

### GLOBAL MINDSET

Today, Aspect’s overall giving efforts are a blend of the leadership-driven giving the firm has always done and the emerging work of the ACT team. Aspect provides ongoing financial support to a number of organizations, both locally and internationally, and Flynn believes it is important to continue those relationships, even as he strives to give employees more say in where the firm’s dollars go.

“We want to avoid donating with ‘one-offs,’” Flynn says. “It is important for nonprofits to have confidence and consistency in their cash flow and revenue streams, and we have made it a point to be a consistent donor, so they have that sustainability.”

One of those nonprofits is the Hands for Peacemaking Foundation, a Guatemalan nonprofit that Flynn supported before Aspect was founded. In addition to directing a portion of the firm’s charity dollars to the organization, Flynn has traveled to Guatemala a number of times to help evaluate potential sites for groundwater infrastructure in remote areas and teach locals how to install wells and pumps.

According to Flynn, investing in the community is an important part of work-life balance. Furthermore, his definition of “community” extends beyond Aspect’s immediate geographical area and beyond international borders. Both perspectives resonate with employees, especially younger workers.

“Younger generations tend to think much more globally,” he says. “I am proud of the fact that the firm is engaged in the work we do internationally. We are helping institutions in our backyard as well as in developing countries that certainly need the help.”

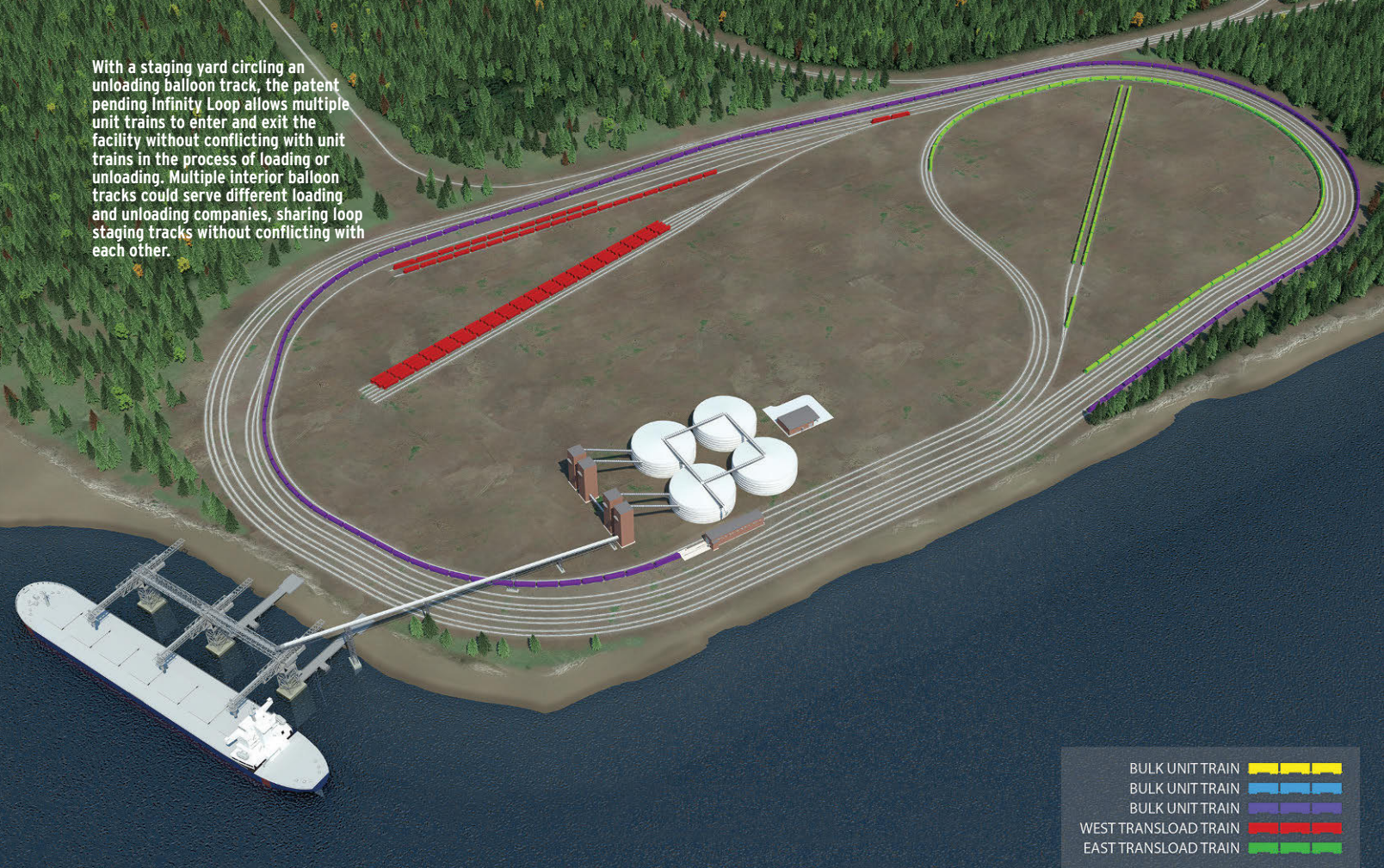
Although ACT may still seem somewhat separate from the rest of Aspect’s efforts, Lanier-Kamaha’o believes the program has energized employees and has made the firm’s giving more visible to the rank-and-file.

“It is apparent that people are excited to be involved,” she says. “Some people, especially younger employees, will say, ‘I did not realize that we did so much charity work.’” ■

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



With a staging yard circling an unloading balloon track, the patent pending Infinity Loop allows multiple unit trains to enter and exit the facility without conflicting with unit trains in the process of loading or unloading. Multiple interior balloon tracks could serve different loading and unloading companies, sharing loop staging tracks without conflicting with each other.



# HDR'S REVOLUTIONARY DESIGN MADE THE IMPOSSIBLE SIMPLE

Infinity Loop could change the way bulk freight trains are processed

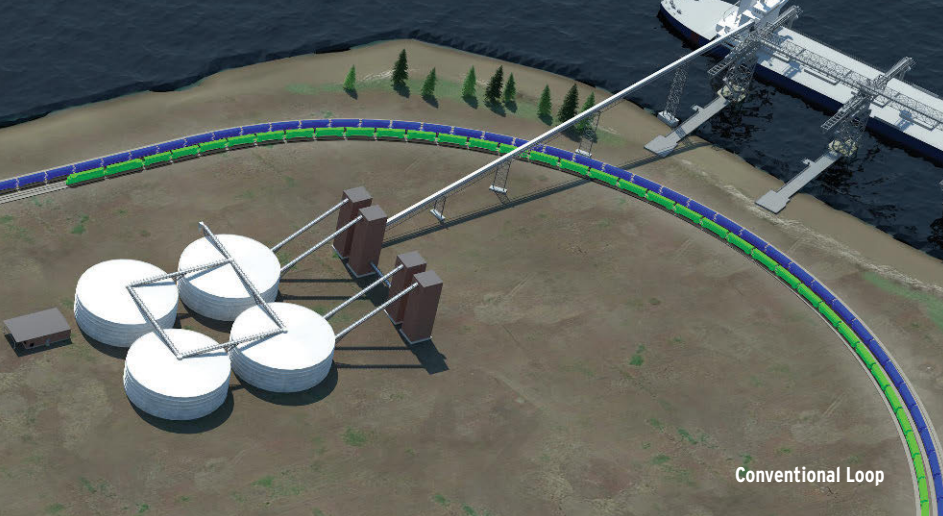
BY GERRY DONOHUE

**O**n the face of it, the client was asking for the impossible. They wanted HDR to design a loading and unloading facility that could process eight 8,500-foot unit trains per day on a site that would be hard-pressed to process four per day. Furthermore, the facility was hemmed in on all four sides by a river, an industrial site, a capped contaminated site, and a state highway.

"Our initial configurations were sprawling and involved moving the highway and a whole bunch of other things," says Kurt Reichelt, vice president at HDR. "We looked at each other and asked is this the best that we can do?"

The answer to that question was a resounding no. Within a few days the team developed a revolutionary design concept that met all the needs of the client and could fundamentally alter the way bulk freight trains are processed in the future.





the railroads and the shippers to minimize transportation costs.

At the origin and destination sites, shippers and receivers routinely use one or more loop tracks to load and unload the commodities. The tracks are arranged in a circle large enough to accommodate an entire unit train. At the throat area, crossover tracks allow trains to enter the loop from the mainline, offload their material, and return to the mainline.

While loop tracks are used at hundreds of rail terminals around the country, they have several critical drawbacks. Current designs cannot efficiently accommodate multiple unit trains

“When we completed the first schematic, we thought it was too good to be true,” says Paul Weber, senior rail project manager at HDR, who, along with Reichelt, has a patent pending for the new design. “We thought there had to be a flaw somewhere, but there was not.”

### UNIT TRAINS AND LOOP TRACKS

Railroads are a primary mode of conveying commodities and other goods in the United States, and since the 1960s, a key component of that system has been the unit train. Unit trains transport a single commodity between a single origin and destination for a single shipper. Typically 100-plus-cars long, unit trains allow

arriving and departing while processing is taking place. Terminals can build additional loops, but that requires more acreage and track, and there are inevitable traffic conflicts. Trains cannot navigate independently of other trains in the facility because the throat and crossover track arrangements require they cross paths. Furthermore, because the loop is designed to be the length of a single unit train, the interior cannot be accessed without grade separations or multiple, strategically located at-grade crossings, resulting in significantly underutilized property. Finally, if the train needs to leave the loop in the direction from which it came, the locomotive must be moved from one end to the other, further congesting the facility.



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"Our client had never seen anything like it. Once we explained how it would operate and the

benefits of it, they were on board."

**KURT REICHELT**  
**VICE PRESIDENT**  
**HDR**

The Balloon Loop, which was introduced in the 1990s, solves one of those problems, allowing the train to turn around without switching the locomotive from one end to the other, but the design requires a separate yard in front of the loop to stage trains upon arrival or before departure.

#### THE INFINITY LOOP

Facing the size constraints of the client's site and the problems of the conventional yard designs, Reichelt and Weber came up with an innovative solution. They designed a staging yard with eight loop tracks, spaced 15 to 25 feet apart, and inserted a balloon

loop loading and unloading track in the interior.

"The staging yard with an interior unloading balloon track connected by a dual lead effectively forms a linear path 'Infinity Loop' design that allows multiple unit trains to enter the facility without conflicting with a separate unit train in the process of loading or unloading," Reichelt says.

Unit trains now can be loaded or unloaded in succession, following the same path from the outer-loop staging tracks onto the balloon track, through the loading and unloading facility, and then either depart to the main line directly or return to the outer-loop staging tracks for later departure, never crossing paths with any other trains.

"Our client had never seen anything like it," Reichelt says. "Once we explained how it would operate and the benefits of it, they were on board. They were excited about getting the throughput on such a small site."

"The railroad also had to buy into it," adds Weber. "When we presented it to them, I do not know if 'shocked' is the word, but they were pretty amazed about how it worked. It solves a lot of the problems they have been dealing with for many years."

Because of its revolutionary design and potential impact on the nation's freight transportation system, HDR's Infinity Loop received a Grand Award in ACEC's 2019 Engineering Excellence Awards. ■

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

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# Long Before Winter, Deal-Makers Head South

BY NICK BELITZ

**T**he flurry of mergers and acquisitions in the engineering industry continued through the heat of the summer of 2019. Nationwide, ACEC deal-makers contributed a total of 188 deals completed in the U.S. through July. This puts the industry on pace for more than 320 transactions by year-end, which would exceed the 293 total deals closed in 2018 and set another record year for A/E firm marriages.

So far this year, DC Capital Partners (Alexandria, Va.) made waves in the industry by partnering with ACEC member Pond & Co. (Peachtree Corners, Ga.), ranked by *Engineering News-Record* as the 107th-largest firm in the industry, and one of the most recognized Georgia-based engineering firms. As a diversified A/E firm, Pond & Co. brings expertise in the aviation, facilities, transportation, industrial, defense and energy sectors to DC Capital's portfolio. CHA Consulting, Inc. (Albany, N.Y.), also made waves with the acquisition of ACEC member Wolverton & Associates, Inc. (Atlanta, Ga.), a full-service civil engineering and transportation firm. These two deals of Georgia-based companies, while notable by themselves, proved to be part of a larger trend of ACEC deal-makers heading South long before the onset of cooler weather.

While many see the benefits of the South, with its great hospitality, powerhouse NCAA football in the Southeastern Conference and warm winter months pleasantly free of polar vortexes, it is important to understand why the South—and the Southeast in particular—ranks so high on engineering deal-maker wish lists.

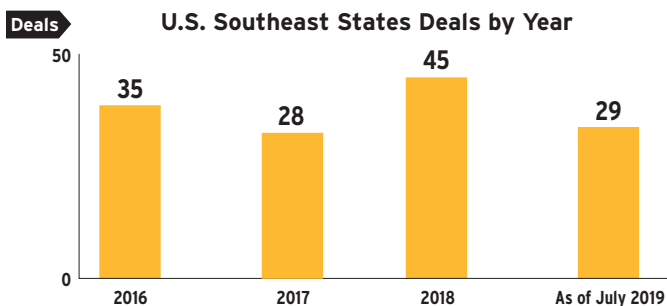
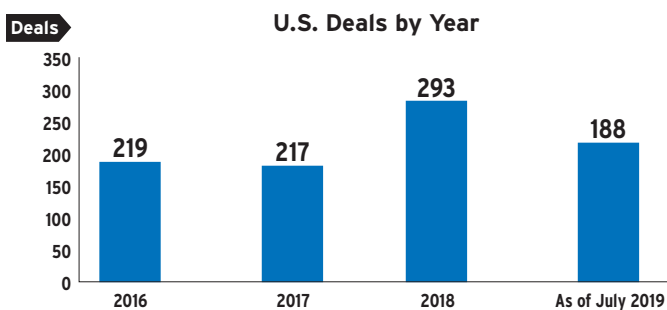
Consider the following about the Southeastern U.S. states: From 2013 to 2017, the Southeast U.S. escalated construction spending at a greater rate than that of the nation overall, according to the U.S. Census Bureau. Specifically, construction spending by state and local governments plus private-sector nonresidential spending in North and South Carolina, Georgia and Florida rose from \$47.3 billion in 2013 to \$70.3 billion in 2017. That translates to a compound annual growth rate of 10.4 percent and compares with construction spending growth in the U.S. as a whole of 6.2 percent over the same time period.

Why all the building? Because a lot of people are showing up in those states, and more are expected to arrive. The University of Virginia's Weldon Cooper Center for Demographic Research reports that since 2013, the population growth of the Southeastern U.S. has measured 1.3 percent in terms of the compound annual growth rate. By comparison, U.S. population grew at a compound annual growth rate of 0.7 percent over the same time period. For the Southeast, that translates into less than 50 million people rising to 52 million by 2018—millions more people in a span of just five years. The center forecasts that by 2030, the population of the Southeast will rise to nearly 60 million people, which works out to a compound annual growth rate of 1.1 percent. That figure significantly exceeds the expected annual growth rate of the entire U.S., which is projected to remain at 0.7 percent. This is critically important because population growth is a primary driver of demand for engineering services. As shown in the construction spending data, more people means more building in all sectors, and engineering firm executives are betting heavily this will mean more work for firms of all types.

While the heat of the South has proved attractive thus far in 2019, not all deal-makers sought a new home in warmer climates. As noted below, ACEC members also closed deals in the West, Midwest and Northeast. That data shows two additional trends of interest.

**1. Birds of a feather flock together, even if they are not flying South.** Recent transactions have shown a noticeable degree of intrastate dealing where the buyer and seller call the same state home. Notably, buyers in New York (Bergmann of Rochester), Ohio (DLZ of Columbus) and California (BC Engineering Group of Santa Rosa) have acquired neighbors in the same state.

**2. The march of private equity continues.** In addition to DC Capital's deal with Pond & Co. and CHA Consulting's acquisition of Wolverton & Associates, Inc., TRC Companies (Lowell, Mass.), backed by New Mountain Capital, acquired a division of EC Source (Houston). Anser Advisory (Orlando, Fla.), backed by RTC Partners, acquired DHS Consulting, LLC (Santa Ana, Calif.). This continues a trend tracked by Morrissey Goodale showing private equity firms accounting for nearly 20 percent of all A/E industry deals.





With the end of the year just around the corner, we expect these trends to continue and to see consolidation on all fronts as buyers lock in their investments for 2020.

## ACEC DEAL-MAKERS

### JULY 2019

ACEC member **Pond & Co.** (Peachtree Corners, Ga.) partnered with private equity investment firm **DC Capital Partners** (Alexandria, Va.). The partnership is intended to provide capital to allow Pond to grow and create greater value for clients and expand opportunities for employees. Pond chose to partner with DC Capital given their focus on companies that provide differentiated and innovative services in the A/E/C industry.

Global consulting firm and ACEC member **TRC Companies** (Lowell, Mass.) acquired the testing and commissioning field services division of **EC Source** (Houston), a nationally recognized engineering, procurement and construction provider.

**CHA Consulting, Inc.** (Albany, N.Y.) acquired **JBS Project Management** (Brooklyn, N.Y.), a project and construction management firm of approximately 30 employees. CHA is an ACEC member.

Multidisciplinary A/E consultant **DLZ** (Columbus, Ohio) expanded its presence in northwest Ohio with the acquisition of **Lee Surveying and Mapping Co.** (Bellefontaine, Ohio), a firm specializing in survey for land development and planning. DLZ is an ACEC member.

Full-service consulting firm **Barton & Loguidice** (Liverpool, N.Y.) acquired **Cummings & Smith, Inc.** (Fairfield, N.J.), a civil engineering firm with expertise in the solid waste management sector. Both firms are ACEC members.

**NV5** (Hollywood, Fla.) acquired **WHPacific** (Portland, Ore.). The acquisition expands NV5's business in the Pacific Northwest. Both NV5 and WHPacific are ACEC members.

ACEC member **Ross & Baruzzini, Inc.** (St. Louis) acquired telecommunications consultant **COMgroup** (Kirkland, Wash.), expanding its current technology service offerings deeper into the western United States.

ACEC member **HDR** (Omaha, Neb.) acquired international engineering consultancy **Hurley Palmer Flatt Group** (London, U.K.), expanding its multidisciplinary building engineering services with 500 new staff across 10 offices.

**Greenman-Pedersen, Inc.** (Babylon, N.Y.) acquired **MHF Design Consultants, Inc.** (Salem, N.H.), a 24-person civil engineering and surveying firm. Greenman-Pedersen is an ACEC member.

**NV5** (Hollywood, Fla.) acquired 91-person **GeoDesign, Inc.** (Wilsonville, Ore.), a geotechnical, environmental and geological firm with five offices in the Pacific Northwest. Both NV5 and GeoDesign are ACEC members.

### JUNE 2019

**Westwood Professional Services** (Minnetonka, Minn.) acquired ACEC member **OMNNI Associates** (Appleton, Wis.), an infrastructure consultant.

Land development services firm and ACEC member **Schoel Engineering** (Birmingham, Ala.) acquired **4Site** (Huntsville,

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



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

Ala.), an interdisciplinary civil engineering, land surveying and landscape architecture firm.

**Anser Advisory** (Orlando, Fla.), a program management and CM-for-fee firm, acquired ACEC member **DHS Consulting, LLC** (Santa Ana, Calif.), also a CM-for-fee firm.

**Iteris, Inc.** (Santa Ana, Calif.), a leader in applied informatics for transportation and agriculture, entered into a definitive agreement to acquire traffic operations engineering services provider **Albeck Gerken, Inc.** (Tampa, Fla.). Both Iteris and Albeck Gerken are ACEC members.

ACEC member **Weston & Sampson** (Reading, Mass.) acquired **MA Engineering Consultants** (Cary, N.C.), a provider of civil engineering, geomatics and visualization services.

**CHA Consulting, Inc.** (Albany, N.Y.), a diversified, full-service engineering consultant, acquired **Wolverton & Associates, Inc.** (Duluth, Ga.), a full-service transportation and engineering firm. Both firms are ACEC members.

ACEC member **NV5** (Hollywood, Fla.) acquired **Alta Environmental** (Long Beach, Calif.), a consulting firm specializing in air quality, environmental building sciences, water resources, site assessment and remediation, as well as environmental health and safety compliance services.

ACEC member **Bergmann** (Rochester, N.Y.) acquired **William Taylor Architects** (Syracuse, N.Y.). The William Taylor team will work as part of the firm's Northeast Buildings division.

Employee-owned, professional services firm **Short Elliott Hendrickson** (St. Paul, Minn.) and **Russell Planning & Engineering** (Durango, Colo.) announced their intent to merge. Both companies are ACEC members.

**NV5** (Hollywood, Fla.) acquired **Page One Consultants** (Orlando, Fla.), a program management and construction quality assurance firm. Both firms are ACEC members.

**Terracon** (Olathe, Kan.) acquired **Environmental Services, Inc.** (Jacksonville, Fla.), and **Geotechnical & Environmental Consultants** (Macon, Ga.), enhancing the company's geographic presence and depth of services in the Southeast. Terracon and Geotechnical & Environmental Consultants are ACEC members.

### MAY 2019

ACEC member **BC Engineering Group** (Santa Rosa, Calif.) acquired **Firma Design Group** (Santa Rosa, Calif.), a 10-person civil engineering and landscape architecture firm. ■

# On the Move

San Diego-based **Kleinfelder** announced the appointment of **Louis Armstrong** to the positions of CEO and president, succeeding current CEO **George J. Pierson**, who will become Kleinfelder's executive chairman. Armstrong joined Kleinfelder as executive vice president in 2017 and was promoted to president in January 2019.

**Kathleen Linehan** was appointed president of Dulles, Virginia-based **Alpha Corp.**, a woman-owned engineering and construction firm. Linehan formerly served as vice president for Jacobs Engineering Group (formerly CH2M Hill) of Arlington, Virginia, and has nearly 30 years of engineering consulting business expertise.

**Clayton Bubeck** has been promoted to president of Lancaster, Pennsylvania-based **RETTEW**, succeeding **Mark Lauriello**, who will continue as CEO. Lauriello has served as president since 2004. Bubeck previously served as senior vice president and CMO.

**Kevin Fitzpatrick** was selected to serve as the next president and CEO of Chicago-based **Benesch**, succeeding **John Carrato**, current president and CEO, in September 2020. Carrato, who has held the role since 2009, will remain with the company in a different capacity. Fitzpatrick currently serves as executive vice president and as the company's Great Lakes regional manager.

**Todd Smith** has been appointed executive vice president of Denver-based **R&R Engineers - Surveyors, Inc.** Smith, who has 30-plus years in multistate design and construction, previously worked as an R&R employee in the late 1990s.

**Doug Cheppo** was appointed CFO of Westfield, Massachusetts-based **Tighe & Bond**, leading the company's finance and information technology operations. Cheppo previously served as CFO and COO of Thorpe and as vice president of finance for AECOM, KBR and CH2M HILL.

**Jason Sander** has been named senior vice president and national director for materials engineering services at Olathe, Kansas-based **Terracon**. Sander previously served as regional manager for Terracon's Cincinnati and Portsmouth, Ohio, and Lexington, Kentucky, offices.

**Jody Martinson** joined Minneapolis-based **WSB** as vice president of transportation succeeding **Jon Chiglo**, who was promoted to COO. Martinson formerly served as assistant commissioner of the Minnesota Department of Transportation's operations division.

**Shahid Khan** joined Boston-based **CDM Smith** as a vice president to the firm's International Services Unit and as Qatar country manager where he will oversee Qatar operations,



Louis Armstrong



Kathleen Linehan



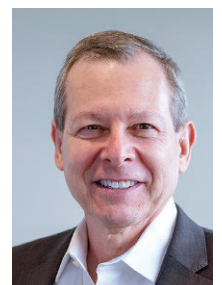
Clayton Bubeck



Kevin Fitzpatrick



Todd Smith



Doug Cheppo



Jason Sander



Jody Martinson



Shahid Khan



Shelly Mitchell



John Tyler



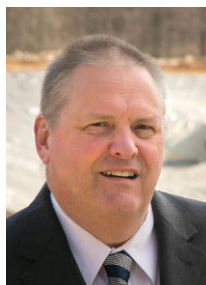
Aaron Barnes



business development, client relationships, project delivery and staffing. Khan formerly served as the Qatar area manager for Parsons Corp.

San Antonio-based **Pape-Dawson Engineers, Inc.**, announced the following appointments: **Shelly Mitchell** was promoted to vice president and will lead commercial, industrial and institutional land development projects. **John Tyler** was promoted to vice president and will lead transportation planning and roadway projects across the state of Texas. Mitchell is based in the company's Austin office, and Tyler is based in the company's headquarters office.

Philadelphia-based **Urban Engineers** announced the following vice president promotions: **Aaron Barnes**, construction support services, Mechanicsburg, Pennsylvania; **James Davis**, construction support services, Philadelphia; **Korin Giles**, practice leader for environmental services, Erie, Pennsylvania; **Eric Sailer**, director of construction services, Buffalo, New York; **Keith Shuster**, construction support services, Philadelphia; **Robert Snowden**, practice leader for construction inspection, Delaware and Maryland; and **Brian TerBush**, facilities construction management services, New York.



James Davis



Korin Giles



Eric Sailer



Keith Shuster



Robert Snowden



Brian TerBush

## ACEC/North Carolina Celebrates 50th Anniversary

**A**mid a time of tremendous growth in membership, ACEC/North Carolina is celebrating its 50th anniversary this year.

Established in 1969, the Member Organization has increased membership from 185 firms in 2013 to a current membership of 235 firms representing more than 10,000 employees.

"We are blessed to be in a growing state," says James Smith, executive director of ACEC/North Carolina.

During its recent Summer Conference, ACEC President/CEO Linda Bauer Darr presented Smith with a plaque to commemorate the anniversary milestone.



ACEC National President/CEO Linda Bauer Darr presents a commemorative plaque to ACEC/North Carolina Executive Director James Smith during the Member Organization's recent Summer Conference and 50th Anniversary celebration held in Wrightsville Beach, N.C. Also pictured is ACEC/N.C. President Derek Clyburn of ECS Carolinas.





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EEIS Consulting Engineers, Inc.  
Anchorage

## ACEC/Arizona

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Tempe  
G2 Energy Solutions  
Phoenix  
KBell Engineering, LLC  
Mesa  
WestLand Resources, Inc.  
Tucson

## ACEC/California

Agnew Civil Engineering  
San Rafael  
Drake Haglan & Associates  
Fresno  
Drake Haglan & Associates  
Manteca  
Grice Engineering, Inc.  
Salinas

## ACEC/Colorado

SMH Consultants, PA  
Colorado Springs

## ACEC/Florida

Ardmore Roderick  
Orlando  
Avant Engineering Group, LLC  
Winter Park  
Snell Engineering Consultants  
Sarasota

## ACEC/Georgia

Fitzmeyer & Tocci Associates, Inc.  
Atlanta

## ACEC/Illinois

Program Management & Control Service, LLC  
La Grange

## ACEC/Maryland

Infrastructure Technologies, LLC  
Marriottsville  
Pioneer Civil Engineering Services, Inc.  
Ellicott City  
Suyash Consulting, LLC  
Columbia

## ACEC/Massachusetts

Horsley Witten Group  
Sandwich

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- 8** Recession-Proof Your Firm  
(online class)
- 9** How to Effectively Take  
Advantage of Your Socio-  
Economic Status – It's Not What  
You Think (online class)
- 10** Talent Retention (online class)
- 13-16** **ACEC Fall Conference, Chicago**
- 15** Using Competitive Intelligence  
to Win Work (online class)
- 17** Value of Claims Review –  
Lessons Learned Programs in  
the A/E Space (online class)
- 22** Performance Management  
for Engineers: Aligning  
Your Workforce, Building  
Competencies and Improving  
Employee Performance  
(online class)
- 23** Traps for the Unwary–Top 10  
Pitfalls (online class)
- 24** Effective Contractual Risk  
Mitigation (online class)
- 29** Acquisitions – How and What to  
Look for During Due Diligence  
(online class)
- 30** Managing Multiple Projects  
(online class)
- 31** Super Busy? Here's 60 Minutes  
to the Polished Presentation  
(online class)

## NOVEMBER

- 5** 5-10 Years Pre-Retirement?  
What You Need to Do Now  
to Protect Your Legacy  
(online class)
- 6** Buy-Sell Agreements–  
Don't Sell Your Firm Short  
(online class)
- 13** Radically Relevant: Reshape  
Your Message, Earn Their  
Attention, Gain More Trust  
and Clients  
(online class)
- 19** Are You Building the Right  
Website? (online class)
- 20** P3 Myths and Realities for  
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In August, ACEC launched a new and improved business resource center for all online classes, contracts and publications.

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The new resource center also contains a personal dashboard for members, which offers a “snapshot” of their in-progress and recently completed education programs, as well as upcoming live online classes and in-person seminars. Customized suggestions for classes and publications are also available on the dashboard page.

All online class materials are now hosted in one convenient location. Login instructions, recorded presentations, handouts and evaluations can be accessed by clicking the “Launch” button.

Earning PDHs and retrieving PDH certificates also have become more convenient. Members can now download their certificates immediately. Upon completing a live or on-demand online class, members must take and pass a

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Members will also find it easier to search for and purchase ACEC Coalitions and EJCDC model contract documents, as well as other engineering-specific e-publications.

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