

# THE MUNICIPAL

*The Premier Magazine For America's Municipalities*

November 2016

## TECHNOLOGY

### INSIDE:

**PHG Energy brings waste to energy to Lebanon, Tenn.**

**Technology and the government**

**Trends for winter maintenance**

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## 16 Focus on Technology



**18 Focus on Technology:**  
*Held hostage - Ransomware attacks on the rise*

**22 Focus on Technology:**  
*Big or small, cities are becoming smarter*

**26 Focus on Technology:**  
*Parks embrace technology to ease management and save money*

**30 Focus on Technology:**  
*What's new in snow and ice management on roads*

**38 Fleet Service & Management:** *Training the next generation of fleet technicians*

**44 City & Town Management:**  
*Outreach key to addressing homelessness*

**48 Firefighting & EMS:**  
*Where's the fire? New assessment tool shows promise in measuring fire impact*

**52 Solid Waste & Water Utilities:**  
*Finding 'green' in wastewater biogas production*

**56 Streets & Snow:** *Winter requires a solid game plan*

**58 City & Town Management:**  
*Why sticking your head in 'the cloud' is a good thing*



### ON THE COVER

More than two years of planning and building a coalition for converting waste to energy have brought to fruition the world's largest downdraft gasification facility in Lebanon, Tenn. The new facility, which uses technology from PHG Energy of Nashville, highlights a successful public/private partnership. Shown, from left, are Wilson County Mayor Randall Hutto, Lebanon Mayor Philip Craighead, Gallatin Mayor Paige Brown and Sumner County Executive Anthony Holt.





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# Departments



12

## "Horse Capital of the World"

- 8 Editor's Note:** *Creating the cities of tomorrow*
- 10 From the Cover:** *First steps toward zero landfill will produce clean energy in Tennessee*
- 12 World Capitals:** *Horse Capital of the World Ocala, Fla.*
- 14 Know Your Founder:** *Nathan and Daniel Morgan Boone - Boonville, Mo.*
- 60-61 Product Spotlights**
- 61 News & Notes**
- 62 Conference Calendar**
- 64 Company Profile:** *Rumber excels at providing quality solutions*
- 66 Classified Ads**
- 68 Top 10:** *America's most facial hair friendly cities*
- 69 Advertiser Index**



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# Creating the cities of tomorrow



Sarah Wright | Editor

Our cars may not be flying—yet—but we truly are on the verge of the stuff seen in science fiction: self-driving cars, augmented reality, solar-powered “smart” roads, etc. However, as technology continues by leaps and bounds, its advances leave cities in an interesting predicament: How do they adapt to the steady stream of changes and how do they get in place the infrastructure these new advances need?

Self-driving cars—much like the emergence of automobiles themselves in the early 1900s—have the potential to rock city infrastructure, particularly when you factor in ride-sharing. MIT SENSEable City Laboratory found self-driving cars and ride-sharing could potentially reduce cars on the roadway by 80 percent, meaning less parking space might be necessary in the city of the—maybe not so distant—future. In fact, an IHS Automotive study, called “Emerging Technologies: Autonomous Cars—Not If, But When,” forecasted “total worldwide sales of self-driving cars will grow from nearly 230 thousand in 2025 to 11.8 million in 2035—7

million SDCs with both driver control and autonomous control and 4.8 million that have only autonomous control. In all, there should be nearly 54 million self-driving cars in use globally by 2035.”

Already this year, we have seen the first Uber self-driving fleet roll out in Pittsburgh, Pa., complete with human “supervision” in the driver’s seat. As the USA Today reported in its test drive, the driver still has to loosely grip the steering wheel at all times and be prepared to take over should the car reach a situation too complex for its algorithms.

And while self-driving cars are grabbing headlines, there are plenty of other technologies that are going to impact infrastructure.

Missouri Department of Transportation is just one of the many street departments across our nation embracing some of these new technologies with its Road to Tomorrow initiative, which includes exploring the “Internet of Things,” smart pavement, truck platooning, solar roadways and more. In fact, its pilot project with solar roadways will be coming soon to the Historic Route 66 Welcome Center at Conway, Mo. And in the spirit of the era, MoDOT is preparing the first DOT crowdfunding effort in regards to that project. Undoubtedly many eyes will be on MoDOT to see how the pilot project unfolds.



In this particular issue, writer John David Thacker shares ways cities are already moving to adapt to the demands of technology while harnessing the Internet of Things to adjust public transportation and recommend where businesses should locate based on where people are. In particular, he highlights the efforts of two Smart Cities—Kansas City, Mo., and Dubuque, Iowa—to stand out.

While technology will turn infrastructure on its head within the next decade or so, it will also be making our lives easier by streamlining tasks ... however, not without some caveats as seen through Denise Fedorow’s article on ransomware attacks on SLED, or State and Local Government Education, networks. Undoubtedly, as progress hammers on there will be more than a few wrinkles to be ironed out along the way. Self-driving cars definitely have a few, which will need to be worked out prior to that 2035 prediction.

We are definitely living in interesting times, and it will be fascinating where we stand in 10 years, especially when looking at how quickly the internet, computers and smartphones have forever changed our lives. Personally, I am still waiting with bated breath for the creation of a functional teleporter a la “Star Trek”—and those flying cars might not be so bad either. Happy Thanksgiving, everyone!



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# First steps toward zero landfill will produce clean energy in Tennessee



By SARAH WRIGHT | The Municipal

**A mayor's dream of putting his city on the path away from dumping waste into landfills became a reality last month in Lebanon, Tenn., and the project is highlighting the success possible utilizing public/private partnerships to achieve sustainability goals and generate clean energy.**

The result of over two years of logistical planning and building a local coalition for converting waste to energy, the new plant is the world's largest downdraft gasification facility and the only one in America utilizing wood waste, scrap tires and municipal bio-solids as a feedstock blend. The technology deployed by PHG Energy of Nashville had been proven in multiple previous facilities with over 50,000 hours of successful commercial operation.

One of the motivating drivers for the city of Lebanon, about 20 miles east of Nashville, was the scheduled closing of a major landfill in the area, one that has historically taken municipal solid waste from the city, as well as wood waste from area manufacturers.

"We talked to dozens of companies who had ideas and theories on how to help us," Mayor

Philip Craighead said. "When we met with PHG Energy, they showed us a process we could implement in stages and keep a solid financial base underneath us as we expanded.

"Plus they had the building and operating experience to prove their technology," he added, "as well as the financial backing to remove risk to our city and its taxpayers." Keeping the solutions financially self-sustaining was a mandatory part of the project, and raised the comfort level of city council members and public works professionals involved in the project.

## **A partnership to solve a problem**

Forming a public/private partnership with local industries was key in making the system financially attractive, according to PHG Energy spokesman and Chief Operating

Officer Chris Koczaja. "Local companies were paying to have wood waste hauled to landfills. We developed a process whereby they paid tipping fees to the city to take the wood, lowering their costs and providing excellent feedstock for our downdraft gasification plant." At the same time, Wilson County decided that several hundred tons of scrap tires they were paying to have hauled away each year could also be added to the gasification blend at considerable savings.

A critical element of the partnership is an independent commercial company that assumes all responsibility for collecting, transporting and preparing feedstock material to spec. From a nearby collection yard, they store and deliver wood and tire waste to the conversion plant in a consistent form as needed for operations.



**LEFT:** The Lebanon waste-to-energy plant comprises less than 2 acres. The roof that you see is the building that holds the ORC generators and the power control room. The elongated blue structures in the middle of the photo are the bins that will house the feedstock. Next to it is a tall, round chamber—the thermal oxidizer—where the gas is combusted. Inside the structure with the yellow and gray steps is the 64-ton-per-day gasifier, which is black, vertical and rectangular. (Photo provided)

**RIGHT:** The vertical, black four-story object with the structure around it is the 64-ton-per-day capacity gasifier. When it starts up this fall, it will be the largest downdraft gasifier in the world. (Photo provided)

**BELOW:** From left, Lebanon Mayor Philip Craighead, Field Representative Evann Freeman from U.S. Sen. Lamar Alexander's office and Mike Webb, vice president marketing for PHG Energy, tour the gasification plant construction site. (Photo provided)



The \$4.5 million gasification plant is located on the site of the city wastewater treatment facility, and the power produced is utilized “behind the meter” to offset power previously purchased from the local utility. As an added financial bonus, the treatment plant was able to retire a very power-hungry digester unit since the biological material is being sent directly to the gasification unit. The technology will provide nearly 200 kilowatts net of clean power for the wastewater treatment plant—half the total load—while diverting at least 32 tons per day of waste material away from local landfills. The city's plan is to



implement a full MRF facility in coming years and deploy gasification of refuse derived fuel, or RDF, pellets and steam turbine generation capacity in the process, thus taking control of all its waste streams.

The overall objective of the plant is multi-fold. The energy created will provide clean, sustainable power for the WWTP while eliminating the hauling and spreading costs of biological sludge. It will also reduce the amount of municipal material hauled to landfills and tipping fees paid. The addition of scrap tires to the feedstock brings a beneficial use to an old problem. This new system will be financially viable and not a burden to taxpayers as it was when tipping fees were paid to commercial partners. And it will create a new infrastructure for future expansion.

#### Small size, big output

The overall footprint of the gasification plant is less than one acre. In that space, the unit has a 64-ton-per-day capacity. Through the core technology of the PHG Energy downdraft gasifier, the syngas produced—92 percent by volume input—is combusted in an industrial thermal oxidizer—an emissions control device. That thermal energy is transferred to heat water, and the hot oil drives a 400 Kw Organic Rankine Cycle generator. All feedstock is locally sourced and prepped by a specialty contractor. This company will ensure that wood and tires are cut to 1-inch to 3-inch size. Biologicals will be blended with that mixture on site. The target moisture content of the total blend is 30 percent. The blend will yield 8 percent biochar that is 70 percent carbon

and recyclable. Commissioning of the plant will take place in October 2016.

#### Multiple benefits

When the plant is running at full capacity, 5,000,000 pounds—2,500 tons—of carbon emissions will be kept out of the air each year, which equates to the CO<sub>2</sub> produced annually to provide electricity to 312 homes, or the annual greenhouse gas emissions from over 450 passenger vehicles. More than 16,000,000 pounds—8,000 tons—of material will be diverted from landfills each year, and this will help both the city and local industries move toward zero landfill goals. The system will create a positive use for more than 800,000 pounds—400 tons—of scrap tires annually. And over 20 million kilowatt hours of renewable electricity, during the 20-year lifespan of the project, will be produced.

“This deployment of the patented gasification technology we invested years in developing is an excellent example of the benefits of scientific research,” said Dr. Deon Potgieter, Ph.D., theoretical physicist on PHGE's staff and director of Research and Development. “In partnership with forward-thinking city officials like those in Lebanon, we have taken our tested and proven work into the commercial marketplace for the benefit of everyone.”

The project benefited financially from a \$250,000 grant from the Tennessee Department of Environment and Conservation, and \$3,500,000 in federal program financing that pays 70 percent of bond interest rates. ■

Information provided by PHG Energy.



# Horse Capital of the World Ocala, Fla.



by RAY BALOGH | The Municipal

**O**NE CENTURY AGO, CARL G. Rose started with asphalt and ended with horses.

In 1916, Rose traveled from Indiana to Ocala, Fla., to oversee construction of that state's first asphalt road.

But he ran into problems with the material, so he experimented with limestone. Along the way, he learned that the abundant mineral resource supported excellent pasture grass with enhanced calcium to raise strong and robust animals, as evidenced by Kentucky's Bluegrass region, long a mecca for raising thoroughbred horses.

Rose took up horse breeding in 1943 after he purchased some land along SR 200 for \$10 an acre and opened Rosemere, the first

thoroughbred horse farm in the state and one of the industry's first commercial breeding establishments. The following year one of his two-year-old fillies ran to victory at Tropical Park in Miami, becoming the first Florida-raised thoroughbred to win a Florida race.

The same year Rose traveled to Florida, one Bonnie M. Heath was born in Arkansas. He graduated with an engineering major from Oklahoma A&M University and found success with oil drilling enterprises in Illinois and Indiana.

Heath and his wife, Opal, moved to Florida in 1950 where Hugh Fontaine, an enthusiastic horse trainer, ignited Heath's passion for horse racing. Heath and his long-time business partner, Jack Dudley, purchased Needles, a sickly foal under

*Today Ocala and surrounding Marion County boast nearly 1,200 horse farms — 900 of them thoroughbred farms — comprising 77,000 acres and providing 44,000 breeding, training and related jobs. (Photo provided by Ocala/ Marion County Visitors and Convention Bureau)*

veterinary care for broken ribs and a near fatal case of pneumonia.

Needles overcame his health deficits to win six of his first 10 starts and earned the state title of Champion Two-Year-Old Colt in 1955.

But Needles was only beginning. True to form as a comeback artist, Needles came from 16th place in a 17-horse field to make up 24 lengths and handily win the 1956 Kentucky Derby, the first Florida-bred horse to capture the crown.





Ocala hosts "Horses in the Sun," a two-month dressage and jumper competition, which brings nearly \$7 million into the county each year. (Photo provided by Ocala/Marion County Visitors and Convention Bureau)



Ocala officially received its designation as a "Horse Capital of the World" in 2007. (Photo provided by Ocala/Marion County Visitors and Convention Bureau)

All the more significant: No Florida-bred horse had even run in the Kentucky Derby before Needles' legendary performance.

That year, Needles also won the Belmont Stakes and narrowly lost the Triple Crown, placing second in the Preakness.

The horse's performance put Ocala on the map. The year-round moderate temperatures and calcium-rich limestone soil provided the optimum environment for the subsequent steady growth of top-notch horse farms and earned Ocala the designation of "Horse Capital of the World" in 2007.

Other notable milestones in Ocala's storied history of raising thoroughbred horses:

- 1957: Maryland transplant Joe O'Farrell organizes the nation's first two-year-old-in-training sale, selling 37 racehorses. Later that year he and several other horse farm owners found the Florida Breeders Sales Association.
- 1959: Ocala-bred horses win the first four place in Florida's Breeders' Stakes.
- 1960: Rose is appointed to the Florida State Racing Commission, and Heath is elected president of the Florida Thoroughbred Breeders' Association.
- 1961: Thoroughbred horse farms in Ocala and surrounding Marion County total 52.
- 1965: The Florida legislature authorizes summer racing.
- 1970s: Ocala born and raised horses win Kentucky Derby and Belmont Stakes

races; Affirmed wins the Triple Crown in 1978.

- 1980s: Ocala horses win another half dozen races in the Triple Crown series.
- 1986-87: Congress repeals tax shelters for writing off horse losses against non-racehorse business profits. Thousands of wealthy investors withdraw from the racehorse industry. Marion County farm real estate values and Ocala's thoroughbred business plummet. Registered thoroughbred foal inventory drops 50 percent.
- 1990s: The local industry begins to rebound, aided by more Kentucky Derby victories. Ocala horses, Holy Bull and Skip Away, are each named North American Horse of the Year.
- 2000: Needles (1953-1984) is posthumously inducted into the Racehorse Hall of Fame.
- 2001: Thoroughbred horse farms in Marion County number 450, supporting 10,000 jobs.
- 2003: A new federal law allows racehorse owners to depreciate a horse's purchase price more rapidly, spurring higher gross sales at thoroughbred auctions.

Today the county boasts nearly 1,200 horse farms—900 of them thoroughbred farms—comprising 77,000 acres and providing 44,000 breeding, training and related jobs.

The equine industry generates more than \$2.2 billion in annual revenue.

Only four U.S. cities meet the national chamber of commerce guidelines to earn the designation of "Horse Capital of the World." Of the four, Ocala is the largest and has compiled the most extensive historical resume.

Ocala hosts one of the largest horse shows in the country, "Horses in the Sun," a two-month dressage and jumper competition, which brings nearly \$7 million into the county each year.

Other equine events include cowboy mounted shooting, endurance rides, barrel races, extreme cowboy competitions, trick shows, parades, draft pulls and rodeos.

As inextricable as horse raising is to Ocala's vitality, the city of 57,468 sports other attractions, which draw tourists all year-round.

The artesian springs at Silver Springs, about six miles northeast of downtown Ocala, were the state's first tourist destination. The site now features glass bottom boat tours.

Other natural attractions include Ocala National Forest and the Florida Trail. The city's historical district, designated in 1984, contains many stellar examples of Victorian architecture.

The county is crosshatched with 110 miles of hiking and biking trails; more than 80 square miles of its waterways are available for water sports. 🐾

For more information, visit [www.ocalafl.org](http://www.ocalafl.org) or [www.ocalamarion.com](http://www.ocalamarion.com).



# Nathan and Daniel Morgan Boone: *Boonville, Mo.*

**Boonville, Mo., was founded by a pair of trailblazing brothers and settled by a widow and her nine children five years later.**

Daniel Morgan Boone (1769-1839) and his little brother Nathan (1780-1857), sons of the American folk hero Daniel Boone, acquired their passion for exploration during childhood wilderness adventures and hunting trips with their father.

Daniel Morgan was born in North Carolina and was the first of the family to set foot in Missouri at his father's request.

He was given a land grant at the eastern edge of the state by the district's lieutenant governor and was told his father and everyone in his traveling party could also receive land. Within two years, the famed frontiersman brought a band of settlers to the area.

Nathan was the youngest of Daniel Boone's 10 children. When his father moved to Missouri in 1799, 19-year-old Nathan stayed behind in Kentucky to wed Olive Van Bibber before joining the family. He purchased 680 acres near where the rest of the family settled.

Before long the family migrated west into Missouri's interior. In 1805, across the river from present-day Boonville, the brothers established a commercially successful salt lick business, extracting salt from the local springs and shipping it to St. Louis.

Because of that business and the brothers' influence in the local commerce, the area became known as Boonslick or Boone's Lick Country. To facilitate the flow

of commerce, Daniel Morgan and Nathan built Boone's Lick Road, which served as a major artery in the nation's westward expansion and became the starting point of the Santa Fe Trail.

Both brothers served admirably in the War of 1812. Nathan was a delegate to the Missouri constitutional convention in 1820 and Daniel Morgan conducted land surveys for the federal government.

In 1808, Hannah and William Temple Cole and several other Kentuckians settled on the riverside acreage now embraced by Boonville. They were relocated to a nearby island when hostilities from the local Native Americans intensified. The Indians raided the island in 1810 and killed William.

Fifty-year-old Hannah and her nine children, including 2-year-old twin girls, moved back to her cabin on the bluffs, which was fortified and became known as Cole's Fort. Other settlers moved in and around the fort and the settlement of Boonville was born.

The town was formally platted in 1817 and became the county seat of Cooper County.

Today the municipality of 8,370 boasts more than 400 National Register historic properties attesting to its rich heritage, including four Civil War battles, the oldest military academy west of the Mississippi River and the last remaining Spanish Mission-style train depot. ■



*Nathan Boone*



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A word cloud of cybersecurity terms including 'Virus', 'Ransomware', 'Antivirus', 'Software', 'Malicious', 'Data', 'Spyware', 'Hacker', 'Attack', 'Immunization', 'Backdoor', 'Security', 'Infected', 'Encryption', 'Locker', 'Malware', 'Phishing', 'Denial of Service', 'Zero-day', 'Botnet', 'Malware', 'Phishing', 'Denial of Service', 'Zero-day', 'Botnet'. A large black padlock is positioned over the word 'Antivirus'. A US dollar bill is visible in the bottom left corner, partially obscured by a black object. The background is dark and textured.







**67 percent**

The percentage of government networks that triggered critical malware or ransomware alerts, compared to only 39 percent seen in non-State and Local Governments and Education networks.

Source: [blog.varonis.com/how-has-ransomware-impacted-the-us-government/](http://blog.varonis.com/how-has-ransomware-impacted-the-us-government/)

**\$700,000**

The amount of money the Pennsylvania Department of Transportation hopes to save through its \$1 million pilot project, which mounted sophisticated tracking gear on about 728 of its snowplow trucks. The tracking is expected to create more efficient truck routes and help manage materials better as well.



Source: [www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2015/12/18/states-go-high-tech-to-battle-snow-and-ice](http://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2015/12/18/states-go-high-tech-to-battle-snow-and-ice)

**24,800**

The number of water meters the city of Dubuque, Iowa, replaced in its homes, changing them out for smart water meters that can monitor and report water usage in real-time.



See story on page 22

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**\$500**

The amount of money some cities had to pay to prevent having their data deleted after ransomware infiltrated their systems.

See story on page 18

m w a R E

**UAV'S**

**33**

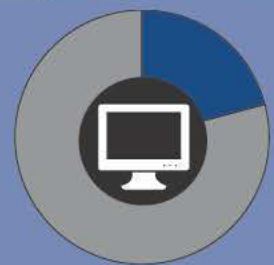
The number of state departments of transportation that stated they have or are exploring, researching, testing or using UAVs for varied applications.

Source: [www.aashtojournal.org/Pages/NewsReleaseDetail.aspx?NewsReleaseID=1466](http://www.aashtojournal.org/Pages/NewsReleaseDetail.aspx?NewsReleaseID=1466)



**20 PERCENT**

The percentage of mayors who considered data/technology to be a top issue as seen through their state of the city speeches. Economic development was the No. 1 issue mentioned at **75 percent.**

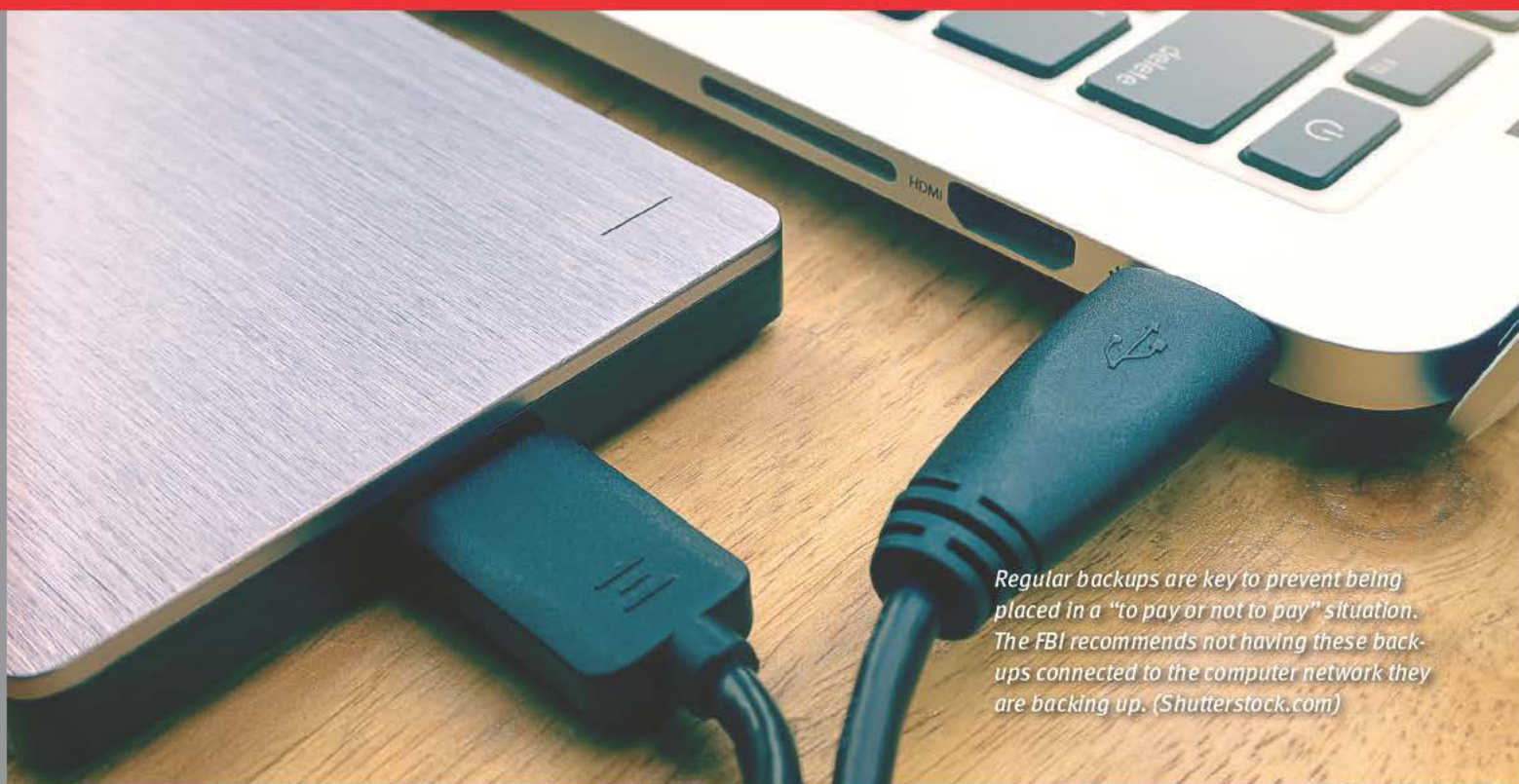


Source: [www.nlc.org/find-city-solutions/city-solutions-and-applied-research/state-of-the-cities-2016](http://www.nlc.org/find-city-solutions/city-solutions-and-applied-research/state-of-the-cities-2016)



# Held hostage:

## *Ransomware attacks on the rise*



Regular backups are key to prevent being placed in a “to pay or not to pay” situation. The FBI recommends not having these backups connected to the computer network they are backing up. (Shutterstock.com)

By DENISE FEDOROW | The Municipal

**It's a typical day on the job, you're logged in to your computer doing your daily work when all of a sudden it happens: your screen freezes and starts making noise and a warning message comes on your screen along with a countdown clock stating if you don't pay up, your files will be deleted.**

You've just become a victim of ransomware — an insidious virus that spreads rapidly through your system and has been increasingly spreading through municipalities and local government agencies.

In the last year municipalities are experiencing higher instances of ransomware attacks. Some examples include the Dayton; Miami Valley Regional Planning Commission; Vernon Township; Clinton County; Marion County; Ohio County Court; and Madison County, all located in Ohio. But Ohio is not

alone — the city of Durham, N.C., the city of Plainfield, N.J., and many other municipalities have dealt with this cyber-extortion.

In the case of MVRPC, the virus was discovered before it fully hit. Tim Gilliland, business finance and administration, explained what happened.

“Earlier that day our IT manager was in the network drive doing work and he noticed files were changing on their own,” Gilliland said. “The IT manager called our consultant that we keep on retainer, and the consultant

logged into the network, saw it was a virus and shut down the system.”

MVRPC is the planning agency for three counties in Ohio with 75 members. Gilliland said they were very fortunate that they saw what was going on and reacted quickly. The virus had already started to infect 15,000 files, but they were able to completely recover those files and no data was lost. He said they were able to go to the most recent backup to recover the most recent files and to figure



**RIGHT:** Pictured is one variety of ransomware. Ransomware locks down data in infected systems and gives a set timespan to pay up while threatening to delete data if the ransom is not met. (Photo by Motormille2; <https://commons.wikimedia.org/wiki/File:Ransomware-pic.jpg>; <https://creativecommons.org/licenses/by-sa/2.0/>)

**BOTTOM RIGHT:** Plainfield, N.J., City Hall was a victim this past spring of a ransomware attack, precipitated through a “spearfishing” type of email. Plainfield ultimately gave in to the demands. (Photo provided)

out where the other files were located and restored their system.

“If the timing was off, if we didn’t have a separate backup, it could’ve been disastrous,” Gilliland remarked.

They traced the virus back to a work laptop that had an infected file a staffer had opened but were unable to determine the origin. Gilliland said what they learned from that experience was that it “could come from anywhere” and diligent monitoring of one’s system is critical.

“Time is a big element—especially in discovery. If it goes (undetected) too long, it ties everything up or worse.”

Gilliland said to his knowledge they caught the virus before a ransom demand was made; other sources have reported that there was a demand of \$1,400, but it wasn’t paid.

Plainfield, N.J., was attacked in March. Ron West, director of administration, finance, health, social services and technology, said he has no idea why his city was targeted but they know how.

“An individual opened a file from a source we’re accustomed to seeing and it turned out to be the virus,” West said. “It started converting a bunch of files right away.”

He said there was a request for money and they didn’t respond—at first. They took the system off the server and made several attempts to see if they could salvage the files and recover, but came to the conclusion that nothing they were doing was giving them the ability to resolve the issue.

“We didn’t lose any files and ultimately decided to pay,” West said.

The city paid \$500 and its files were released. As to avoiding the same thing happening again, he said, “There’s never too much education



when it comes to opening files—even if it appears to be from a reliable source,” West said. “It also brings home the point that files need to be backed up.”

Plainfield strengthened its security requirements, strengthened its firewall and took other additional security measures, including regular backups with backup hardware and software. Taking all these steps will help put the city back into business faster in the event of another attack.

To pay the ransom demand, money was taken from the IT budget. “Just like maintenance on a building, this is part of the cost of doing business,” West said.

His advice to other municipalities would be to take a closer look at what they need to do to increase their levels of security. “So they don’t have to go through the trials and trouble we did,” he said.

West also said the files that were held hostage were of no use to the “file-nappers,” stating “The files were not of value to them—they were important to city hall but not them.”

He also said the city was able to trace the origin of the virus to Russia. Russia and Eastern Europe have become the source of many recent cybercrimes.

“We are certainly better protected than before and we continue to evolve,” West said.

### ‘Spearfishing’

The type of attack that the city of Plainfield fell victim to is known as “spearfishing.” They’re attached in emails that appear to be from someone you know—a reliable source—so the recipient is not concerned about opening them.

In even more sophisticated cases, rather than just a link, the target is given specific



instructions to carry out. That proved costly in two Ohio cases last year.

Reportedly, last September Madison County Agricultural Society received an email from someone posing as an Internal Revenue Service’s agent collecting back taxes and the organization paid \$60,491. The Big Walnut Local School District in Sunbury, Ohio, reportedly paid \$38,500 after an employee received an email supposedly from his or her boss asking for the transfer be made from a school account.

When receiving any email that has a monetary request, a good policy would be to confirm that request by phone.

### Police departments targeted

The other area where ransomware attacks are rapidly spreading is through law enforcement agencies. According to a CNBC story by Chris Francescani, “Ransomware Hackers Blackmail U.S. Law Enforcement,” since 2013 cybercriminals have targeted police departments in at least seven states and that number is growing.

In 2015 five police and sheriff departments in Maine were locked out of their records management systems. This is a bitter pill for these departments to swallow. Sheriff Todd ▶





Brackett of Lincoln County, Maine, said, "We're cops; we generally don't pay ransom."

But after 48 hours they did reluctantly agree to pay. He thought he got the better of the criminals after canceling the payment once the files were restored but they struck again two days later with a higher demand. This time they paid right away.

The police chief in Durham, N.H., refused to pay; the files were deleted, but they were able to recover most from backup files. The Collinsville, Ala., police chief refused to pay and his files were lost.

Tewksbury, Mass., Police Department enlisted the help of the Federal Bureau of Investigation, Department of Homeland Security, the state police and a private investigator, but after five days of unsuccessful attempts to rescue their files, they paid the \$500 in bitcoins.

*Smaller police departments are particularly vulnerable to attacks, especially when outdated software is involved. In ransomware attacks, evidence files on open criminal cases could be lost or altered, and it could raise questions from defense attorneys about the validity of the evidence files. So far, this has yet to happen. (Shutterstock.com)*

Midlothian, Ill., Police Department's backup files were also irretrievable so they also paid \$500.

According to the CNBC story, police departments are especially vulnerable to attacks because many smaller departments have outdated systems. One chief admitted he was still running on DOS when attacked, and many departments are still using Windows XP or Vista. What's especially troubling is that evidence files on open criminal cases could be lost or altered, and it could raise questions from defense attorneys about the validity of the evidence files.

So far, that hasn't happened. Files recovered from ransomware attacks have not been altered, just held hostage and the criminals are just looking for a payoff.

#### **To pay or not to pay**

To pay or not to pay is the big question being heavily debated these days. The FBI has reportedly even advised victims to "just pay," and it creates a difficult situation for them. They know that most victims who pay get their files back unharmed, but they also know that the payouts encourage more extortion.

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## Prevention


The key to not having to make that decision is prevention. Cyber-criminals are getting increasingly sophisticated, but many of the prevention steps bring us back to the basics. When computers first came out, everyone was more wary and much more vigilant; as they've become so commonplace that most Americans have one in the palm of their hands, we've let our guard down.

Be aware that social media is also a source so be careful of random instant messages, run an anti-virus program, run the latest updated version of Windows and any program, and set security at the highest level.

Impress upon city council and board members the importance of budgeted funds for technology updates — not just to have all the bells and whistles but to protect the city's data.

The Department of Homeland Security offers cyber-security training, conducts tests of a municipal system and has numerous resources available.

"Behavior Detection" is becoming one of the best ways to stop ransomware, according to security expert and founder of Bleeping Computers, Laurence Abrams. User Behavior Analytics compares what users on a system normally do vs. the non-normal activities of an attacker.

Computer viruses and cyber crimes are probably not going away any time soon so reminding all employees to be super vigilant can help save your budget. 

## Tips to keep municipal systems secure from the FBI

- Make sure employees are aware of their critical role in protecting the organization's data.
- Patch operating systems, software and forms on digital devices.
- Ensure anti-virus and anti-malware are set to automatic updates and conduct regular scans.
- Manage the use of privileged accounts—no user should be assigned administrative access unless absolutely needed and only use administrative accounts when necessary.
- Configure access controls, including files, directories and network sharing permission approval. If you only need 'read only' specific information they don't need "write" access to those files.
- Disable macro scripts from office files transmitted over email, implement software restrictions policies or other controls to prevent programs from executing from common ransomware locations (e.g. temporary folders supporting popular Internet browsers, compression/decompression programs).
- For business continuity back up data regularly and verify the integrity of the backup.
- Secure your backups. Make sure they aren't connected to the computer network they are backing up.



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# Big or small, cities are becoming smarter



*A woman uses a smart city kiosk. (Shutterstock.com)*

By JOHN DAVID THACKER | The Municipal

**If the internet has enabled the global networking of people, the Internet of Things is its machine counterpart. Through embedded sensors and access to a network, physical devices—appliances, vehicles, even buildings—can collect and exchange data about their environments. Cities large and small are increasingly utilizing this Internet of Things to improve their services and to become “Smart Cities.”**

There are many definitions of a Smart City. Bob Bennett, chief innovation officer for Kansas City, Mo., said, “Smart cities have a very deliberate and very focused data collection plan. They have a data analysis system and actually use that data to be proactive in their provision of services to their citizens as

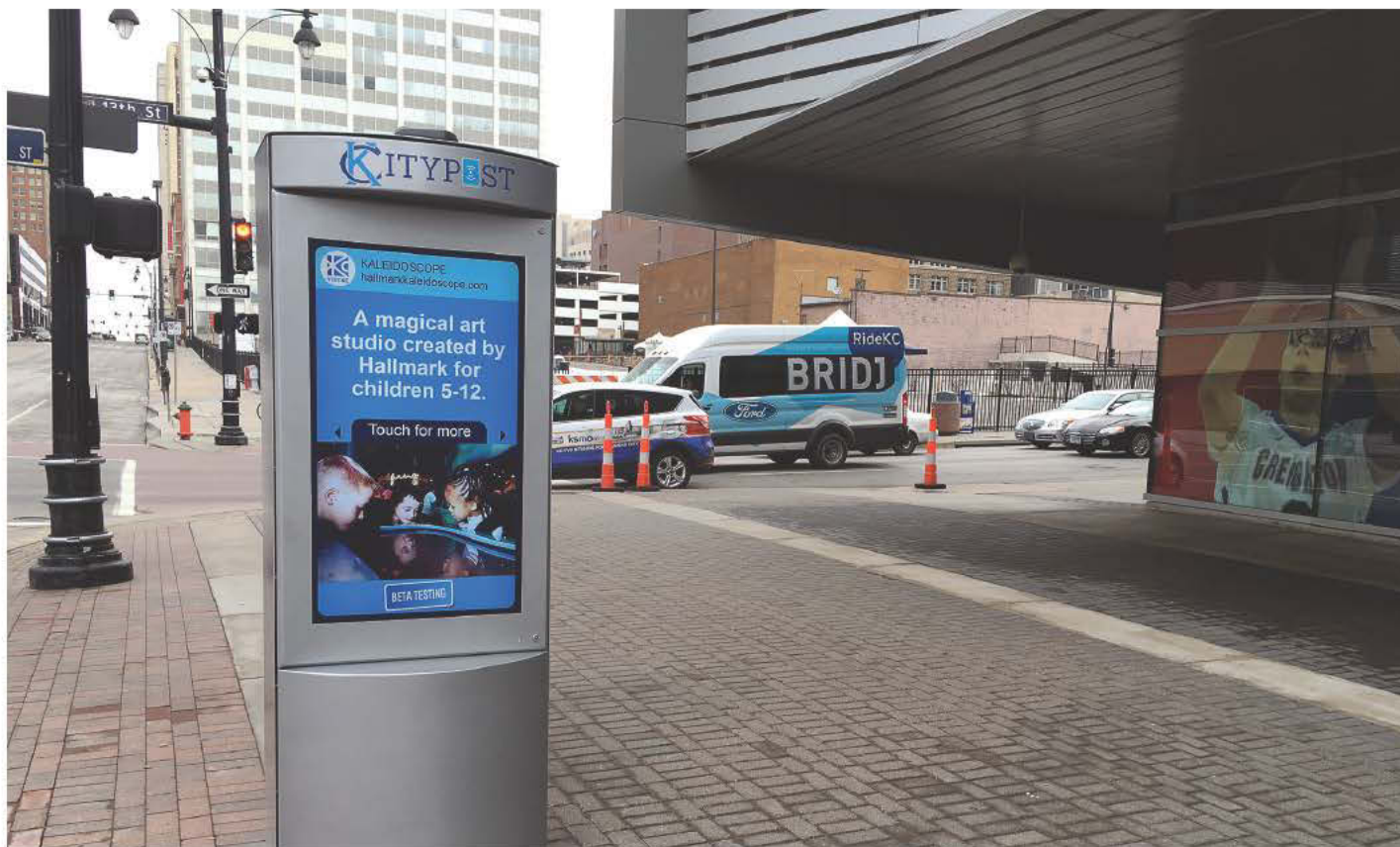
opposed to being reactive to what’s going on in their jurisdictions.”

Since Google Fiber brought ultra high-speed broadband Internet service to Kansas City in 2012, the city’s use of the IoT has advanced quickly. The city’s downtown streetcar line has become the core of its Smart City progress thus far.

“We have 51 square blocks of Smart City technology,” said Bennett. “A lot of our Internet of Things apparatuses are hung up and fully interconnected in our inner core. This includes a free public Wi-Fi system; it includes a series of 25 information kiosks; it includes a data analysis system that is able to give us data as to who’s moving around the city and where they are from so we can focus activities toward visitors or toward folks who live here. And finally, it has a lighting system, which allows us to react to citizens’ needs and visitors’ needs as they walk in and around our spaces.”

The data collected by lamppost sensors can be shared with others in the community to help them make informed decisions. Bennett said, “The ability to track where people are walking around downtown allows me to talk to a business owner who’s considering





*Kansas City, Mo., not only has free public Wi-Fi, but has a series of 25 information kiosks available to residents and visitors alike. (Photo provided)*

***“The Smart City movement is clearly here to stay and will continue to evolve as new technologies are developed.”***

a location for a coffee shop or a restaurant. I can tell him where “X” number of people are walking on different street corners that currently do not have a coffee shop or a restaurant. And they can then target a location that is meeting their demands with regards to foot traffic.

“I can also use it to figure out where large groups of people are gathering at times I would not otherwise anticipate it, say, for example, at the end of a concert, or maybe a concert gets out late and it changes what we anticipated would happen. So I could put public safety resources like police or traffic control officers at a location.

“In a similar vein, being able to figure out where I’ve got large groups of people waiting for public transportation can help us to surge some of our transportation assets as we need them to make sure citizens get from point A to point B as quickly as possible.”

While the Internet of Things is impacting the ways that cities provide services across the board, Jennifer James, director of Smart Cities Solutions for Black & Veatch, thinks that the transportation and energy sectors are seeing the greatest advances. “Transportation is definitely a hot area,” James said. “There’s a real need from many different perspectives. Not only is technology advancing, with things like autonomous vehicles coming on board, but there are major challenges, from a congestion perspective, from a pollution perspective. And there are also considerable safety issues.”

Utilities are also investing heavily in the Internet of Things. “Energy is always interesting,” James said. “The smart grid — or grid modernization movement as it’s now known — that’s almost the backbone, the beginning of a lot of this stuff in many ways. You start to look at how you connect all

these different types of distributed energy resources into the grid, and the two-way flow of communication that happens has a huge impact. So from an energy perspective, the utilities really had to figure that out.”

It’s not only large cities that are leveraging the Internet of Things to their advantage. Small- and medium-sized cities are also becoming “smarter.” Bennett called Dubuque, Iowa, with a population of less than 60,000 “one of the very first truly smart cities in the United States.”

Dubuque has undertaken several Smart City initiatives. The first was Smarter Water. The city replaced all 24,800 water meters in its homes with smart water meters that can monitor and report water usage in real-time. “We now have the ability to show real-time consumption data to our citizens,” said Teri Goodmann, Dubuque’s assistant city manager for Government Relations and Strategic Partnerships. ▶





"We could see if someone had a leak, because if you are using umpteen gallons at 2 a.m. when you are sleeping, we know that something has gone awry in your household, so we notified our citizens where we detected this and then we paid the first \$100 of their plumbing bill to get it fixed, because it benefits the resident of the home, but it also benefits the city to save that money."

Smarter Energy and Smarter Discard — or recycling and waste — followed. The city is currently using its Smarter Travel pilot project to improve public transportation. The city offered riders a free three-month bus pass with an embedded radio-frequency identification chip that can anonymously track their travel to learn what times of the day people were using the bus and where they traveled to and from. Using this data, said Goodmann, "We were able to redesign the routes of our public transportation to meet the needs of the majority of our citizens."

They also learned that the bus was being used more at night than they had expected. "We started providing a late night route that ran from 6 p.m. to 2 (a.m.)," Goodmann said, "and discovered there are night-time workers who are transit-dependent."

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*The Internet of Things can be used to track usage patterns, allowing cities to redesign bus and streetcar routes to better meet the needs of citizens. (Photo provided)*

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The Smart City movement is clearly here to stay and will continue to evolve as new technologies are developed. "I think we're only just really seeing the beginning of the potential," James said. "A lot of what's been happening, like the smart grid movement, people aren't even realizing it's happening, but it's benefiting them. So it's an interesting mix between things that people are very actively engaged in — like information, reporting and social collaboration-type networks — to the things that are being deployed behind the scenes that people may not even be aware of."

Emerging technologies and the terabytes of data they can provide municipalities will continue to shape city services and planning. "The smart city infrastructure and the Internet of Things won't do anything independently," said Bennett, "but they will make everything that a city does more efficient and more responsive to citizens." 

*Kiosks in Kansas City are used to provide all sorts of information about downtown activities, entertainment and services. Here, a young boy uses one of the kiosks. (Photo provided)*





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# Parks embrace technology to ease management and save money



*Parks and recreation departments are integrating all manner of technology into their programming and operations. In some cases, parks themselves are being teched out with free Wi-Fi. (Shutterstock.com)*

by SARAH WRIGHT | The Municipal

**Technology levies new and innovative opportunities, effectively revolutionizing the way our cities operate across all departments. Parks and recreation departments across the U.S. are embracing the many benefits of technology, utilizing it to not only engage their communities, but to streamline registration and reservations, save money and track costs.**

New York City utilized tech and volunteers to canvas the city for its tree census in 2015, pairing a web-based system with tablets provided by the parks department in addition to volunteers' smartphones. The system then utilized software to map each tree, including data, such as the tree's health. Free Wi-Fi in parks continues to be a growing trend

predominately in urban parks while parks embrace technological trends — like Pokemon Go or geocaching — to draw people in. Some parks are even offering live streaming of sports events.

There are so many varied applications, and it is not just larger park systems getting in on the action.

## **Saving time, reducing errors and showing the value**

Watertown, N.Y., a city of approximately 27,823, has embraced technology both for management and engagement purposes. Four and half years ago it had ordered RecTrac and WebTrac, digitalizing many of its operations. Paired together, the two





*Watertown, N.Y., Parks and Recreation has turned to software to break down the exact cost of different events like its concerts. Previously, the department had to do estimates of the time put into each project. (Photo provided)*



*Rather than send someone out to change plastic lettering, Watertown Parks and Recreation works can now change the message on the city's new electronic marquee sign via computer. (Photo provided)*



*Watertown, N.Y., Parks and Recreation is able to use RecTrac at points of sale and its skate rentals to keep track of inventory, prices and quantities. (Photo provided)*

programs have allowed department employees to better track time, expenses, scheduling and more while WebTrac allows community members to see what is happening.

"It's definitely streamlined everything," Watertown Parks and Recreation Superintendent Erin Gardner said, noting prior to the software, scheduling was done with a printout calendar and pencil, allowing for double-booking and human error.

Going digital has not only reduces chances for errors, but freed up time for staff to perform other tasks. It has also streamlined the Watertown's points of sale and skate rentals, with Gardner noting it can keep track of inventory, prices and quantities. RecTrack is used to alert residents to event cancellations, too.

"Most households have at least one cell-phone tied to them," Gardner said, adding the park can now send out notifications to those numbers if they need to cancel an event due to weather. "We used to have to spend time calling each family." Since everything is digitalized, notifications can be sent specifically to the affected teams, rather than everyone.

"We will begin training on Cartegraph soon," Gardner said, noting the software will help the department "really find out the time that goes into one project." The program will

also factor in materials used for projects in addition to other components, ultimately breaking down the full cost.

Previously, she stated the department would have to estimate the time put into one of its big concerts. "Now we will just punch in the data to find out," she added. This feature will help with the hockey rink, or when sports teams rent fields, because they can show how the fees are arrived at. "It's to help justify what they are paying."

Watertown also sees various tech fairs, so having those figures available are also conducive to making sure they keep coming. "It also shows that we are doing our due diligence; that we are not charging too much so they won't come back, and we are not putting burden on the taxpayer."

Another added bit of technology introduced to Watertown is an electronic marquee sign, which came about during a \$11 million renovation to the municipal ice arena. Gardner stated previously they had to send workers out to change plastic letters to spell out messages. "Now (an employee) can just put it into the computer and it appears in a couple of seconds."

In addition to the sign and their software, Gardner said, "We have a Facebook page. We also send a lot of press releases to local media

through email." Gardner has also served as a guest speaker on television and radio to get word out about different events. The city website, on which the parks department has a calendar, has also been a valuable tool used for community engagement. "We are a low-income area and try to have low and no cost programming. We emphasize getting the word out by any means."

#### **Tech brings cost savings**

Faced with a budget crisis in 2009, the Miami-Dade Parks, Recreation and Open Spaces Department partnered with Honeywell to address aging infrastructure and facilities by entering into an ESCO, or energy performance contract. Jack Kardys, director of the department, explained Florida state statute allows infrastructure improvement projects to be financed using energy and efficiency savings for a span of less than 20 years. Miami-Dade's project is approximately \$11.8 million and will be paid using savings during a 15-year period.

"There were 34 parks that were identified for future savings," Kardys said, adding these particular parks consumed more than 80 percent of the electrical energy for the entire department. "Their HVACs were outdated and they were using high-density lighting." ►





Zoo Miami received a 50-foot cylinder composter as part of the Miami-Dade Parks, Recreation and Open Spaces Department's energy performance contract with Honeywell. Compost produced is used in the county's park, and excess could potentially be sold. (Photo provided)

The buildings were also showing their age, allowing air leakage.

"Honeywell bid and secured the financing for the loan, a 15-year mortgage," Kardys said. "They guarantee the savings. They have

to put their money where their mouth is because it's all in the contract."

Several energy conservation measures were put into place by Honeywell, including solar panels, high-efficiency lighting,

building envelope improvements, high-efficiency HVAC equipment, building automation controls, plus a 50-foot cylinder composter for Zoo Miami. Kardys said the compost is then used in the parks, and eventually more compost will be generated than can be used by Miami-Dade, allowing the county to sell excess.

When it comes to its water infrastructure, Miami-Dade parks has utilized IBM's Smarter Cities software to produce savings when it comes to its water bill. Kardys explained many of the county's pipes are from the '50s and '60s, and when paired with salt water conditions, there is a lot of deterioration.

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*On the left is material that enters Miami-Dade Parks, Recreation and Open Spaces Department's composter from Zoo Miami while the photo on the right is the finished compost, which is used in the parks and might eventually be sold to other entities. (Photo provided)*

"We wouldn't know until the end of the cycle (if there were irregularities). We have a big system here," Kardys said. However, now with the software, the project manager and park manager are notified via an app if there is a sudden spike in usage, such as a faucet left on at one of the parks. "They can get someone on the radio and settle it.

It's a really cool system." Miami-Dade is currently experiencing a 7 to 12 percent savings on its annual water bill as a result of the program. And with all of the new infrastructure updates, savings are being strictly measured for the ESCO. Training in order to maintain Miami-Dade's savings momentum has

also been underway, including everyone from senior management to each staff person, pressing the need for conservation. The hope is that Miami-Dade parks will be helping advance Miami-Dade County's goal of reducing energy usage by 20 percent. 

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# What's new in snow and ice management on roads



By ANNE MEYER BYLER | The Municipal

**Research and equipment related to winter road maintenance continue to evolve. From road sensors and tracking gear on snowplows to onboard cameras that relay photos of current road conditions, state and local governments are continually adapting their fleets in order to get people where they need to go safely. Additionally, new technology is offering chances to save money when it comes to working hours and materials.**





*Tracking gear is being used by many departments to better assess real-time weather conditions and determine how best to use deicing and other materials. (Shutterstock.com)*

## On the Web



MDOT's research is available at  
[www.michigan.gov/mdot/0,4616,7-151-9622\\_11045\\_24249\\_52176-353767--,00.html](http://www.michigan.gov/mdot/0,4616,7-151-9622_11045_24249_52176-353767--,00.html).

During the 2014-2015 winter season, an American Association of State Highway and Transportation Officials' survey of 23 states showed that those states "spent approximately \$1.131 billion from October 2014 to mid-April 2015 to pre-treat, plow roads or spread chemicals and other materials on roadways." With unpredictability from winter to winter, departments are turning to technology to smooth budget woes.

The Pennsylvania Department of Transportation, for example, outfitted approximately 728 trucks with tracking gear as part of a pilot program. At the time, Rich Roman, maintenance and operations director for PennDOT, told Stateline, an initiative of The Pew Charitable Trusts, "We're hopeful this will make our truck routes more efficient and help us manage our materials a lot better, such as

figuring out that we used this much salt, but it turned out to be 34 degrees and sunny so we didn't need to use so much."

Through the program PennDOT hopes to save \$700,000 in the long haul. And PennDOT is not alone in using tracking gear as several other state departments of transportation have turned to the technology to judge current weather conditions and better manage material.

Tracking, however, is not the only technology being put to the task of clearing roadways of snow, or maintaining them throughout the year.

### **Unmanned aerial vehicles show promise**

Michigan's Department of Transportation ran a research project in 2014, which was later published in 2015, called "Evaluating the Use of Unmanned Aerial Vehicles for

Transportation Purposes," which consists of four parts. Through its research it evaluated different uses for UAVs, such as hexacopters or quadcopters. Most of these uses exceeded snow and ice management, spanning across various avenues of road maintenance.

One use was in crash scene reconstruction imaging. Researchers "could rapidly collect imagery from a small quadcopter so that a member of the Michigan State Police Crash Scene Evaluation team could more easily measure crash scene information taken. MSP is currently evaluating where it would like to move with this technology, and has acquired its own UAV for testing since this demonstration." This has potential roadway conditions applications as well.

The UAVs were also used for bridge assessment. Digital elevation models for each ►





bridge were processed through a spall detection algorithm. "An overall percent spall value for the entire bridge was then calculated. Delaminations were detected using thermal imagery, due to the fact that these defects have a different temperature than their surroundings." This usage has many benefits from preventing traffic disruptions and keeping workers safe to saving time and money.

The UAVs were also used for roadway asset detection: "These methods used image classification, tracking of asset features between video frames, and an initial demonstration with a set of known test imagery ... The demonstration showed promise for a UAV-based

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*Many state departments of transportation are testing out unmanned aerial vehicles for several different road maintenance applications, from bridge assessment and roadway asset management to thermal mapping. (Mps197 / Shutterstock.com)*



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mobile asset data collection concept and could be developed further," the report noted.

Melissa Howe, a region support engineer for the maintenance field services section at MDOT, also mentioned that the research showed thermal mapping to be a capability of the UAV technology. This could come in handy for snow and ice management, with thermal mapping capable UAVs able to ascertain roadway temperatures so departments can better determine the amount of materials needed and where.

Michigan is not alone in eyeing drones. In another AASHTO survey conducted in March 2016, 33 state departments of transportation stated they have or are exploring, researching, testing or using UAVs for varied applications.

#### New technologies in equipment

Industry leaders are also turning out new, improved products to meet ice and snow management needs. Henderson's BlackBelt Maxx is their newest piece of combination equipment, functioning as a salt/sand spreader in

winter conditions and a dump body the rest of the year. Its higher tech aspects include a pure belt system, with patented load-sense belt tensioning for low maintenance; self-cleaning design and operation; material sensor, which automatically feeds material to rear, as needed, so the driver stays focused; and winter applications, such as anti-icing (liquid brine or salt slurry) and de-icing (sand, straight rock salt, pre-wet or salt slurry).

BOSS has a full line-up of snow and ice removal gear: a truck plow, box plow and their BOSS tailgate spreaders, which have adjustable feed gate and material deflectors. They also have variable speed control and are equipped with blast feature and overload protection.

Salt brine is often used and is a part of the de-icing stage of operations. The AccuBrine brine maker makes it to the user's specifications and is automated once salt is added with no overflows or underfills. The brine is tested for desired salinity and is fixed if concentrations aren't adequate. They have an operator

interface screen layout and service and troubleshooting capabilities via remote access.

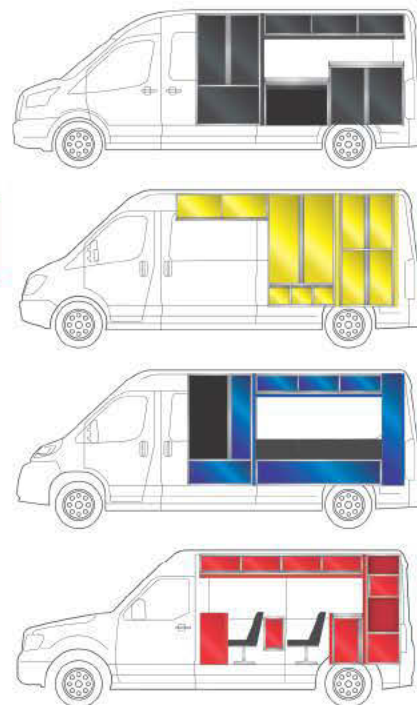
The brine maker is paired with AccuBrine truck loading and blending system. Customized brine blends to load into the trucks. The brine maker pumps brine to tanks and then trucks. The operator can configure multiple brine product recipes, selecting which product and quantity to load into which truck.

"We also have innovative pavement solutions. SafeLane surface overlay and WinterPave asphalt anti-freeze both help to prevent ice and hardpack snow from adhering to the surface as well as protect infrastructure," according to Debby Capela, business development and marketing manager for Cargill Deicing Technology.

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# Chad Gibson

By BARB SIEMINSKI | The Municipal



Chad Gibson

**There are few individuals in this world who are born joyful, and the beneficiaries of these easygoing folks are their fortunate co-workers, friends and family — and a world in general that tips its collective hat to a smiling face in this war-weary, politically torn planet of ours.**

Such a carefree personality graces the offices of the city of Upper Arlington, Ohio, in the form of Chad D. Gibson, senior planning officer/Community Development Department in charge of zoning and code enforcement for the city, who describes himself as being “fun, positive, helpful and happy.”

The highest-ranking zoning official in the city, Gibson administers the award-winning Unified Development Ordinance and serves the board of zoning and planning, city council, plus other boards and committees as requested by the city manager.

A member of the American Institute of Certified Planners, Gibson also serves as an associate faculty member at the Ohio State University where he teaches the City and Regional Planning program.

Gibson, who earned his Bachelor of Arts in geography and urban analysis at Miami University and his Master of City and Regional Planning at Ohio State University, is proudest of the positive impacts his input has had on the built environment.

“From the simplest addition of a sidewalk to the complete redesign of a site plan, there is no doubt that these changes have made my community a better place,” said Gibson.

“I am also proud of delivering consistent, quality service to my customers with a friendly attitude. Calls are always returned in a short timeframe and permits are reviewed efficiently. ‘Turning around’ angry individuals and debunking bureaucracy within local government are two of my favorite challenges.”

Transparency in government is important and public record requests should be part of the services his department provides, said



*The Fishinger Road project aimed to make the area safer for drivers and pedestrians. Pictured is the intersection of Fishinger Road. (Photo provided by Ohio State University)*

Gibson, a member of Engaging Local Government Leaders program.

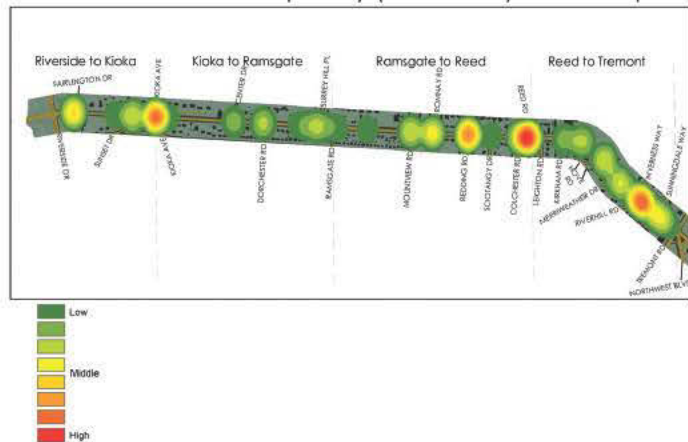
“I’m still fairly new to the ELGL program so it hasn’t been too grueling just yet,” said Gibson, who with wife Heather has two daughters, Marissa, 8, and Mackenzie, 5. “What is grueling is working two jobs while raising a young family — I am the senior planning officer for the city of Upper Arlington, Ohio, and I also teach studio courses at the

Ohio State University in the award-winning City and Regional Planning program.”

One of the awards earned by Gibson was the Best Planning Student Project Award — by the Ohio Chapter of the American Planning Association — for his fall 2014 undergraduate planning studio regarding a light rail transit in Columbus, Ohio. Another, more recent, designation was the National AICP Award for Application

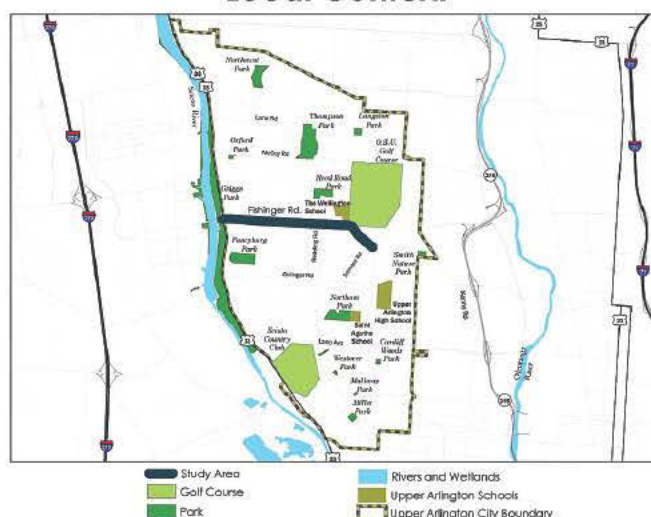


## Crash Location Frequency (2012-2015): Heat Map



As part of the Fishinger Road project, a crash location frequency heat map was complete using data from 2012 to 2015. (Photo provided by Ohio State University)

## Local Context



Pictured is a local context map for the Fishinger Road project (Photo provided by Ohio State University)

of the Planning Process — Undergraduate Program from the American Planning Association. Earlier awards included the 2013 Notable Team Project Award and the 2007 Distinguished Service Award — both from the city of Upper Arlington.

The Notable Team Project Award was received by members of the community and economic development department and fire division for their collaborative efforts in bringing the Lane Avenue mixed-use project to fruition, which included Homewood Suites, Hudson 29 Restaurant, Wright-Patt Credit Union, The Lane Apartments, etc.

"My role in the Notable Team Project Award was from the zoning standpoint — bringing the project through the streamlined public review process, which included the board of zoning and planning as well as an appeal to city council," said Gibson.

"I gathered input from other departments to create a coordinated city response to various aspects of this complex project. The other team members were Justin Milam (zoning); Roger Eastep and Bob Geiger (building); Ben Anders and Chris Zimmer (fire). This project has been an overwhelming success for the community and included the city's first hotel and parking garage. It has helped continue the significant redevelopment momentum in the corridor. A video, which describes some of our recent development activity, can be seen at <https://vimeo.com/153124242>."

Another major project was undertaken by Gibson's spring 2016 graduate studio class, which made recommendations for the Fishinger Road corridor in Upper Arlington, Ohio. The project's website, <http://uafishingerroad.weebly.com/>, shows the plan from beginning to end with maps, photos, pavement condition ratings, utility existing conditions, bikeways and paths, residents' and visitors' comments prior to beginning the Fishinger Road Transportation Plan and much more.

Gibson, whose leisure time hobbies include golf, OSU athletics, traveling, mentoring and family time, reflected back on his career.

"It has been a true privilege to be a professor in the City and Regional Planning Department at OSU since 2012," said Gibson.

"One aspect of this role that I particularly enjoy is helping the students find gainful employment after graduation. I get to write reference letters and speak with HR departments from all over the country about my interactions with any given student. Maybe it is my letter-writing skills, but my success rate with these recommendations has been nothing short of fantastic! Nothing makes me feel better than being contacted by a student years after our class to hear how positive their experience at OSU was and that their first job is so rewarding. Helping these great kids get their first chance to thrive and make the world a better place is a special role that I cherish."



This map highlights the road pavement condition of Fishinger Road and other nearby roadways. (Photo provided by Ohio State University)

Finally, this cheerful senior planner/teacher who has achieved so many municipal successes admitted one incident that was not one of his early highlights:

"I got a two-day in-school suspension for throwing eggs over a tall apartment building, which rained down on some kids I knew who were waiting for their bus..."



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# Training the next generation of fleet technicians

by ANNE MEYER BYLER | The Municipal



Robert Gordon

**R**OBERT GORDON IS INTERIM director of DeKalb County, Ga., Fleet Maintenance with 152 employees to supervise and 3,450 vehicles to keep in shape. His fleet was No. 2 Best Fleet in the Americas two years in a row out of a possible 38,000 public fleets. In a time during which it is hard to fill fleet tech jobs, what are some of Gordon's practices? He himself is a product of a local high school tech program, so he has something to say about how to recruit from the student population.

One thing Gordon suggested was that fleet staff members join local advisory committees for high school automotive departments or technical schools. This is where curriculum gets determined and members can offer suggestions for training that match the skills needed in the workforce. Warren Technical School is K-12 and one of the schools where members of Gordon's staff are on an advisory committee.

Then, too, the DeKalb recruitment committee has staff go to schools on their career days to talk to students about the work on the fleet. In just the last eight months, the local military bases have held specific career days for mechanics so there may be fewer people in the room, but they are more specifically interested in the technical work. Two of the members on the recruitment committee are now ex-military and know procedures and how to work with base staff. One aspect staff talk about are real-world issues, such as appropriate dress, being on time and appropriate cellphone management.

In the past, there has been a drop off in number of technical classes at the high school level, while teachers were trying to get every student "college ready." There wasn't time for both Advance Placement classes and technical training. The emphasis was

on the former. More recently there has been emphasis again on technical classes because there was a larger drop-out rate from college — those students proving uninterested in core courses, but rather in a practical technical field. Some colleges are putting back in place a certificate for those taking automotive maintenance for one year, instead of going for a two-year degree. Mechanics, like plumbers, welders and carpenters, are fast-growing areas for employment. Gordon said, "Society needs these blue-collar workers."

There is a National Institute for Automotive Service Excellence certification program. Gordon said, "Students at Warren Tech are

still getting ASEs. When students come to work in the parts department, we train them, and our master techs would help them prepare for the test. If they pass the test and are working for us, we pay them back. For those students in high school, the school or student pays for the test.

Regarding social media and recruiting, DeKalb County has been unable to post recruiting information on any of the county's social media pages. "We are trying to work it out with our public information officer," said Gordon, "but no luck so far."



*A student works on a vehicle in DeKalb County, Ga., Fleet Maintenance's body shop. Students learn the basics through the co-op program with Warren Technical School. (Photo provided by DeKalb County)*





*When students arrive, they receive in-house training on basic preventative maintenance; a skill they will likely use 85 percent of the time. (Photo provided by DeKalb County)*



*While heavy trucks pay more, many millennials have very little interest in heavy truck maintenance, being more interested in automotive. (Photo provided by DeKalb County)*

Gordon offered a few recommendations for starting a tech trainee program and keeping it going as a success:

- Initiate conversation with a high school- or college-level tech school, and get on local advisory committees to impact curriculum.
  - You don't have to emphasize computers too much. Students need to be able to do preventative maintenance and fix brakes, etc. — normal basic repair.
  - You can go to the latest and greatest troubleshooting software after they know how to do the basics.
- Be clear about prerequisites from the students' end and being work-ready for the real world. They need to know how to conduct themselves in the real world, beside tech having skills.
- Place trainees where they are needed the most.
- Have clear job descriptions that fit beginners.
- Find good mentors. Each shop tends to have one person who tends to be good at mentoring. When you start, you will be set with a trainer for all aspects. It depends when the students are ready on all aspects before they are set on their own.
- Choose trainers who are good at relating.

"Mr. Nathaniel Clark in DeKalb County has a way to encourage students to be part of a club," he said of the latter point, "walking, bowling ►



*Good mentors, who can relate to the students, are key to the success of DeKalb County's program. Pictured, one instructor guides students through the repair of a fire apparatus. (Photo provided by DeKalb County)*

## Tips for smaller city fleets

- Get involved with local tech school or the tech department in the high school. Smaller fleets need to be involved in the local high school.
- Donate a vehicle or two if you have surplus equipment. Commissioners may need to vote on this step.
- Communicate what you need to have students learn to work on your fleet.
- Gordon has yet to find a school that doesn't want someone from the real world to come and talk to students. Kids hear things from the teachers all the time, but they listen better when they have a guest speaker.



or biking. This is outside of work time.” Clark has been doing it for 25 years, and it’s not officially sponsored. Gordon noted that they’ve walked up Stone Mountain, gone bowling on Wednesday evenings in addition to biking and walking on weekends.

Another route for training is through the original equipment manufacturer. When DeKalb County places an order for 10 police cars, for example, it includes 40 hours of training time for each vehicle in its request for bids. The vendor — the bidder — pays the funding to train the employees. Young technicians receive more of that kind of training. It’s an ongoing program. One person can be trained in more than one vehicle — for example, in all different models of heavy trucks.

Gordon has found that many millennials don’t have good on-the-job work skills. They also tend not to be as interested in heavy truck maintenance, but are more interested in automotive, even though heavy truck work pays more.

In terms of higher technology for learning skills, he said, “There may be some basic stuff on programs but I don’t utilize it. When they get here, we do an in-house training on in-house basic preventive maintenance. We use check-off sheets. It’s the basics: hoses, water pumps, brakes — this is what we do 85 percent of the time. The other 15 percent of the time is diagnosing, but the skills we need most are those dealing with basic repairs.” ■



More schools are making efforts to supply technical training for interested students. Robert Gordon, with DeKalb County, Ga., recommended that fleets reach out to schools to help with those programs. (Photo provided by DeKalb County)

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# Outreach key to addressing homelessness

*On a single night in January 2015, 564,708 people were experiencing homelessness, according to the National Alliance to End Homelessness. (Shutterstock.com)*

By LAUREN CAGGIANO | The Municipal



*Eric Tars, senior attorney with National Law Center on Homelessness and Poverty*

**Homelessness has become the “new norm,” in American cities, according to a spokesperson from the National Law Center on Homelessness & Poverty.**

“It’s a problem that has been 30 years in the making,” said Eric Tars, senior attorney. “Due to legislation, housing is becoming less affordable.” Tars pointed out the loss or weakening of the social safety net as a major factor in the country’s increase in homelessness over the years.

On a single night in January 2015, 564,708 people were experiencing homelessness, according to the National Alliance to End Homelessness. Still, a few municipalities

have found successful and long-term ways to address the issue. One example is the Fort Lauderdale, Fla., Police Department’s efforts to keep people off the streets.

Officer Sandi Downs-Keesling has been instrumental in furthering the efforts of the police department’s Homeless Outreach Unit. The Fort Lauderdale Police Department Homeless Outreach Unit was founded in 1999 comprised of one homeless man and one patrol





officer. The goal of the unit at that time was to locate homeless veterans and assist them with benefits otherwise unknown to them, according to Downs-Keesling.

It was during this period that the outreach officer, the homeless veteran man and a woman by the name of Lorraine Wilby created a nonprofit under the name, “The Task Force For Ending Homelessness.” As the CEO of the organization, Wilby provided years of experience running and maintaining homeless shelters and social service contact that assisted the homeless outreach unit and led to the growth of the task force.

With that growth came a shift in attitude in how the city responded to the issue. “In earlier days, the goal was to move homeless out of the areas of concern,” she said. “At that time the city operated its own municipal jail; and, as such were able to arrest and house 210 of our regular ‘chronic homeless,’

for quality of life issues.” They were held in custody by judges for 30 to 60 days prior to being released. Closure of the city jail then resulted in most of the homeless frequenting the downtown area.

The great recession only exacerbated the situation. According to Downs-Keesling, in 2008, the number of homeless at least doubled. As of 2015, they have just under 5,000 homeless individuals in Broward County, with 2,200 overnight shelter/program beds throughout the county.

Downs-Keesling attributes their success to a shift in mindset. The old attitude, she said was “get rid of these people with problems,” but now after eight years of being a homeless outreach officer, “I say, these are ‘people with problems, not problem people.’”

The approach is very much rooted in serving the needs of homeless individuals, first and foremost. Downs-Keesling

*Attitudes, according to Officer Sandi Downs-Keesling with the Fort Lauderdale, Fla., Police Department, have begun to change with people beginning to view homeless people not as “problem people,” but as “people with problems.” (Shutterstock.com)*

and her team follow a process: “Every day, we hold an ‘assessment’ point (for lack of better terms), at various locations — usually churches — throughout the city. The homeless population is familiar with our meeting locations, and we meet with anywhere between 45 to 75 people each day.”


Continuity and consistency have been key. “It is a constant and continuous partnership with the individual, the task force and social services that keep this working wheel turning” she said. “It is a commitment to being available 24 hours a day, 7 days a week — whenever anyone needs assistance.” ▶



***“These are people with problems, not problem people.”***

The task force holds these meetings every day; 365 days a years, and in Downs-Keesling’s words, “We make it our commitment not to leave until we meet with every person present wanting assistance.” Each person’s information is self-disclosed and entered into a central database. In 2015, 18,000 individuals were seen on multiple occasions, indicating that some of the individuals are repeat cases, she noted.

Another factor in their success has been collaboration with other public and private entities. In her words, “The single most ‘best practice’ that other cities can follow is to have an established homeless outreach team that can assist and liaison with social services and individuals needing and seeking assistance.”

Police agencies, she said, need to have established professional relationships with social service agencies. Last, she suggested that cities form a crisis intervention team composed of “officers with both training and established professional relationships with the social service community and local business partners.” Together they can help identify and address concerns of and involving the homeless community. 



*A strong outreach team is key and can serve as liaison with social services and individuals needing and seeking assistance.*  
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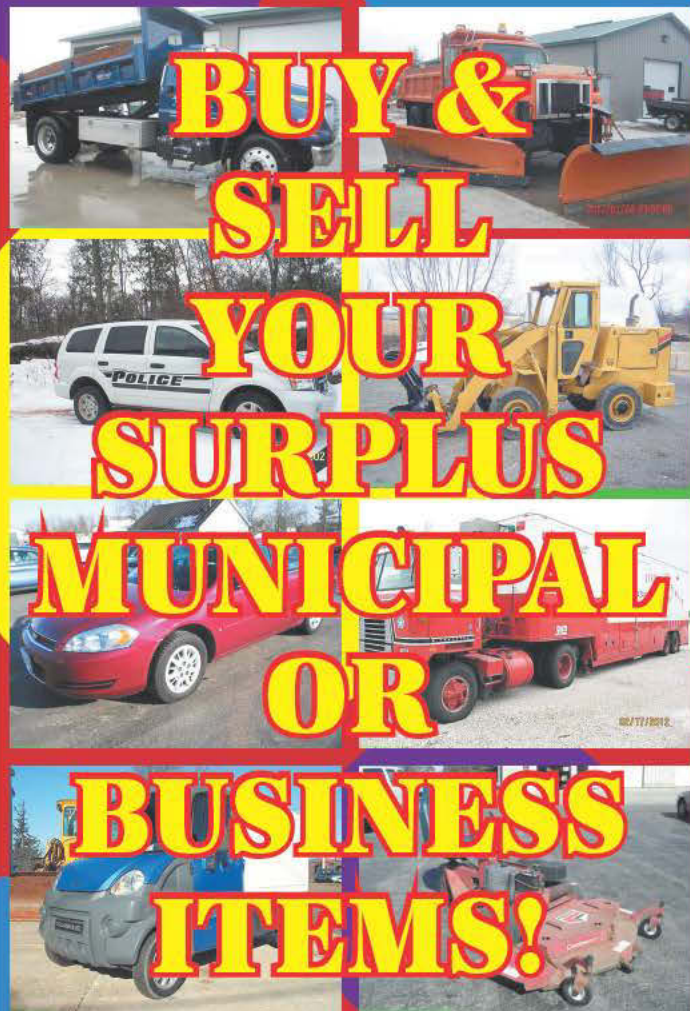
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# Where's the fire?

## *New assessment tool shows promise in measuring fire impact*

By JULIE YOUNG | The Municipal

**E**VERYONE KNOWS THE KIND OF impact fire has on a community. On the local level, it is typically measured in terms of the number of annual events, the loss of human life and, of course, the amount of direct and indirect property damage. But what about the environmental and economic impact a fire makes on the community? While not as easily calculated, these subtle impacts also contribute to the overall performance of a fire service as it strives to protect the public.

In order to provide a consistent methodology for assessing the performance of a department in these two areas, a tool has been created to help. Although it is still in the development stages, it is hoped that continued testing will determine the environmental and economic, or ENVECO, assessment tool's effectiveness while expanding and improving its capabilities.

### User-friendly application

The ENVECO assessment tool was created by the Fire Protection Research Foundation, the research affiliate of the National Fire Protection Association, as a relatively easy-to-use methodology for local departments. Ordinarily the prevailing risk, environmental and economic assessment methods require specialized knowledge that is outside the scope of most fire departments. By being more user-friendly, the tool allows fire departments to estimate the environmental and economic impact of fires in such a way that community leaders can better understand which department activities influence the overall municipality.



*A new the environmental and economic, or ENVECO, assessment tool created by the Fire Protection Research Foundation aims to help fire departments easily calculate the impact of fires on their community. (Joseph Sohm/Shutterstock.com)*

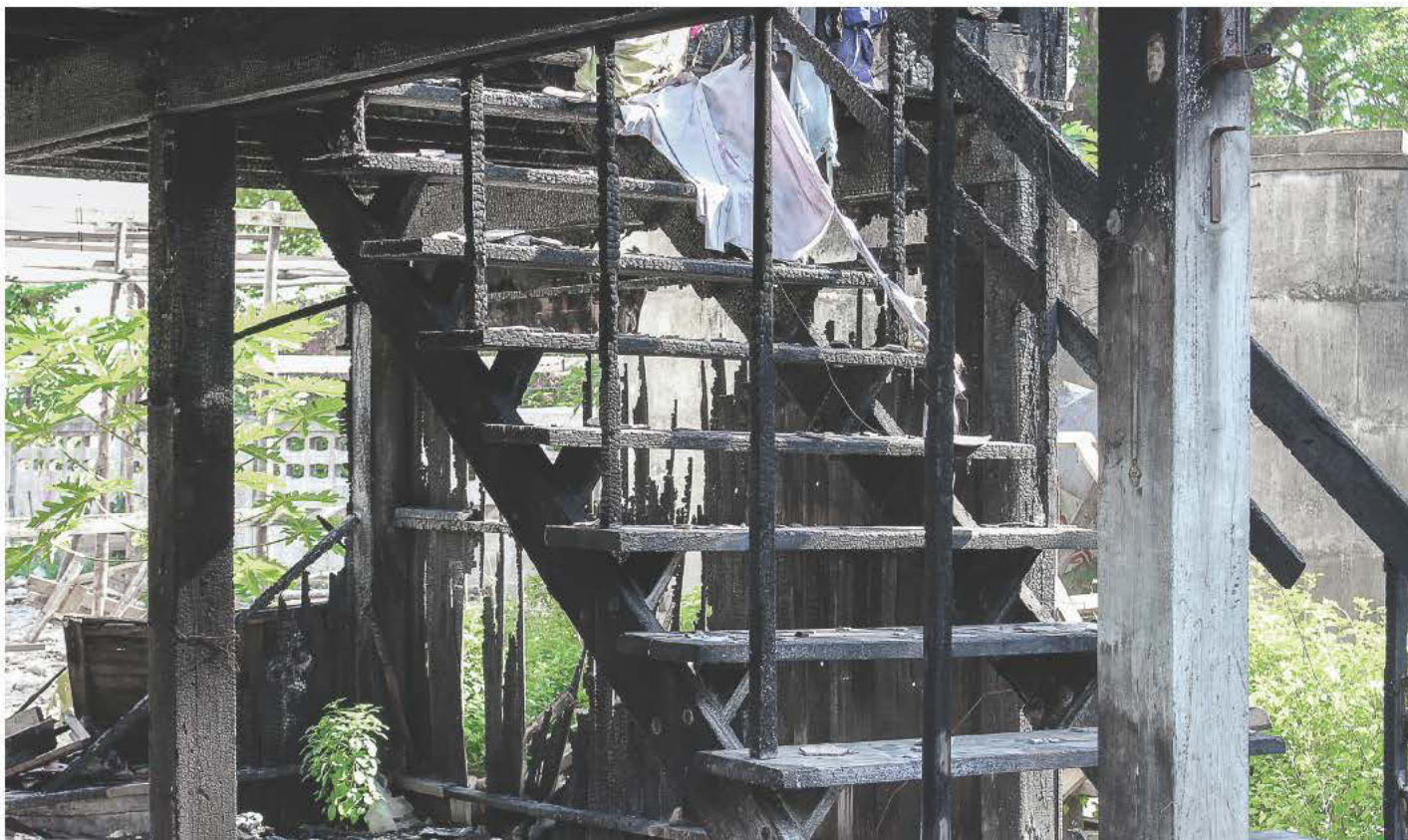
"At this point it is just a basic spread sheet, but we've been hearing from fire departments that they often need to justify themselves and their budgets to the city, so we wanted to create something a chief could present to community officials," said Amanda Kimball, research project manager for the FPRF.

According to the FPRF's executive summary of the ENVECO assessment tool, the spreadsheet enables departments to estimate the qualitative risk assessment for

predicting the ability of a fire to spread to adjacent structures; the life cycle assessment, or the environmental impact of a fire, the fire response and the replacement cost of damaged materials; as well as a cost benefit analysis for estimating the economic impact of the fire.

The spreadsheet is divided into four areas, which are filled in by the user using metric or British measurements: risk of fire spread, warehouse description, contents description





and fire service response. Default input values are given whenever possible and are based on referenced literature. Then the output is the probability of the fire spreading to adjacent structures, the QRA; the savings in terms of firefighter injuries and/or fatalities; all property damage; cost to business; fire service intervention and rent reduction from the CBA; and the savings in terms of the cost to the environment, including global warming, acidification, eutrophication, ozone depletion, eco-toxicity and energy used.

### Create something more universal

Kimball said that the tool, in its initial form, was used on a case-by-case basis for warehouse fires in which water was the only extinguishing medium used during the response. The ENVECO tool analyzed the fire service response to previous events, where a defensive strategy was used, and then makes a comparison with predicted consequences of the same fire without a department response. This created a theoretical baseline case.

It does not predict response outcomes for future fires, nor does it provide insight into potential damages as a function of response time, or fire growth within the structure, but those types of features may

be included in future versions of this tool as its possibilities grow.

"We really just wanted to start from somewhere," Kimball said. "Once we get this going, we can do something a little more universal."

Even though there are still a lot of uncertainties associated with the ENVECO tool, due to the non-specific input data, many of them become less severe when used in comparison between the theoretical case where no fire department intervenes and the real case in which a fire service does take action. This is because when a certain portion or these parameters used in the models are applied to both situations, they cancel each other out leaving the more specific information intact.

The most important factor is the ration between radiated and total heat release, which determines a large portion of the difference between the two scenarios in terms of how a fire may spread to adjacent structures. Other important factors are those related to the differences between the scenarios, such as the area used to calculate property damage. In fact, there are only three factors that are present in one of the scenarios: firefighter fatalities, injuries and the cost of fire service intervention. Out of these, firefighter

*Still in the developmental stage, the ENVECO assessment tool is a basic spread sheet, designed to help fire departments present information to community officials. (Shutterstock.com)*

fatalities have a high impact on the results but have little uncertainty.

In time, Kimball says it can be updated with more accurate information as soon as it becomes available. Likewise, as more information becomes available to the users through public or private databases, the tool will become easier to use and the quality of the input data can improve. The functionality of the tool can also be extended more easily as new information becomes available. This tool was originally intended for use by the fire service, but it may have value for other interested parties as well.

"Right now, it is limited in scope, but it should be good for anyone who has a warehouse fire because there is default data included. We hope it will be developed more over 2016 and 2017 and that there will be a revised version with a case study analysis," Kimball said. "We just wanted to develop something simple and free that fire departments can use, but this is just the first pass." ■





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# Finding 'green' in wastewater biogas production



*Sharon Thieszen, superintendent of the Sheboygan, Wis., Regional WWTF*



*Sharon Thieszen visits the Sheboygan, Wis., Regional Water Resource Recovery Facility. (Photo provided)*

By BARB SIEMINSKI | The Municipal

**Last year, the Water Environment Federation held a webinar called “Wasted Food to Energy: How Five Water Resource Recovery Facilities are Boosting Biogas Production and the Bottom Line,” which featured five speakers who shared their experiences with biogas production. Three of the speakers were from California; one was from Wisconsin and one from Indiana.**

The webinar, [www.wef.org/WastedFood-toEnergy/](http://www.wef.org/WastedFood-toEnergy/), brought together plant operators, utility management, engineering consultants, project developers, regulators and academics interested in learning, “about how co-digestion is helping water resource recovery facilities become ‘energy neutral’ and even ‘energy positive’ through a combination of energy efficiency measures and the addition of outside organic wastes.”

Participants heard about co-digestion practices and experiences of the WRRFs interviewed and also the types of food waste

co-digested and the strategies employed to manage the material. Also presented was information on how the facilities managed biogas and biosolids and on how the facilities funded and justified the investment.

Sharon Thieszen, superintendent of the Sheboygan, Wis., Regional WWTF gave a presentation on “Sheboygan Regional WWTF’s Fifty Shades of Green: A Cleaner Ending to a Filthy Story.”

Since 2006, the Sheboygan Regional WWTF has been continually seeking ways to reduce energy costs.

“A partnership with the local electrical generation utility, Alliant Energy, in 2006 made it possible for the WWTF to add electrical generation and heat recovery with minimal capital costs,” said Thieszen.

“In 2006, the city partnered with Alliant Energy — Wisconsin Power & Light to install 10-30 kW Capstone TM Microturbines of electrical power and recovering 1,000,000 BTU of heat per hour. The equipment (microturbines, heat recovery units and gas conditioning system) was funded by Alliant Energy while the biogas fuel used by the microturbines was provided by the WWTF.

“In order to produce enough biogas to power the microturbines, the WWTF implemented a high strength waste program. The HSW, a liquid waste predominately from dairy processing facilities, is rich in organic content and is mixed with municipal sludge collected from the wastewater treatment processes and pumped to the anaerobic





**ABOVE:** *Thieszen looks over the final clarifier at the Sheboygan, Wis., Regional WWTF. (Photo provided)*

**RIGHT:** *David Henderson, utility director of West Lafayette, Ind.*

digesters. The additional organic source helps to significantly increase the biogas production,” Thieszen said.

She added, “The energy savings realized combined with the additional revenue from tipping fees, led the WWTF to install additional cogeneration equipment. Today, the WWTF produces more than 500,000 cubic feet of biogas per day. The biogas is utilized to fuel three process oilers, 10-30 kW and 2-200 kW microturbines. The WWTF saves over \$450,000 annually in energy and biosolids processing costs as a result of the HSW and cogeneration program.”

Asked what lessons her department learned and what they would do differently next time, Thieszen mentioned the corrosiveness of high strength waste — especially dairy waste.

“Piping and pumps should be stainless steel,” Thieszen said. “Storage tanks should be stainless steel or coated with a product that can withstand very acidic and corrosive conditions. Also, the receiving station should have some sort of screening before the waste is accepted into storage and into the anaerobic digesters.”

She added, “Third, mixing is also important in the high-strength waste storage tank to help deliver a more homogenous, consistent feed of additional food waste to the anaerobic digesters. The high-strength waste (supplemental waste) should be fed to the anaerobic



digesters continuously versus intermittently. Finally, a good relationship with the haulers is important to receiving a consistent supply of waste; help ensure additional debris and unwanted waste is not mixed in with accepted loads.”

According to David Henderson, utility director of West Lafayette, Ind., who also attended the webinar, his successful operation was due ►



to three factors: a great engineering team, Wessler Engineering and Kennedy Jenks; a top-notch construction contractor, Bowen Engineering; and his own utility staff, "that has taken ownership of the cogeneration project to make it work so well."

What Henderson's department would do if it had to do it all over again: "We'd include the need for additional screening ahead of our grease/food waste receiving station and perhaps a separate solid waste-receiving apparatus. We co-digest wastewater solids, FOG (fats, oil and grease) and food waste from Purdue University. This combination of feedstocks boosts our biogas production. We use the biogas in micro turbines to produce about 20 percent of the electricity needed by our facility." He added, "The potential sources of food waste are abundant and having a receiving station for it specifically would be ideal for our operation."

Both Henderson and Thieszen had advice to share with other municipalities.


"Look around your city or town," suggested Henderson. "Where are there concentrations of people? Colleges, universities, military bases and prisons all have to feed a lot of people. These are good sources of food waste. Do you have a dairy or brewery? Wastes from these can help biogas production in your digesters."

Thieszen took it a step further.

"Adding food waste to the anaerobic digesters to produce additional biogas should be used to offset energy costs and to better utilize the resources already available," concluded Thieszen. "Do not expect



Sharon Thieszen stands by the digester cover at her Sheboygan, Wis., Regional WWTF. (Photo provided)

significant revenue from tipping fees; the cost savings are reaped from the energy production and heat capture off the Combined Heat and Power Equipment." 

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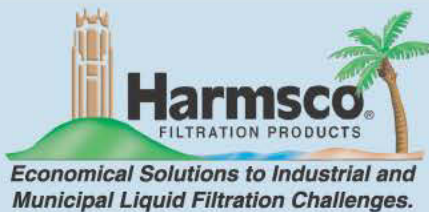
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## Winter requires a solid game plan

by AJ HUGHES | The Municipal

**Roads covered in black ice. Collapsed power lines. Roofs sagging under the weight of heavy snow. These are only a few examples of winter-related hazards that are more common in cold-weather climes but can strike almost anywhere in the United States. In municipalities located across the snow belt, relying on an established winter-weather action plan is important to keep people safe and equipment running smoothly.**

This is certainly the case in Fairbanks, Alaska, a town that's used to long and harsh winters.

"Winter temperatures in Fairbanks can be well below zero, so it's a large concern of ours to keep folks safe," said Dan Schacher, who works for the state of Alaska and serves as Fairbanks District superintendent for the American Public Works Association. "We have numerous procedures in place."

These procedures include equipping employees with survival gear bags and parkas, plus ensuring and maintaining excellent radio communication and access to satellite phones in case cellular networks go down.

Since public works employees and emergency responders rely so much on their vehicles and other types of equipment, it's imperative that these also be kept winter-ready. But just like their human counterparts,

there's a limit to how much cold mechanical equipment can withstand.

"For machinery, minus 30 degrees Fahrenheit is the cutoff," said Schacher. "Colder than that and it's too hard on equipment. Flexibility is lost."

But to keep equipment running well when the mercury reads well below zero requires an excellent preventive maintenance program and powerful antifreeze, according to Schacher. And when it gets that cold, it's also imperative to keep equipment operators warm.

"Normal heaters won't keep the cab warm enough," Schacher said.

Schacher also emphasized public awareness of what public works employees and emergency responders do to keep Fairbanks





*LEFT: Crews work to clear streets after a blizzard event. Preparing workers for winter includes teaching about black ice, effective winter attire, exercising greater caution when navigating around snow piles and alternatives to snowplows. (Photo provided)*

*ABOVE: An established winter-weather action plan is vital to keeping people safe and equipment running smoothly. Procedures that equip employees with survival gear bags and parkas or ensure excellent radio communication can go a long way. (Photo provided)*

safe and running smoothly during the coldest times of the year.

"Be patient with snowplows, which hold up traffic because they are slow," he said. "It's important for the public to know that our goal is to make Alaska as safe as possible. I want my people to be safe and happy."

Minnesota, another state accustomed to extreme cold and snow, is able to take things somewhat in stride because of policies and procedures it has in place.

"We conduct a safety inspection prior to winter, when it's not unusual for it to be 10 to 15 below zero with a wind-chill of minus-25," said John Scharffbillig, fleet service division director for the city of Minneapolis. "We put equipment into storage in April or May, and take out in July—we officially switch to winter mode in the third week of October. It's necessary to make sure that equipment is in good working order."

A large portion of the city's vehicles and equipment runs on biodiesel, which requires additives during cold months to keep it from freezing.

Equally as important to winter readiness, according to Scharffbillig, is education. This comprises teaching about black ice, the difference in effectiveness between gloves and mittens (mittens keep hands warmer), exercising greater caution when navigating around snow piles, reasons to wear spikes on shoes when walking in icy conditions and alternatives to snowplows such as backhoes.

Like many other areas of the United States, Minneapolis has seen an influx of immigrants, many of whom came from parts of the world that never see ice or snow. They, said Scharffbillig, especially need to learn how to keep themselves warm when winter

weather strikes. He told a story of a man who had recently moved to Minnesota from the Middle East and was astounded when he first saw hoarfrost. His new colleagues then warned him about "snow snakes," and they all had a laugh when he finally realized that hoarfrost is real, and snow snakes are not.

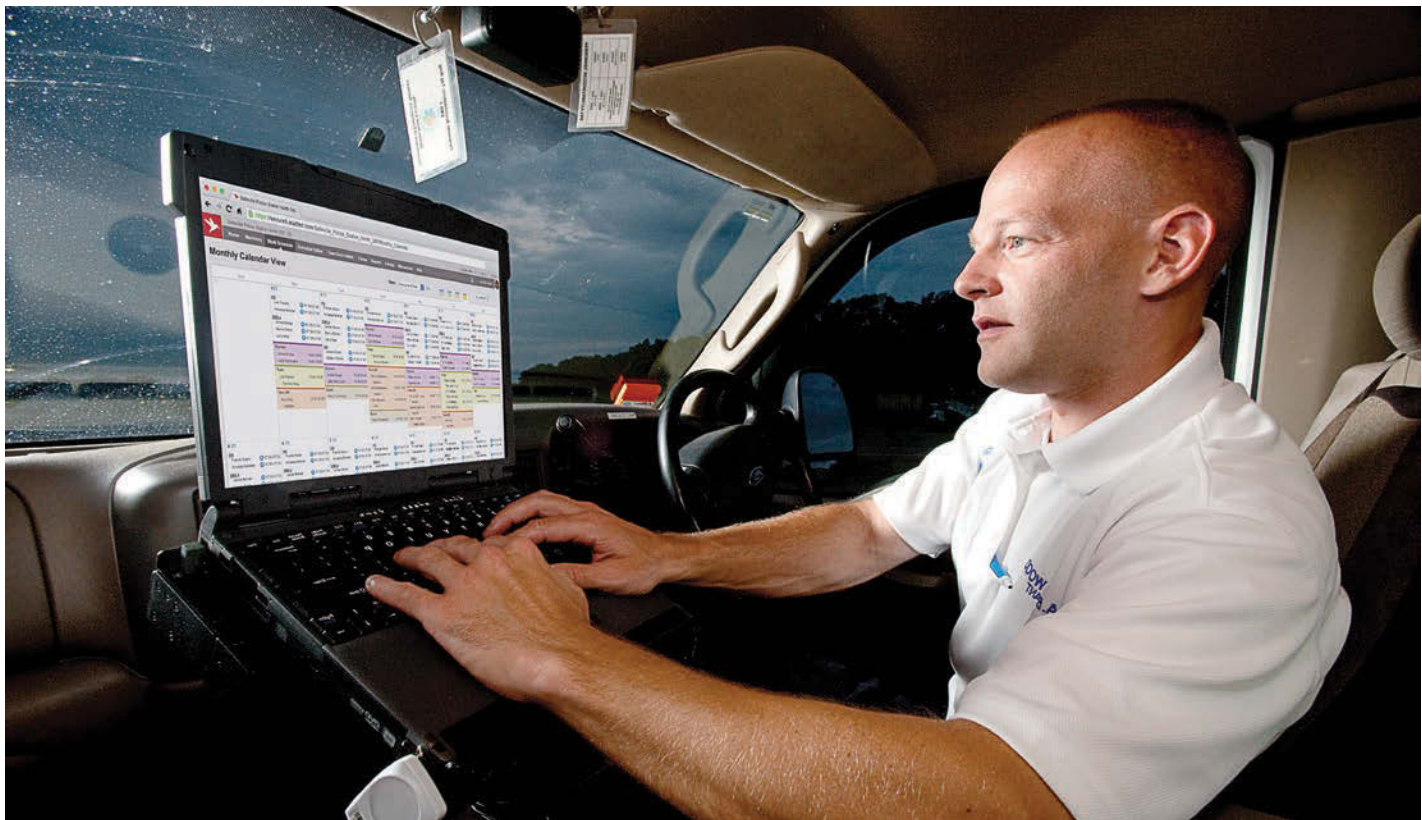
Another reason for education, according to Scharffbillig, is that towns and cities all across the United States are changing. In Minneapolis, for example, people are moving back in droves to downtown, but they're leaving their cars behind. Instead, they bike or walk. Consequently, bikers and pedestrians need to take precautions for winter, and drivers need to have greater awareness of traffic other than cars.

The future will hold even greater changes, Scharffbillig believes. He pointed to the advent of Pokémon Go and how that's gotten even more people outside, and people who walk while glued to their cellphones. Even in the best weather conditions this can cause hazards, but adding snow and ice to the mix calls for even more care. Self-driving vehicles are on the horizon, and this will change the game even more.

"Everything's gonna change, oh heck yeah," Scharffbillig said. ■



# Why sticking your head in ‘the cloud’ is a good thing



**It wasn't too many years ago you wouldn't see a computer in an office... let alone laptops, smartphones and tablets. Wow, how things have changed; it's hard to imagine getting our job done without a computer, or even a smartphone.**

In the last few years, in part due to online software, how we access and disperse information has dramatically improved. You've likely heard the term "cloud computing" — it allows you to utilize software programs directly over the Internet — by logging onto the software provider's web server. Since the software is online, there's nothing to install and no need for an onsite server... and your software is mobile. You can use it on any device via the Internet. Today software programs are being used in emergency vehicles,

at the scene of an accident, at home, while in the field, at the office — from anywhere.

Mobile 24/7 access to online software is only the beginning. Cloud-based software will also improve your organization by streamlining and automating processes, improving efficiency and reducing human errors... therefore saving time and money. In addition, online software will decrease the pressure on your IT staff, which can be a significant cost savings.

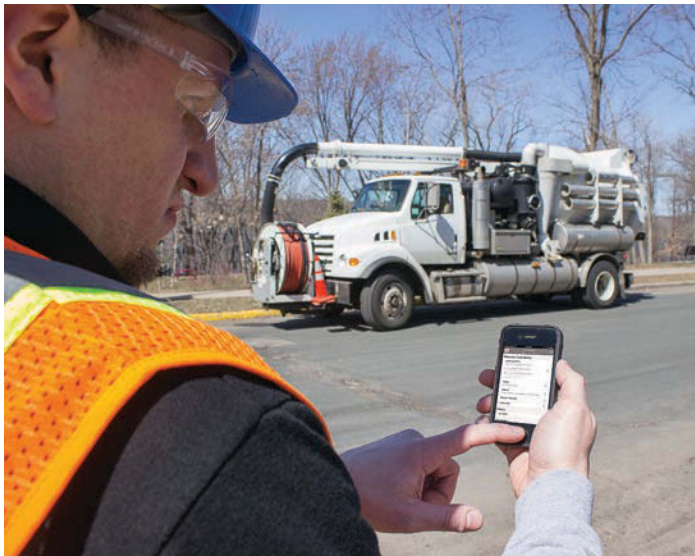
There are many online software products designed specifically for the Public Safety

*One advantage of online software is that an organization can often try a free demo before purchasing, ensuring that the software covers its needs. (Photo provided)*

Sector: for example, Rhodium for Incident Management; Sansio for field data needs; RedVector for continuing education programs; ESO Solutions for ePCR; Zoll for 12-lead communications; and Aladtec for employee scheduling and workforce management. Some software include many features; for instance, Aladtec also has customizable forms, certification tracking, a library, discussions, payroll integration and an optional time clock.

At times, one software system can be used throughout an entire municipality. "Here in the city of Lincoln it's important to use the same software across departments so payroll can easily track overtime, sick time

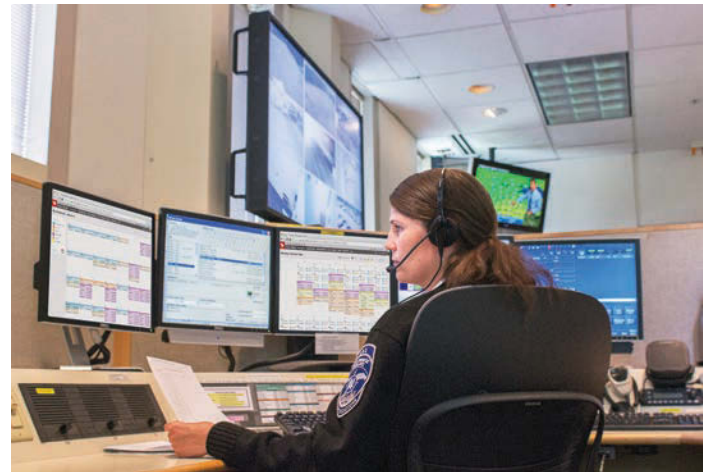




**ABOVE:** Cloud-based software allows ease of use and mobility; software can be accessed from anywhere and via most devices. (Photo provided)

**ABOVE RIGHT:** Online software allows organizations to streamline and automate processes, such as scheduling, improving efficiency and reducing human errors. (Photo provided)

**RIGHT:** Online software can allow organizations to more easily track all paid time, meeting a requirement of the Affordable Care Act. (Photo provided)



and vacation time for all our employees from one software system,” explained Chief Mark Miller, city of Lincoln Fire Department, Ill. “Before, we used a computer-based fire department only system; the system software crashed and records were lost. We switched to Aladtec and that’s no longer a risk. Aladtec also allows us to go paperless. We keep our department forms in the software system, including all daily and weekly apparatus checks; EMS equipment checks; and overtime documentation.”

The city of Lincoln uses Aladtec for employee scheduling and workforce management within their fire department, police department and city offices. “The Affordable Care Act prompted us to use Aladtec, too. Since the city of Lincoln is a large employer with more than 50 full-time employees, we are required by law to file reports with the IRS annually. Aladtec enables us to track separately (vacation, holiday pay, etc.) all paid time, which is required for the Affordable Care Act,” indicated Susan K. Gehlbach, city clerk. “Aladtec reports provide much

needed information for ACA. All municipalities should invest in this software.”

Colerain Township Department of Fire and EMS has been using Aladtec for several years. They operate out of five stations with 33 fire and EMS personnel on duty around the clock; in total, 183 active members use the Aladtec system. “We are a combination (full- and part-time personnel) department with several different shift lengths and employment types working concurrently. We operate a fluid and dynamic schedule,” stated Captain Tim Beach, Colerain Township Department of Fire and EMS, Cincinnati, Ohio. “With recent legislation requiring a close watch on the amount of hours worked in a week, pay period, month or year — Aladtec has proven to be a valuable tool. So much so that our other township departments, including the police department and public works, have adopted its use. Administrators, department heads, administrative assistants, accounting and human relations departments can all access the information they need.”

As for how much online software costs, it’s typically available through an annual

subscription; therefore easier to budget for because there’s not a large capital expenditure to try to get approved. Usually the fee is based on how many people will use the system and/or what specific features/services you subscribe to.

Another advantage of online software is you can often try a free demo to assure it fits your organization’s needs. Because of the free demo, there’s really no need for a request for proposal, which takes a lot of time to create, put out for bid and then evaluate. RFP’s are used to determine which product or service best fits your needs prior to purchasing, because buying the wrong thing can be a costly mistake. However, if you can actually try out a software system before you purchase it, why require RFP’s? They really aren’t needed, which saves everyone a lot of time and the purchasing timeline becomes much shorter.

To find an online software solution for your organization’s specific needs, do some research. You can ask neighboring municipalities or agencies for recommendations, and/or do an online search for the type of ►



product you are looking for, such as personnel scheduling, incident reporting or electronic patient care reporting, or ePCR, software. Remember to look for software products with a free demo version so you can see how it will, or won't, fit your requirements — and hopefully you'll avoid the dreaded RFP, too.

"Finding a reliable, efficient and evolving software system eliminates lost data, wasted money and lost time learning new systems every couple years. Online software has provided that for our department. While the user-friendly format is a bonus to the system, in Aladtec's case their support staff is the backbone of their system. Their expertise and willingness to help us use the system to its fullest potential has been paramount," added Beach.

If you're ready to ditch scheduling staff on a spreadsheet or calendar, tired of hard copy forms, searching for reports in a file cabinet, having to do the bulk of your work at your office desk, conducting training only on location, dealing with error prone methods or other inefficient processes — consider switching to online software. It will ease your frustrations, save time and improve the way your organization operates.

One last piece of advice... when narrowing down your options, make sure you find out what's included in the software subscription price. Some companies include everything while others charge extra for implementation, training, system updates, new features and/or customer support. ■

Provided by Aladtec

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- Reduce human error — safeguards can be put in place to assure accuracy and prevent mistakes.
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- Save money — By spending less time on manual processes, you can control overtime, eliminate errors that cost money and avoid mistakes that may instigate a lawsuit.
- Improve efficiency — All aspects of online software help you become more efficient.

For information on the software systems mentioned, visit [www.aladtec.com](http://www.aladtec.com), [www.irtsoftware.com](http://www.irtsoftware.com), [www.sansio.com](http://www.sansio.com) and [www.centrelearnsolutions.com](http://www.centrelearnsolutions.com).

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The AUV features a unique design with overhead doors that act as shelter from rain/snow/extreme sun when extended; as well as, providing excellent visibility of cargo. The waist-high work surface is easily accessible by the technician, without having to climb in and out of the body. There are several shelving options available, including fully adjustable shelves that rotate 45 degrees for visibility and organization. The flat body sides provides great space for company signage, artwork and logos. Various vocational packages are available with many customizable options. The MTE AUV is available in 8-foot, 9-foot and 11-foot lengths, with a five-year limited warranty.

The AUV is ideal for vocations such as general contractors, HVAC contractors, utility companies, plumbers, electricians and veterinarians to name a few.

For information, contact Monroe Truck Equipment Inc. at (800) 356-8134. Like the company on Facebook, and find it online at [www.monroetruck.com](http://www.monroetruck.com).

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## NOVEMBER

**Nov. 1-4 Campus Fire Forum**  
Hilton Phoenix, Mesa, Ariz.  
[www.campusfiresafety.org](http://www.campusfiresafety.org)

**Nov. 1-4 Specialty Equipment Managers Association Annual Conference**  
Las Vegas Convention Center, Las Vegas, Nev.  
[www.semashow.com](http://www.semashow.com)

**Nov. 1-4 Fire Findings Investigation of Gas and Electric Appliance Fires**  
Fire Findings laboratory testing facility, Benton Harbor, Mich.  
[www.firefindings.com/seminars/info/gas-electric](http://www.firefindings.com/seminars/info/gas-electric)

**Nov. 2-3 2016 WaterJet Technology Association-Industrial and Municipal Cleaning Association Expo**  
Ernest N. Morial Convention Center, New Orleans, La.  
[www.wjtaimcaexpo.com/assnfe/Ev.asp?ID=21](http://www.wjtaimcaexpo.com/assnfe/Ev.asp?ID=21)

**Nov. 2-4 Water and Wastewater Equipment Manufacturers Association 107th Annual Meeting**  
Rosen Shingle Creek Resort, Orlando, Fla.  
<https://www.wwema.org/annual.php>

**Nov. 2-5 EMS Associates Summit 2016**  
Utah Valley Convention Center, Provo, Utah  
[emsassociates.com/provo](http://emsassociates.com/provo)

**Nov. 9-11 Sweeper Summit 2016**  
Hilton Lake Las Vegas Resort & Spa, Henderson, Nev.  
[www.sweepersummit.com](http://www.sweepersummit.com)

## NOVEMBER

**Nov. 11-12 Iowa Society of Fire Service Instructors Annual Instructors Conference**  
[www.iasfsi.org/#!events/c19ml](http://www.iasfsi.org/#!events/c19ml)

**Nov. 13-17 2016 American Water Resources Association Annual Water Resources Conference**  
Florida Hotel & Conference Center, Orlando, Fla.  
[www.awra.org/meetings/Orlando2016](http://www.awra.org/meetings/Orlando2016)

**Nov. 14-15 Tennessee Recreation and Parks Association 84th Annual Conference**  
Hilton Memphis, Memphis, Tenn.  
[www.trpa.net/conference](http://www.trpa.net/conference)

**Nov. 16-19 National League of Cities City Summit**  
David L. Lawrence Convention Center, Pittsburgh, Pa.  
[citysummit.nlc.org](http://citysummit.nlc.org)

**Nov. 30-Dec. 2 Florida Parking Association 2016 Annual Conference and Trade Show**  
Omni ChampionsGate Resort, ChampionsGate, Fla.  
[flparking.org/december-conference](http://flparking.org/december-conference)

## DECEMBER

**Dec. 6-8 Groundwater Week 2016**  
Westgate Las Vegas Resort & Casino, Las Vegas, Nev.  
[groundwaterexpo.com](http://groundwaterexpo.com)

## DECEMBER

**Dec. 13-15 2016 International Association of EMS Chiefs Leadership Summit and Annual National Healthcare Coalition Preparedness Conference**  
Washington Hilton Hotel, Washington, D.C.  
[iaemsc.org](http://iaemsc.org)

**Dec. 13-15 Power-Gen International Conference 2016**  
Orange County Convention Center, Orlando, Fla.  
[www.power-gen.com](http://www.power-gen.com)

## JANUARY

**Jan. 10-12, 2017 Northern Green Trade Show**  
Minneapolis Convention Center, Minneapolis, Minn.  
[northerngreen.org](http://northerngreen.org)

**Jan. 10-12, 2017 Landscape Ontario Congress**  
Toronto Congress Centre, Toronto, Ontario, Canada  
[locongress.com](http://locongress.com)

**Jan. 15-20, 2017 National Recreation and Park Association Event Management School**  
Oglebay Resort and Conference Center, Wheeling, W.Va.  
[www.nrpa.org/event-school](http://www.nrpa.org/event-school)

**Jan. 16-18, 2017 Fire Department Safety Officers Association**  
Wyndham Orlando Resort, Orlando, Fla.  
[www.fdsaa.org](http://www.fdsaa.org)

## JANUARY

**Jan. 17-19, 2017 U.S. Conference of Mayors 85th Winter Meeting**  
Washington, D.C.  
[www.usmayors.org/meetings](http://www.usmayors.org/meetings)

**Jan. 17-21, 2017 Fire Rescue East**  
Daytona Beach Ocean Center, Daytona Beach, Fla.  
[www.ffca.org/fire-rescue-east](http://www.ffca.org/fire-rescue-east)

**Jan. 18-20, 2017 Indiana Parks and Recreation Association Conference & Expo**  
Crowne Plaza at Union Station, Indianapolis, Ind.  
[inpra.evrconnect.com/conference](http://inpra.evrconnect.com/conference)

**Jan. 18-20, 2017 Fire Department Safety Officers Association 2017 Apparatus Symposium and Safety Forum**  
Wyndham Orlando Resort, Orlando, Fla.  
[www.fdsaa.org](http://www.fdsaa.org)

**Jan. 20-21, 2017 Piedmont Fire Expo**  
Twin City Quarters/Benton Convention Center, Winston-Salem, N.C.  
[www.forsythcountyfire-rescue.com/expo.php](http://www.forsythcountyfire-rescue.com/expo.php)

**Jan. 20-25, 2017 American Correctional Association 2017 Winter Conference**  
Henry B. Gonzalez Convention Center, San Antonio, Texas  
[www.aca.org](http://www.aca.org)

**Jan. 23-26, 2017 Heavy Duty Aftermarket Week 2017**  
The Mirage, Las Vegas, Nev.  
[www.hdaw.org](http://www.hdaw.org)



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*Rumber boards are perfect for walkways, withstanding the elements and outlasting other alternative products, such as wood. (Photo provided)*

## Rumber excels at providing quality solutions

by SARAH WRIGHT | The Municipal

**F**OR 25 YEARS, RUMBER MATERIALS, based out of Muenster, Texas, has specialized in finding green, quality solutions to customers' needs through the use of 100 percent recycled materials. The company's patented process, using recycled plastics and ground whole tire waste, produces a superior material — Rumber — which can be cut and drilled like wood. However, unlike wood, Rumber is more flexible, durable and impervious to fluids and ultraviolet rays, making it an ideal solution for many applications.

"The value of Rumber Materials is in the savings it provides through the replacement of wood flooring on trailers in municipal and

other various usages," Rumber CEO Brian Adams said, highlighting just one of many potential applications.

The Texas Department of Transportation, King County, Wash., Department of Transportation and County of Sacramento, Calif., all have been using Rumber as trailer flooring in their fleets since 1994 with great success. In fact, Adams said the three departments have not had to replace the floors for over 20 years. Unlike wood and other alternatives, Rumber boards do not rot, crack or splinter making them an ideal and cost-effective option. In the last 25 years, Rumber has had over 27 other state departments of

transportation, 250 counties and over 300 municipalities purchase Rumber.

With the example of a 24-foot HD goose-neck flatbed, 102 inches in width, installation costs are often cheaper at first when using a traditional pressure treated pine floor; however, Rumber boards more than surpass wood boards in terms of lifetime savings. Over a 20-year time period, wood boards may need replacing up to 10 times, whereas Rumber boards would require zero replacements. The estimated savings over 20 years totals approximately \$6,925.

And when it comes to trailer flooring, the boards offer other added benefits beyond durability and lifespan. They cushion payload.





*Texas Department of Transportation replaced its trailer's flooring with Rumber boards in 1994 and has yet to replace them. Durability is one of the key components of all Rumber Materials' products. (Photo provided)*



*Aesthetically appealing, Rumber boards are also UV resistant and do not rot, crack or splinter. The boards also have increased traction. (Photo provided)*

Since Rumber boards are textured, they have excellent gripping abilities to increase safety. The boards also won't absorb water, oil, mud, gasoline, diesel or other fluids.

Rumber's Profile Products are products that have a definite shape and are used as a wood substitute and are produced in various lengths. The sizes currently being produced are common sizes for North American lumber: 2-by-8's, 2-by-6's and 2-by-4's. The length can vary up to 24 feet—the North American standard lengths in lumber are multiples of 8 feet. These boards are tough, durable, shock absorbing, rot-resistant, insect proof and friendly toward the environment. The 2-by-8 boards are used primarily as trailer flooring for livestock trailers and heavy equipment trailers. The boards are also being used as flooring for cattle and buffalo squeeze chutes.

To further ease the storing and moving of equipment, Rumber Materials also manufactures Rumber lifetime wheel chocks. The chocks come in a variety of colors, sizes and weights, including double chocks with chain. Since they are also made from Rumber, the wheel chocks offer many of the same benefits of the boards in terms of traction and durability. These are an indestructible wheel chock with a lifetime warranty.

Beyond answers to fleet and public works problems, Rumber Materials offers aesthetic solutions for outdoor decking, walkways and steps perfect for parks and other city

properties. Everyone—from NASA, the Navy, National Park Services to the University of Texas—has enjoyed solutions from Rumber. Wood, particularly in regions with snow, shows signs of aging relatively quickly, fading due to UV exposure or splintering and breaking after seasons of rough weather. This can lead to costly and untimely maintenance or repairs, possibly before they have been anticipated. On the other hand, Rumber outdoor decking, walkways and steps—like their trailer flooring counterparts—require very little maintenance and are more easily cleaned, freeing up staff to work on other projects.

Rumber is well-suited for recreation applications, with boards coming in a variety of dimensions and weights. With a life span that is four to five times greater than similar wood products, Rumber saves both time and money, without the worry of broken boards that could injure visitors. Some of the recreation board options also feature traction surfaces, providing an additional safety measure, particularly in wet environments.

All of Rumber Materials' products are manufactured in the U.S. and come with warranties, guaranteeing quality, durability and a long life span. Additionally, products are tested to ASTM standards to ensure high quality and workmanship across the company's product lines. And when it comes to the environment, the U.S. General Services Administration awarded Rumber Materials



*Coming in a variety of sizes, weights, styles and colors, Rumber wheel chocks make loading and storing equipment a breeze. Made of durable Rumber, the chocks are designed to last. (Photo provided)*

the prestigious Evergreen Award in 2013, in recognition of its support of the federal government's environmental initiatives.

"We sell solutions, better solutions," Adams said, noting Rumber offers not only better performance, but better aesthetics, plus a chance for municipalities to make a positive environmental impact. "It gives them the opportunity to set a good example." ■

**To see what Rumber Materials can do for you, visit its website at [www.rumber.com](http://www.rumber.com) or call (877) 786-2371.**





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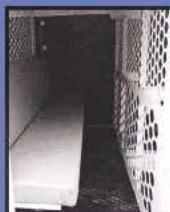


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**M****TOP  
10**

## America's most facial hair friendly cities

In honor of Movember, or No-Shave November, we are sharing this fun top 10 from Wahl Clipper Corporation on the most facial hair friendly cities. With a total of 50 cities, the list was created through in-depth analysis. Wahl, with the help of Opinion Research

Corporation and a team of facial hair physicists, "scanned the online universe for beard and mustache positivity and interest." A few notable facial hair related events didn't hurt some of the cities on the list either.

1. Miami, Fla.
2. Washington, D.C.
3. Dallas, Texas
4. Atlanta, Ga.
5. Austin, Texas

6. Minneapolis, Minn.
7. Seattle, Wash.
8. Portland, Ore.
9. Pittsburgh, Pa.
10. San Francisco, Calif.



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**A**

|                             |    |
|-----------------------------|----|
| Acuity Brands .....         | 71 |
| Aladtec, Incorporated ..... | 2  |
| Alumitank. ....             | 41 |
| Andy Mohr Ford .....        | 67 |
| Armorskids .....            | 36 |

**B**

|                          |                   |
|--------------------------|-------------------|
| Bonnell Industries. .... | <b>Back Cover</b> |
| Boss Snow Plow .....     | 3                 |
| Bullet Safe .....        | 50                |

**C**

|                                  |    |
|----------------------------------|----|
| Cascade Cart Solutions. ....     | 5  |
| Clearspan Fabric Solutions. .... | 51 |
| CTECH Manufacturing .....        | 33 |
| CVG .....                        | 32 |

**D**

|                                    |    |
|------------------------------------|----|
| Drive Products, Incorporated ..... | 55 |
|------------------------------------|----|

**E**

|                             |    |
|-----------------------------|----|
| Eberspaecher .....          | 24 |
| ECM Performance .....       | 43 |
| Emerson Manufacturing ..... | 25 |

**F**

|                             |    |
|-----------------------------|----|
| Fabco Power .....           | 43 |
| Finley Fire Equipment ..... | 42 |
| Fol-da-tank. ....           | 40 |

**G**

|                                     |    |
|-------------------------------------|----|
| Global Environmental Products ..... | 29 |
| GPS Insight .....                   | 15 |

**H**

|                                   |    |
|-----------------------------------|----|
| Harmsco Filtration Products ..... | 55 |
| Horst Welding .....               | 50 |
| Hotsy .....                       | 50 |

**I**

|                                      |    |
|--------------------------------------|----|
| Imel Motor Sales, Incorporated ..... | 63 |
|--------------------------------------|----|

**K**

|                           |    |
|---------------------------|----|
| Kollman Landscaping ..... | 28 |
|---------------------------|----|

**L**

|                                |    |
|--------------------------------|----|
| Land Pride .....               | 42 |
| LKQ - Geiger Truck Parts ..... | 21 |
| Lock America .....             | 54 |

**M**

|                                      |    |
|--------------------------------------|----|
| Mile-X Equipment, Incorporated ..... | 47 |
| Monroe Truck Equipment .....         | 36 |

**N**

|                                     |    |
|-------------------------------------|----|
| National Construction Rentals ..... | 43 |
| New Way Trucks. ....                | 70 |
| NTEA. ....                          | 7  |

**P**

|                                |                     |
|--------------------------------|---------------------|
| PHG Energy .....               | <b>Cover, 10-11</b> |
| Pik Rite .....                 | 51                  |
| Pro-Tainer, Incorporated ..... | 28                  |

**R**

|                        |       |
|------------------------|-------|
| Rumbar Materials ..... | 64-65 |
|------------------------|-------|

**T**

|                          |    |
|--------------------------|----|
| Toledo Ticket .....      | 37 |
| Trimble Navigation ..... | 9  |

**V**

|                              |    |
|------------------------------|----|
| Valley Truck Parts .....     | 66 |
| Varco Purden Buildings. .... | 46 |

**W**

|                                  |    |
|----------------------------------|----|
| Warren Power Attachments .....   | 55 |
| Weatherboots, Incorporated ..... | 20 |
| Wisconsin Surplus Auctions. .... | 47 |

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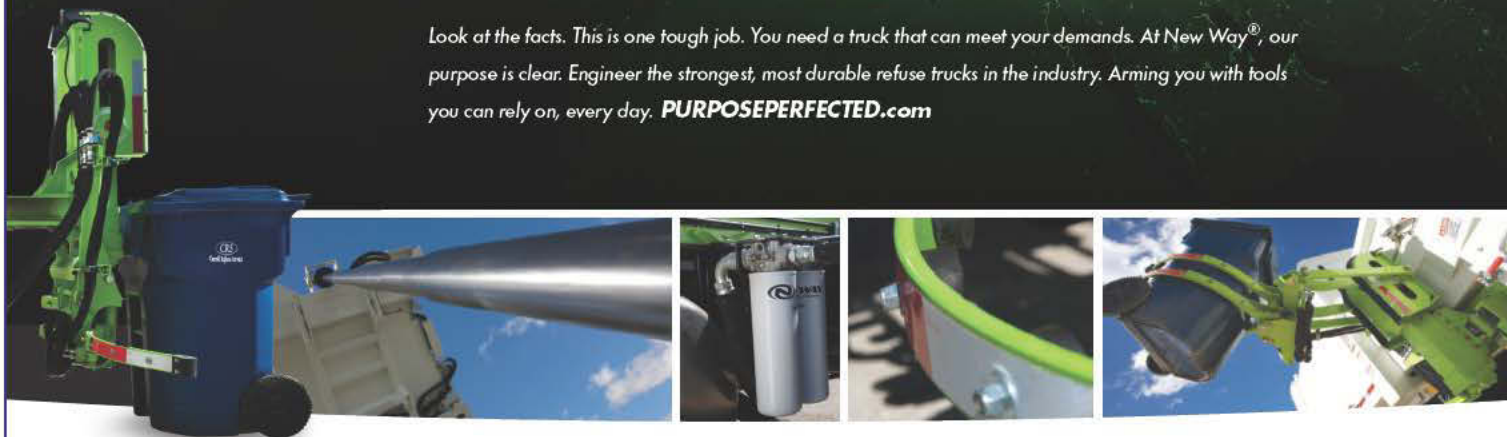
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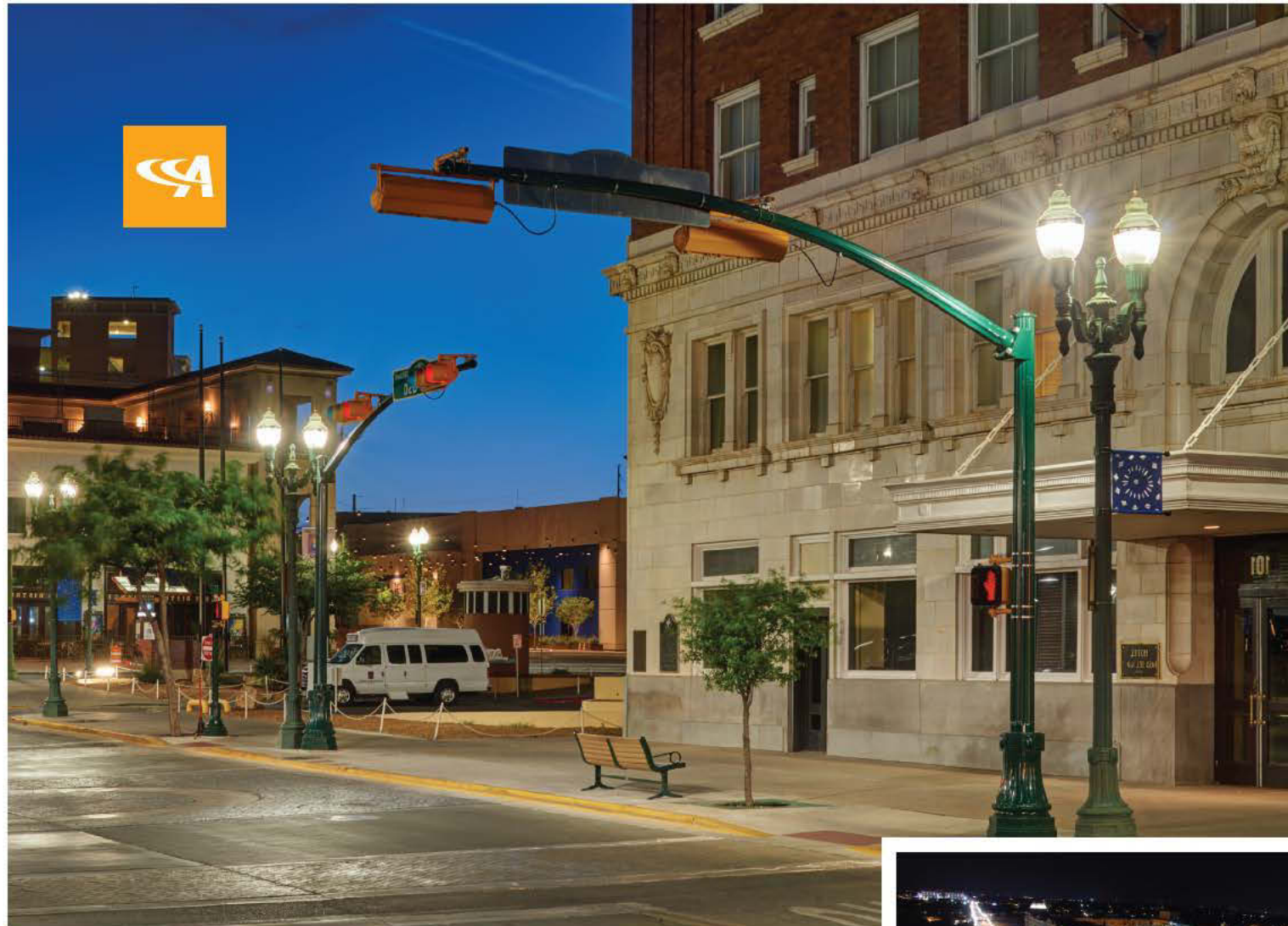


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