Toward a more sustainable future

John Deere has always believed that we must act with urgency today to make the lives of our customers and everyone we serve better tomorrow. In 2020, we put our focus squarely on the future with a new business model that delivers intelligent, connected machines and technology solutions. This will revolutionize our customers’ businesses by unlocking economic value in ways that are sustainable for all.

In this issue of The Dirt, you’ll learn about how our customers are using our machines and technologies to help achieve sustainable outcomes. For example, Kansas City International Airport (KCI) is building a more modern facility using a 644 X-Tier Wheel Loader that helps the airport reduce noise and emissions (see page 18). KCI has a long history of environmental initiatives, including being the first airport in the country to introduce fully electric buses. Another John Deere customer, Bourn Environmental, specializes in stream restoration with a focus on conserving wildlife and protecting fragile habitats (see page 14). Deere 245G LC Excavators are the perfect machines to help the company work more efficiently while minimizing impact on the land.

John Deere is working with National Grid, a leader in promoting clean energy solutions, on jointly testing a prototype of the battery-electric prototype John Deere E-Power Backhoe (see page 3). The intent of the initiative is to help the company achieve its published sustainability goals.

Much like John Deere builds machines and technologies to unlock value for our customers, we also support sustainable programs by working externally with utilities, infrastructure policy organizations, and suppliers. As you’ll learn in the story about Blattner Energy (see page 8), the Mesquite Sky Wind Project will help Deere use renewable energy to address around 25 percent of our global electricity footprint — or the equivalent of the electricity needed to power more than 30,000 U.S. homes on an annual basis. In the story about the nonprofit organization Pave the Road (see page 4), you’ll learn about how John Deere and its local dealership have helped Costa Rica become more carbon neutral through renewable plastic-road construction.

These are just a few examples of how, over the years, John Deere has remained true to its higher purpose of improving the lives of everyone we serve. I am excited to see what more we can accomplish.

Domenic G. Ruccolo
Senior Vice President, Sales, Marketing, and Product Support, Global Construction Equipment / Chief Sales Officer, Wirtgen Group
JOHN DEERE E-POWER BACKHOE HELPS NATIONAL GRID REDUCE THE CARBON FOOTPRINT ON ITS JOBSITES

A leader in promoting clean energy solutions, National Grid has helped transform energy systems in the United Kingdom and Eastern United States by investing in low-carbon, renewable-energy generation. But to become truly carbon neutral, the company knew it needed to reduce its own carbon footprint. One way is to lower emissions on construction sites. But how?

Enter the John Deere E-Power Backhoe, a battery-electric prototype built off the company’s 310L 100-horsepower diesel equivalent.

“REVOLUTIONARY”
National Grid reached out to John Deere to help the company achieve its published sustainability goals. “Working with John Deere is an important step in electrifying our company vehicles, which could be revolutionary for our industry,” says Badar Khan, president, National Grid, U.S. “Decarbonizing transportation remains a challenge in the journey to net zero, and we’re hopeful that bringing on more electrified heavy-duty vehicles and equipment will help us make significant progress.”

The battery-electric backhoe concept had been used on National Grid jobsites to test and improve the design. “We are excited to work with National Grid to test the John Deere battery-electric backhoe design in real-world conditions,” says Jason Daly, global director, production systems, technology and marketing, John Deere. “This project is another stepping-stone in our backhoe-innovation journey, intended to lead to subsequent electrification testing and design refinement.”

The E-Power Backhoe is expected to offer performance and controllability similar to a diesel model, along with lower daily operating costs and enhanced reliability. Being battery-electric means the E-Power Backhoe runs quieter, so it’s less disruptive to neighborhoods or nearby businesses. Reducing jobsite noise also makes communication easier for the operator and other crew members.

Having the E-Power Backhoe in the field has generated a lot of buzz among John Deere customers, helping the company take a broader view and prioritize future investments. “We’re looking to leverage what we’ve learned across multiple product lines to have not only a backhoe, but up to five or six different machine forms that are electrified,” says Jon Gilbeck, manager, production systems, site development and underground, John Deere.

Let the revolution begin.
Climate concern
As a popular tourist destination, Costa Rica is known for its exotic wildlife, adventure sports, and tropical forests. The beautifully warm climate comes with dry seasons of little to no rainfall, which creates a major respiratory health problem: Dust is kicked up while traveling the many unpaved dirt roads, causing air pollution.

Mason had only been in Costa Rica for three months when she started noticing her son Jesse having trouble breathing from the consistent flow of road dust being kicked up from large trucks, quads, cars, and motorcycles. Around the same time, she received a call from a friend whose son had stopped breathing in the middle of the night and suffered a severe asthma attack due to this road dust.

“Children are constantly inhaling particle pollution, which can increase the risk of heart disease, lung cancer, and asthma attacks, and can also interfere with the growth and work of the lungs,” Mason says. “The majority of the children end up developing chronic respiratory disorders — with many also suffering from skin, eye, and ear infections, and allergies. In worst-case scenarios, there are physical accidents because drivers can’t see children crossing the roads.”

– continued
With more than 2,500 children from seven schools in the southern Nicoya Peninsula of Costa Rica at risk of suffering from respiratory, skin, and eye infections due to the road dust, Mason knew something had to be done. So in 2011, she created Pave the Road, a nonprofit organization that became the voice of the children and the peninsula. In addition, she created a self-shot memoir that documents the process.

With Pave the Road’s influence, five of the schools’ roads and nearly 28 miles have been paved with traditional asphalt. This includes highway pavement in a previously dangerous unpaved location, along with rural routes between villages and along the ocean. For this work, municipalities relied on multiple John Deere backhoes, motor graders, and dozers to get the work done safely and efficiently.

MPC, the crew’s local John Deere dealer, seemed like a perfect match for the job as the company is committed to respecting the environment while operating through sustainable practices and is certified carbon neutral.

The road to eco-intelligent solutions

Despite the possibility of using traditional asphalt to pave the roads, Mason knew from the start that there had to be a better option. With the Costa Rican government promising the United Nations to be a carbon-neutral country by 2021, she began looking into alternative solutions.

“Given the lack of proper waste management in developing countries, the pressure of needing to reduce fossil-fuel consumption, along with the carbon-neutral promises that many countries are setting goals for, I knew we needed to find an eco-intelligent solution,” she says.

After an email from a friend, Mason was introduced to the concept of plastic roads — which not only gives a solution to diverting plastic waste away from landfills...
and into road construction, but also reduces fossil fuels and builds better, longer-lasting roads. She was then connected with KK Plastic Roads of India, a company that has paved 124 miles in Bangalore with its custom plastic-road technology.

Determined to create sustainable change, Mason met the mayor of Puntarenas Province, who helped her secure a partnership with the University of Costa Rica and its national laboratory for structural building materials, LANAMME-UCR.

"Every step of the way, the right person would show up," Mason says. "The University of Costa Rica and LANAMME-UCR partnered with the initiative to do the research required to prove the validity of the plastic-road technology, which helped us write an environmental bill. This percolated amongst expert engineers and Congress members for four years. We were challenged with needing to reconvince newly elected administrations every four years that this bill was in the best interest of all parties."

Mason and her team helped to develop outreach programs showing kids how to sort their garbage at home, along with an integrated course at schools teaching them the science of plastic-road technology. To mitigate dust levels in the meantime, the team fundraised to purchase molasses, which can be used to provide a smooth, dry road surface for a few months at a time.

In July 2020, the bill was approved and made into Law 9828, mandating the use of recycled materials in every road project in the country. While working for the initiative, Mason started Green Pavement Company, a provider of proprietary, certified recycled modifiers for all applications of cement and asphalt road construction for Costa Rica.

**The future of plastic**

Today, Mason remains committed to following through with her promise to pave the Costa Rican school roads with plastic waste technology and looks forward to the partnerships formed through the process. She and her team know that plastic asphalt is the right solution. Now it’s just a matter of securing funding to continue paving the way towards a more sustainable tomorrow.

"It is extremely important to have powerful leaders like John Deere involved in sustainable projects as it deepens their commitment to sustainability," Mason says. "In the eyes of the industry, that means others will try and match Deere’s efforts. In the eyes of the public, this gives hope that large sectors of industry are taking responsibility to protect the planet. More than ever, we need to mainstream sustainable inclusion in all that we do."

Pave the Road partners with MPC John Deere, San José, Costa Rica.

> To view the Pave the Road film online, visit [https://vimeo.com/ondemand/pavetheroadfeaturefilm](https://vimeo.com/ondemand/pavetheroadfeaturefilm). An access charge will apply.

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**BY THE NUMBERS:**

*Data provided by Pave the Road.*

<table>
<thead>
<tr>
<th>0.6 Miles of Plastic Road</th>
<th>= 864K plastic bags diverted from the landfill (the equivalent of 80K plastic bottles)</th>
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<td>25,133 pounds of carbon dioxide are offset from being released into the atmosphere</td>
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<td></td>
<td>Plastic roads last 2-3x longer than a traditionally paved road</td>
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Proven practices help transform work in the innovative renewable-energy field — continued
When I come to a site and it’s totally untouched other than stakes in the ground out across a field, and I get to be the first to run equipment through and cut the road —

**that brings me joy.**

— John Martin, motor grader operator, Blattner Energy
There are a couple reasons this project in particular is close to Dursma’s heart. “I’ve had a 44-year career in this industry. And I’m actually from the western part, but the fact that it’s in my home state — well, that’s even better.” Starting as a laborer, working his way up through equipment, management, and more, Dursma has nearly seen it all, and he has a wealth of experience to impart to his teams. One such greenhorn is Jerett Freiboth, a site manager with five years of experience who has mentored under Dursma.

“The biggest lesson I’ve learned is that challenges happen all the time and critical thinking is extremely important,” says Freiboth. “Nobody really realizes how big this is. The scale of a wind-farm project is hard to understand unless you’ve done it. I’m also from Montana, so it’s nice for people I know to get a sense of what I deal with day-to-day.”

PRIDE IN THE PURPOSE

It’s no secret that pride in one’s work yields a better end product and is a contributing factor to any company’s success. For motor grader operator John Martin, “a job well done” is the only way to work. “When I come to a site and it’s totally untouched other than stakes in the ground out across a field, and I get to be the first to run equipment through and cut the road — that brings me joy.” With the amount, size, weight, and complexity of the wind-turbine components that need to be brought in, having stable, reliable access is critical. “The worst thing I could hear from my boss is that a road I built isn’t fit to drive on. That doesn’t happen often,” Martin says with an assured smile.

"We have to look out for the planet... ."

The more we can make it a green planet or a cleaner planet, the better it’s going to be for everybody.”

— Chuck Dursma, civil superintendent, Blattner Energy

The jobsite in Montana is dotted with the gridded-metal bases that will eventually anchor the massive wind turbines in place.
As for Freiboth, on top of taking pride in the quality of his work, the projects he completes for Blattner provide an additional sense of accomplishment. “Being able to travel and meet new people has been great for me. The biggest thing, though, is that building renewable-energy projects gives you a greater sense of purpose. You’re working toward a goal not for yourself, but as a country. That brings a unique sense of pride.”

That sense of importance is shared by Dursma. “We have to look out for the planet, and we have to look out for our kids and our kids’ kids. The more we can make it a green planet or a cleaner planet, the better it’s going to be for everybody.” That’s exactly what Blattner seeks — to build a better tomorrow through renewable energy so future generations can flourish.

**TOOLS OF THE TRADE**

Every ranch needs its horses, and for the Blattner crew, it’s a handful of John Deere 872GP Motor Graders. “When I started, machines didn’t even have cabs,” says Dursma. “They’ve come a long way.” Martin echoes the sentiment. “They’re much more operator friendly — these are top-of-the-line pieces of equipment. You can use the technology to set and finish with a perfectly level edge. You used to have to know a lot to achieve that, but now it’s built into the machine.”

With such a heavy focus on sustainability, ease of use isn’t the only factor the Blattner crew appreciates. They also respect the focus on the future. Martin agrees: “I trust John Deere to continue bettering the equipment. They’ve proved to me they can.”

“Deere is building the machines and training the people needed so we can perform our tasks on these projects,” Dursma continues. “A dealer has to earn trust, and I have to say John Deere has done an excellent job on that.”

Blattner Energy is serviced by RDO® Equipment Co., New Prague, Minnesota.

Check out the video at: JohnDeere.com/TheDirt
The Clearway Energy Group
Mesquite Sky Wind Project
By the Numbers:

- **69 wind turbines**
  supplied by Siemens Gamesa Renewable Energy

- **500-ft. tall**
  height of each wind turbine

- **20,000 acres covered**
  with the majority still productive for farming, grazing, and other typical uses

- **345 MW**
  size of wind farm

- **~1,200 GWh**
  annual energy generated by the wind farm

- **20–22 GWh**
  annual energy generated per wind turbine

- **25%**
  of John Deere’s global electricity commitment met

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Blattner Energy is an industry-leading renewable-energy-solutions provider, building wind, solar, and energy-storage projects all over the United States. Its recent work in Texas on the Mesquite Sky Wind Project for Clearway Energy Group is especially unique to John Deere. Once operational, it will sell power through long-term virtual-power purchase agreements to the company in order to support its sustainability commitments.

“John Deere’s commitment to this great renewable project is to deliver sustainable results for the company’s aggressive greenhouse-gas reduction and renewable-electricity targets,” says Wallas Wiggins, vice president of Global Supply Chain Management and Logistics for John Deere. “Our commitment addresses approximately 25 percent of our global electricity in a long-term partnership with this renewable project, another step forward in sustainability for our customers, our operation, and our world.”
For Bourn Environmental of Mitchellville, Maryland, doing all that is just another day on the job. The company specializes in stream restoration and stormwater and wildlife management while fulfilling its overarching passion for ecological construction.

"Many of the reasons that we do stream restoration have to do with water quality, and conservation of wildlife is definitely on my mind as well," says Christopher Perry, operating manager of Bourn Environmental. "It’s the reason I really got into the work. Improving nature through stream restoration and habitat management is not only a lot of fun for us, but it has endless benefits for wildlife in the area."

Perry does more than talk the talk. He picks up a few small salamanders, walks them upstream, and deposits them back in the stream where the work has been completed. One of his employees does the same thing, carrying a dozen crawdads in a hard hat from where the stream is being worked on to the safe, completed part. They know the fragility of the ecosystem they’re working in and make taking care of it a top priority.

**CHANGING COURSE**

Even before he got into protecting habitats and repairing the damage caused by development outside the Washington, D.C./Baltimore area, Perry was interested in helping where he felt needed. Prior to starting Bourn Environmental in 2014, he graduated from West Point, did two tours of duty in Iraq and one in Afghanistan, and was a captain in the U.S. Army Corps of Engineers.

"I’m really proud of my military service, but after that final tour in Afghanistan, I realized it was time for me to start on another career path," says Perry. "I have a background in habitat management and environmental sciences, so I got connected with some people who were doing these types of jobs, worked for them for a short stint, and then started my own business."

– continued
Perry knew there was much to be done in both stream restoration and stormwater management, especially in Maryland. Qualities normally associated with military culture — attention to detail, execution of informed plans, and focus on the greater good — carry over to what he does now.

“This work is important, and I’m really proud of our crews and the quality of work they do,” says Perry. “We know that it’s not just grading. There’s an understanding of hydrology and how ecosystems work, and we take an interest in that, collaborating with engineers to create a high-quality project that will last a very long time.”

Those projects mostly involve floodplain reconnection and grade-control structures inside stream channels to limit the amount of sediment, phosphorus, nitrogen, and other pollutants going downstream into the Chesapeake Bay. It’s hard to see these jobs as anything but an extension of the goodwill and foresight that Perry excelled at in the military: restoring balance and leaving a place better than when it was found.

**TIGHT FLEET TEAMWORK**

“When we started getting into larger-scale projects, we began to see the value in working with John Deere,” says Perry. Bourn Environmental’s relationship with its dealer, JESCO Equipment, has resulted in a Deere-centric fleet including three 333G Compact Track Loaders, two 135G Excavators, and its secret weapon — three 245G LC Excavators.

The reduced tail swing of the 245G LC helps open up tight spaces, and once the company discovered the precision and management capabilities of GPS paired with the 245G LC, that changed the stream-restoration game.

“We ended up doing 6,500 linear feet of a project in essentially four months. It ramped-up our productivity like we weren’t expecting,” says Perry. “We knew it was going to be good when we demoed it, but we really didn’t know that it was going to speed us up that fast.”

Perry is quick to pivot right back to the hard iron that helped make it happen.

“The 245G LC is best for our application right now because of its size, power, and versatility, all of which allow us to effectively work in the mud. We had an idea of the exact equipment that we needed, and once we tried out the 245G LC, we were sold. We thought, ‘This is the perfect machine for what we do.’ ”

**THE FOREST FOR THE TREES**

Part of the challenge of Bourn Environmental’s current project, a 3,000-linear-foot stream restoration, are the many different natural-channel design techniques being applied.

“EVERYTHING downstream IS GOING TO BENEFIT.”

— Christopher Perry, operating manager, Bourn Environmental
WHAT IS STREAM EROSION?

Due to urban development, nearby streams often become incised or worse, completely entrenched. This means the channels essentially become a deep valley with cliffs on either side. The process of stream restoration involves folding back the floodplain to create a bench and a much gentler slope going up to the existing banks.


employed along the banks. Difficult as that method may be, it’s resulted in a highly sustainable project overall.

“We have a lot of native material on-site that we’re able to reuse in the stream structures. That means a lot of native streambed material gets excavated and then put back in at the right elevation, and trees come down and get placed in the floodplain as sills, in the channel as vanes, or into the banks as a toe-wood structure,” says Perry. “Nothing is actually leaving the site. All the woody debris, all the soil that’s being excavated, and all the aggregate that’s being salvaged, it’s all being reused on the project.”

Despite the long-term positive impact Bourn Environmental is having on the area, the short-term effect often makes nearby residents understandably upset. But there’s a grand design at work. The trees have to come down in order to meet grade requirements, recreate the floodplain, and reconnect it to the stream channel. Once it’s fixed, wildlife will have a safer, more hospitable habitat.

This current jobsite sits firmly in a valley between two residential areas just north of Washington, D.C. Walking along the part of the stream Bourn Environmental has completed, visitors can see a nature scene that feels organic and as vibrant as if pulled from a painting. Ahead on that same path is the work yet to be done — and the equipment Perry and crew know will make it happen.

“We love using John Deere. They’ve been great to us,” says Perry. “From the financing options to the technology to the equipment itself, it’s just been a great fit for our line of work. At the end of this project, we’ll have stabilized the entire stream valley, reducing sediment and nutrient pollution while recreating habitat for wildlife — the finished product will be an undeniable improvement. That’s good for this stream, that’s good for the Potomac River, and that’s good for the Chesapeake Bay — everything downstream is going to benefit.”

Bourn Environmental is serviced by JESCO Equipment, Baltimore, Maryland.

Check out the video at: JohnDeere.com/TheDirt
The new single terminal at Kansas City International Airport (KCI) represents the largest infrastructure project in the city’s history. Opening in 2023, the $1.5-billion project will replace an outdated three-terminal complex with a single modern terminal and offer the latest technology and conveniences. At the construction site, a John Deere 644 X-Tier Wheel Loader goes quietly about its business, shuttling dirt and gravel across a wide expanse that eventually will become runways, taxiways, and aprons.

One of the advantages of the innovative E-Drive transmission system is its ability to produce dramatically less exterior noise than comparable models. “This machine could be running wide open and you’d barely hear it,” says Kenny Williams, fleet asset manager for the Aviation Department at KCI. “The 644 X-tier is amazing and a big part of our environmental efforts to reduce noise and emissions. We use it almost everywhere. During the winter it’s used for snow removal, and during the rest of the year, it hauls sand and gravel.”

**Pioneer**
Williams has worked in aviation for almost 28 years and knows a thing or two about hybrid and electric vehicles. He is an innovator in bringing electric buses to KCI and a sought-after...
conference speaker on electric-vehicle technology and clean-air initiatives.

“We’re forward thinkers at KCI, and I’m glad to be a part of what we’re doing,” he says. “We’re building a new airport that will be one terminal instead of three, so it’s simpler and more convenient. Environmentally, we’re doing a better job with how we’re burning energy and what we’re using for fuels. We’re cutting down on noise pollution and how complicated things are to operate. Electric buses and hybrid construction equipment support that vision.”

KCI has long been a leader in implementing alternative fuels to airports, introducing compressed natural gas (CNG) buses back in 1997. In 2017, KCI became the first airport in the country to introduce fully electric buses. Its seven electric buses shuttle passengers between the airport terminals and parking lots. “Given the advances in battery technology, introducing electric vehicles was a no-brainer,” Williams says. “Sustainability is important to me, so when there is any opportunity to use an alternative fuel, I’m all in. I still get excited about what we’re doing here.”

Williams began spearheading the move toward electric buses after researching

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Sustainability is important to me, so when there is any opportunity to use an alternative fuel, I’m all in.

I still get excited about what we’re doing here.”

— Kenny Williams, fleet asset manager, Aviation Department, Kansas City International Airport

— continued
their advantages back in 2015. The hardest part was getting people comfortable with the idea that an electric vehicle can do the job. But the more he learned, the more Williams was able to convince his supervisors. Electric buses have no tailpipe emissions. And because they have fewer moving parts than combustion-engine vehicles, they are easier and cost less to maintain. "Unlike CNG buses, electric buses don’t make noise. And the transmission is much smoother, reducing driver fatigue."

**Fully in charge**

The 644 X-tier machine fits right in with KCI’s environmentally responsible initiatives. The efficient machine moves 18-percent more tons per gallon of fuel burned than top competitors.*

“I’ve been playing around with a lot of alternative-fuel vehicles, and this one knocked it out of the park," says Williams. “It not only delivers low emissions and is fuel efficient, it’s powerful, quick, and easy to run. Give an operator 20 or 30 minutes with it, and he’s ready to go."

The E-Drive combined with the simplified PowerShift™ transmission delivers strong pushing power to handle a variety of tasks easily and efficiently. “The E-Drive runs great,” says Williams. “Operators were skeptical at first. They figured the electric motor wouldn’t have near the horsepower or torque. But once they realize it is capable of doing more than they could possibly do with it, everybody wants to run it — they fight over it.”

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*As measured in a closed-circuit test conducted by John Deere in September 2020 against similarly equipped top competitors. All machines were operated at maximum productivity in controlled conditions.

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**Amping up its fleet**

Kansas City International Airport is the first airport to deploy electric buses. Here are a few facts and figures about each bus:

<table>
<thead>
<tr>
<th><strong>30</strong></th>
<th><strong>22</strong></th>
<th><strong>150</strong></th>
<th><strong>3</strong></th>
<th><strong>0</strong></th>
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<tr>
<td>30-feet long</td>
<td>Seats 22 passengers</td>
<td>150-mile range, long enough for 8-hour work shift</td>
<td>Fully charges in 2.5 to 3 hours</td>
<td>Zero tailpipe emissions</td>
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...once they realize [the 644 X-tier] is capable of doing more than they could possibly do with it, everybody wants to run it... .”

— Kenny Williams, fleet asset manager, Aviation Department, Kansas City International Airport

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*Source: en.byd.com.*
Drivetrain and hydraulic functions are powerful and quick, delivering impressive productivity. "The power is there at your demand — it’s just really responsive," says Williams. "The E-Drive keeps pushing past what you might expect would stall a standard transmission with a conventional motor. I’m excited to see how far we can push the limits of what we need to get done."

Operators appreciate the placement of the joystick controls. "They are right where you want them to be," he says. "They are adjustable whether the operator is short or tall, and with fingertip touch, they are easy to use. The machine becomes an extension of your arm, so you’re fully in charge."

With the ability to control up to six functions on the single hydraulic joystick, it is much easier to operate hydraulic snow attachments. And that’s important at KCI, where snow removal is a huge job. KCI has 15.4 million square feet of runways, taxiways, and aprons, and over 7.2 million square feet of roads and parking area to keep clear.

"The snow implements’ functions are right at your fingertips," says Williams. "We don’t have to add another control to make them work. To have all those adjustments a finger touch away is amazing. Plus, you can add different implements and save each to memory. It makes everything so much easier."

**Sustainable future**

Williams’ father owned a construction company, so he grew up around loaders and dozers. As much as he enjoyed operating the machines, he was more interested in how they worked. After high school, he trained to become a technician. Over the years, he acquired vast experience in the mechanical-repair industry purchasing and maintaining vehicles. As fleet asset manager for KCI, Williams oversees 12 technicians and is responsible for 800 pieces of equipment that are used for snow removal, earthmoving, mowing, transportation, fire prevention, and security. KCI runs almost 20 pieces of John Deere equipment including the 644 X-tier and numerous other wheel loaders. "Our local John Deere dealer really takes care of us," says Williams. "They have really supported us and are involved in our operation. When they realized I was doing electric, they went out of their way to show me what Deere has done in terms of hybrid technology and the E-Drive."

KCI hopes to continue adding innovative and sustainable machines like the 644 X-tier to its fleet. "The biggest thing that attracted me to John Deere is the technology," says Williams. "Deere just really stands out in this area. It works, it’s sustainable, and Deere is staking their reputation on it. I’m very impressed."

Kansas City International Airport is serviced by Murphy Tractor & Equipment Co., Kansas City, Missouri.
SAFE ENVIRONMENT

John Deere training simulators help operators learn to safely run machines without burning fuel or damaging soil.

The labor shortage has made it even more difficult to find experienced, skilled operators. Training new operators is imperative, but on-the-job training in actual machines is hard on the equipment and the earth while burning excess fuel. It also presents safety issues.

Simulator training is a cost-effective, fuel-efficient, and low-risk alternative that avoids equipment wear and tear as well as damage to the earth. John Deere simulators help operators develop the skills they need to perform a variety of job-specific tasks while providing helpful feedback on their overall performance and abilities. Virtual seat time helps them get comfortable with controls that are virtually identical to those on the actual machines while minimizing additional training time in the field, fuel use, and environmental impact.

**FIVE MACHINES, ONE SIMULATOR**

John Deere simulators can be easily configured with different screens, controls, pedals, and motion-platform options. Realistic true-to-life controls can be swapped out to quickly convert the simulator to any of five different Deere construction machine types: backhoe, crawler dozer, excavator, wheel loader, and motor grader.

Training modules for each machine type offer progressive learning exercises to help familiarize operators with basic controls and learn advanced excavating, grading, and loading techniques. For example, training exercises for a John Deere crawler dozer simulate setting correct blade angles, maintaining material in front of the blade, excavating a drainage inlet and a transversal ditch, trailer loading and unloading, and more.

For more information, visit JohnDeereSimulators.com. John Deere University at JDU.Deere.com provides online operator training courses that complement our simulator program and equip operators with essential safety, maintenance, and operating information.

Safety and training videos at JohnDeere.com/OT cover everything from safety and maintenance to operation tips.
THE POWER TO PUT WINTER IN ITS PLACE

Add snow-removal attachments to your fleet and pile up higher profits this winter. For a limited time, take advantage of low-interest financing when you put blades, pushers, blowers, and more on PowerPlan.

Keep working all year and keep your cash. Tell your dealer to “Put it on PowerPlan!”

1 Offer valid on qualifying purchases made between 01 September 2021 to 28 February 2022. Subject to approved credit on PowerPlan, a revolving credit service of John Deere Financial, f.s.b. For commercial use only. After the promotional period, interest charges will begin to accrue at Prime plus 14.9% APR. Offer requires a minimum of $500 in attachments purchase. Available at participating U.S. dealers. Prices and models may vary by dealer.

2 Offer valid on qualifying purchases made between 01 September 2021 to 28 February 2022. Subject to approved credit on PowerPlan, a revolving credit service of John Deere Financial, f.s.b. For commercial use only. 1.9% APR is for 12 months only. Offer requires a minimum of $500 in attachments purchase. Available at participating U.S. dealers. Prices and models may vary by dealer.

*Other terms options available. See your dealer for details.
WITH JOHN DEERE CONNECTED SUPPORT™ your machines are constantly under the watchful eye of both John Deere and your local dealership. Together they can reduce, or even prevent, costly downtime. So you and your crew can stay focused on what matters.

ALWAYS CONNECTED.
ALWAYS RUNNING.