Madison Gas and Electric Company

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your community energy company

ENVIRONMENTAL AND SUSTAINABILITY 2016 REPORT

Revised and updated September 2017.

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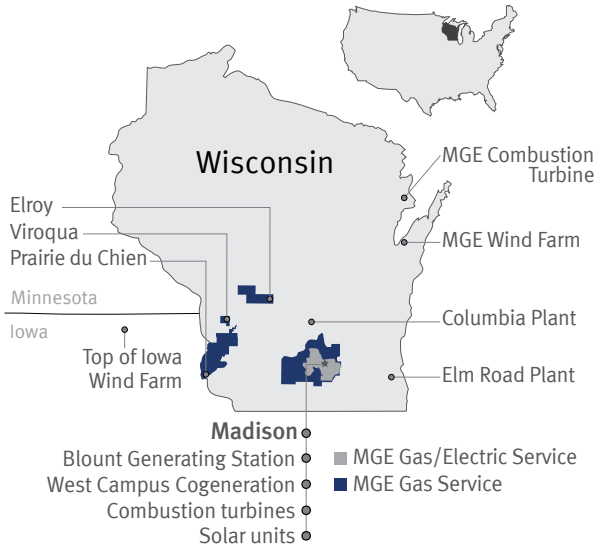
About the cover: As a community energy company, MGE works with customers to put reliability, safety and sustainability in the forefront.

MGE's Gas and Electric Services



Madison Gas and Electric (MGE) generates and distributes electricity to 149,000 customers in Dane County and purchases and distributes natural gas to 154,000 customers in seven south-central and western Wisconsin counties. MGE is a regulated utility and the main subsidiary of MGE Energy. MGE's roots in the Madison area date back more than 150 years.

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As of September 2017, MGE updated its 2016 Environmental and Sustainability Report with new information and data.

This report includes forward-looking statements and estimates of future performance that may differ from actual results because of uncertainties and risks encountered in day-to-day business.

Executive summary

MGE is creating a more sustainable future with a strong commitment to energy reliability, affordability and safety.

MGE's Energy 2030 framework is our road map, which includes goals and objectives that we first introduced to the communities we serve in November 2015. Our main goals under Energy 2030 include:

- Reducing carbon dioxide emissions 40% by 2030 from 2005 levels. This target is consistent with the U.S. emissions targets for the 2030 time frame established as part of the Paris Agreement on climate change. MGE already has made progress toward this goal by reducing our carbon emission rates 21% from 2005 to 2016.
- Increasing renewable energy to provide 30% of our retail electric sales by 2030.

If we can go further, faster toward our clean energy goals, we will. That is the commitment we have made to our customers. Already, we have taken steps toward our goals under Energy 2030:

- MGE has proposed building its largest wind farm to date. If approved by state regulators, construction could begin in 2018 on the 66-megawatt wind project near Saratoga, Iowa.
- Our utility-scale Shared Solar installation went online in January 2017. Customers have fully subscribed this community solar project. We maintain a waiting list for future projects.
- MGE is reducing its megawatt capacity share in the coal-fired Columbia Energy Center by approximately 14%. MGE is a minority owner in this plant. We also made a commitment not to build additional coal plants.

In addition, MGE is actively exploring new sites for more wind farms, utility-scale solar and community solar projects.

Jeff Keebler
President and CEO
MGE Energy and Madison Gas and Electric

Environmental accountability is part of our culture from field employees to office workers to senior management. Our Board of Directors annually reviews our environmental progress and performance.

Innovative, customer partnerships

By partnering with our customers, we can implement new technologies and build a more sustainable energy future. Some of our efforts under way include:

- Charge@Home, a recently expanded program, which installs home chargers and enrolls participants in a study to learn more about charging preferences. MGE is a leader in electric vehicle programs and services, including our network of 27 public charging stations throughout our service area.
- Smart Thermostat Demand Response, which is testing a new method of controlling high energy usage during the summer.
- Partnering with the City of Madison on its efforts to electrify 50% of its bus fleet by 2035. The city was awarded a Low-No Emission Vehicle Program grant for three zero-emission buses. MGE contributed the required local match for this federal grant and will continue in-kind technical expertise.

Information about Energy 2030 and our initiatives are available throughout this report.

Governance

MGE's environmental policy, procedures, board oversight and participation in statewide organizations help measure our performance and govern our proactive approach to sustainability. Our systems help ensure environmental accountability remains a core focus.

Board of Directors oversight

Through strategic planning and a consistent approach, our utility holding company MGE Energy is well positioned to manage risk. Our Board of Directors is involved in the process of overseeing the primary operational, financial and regulatory risks facing MGE Energy and its subsidiary, MGE. All of MGE Energy's directors initiate discussion at any time, on any areas of concern, including risk identification and assessment, controls, management and oversight. MGE management regularly presents to the board on issues of strategic importance including environmental performance.

Annually, MGE will issue its Environmental and Sustainability Report and update the board on environmental performance.

MGE also operates within a highly regulated environment, which serves to protect the interests of customers and investors. MGE works with the Public Service Commission of Wisconsin (PSCW) to ensure its operations best serve the public interest, the environment and those who invest. The PSCW has oversight of rates, issuance of securities and construction of infrastructure, among other things.

Executive compensation

MGE Energy's Board of Directors' compensation committee, composed of independent directors, takes into consideration environmental performance, among other factors, when evaluating executive compensation. MGE Energy's compensation committee considers performance goals that are critical to MGE Energy's success, such as earnings, system

MGE's Environmental Policy

As part of MGE's commitment to environmental stewardship, MGE will:

- Consider the environmental impacts of all applicable company activities and actively seek cost-effective ways to reduce adverse environmental impacts and risks.
- Seek environmentally friendly options when considering sources of supply, material and contractors where cost-effective opportunities exist.
- Educate our employees about MGE's environmental responsibilities and policy and encourage them to actively seek ways to mitigate environmental impacts.
- Set environmental goals and objectives and strive to continually improve corporate environmental performance.
- Strictly comply with all environmental laws, regulations, permit requirements and other corporate environmental commitments and exceed simple compliance where sound science and cost-effective technologies permit.
- Continue to be an active member of the community and work with other community agencies to promote environmental education and energy conservation. As a member of the community, MGE will communicate openly and honestly with the public regarding MGE environmental policy and performance.

reliability, customer satisfaction, cost containment and environmental performance. The committee employs an independent consultant for its compensation review program. The committee's charter is available at *mgeenergy.com/corpgov*.

Measuring performance

MGE measures performance and benchmarks by voluntarily participating in two statewide programs. These programs help us set and meet goals for continuous improvement. Based on past sustainability efforts, MGE has achieved the highest designations from both programs.

Green Masters designation

MGE has achieved the highest level of the Wisconsin Sustainable Business Council's Green Masters program. This statewide program evaluates participating companies on their sustainable actions in nine areas. Based on this evaluation, companies are placed in one of three categories. The Green Masters program is an objective, points-based recognition program.

The top 20% of the companies achieve the highest-ranking category—the Green Master distinction.

Green Tier

MGE is the only utility in Wisconsin to have earned the highest participation level in Green Tier, the Wisconsin Department of Natural Resources' environmental leadership program. MGE is one of only seven Wisconsin companies that achieved the "Tier 2" level, which recognizes superior environmental performance.

Environmental management

Under Green Tier, we use an Environmental Management System (EMS) at MGE's Blount Generating Station. An EMS is a set of procedures and processes for continuous environmental improvement. MGE's ISO 14001 EMS at Blount is a voluntary framework that builds environmental accountability into our daily operations. It establishes annual goals and measures performance with third-party environmental audits.

At Blount Generating Station, crews disassembled an older turbine. MGE discontinued coal use at this facility and has retired 90 megawatts of older, less-efficient generation. Blount is the first power plant in the state to be ISO 14001 certified.

Energy

MGE is committed to growing a more diversified energy mix and reducing air emissions while maintaining its nationally recognized electric reliability rating. We have significantly decreased regulated air emissions and grown renewable energy resources since we began modernizing our generation fleet in 2005. Our sustainability progress will continue under Energy 2030.

Energy 2030

MGE's Energy 2030 is an ambitious framework for the company's long-term direction and our community's energy future. Energy 2030 builds upon our long-standing commitment to sustainability and reliability.

Under Energy 2030, MGE will work toward the following goals and objectives:

- Transition toward supplying 30% of retail electric sales with renewable resources by 2030. As a milestone goal, we will supply 25% of retail electric sales with renewable resources by 2025.
- Work with customers to reduce carbon dioxide emissions by 40% from 2005 levels by 2030. This target is consistent with the U.S. emissions targets for the 2030 time frame established as part of the Paris Agreement on climate change.
- Increase engagement around energy efficiency and conservation to reduce our community's overall energy and peak electric use to reduce long-term costs for everyone.
- Create a more dynamic, integrated electric grid that supports and integrates new technology.
- Develop and test new products and services to offer customers more control over their energy use.
- Deepen our engagement with customers to chart our next steps and determine over time, as technologies evolve, how best to meet customer needs and accomplish our long-term goals.

Our *energy2030together.com* website offers customers Energy 2030 news and information as we work together to create a sustainable future and make Energy 2030 a reality.

Learn more about our Energy 2030 framework and projects at *energy2030together.com*.

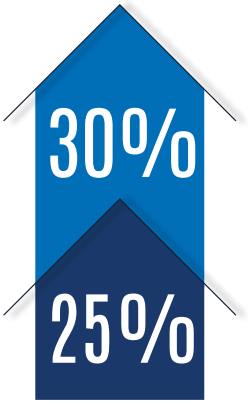
Cleaner energy

MGE is a minority owner in the coal-fired Columbia Energy Center. MGE reached an agreement with the co-owners to reduce MGE's megawatt (MW) capacity share by about 14%.

Under this agreement, MGE also has the option to acquire up to 50 MW of Alliant Energy's new natural gas-fired Riverside Energy Center. MGE's Energy 2030 framework calls for more energy from natural gas and renewable resources in our supply mix. MGE has pledged not to build additional coal plants.

Reduced carbon dioxide emissions

40% reduction by 2030 from 2005 levels



Greater use of renewable resources

30% renewable energy by 2030 with 25% by 2025

Renewable energy

MGE is moving forward with renewable energy projects as we advance our Energy 2030 goals.

MGE has proposed its largest wind farm to date. If approved by state regulators, construction on the 66-MW wind farm near Saratoga, Iowa, could begin in 2018. It would deliver renewable energy to power about 47,000 average homes.

The construction-ready site is about 200 miles west of Madison. This high, flat and open area provides an excellent wind resource and is close to an established substation and transmission lines to carry the power. If approved, the Saratoga wind farm will continue our ongoing transition to a more sustainable future.

Our utility-scale Shared Solar installation also is part of that transition. This 500-kilowatt array in Middleton went online in early 2017.

Residential electric customers had the opportunity to purchase this locally generated solar energy without having to invest in solar panels themselves. Customers could purchase enough electricity for up to half of their annual electric needs. Shared Solar helps to reduce greenhouse gas emissions by offsetting fossil fuel energy production.

Customers have fully subscribed this community solar project. We are maintaining a waiting list for future projects.

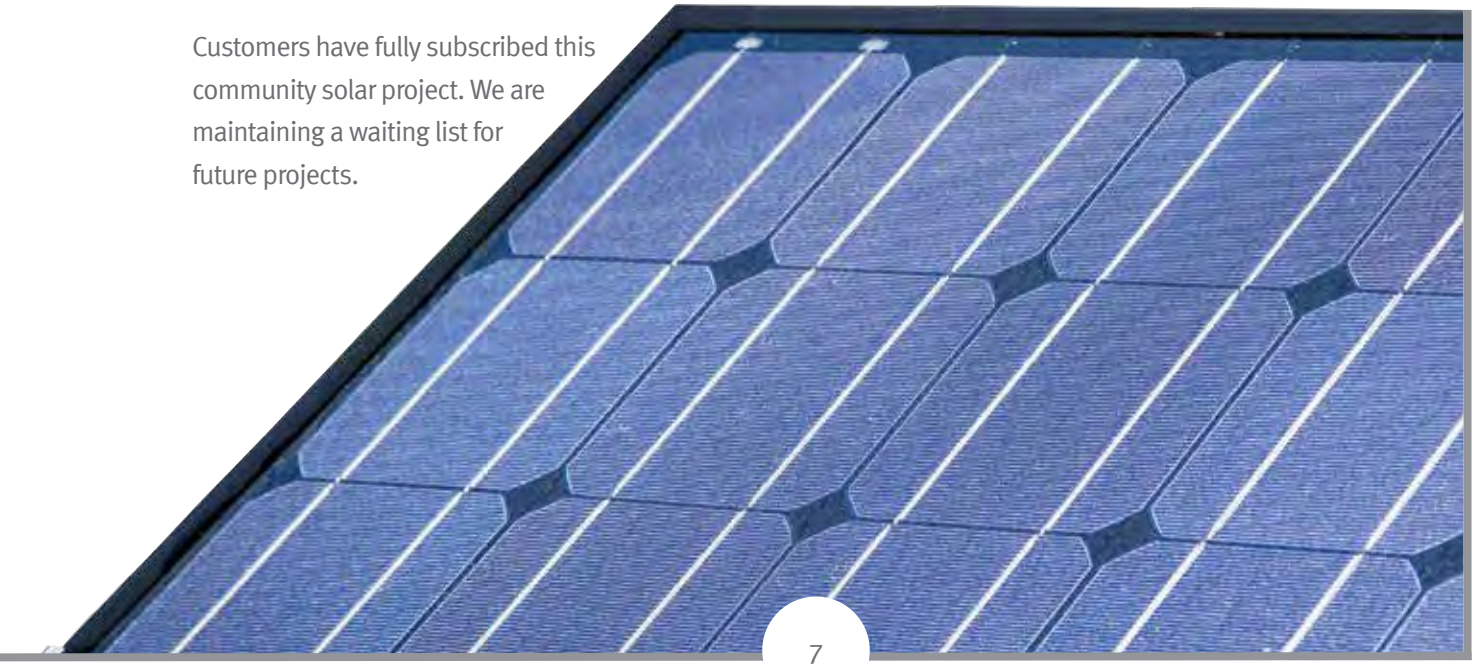
In 2017, MGE received approval to launch the Renewable Energy Rider program to serve business customers with renewable energy resources. This new model offers us the opportunity to work with business customers to tailor their renewable energy generation sources to meet their needs and reduce their environmental footprints.

Reliability

MGE is committed to maintaining its top-ranked reliability as we transition toward a more sustainable energy supply mix.

MGE consistently ranks among the top utilities for electric reliability. In a 2016 survey of more than 90 electric utilities, MGE ranked second in the nation for the fewest number of outages. For 2015, we ranked first in the nation. Over the last 10 consecutive years, MGE has ranked in the top three utilities nationwide.

MGE also recorded the third-fastest average response time when notified of a potential natural gas leak, according to a 2016 nationwide survey of more than 80 utilities. MGE's average response time of 15 minutes puts it in the top 99 percentile—making it one of the fastest.



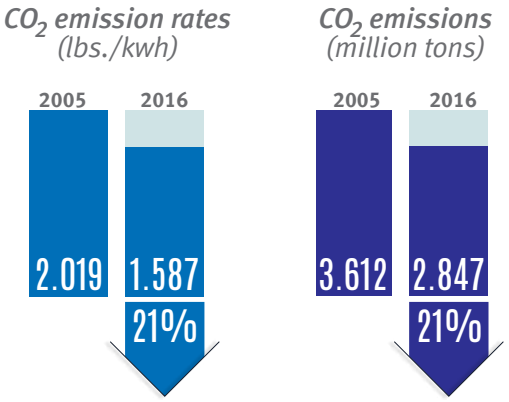
Climate change and air quality

MGE works to provide affordable, reliable electric service while meeting our commitment to be responsible environmental stewards. Whether it is air emissions or global climate change, MGE takes a proactive approach.

We reduce greenhouse gas (GHG) emissions through energy efficiency, working with customers, renewable energy and energy production strategies.

Carbon reductions

We have already reduced CO_2 emission rates by 21% and total CO_2 emissions by 21% since 2005. Now we are working to further reduce carbon emissions. Under our Energy 2030 framework, we will work with customers to reduce carbon emissions by 40% by 2030 from 2005 levels. This target is consistent with U.S. emissions targets for the 2030 time frame established as part of the Paris Agreement on climate change.



Carbon dioxide (CO_2) emissions are calculated from generating units owned by MGE, power purchase agreements and power projected to be purchased by MGE on the regional Midcontinent Independent System Operator market. The market purchase emission rate is based on a seven-state regional average CO_2 emission profile from all power produced in Wisconsin and the surrounding Midwest states.

Methane

MGE reduces GHG impacts with initiatives that generate electricity from the combustion of methane energy, which is produced locally in landfills and cow manure. As a GHG, methane is at least 20 times more potent than CO_2. However, methane as a fuel burns much cleaner and produces 50% less GHGs than coal.

- Landfill gas. MGE purchases electricity generated from methane at a Dane County landfill. This site currently produces more than 31,000,000 kilowatt-hours (kWh) per year or enough to power about 5,000 homes.
- Manure digester. MGE receives energy from a manure digester, which converts cow manure from local farms into electricity. In 2016, the manure digester generated more than 14.7 million kWh of electricity. This is enough to power approximately 2,410 homes.

GHG reporting

Under an Environmental Protection Agency requirement, MGE monitors, measures and reports several GHG emissions annually. The tracking covers power plant emissions and smaller combustion sources.

Partnering with customers

MGE is committed to providing customers with innovative tools and resources they need to make wise energy choices to reduce their individual carbon footprints.

Green Power Tomorrow

Green Power Tomorrow, our green pricing program, is an effective way for customers to buy more of their energy from renewable sources and offset their GHG emissions. Today, about 9,500 customers buy green power from MGE—about half of them choose to buy 100% of their energy from renewable sources.

Solar programs

MGE works with customers who want to install solar to help power their homes or businesses. These customers connect to our community distribution grid and sell back excess electricity to MGE. We have more than 500 solar installations connected to our grid.

Our new Shared Solar program offers customers the benefits of solar power without having a system on their home. Our 500-kilowatt solar array in Middleton provides an easy and affordable way for customers to purchase solar energy.

The clean, renewable solar electricity generated through these programs helps the environment by reducing GHG emissions and helps manage fuel costs that can increase over time.

Other customer programs

We work hard to educate customers and encourage them to take steps to conserve energy and protect the environment. We offer workshops, on-site energy assessments, training sessions, construction advice, technical assistance, educational programming and more.

Reducing energy use is one of the most effective ways to reduce GHGs.

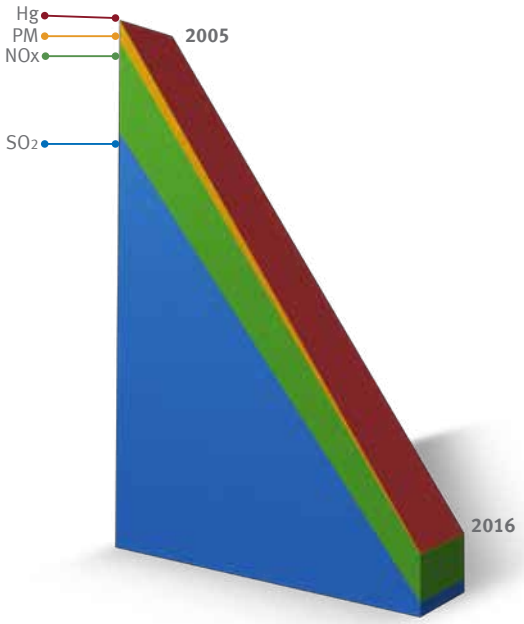
Air quality

Since 2005, we have significantly reduced air emissions by installing new emission-reduction equipment, investing in renewable generation and improving the equipment efficiencies of our diversified generation mix. MGE owns or co-owns the following electric generation units:

- Blount Generating Station, Madison. MGE discontinued coal use at this facility in 2011 and retired 90 megawatts of older, less efficient generation. The plant now operates only on natural gas.
- Columbia Energy Center, Portage. This 1970-era plant is undergoing a series of major air emission-reduction projects.
- Combustion turbines, Madison and Marinette.
- Elm Road Generating Station, Oak Creek.
- Rosiere Wind Farm, Kewaunee County.
- Solar photovoltaic units, Dane County.
- Top of Iowa Wind Farm, Worth County, Iowa.
- West Campus Cogeneration Facility, Madison.

The company also purchases power through contracts and on the Midcontinent Independent System Operator energy market.

Emission rates



lbs./MWh	2005	2016	%Change
Sulfur dioxide (SO_2)	10.34	**0.28**	↓97%
Nitrogen oxide (NOx)	2.31	**0.92**	↓60%
Particulate matter (PM)	0.55	**0.04**	↓93%
Mercury (Hg)	0.000061	**0.0000039**	↓94%

Emission rates from MGE's owned generation assets, adjusted for MGE's share of jointly owned units. MGE is a co-owner of the Elm Road Generating Station and the Columbia Energy Center.

Energy efficiency and conservation

At MGE, we believe encouraging customers to conserve energy is key to building a sustainable future. We have a long history of working with customers to help them think about energy efficiency and conservation in their daily lives. Since 1987, our customers' conservation efforts have reduced the demand for new electric supply by more than 110 megawatts (MW). By comparison, MGE's West Campus Cogeneration Facility has a capacity of 150 MW.

Demand response

MGE plans and builds enough infrastructure to meet the electric needs of every customer—this includes meeting needs when electricity use is greatest—typically on hot summer days when air-conditioning load is high. During these periods, utilities run most or all of their electric generating facilities. Utilities also use the maximum amount of transmission and distribution grid capacity to deliver electricity to homes and businesses. MGE must ensure we can meet the needs of customers when demand peaks.

An effective strategy is "demand response," which is decreasing the electric load during those peak times. Reducing peak electric demand has the potential to decrease the need for utility generation, transmission and distribution infrastructure—which would reduce the cost for all of our customers over time. MGE encourages customers to take advantage of voluntary demand response programs and initiatives.

On Demand Savings program

Business customers from large to small are participating in a pilot project aimed at curbing electric demand during peak periods. Customers are tracking their energy use and working with MGE to identify electric demand-limiting strategies in their facilities' operations.

Capital Brewery in Middleton joined the On Demand Savings program to help reduce electric use during peak use periods.

The goal is to help participants identify ways to improve their energy management systems, reducing peak demand and costs.

MGE is working on this project with Focus on Energy and Franklin Energy. The National Governors Association was instrumental in bringing this project together and may share pilot results that could be replicated by other utilities across the country.

Smart thermostats

MGE introduced in 2017 a smart thermostat program, in partnership with Nest, to test a new method of controlling high energy usage during the summer. About 500 residential customers have joined this pilot program.

Our research with Nest and participating customers tests how we can reduce peak energy demand through the use of smart thermostats to manage air conditioners. Smart thermostats can be controlled remotely. With customers' permission, Nest can make minor temperature adjustments through smart thermostats to reduce energy use during times of high electric system usage. Customers are notified in advance and can change the temperature on their thermostat at any time.

Resources for saving energy

MGE is committed to providing valuable energy-saving information. When information is easy to access, customers are more likely to take action.

Home Energy Line

MGE's Home Energy Line is an efficient way for customers to get energy tips or answers to their energy-related questions. MGE's local energy experts are available by phone or email.

Website tools

With a few mouse clicks, customers can find many valuable resources online—from low-cost, energy-saving tips and comparison tools to savings calculators and other energy information. Customers also can track their energy use and compare their energy use to similar houses on our website, *mge.com*.

Multifamily Building Comparison Tool

The amount of energy used by multifamily buildings in the Madison area varies. Heating system type and building condition can impact energy costs. With MGE's online Building Comparison Tool, customers can see how their building compares to others in the area. MGE staffers share energy-saving ideas with customers at neighborhood workshops, at community events and by holding "Energy Breaks" for employees at local businesses.

Business energy assessment

Business customers looking for ways to cut their energy bill can request a free energy assessment. MGE will conduct an on-site consultation and share energy recommendations tailored to the business and its budget.

Financial incentives

MGE partners with Focus on Energy, Wisconsin's program to encourage energy efficiency and renewable resources. We reach out to residential and commercial customers so they are aware of financial incentives available from Focus on Energy. Many energy efficiency and renewable energy projects qualify—ranging from LED bulbs for homes to design assistance for new commercial buildings.

Financing energy-saving projects

One way MGE fosters energy-efficient improvements for businesses is with Shared Savings. Through this revolving loan program, MGE provides up-front financing, and the customer repays the loan with the help of the project's energy savings. When the Shared Savings agreement ends, the customer receives the full dollar savings created by the improvement.

Over the past 24 years, MGE has committed to fund $32 million to Shared Savings projects in our service area that are saving millions of kilowatt-hours of electricity annually.

The Richards family farm in Cross Plains used MGE's Shared Savings program to upgrade the lighting in their cow barn to new energy-efficient LED lighting from old metal halide lighting.

Community engagement and partnerships

By working with our customers and communities, we all can move toward a cleaner, more sustainable energy future. Under our Energy 2030 framework, we are committed to furthering our engagement.

Energy 2030 engagement

Community Energy Conversations

We turned to our customers to help us build a community energy company for the future. In the summer and fall of 2015, hundreds of customers participated in MGE's Community Energy Conversations, sharing their feedback about our community's energy future. We also conducted an extensive customer survey and collected online input. Following these efforts, we introduced our framework for the next 15 years. We call it a framework because we know that technologies, regulations and community input may change over time. Through customer engagement, we can keep customers informed about our framework and work with them to further our shared goals.

Community Energy Workshop

In 2016, we took our next step in community engagement by hosting a Community Energy Workshop. About 200 community members and leaders attended the workshop, which generated additional input regarding Energy 2030.

Introducing a new website

After the workshop, we launched a new website—*energy2030together.com*—so the community can stay informed about our efforts. This new resource features the latest news related to Energy 2030, energy-saving tips and information and stories from our community.

Technical Work Group

MGE is working with the Citizens Utility Board and Clean Wisconsin as a Technical Work Group to examine innovative program ideas in a focused, deliberative fashion. The work group, which began in 2014, continues to look for ways that MGE can be responsive to our customers' evolving energy needs while maintaining a modern, sustainable electric system. The group's work has informed a number of recent pilot projects and programs, including Shared Solar (page 7), On Demand Savings, our Smart Thermostat Demand Response Program (page 10) and our Charge@Home electric vehicle home charging program (page 18).

Working with Madison

MGE staff is collaborating with City of Madison representatives to work toward reducing carbon emissions through electric vehicles, increasing renewables through solar energy, and increasing energy efficiency and conservation.

We also are helping the City of Madison compete for the Georgetown University Energy Prize. The city has advanced to the semifinal round of this nationwide energy competition that challenges communities to implement strategies to increase energy efficiency.

In addition, we are partnering with the City of Madison on its efforts to electrify 50% of its bus fleet by 2035. The city was awarded a Low-No Emission Vehicle Program grant for three zero-emission buses. MGE contributed the required local match for this federal grant and will continue in-kind technical expertise.

MGE also serves as a member of the Dane County Climate Action Council established in 2017. The council includes representatives from local government, business, utilities and environmental organizations. MGE's partnership with local stakeholders through the Council offers another collaborative opportunity to work toward common goals.

In the community

We support our community by working in neighborhood centers, supporting nonprofits and reaching out to those for whom English is a second language. Our Spanish-speaking outreach has included a program called Living in Balance, which promotes energy conservation and sustainable living. We're also on the air with energy news at La Movida—Madison's Spanish-speaking radio station. We want all customers to learn the benefits of energy conservation.

From behind the scenes, the MGE Foundation helps support a variety of nonprofit organizations that help keep our community strong. In the last five years, the MGE Foundation has given more than $4.6 million to more than 350 community organizations ranging from the Boys and Girls Club to the United Way.

Attending an event supporting student internships are (L-R) MGE President and CEO Jeff Keebler, Boys and Girls Club President Michael Johnson and MGE Senior Talent Acquisition Partner Laura Kaker.

Energy education

From elementary school through college, our staff is helping to educate tomorrow's energy consumers about smart energy use, renewable resources, safety and career options.

- Our electric safety program, which uses a fun-learning model, reaches nearly 2,000 fourth and fifth grade students annually. We have offered this program for more than 30 years. Approximately 75% of teachers in our electric service area request this program.
- Our Earth Day education outreach helps teach elementary and middle school students about sustainability. Every year, we develop an interactive website, distribute more than 8,000 education booklets and promote a video contest for students.
- As students become older, we partner with other organizations for career opportunities. For example, our Career Ambassador program works with high school students and recent graduates to give them hands-on experience in the utility industry.

Students listen to an MGE electric safety presentation.

- For college-level students, we offer tours of our two natural gas-fired power plants in the Madison area. These tours are especially insightful for those in engineering programs.
- Energy efficiency is a key part of our student outreach. We provide a fun, interactive program for younger children called MaGicEnergy. We also offer free energy curriculum that more than 100 teachers request annually. And, we offer scholarships to teachers who take energy education courses offered through the Wisconsin K-12 Energy Education program.

Water

The Madison area is fortunate to have plentiful lakes and streams. Downtown Madison is on an isthmus with Lake Mendota to the north and Lake Monona to the south. Farther south are additional lakes and waterways. From the north, streams and creeks feed this chain of lakes. Collectively, these make up the Yahara Watershed—a resource we are working to protect.

MGE partners with others to improve water quality.

Yahara WINs

MGE supported a pilot program that is expanding into a 20-year effort to reduce phosphorus in our watershed. This collaborative water cleanup effort, called Yahara WINS, has been described as one of the more complex and ambitious in the nation.

The original pilot program has led to every community in the 360-square-mile Yahara watershed to join forces and work to reduce phosphorus. The agreement, signed by about 60 local governments, commits more than

Phosphorus reduction

Reducing phosphorus in our Yahara Watershed is a goal we share with many others.

Phosphorus—from farms, construction and industry—contributes to algae in our lakes and waterways. Our goal is for cleaner water that better supports plants and wildlife.

MGE is taking steps to make a difference.

Facility discharge

In 2012, MGE started implementing a process to reduce concentrations of phosphorus in the discharge from its West Campus Cogeneration Facility (WCCF). We now use methods to prevent corrosion in our cooling towers and scaling in our reverse osmosis system that are phosphorus-free.

This reduced the phosphorus by 93% in the reverse osmosis wastewater discharge. Small amounts of minerals and elements, including phosphorus, are naturally present in the ground and lake water used at WCCF.

Erosion control

MGE is committed to implementing proper erosion-control measures at all work sites to minimize the likelihood of soil being washed out of a site. We track permits and inspections. In addition, we have a committee that meets to review new regulations, field techniques and technologies to ensure we effectively manage erosion-control strategies.

$2 million annually for 20 years. MGE supports this effort financially through its foundation and by serving on its technical advisory committee.

The collaborative approach pools the resources and expertise of partners ranging from farmers to the University of Wisconsin-Madison to environmental organizations. The common goal is to use adaptive management strategies whether its planting buffer crops to reduce agricultural runoff or improving industrial practices, such as MGE's phosphorus reduction at its West Campus Cogeneration Facility.

Other collaborative projects

A large manure digester in northern Dane County also aids phosphorus reduction. MGE supports this anaerobic digester by purchasing energy from the digester at a premium rate. The digester converts cow manure from local farms into electricity. Previously, most phosphorus from these farms was discharged to the Yahara watershed, contributing to algae and weeds.

We also worked with the City of Madison to incorporate a green roof into an expansion project at Madison's Central Library. One benefit of the roof is that it helps with stormwater management. The roof's plants absorb rainwater and reduce surge loads on the municipal stormwater system.

Stormwater management

As MGE builds new facilities, stormwater management is part of our planning and design. Our new training facility, which opened in 2015 in Fitchburg, has a system that ensures there is no increase in runoff resulting from the development. The stormwater system was designed to aid the nearby wetland habitat.

We also have a stormwater filtration system in our downtown parking lot. This system cleans stormwater before it drains into Lake Monona. This system is effective in reducing pollutants such as petroleum compounds and phosphorus.

MGE follows best practices to remove water from underground utility vaults. MGE's dewatering compliance plan ensures that all water pumped from vaults into the storm sewers is filtered prior to discharge in order to keep sediment-laden water out of the area water bodies.

We constantly strive to go beyond regulations such as water testing and surveys.

Supply chain and waste management

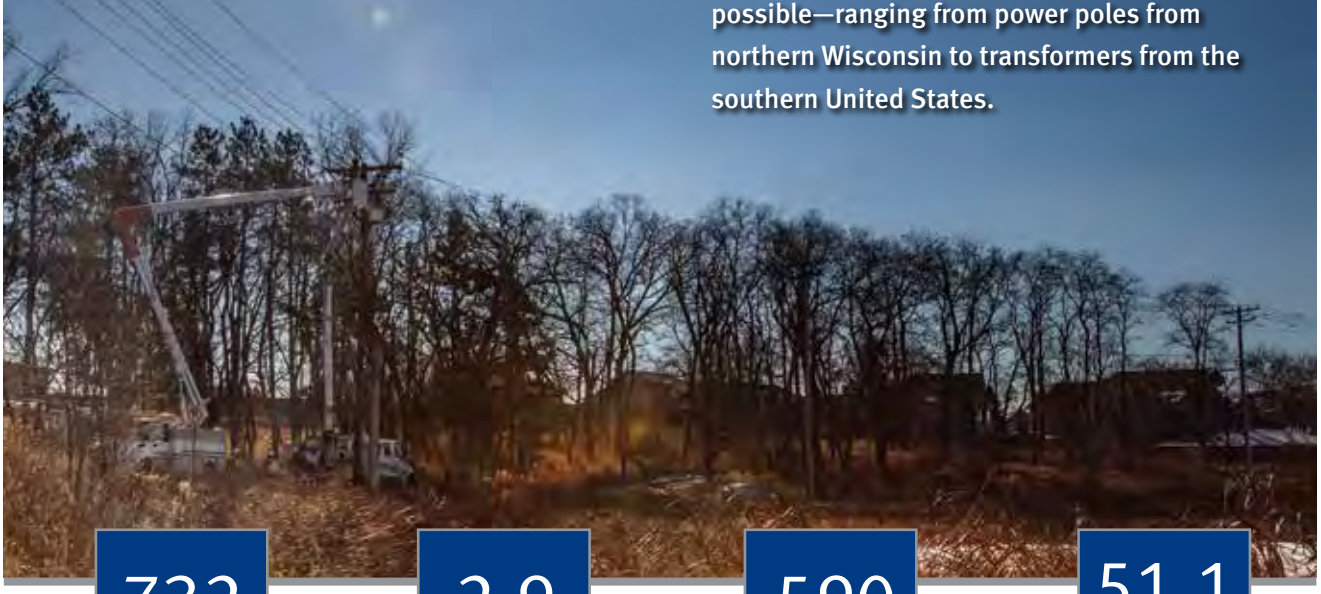
MGE recognizes its responsibility to seek out environmentally friendly practices that prevent pollution and minimize waste. Whether it's a daily task, a major project or new initiative, we:

- Consider environmental impacts and look for cost-effective ways to reduce those impacts.
- Work hard to conserve, recycle and manage waste efficiently.

Buying local

When purchasing the goods we need to run our business, we review our supplier database and buy from local vendors when it is cost-effective. Local purchases support the local economy.

Due to the nature of our utility business, most of our materials and equipment are highly specialized. We buy U.S. products whenever possible—ranging from power poles from northern Wisconsin to transformers from the southern United States.



732 tons	2.9 tons	590 lbs.	51.1 tons
Metals	Computing equipment	Alkaline batteries	Paper

Recycling

MGE has a strong recycling program—in the office and in the field. Employees take seriously their responsibility to play an active role in the process. Working together, we are making an impact.

In 2016, MGE employees recycled 162 tons of materials through our all-in-one recycling method (paper products, glass, plastic and aluminum cans combined in one bin).

While we are achieving results, recycling is a process of continuous improvement. In 2016, MGE hired an independent auditor to review our recycling efforts at our main office facility. The auditor's recommendations currently are under review.

Other 2016 recycling results include:

- 732 tons of metals and other scrap materials left over from fieldwork.
- 2.9 tons of computing equipment and supplies. We send these to an e-Stewards Certified company for recycling or reuse.
- 590 pounds of alkaline batteries. We send these to a vendor who recovers steel and zinc.
- Approximately 51.1 tons of paper.

Overall, MGE's annual recycling rate continues to be more than 50%. At MGE, waste management is a top priority across all departments.

Green products and practices

MGE makes responsible choices about the materials and products we use in our operations. This includes a variety of green cleaning products. We avoid products that contain harsh chemicals like bleach.

Earth-friendly paint options

At MGE, we have a pilot project to see if we can replace the aerosol cans that we have traditionally used in marking underground gas and electric facilities. When customers call Diggers Hotline, our locators use paint to mark where the pipes and lines are buried.

Aerosol cans need a propellant to push out the paint. That propellant is often hazardous. In addition, aerosol cans are under pressure, which causes them to be considered hazardous waste even if the paint in the can is not hazardous.

We reviewed options, taking into consideration costs, labor and environmental outcomes. We are now testing a pouched-bag system, SpraySmart®, to determine if it is a viable replacement for the aerosol cans. MGE is one of the first large-scale users. If SpraySmart becomes our replacement product, it will:

- Reduce the waste associated with marking underground facilities. Once empty, the pouched bag is biodegradable.
- Be a safer and less bulky product as the pouches are not stored under pressure.

MGE is testing a new, more environmentally friendly way to mark underground facilities after customers contact Diggers Hotline.

Proactive IT strategies

Longer life, less waste

MGE's Information Technology department implemented a new strategy to help reduce electronics waste. We are purchasing, rather than leasing, equipment such as fax machines, monitors and printers. With previous leases, we were sending back equipment that still used current technology and was operating well. By purchasing more equipment and keeping it longer, we can cut down on waste.

E-cycling partner

MGE began working with a local company for electronics recycling so equipment does not need to be transported out of Wisconsin. The new company takes responsibility for the entire recycling process, going above and beyond to find the next best use for a retired piece of equipment or dismantling it to retrieve parts that can be reused. In the past few months, we have recycled more than 600 pounds of electronics equipment.

Smart buys

MGE also takes action to reduce environmental impacts through purchasing decisions.

All end-user electronic devices that we purchase (e.g., monitors, desktops, laptops and printers) are included in the EPEAT database. EPEAT-registered products meet strict environmental criteria offering a reduced environmental impact across their life cycles. EPEAT is managed by the Green Electronics Council.

In addition, we began purchasing high-yield toner for our printers. This cuts down on packaging and shipping costs. Furthermore, more employees are going paperless. With our corporate wireless network, more employees take their laptops to meetings and work sites and do their work online.

Transportation

Sustainable transportation is essential for a cleaner environment. That includes making smart choices about vehicles, fuels and other operations. MGE is committed to testing new technologies, sharing our findings with customers and growing our green vehicle fleet.

Alternative-fuel vehicles

MGE supports strategies that increase interest in alternative-fuel vehicles, including electric vehicles (EVs) and vehicles fueled with compressed natural gas (CNG). We want customers to be aware of transportation fuels that can reduce emissions and decrease our nation's reliance on foreign oil.

Electric vehicles

MGE is a leader in helping customers plug in rather than gas up. For nearly a decade, we have encouraged alternatives to gasoline- and diesel-fueled vehicles to help grow the use of EVs in our community. Our initiatives also help MGE develop a smarter grid that can better integrate evolving technology. MGE has:

- Installed one of the nation's first networks of EV charging stations. These 27 charging stations are located throughout our service area. These charging stations are powered by green energy. In addition, our network includes the first public direct-current (DC) quick charger in Wisconsin.
- Partnered with the City of Madison on its efforts to electrify 50% of its bus fleet by 2035. In September 2017, the city was awarded a Low-No Emission Vehicle Program grant for three zero-emission buses. MGE contributed the required local match for this federal grant. MGE already has done substantial work to make the city's project economically and logistically feasible, and we will continue our in-kind technical expertise. MGE is committed to working with the City of Madison and other municipalities to advance new, cleaner technologies.
- Recently expanded our new program, Charge@Home. MGE installs charging units at customers' homes and enrolls participants in a study to learn more about charging sessions and how technology can best work for them. State regulators recently approved expanding this program from 30 to 100 customers.
- Enrolled more than 300 drivers in our multiyear EV charging research study. We are tracking EV energy use and learning about drivers' needs and charging patterns.
- Offered multiple "ride-and-drive" events so our customers and employees can explore EVs and learn about charging options.
- Launched a program for auto sales personnel that includes an online EV charging educational resource.
- Partnered with Wisconsin Clean Cities and Nissan to offer customers a significant discount on all-electric Nissan LEAF® vehicles.
- Introduced a program for area employers to offer workplace charging. We help them implement charging programs for their employees.

At a Drive Electric event in 2016, electric vehicles were on display at MGE's headquarters.

Compressed natural gas

We also are helping customers learn about CNG. This fuel is an alternative for business and government customers who operate fleet vehicles. CNG costs about half as much as gasoline or diesel and has fewer emissions.

CNG fueling sites are expanding locally and nationally. Four public stations in our service area offer CNG fueling: Middleton, Monona, Verona and Windsor. MGE supplies each of these fueling stations with natural gas.

We are reaching out to customers with information, including a series of videos that explain the benefits of CNG.

MGE's transportation fleet

MGE is developing a process to transition its vehicle fleet to all-electric, hybrid and CNG vehicles where possible. We are developing a process that includes tracking new technology, setting parameters for which vehicles can transition to greener options and establishing goals for the future.

Typical bucket trucks require power from an idling engine to operate an aerial lift. With MGE's hybrid trucks, an electric component operates the aerial lift bucket. Without idling, they waste no fuel and emit no pollutants while working.

Currently, we use the following vehicles in our daily operations:

- 23 Gas/electric hybrid vehicles
- 7 CNG vehicles
- 5 Electric hybrid bucket trucks
- 5 All-electric vehicles

Anti-idling policy

MGE's anti-idling policy directs employees to turn off company vehicles and equipment that are not in use. Following this practice helps reduce air emissions, burn less fuel and minimize wear and tear on engines.

Additionally, MGE is making vehicle emergency lighting changes that will help further reduce idling. Amber lighting used on MGE vehicles to alert others of danger is being changed from incandescent to LED lights. Because LEDs require a much smaller electric draw than incandescents, crews do not have to leave trucks idling to keep emergency lights on. With a large fleet, we expect significant savings in fuel costs and reduced emissions.

MGE is bike friendly

MGE encourages employees to consider biking as an alternative form of transportation. Bike riding reduces emissions, saves money on fuel and burns calories. To make commuting by bike an even more attractive option, we offer:

- Bike racks at most facilities.
- Showers at several locations.
- Bike lockers and indoor bike storage.

In addition, employees who bike to work can earn points in our wellness program.

MGE has hosted bike commuting lunch-n-learn events and alternative transportation challenges and supported MGE teams in bike events.

Workforce

MGE employees share our company's strong environmental values. They reinforce their environmental commitment by following procedures, looking for new opportunities and taking part in stewardship projects.

Green Team

Every employee at MGE is a member of our Green Team and has a responsibility to the environment while at work. For more than 20 years, MGE's Green Team has encouraged environmental awareness, proactively shared ideas and made improvements that strengthen our practices. Green Team Leaders represent departments across the company. They guide activity, implement regulations and serve as educational resources.

Over the years, Green Team projects have ranged from improving compliance strategies and expanded recycling programs to data-tracking tools and bike-to-work initiatives. One project under way is a gas and electric construction permit improvement process. Utility projects can require permits for erosion control, stormwater, wetlands, archaeological sites or endangered species. The goal of MGE's effort is to identify efficiencies that will help streamline the permitting process and ensure we continue to operate in compliance with regulations.

Environmental awareness

While MGE employees are trained in how their individual actions at work can improve the environment, we encourage them to continually look for new ways to make a difference.

One example of an idea raised by employees and then implemented is server virtualization. Rather than having many individual servers, a single physical server is partitioned into multiple smaller virtual servers. Each virtual server runs its own operating system and applications, performing as if it were an individual physical server. Having fewer physical servers offers many benefits:

- Saves space. We can put up to 35 virtual servers on one physical server. Therefore, much less facility space is needed.
- Saves time and money. Costs for hardware and maintenance decrease.
- Saves energy. Less equipment means less energy is used for daily operation. Additionally, less cooling energy is needed to offset the heat produced by servers.

MGE reduced its number of computer servers, which saves energy and space.

When it is time to replace a physical server, only one piece of hardware needs to be purchased. All the virtual servers can be moved to the physical new server. Server virtualization is an ongoing process at MGE. Today, about 75% of MGE's environment is virtualized, compared to 6% a decade ago.

Development and training

MGE is committed to sustainable workforce practices such as career development and training. This is increasingly important in an industry that is constantly changing. We recently

launched an effort to identify training needs and develop courses for employees to advance their skills and succeed.

MGE Learn

New opportunities include:

- MGE Learn, an online resource where employees can find e-learning courses and sign up for instructor-led courses. Topics range from computer skills and communication to taking control of conflict.
- A multiyear Leadership Development program that is customized to MGE and designed for employees who manage other people.

In the community

MGE's dedication to sustainable practices extends beyond the workplace. Employees take an active role in supporting the communities we serve.

One example is Adopt-A-Highway. MGE regularly participates in this Wisconsin Department of Transportation program. The goals are to reduce litter along state highways, provide education on proper litter disposal, enhance the environment and help beautify our roadsides. Another example is supporting United Way projects such as helping to renovate and paint facilities and apartments to provide housing options for homeless families.

MGE employees volunteer for various United Way efforts such as a painting project at the YWCA.

Working with the next generation

We care about the next generation, and that means opening our doors to the students who will be tomorrow's leaders. We have young people at our company learning about energy careers and our industry.

PEOPLE Program

MGE hosted students from UW PEOPLE (Pre-college Enrichment Opportunity Program for Learning Excellence). PEOPLE works with students, families, teachers and counselors to provide sustained individual attention critical for being prepared to succeed at the college academic level. At MGE, students learned about our company, the utility industry and careers.

Student interns observe a natural gas installation project.

Career Ambassadors

MGE also participated in the Career Ambassador program. Students from the Boys and Girls Club, Centro Hispano and the Urban League of Greater Madison job shadowed MGE employees. They worked with mentors around MGE to learn about utility careers they may not have considered.

STEAM Camp

About 40 middle school students spent a day at MGE as part of a local program called STEAM Camp—Science, Technology, Engineering, Arts and Math. The interactive learning program introduces students to STEAM-related careers.

Safety

Safety is a core value at MGE. We put safety first in all we do. We take the approach that everyone always can improve upon their safety performance. At MGE, we are committed to maintaining a safe working environment and continuously improving our safety culture.

Employee safety initiative

In 2014, MGE launched a new employee safety initiative. It started with a company-wide Safety Perception Survey to gauge the overall health of our safety culture. Working with our consultant to analyze the survey results, we determined areas of strength and areas for safety improvement.

Continuous improvement

In 2014, MGE formed a Safety Steering Team to identify and prioritize safety improvement projects. This team is made up evenly of front line workers and managers. For each improvement project, the Safety Steering Team identifies a group of about 10 employees for a Continuous Improvement Team, which is tasked with creating and implementing a plan to address a specific improvement area.

The first project targeted improving the quality of our safety meetings. The Continuous Improvement Team, with the assistance of our facilitator, developed a plan for employee-led safety meetings. They drafted a process, piloted that process and then implemented it across all operations areas within the company.

The new safety meeting process is proving to be successful. Surveys conducted prior to, during and after the pilot show the improvement and the progress. Employees have weighed in and concur that safety meetings are now more relevant and provide adequate time to cover topics. Subsequently, safety issues are resolved in a more timely manner.

An electric crew holds a job briefing before starting work at a construction site.

Getting a safe start

Our second Continuous Improvement Team redeveloped our daily job briefing process. These are the meetings that operations crews have on a job site before they begin any work. Team members identified opportunities for improvement and developed a new job briefing process that strengthened our safety culture.

They created a list of accountabilities and expectations regarding job briefings. They redesigned the MGE job briefing forms, developed a training program on the new process and created training videos that show employees what an effective job briefing looks like compared to an ineffective one.

“We believe we have developed an improved process that puts a focus on hazard awareness and job-specific safety,” explained Tim Schaaf, MGE Line Technician Journeyman and Continuous Improvement Team member. “It engages and involves employees as well as establishes accountability at all levels.”

Employees make safety a priority

Imagine climbing a ladder 65 feet straight up. Now imagine doing it in the winter or poor weather conditions. That’s the climb that begins on the roof and ends at the top of the exhaust stacks at MGE’s West Campus Cogeneration Facility (WCCF).

The ladder is equipped with a safety cage, but that did not stop one employee from looking for further protections. Zach Kastern, an Electrician and Instrument and Control Specialist Journeyman at WCCF, usually makes that climb once or twice a year. He wondered if there was a way to make it safer and less anxiety-filled.

"I just thought, if it makes me uncomfortable, other people who occasionally have to make that climb probably feel the same way. So the right thing to do is to find a way to make the climb as safe as possible for everyone," Kastern said.

After talking with others at the plant, he approached the Safety department, which did some research and found a cable grab system that prevents a person from falling more than two feet if their foot slips while climbing. "The new cable grab system is great and makes me feel a lot safer when climbing up that ladder," Kastern added.

Customer safety

In addition to the safety of our employees, the safety of our customers is also a top priority. Whether it's electric and natural gas safety advertising across our service territory, information included with our bills or information on our website, we strive to keep customers well informed about the potential dangers of electricity and natural gas and what to do in an emergency.

Fast response time

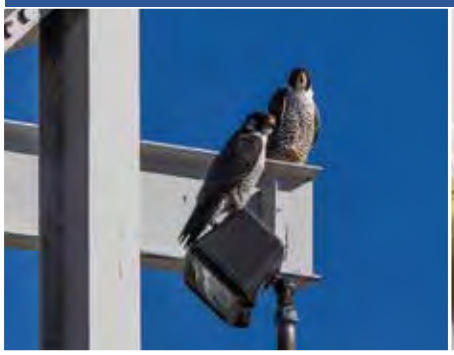
Natural gas safety and reliability are critical for our customers. We are there when our customers need us. In a nationwide survey of more than 80 utilities, MGE recorded the third-fastest response times to customer calls reporting natural gas leaks. We averaged a 15-minute response time.

First responder training

Every year, MGE's Electric and Gas Operations departments conduct safety training with first responders across our service territory. This training is just another example of the partnerships MGE has throughout the communities we serve.

MGE trains fire departments from the City of Madison to much smaller communities. We also conduct drills with the City of Madison Fire Department at both of our local power plants.

The City of Madison Fire Department practices a confined-space rescue at MGE's Blount Generating Station.



Since 2009, peregrine falcons have called the nest box at MGE's Blount Generating Station home. Peregrine falcons are an endangered species in Wisconsin due to the use of DDT pesticide that began in the 1940s. Manmade nest boxes at power plants have proven to be ideal homes for nesting falcons. MGE is proud to assist with peregrine falcon recovery. A nest box built by an employee's son was installed, and for the past eight years, MGE has been home to three falcon pairs producing a total of 35 offspring.

Annually, our falcon chicks are removed from the nesting box and banded with ID numbers for tracking purposes. Our employees await the return of the falcons each spring. Join us in the spring and summer by following their progress with our live stream falcon camera at mge.com/falcons.

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