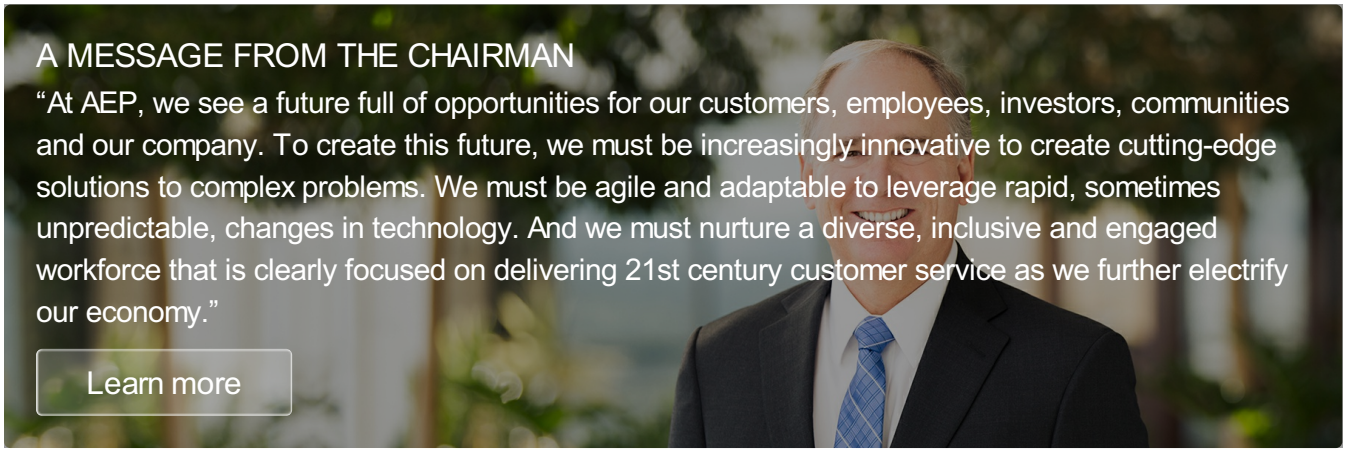
ENSURING A BRIGHTER, BOUNDLESS FUTURE

With more than a century of ingenuity and innovation, AEP is putting its experience to work, preparing for a future that we are still imagining. As we shape the future with our customers, we are dedicated to safely delivering on our commitment to an exceptional customer experience. This is an exciting time for our industry and our company; the pace of change is exponentially accelerating. We are confident in AEP's foundation for growth and we are learning to be more flexible in our resolve to lead the way forward.



INNOVATING FOR TOMORROW

Innovation has been part of the fabric of AEP's culture for more than a century. We are committed to continue providing our customers the innovations that will power the 21st century.

Learn more

DIVERSITY & INCLUSION

At AEP, we take deliberate actions to create a work environment in which employees are valued and the diversity and richness of the backgrounds and perspectives of our people are embraced.

Learn more

CUSTOMER COMMITMENT

We are committed to meeting the demands of our customers by investing in new technologies, modernizing the grid, investing in renewables and engaging with customers in their channel of choice.

Learn more

AEP'S STRATEGIC VISION FOR A CLEAN ENERGY FUTURE

We believe sustainable electricity is an essential tool for managing the company's carbon emissions and reducing the broader global carbon footprint. We are evaluating business risks and potential new opportunities, from the boardroom to the customers' side of the meter. AEP's sustainability goals reflects our strategy to transition to a cleaner energy economy and our commitment to transparency as we move forward.

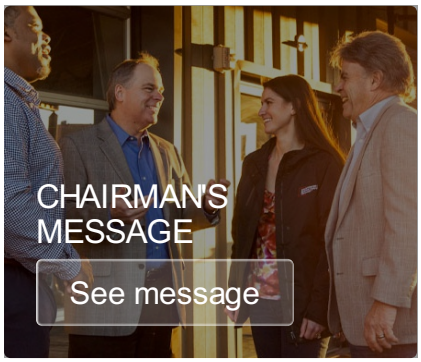
Learn more

ABOUT AEP

STRATEGY FOR THE FUTURE

“Change has come. It is here, it is accelerating, and AEP is prepared to lead it. We see many challenges ahead, but also significant opportunities as we work for a sustainable future. We’ve accomplished a great deal over the past decade, but we must lead at an ever-quickening pace. Our strategy to be more innovative, more engaged and more customer-focused is well underway and we will continue to execute it with discipline and conviction. Our 2023 strategy will stretch and push us toward achieving our vision for the future.”

– Nicholas Akins, Chairman, President & Chief Executive Officer



2018 COMPANY OVERVIEW

Number of Employees	17,582
Regulated & Competitive Customers	5.8 million
Service Territory	200,000 square miles
Total Revenues	$16.2 billion
Capital Investments	$6 billion
Cash Dividends Per Share	$2.53

Transmission	40,000 miles
Distribution	220,000 miles
Total Generating Capacity (owned & PPA)	32,000 MW
Total Renewable Portfolio*	5,272 MW
Total Assets	$68.8 billion
Charitable Giving	$25.5 million

* Includes expected capacity as of year-end 2019.

AEP'S STRATEGIC PLAN

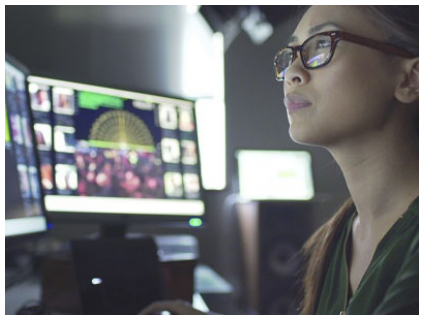
AEP's strategy for growth and the way we are advancing our business model are changing as we plan for a future that is evolving.

Learn more

REGULATORY AND PUBLIC POLICY

AEP is committed to enhancing regulatory models to give utilities the ability to explore new and evolving solutions that deliver the best value for our customers.

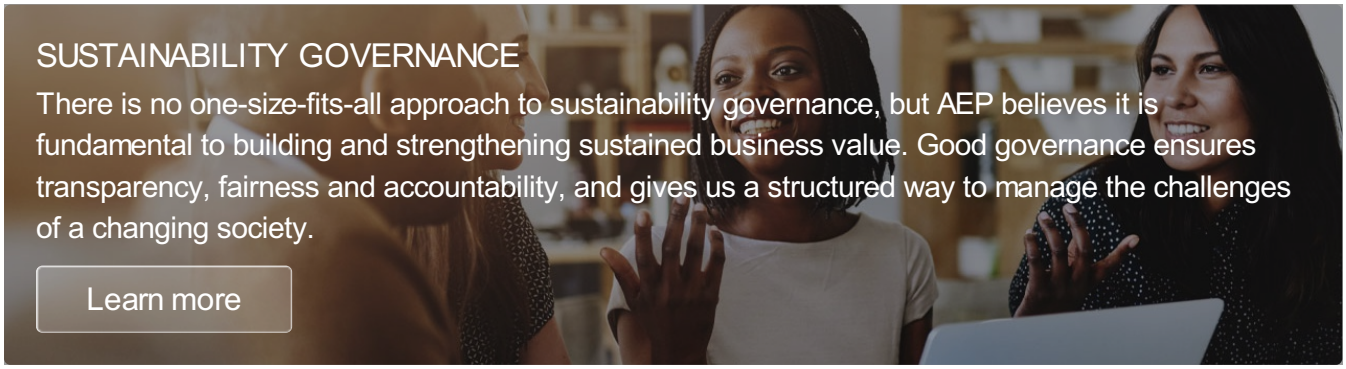
Learn more



RISK MANAGEMENT

AEP has a robust risk management process that helps us proactively identify and mitigate potential risks to our businesses and operating companies.

Learn more



SUSTAINABILITY GOVERNANCE

There is no one-size-fits-all approach to sustainability governance, but AEP believes it is fundamental to building and strengthening sustained business value. Good governance ensures transparency, fairness and accountability, and gives us a structured way to manage the challenges of a changing society.

Learn more

Dear Friends and Colleagues,

At AEP, we see a future full of opportunities for our customers, employees, investors, communities and our company. To create this future, we must be increasingly innovative to develop cutting-edge solutions to complex problems. We must be agile and adaptable to leverage rapid, sometimes unpredictable, changes in technology. And we must nurture a diverse, inclusive and engaged workforce that is clearly focused on delivering 21st century customer service as we further electrify our economy.

CHAIRMAN'S MESSAGE BROCHURE

Download PDF

We're meeting these inter-connected challenges, by partnering with start-up companies and working in global innovation hubs to incubate and test new, leading-edge technologies and processes. We're seeking collaborative opportunities to improve our operational efficiency, enhance our ability to collect and analyze data, and deliver a superior customer experience.

Our stakeholders are critical to our success and we have engaged them on numerous issues, especially climate change. For decades, we have listened to diverse viewpoints from customers, investors, the environmental community and others about the potential impacts and magnitude of climate change, and about what we can, and should, do to set and meet ambitious goals in a timely manner. We embraced their aspirations for a clean energy future and together set a realistic path to achieve it.

We are making progress. We have retired approximately 7,800 MW of coal-fueled generation since 2011, increased the size of our renewable portfolio, and helped our customers become more energy efficient. In 2018, we set new carbon

reduction goals – 60 percent by 2030 and 80 percent by 2050 (both from a 2000 baseline). At the end of 2018, our carbon emissions were 59 percent lower than in 2000 – exceeding targets set by the U.S. EPA's Clean Power Plan for the electric sector. Since we are so close to achieving our 2030 goal more than a decade ahead of schedule, we are reevaluating this target. We review these targets annually in the context of where we see regulations, policies and technology advancing and what we believe we can achieve. Our ability to move technology forward will only accelerate what we are able to do.

We've invested significantly to modernize the electricity grid, making it more efficient, enabling the growth of distributed energy production, and transforming it into the information and clean energy platform we need to power the future.

We're building a new talent pipeline and developing our current workforce for a digital future. This is critical as we shift from being a generating resources-driven company to a people, data and technology-driven company. We're talking to our customers, understanding their needs and seeking new solutions for their benefit. And we are delivering value to our shareholders while having positive impacts on the environment, our communities and society in general. I am confident we are on the right path and excited about our future.

As we grow and invest in a smarter, cleaner energy system, we continuously reward our shareholders. AEP has paid quarterly dividends to our investors since 1910 and we are proud of the consistency and quality of the earnings and dividends we deliver. In 2018, we provided a total shareholder return of 5.4 percent – exceeding the 4.2 percent total return for the S&P 500 Electric Utilities Index. From April 2018 to April 2019, AEP has delivered a total shareholder return of 25.4 percent. In addition to investing capital, we closely manage our costs and expenditures, using the savings to deliver additional benefits to our customers and investors.

AEP EARNINGS & DIVIDEND DATA $/per share

	2014	2015	2016*	2017	2018
Earnings Per Share (GAAP)	$3.34	$4.17	$1.24	$3.89	**$3.90**
Operating Earnings Per Share	$3.43	$3.69	$3.94	$3.68	**$3.95**
Cash Dividends Per Common Share	$2.03	$2.15	$2.27	$2.39	**$2.53**

* The difference between year-end 2016 GAAP and Operating Earnings was primarily due to the impairment of certain merchant generation assets.

As always, I am extremely proud and deeply appreciative of the employees of AEP who are paving the way for our future success. They give generously, work tirelessly and provide the knowledge, experience and creativity that keep us moving ahead. It is a privilege to lead and work beside them. Together, we are creating a clean, bright energy future for us all.

Achieving Zero Harm

Safety is our most important value – nothing we do is more important than working to prevent harm to our employees, contractors and the public. Our success as an organization is based on working safely to ensure the well-being of all. At the end of each workday, everyone must return to their loved ones in the same condition as when they arrived at work. All of us at AEP are personally committed to Zero Harm, starting with me.

Zero Harm requires hard work, including knowledge, determination, vigilance, patience, and a round- the-clock effort to look out for ourselves and for each other. In an instant, one error, one shortcut, can result in grave consequences.

In 2018, AEP employees and contractors worked 4.3 million more hours than in 2017 to serve our customers. At the same time, our DART rate (Days Away, Restricted or Transfer) improved approximately 11 percent compared to the three-year

historical average. This is encouraging and demonstrates significant progress towards Zero Harm. But we must maintain focus and resolve. We must believe that we can reach our goal and be relentless every minute of every day on every job.

Last year, more than 80 percent of all work locations across AEP achieved Zero Harm, which tells us three important things: harm can be eliminated, we are working hard to prove it, and we still have a long way to go.

We know this all too well. I am deeply saddened to report that in 2018 an AEP employee was fatally injured on the job and, in March 2019 another AEP employee lost his life in a job-related accident. Everyone at AEP feels these profound losses, both personally and professionally. One of the best ways we can pay tribute to them and their families is to learn from these events.

We held company-wide Safety Stand Downs to refocus on and reinforce our commitment to Zero Harm. We implemented new life-saving rules; recorded more than 16,000 CORE visits (coaching through observation, recognition and engagement) in 2018 to create meaningful interactions and reinforce positive safety behaviors; and logged more than 5,000 “Good Catches” from employees and contractors who found ways to prevent harm. And, through continuous communications, we share information and best practices and recognize those who excel at achieving Zero Harm. We are also piloting an assessment process to look more closely at our training and skills, and our critical safety measures and protections. I can’t say this enough: our most important goal is to ensure that everyone goes home in the same condition as when they came to work.

We’re also building stronger contractor and public safety programs to ensure that our safety expectations are clear and are being met.

Creating A Culture of Diversity and Inclusion

Diversity and inclusion are as important to our success as any strategic or operational action. We require a diverse, inclusive workforce and a culture that values the differences among us. Our success lies in large part with our ability to respect and embrace all people and divergent views that allow us to have a clearer view of obstacles and opportunities. We’re all on the same team, striving for the same bright future, and when we appreciate and value our differences as well as our similarities, that’s when we succeed as an entire company.

Diversity and inclusion are not checklists or slogans. Like safety, they require focused action and changes in how we think and act. Diversity and inclusion improve morale and our ability to work as a team, they enhance our reputation and our brand, they help drive innovation, help to engage the diverse communities we serve, and strengthen us as an organization and as individuals. If we are not diverse and inclusive, we will be left behind.

In 2017 we established a Diversity and Inclusion Council to focus on our workforce, supply chain and community engagement, and in 2018, we appointed a Chief Diversity and Inclusion Officer. Together, they are helping us with this business-critical mission. Our 2025 Diversity and Inclusion Roadmap, which includes accountability metrics and extensive partnering with other committed organizations, will help us attract, develop and retain the strongest talent from an increasingly diverse talent pool, while enhancing the engagement, knowledge and skills of our current employees. We also plan to achieve gender and wage parity and break down barriers caused by unconscious biases. We are committed to holding ourselves accountable for maintaining a supportive culture.

Creating gender parity in leadership roles is critical because of a strong correlation between success and diversity. In collaboration with Paradigm for Parity®, a coalition of business leaders working to address gender inequality, we are making progress toward gender parity at all levels of corporate leadership.

This commitment extends to our Board of Directors. The Board’s Committee on Directors and Corporate Governance has committed to include in each director search qualified candidates who reflect diverse backgrounds, including diversity of gender and race.

The Board regularly considers AEP’s strategy and the skills, experiences and qualifications that should be represented on the Board to effectively oversee the company’s strategic direction. In 2019, we welcomed a new Board member with digital/technology, marketing and IT skills. Her election increases the diversity of our 13-member Board to 31 percent.

We conducted a listening tour and survey in 2018 to determine what employees think about diversity and inclusion at AEP. I am grateful to over 700 employees who participated – opening themselves up to share honest and important

personal insights. They expressed a desire to learn more about why diversity is so important to our business and want accountability, education and engagement from leadership.

As a new generation enters the workforce, we want the best and the brightest minds to join AEP. We are working to understand their needs and desires and what the future of work holds for them to ensure that we attract and retain the top talent to lead us forward. Diversity and inclusion are at the heart of that effort, and I am confident we will succeed.

Improving Customer Relationships

Our customers want and expect more from us today than reliable, on-demand energy. With expectations shaped by their experiences with companies like Netflix, Google and Amazon, they are demanding personalized, on-line information and services delivered instantly, with more choices, convenience and control. We are providing them with easier ways to interact with us because their choices are critical to our future success.

For example, in 2018 we partnered with Google, Amazon and Tendril (a home energy management technology platform) to pilot a voice activated application on Google Assistant and Amazon's Alexa. Customers can now ask out loud, "How much is my bill?" or "How can I save energy?" and get immediate answers, day or night. We intend to expand this service across all of our operating companies. We also opened our Social Media Center in 2018, run jointly by our communications and customer services organizations, and available to customers seven days a week.

Voice engagement channels will allow customers to access information within their home energy management platform and other AEP digital customer applications.

To track our performance and hold ourselves accountable, we developed a Customer Experience Dashboard that provides us with information on customer satisfaction, ease of doing business with us, and how customers are feeling about the company. We can track "message sentiment" data, determine the percentage of positive, negative and neutral messages about AEP on social media, and work to improve those numbers. As a result, we are engaging customers in ways that meet their specific needs.

We are also working to improve service to large customers who connect directly to our transmission grid. We are testing a system in Oklahoma, for example, that leverages our smart meters to track and report momentary outages, or "blinks," on the system. These blinks can shut down production lines for large customers where equipment is hyper-sensitive to momentary disruptions. We will soon have the intelligence we need to inform solutions to better serve our larger customers' needs.

Our 2023 strategy clearly identifies significant opportunities for advancing our vision and our entire company is working to meet our customers' needs. As our regulated utility companies continue to invest in distribution and transmission to modernize the grid and develop capabilities to meet future customer expectations, we are also looking at new opportunities to serve customers. AEP Energy and its unregulated subsidiaries are well-positioned to offer customer solutions, including renewables, distributed generation and storage, and can deploy them within and beyond our traditional service territory boundaries. This team effort allows us to provide customers with an array of solutions.

In April 2019, we completed the acquisition of Sempra Renewables, LLC, adding 724 MW to our renewable portfolio from seven wind farms and one battery installation in seven states. This acquisition, and completion of the Santa Rita East Wind Project currently under construction in Texas, will boost AEP's total regulated and contracted renewable portfolio to more than 5,000 MW.

Strong customer interest in renewable energy is also driving multiple efforts to increase our clean energy resources within our regulated utilities. In 2019, Appalachian Power is seeking proposals to add up to 200 MW of solar energy projects in Virginia to reduce customer costs and further diversify its electricity generation mix. Southwestern Electric Power Company and Public Service Company of Oklahoma are both working to add new wind energy resources for their

customers, too.

By modernizing the grid and diversifying resources, investing in innovation, piloting new technologies and engaging customers in their channels of choice, we can deliver the excellent service our customers expect.

Innovating for a Clean Energy Future

A clean energy economy requires a combination of resources, innovation and technology. In fact, innovation and technology are fast becoming an integrated resource that drives efficiencies and optimization of the electricity grid, benefitting customers and the environment. Enabling a clean energy future also requires taking a hard look at how the traditional regulated utility business model treats innovation, because business-as-usual is not a viable option.

As we advocate for changes that reward innovation in the energy industry, we're pursuing innovation along a number of parallel tracks. Our experience working with technology providers and start-ups tells us energy companies must be involved in the early stages of innovation. We must demonstrate and validate new technologies at a large scale to maximize benefits for all customers.

We are co-presenting an IllumiNation Energy Summit in Columbus, Ohio, with Battelle, The Ohio State University and other sponsors in May 2019. Established technology providers, start-ups, regulators, legislators, environmental organizations, trade groups, academia and research organizations will meet in an immersive technology forum to demonstrate and discuss the technology opportunities we have before us. It also provides an opportunity to engage with policymakers on achieving a clean energy future.

We recently launched our IllumiNationLAB to help us identify promising entrepreneurs and early growth stage companies in four areas: customer experience; grid optimization; efficiency, operations and maintenance; and electric mobility. Our intent is to select promising tech startups to work with an AEP mentor to advance and shape their solutions. We will provide resources and access to subject matter experts and to help start-ups develop products, platforms and processes that we can validate and provide at scale. IllumiNationLAB is focused on renewable energy resources, smart connected devices, customer engagement, predictive analytics and virtual assessments.

We're also working with Free Electrons, a global technology accelerator for the energy industry, that gives us access to hundreds of start-ups around the world. In 2018, we chartered an Enterprise Innovation and Technology team to establish a new process to test ideas that deliver value to customers and deploy them, if validated. The team is actively seeking partnerships and potential investors to enable us to bring new products to market.

Finally, we've created "Charge" – an AEP digital hub that incubates and develops new ideas and creative concepts in a contained space – one that won't affect day-to-day operations. Our new Chief Digital Officer leads this team with a five-year roadmap to achieve our digital transformation. Each Charge project seeks improved customer or employee experience, while creating financial value (reducing spend, creating efficiencies, or increasing revenue). Charge is a microcosm of what we envision for all of AEP – thinking differently about how our company operates and how we interact with our customers.

Our overall approach to innovation is to check and adjust as we learn. We are carefully managing our investment risk by assessing each new technology to ensure it is something that provides value to customers, will be profitable, feasible and that we clearly understand the resources needed to go to market. We take prudent risks, recognizing that there will be challenges on the road to success, as we innovate to create a new, clean and secure energy future.

Protecting The Grid

Protecting the electric power grid is a major priority for our industry as the system is threatened by natural phenomena like extreme weather or geomagnetic disturbances, or deliberate attacks from malicious hackers or nation-states. We invest in protecting our system and participate in drills to test our defenses to help us prepare for and guard against a potentially catastrophic event. We work in partnership with the federal government to anticipate and respond as effectively as possible. We participate in the Electricity Subsector Coordinating Council that focuses on threat information sharing and coordination between industry and government, research and development and working across sectors, such as with the

oil and natural gas industries.

Through the years, the North American Electric Reliability Corporation (NERC) has developed and enforced Critical Infrastructure Protection (CIP) standards to protect the grid from cyber and physical attacks. These standards are constantly evolving, requiring increased focus to ensure compliance. Consequently, in 2018, we strengthened our governance and the central team devoted to ensuring our compliance with the NERC standards.

As we modernize the grid, making it smarter and more resilient, we are also upgrading the telecommunications network which serves as the backbone of the grid, enabling the flow of information and data critically needed to operate the system. This upgrade will enhance cybersecurity and improve reliability and resilience by providing real-time data on equipment condition.

We also take measures to secure and protect employee and customer data. Our Personally Identifiable Information (PII) protection program includes several measures such as blocking outbound emails containing unencrypted PII and a data classification tool that prompts users to classify documents and data before sharing them. We also formed a data governance program to improve how we manage data across the company. This program looks at privacy risks, customer data monitoring and protection, and internal controls to prevent misuse of customer data.

Preparing Our Workforce

One of our biggest challenges is to ensure that our employees have the knowledge, skills and abilities we need, and they need, to succeed today and in the years ahead. We must understand emerging workforce requirements and ensure that our employees and recruits are being trained and educated to meet them, while strengthening the skills required for our company today. We invest in education and collaborate with others to create the talent pipeline we need.

We partnered with the Business Roundtable (BRT), the Ohio Business Roundtable and the International Brotherhood of Electrical Workers, as well as community colleges and businesses across central Ohio in 2018 to host the BRT's Workforce Partnership Initiative (WPI). The WPI will develop education and training opportunities to prepare students, and current AEP employees, for the jobs of the future.

Our charitable foundation's signature Credits Count℠ STEM education program helps high school students who otherwise may not be able to afford a college education to earn college credits toward STEM-related careers while still in high school. The AEP Foundation has committed $14.2 million since we created this program in 2014.

We also launched Transmission University (TU) in 2018, a pilot program to revolutionize learning within AEP. TU provides transmission employees and contractors with self-guided learning opportunities that empower them to take control of their professional development.

We must understand emerging workforce requirements and ensure that our employees and recruits are being trained and educated to meet these needs.

We have several development programs across AEP to identify potential company leaders and provide them with skills and experiences that put them on a path for future leadership roles. We partner with numerous colleges, universities and technical schools across the country and we provide experiential learning through apprenticeships and co-ops. We encourage our employees to be continuous learners and provide education assistance to support those efforts. We proudly support and hire military veterans, who bring the technical skills and discipline we need.

A major generational shift is underway as Baby Boomers retire and Generation Z enters the workforce. More people are working independently and remotely in jobs that didn't exist even a decade ago, such as data analysts, cyber specialists, and renewable energy experts. We are re-imagining many of our traditional job roles and reassessing how we will get our work done in the future.

Workforce development is a critical concern. We must be agile and creative to attract and retain the best talent, including

the potential for making advance job commitments to students who successfully complete programs in key areas such as cyber security and data analytics. As technology rapidly changes, so must the knowledge, skills and capabilities of our workforce.

Electrifying to Create Shared Value and a Cleaner Energy Future

The benefits of converting industrial equipment and processes to be powered by electricity, combined with cleaner energy from the grid and better ways to store it, will lead us on a clear pathway to a low-carbon future and universal access to clean energy. Electrification converts end-uses powered by fossil fuels, such as forklifts and other industrial applications, to electricity.

As part of our beneficial electrification program, we launched a new website in 2018, www.energyconversionhub.com, for commercial and industrial companies. The site highlights the economic and environmental benefits of using electricity to improve their operations. For example, an online calculator shows the cost and environmental benefits of operating gas or diesel-fueled equipment versus electricity-powered equipment.

The road to electrification is complex and challenging, but the long-term reward is significant for the environment, society and business.

The electric vehicle (EV) revolution is accelerating. A 2018 study by the Edison Electric Institute estimates that EVs in the U.S. will increase from 1 million on the road today, to over 18 million by 2030. In our service territory more than 10,000 EVs were registered by the end of 2018. Replacing an internal combustion engine vehicle with a similar EV can reduce first year fuel costs by over 50 percent and tailpipe emissions by about 40 percent. EVs are good for consumers, the environment and the electric industry.

We are well-positioned to play a significant role in supporting EV market development. We are working to increase adoption of EVs and provide charging options that optimize the use of the grid for the benefit of all customers.

To lead by example, we are increasing the proportion of electric cars in our fleet and installing workplace charging infrastructure for employees. We have deployed over 100 EV charging ports at our facilities to date – one of the largest workplace deployments in the U.S. – with plans to expand this number dramatically in coming years.

In 2018, AEP Ohio received regulatory approval for an EV incentive program that offers financial incentives for EV charging stations in workplaces, multi-family housing units, low-income neighborhoods and government-owned properties.

Energy storage plays a vital role in the electrification of the economy and the transition to renewable energy. Batteries can provide back-up power or power during peak demand times and can respond rapidly in order to balance load and generation. They also help us to maintain a constant flow of energy when intermittent resources like wind and solar power are not available or are not needed at the time of generation.

Our 4 MW energy storage system with Appalachian Power's Buck and Byllesby hydroelectric power plants in Southwest Virginia is one of the first integrated energy storage systems in the PJM transmission region, balancing load and generation to maintain system stability and increase the integration of variable renewable resources. This demonstrates the game-changing impact energy storage can have as the technology matures.

Creating a Brighter Energy Future – Together

Change has come. It is accelerating, and we stand ready to lead AEP into an innovative energy future that shines for us all. We see many challenges ahead, but also significant opportunities as we work for a sustainable future. We've accomplished a great deal over the past decade, but we must lead at an ever-quickening pace. Our strategy to be more innovative, more engaged and more customer-focused is well underway and we will continue to execute it with discipline

and conviction. Our 2023 strategy will stretch and push us toward achieving our vision of powering a new and brighter future for our customers and communities.

I am confident that we are well positioned, and on the right road for sustainable growth in the months and years ahead. We have always led the way in our industry and we will continue to work on what matters most to our customers and our communities.

I feel confident about the future whenever I am with our employees. They are the strength and spirit of American Electric Power and I am so proud of what they are doing, and are preparing to do. As we work to create our future, I would like to thank them and our customers for making us a stronger, better company.

I invite you to learn more about AEP in our 2019 Corporate Accountability Report.

Sincerely,

Nicholas K. Akins
Chairman, President & Chief Executive Officer
American Electric Power

STRATEGY FOR THE FUTURE

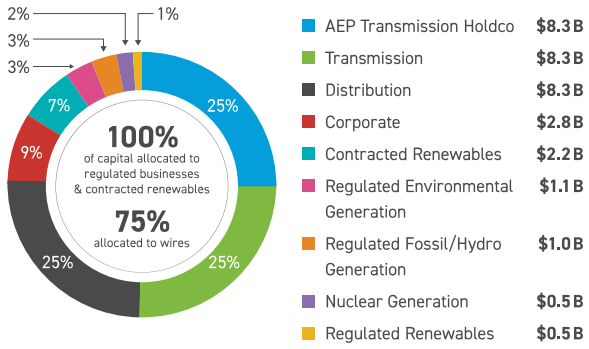
The rapid changes transforming the energy industry, driven by technological innovation and interconnectivity, are altering the dynamics of how people interact with the power grid. These changes are turning consumers into active, not passive, participants. Every interaction our customers have with us is compared to their experiences with companies in other industries, which changes their expectations of AEP and challenges us to redefine the relationship we have with our customers. From decentralized power generation and beneficial electrification to digitization and process automation, disruptive innovation is reshaping our industry and our company.

AEP's strategy for growth and the way we are advancing our business model are also changing as we plan for a future that is evolving. Historically, our capital investments focused primarily on large, centralized power stations, building new capacity and applying new engineering practices to comply with environmental regulations and extend their life.

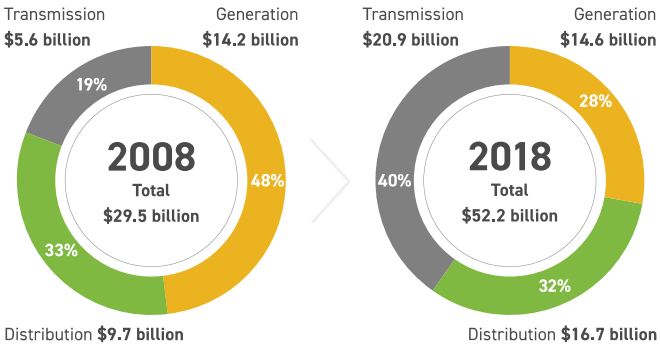
Today, our capital investment strategy spans the value chain of generation, transmission and distribution spurring innovation, with the customer at the center. Our focus is on providing customer solutions through technology; diversifying our resources for a cleaner, more balanced portfolio; working with regulators to modernize the regulatory compact to keep pace with the changing needs of all our customers; and preparing for the future of work and the new skills our workforce will need. At the same time, we continue to reduce our environmental footprint, remove risk from our business and deliver value to our customers and shareholders.

Between 2019 and 2023, AEP plans to invest $33 billion in capital, with 75 percent of it targeted for transmission and distribution.

AEP'S 2019–2023 CAPITAL FORECAST



HISTORICAL NET PLANT PROFILES



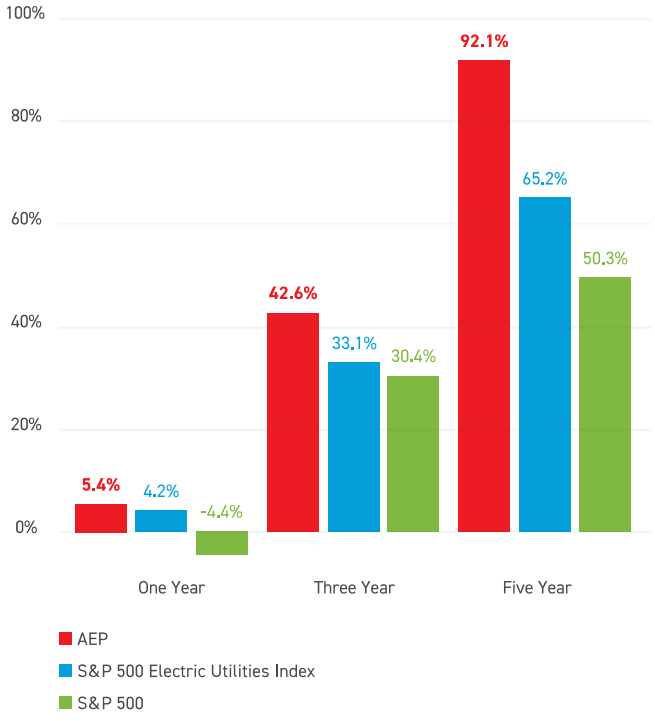
Strong Financial Performance

AEP's transformation is well underway and our track record of consistent, quality earnings and dividends positions us for a bright future. In 2018, AEP's strong earnings performance was driven by a robust economy, our continued focus on investing in our system to enhance services for our customers, managing our costs and favorable weather throughout much of the year. In 2018, AEP announced plans to increase capital investments in its regulated operations over the next five years to provide more advanced, resilient and cleaner energy solutions for customers. We also committed to investing $2.2 billion in contracted renewables through 2023.

Our projected operating earnings growth of five to seven percent is predicated on our ability to continue efficiently investing capital to modernize the grid. We have thousands of smaller capital projects that are within our control to execute as we replace aging infrastructure and transform the grid to a platform of two-way flows of information and energy. Our fundamentals for growth are strong, giving us options about how we invest today and what we invest in for the future.

Maintaining a strong balance sheet and credit profile is a

2018 TOTAL SHAREHOLDER RETURN

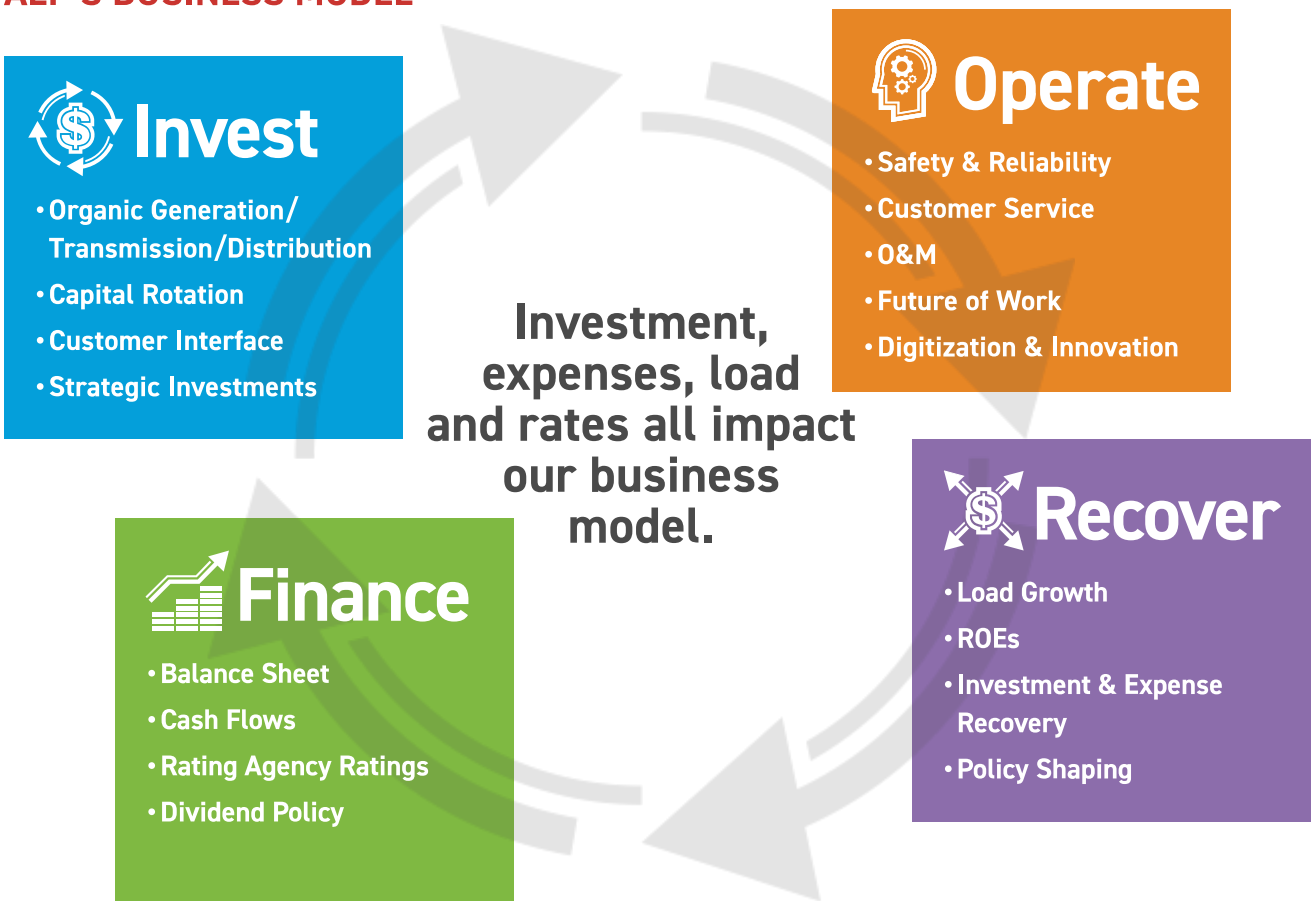


priority. We regularly monitor a variety of metrics that help us to know when we will need to access the capital markets for funding to support our capital investment program, which, in turn, allows us to grow earnings and provide reliable service to our customers.

We are proud that we have paid a quarterly dividend to our shareholders since 1910. In 2018, AEP delivered a total shareholder return of 5.4 percent, exceeding a 4.2 percent total return for the S&P 500 Electric Utilities Index. In fact, over the past five years, we've provided a total shareholder return of more than 92 percent. This outperformed the broader S&P 500 Index total return of 50 percent and 65 percent total return for the S&P 500 Electric Utilities Index.

Managing O&M (operations and maintenance) costs as capital investments increase is part of our culture at AEP. Because we believe that every dollar counts, we are focused on managing costs to optimize our spending on the customer experience and to deliver operational excellence. That includes our transition to a clean energy future and ensuring that every customer has access to the resources and technologies the grid provides.

AEP'S BUSINESS MODEL



AEP's 2023 Strategic Plan

AEP has laid a strong foundation for growth as we transform our company for operational excellence, financial strength and workforce readiness. This will bring us closer to our customers, delivering reliable and affordable energy; providing innovative and tailored solutions that improve their businesses and their lives; while maintaining universal access to the grid. To achieve this, we need a culture of diversity and inclusion; relentless focus on controlling costs; continuous learning to be the disruptor and adopter of new technologies; and process efficiencies to optimize technology, automation and digitization. We must bring regulators and legislators along with us so we can secure supportive policies that allow us to continue investing in the right assets and resources that improve the customer experience.

Today, AEP is financially strong and well-positioned for the future. As we are investing in our future, we have a lot of options to maximize those investments. Our grid modernization investments are creating the platform to enable expansion of distributed resources, more efficient use of energy, two-way flow of communication and power, and expanded electrification. We are working to expand both our regulated and competitive renewable portfolio to deliver clean energy to

customers within and outside of our traditional service territory.

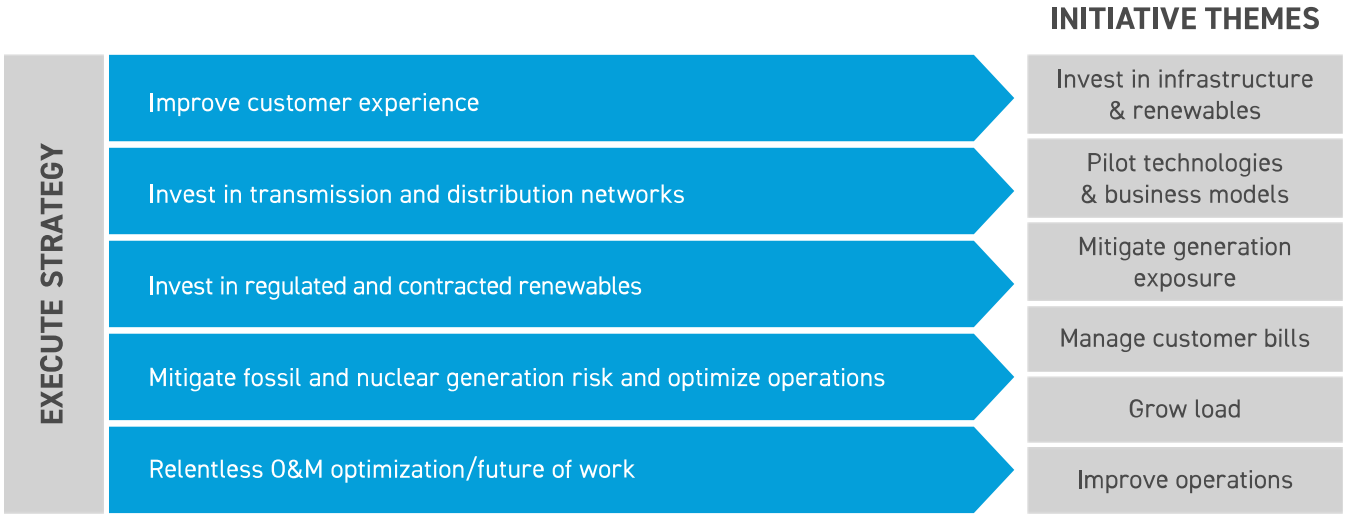
Our investments in transmission are critical to enabling renewable resources to connect to the grid as well as improving local and regional reliability for customers. It also makes economic development possible, which supports our mission of building stronger communities. We are projected to invest about $3 billion per year through 2023 to strengthen and modernize transmission.

We are strategically partnering with start-ups to pilot an array of technologies so that we can be the digital energy company of the future. We want to be ready when new technologies are set to be mass-marketed, which means being an early adopter. There's risk in this approach – we know some technologies will fail – but it's fundamental to delivering an excellent customer experience.

To better support our innovation strategy we hired a Chief Digital Officer in 2018 who formed a new team, called Charge, to incubate and develop new ideas, without disrupting day-to-day operations. The teams look for projects that will add value for AEP and quickly discard those that won't. This means the project must improve the customer or employee experience while creating financial value, such as reducing spend, creating efficiencies or increasing revenue. This team is charged with reimagining our business for the future.

We are also growing our competitive business. AEP Energy Partners has subsidiaries that are serving wholesale markets, retail electric and gas customers across the country and providing tailored energy solutions to large commercial and industrial customers. Our commitment to grow contracted renewables was bolstered in early 2019 with the acquisition of Sempra Renewables LLC. When combined with the completion of the Santa Rita wind farm in San Angelo, Texas this year, AEP's total renewable capacity will increase to 16 percent from 4 percent in 2005.

AEP'S 2023 STRATEGY & EXECUTION



WE ARE FOCUSED ON EXECUTING OUR STRATEGY WHILE IMPROVING THE CUSTOMER EXPERIENCE.

Culture Makes It Happen

Without engaged employees, executing on our strategy would not be successful. To AEP, engagement means including everyone, solving problems and working as a team. That is why we are transforming our culture to foster an environment that welcomes and encourages diversity and inclusion, collaboration, openness and engagement. Our safety culture continues to be a strength and core value for AEP. Learn more about culture at AEP.

SUSTAINABILITY GOVERNANCE

There is heightened demand for transparency and expectation that business leaders adopt holistic, long-term approaches to managing environment, social and governance (ESG) performance. Companies are judged on performance and how well they link tangibles (such as financial capital and physical assets) with intangibles (such as reputation, brand, customer loyalty, risk management, trust and credibility) and show bottom-line benefits.

There is no one-size-fits-all approach to sustainability governance, but AEP believes it is fundamental to building and strengthening sustained business value. Good governance ensures transparency, fairness and accountability, and gives us a structured way to manage the challenges of a changing society.

Through AEP's Enterprise Sustainability Council (ESC) – with oversight from executive management and the Committee on Directors and Corporate Governance of the Board of Directors – we have clear guidance on our ESG responsibilities for sustainable business development. ESC members, who represent all aspects of AEP's business, serve as strategic ambassadors, providing guidance and support to ensure the success of AEP's sustainable development strategy. They do this by enabling cross-functional integration of sustainability across the enterprise.

The ESC is also responsible for monitoring the progress of AEP's sustainability goals and the timely and accurate production of AEP's annual Corporate Accountability Report. In addition, the ESC helps increase internal and external stakeholder awareness of the relevance and value of sustainability to AEP's success. The ESC also provides a forum for sharing work, best practices and ideas, and identifying trends and emerging issues that could impact AEP financially or operationally.

Executive sponsors of the ESC include the Chairman, President and CEO; Executive Vice President, General Counsel and Corporate Secretary; and Executive Vice President of External Affairs.

In addition to the ESC, the Committee on Directors and Corporate Governance of the Board of Directors reviews the Corporate Accountability Report annually and actively monitors AEP's ESG performance. The Committee provides feedback and develops the Board Statement supporting AEP's commitment to sustainable business development and performance accountability. The combined governance from the Board of Directors and the ESC helps us ensure our disclosure undergoes a disciplined review and validation process.

While these issues are discussed by the Board of Directors throughout the year, we report to the Committee on our sustainability-related activities at least twice per year. In addition, the Lead Director of AEP's Board of Directors conducts annual outreach to engage with investors on important ESG and governance matters.

AEP's Enterprise Sustainability Council Representation

AEP Energy	Ethics & Compliance
Audit Services	Generation
Chief Customer Officer	Human Resources
Chief Digital Officer	Information Technology
Commercial Operations	Investor Relations
Continuous Improvement	Legal
Corporate Communications	NERC Reliability Assurance
Corporate Finance	Operating Company President

Corporate Planning & Budgeting	Public Policy
Customer Solutions & Policy	Real Estate & Workplace Services
Distribution Services	Regulatory Services
Economic & Business Development	Resource Planning
Enterprise Risk Management	Safety & Health
Enterprise Security	Supply Chain & Procurement
Environmental Services	Transmission

Learn more about AEP's Corporate Governance and see our report: American Electric Power: Strategic Vision for a Clean Energy Future for climate risk information.

REGULATORY AND PUBLIC POLICY

The energy industry is one of the most highly regulated sectors of the U.S. economy and is undergoing a major transformation to modernize the grid – making it more reliable, resilient and customer friendly. As our industry evolves, we will continue working with our regulators and legislators at the federal, state and local levels.

AEP operates in 11 states within a variety of jurisdictional regulatory frameworks. Those frameworks are primarily governed by state legislatures that direct state regulatory commissions to achieve overarching policy goals. These regulatory and legislative environments, in conjunction with federal regulation and legislation, define the parameters of AEP's business and planning models.

One aspect of fast change is the North American Electric Reliability Corporation (NERC) Compliance Standards and Requirements that require increased security and reliability of the bulk electric system. This means more frequent audits focusing on documentation and evaluation of controls, and increased regulatory scrutiny and pressure. It also means the potential for higher penalties and greater reputational risk for companies. In response to the constantly evolving nature of NERC Critical Infrastructure Protection (CIP) standards, we formed a separate governance structure and associated teams devoted to NERC reliability assurance.

Our priority is to maintain and operate a safe and reliable grid that is resilient and adaptive. Our generation, transmission and distribution system investments directly affect our customers and shareholders. These investments must coexist with regulation and policy considerations, such as environmental rules and affordability. Regulatory frameworks must be responsive to today's technology and customer preference environment. As we transition to a clean energy future, we are reshaping our asset base in a reliable and affordable manner for our customers while managing the financial risk for our shareholders.

Regulatory Compact

The regulatory compact is a term used to describe traditional regulation of vertically integrated utilities. It is a regulatory environment in which an energy company makes prudent investments to ensure safe and reliable electric service for all customers. Under the regulatory compact, a utility has an obligation to provide service to all customers in a certain territory. In exchange, government regulatory agencies allow the opportunity for the utility to earn a fair and reasonable profit. The company applies to its state regulatory commission for cost recovery of its investments, and the commission approves the expense with an opportunity to earn a fair rate of return on investment.

The majority of electric utilities operated in this way until the deregulation trends began in the 1990s. Now, states have varying levels of competition where the generation and/or access to retail customers is competitive. However, even in

those states, the regulatory compact is still responsible for the regulation of the “wires.”

AEP embraces the regulatory compact, but we also see a need for more flexibility through alternative ratemaking models to keep pace with advances in technology and ensure timely recovery of costs. This is imperative to meeting the changing needs of our customers. For example, as more customers demand clean energy, we need support from state regulators to enable investments in renewable resources.

Today’s technologies offer creative energy solutions that were not envisioned just a few years ago. To respond to these technological advancements, we need regulatory models that give utilities the ability to explore new and evolving solutions as they determine what delivers the best value for our customers today and in the future.

The classifications of generation, transmission and distribution should also be revisited, as those boundaries are becoming blurred with the advent of new technologies and distributed resources. We also need to consider transition issues as utilities move from central station generation to more distributed energy resources.

As we look at the regulatory future of our industry, we need the ability to offer customized goods and services to our customers while maintaining system reliability and universal access to the grid. In 2018, we introduced several innovative rate offerings to maximize value for our customers. For example, Indiana Michigan Power (I&M) introduced a flat rate bill called EZ Bill for residential and small commercial customers in Indiana. The program, approved by state regulators, allows I&M to offer individualized rates to customers who sign up.

This is an important option for customers who value the predictability and convenience of receiving a predetermined, fixed monthly charge for their electric service. This makes budgeting and financial planning easier, especially for customers with fixed or limited incomes. For customers who want to know what their electric bill will be in advance, the EZ Bill program meets that need.

In Oklahoma, we introduced a pre-pay program, known as Power Pay, which functions similarly to a prepaid phone card. This program offers customers of Public Service Company of Oklahoma (PSO) a voluntary payment option, giving them more control over when and how they pay for their electric service. Dozens of authorized payment kiosks are located throughout PSO’s service territory, giving customers additional payment options. Power Pay also gives our customers information about their usage and cost so they can make informed decisions. At the end of 2018, nearly 20,000 customers were taking advantage of this program.

In 2019, Appalachian Power received approval to establish a seasonal rate in West Virginia that would apply to electricity sales above a specific threshold during winter months. With the seasonal rate structure, customers with higher winter usage, such as those with electric heat, will see little or no increase, or even a decrease, in their bills.

These are some examples of alternative rate models that are needed today to meet the changing needs of customers.

Public Policy and Issue Management

Similar to other companies, AEP has a public policy strategy that seeks to inform decisions made by Congress, Federal Energy Regulatory Commission (FERC), North American Electric Reliability Corporation (NERC), state legislatures and regulatory commissions, and Regional Transmission Organizations (RTOs).

In 2017, AEP formed the Policy Advisory Team (PAT) to create a more efficient and consistent policy strategy across the company. The team comprises senior executives across multiple business functions and departments, including some who represent the company in Washington, D.C., and the state capitals in our service territory.

The PAT considers policy options on issues of relevance to the company and supports internal policy analysis and debate. This approach ensures that AEP is speaking with one voice, and that all employees with external contacts are clear on our policy positions and objectives. Since its inception, the PAT has considered roughly a dozen issues on which we have developed positions.

In strategic discussions about how we can best align ourselves to maximize the customer benefits of new technologies, we talk about “future-proofing” our company. To adapt to the changing energy landscape, we require a regulatory and legislative framework that enables the flexibility to incorporate new technologies, including those we have not yet even envisioned.

Expanding Broadband

AEP is installing fiber cable as part of our grid modernization efforts, which provides a new opportunity to piggyback on this installation to extend broadband service to unserved or underserved areas throughout our service territory. Fiber cable provides the best technology to meet our needs for upgrading the grid: it is highly resistant to corrosion and is critical to providing a modern communications infrastructure as the demand for two-way flows of data and power increase. We believe broadband technology plays an important role in the economic development and sustainable quality of life of rural and suburban America. We are exploring new options for the dual use of fiber for grid modernization and enabling Internet Service Providers to make the final connection to areas that lack broadband coverage.

In 2018, Appalachian Power (APCo) completed a Broadband Feasibility Study as required by the Virginia Grid Transformation and Security Act of 2018. The study found that several barriers prevent broadband from using distribution and transmission infrastructure, including the ability to recover costs. The study also identified potential strategies to support broadband development, including increasing the capacity of fiber that APCo would install to support its grid modernization program. For projects already planned, it would require increasing the fiber capacity with the intent of leasing the extra fiber strands to broadband service providers.

There are significant challenges including legislative restrictions in many states that prohibit us from recovering our investments if we install additional fiber to support broadband expansion. We are working with legislators and regulators in our states to gauge interest and explore options.

In a promising move, Virginia lawmakers took steps in March 2019 to address the geographic disparities in broadband coverage. Lawmakers approved House Bill 2691, giving the state's two largest electric utilities – including APCo – the green light to create a pilot to expand "middle mile" broadband coverage. This is the infrastructure that connects the networks and core routers on the internet to local service providers and consumers directly. Importantly, the bill allows the companies to recover the cost of the pilot from ratepayers. The final connection, called the "last mile," would be the responsibility of third-party internet providers.

In addition to delivering modern-day technology to underserved areas, this is a potential new business opportunity for AEP. Providing the means to extend high-speed internet to these areas also creates new opportunities for home-based work and helps to power economic stability for customers and communities.

Existing and Emerging Models

Traditionally, distribution service has been totally within the purview of the local electric utility. This is true whether the retail model in a state is regulated or competitive. It provides the utility with a direct customer relationship. AEP thinks that relationship is invaluable for both assuring universal service and in optimizing service delivery; therefore, we want to do everything we can to preserve it.

New models, however, have arisen. New York and California have led the way in creating energy market platforms at the retail level very similar to regional wholesale markets. By doing so, these models allow entrants other than utilities to have full retail access to the customer. This includes those areas that traditionally have been preserved for the distribution/wires utility. It is clear that technology and potentially competitive opportunities for new entrants are challenging the existing regulatory paradigm. As distributive, non-wires and behind-the-meter technologies evolve, so will competition where appropriate. It is imperative, however, that the traditional utility not be precluded from participating in these new markets, thereby ensuring that these technologies are available to all and are deployed in a manner consistent with customer demands.

States within the AEP footprint are exploring other models, such as Ohio with its PowerForward Initiative. AEP believes conversations between the utility and regulators early in the process, similar to those ongoing as part of PowerForward, provide for an optimal model design to seamlessly enable these technologies to customers' benefit.

Tax Reform

The Tax Cuts and Jobs Act (TCJA) enacted in late 2017 reduced the corporate tax rate from 35 percent to 21 percent, effective in 2018, and resulted in ongoing rate reductions for customers. The tax bill also maintains the federal income tax deduction for interest expense for regulated electric companies and preserves the federal income tax deduction for state and local taxes, resulting in positive outcomes for both AEP and our customers. Additionally, AEP's FERC jurisdictional formula rates allow the benefits of tax reform to flow through efficiently to wholesale transmission and generation customers.

Grid Reliability and Resilience - NERC Oversight

The North American Electric Reliability Corporation (NERC) develops and enforces the rules and standards that protect the North American bulk power system. NERC Compliance Standards and Requirements are rapidly evolving, requiring increased security and reliability of the grid. This means increased scrutiny of compliance efforts. In response, we are changing our structure to align with our compliance requirements, ensuring the appropriate focus on the evolving regulations.

The new structure comprises of three layers of governance with distinct responsibilities. The Reliability Compliance Committee (RCC) includes AEP's top executives who are accountable for establishing the vision, mission and culture expectations of the program. Additional governance teams are all working toward a common goal of achieving operational excellence in grid reliability and security.

In 2018, we established a multiyear strategic plan for NERC compliance operational excellence. This strategic plan is being rolled out in 2019, and will focus our work on four areas: governance, program consistency, communication and culture, and audit readiness.

Although the strategic plan will address all of the NERC standards, it will have a major focus on Critical Infrastructure Protection (CIP) Standards. The CIP Standards are evolving at a faster rate and represent increased regulation to protect against cyber threats. To date, new versions of the CIP Standards have significantly expanded the scope of cyber systems associated with grid reliability.

Our goal is to improve our program and establish AEP as an industry leader in NERC reliability.

Lobbying and Political Contributions

The electric utility industry is undergoing a fundamental transformation driven by a number of factors, including new public policies. For the benefit of all stakeholders, we actively participate in the political process and in lobbying activities at the national, state and local levels.

The investments needed to modernize the power grid are in the billions of dollars, and the stakes have never been higher. To understand the policies and regulations that could affect our business, we participate in a number of organizations, lobby on our customers' behalf and contribute to political candidates, where allowed by law.

Each year, AEP publicly discloses lobbying activities and political contributions. We also annually report on the portions of membership dues paid to organizations such as the U.S. Chamber of Commerce and Edison Electric Institute (EEI) that go toward lobbying. We post our lobbying policy online and we discuss political contributions annually with AEP's Board of Directors' Committee on Directors and Corporate Governance.

We have been asked by stakeholders why we belong to some organizations whose positions may conflict with AEP's. In general, we believe it is better to be at the table and engaged in the discussion whether or not we are in total agreement. When we disagree, we voice our concerns and work to change the position. Sometimes we prevail, and sometimes we do not, but we strive to reach an appropriate position based on the facts available. In addition, many of our customers belong to these organizations, and this helps us better understand their concerns and needs.

We believe in transparency and active participation in public debate. Our experience is that open, candid discussion and a good-faith attempt to reach common ground is the best way to do business.

ETHICS AND COMPLIANCE

At AEP, we are committed to health, safety, financial, operational and environmental compliance while holding ourselves to a high standard of ethical conduct – always doing what is right.

AEP's Principles of Business Conduct places responsibility for acting legally and ethically with every individual – from the Board of Directors and management to employees on the front line. We want employees to speak up, ask questions and report potential violations without fear of retaliation. Our culture supports the interests of both employees and AEP by maintaining a vigilant approach to practicing compliance and acting with integrity. We will continue to build a reputation of trust by holding people accountable and taking appropriate actions when necessary.

In 2018, we updated the Principles of Business Conduct to reflect our cultural transformation and to provide clear direction on our expectations. For example, we enhanced the section on social media to remind employees that they represent the company, even when off the job. We also added a section on our supplier diversity initiatives and highlighted the importance of sustainability and protection of personally identifiable information (PII). We rolled out mandatory training on the updated Principles to all employees. The training consists of evaluating several distinct scenarios in some of our higher-risk areas such as conflicts of interest, appropriate use of company assets, fraud, management of PII, intellectual property and insider information and trading.

The Committee on Directors and Corporate Governance of the Board oversees AEP's Corporate Compliance Program and receives regular reports from the Chief Compliance Officer.

Our Ethics & Compliance team (including our Chief Compliance Officer) met with employees across AEP in 2018 to raise awareness of our programming and conduct comprehensive work group culture assessments.

Starting in 2019, all employees will be required annually to complete a conflict of interest disclosure as part of their mandatory training. This new process of soliciting potential conflicts of interest will be centralized and documented electronically, allowing our Ethics & Compliance department to review and clear (or flag) conflicts as needed. Our intent is to share what we learn with employees and managers to continuously set clear expectations for ethical behavior.

AEP also offers a confidential 24/7 hotline that allows employees to report concerns anonymously or to seek guidance on ethical, safety or compliance matters. Additionally, we created a quarterly "Ethics Hotspot" feature for managers and supervisors to use while engaging employees on these issues. These "Hotspots" demonstrate what is acceptable or unacceptable conduct and the associated consequences that come with it.

Our Ethics & Compliance team, with input from Human Resources and Legal, identified areas where we could improve training. For example, we will begin rolling out a new Sexual Harassment Prevention Workshop for managers in 2019. We want everyone who works for us to know that abuse of any kind is not only offensive but a violation of company policy and won't be tolerated. We are committed to providing a work environment that is free from intimidation and harassment.

As our business makes the transition to a clean energy future, we want to be more closely connected with our customers and to be a good corporate citizen. It is important to us that our employees are engaged members of their communities because they carry AEP's reputation with them wherever they go. We strongly urge our employees to uphold our values beyond the workplace by always acting with integrity.

ENTERPRISE SECURITY

Like all major infrastructure, the nation's power grid is subject to an array of threats, from naturally caused phenomena such as extreme weather to vandalism, terrorism and insider risks that jeopardize reliability, safety and data security. The stakes are high; our response to an event affects our customers, our reputation and the reliability of the power grid.

Growing risk from third-party products and services has prompted new regulations to protect the grid's resilience and reliability. As threats become more sophisticated and massive breaches occur, it is a constant challenge to achieve the

appropriate level of risk management. Our comprehensive security strategy – known as “Defense in Depth” – assumes a broader range of possibilities such as physical theft, unauthorized access to data and incidental threats that do not specifically target protected systems or assets.

We continue to incorporate cyber and physical security risks into our enterprise risk management framework. This provides a more comprehensive approach to understanding these risks in relation to other enterprise risks. It also allows us to make security decisions based on the level of risk, as well as our priorities and resources.

In May 2018, AEP Ohio awarded The Ohio State University a $250,000 grant to fund research on cyber-resilient power grids. The research is being done through OSU’s Electric Power Grid Research Group, which is focused on electric power distribution networks to make electricity supply more reliable, secure, energy efficient and environmentally friendly.

AEP’s Defense in Depth approach to cyber and physical security allows us to deal with threats in real time. These strategies include monitoring, alerting and emergency response; employee education; forensic analysis; disaster recovery; and criminal activity reporting.

Cyber & Physical Security

New threats and security risks to the electric power grid are constantly emerging as we continue to connect a greater variety of web-connected devices, also referred to as the Internet of Things (IoT). This includes sensors, routers, drones and smart devices that are essential to a modern grid, 24/7 business transactions and data transfers. New mobile apps and services that we develop or buy for customers and our own increasing reliance on cloud-based programs increases external connectivity to our network, creating new entry points for potential attackers and posing new challenges for grid security. It is up to each utility to be prepared to contain and minimize the consequences of cyber and physical security incidents.

We recognize that technology is rapidly changing and that we have to keep pace to stay relevant with customers, modernize the grid and become more efficient in our work. But the fact remains that the growth of smart energy devices, which are increasingly decentralized and interconnected, creates more entry points for threats to cause harm. Breaches can come from anywhere, even a trusted contractor connecting to the AEP network. We’ve put a new security access program in place to monitor and manage these connections while providing controlled access that allows us to get our work done. And, we have a new procurement policy prohibiting the purchase of anything that requires connecting to the network without first following steps to protect the system. We are proactively considering possible ways attackers could breach our systems, and we are preparing for recovery if a breach occurs, through policies, procedures and technology, as well as educating our workforce about the growing threat.

AEP learns from and takes actions based on real-world events that occur. Our Defense in Depth approach to cyber and physical security allows us to deal with threats in real time. These strategies include monitoring, alerting and emergency response; employee education; forensic analysis; disaster recovery; and criminal activity reporting. We also maintain critical partnerships with the public sector, peers and other industries. Through rapid notification and response when attacks and disasters are underway, we can reduce the impacts of cyberattacks and avoid or mitigate the damage before the full effect of the threat is realized.

In 2018, AEP established a working group to vet IoT technology to further strengthen our defenses against cyber risks. Our goal is to align business units with consistent processes and policies to ensure security across the enterprise.

The AEP Foundation awarded Louisiana Tech University a $1 million grant in 2018 to support a new cyber and academic center in Bossier City, La. The new Academic Success Center located inside Bossier Parish Community College STEM Building in the National Cyber Research Park will enable enhanced educational services, provide cyber education and research, support economic development and engage in workforce development activities. This investment will help to increase opportunities for students to pursue cyber careers and strengthen the future workforce in this high demand field.

Drones have great potential to improve efficiency and safety but can also pose physical and cyber risk. AEP is seeking to develop consistent processes and policies for drone usage. In 2018, AEP developed a new Drone Governance Team to identify and implement recommendations that enhance the coordination of AEP's drone operations.

Security Policy Management

The cyber and physical security of the bulk electric system (BES) is regulated by the federal government through the North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) Reliability Standards. We are routinely audited for compliance with federal standards in both cyber and physical security. In addition, the Board of Directors' Audit Committee reviews our cyber and physical security efforts, which also are reviewed annually with the full Board.

To ensure our security controls are comprehensive, effective and in compliance with regulatory requirements, we have established a robust, collaborative security policy management program that aligns with the National Institute of Standards and Technology (NIST) Cybersecurity Framework. Our resulting policies and standards are jointly developed with AEP's business areas, through the Enterprise Security Advisory Council, to maximize adoption and implementation of standard controls, thereby reducing security risk to AEP.

We classify all BES facilities based on their criticality to determine the level of physical security needed. This approach allows us to design security controls for new infrastructure from the start, building the costs into capital projects as needed. It also allows us to be more proactive with new and existing infrastructure while balancing risks with mitigation solutions.

Security Training

Our most important partner in protecting AEP's cyber and physical security is our people. AEP's Security Awareness program reduces risk by promoting security best practices and providing awareness education to our employees and contractors. The success of our program depends on constant communication and reinforcement. Our goal is to protect AEP's assets and information, enable the business to work securely and efficiently, and educate employees and contractors about their responsibility to keep AEP secure.

We provide annual training on enterprise security, including regulatory compliance. We use web-based training programs, newsletters, articles, security alerts and road shows to engage employees and contractors. In 2018, we also conducted phishing email tests and shared security trends and initiatives with employees and contractors. Our training covers a wide variety of topics such as policies and standards, domestic violence, workplace aggression, personally identifiable information (PII), password protection, phishing and active shooter situations. We focus on current security topics, such as techniques for identifying phishing emails, classifying data and protecting personal devices against new vulnerabilities. Our Security Ambassadors help educate project teams and business units on the risks introduced by new initiatives and help them identify ways to reduce risk.

Physical threats to our electric infrastructure could target our people, office buildings and substations. Our priorities for physical security are workplace aggression, threats and attacks by customers against employees, attacks on substations, and vandalism/copper theft. We address these priorities through training, access control at our facilities and the use of technology where appropriate. Learn more about our employee training for workplace aggression.

Supply Chain Security

In 2018, we initiated a two-year project to assess the security risks posed by third party vendors. By evaluating their security controls through a series of questionnaires and on-site assessments, we seek to mitigate AEP's exposure to excessive risk. We've also added a new set of security requirements to all primary contracts.

In addition, FERC has approved new mandatory reliability standards to protect the BES from cybersecurity risks in the supply chain. The new and revised standards take effect in June 2020. We have already begun the process of gathering information and planning for compliance. Our plan is to achieve full compliance when the rules take effect.

As technology evolves, more and more devices are participating in cloud computing. While the cloud opens new opportunities, we must mitigate the additional cybersecurity risks that come with it. We recognize the role of cloud technology, and we continually work with cloud vendors to secure the solutions they provide that connect to our systems. As this area evolves, we'll continue to identify and assess risks as we invest in our technology infrastructure.

ENTERPRISE RISK & RESILIENCY

AEP's Enterprise Risk & Resiliency team works with business units and operating companies to proactively identify and mitigate risks, and to respond to and recover from disruptive events. With the collaboration between the Enterprise and Operational Risk teams, the Enterprise Business Continuity Resilience (EBCR) team and the Crisis Response team, AEP is able to see the full picture of a hazardous or threat event.

The team is continuously looking for strategic, financial, operational and regulatory risks across the enterprise, and working with the business units and operating companies to apply our risk management framework. This is the process we use to identify risks, assess the risks and controls, plan mitigation strategies and monitor risks. This process informs and prioritizes asset replacement strategies and enables us to make risk-based investment management decisions.

AEP'S RISK MANAGEMENT PROCESS

AEP's EBCR team provides support to the business units and operating companies for planning, preparation and related activities. This support ensures our organization's critical business functions and core assets – our people, equipment, technology, facilities and vendors – will either continue to operate in the event of an emergency, or be recovered to operational status within a defined timeframe.

Business continuity planning prepares the enterprise when an event happens that disrupts our operations. The threat of a cyber or physical attack or workplace-related incident is a risk for AEP, as are many other events that could interrupt

business operations in one or all of our facilities.

In 2018, our Cyber Attack Resiliency Program focused on protecting AEP's data from a data destruction event, created operational strategies to sustain the business through an extended business disruption and tested the response and recovery through an enterprise tabletop exercise.

In addition, in 2018, construction began on AEP's backup data center. This data center will replace our current disaster recovery center. The 10,000-square-foot space is expected to be fully operational by 2020 and will serve as the backup data center for disaster recovery while providing flexibility for business-critical applications and greater resiliency. AEP's Crisis Response team drives emergency management planning and preparedness that provides a coordinated and standardized approach to responding to emergencies. This team is responsible for maintaining and exercising AEP's enterprise-wide emergency oversight structure, which includes roles and responsibilities for all levels of leadership and each specific response plan.

Significant environmental, social, and governance (ESG) issues, including climate change impacts, are identified and assessed, and mitigation plans are developed through AEP's enterprise risk management process. In 2019, we identified ESG and wildfires as additional risks we are monitoring.

As we have seen through recent events in California, wildfires can represent a serious risk to the electric grid and surrounding areas. AEP has evaluated and will continue to evaluate as part of its ongoing enterprise risk management function the risk of wildfires to its system. To the extent that significant risks are identified, the company will appropriately assess and mitigate these risks as it does other enterprise level risks. In addition, the Edison Electric Institute (EEI) has launched a new CEO-led task force to address the growing threat of wildfires to the power sector, and AEP is participating in this ongoing effort.

We have an obligation to maintain reliable service while keeping our customers and our employees safe. We test our plans to continuously improve our ability to effectively respond and recover in the event of an emergency.

Data Privacy and Protection

AEP collects a significant amount of personal data from customers, employees and business partners. When they share information with us, we have a responsibility to protect it. AEP's Personally Identifiable Information (PII) Data Protection Program seeks to protect and secure the personal data we maintain.

For example, outbound emails containing PII are encrypted or blocked if they are not. We also ask PII owners to confirm they need the data and that it is properly protected. We also use a Personal Data Portal that allows PII to be securely transferred into AEP when new contractors come onboard, including information that was historically transmitted via email or telephone.

Another way we are protecting the data we collect is to classify it based on its sensitivity. In early 2019, we deployed a data classification tool to make it easier for employees to properly classify data before sharing it. This helps us to strengthen our data protection program and is a part of our ongoing efforts to build an industry-leading cyber security program.

AEP continues to advance our data loss prevention program, bolstered significantly by the new data classification tool. We are expanding our focus to prevent the unsecured transmission of other sensitive information, the loss of which can have significant regulatory compliance ramifications. Alerts generated from the data loss prevention tools result in comprehensive response and correction measures, and generate prompts to employees informing them of the appropriate methods of securely transferring sensitive information to external parties.

We are organizing a formal, enterprise-wide data privacy program to weave together our privacy risks, customer data monitoring and protection, and controls to prevent the unauthorized loss or misuse of customer data. While we have had customer data privacy disciplines within the company for years, they have been isolated within each operating company and business unit without a methodology to ensure that privacy practices are not only effective but also consistent across our business and evaluated regularly for improvement opportunities.

To support this, we formed a data governance program focused on defining and sustaining the trustworthiness and "fitness-for-purpose" of data. In the first year of operation, we created governing bodies in three lines of business that are accountable for decision making, priority setting and resource allocation. In addition, data governance and data stewardship roles and activities were formalized through policies, standards, and the addition of tools and technologies

for data quality assessment and management. Through this program, we will better understand where data is located and develop methodologies to improve how we manage data across the enterprise.

AEP'S STRATEGY FOR A SUSTAINABLE FUTURE

Our strategy for a sustainable future is to ensure that the production and delivery of energy enables positive social and economic change for our customers, employees and communities as we collaboratively shape our future. This is grounded by our culture of safety, continuous improvement and customer focus. We commit to aggressively support economic development, develop innovative solutions, champion education and make smart infrastructure investments that power our communities and improve lives.

Learn more

QCRD NASDAQ OMX INDEX
NASDAQ OMX® CRD GLOBAL SUSTAINABILITY

In 2018, AEP was added to the Nasdaq CRD Global Sustainability Index, one of the leading Global Sustainability Indexes.

OUR COMMITMENT TO STAKEHOLDER ENGAGEMENT

Our engagement efforts are integral to the success of our strategy for a clean energy future. Through our commitment to transparency, engagement, candor and honesty we have seen relationships with our stakeholders transform and become more collaborative. We believe strong relationships create better partnerships to address issues that can influence or shape our business future.

Learn more

SUSTAINABILITY GOALS

In 2018, AEP publicly announced our Corporate Sustainability Goals in parallel with our carbon reduction goals. View the progress made toward our goals.

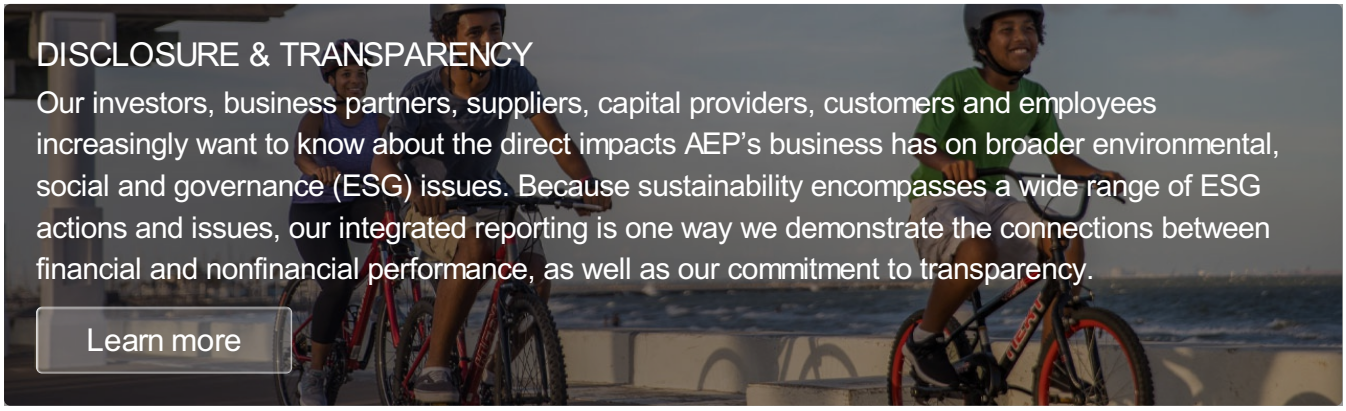
ABOUT THIS REPORT

The 2019 Corporate Accountability Report marks AEP's 13th year of reporting on our environmental, social and economic performance. Download a PDF version of this report.

PERFORMANCE SUMMARY

AEP is committed to reporting on our sustainability performance. View AEP's 2018 environmental, social and economic performance.

Learn more | Learn more | Learn more



AEP's Sustainability Strategy

In 2018, AEP developed a Corporate Sustainability Strategy that is aligned with AEP's 2023 Strategy. The purpose of this strategy is to guide our efforts over the next three to five years as we look to drive customer value, boost employee engagement, drive innovation, encourage agility, inform our future strategy and manage risks while enhancing our brand and reputation.

Our Sustainability Strategy has three main focus areas:

Engagement: Engage diverse stakeholders who are material to our business, involving internal business units as appropraite, in order to manage risk and capture emerging opportunities.

Transparency: Proactively share data and information about AEP's goals, performance and strategy to demonstrate that we are listening and responding to stakeholder concerns, needs and aspirations.

Integration: Integrate sustainability into strategy, governance, and operations in order to drive shared value for our business and society.

For more information about our sustainability strategy, please read AEP's Corporate Sustainability Strategic Plan.

MATERIAL SUSTAINABILITY ISSUES

Reporting on AEP's non-financial performance is as important as reporting on our financial performance. Our investors, business partners, suppliers, capital providers, customers and employees increasingly want to know about the direct impacts of AEP's businesses, as well as broader environmental, social and governance (ESG) issues and trends. As stakeholders demand deeper levels of transparency, the evolution of corporate sustainability disclosure and reporting has become more detailed and complex. Because sustainability encompasses a wide range of ESG actions and issues, our integrated reporting is one way we demonstrate the connections between financial and nonfinancial performance, as well as our commitment to transparency. AEP has been reporting in this way for more than a decade.

AEP has a robust process for determining material sustainability issues and disclosure. This process ensures we are listening to our stakeholders and addressing issues that are most relevant for our business, as well as choosing the best approach for what we report. AEP defines material sustainability issues as those that reflect our most relevant economic, environmental and social impacts and contributions

because they can:

1. have a significant impact on the company's finances and/or operations;
2. have or may have significant impact on the environment or society now or in the future; and/or
3. substantially influence the assessments, decisions and actions of our stakeholders.

In 2017, we leveraged Datamaran's Materiality Analysis tool – a business intelligence tool that uses big data and artificial intelligence to conduct real-time materiality assessments. This tool enabled us to identify and prioritize the ESG impacts, risks and opportunities most important to internal and external stakeholders by analyzing a universe of sources such as corporate reports, global regulations and initiatives, social media and online news. Internal and external stakeholders then completed a survey to validate the universe of issues.

Through the materiality assessment, our internal stakeholders identified Workforce Safety & Health, Data/Cyber Security and a Clean Energy Transition strategy as most important, while external stakeholders see Energy Efficiency, Stakeholder Dialogue & Engagement and Climate Change Strategy as most material. Important to all stakeholders is our commitment to addressing climate change and executing a strategy to transform our business for a clean energy future. We continue to view these topics as material in 2019, and we are making progress on their associated goals and strategies linked to operations and financial performance measurement.

We also take an industry view of priority issues through the Electric Power Research Institute (EPRI), with which we participated in publishing its second report on Priority Sustainability Issues for the North American Electric Power Industry in 2017.

AEP's Priority Sustainability Issues

Sustainability Pillar	Issues
Environmental	Air Emissions Clean Energy Transition Energy Efficiency Energy Reliability and Resilience Environmental Performance Greenhouse Gas Emissions Sustainable Procurement Practices Waste Water
Social	Employee Safety and Health Engagement and Collaboration Job Satisfaction Public Safety and Health
Economic	Community Support and Economic Development Economic Viability of Electric Utilities Energy Reliability Energy Affordability Skilled Workforce Availability

STAKEHOLDER ENGAGEMENT

Now, more than ever, our stakeholders want a voice in determining the future of energy and our company. These stakeholders include our employees, our customers, our investors and the communities in which we operate. We also engage "shapeholders" – those who don't have a direct stake in our success, but exert significant influence over our

business. These include industry groups, policymakers, consumer advocates, professional associations, non-governmental organizations (NGOs), thought leaders, utility peers, and the media.

When we talk to our stakeholders about sustainable electricity, they ask us about resource diversity, advanced technologies that enable energy efficiency, distributed resources, and regulations and public policies that could affect future operations or investments. They also want to know our plan for smart, modern infrastructure that informs and empowers customers and creates a more resilient and robust system. Across the board, the question we are asked most frequently is whether we are sufficiently prepared for the transition to a cleaner energy economy.

Strategic Priorities for Sustainable Engagement

Our Purpose:
Inspire and engage our stakeholders to co-create a sustainable energy future and make a positive difference.

Customers	Improve our ability to partner with sustainability-oriented customers to meet their needs, prevent disintermediation and promote regulatory and policy changes that support a cleaner energy future.
Employees	Engage and empower our people to lead the future of sustainability at AEP to attract and retain the best talent and succeed in our transformation journey.
Investors	Leverage sustainability to position AEP as an attractive investment, and prevent divestment.
NGOs	Strengthen NGO-AEP relationships and continue to raise awareness internally about NGO activities to capitalize on collaboration opportunities.
Communities	Strengthen our brand and stakeholder relationships locally to build support for infrastructure investments and new programs and services.
Policymakers	Proactively engage policymakers to enable our clean energy strategy.

Customers

AEP's customer-centric culture includes a commitment to better anticipating and serving their needs. By engaging with our customers, we can identify energy solutions that help them save money, use energy more efficiently, and achieve their own energy and sustainability goals. Customers are also an important voice to bring into the conversation with policymakers, as we design and seek approval for investments to realize a cleaner energy future and advance innovation and technology.

In May 2018, we convened a customer meeting featuring a two-way dialogue about potential solutions to enhance the customer experience. We not only strengthened our relationships with customers, but also learned about the issues they care about most. Additionally, we met with customers at the Renewable Energy Buyers Alliance and through our work with the World Resources Institute's (WRI) Clean Power Council. These interactions focused on opportunities for co-creating solutions to meet customers' business needs. Many customers share AEP's vision for a clean energy future and have goals for carbon reduction and renewable energy, and they are looking to us to help them meet their goals.

To deliver solutions that meet customers' needs, we are leveraging both our regulated and competitive businesses. We bring our whole team to the table, recognizing that being flexible can mean the difference between a satisfied customer and a missed opportunity. This gives us greater flexibility to deliver on customer expectations. For example, several large customers contacted AEP after hearing of our new carbon reduction goals. They wanted to learn more about potential opportunities to work together since they have similar goals.

In addition, we are actively engaged with the Edison Electric Institute's (EEI) Customer Solutions Advisory Group, which meets with large customers regularly to understand their concerns and issues and collaborate on solutions. The group is

made up of EEI utility members and large commercial and industrial customers. One pain point identified through both the EEI group and the Clean Power Council is the need for timely greenhouse gas emissions data to help customers more accurately calculate their carbon footprint. EEI and WRI have teamed up to develop a template for providing customers this data, which will be piloted in 2019. AEP is also working to make it easier for customers to gain access to more timely information.

Communities

From hosting open houses and gathering public input about new transmission projects to developing a resource plan that meets a community's energy and capacity needs, AEP is committed to being open, accessible, honest and responsive. To us, it's all about relationships. Community and landowner involvement is very important to AEP where significant investment in critical electric infrastructure is vital to the communities we serve.

AEP Transmission's project outreach team uses open house events, interactive project websites, visual simulation, fact sheets, direct mail and other proactive tools to gather input and work with stakeholders. This proactive approach promotes transparency and two-way communication, ensures compliance with laws and regulations, and gives directly impacted property owners and communities a voice throughout the process. In 2018, project outreach specialists supported 514 projects across AEP's system and hosted 32 community open house events. We engaged one-on-one with landowners to acquire more than 5,300 easements for transmission rights-of-way, which translates into more than 80,000 interactions with directly-involved property owners.

In late 2018, Indiana Michigan Power Company (I&M) collaborated with the City of Fort Wayne, Indiana, on the Spy Run Extended project to restore and enhance a transmission right-of-way that passes through a city park and along a greenway trail. This project was the final piece of the Powering Up Central project, one of five Powering Up Indiana projects to replace aging transmission infrastructure and improve reliability for customers. Thanks to a partnership between I&M and the City of Fort Wayne, we created environmentally balanced habitats in an important recreation area of the community.

Appalachian Power hosted five open houses to meet customers where they live and listen to their concerns and questions. About 350 customers in Logan, Beckley and Elkview, W.Va., Grundy, Va., and Kingsport, Tenn., took advantage of the meetings, where our employees provided information on a range of issues, including electric bills, service reliability and energy efficiency.

Investors

The universe of environmental, social and governance (ESG) ratings and rankings continued to expand in 2018, as did the demand for ESG-related information. Climate change, governance, risk and strategy continue to be the main focus; however, increasingly, investors are looking more closely at companies' social performance to see how they are delivering profits while making a positive contribution to society. Many institutional investors issued clear intentions to consider ESG performance in their investment decisions, demonstrating the drive for more robust disclosure and engagement.

In response to this growing interest, we've sharpened our focus on ESG and responded to 10 ESG investor-focused surveys in 2018. In addition to the surveys, AEP published a 2018 Strategic Vision for a Clean Energy Future report, which is solely devoted to addressing climate-related risk management, scenario analysis and governance, as well as opportunities and challenges. This report provides significant additional disclosure on how AEP is managing its transition to a clean energy/low carbon future, as well as setting new mid- and long-term goals for carbon emission reductions.

Part of this engagement included a productive year-end meeting with a group of investors that was led by our CEO and

Lead Director of AEP's Board of Directors. During our meeting we shared our progress toward a clean energy future. The discussion was open and candid, and we agreed to continue the dialogue. We remain committed to engaging with AEP's ESG-focused investors and other interested stakeholders to understand what they expect from AEP and to inform them of our progress as we execute our strategy.

As part of its oversight role, the Board monitors climate risks and reviews opportunities that may be realized with climate change and other issues, including technology changes, renewable energy and energy efficiency. As AEP continues to transition its business, the Board works with senior management to adjust plans as needed to respond to rapid change in the industry, including technology and public policy. Management identifies and incorporates significant ESG issues, including climate change impacts, into the business strategy. We believe our ESG performance is linked to our ability to create long-term value for our shareholders.

In recognition of AEP's overall financial and nonfinancial performance and commitment to ESG, in 2018, AEP was added to the Nasdaq CRD Global Sustainability Index, one of the leading Global Sustainability Indexes. The Index measures the performance of 400 public companies executing a business strategy for shared value focused on long-term value creation, financial returns, environmental performance and positive societal impact.

AEP is also highly engaged within our industry through the Edison Electric Institute's (EEI) ESG/Sustainability reporting effort. AEP is a member of the EEI committee that created a template to provide electric industry investors with more uniform and consistent quantitative and qualitative ESG and sustainability-related metrics. This was done in collaboration with institutional investors and ESG research organizations who specialize in asset management, ESG/sustainability, investment banking, and buy-side and sell-side research. We piloted the report in 2017 and issued the first formal report in 2018. We intend to publish this report annually. In addition, the EEI ESG Committee meets twice per year with investors to check and adjust the template, ensuring it remains relevant in today's rapidly changing ESG landscape.

Non-Governmental Organizations

Our engagement efforts are integral to the success of our strategy for a clean energy future. For more than a decade, we have been engaging with various non-governmental organizations (NGOs), including environmental organizations. Through our commitment to transparency, engagement, candor and honesty we have seen these relationships transform from adversarial at times to complementary and collaborative. We believe strong relationships with NGOs create better partnerships to address issues that can influence or shape our business future.

Throughout 2018, AEP engaged with numerous NGOs to seek their feedback and educate them on several important sustainability issues. We asked them for input as we developed a new stakeholder engagement strategy, and they acknowledged the value of having access to AEP leaders and commended our commitment to engagement and transparency. AEP's sponsorship of the Electric Power Research Institute's Electrification Conference enabled several NGOs to attend and learn about the technologies, challenges and opportunities of electrification. Additionally, Ceres, Sierra Club, Environmental Defense Fund, Natural Resources Defense Council (NRDC) and Clean Air Task Force members joined AEP executives and several large customers for an in-person meeting at the conference. We also held meetings in Columbus, Ohio, with NRDC and The Nature Conservancy. In addition, we communicated with NGOs about key events, leadership changes and updates on our clean energy strategy as they occurred.

Clean Power Council

The World Resources Institute's (WRI) Clean Power Council (CPC) is a two-year collaboration composed of U.S. electric utilities and major commercial and industrial customers from the technology, manufacturing, automotive, retail and hospitality sectors. The CPC is committed to the rapid deployment of low-carbon energy supply and increased use of

beneficial electrification through innovative and mutually beneficial utility sector solutions. The main work streams for the group are to address customers' needs for GHG data as well as fleet electrification opportunities. In early 2019, WRI/CPC joined with the EEI Customers Solutions Advisory Group to address the GHG need. For more information on the CPC, please visit the WRI website.

AEP'S SUSTAINABILITY GOALS

In 2018, AEP publicly announced our Corporate Sustainability Goals in parallel with our carbon reduction goals. Our sustainability goals are guided by AEP's Strategic Framework for Sustainable Development, which provides context for our core business and a roadmap to implement throughout our value chain. We support our goals with metrics and methodologies to measure performance against our business plan and across our operations.

AEP employee teams developed the goals to ensure we effectively assess and communicate the return on investment (ROI) and shared value we create for AEP and all our stakeholders. We mapped our sustainability goals to the United Nations Sustainable Development Goals (SDGs) to further demonstrate how we create shared value for our business and society. In 2020, we will begin to report on the connections between AEP's performance and the SDGs.

Specific to our carbon reduction goals, AEP has a target to reduce carbon dioxide emissions (CO_2) from our generating facilities by 60 percent by 2030 and by 80 percent by 2050 (from a 2000 baseline). To meet these targets, we are investing in cleaner energy such as wind and solar and advancing technologies to enable a smarter, more efficient power grid. We are leveraging our scale, experience and partnerships to help find new ways to better serve our customers. And we are taking part in initiatives such as the Free Electrons global energy accelerator and IlluminationLAB, which both help AEP identify innovative ideas from startup companies around the world on technologies that add value for customers.

For more information on our carbon reduction goals, please see Carbon & Climate.

Corporate Sustainability Goals

AEP's Strategic Framework for Sustainable Development

Our strategy for a sustainable future is to ensure that the production and delivery of energy enables positive social and economic change for our customers, employees and communities as we collaboratively shape our future. This is grounded by our culture of safety, continuous improvement and customer focus. We commit to aggressively support economic development, develop innovative solutions, champion education and make smart infrastructure investments that power our communities and improve lives. AEP is leading by example by setting strategic performance targets and goals, and we are guided by these key principles:

- Be a catalyst for change
- Advance environmental stewardship
- Help to build strong local communities
- Develop a brighter energy future

STATEMENT OF AEP'S BOARD OF DIRECTORS

The AEP Board of Directors receives frequent reports from management about the company's sustainability initiatives and financial reporting, policy matters, and social and economic performance. These issues are the subject of active discussion at Board meetings and Board committee meetings.

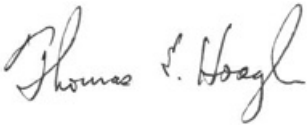
The AEP Board of Directors has assigned responsibility for overseeing the company's sustainability initiatives to the Board's Committee on Directors and Corporate Governance (the Committee). This report provides a comprehensive

account of AEP's performance, integrating financial with sustainability reporting. Stakeholders have expressed approval and appreciation for AEP's leadership with this integrated approach to corporate reporting, and the Committee fully supports this approach.

Throughout the year, the Committee and company management review and discuss AEP's sustainability initiatives in the context of environmental, social and governance (ESG) issues impacting the company. Our ability to create long-term value for our shareholders is linked to our ESG performance. This comprehensive report reflects our commitment to transparency on these issues.

The 2019 Corporate Accountability Report provides robust disclosure about AEP's 2018 performance as well as a forward look of the company's 2023 strategy. This report describes AEP's ongoing transition to a clean energy future, including progress toward achieving carbon dioxide emissions reduction goals. It also outlines how the company is driving innovation to deliver on its customer promise, improving efficiencies for operational excellence, and preparing our workforce for the future.

The Committee believes this document provides a clear presentation of the company's strategy and of its ESG performance. The Board has emphasized that management will continue to be evaluated by its success in executing the company's strategic plan, including its ability to respond to changing circumstances.



Thomas E. Hoaglin
Lead Director of the AEP Board of Directors and Chairman of the Committee on Directors and Corporate Governance
May 2019

2019 AUDIT STATEMENT

AEP Audit Services performed a limited review of select company performance statements within the 2019 AEP Corporate Accountability Report that were deemed to have reputational, financial, or compliance aspects. Financial information was reconciled with AEP's audited financial statements and other sources as deemed appropriate. Non-financial statements were substantiated with applicable source data. Forward-looking information was verified as consistent with other public information disclosed by AEP.

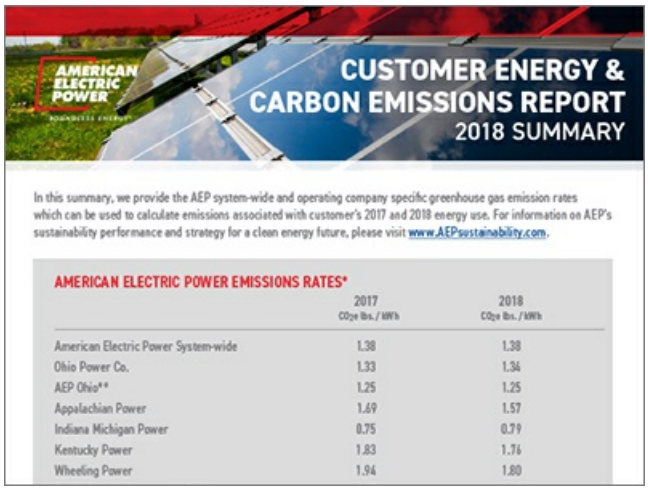
Based upon our limited review, we believe the performance information contained within the Report is appropriately stated, and that the processes followed in accumulating both the financial and nonfinancial information were reasonable.

Andrew Reis
Vice President Audit Services
May 3, 2019

Customer Emissions Report

In this summary, we provide the AEP system-wide and operating company specific greenhouse gas emission rates which can be used to calculate emissions associated with customer's 2017 and 2018 energy use.

Supplemental GHG Emissions Data



View Report

EEI ESG/Sustainability Reports

AEP participates in an EEI-led stakeholder working group composed of electric companies and financial industry specialists in asset management, ESG/sustainability, investment banking, and buy-side and sell-side analysts to develop industry-focused and investor-driven ESG/sustainability reporting practices. The effort encourages voluntary reporting of ESG/sustainability information in both quantitative and qualitative formats and is the first and only industry-focused and investor-driven ESG reporting framework.

The EEI ESG/Sustainability Report template provides information in a measurable and consistent format for investors and customers to accurately assess long-term ESG/sustainability progress. Within the quantitative section, companies report sector-specific information, including data on a company's portfolio, emissions, capital expenditures and resources. The use of these universal metrics provides comparable data. The qualitative section provides an opportunity for companies to share additional information and context about their ESG/sustainability governance and strategy.

AEP's 2018 EEI ESG/Sustainability Report highlights the company's emission reductions and clean energy strategy, which is focused on modernizing the power grid, expanding renewable energy resources and delivering cost-effective, reliable energy to its customers.

View AEP's 2018 EEI ESG/Sustainability Report

GRI Reports

AEP's 2019 Corporate Accountability Report has been prepared in accordance with the GRI Standards: Core option. The GRI Standards provide a voluntary reporting framework used by organizations around the world as the basis for sustainability reporting. We are also using the Electric Utility Sector Supplement for reporting on industry-specific information.

- AEP's 2018 GRI Report
- AEP's 2017 GRI Report
- AEP's 2016 GRI Report
- AEP's 2015 GRI Report

CDP Reports

AEP's commitment to transparency includes responding annually to CDP (formerly the Carbon Disclosure Project) surveys on carbon, water and supply chain. We have been reporting to CDP for almost a decade on the carbon survey

and have participated in the water survey since it began. These surveys are important to our stakeholders, particularly investors.

CDP is an international, not-for-profit organization providing a global system for companies and cities to measure, disclose, manage and share vital environmental information. To ensure easy access to our responses for our stakeholders, we are providing a three-year archive of our CDP reports.

2018:

- Carbon Disclosure Project – AEP's 2018 Response (PDF)
- CDP Water Disclosure Project – AEP's 2018 Response (PDF)

2017:

- Carbon Disclosure Project – AEP's 2017 Response (PDF)
- CDP Water Disclosure Project – AEP's 2017 Response (PDF)
- CDP Supply Chain Disclosure Project – AEP's 2017 Response (PDF)

2016:

- Carbon Disclosure Project – AEP's 2016 Response (PDF)
- CDP Water Disclosure Project – AEP's 2016 Response (PDF)
- CDP Supply Chain Disclosure Project – AEP's 2016 Response (PDF)

PERFORMANCE SUMMARY

At AEP, we understand the importance of providing clear, accurate and consistent data and information in a timely manner. AEP's Performance Summary and Sustainability Goals section of this report, reflects our commitment to transparency by proactively sharing data and information about our sustainability goals, strategy and environmental, social and economic performance. This demonstrates that we are listening to our stakeholders and addressing issues that are most relevant for our business.

Environmental Performance

Emissions

	2016	2017	2018
CO_2 (Metric Tons)	93,460,481	72,344,128	68,732,609
Mercury (lbs)	675	432	417
SO_2 (US Tons)	99,443	75,677	68,646
NO_x (US Tons)	65,118	52,490	49,915

Waste

	2016	2017	2018
Total Coal Combustion Products Generated (Tons)	8,660,027	6,240,397	4,846,451
Total Coal Combustion Products Diverted from Landfill (Tons)	2,866,085	2,556,315	3,730,803

Water

	2016	2017	2018
Total Water Consumption (Million Gallons per day)	197.88	157.61	132.10
Freshwater Withdrawal (Million Gallons per day)	4,970.00	4,914.53	4,172.84

Energy Efficiency

	2016	2017	2018
Incremental Annual Electricity Savings (MWh)	1,055,046	1,032,000	1,022,257
Avoided CO_2 Emissions (Metric Tons)	-	886,000	525,189

Social Performance

Safety & Health

	2016	2017	2018
Employee and Contractor Days Away, Restricted or Job Transfer Cases (DART rate)	0.542	0.507	0.446
Employee Fatalities	4	2	1
Public Fatalities	11	5	6

Leadership Diversity

	2016	2017	2018
Total Number of Employees	17,701	17,666	17,582
Total Number on Board of Directors/Trustees	12	12	12
Total Women on Board of Directors/Trustees	3	3	3
Total Minorities on Board of Directors/Trustees	2	2	2

Economic Performance

Economic Impact

	2016	2017	2018
Total Annual Capital Expenditures (nominal dollars)	$4,934 Million	$6,045 Million	$5,964 Million
Economic Development Contributions	$6,800,000	$621,000	$1,323,038
Jobs Supported by AEP's Economic and Business Development Efforts	18,000	18,000	14,700
Wages, Incentives and Fringe Benefits	$2.3 Billion	$2.3 Billion	$2.3 Billion
Charitable Giving	$20.9 Million	$16.8 Million	$25.5 Million
Local Taxes	$750 Million	$817 Million	$827 Million
State Taxes	$349 Million	$353 Million	$339 Million
Federal Taxes	$141 Million	$198 Million	$80 Million

Supply Chain

	2016	2017	2018
Total Supplier Spend	$6.2 Billion	$7 Billion	$6.9 Billion
Local Based Supplier Spend	$3 Billion	$3.1 Billion	$3.4 Billion
Small Business Spend	-	-	$971 Million
Diverse Supplier Spend	-	-	$365 Million

ENVIRONMENT & CARBON

CLIMATE CHANGE

For more than a decade, AEP has engaged various stakeholders on the impacts, risks and opportunities associated with climate change. Today, AEP's transition to a clean energy economy is making good progress as the path forward begins to come into sharper focus. We are achieving carbon dioxide (CO_2) emissions reductions on pace with our goals for 2030 and 2050. In 2018, AEP's CO_2 emissions were approximately 59 percent lower from a 2000 baseline.

Learn more

MANAGING CLIMATE RISK

In our *Strategic Vision for a Clean Energy Future* report we outlined our risk management process, which includes executive management and board oversight for climate risk. We agree that climate change is a significant issue facing AEP and other companies, and it is one of many material issues for which we manage and plan. We have a robust enterprise risk management process to do this.

Learn more

WATER

Water is an increasingly important sustainability issue for society and our company. We have a responsibility to manage this resource to mitigate our impacts and reduce consumption where we can.

Learn more

WASTE

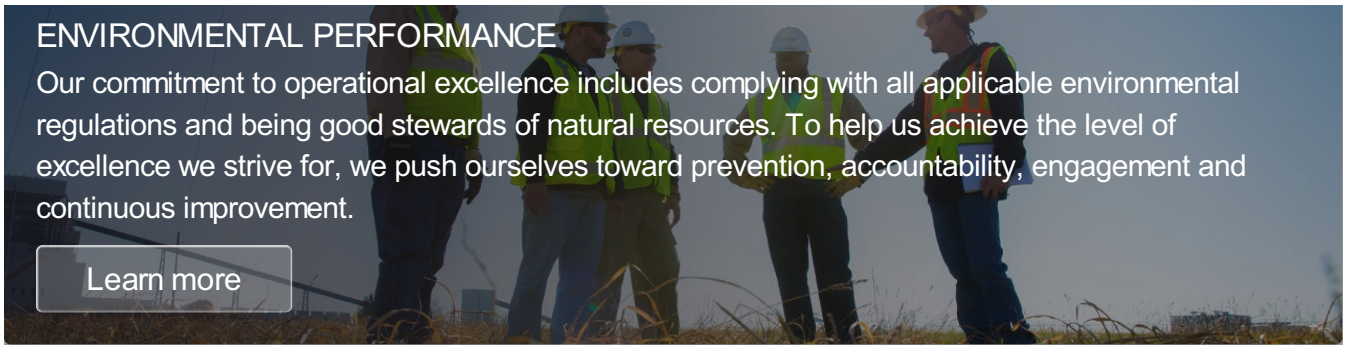
AEP remains committed to diverting waste from landfills through beneficial reuse or recycling to minimize our environmental impacts.

Learn more

CONSERVATION

As stewards of the ecological richness of our geographies, we remain committed to protecting the habitats in which we live and operate by taking the necessary steps to ensure wildlife protection.

Learn more



CLIMATE CHANGE

For more than a decade, AEP has engaged various stakeholders on the impacts, risks and opportunities associated with climate change. Today, AEP's transition to a clean energy economy is making good progress as the path forward begins to come into sharper focus. We are achieving carbon dioxide (CO_2) emissions reductions on pace with our goals for 2030 and 2050. In 2018, AEP's CO_2 emissions were approximately 59 percent lower from a 2000 baseline. Since we are already so close to our 2030 goal, we are reevaluating the 2030 target this year.

We review these targets annually as public policies, regulations and advancing technologies change. We view these goals and our approach to achieving them as a work in progress. As the electric power grid becomes a more efficient optimizer of resources and advanced technologies, our ability to further reduce emissions is enhanced. Through this report, stakeholders can follow our progress.

Our CO_2 emissions will continue to decline as we retire less efficient units, increase renewable energy and natural gas, invest in a more efficient and modern grid to enable greater penetration of distributed resources, and embrace new technologies that improve operational efficiencies and meet customers' needs. As we manage this transition, we are committed to going at an appropriate pace while engaging with our regulators to ensure our actions are in the public interest.

We report our efforts toward achieving our climate goals annually. We measure our progress directly as a function of our total carbon emissions (and associated percentage reduction from 2000 levels). We also measure our progress indirectly as a function of retirements of less efficient generation capacity, and the addition of cleaner energy resources to the AEP system and new technologies that increase efficiency and reduce emissions.

AEP's total carbon emissions reduced slightly in 2018 compared with 2017, which is direct progress toward our carbon reduction goals. Indirect progress towards our carbon goals was also made in 2018 with the retirement of the coal-fired Stuart plant, of which AEP was a minority owner. Additionally, we announced the future closure of two coal-fueled facilities by the end of 2020 for economic reasons – the Oklaunion plant in Texas and Conesville plant in Ohio. The closure of these facilities will result in further carbon reductions going forward as they cease to generate emissions. AEP's renewable portfolio continued to grow in 2018, increasing the carbon-free energy serving customers.

AEP recognizes, with the measures we have already taken to reduce our carbon footprint, we still have important work to do in this area. However, we remain confident in our strategy and resource planning process to guide our journey and achieve our carbon reduction goals.

Managing Climate Risk

In our 2018 report, "American Electric Power: Strategic Vision for a Clean Energy Future," we outlined our risk management process, which includes executive management and board oversight for climate risk. We agree that climate change is a significant issue facing AEP and other companies, and it is one of many material issues for which we manage and plan. We have a robust enterprise risk management process to do this, and in 2019, climate change was formally added to AEP's enterprise risk "watch" list.

As part of our ongoing dialogue with stakeholders, particularly investors, we often get asked about climate risk and oversight. AEP's 2018 clean energy report has helped guide stakeholders on our overall process, but subsequent

conversations have identified additional opportunities for disclosure. For instance, we have received questions about AEP's board expertise in climate change.

Our board is elected based on providing a diverse mix of viewpoints, skills and experiences relevant to managing a large corporation. Relevant experience to the board in addressing climate impacts comes from managing long-term changes in investment strategy, operations and technology use, in which our board has considerable expertise.

The Board's Committee on Directors and Corporate Governance receives updates at every regular meeting about AEP's environmental performance. In addition, the Board's Policy Committee (which comprises the entire Board) invites speakers to share varying viewpoints on a wide variety of topics. In 2019, the Board heard from an outside climate change expert.

Each year, the board's lead director conducts outreach to AEP's largest institutional investors. In 2018, about a dozen shareholders requested meetings. Environmental, social and governance (ESG) issues, including climate risk, were discussed with nearly all of them.

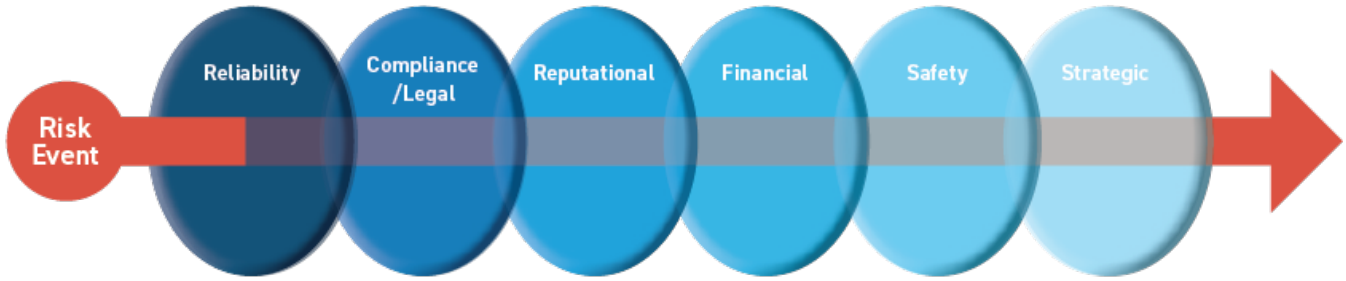
At AEP, employee incentive compensation is tied to our environmental performance and our clean energy transition. For example, 9 percent of annual incentive compensation is tied to performance related to investing in infrastructure for the benefits of our customers, including transmission investments and increasing renewables in our portfolio.

We have new renewable options we are pursuing in 2019, including wind projects with Public Service Company of Oklahoma and Southwestern Electric Power Company and solar projects in AEP Ohio and Appalachian Power. In addition, we are investing $2.2 billion in contracted renewables by 2023, which was accelerated in 2019 with the acquisition of Sempra Renewables.

Significant environmental, social, and governance issues, including climate change impacts are identified and assessed, and mitigation plans are developed through AEP's enterprise risk management process.

RISK ANALYSIS: VIEWING RISKS THROUGH LENSES

Consistent, transparent, repeatable process for risk management. Six impact categories to evaluate consequences of a risk event.



Range of potential consequences (levels 1-7) in each category:

Climate Opportunities

While climate change is often framed as a risk for electric utilities, there are distinct opportunities provided by the potential pathways for carbon reductions. Many sectors of the economy face potentially higher costs to achieve emissions reductions. Electrification can provide a pathway for carbon reductions that is more cost-effective and achieves the significant emission reductions our customers and society want.

Beneficial electrification allows AEP to invest capital in assets to serve the incremental load on the system. This investment provides a return for AEP shareholders while giving customers access to environmentally beneficial technology, as well as clean sources of energy. Additionally, when customer usage grows, we can spread the cost of fixed investments over a broader base of customers. This helps reduce customer charges per kilowatt-hour (kWh), providing an

economic benefit to all customers.

Electric transportation is the biggest opportunity for electrification. Today, transportation is the largest contributor to U.S. carbon emissions. However, transportation is becoming increasingly electrified as more consumers purchase electric vehicles (EVs), helping to reduce CO_2 emissions from this sector. AEP will continue to support electric vehicle adoption through investments in charging infrastructure, offering charging options that lower customer costs and optimize the efficiency of the grid, as well as advocating for sensible public policy in this space. We have deployed a network of vehicle charging stations at our own facilities, and our network now represents one of the few large corporate workplace EV infrastructure deployments in the U.S. AEP has also been marketing other electrification opportunities, with the potential to make emission reductions in other sectors.

Opportunities to invest in low-emission technologies and earn a return on equity for our shareholders is another potential avenue of growth as we address climate risk. Renewable technologies such as wind and solar are especially attractive to investors and customers because they are mainly capital investments. Most of the cost of electricity is tied to the capital investment, which provides universal access to clean energy for all customers while enhancing earning opportunity for shareholders. For example, coal and natural gas plants have fuel costs that are passed through to customers. Investing in renewables benefits customers in that they become insulated from unpredictable fuel costs over time because there is no direct fuel cost associated with renewables. This has a positive impact on customers in the form of more stable bills.

Scenario Analysis

Stakeholders are increasingly asking companies to analyze potential risks associated with climate change consistent with international goals to limit global warming to 2 degrees Celsius (and potentially 1.5 degrees Celsius). AEP has also received requests to conduct scenario analyses consistent with these global targets. This is a complex process, especially when there are so many differing recommendations, methodologies and tools for doing it. In 2018, AEP joined a research study with the Electric Power Research Institute (EPRI) to better understand current scientific knowledge of climate policy scenario analysis and how it might apply to our own analysis.

The EPRI study evaluated the relationship between global temperature goals and a company to identify pathways for reducing emissions. The findings provided clarity of the fact that this is a process laden with many different pathways to choose from. AEP has not conducted a 2-degree analysis because we believe the uncertainties – from new and unknown technologies and other externalities – are so significant that they would make AEP's analysis of many of the proposed recommendations misguided. It would also undermine our credibility and be costly for customers and shareholders if the wrong pathway were to be unknowingly chosen.

AEP is a large and diversified energy provider that faces a multitude of potential challenges, risks and opportunities that could have implications on our business model. Our current business model includes electric distribution, transmission and generation. Generation has increasingly become a smaller share of our capital investment and asset base over time due to unit retirements and asset divestitures. Therefore, modeling scenarios relating solely to climate policy objectives (and the associated effect on generation choices) do little to inform our overall business strategy.

Changes in regulation, technology, economic growth and customer preferences have been present throughout AEP's history and will continue to provide uncertainty in business planning and strategy going forward. To explore different outcomes, AEP does review and test planning assumptions through the use of informative scenarios that encompass all relevant factors that may influence our operations in the future, including technology, public policy, regulation, market shifts and customer preferences.

AEP's generation portfolio is modeled through the Integrated Resource Planning (IRP) process, which looks at portfolios of energy and capacity that can be used to serve customer demands in the future. These are evaluated under a range of assumptions, most notably changes in potential carbon regulation and fuel costs. The current IRPs show an increased reliance on renewable energy and decreased reliance on coal. While we did not conduct a specific 2-degree analysis, these plans led AEP to establish a 2050 goal for carbon reduction, which we believe is consistent with plausible emission pathways toward achieving a 2-degree climate future.

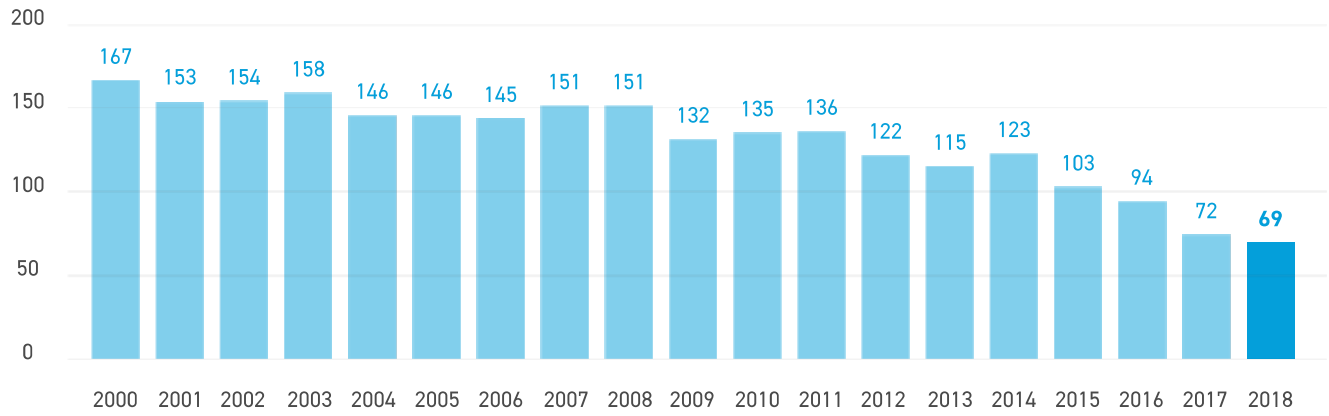
Environmental Public Policy and Regulation

Several significant developments occurred in 2018 relating to carbon regulation of the electric sector. In August 2018, the U.S. Environmental Protection Agency (EPA) proposed the Affordable Clean Energy (ACE) rule to replace the Clean Power Plan with new emission guidelines for regulating CO_2 from existing sources. ACE would establish a framework for states to adopt standards of performance for utility boilers based on heat rate improvements for those boilers. In December 2018, the EPA filed a proposed rule revising the standards for new sources and determined that partial carbon capture and storage is not the best system of emissions reduction because it is not available throughout the U.S. and is not cost-effective.

We actively monitor these rulemakings and generally support both rules, as we believe they are more consistent with the language of the Clean Air Act than what was proposed in previous rulemakings. As the rules are both still in the proposal stage, it is unclear what the final rules may dictate or what may be the ultimate impact on AEP, its emissions or customer costs.

AEP believes that the existing Clean Air Act is an ineffective vehicle to regulate carbon emissions. We have long maintained an economy-wide legislative approach to address carbon is the preferred route for climate action. A legislative approach would allow for proper consideration of costs, benefits, rate of emissions reductions, incentives for technology development and all associated economic impacts with input from all stakeholders. With a new Congress in 2019, a variety of legislative solutions are likely to be discussed and debated, including, but not limited to, renewable mandates and carbon taxes. AEP will remain engaged in the climate policy debate to address the interests of customers, investors and policymakers.

TOTAL AEP SYSTEM — ANNUAL CO_2 EMISSIONS in million metric tons



Direct CO_2 emissions from AEP's ownership share of generation as reported under Title IV of the 1990 Clean Air Act.

ENVIRONMENTAL PERFORMANCE

Our commitment to operational excellence includes complying with all applicable environmental regulations and being good stewards of natural resources. To help us achieve the level of excellence we strive for, we push ourselves toward prevention, accountability, engagement and continuous improvement.

The primary federal statutes we are subject to include the Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act, Endangered Species Act and Safe Drinking Water Act. Environmental regulations developed under these laws are periodically revised and it is critical that we stay current with changes to them to ensure we remain in compliance. While some regulations have an unclear path forward, there are many others that we must comply with and new ones that are still being finalized.

As the scope and stringency of environmental regulations evolve, we are faced with technical, operational and financial challenges that are common for our industry. These challenges include uncertainties with timing, scope and magnitude of future environmental regulations, which influences our decisions to upgrade or retire generating units. They also impact the

planning process for new generation and transmission projects across our industry.

Our facilities are subject to a variety of environmental, regulatory and permitting requirements at the federal, state and local levels with which we must comply. Our goal is zero – zero violations of environmental regulations or laws and zero enforcement actions. We are subject to routine environmental inspections of our facilities through scheduled and unannounced visits. During these visits, regulators inspect physical facilities and monitor our compliance with regulatory requirements, permit limits and record-keeping obligations.

Whenever agencies identify concerns, we work with them to address those issues in a timely fashion. This could include identifying and implementing any corrective measures that may be needed to mitigate future risks.

One way we check on our own compliance is through internal audits which provide additional focus on controlling risks and providing assurance.

REGULATIONS UPDATE

Mercury and Air Toxics Standards (MATS)

The final MATS Rule became effective on April 16, 2012, and required compliance by April 16, 2015. This rule currently regulates emissions of hazardous air pollutants (HAPs) from coal- and oil-fired electric generating units through emission rate limits. The rule has been subject to both judicial and regulatory review since it was finalized; AEP has been complying with the rule for several years. One of the key questions raised in the review process is how compliance costs are factored into the need for the rule.

In December 2018, the U.S. Environmental Protection Agency (EPA) released a proposed finding that the costs of reducing HAP emissions to the level in the current rule exceed the benefits of those emission reductions. The EPA also determined that there are no significant changes in control technologies and that the remaining risks associated with HAP emissions do not justify any more stringent standards. However, the agency also proposed that it would not remove the source category or alter MATS and no further reductions are necessary. AEP is generally supportive of these proposed findings as our units are in compliance and we made significant investments in emission controls to achieve compliance.

Effluent Limitation Guidelines

In November 2015, the U.S. EPA issued a final rule revising effluent limitation guidelines for electricity generating facilities. The rule establishes limits on flue gas desulfurization (FGD) wastewater, fly ash and bottom ash transport water and flue gas mercury control wastewater, to be imposed as soon as possible after November 2018 and no later than December 2023. The rule was challenged in the U.S. Court of Appeals for the Fifth Circuit and in March 2017 by industry associations, including groups AEP is part of, who filed petitions for reconsideration of the rule with EPA. The agency granted those petitions and is actively working on revisions to the requirements for FGD wastewater and bottom ash transport water.

In the interim, a final rule revising the compliance deadlines for FGD wastewater and bottom ash transport water to be no earlier than 2020 was issued in September 2017. A draft rule regarding FGD wastewater and bottom ash transport water is anticipated by May or June 2019, with a final rule to be issued by December 2019. We have actively engaged with the EPA during this rulemaking to ensure the agency has the best technical and cost information as it makes decisions on possible changes.

Waters of the United States

In December 2018, the EPA and U.S. Army Corp of Engineers released a proposed rule revising the definition of “Waters of the United States” (WOTUS), which would replace the previously revised definition finalized in a 2015 rule. The term WOTUS is used in a number of environmental regulations to determine when certain federally mandated permits or

activities involving waterbodies are required. Examples that are commonly applicable to AEP's facilities and projects are:

- Wastewater and/or stormwater discharge permits that are required under the National Pollutant Discharge Elimination System (NPDES) permit program,
- A permit and any associated mitigation as required from the Corps of Engineers for impacts to wetlands and other waterbodies; and
- When an oil spill prevention plan is required to be written and implemented under the federal spill prevention program.

The delineation of jurisdiction between federal and state responsibilities in maintaining the integrity of waterbodies is a core issue in this rulemaking. The outcome of this rulemaking will directly affect the level of permitting required for AEP projects.

Our responsibility to environmental compliance will continue for requirements that remain effective at AEP-owned properties where generating units have been retired. This includes many existing state environmental requirements, in particular those related to the management of water and coal-combustion byproducts. We continue to work closely with regulators and our local communities as we move through the decommissioning process.

We actively participate in the development of regulations at the federal, state and local levels to ensure that new requirements are achievable, based on sound science, consistent with statutory authority and balanced with other rulemakings. New requirements should also consider the cost of compliance for customers and allow sufficient time for compliance. For full disclosure on other regulations affecting AEP, please read our 10-K.

CHECKS AND BALANCES

One way we check on our own compliance is through internal audits. Audits provide additional focus on controlling risks and providing assurance that robust compliance processes are developed and implemented system-wide. In 2018, we conducted internal audits of environmental programs at 49 locations.

Environmental audits reveal areas where performance related to regulatory requirements and company policies may be improved, such as recordkeeping details, inspection criteria, training topics and equipment configuration. Auditors also work to recognize practices that go beyond requirements to bring about robust and sustained compliance. Although reports are site-specific, results – including best practices – are aggregated and shared systemwide to improve performance throughout AEP.

DRIVING CONTINUOUS IMPROVEMENT

AEP's Generation business unit has long used metrics to encourage self-reporting of events and to improve environmental performance. An Environmental Performance Index (EPI) was established to set annual goals related to opacity, water discharge permits and oil and chemical spills at our generating facilities. In the past, the EPI tracked only events where we had immediate and significant control. Our incentive compensation within the Generation group is also tied to EPI performance.

In 2017, we expanded the EPI to include all reported events specific to National Pollutant Discharge Elimination System (NPDES) permit expectations and spill events. By expanding the focus to all events, we are increasing awareness on prevention, which encourages sharing as we learn and drives us to be more proactive in protecting the environment.

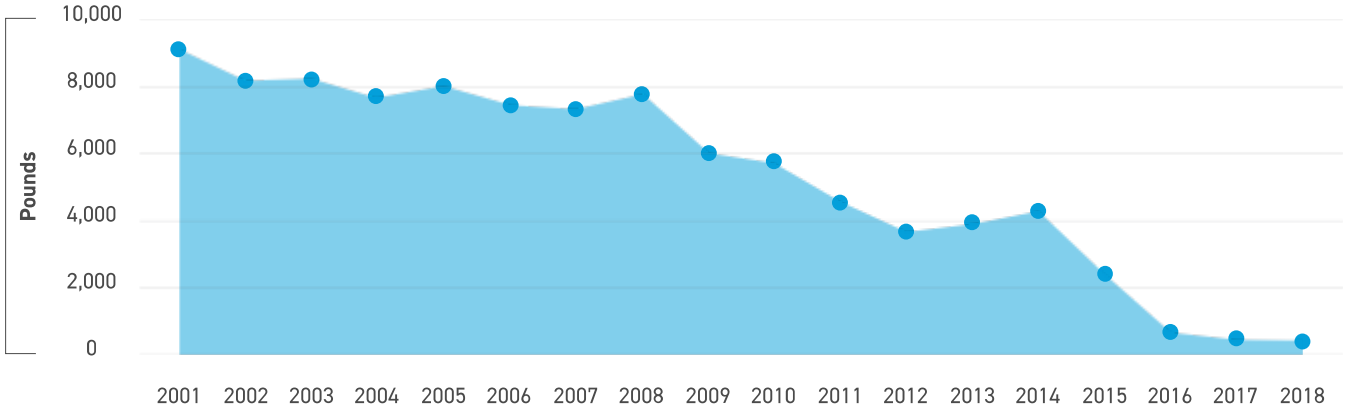
We set annual targets focusing on continuous improvement as we strive for zero enforcement actions and zero events. In addition, AEP's Generation organization instituted an Environmental Good Catch program, similar in manner to our safety and health Good Catch program. "Good Catch" is an observation or recognition of a condition that could lead to a reportable environmental event and the subsequent actions taken by employees to correct the situation to prevent the event from occurring. This demonstrates AEP's commitment to an engaging and accountable culture – using knowledge-sharing and lessons learned to prevent future non-compliance events.

Environmental compliance is a high priority for the lifecycle of every project we undertake. In our Transmission business, where a great deal of construction work is taking place, project teams must complete a mandatory environmental compliance training program. Our environmental specialists and engineers also provide support to ensure we achieve full compliance with environmental permit requirements. This is important to us as we invest approximately $3 billion annually to modernize transmission infrastructure across the country.

EMISSIONS

AEP has made, and continues to make, significant long-term investments in environmental controls to reduce the impact of how we generate electricity. Between 2000 and 2018, AEP invested approximately $9 billion in environmental controls that are primarily related to the Clean Air Act and have significantly reduced emissions. Since 1990, AEP reduced its annual emissions of sulfur dioxide (SO_2) and nitrogen oxide (NO_x) by approximately 96 percent and 92 percent, respectively. Since 2001, AEP reduced its annual mercury emissions by approximately 95 percent.

TOTAL AEP SYSTEM MERCURY AIR EMISSIONS

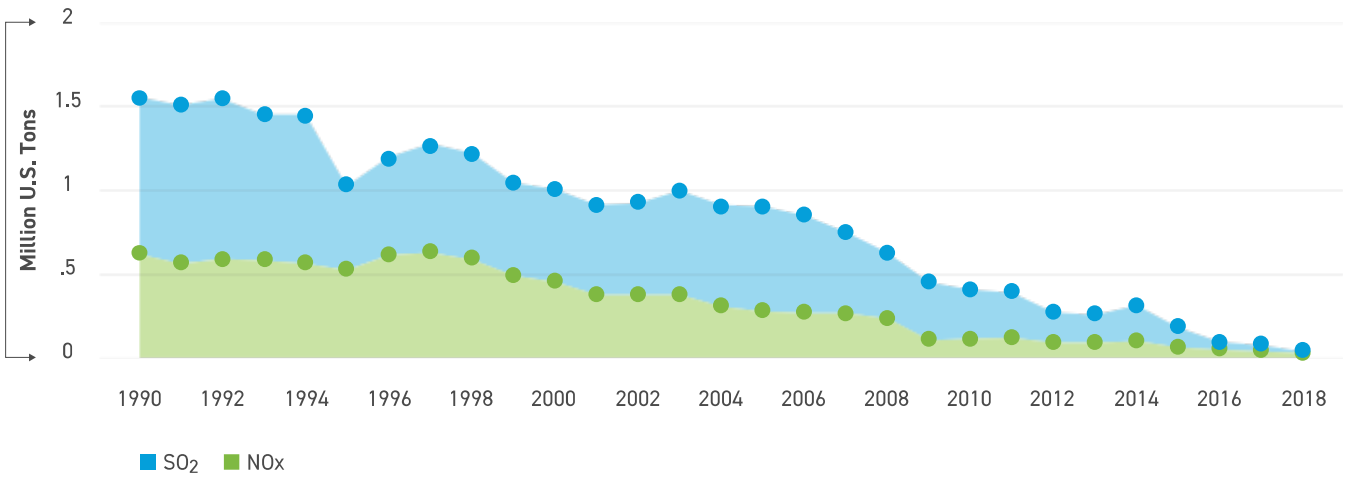


AEP equity share of mercury air emissions from Toxic Release Inventory reporting. 2018 was estimated with MATS program emission monitors.

In 2018, the Indiana Utility Regulatory Commission approved Indiana Michigan Power Company's (I&M) plan to install selective catalytic reduction (SCR) technology on the second of two units at the Rockport Plant. The $274 million SCR project will reduce nitrogen oxides (NO_x), adding another form of clean-coal technology to the plant. The SCR project follows the installation of Dry Sorbent injection technology, which was added to both Rockport units to reduce sulfur dioxide (SO_2) emissions. The project is scheduled to go into service in the spring of 2020.

Additional information about mercury is located within the Toxics Release Inventory program. Read more information about carbon emissions.

TOTAL AEP SYSTEM NOx & SO_2 EMISSIONS



Direct annual emissions of SO_2 and NOx from AEP's ownership share of generation as reported under Title IV of the 1990 Clean Air Act.

NEW SOURCE REVIEW

In 2007, AEP signed a court-approved settlement of New Source Review (NSR) litigation. In 2013, a modification to the decree was approved by the U.S. District Court for the Southern District of Ohio, Eastern Division. The modification lowered a systemwide SO_2 emission cap for AEP plants that becomes increasingly stringent through 2029.

We report annually on our compliance with the consent decree requirements. The reports are available here:

- 2018 NSR Annual Report
- 2017 NSR Annual Report
- 2016 NSR Annual Report
- 2015 NSR Annual Report
- 2014 NSR Annual Report
- 2013 NSR Annual Report

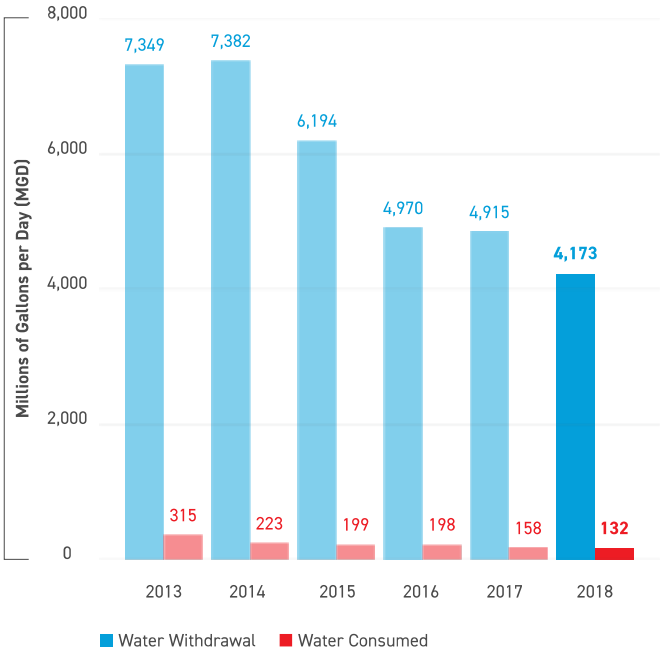
WATER MANAGEMENT

Water quality, availability, use and management are increasingly important sustainability issues for society and our company. We are continuing to take steps to reduce our water consumption, improve water quality and address water availability issues as we comply with current regulations and prepare for new ones.

Water is essential for the production of electricity. Currently, 91 percent of power generated by AEP requires water. Water is used in the steam electric process to cool equipment, scrub flue gas and transport combustion byproducts – and hydroelectric power is completely derived from the energy of flowing water. The water we use is generally returned to its original water source. Water consumption occurs when some of the water is lost to evaporation or to a water-consumptive process, such as flue gas scrubbing. Our captive barge fleet operates on several rivers and relies on consistent water levels to maintain operations, delivering fuel and other supplies to our generating facilities. Our coal and natural gas supply chains also rely on water to mine the coal and extract the natural gas.

As much as we need access to water, we also have a responsibility to manage this resource to minimize potential impacts and to reduce consumption. As AEP continues to diversify its generating portfolio and retire coal generation capacity, our water use will continue to decrease, and we have already significantly reduced our water footprint through plant retirements.

AEP'S WATER WITHDRAWAL & CONSUMPTION



Since 2013, we have reduced our water use from 7,349 million gallons/day (MGD) to 4,173 MGD – a reduction of nearly 43 percent. During that same time period, we have reduced our water consumption by almost 58 percent from 315 MGD to 132 MGD.

We participate in collaborative industry research to find new ways to reduce the use and consumption of water by power plants. In 2019, AEP received two Electric Power Research Institute (EPRI) Technology Transfer Awards, which were the result of research projects involving our western fleet. The first was the study of three AEP power plants and the use of alternative water supplies and transfers between water basins. The study provided understanding of the drivers for, and implications of, using alternative water sources. For example, the use of reclaimed municipal wastewater for the Comanche Plant in Oklahoma resulted in cost savings for Public Service Company of Oklahoma customers and revenue for the City of Lawton, while eliminating our need for fresh water.

The second award recognized the application of case study research at our John W. Turk, Jr., Plant in Arkansas. The plant

normally uses water from the Little River, a tributary of the Red River, which is a source of high dissolved solids that has affected plant operations. For example, during 2018, the Red River was flowing at a higher-than-normal level near the plant while the U.S. Army Corps of Engineers was attempting to perform repairs on the nearby Lake Millwood spillway upstream of Turk's intake.

The Corps' activity allowed poor-quality water to approach the Turk Plant's water intake system. The case study looked at on-site alternatives (adding pond storage capacity) and a watershed-based solution. The results found that by working with the U.S. Army Corps of Engineers to optimize water releases from the nearby reservoir, AEP could address the plant's water needs and provide a net benefit of $5 million through avoided generation curtailments or the need to build additional water storage capacity.

We are also working with EPRI to test the application of a water footprint tool. A water "footprint" is the amount of water used in the production of the goods or services by a business – for example, the amount of water needed to make a pair of jeans or to produce a kilowatt of electricity. This analysis will help us better understand how we use water resources, which will support better water management, reporting, benchmarking and disclosure activities at AEP's generation facilities.

Water Use Reporting

Because we place a high value on the importance of transparency, AEP extensively reports on our usage and management of water throughout our system in different forums. We do this through both required reporting, such as the U.S. Energy Information Administration, and through voluntary reporting efforts. For example, we participate annually in the CDP Water Survey. The 2018 questionnaire was issued on behalf of 655 investors representing $87 trillion in assets who seek business-critical information about water consumption and water use strategy and planning. In addition, AEP provides extensive water data in our Global Reporting Initiative (GRI) report.

As part of our disclosure, we report if our ability to generate electricity has been compromised by inadequate water (droughts or poor quality) or too much water (floods). For example, in 2018, a 500-year flood event occurred at our Indiana Michigan (I&M) hydroelectric projects on the St. Joseph River in Michigan. In some of these areas, the St. Joseph River crested at levels two feet higher than the prior record. The flood impacted our ability to generate electricity and disrupted distribution service to the flooded areas. In response, we created detailed standard work procedures to address the changes we need to make in our work during times of high-water events. This includes operating spillway gates at certain plants or electrically disconnecting the hydro projects. We also purchased additional equipment to use during flood events and created a staffing plan to enable 24/7 coverage at the plants during emergency events.

Water Management in High-Risk Areas

AEP operates several power plants in areas that necessitate the careful use of water. Since 1999, the Texas Commission on Environmental Control has mandated that all Texas water rights holders implement a water conservation plan. Each entity is required to have voluntary, site-specific five-year and ten-year water conservation goals that must be updated every five years. Annual updates must be filed with the Texas Water Development Board. We have comprehensive water conservation plans in place for the Oklaunion, Pirkey, Welsh, Wilkes and Knox Lee Power Plants. In 2017, the plants conserved an estimated 1,700 million gallons through these plans, demonstrating their effectiveness.

We also have a Drought Contingency Plan in place for the Knox Lee Plant, and we have to comply with Drought Contingency Plans for three water providers we secure water from to operate the plant. These plans are based on the storage volume of area reservoirs. We work with water providers to ensure the plans call for reasonable actions.

AEP is also participating with other water users during water supply planning efforts. Texas is divided into 16 regional water planning groups that are charged with developing cost-effective solutions to ensure adequate water supply for all users in their regions. The regional water plans are incorporated into the state water plan, which is updated every five years. By frequently planning for future water supplies, the state is able to plan for and finance water supply projects that are needed by communities, big and small.

Watershed Protection

Water is important to power production, but it's also essential for agriculture, drinking water and economic growth. In addition to planning for water needs, the states of Texas and Arkansas have initiatives to protect watersheds, in which AEP participates. For example, AEP Texas participates in a state-mandated effort to quantify necessary environmental

flows for streams and rivers. Environmental flows are the properties of water flow that strengthen or support aquatic ecosystems and human livelihood.

In addition, AEP participates in voluntary efforts to protect the watershed of Caddo Lake, a Ramsar Convention designated wetland area. The Caddo Lake Ramsar wetlands is one of only 26 such sites in the United States and were the 13th site to gain this designation. In Arkansas, AEP is actively involved in the Illinois River Watershed Partnership, including planting trees to stabilize riverbanks.

WASTE MANAGEMENT AND RECYCLING

We manage many types of waste resulting from the process of providing electricity, operating office buildings, and repairing and replacing equipment. We continue to reduce and divert waste from landfills through beneficial reuse or recycling to minimize our environmental impacts caused by waste.

The amount of polychlorinated biphenyl (PCB)-containing equipment used across the company continues to decline. PCBs, which are known to have adverse health effects, have not been used in new electrical equipment in the U.S. since 1979 but are present in some of our older transformers and other pieces of electric equipment. We removed and recycled approximately 46,500 pieces of electrical equipment in 2018, of which 1,400 contained PCBs at regulated levels.

While we had approximately 1,200 transmission and distribution equipment oil spills in 2018, only two of the spills contained greater than 500 parts per million (ppm) PCBs. Most spills are caused by severe weather and public vehicle accidents that damage the equipment. Regardless of the cause, we respond immediately to each spill to clean up the materials released, notify regulatory agencies where required, and restore areas to pre-spill conditions.

During 2018, the waste we recycled included approximately 382,000 pounds of paper and mixed office waste, 50.5 million pounds of scrap metal, 40,200 pounds of light bulbs, 216,000 pounds of batteries, and more than 234,000 pounds of electronic equipment, such as computers and phones. We also recycled nearly 400,500 gallons of used oil. These numbers are not all-inclusive but are considered a good representation of waste management across AEP and show progress in reducing waste.

AEP reports through the Toxic Release Inventory (TRI) program, part of the Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA requires companies with 10 or more employees, in certain industries, to collect and publicly disclose information about how they manufacture, process or use any of nearly 650 chemicals on a special list developed by the U.S. EPA. Read more on our TRI website.

Coal Combustion Residuals

Coal ash disposal and handling came to the forefront nearly a decade ago and has since been subjected to a new federal rule covering the handling, disposal and storage of coal combustion residuals (CCR). Coal ash is AEP's single largest waste stream.

CCRs are the solid material left over after coal is burned to generate electricity. For decades, many state environmental agencies regulated landfills and surface impoundments where CCRs are placed. In 2015, the U.S. Environmental Protection Agency (EPA) established minimum federal rules for storage and disposal of these materials. These minimum requirements were designed to be self-implementing and enforced by the public.

In March 2018, EPA proposed revisions to the CCR rule in order to address provisions of the April 2015 final rule that were remanded back to EPA and to provide states with approved CCR permit programs the ability to set certain alternative performance standards. EPA has indicated its intent to complete additional rulemaking by the end of 2019.

CCR Rule Implementation

AEP remains committed to handling coal ash disposal in a way that puts safety first while protecting the environment, minimizing impacts to the communities near our facilities and managing our customers' costs.

AEP is in the midst of a multiyear plan to address the company's use of coal ash disposal areas. Currently, AEP has responsibility for 31 CCR ponds and landfills that fall under the CCR Rule. We have posted a large number of documents, including structural stability assessments, initial closure plans and inspection reports on our public website. We have also posted on our website all monitoring data and reports required by this program, including groundwater monitoring reports, and location restrictions for all ponds and landfills covered by the CCR Rule.

2018 AEP Total System Coal Combustion Products (CCP) Utilization Summary

Total CCR Produced (tons)	**4,846,451**
CCP Donated (tons)	**35,705**
CCP Used Internally (tons)	**895,920**
CCP Sold (tons)	**933,777**
CCP Utilized (tons)	**1,865,401**
Total CCP Avoided Cost	**$28,633,471**
Total CCP Revenues	**$11,025,635**
Total Value	**$39,659,106**
Percent Total Utilization Based on Total Production.	**38%**

Includes fly ash, bottom ash, flue gas desulfurization material and gypsum.

In February 2019, we reported statistical data related to potential groundwater contamination for four of our power plants. Outreach was conducted with the surrounding communities as well as around another nine plants with regulated CCR units. In addition to informing the nearby residents, we offered to test the wells of neighbors who wished to have that peace of mind. We will continue to engage with our neighbors on these issues, sharing information on an ongoing basis and conducting public meetings to discuss management of our facilities. All of our reports and required documentation are available online at our dedicated CCR Rule Compliance site.

Beneficial Reuse

CCRs have long been used in concrete, wallboard and a wide variety of construction materials. While this benefits other industries, it also provides a source of financial and environmental benefits to AEP. In February 2014, the EPA completed a risk evaluation of the beneficial uses of coal fly ash in concrete and flue gas desulfurization (FGD) material and gypsum in wallboard, and its conclusions support these beneficial uses. Coal ash and other residual products from AEP's generating facilities are used in the production of concrete and wallboard, as structural fill or soil additives, as abrasives or road treatment materials and for other beneficial uses. By diverting the coal ash to beneficial uses, we are reducing the need for waste disposal sites.

In 2018, AEP generated more than 4.8 million tons of CCRs and was able to beneficially use more than 1.8 million tons, or nearly 38 percent of the total produced. Beneficial use of CCRs (considered to be products if they are beneficially used) avoided more than $28 million in disposal costs in 2018 and generated more than $11 million in revenues.

NUCLEAR WASTE MANAGEMENT

The U.S. Department of Energy oversees permanent disposal of spent nuclear fuel and historically has charged fees to plant owners for this disposal. However, the government stopped developing the Yucca Mountain storage facility in Nevada, leaving generators with no place for permanent disposal.

Like the rest of the nuclear industry, we face a significant future financial commitment to dispose of spent nuclear fuel. We need a national solution for the long-term disposal of spent nuclear fuel, which should be part of a national energy plan.

The uncertainty associated with long-term storage places the burden of interim storage on each nuclear facility. AEP is addressing this issue through dry cask storage on the assumption that a workable off-site solution will not exist before the current operating licenses for both Cook units expire in 2034 and 2037.

In 2012, AEP's Donald C. Cook Nuclear Plant in Bridgman, Michigan, began a program of loading spent nuclear fuel into dry casks. The latest loading campaign took place in 2018, bringing the total to 44 dry casks that have been loaded into storage. The casks are designed to withstand tornadoes, earthquakes, floods, sabotage, missiles, aircraft and temperature extremes. They are licensed by the Nuclear Regulatory Commission and meet all applicable security, environmental and radiological requirements.

The current cask storage facility is designed to store 94 casks for a total of 3,008 spent nuclear fuel assemblies. This

would support the operation of both units through the current operating license dates of 2034 for Unit 1 and 2037 for Unit 2. The pad could be expanded to facilitate removal of all fuel assemblies from the plant's spent fuel pool and full decommissioning of both units.

Nuclear plant operators are required to maintain a plant decommissioning trust fund to safely decommission and decontaminate the plant upon closure. At the end of 2018, the trust fund balance for the Cook Plant was approximately $2.2 billion.

WILDLIFE PROTECTION

Many of AEP's business decisions involve finding the right balance between environmental protection and economics. Compromises are often necessary, yet it can be difficult to please all stakeholders involved. AEP is not immune to these issues and always strives to balance the needs of our stakeholders with the need to protect the environment and keep the lights on.

In 2018, AEP authored a chapter in the book, "Sustainable Electricity II: A Conversation on Tradeoffs," that examines how some of those tradeoffs have played out for AEP over time. The book describes the many challenges we are faced with while managing a 60,000-acre tract of land in Southeastern Ohio and how we achieved a balance between the needs of the local community and of other stakeholders. The book also includes case studies of how AEP resolves some of the toughest choices facing electric power companies today.

On July 17, 2018, AEP completed the sale of a portion of its ReCreation Lands in southeastern Ohio to the State of Ohio, creating a new state park named in honor of Jesse Owens.

As we build and maintain new and existing infrastructure across our service territory, such as transmission or renewable generation facilities, we are mindful of the potential impacts we may have on wildlife. This includes species protected under the Endangered Species Act (ESA), the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. As careful stewards of the ecological richness of our geographies, we take the necessary steps to ensure wildlife protection. We remain committed to protecting the habitats in which we live and operate.

Avian Protection

For more than three decades, the utility industry, conservation groups, wildlife resource agencies and others have worked together to understand why and how birds collide with or are electrocuted by power lines.

To reduce avian mortality, utilities have adopted voluntary company-specific Avian Protection Plans to mitigate the risks associated with bird interactions with electric facilities. We completed our Plan in 2013, and we continue implementing it today. The plan's purpose is to reduce the incidences of bird electrocutions and collisions with AEP's equipment, and to reduce the frequency of bird-caused outages.

We take avian protection into account when we design and engineer new facilities. When birds interact with electrical equipment and cause outages, it impacts service to our customers. For example, the design of the BOLD® transmission line is shorter in stature than traditional transmission lines and structures. Benefits of this design include reduced nesting because of the curved arm, and reductions in both collisions and electrocutions, which are less likely with shorter transmission towers.

AEP manages interactions between birds and power lines through a system-wide program across our 11-state service territory, where a wide variety of bird species can be found. Currently, AEP's primary challenge is on larger species that are more likely to be electrocuted in substations and on poles, or to collide with towers and lines.

The Plan has several key components:

- Employee training and compliance – We educate our employees and provide training on compliance with all federal and state laws. Our goal is to be proactive in preventing bird collisions and electrocutions.
- Construction design standards and mortality reduction measures – We have a process to incorporate bird safety into the design of new lines and facilities.
- Nest management and avian enhancement options – We apply bird-safety tactics such as installing a dedicated de-energized pole for bird nesting or bird diverters to keep them away from wires.
- Avian reporting systems and risk assessment methodologies – We continue to improve our monitoring and reporting capabilities to allow us to be more proactive.
- Public education – We promote the need for migratory bird and habitat conservation and work cooperatively with federal and state agencies and nonprofit organizations.

Avian Conservation Efforts

In April 2018, Indiana Michigan Power Company (I&M) transmission crews worked with local conservationists to protect a nesting Red-tailed hawk that was located within a construction zone. One of the nesting platforms that we installed in various locations was occupied by Red-tailed hawks. To avoid disturbing the birds, which are protected under the Migratory Bird Treaty Act, our crews stopped all work within the vicinity of the platform so we could inspect the nest and determine next steps. For the transmission project to continue, we had to move the platform and the nest, which contained eggs.

We secured a State Migratory Bird Permit and contacted Soarin' Hawk Raptor Rehabilitation Center, a nonprofit raptor foundation from Fort Wayne, Indiana, to help us move the platform without impacting the nest. Once the platform and nest were moved, we kept an eye on it. In time, the eggs hatched and the mating pair are still using the nesting platform.

Habitat Conservation Plans

AEP's infrastructure modernization program requires balancing business needs with environmental protection. With the magnitude of our construction activities, it is inevitable that we will come in contact with, or potentially have an impact on, a range of species. One way we are addressing this is by working with the U.S. Fish and Wildlife Service (USFWS) to establish Habitat Conservation Plans (HCP).

In 2018, the USFWS finalized its environmental review and issued a permit to AEP related to the American burying beetle (ABB). This beetle is listed as endangered, and the permit and associated HCP gives us a mechanism to comply with the Endangered Species Act (ESA). The permit covers portions of Arkansas, Oklahoma and northern Texas – where AEP currently has operations or the potential for future development.

The cooperative stewardship effort with the USFWS helps AEP continue operating efficiently and provide safe, reliable electricity to our customers while assisting in the conservation of the ABB and its habitat through mitigation and minimization measures. The program aims to conserve and recover the endangered species.

We also continued development of a 30-year, system-wide multispecies HCP. Development of the HCP began in 2016 and covers several species potentially affected by our transmission construction activities. During 2018, we continued to refine the list of species covered by the plan, which currently includes five bat species, four bird species, the eastern massasauga rattlesnake and the rusty-patched bumble bee.

We are also working closely with wildlife protection agencies in each of our states to ensure the HCP will be consistent with their goals and regulations. Administered by the USFWS, the HCP will enable transmission construction activities with potential impacts to endangered species to proceed without agency consultation on a project-by-project basis. The plan will cover construction activities in all 11 states in which we currently operate.

This HCP is important because it will not only protect the covered species but also generate cost and time savings for our customers and AEP. Portions of the draft HCP are currently under review by USFWS, and we have initiated the required third-party review under the National Environmental Policy Act (NEPA). In 2019, we anticipate having a complete HCP ready for public review.

Monarch Butterfly Conservation Plan

In August 2014, the USFWS received a petition to list the monarch butterfly under the Endangered Species Act (ESA) due to its notable decline in recent years. In December 2014, the agency made an initial finding that a status review was appropriate and it is currently gathering information to determine whether the monarch needs protection under the ESA, with a listing decision anticipated June 2019.

During the summer, monarchs can be found throughout the United States, particularly in areas where milkweed, their host plant, is available. Each year, monarchs undertake a multi-generational migration of thousands of miles to and from overwintering and breeding areas. These areas significantly overlap AEP's generation and transmission network.

An ESA listing for the butterfly could affect our ability to build new or replace old infrastructure as well as impact vegetation maintenance activities. We are well-positioned to participate in an effort to manage habitat within our right-of-way (ROW) corridors to help the butterfly and avoid an endangered species listing.

As a result, we have joined a conservation initiative with the USFWS to develop a Candidate Conservation Agreement with Assurances (CCAA). A CCAA is a formal agreement between the USFWS and one or more parties to address the conservation needs of a candidate species before the species becomes listed as endangered or threatened. Property managers voluntarily commit to conservation actions that will help stabilize or restore the species and avoid a listing. The University of Illinois-Chicago is coordinating the development of the collaborative monarch CCAA, which includes AEP as well as other power companies, oil and gas companies and state departments of transportation.

CONSERVATION AND STEWARDSHIP

We value and practice environmental stewardship and conservation across our service territory. Whether through reclaiming former industrial land for outdoor recreation areas such as nature trails and campsites, to integrating conservation measures into new and rebuilt transmission lines, AEP takes steps to preserve our natural ecosystem, especially as we grow our business.

In 2018, the Generation organization included in its business plan a commitment to executing at least 25 targeted environmental stewardship activities over a five-year period. Work is underway to determine how these goals can be achieved.

Flint Creek Eagle Watch

Southwestern Electric Power Company's (SWEPCO) Flint Creek Power Plant in northwest Arkansas has been home to the Eagle Watch Nature Trail for almost 20 years. SWEPCO Lake, the coal-fueled power plant's reservoir, attracts wintering American bald eagles, making it a perfect place for bird watching. The 65-acre area opened to the public in 1999, and includes a trail and pavilions to provide a safe place from which to view visiting the bald eagles and other species.

In 2018, plant staff and volunteers built a new walkway to a viewing pavilion that extends out over a marshy section of the lake frequented by eagles and many other birds and wildlife. Groups, such as the Northwest Arkansas Audubon Society, visit the site to view birds and other wildlife along the quarter-mile walking trail. Current and retired plant employees lead field trips and coordinate many other activities at the site.

Flint Creek was awarded Conservation Certification by the Wildlife Habitat Council (WHC) in 2018, in recognition of the plant's commitment to environmental stewardship. We received the certification for habitat enhancement programs, including tall grass prairie restoration, nesting boxes, pollinator garden landscapes and other bird habitat improvements. Flint Creek has held certification under the WHC's Corporate Lands for Learning and Wildlife at Work programs since 2004 and 2005, respectively, and since 2016 when the two programs were combined into the Conservation Certification.

From Mine to State Park

Beginning in 1947, surface mining operations helped convert millions of tons of coal into electric power for Ohio customers. When the mining stopped in the early 2000s, AEP began efforts to reclaim the land for public use. On July 17, 2018, AEP completed the sale of a portion of the land to create a new state park named in honor of Jesse Owens, turning it over to the State of Ohio.

At more than 13,000 acres, the Jesse Owens State Park and Wildlife Area is poised to become one of the state's largest parks once future sales are complete, attracting hundreds of thousands of visitors each year for fishing, canoeing, hiking, camping and other outdoor activities.

The transfer of land to the Ohio Department of Natural Resources (ODNR) was part of our ReCreation Land program, which seeks to ecologically reclaim Ohio land that was once surface-mined for coal. Throughout the history of this program, AEP has planted over 63 million trees, created 380 campsites and established 350 lakes and ponds stocked for fishing. As of February 2017, 58,800 acres have been reclaimed in Ohio through the program.

In 2018, we received an Electric Power Research Institute (EPRI) Energy and Environment Sector Technology Transfer Award for our work in assessing the remaining property acreage set aside for the Jesse Owens State Park and Wildlife Area. Moving forward, we will apply the results of this work to estimate the potential value of remaining ReCreation Land property and to make decisions regarding the divestment of the property for future environmental mitigations and eco-asset transactions.

Pollinator Week

During Pollinator Week (June 18-24), AEP joined other power companies across the country to raise awareness about the crucial role of pollinators in flower and plant fertilization, and about our efforts to facilitate pollinator population growth through vegetation management. We highlighted Pollinator Week through social and internal media and provided anecdotes, photos and information on how AEP supports pollinators throughout our 11-state service territory. In addition to social media posts, numerous photographs were displayed on the large interactive video screens in in our headquarters lobby in Columbus, Ohio. We will continue to participate in this effort in 2019.

Right-of-Way Conservation

AEP partners with a number of communities and nonprofit organizations for voluntary initiatives and projects that benefit pollinators and other wildlife. As part of these ongoing efforts, we partner with EPRI to create pollinator initiatives and right-of-way (ROW) vegetation management studies. One such initiative created a biodiverse prairie habitat on a transmission ROW near Newark, Ohio, in partnership with the nonprofit Dawes Arboretum. As part of this effort, we planted native prairie species in six test plots along the ROW, which includes forest and farmland habitat. In the first year of monitoring, researchers documented rich biodiversity: nine bee species, 21 bird species and nine butterfly species.

Over the next few years, researchers will continue monitoring the site's habitat quality, erosion control and tree growth.

ENVIRONMENT, SAFETY AND HEALTH PHILOSOPHY

No aspect of operations is more important than the health and safety of people. Our customers' needs are met in harmony with environmental protection.

ENVIRONMENT, SAFETY AND HEALTH POLICY

AEP is committed to social responsibility and sustainability. We are proactive in our efforts to protect people and the environment by committing to:

- Maintain compliance with all applicable Environment, Safety and Health (ES&H) requirements while pursuing the spirit of ES&H stewardship.
- Ensure that people working for or on behalf of AEP understand and integrate ES&H responsibilities into their business functions.
- Support continual improvement of environmental performance and pollution prevention.
- Hazard elimination through employee involvement and continual health and safety improvement.

INNOVATING FOR A CLEAN ENERGY FUTURE

“A clean energy future requires a combination of resources, innovation and technology. It also requires a hard look at how the traditional regulated utility business model treats innovation, because business-as-usual is not a viable option. We are thus advocating for changes that reward innovation in the energy industry while pursuing innovation along a number of parallel tracks.”

–Nick Akins, Chairman, President & Chief Executive Officer

SUSTAINABLE ELECTRICITY

Today's age of technology, innovation and disruption is transforming the electric industry. We have to be agile, innovative and more efficient to respond to this rapidly changing environment, stay relevant to our customers and be competitive in new markets. We see sustainable electricity as being cleaner, more technologically advanced, cost-effective and efficient.

Learn more

TECHNOLOGY & INNOVATION

Innovation has been fundamental to AEP’s growth and development throughout our history. We are harnessing new, digital technologies to create a smart, distributed grid.

Learn more

GRID MODERNIZATION

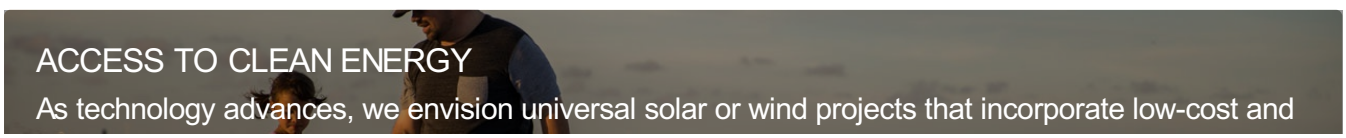
Today, customers expect their electric service to be more flexible, efficient and reliable. In response, we are modernizing and strengthening the grid to meet their needs today and in the future.

Learn more

BENEFICIAL ELECTRIFICATION

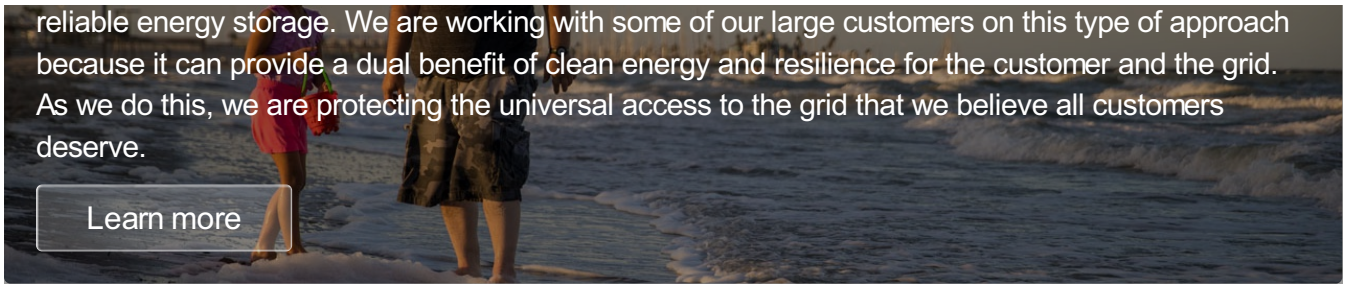
We envision a future where beneficial electrification creates new opportunities for growth, fewer CO_2 emissions, greater mobility, and optimization of the grid for all resources and technologies.

Learn more



ACCESS TO CLEAN ENERGY

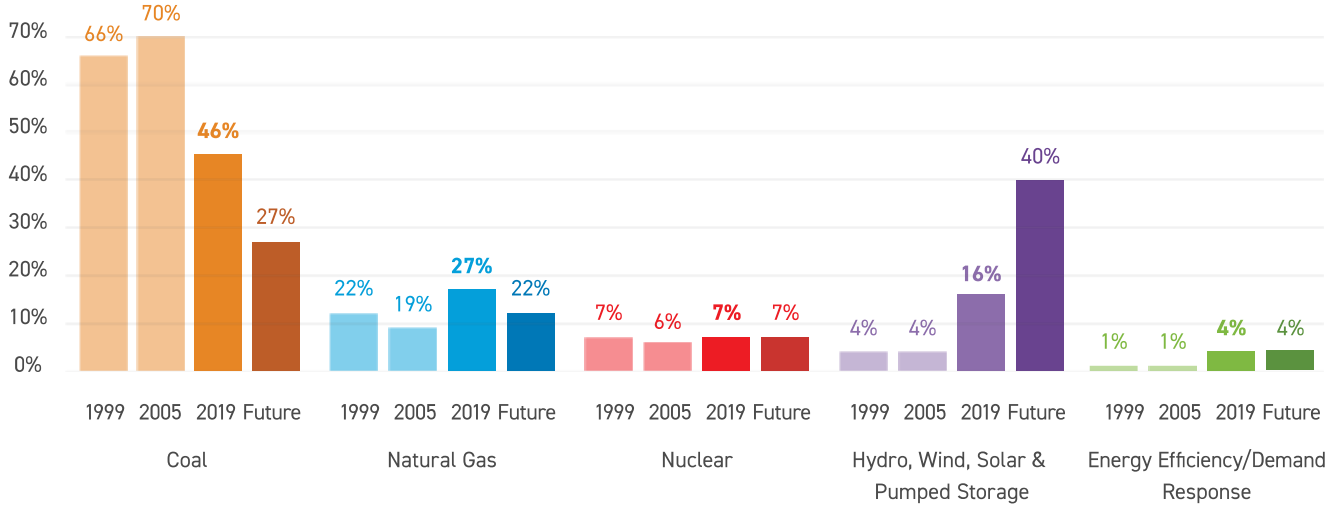
As technology advances, we envision universal solar or wind projects that incorporate low-cost and



SUSTAINABLE ELECTRICITY

Today's age of technology, innovation and disruption is transforming the electric industry. A changing fuel mix, falling power prices, increasing demand for renewables, the surge of distributed energy resources, higher customer expectations, and a deeper focus on cybersecurity and grid resilience are the catalysts for change. We have to be agile, innovative and more efficient to lead in this rapidly changing environment, stay relevant to our customers and be competitive in new markets. We see sustainable electricity as being cleaner, more technologically advanced, cost-effective and efficient.

TRANSFORMING OUR GENERATION FLEET— AEP'S GENERATING RESOURCE PORTFOLIO



2019 includes expected capacity as of year-end 2019. Future includes IRP forecasted additions and retirements through 2030. Energy Efficiency/Demand Response represents avoided capacity rather than physical assets.

We are diversifying our resource mix to serve our customers' needs, with an eye to the future of an electrified economy – the use of electricity to power not only buildings but also transportation systems and industrial processes. We must manage the transition carefully to protect the reliability and resilience of the power grid. At the same time, we envision a future where beneficial electrification across industry sectors creates new opportunities for growth, fewer CO_2 emissions economy-wide, greater transportation mobility, and optimization of the grid for all resources and technologies.

When we think about sustainable electricity, we look across the value chain to include fuel resources as well as transmission and distribution, energy efficiency, advanced technologies such as battery storage, distributed resources and data analytics. These give us the information we need to proactively operate and maintain the grid more efficiently. That's what our "all of the above" strategy is all about. At the center of this is our commitment to deliver an exceptional customer experience.

Our first obligation is to serve our customers with safe, reliable, reasonably priced and increasingly cleaner electricity and to maintain the reliability and resilience of the power grid. AEP's current business strategy and resource plans reflect a comprehensive and diverse approach to meeting those needs efficiently and cost-effectively. Our plan includes:

- Near-term investments in renewable energy within and outside of our service territory
- Technology deployment
- Modernization of the grid to optimize all resources and technologies with significant investments in our transmission

and distribution systems
- Increased use of low-carbon-emitting generation resources, such as natural gas
- Advancement of our integrated resource plans with regulators
- Energy efficiency and savings through technology, energy management and conservation programs on both sides of the meter
- Demand response programs
- Increased integration of distributed resources, including community and large-scale renewables
- Optimization of our existing generating fleet
- Support for advancing low-carbon fossil technologies

We have already made significant progress in reducing our carbon emissions from our early commitment as a founding member of the Chicago Climate Exchange. In February 2018, we announced new goals to reduce CO_2 emissions from generating facilities 60 percent from 2000 levels by 2030; and 80 percent by 2050. At the end of 2018, we had already reduced our CO_2 emissions by 59 percent. We are reevaluating our 2030 carbon reduction goal since we are so close to achieving it.

These goals reflect our current business strategy but will challenge us as our operating environment evolves. A combination of factors gives us confidence in our ability to achieve these reductions, including an aging coal fleet, our growing investments in clean energy and the potential of new and emerging technologies to make the power system more efficient, more decentralized, fully integrated and digitized. Read more about this in Carbon & Climate.

RESOURCE PLANNING & DIVERSITY

As a regulated utility, we must provide our customers with reliable energy at all times. To meet this demand in a cost-effective manner, we use a long-term approach to resource planning. We determine our energy and capacity needs well into the future so we may find the best mix of energy resources at reasonable costs to our customers. Achieving this proper energy mix requires a balance of both renewable energy sources – such as solar, wind and hydro – and 24/7 sources such as natural gas, nuclear and coal.

Integrated Resource Plans (IRP) provide a snapshot of a potential future generating mix, based on today's assumptions. An IRP is not a commitment to a specific course of action, as the future is uncertain and decisions relating to AEP's generation resources are subject to regulatory approval. Rather, it is a roadmap that shows the amount, timing, cost and type of potential future resource additions to meet customers' future energy needs at a reasonable cost.

Our publicly filed IRP's use a planning horizon of 10 to 20 years. They demonstrate how we will meet customer demands for reliable and affordable energy and allow us to estimate future emissions from our generation resources. The potential for carbon regulation has been part of our IRP process for many years and provides an important market signal when we are determining resource needs and costs.

AEP'S PROJECTED RESOURCE ADDITIONS

Operating Company	2020–2023			2024–2027			2028–2030		
AEP Ohio	Up to 400*	Up to 500*	—	—	—	—	—	—	—
Appalachian Power	15	—	—	300	300	—	450	—	—
Indiana Michigan Power	—	—	—	150	600	—	150	450	1,500
Kentucky Power	30*	—	—	20	—	—	40	—	—
Public Service Company of Oklahoma	11	up to 1,000*	410**	600	—	373**	600	200	—
Southwestern Electric Power Company	—	up to 1,200*	—	450	200	—	550	600	—
Totals	**up to 456**	**up to 2,700**	**410**	**1,520**	**1,100**	**373**	**1,790**	**1,250**	**1,500**

* Subject to regulatory filings currently underway

** To replace expiring PPA

To develop our IRPs, we systematically evaluate and balance multiple issues, including the increasingly complex existing and pending environmental regulations, technology advancements, changes in pricing fundamentals, load growth forecasts, energy efficiency advancements, growth in customer-adopted distributed resources and other complexities. Additionally, many IRP processes include stakeholder outreach.

> "The Stakeholder Committee of the Southwestern Electric Power Company's (SWEPCO) 2018 Integrated Resource Planning process would like to commend the company on an excellently prepared IRP and a thoroughly collaborative process. The Arkansas Public Service Commission (PSC) IRP Guidelines underscore the importance of a robust stakeholder engagement process, and SWEPCO has exceeded those Guidelines. Even when SWEPCO and the Stakeholder Committee disagreed, SWEPCO still performed additional analysis at the request of the Stakeholder Committee and provided rationale."

Once an IRP is developed, it is filed with the state regulatory commission. In some states, the commission will approve the IRP, determining that the plan is reasonable and in the public interest for its intended purpose.

INTEGRATED RESOURCE PLAN PROCESS

State Jurisdiction	AEP Operating Company	Filing Frequency	Planning Period	Stakeholder Input Process
Arkansas	Southwestern Electric Power Company	3 years	10 years	Yes
Indiana	Indiana Michigan Power Company	3 years	20 years	Yes
Louisiana	Southwestern Electric Power Company	4 years	20 years	Yes
Kentucky	Kentucky Power Company	3 years	15 years	No
Michigan	Indiana Michigan Power Company	5 years	20 years*	Yes
Ohio**	AEP Ohio	**	**	No
Oklahoma	Public Service Company of Oklahoma	3 years	10 years	No
Virginia	Appalachian Power Company	3 years	15 years	No ***
West Virginia	Appalachian Power Company & Wheeling Power Company	5 years	10 years	No

* I&M's 2018/19 MI IRP filing will be prepared according to the Indiana Commission's IRP requirements as permitted by 2016 MI Public Act 341 Section 6 t (4).

** Integrated resource plan only required under special circumstances.

*** Virginia has a formal regulatory hearing, with public intervention, before the Virginia SCC for such IRP submittals.

New IRPs filed by SWEPCO and Public Service Company of Oklahoma (PSO) call for significant additions of renewable energy. If approved, these additions would result in significant customer savings of fuel costs.

Read about the details of these and other projects in our Regulated Renewables discussion.

AEP Operating Company by State	Case Number/Docket
Southwestern Electric Power Company – Louisiana	SWEPCO LA I-33013 SWEPCO's LA DRAFT 2019 IRP
Southwestern Electric Power Company – Arkansas	SWEPCO AR Doc.07-011-U
Public Service Company of Oklahoma - Oklahoma	Docketless Case
Kentucky Power Company 2016 IRP - Kentucky	Case NO. 2016-00413
Appalachian Power Company – Virginia	Case NO. PUE-2016-00050
Appalachian Power Company – West Virginia	Case 15-2003-E-IRP
Wheeling Power Company – West Virginia	Case 15-2004-E-IRP
Indiana Michigan Power - Indiana	Docketless Case

RENEWABLES

According to the U.S. Energy Information Administration (EIA), roughly 36 percent of new generation sources brought online in the U.S. in 2018 were renewables. This marks the first time since 2013 that renewables accounted for a minority of new generation capacity in the U.S. Despite this recent slowdown, renewable energy sources are becoming further integrated into the national energy mix as technology advances and customer demand for clean

power increases.

Transmission is important to connecting renewables to the grid. Electric Transmission Texas (ETT), a joint venture between AEP and Berkshire Hathaway Energy, is interconnecting renewable generation in Texas at an impressive rate. For example, the Public Utility Commission of Texas (PUCT) issued a final order in September 2018 approving the Foard City Wind Project in less than four months. The new 345 kV transmission line in Foard County, Texas, will interconnect the 350 MW Foard City Wind Farm facilities to the grid. The project is expected to be placed in-service in May 2019.

As renewable energy becomes a larger part of AEP's clean energy future, we asked a sampling of our customers about their preferences. Prior to announcing two new solar projects totaling 400 MW in Ohio, AEP Ohio commissioned a study to better understand customers' attitudes and expectations for renewable energy. Navigant Consulting found a strong majority of customers believe it is important we make greater use of renewable energy, supporting our IRPs and energy strategy. Our new sustainability goal is to increase regulated renewable energy on our system by approximately 8,000 MW (per our integrated resource plans and pending regulatory approval) by 2030 and continue to expand competitive, contracted renewables. However, AEP needs support from state regulators to be able to invest in clean energy resources within our regulated utilities.

In September 2018, AEP Ohio filed a plan with the Public Utilities Commission of Ohio (PUCO) to support the development of 400 MW of solar power in the state's Highland County as part of a 2016 commitment to develop 900 MW of renewable resources in the state. This filing represents the single largest clean energy commitment in Ohio history and would more than double the state's renewable generation capacity. If approved, the projects would add 4,000 construction jobs and 150 permanent jobs, add approximately $24 million in new state tax revenue, and save customers an estimated $200 million over the 20-year life of the project compared with other sources for electricity.

AEP Ohio currently receives renewable generation service from the Wyandot Solar Farm near Upper Sandusky, Ohio; Fowler Ridge in Benton County, Indiana, and Timber Road in Paulding County, Ohio. Wyandot produces 10 MW of energy, and Fowler Ridge and Timber Road each produce about 100 MW.

As technology advances, we envision universal solar or wind projects that incorporate low-cost energy storage to minimize or smooth intermittency on the grid and increase reliability. We are working with some of our large customers on this type of approach because it can provide a dual benefit of clean energy and resilience for the

customer and the grid. As we do this, we are protecting the universal access to the grid that we believe all customers deserve.

APPROXIMATELY
11,900MW of
Renewable Generation Interconnected Across the U.S. via AEP's Transmission System Today

AEP'S 2019 RENEWABLE PORTFOLIO

Hydro, Wind, Solar & Pumped Storage	Owned MW	PPA MW	Total MW
AEP Ohio	—	209	209
Appalachian Power	785	575	1,360
Indiana Michigan Power	36	450	486
Public Service Company of Oklahoma	—	1,137	1,137
Southwestern Electric Power Company	—	469	469
Competitive Operations	1,436	175	1,611
Total	**2,257**	**3,015**	**5,272**

Includes expected capacity as of year-end 2019.

RENEWABLE PORTFOLIO & ENERGY EFFICENCY STANDARDS

Energy Efficiency Standards

ARKANSAS (mandatory)
0.9% of 2015 retail sales in 2017 and 2018; 1.0% of 2015 retail sales in 2019.

LOUISIANA (voluntary)
Voluntary 2-phase EE plan.

OHIO (mandatory)
22% reduction of retail electricity sales by 2027 phased in beginning in 2009.

MICHIGAN (mandatory)
1% annual reduction of previous-year retail sales in 2012 to through 2021.

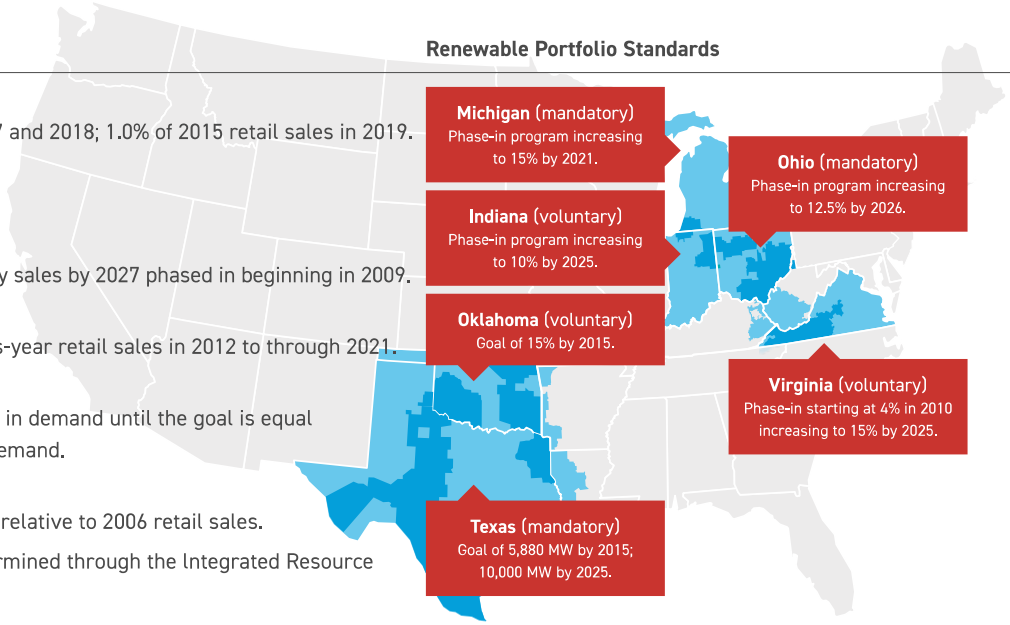
TEXAS (mandatory)
30% reduction in annual growth in demand until the goal is equal to 0.4% of previous-year peak demand.

VIRGINIA (voluntary)
10% electricity savings by 2022 relative to 2006 retail sales.

Note: Indiana EE goals are determined through the Integrated Resource Planning Process (SB 412).

There are currently no energy efficiency standards in Kentucky, Oklahoma, Tennessee or West Virginia.

Renewable Portfolio Standards



There are currently no renewable portfolio standards in Arkansas, Kentucky, Louisiana, Tennessee or West Virginia.

Regulated Renewables

We continued efforts to expand our regulated renewable portfolio across our service territory. Based on current resource

plans, up to 3,766 MW of solar energy and 5,050 MW of wind energy additions are projected to come online between 2020 and 2030.

Southwestern Electric Power Company (SWEPCO) and Public Service Company of Oklahoma (PSO) are currently evaluating proposals for new wind energy projects expected to be operational by the end of 2021. SWEPCO is seeking to add up to 1,200 MW of wind energy, and PSO is seeking up to 1,000 MW of added wind capacity. These new projects will comprise multiple smaller-scale installations, each with at least 100 MW in capacity.

Projects must qualify for at least 80 percent of the federal Production Tax Credit, and those that are selected will be reviewed by the appropriate state and federal regulatory commissions. SWEPCO and PSO anticipate filing for regulatory approval in the third quarter of 2019. The new projects will add to SWEPCO's 469 MW of existing wind energy through power purchase agreements with facilities in Texas, Oklahoma and Kansas, and PSO's 1,137 MW of existing wind energy in Oklahoma.

In November 2018, Appalachian Power (APCo) began seeking proposals to acquire up to 200 MW of new solar energy projects in Virginia. This is in response to the Virginia Senate's passage of Bill 966, requiring APCo to build or acquire new solar generation before 2028.

In early 2019, the Virginia State Corporation Commission (SCC) approved APCo's proposal to provide its customers with the opportunity to purchase 100 percent renewable energy at a modest premium. The renewable energy will come from APCo's existing or planned renewable resources. Participants who use 1,000 kWh of energy per month will pay an additional $4.25 per month.

Meanwhile, Kentucky Power issued a request for proposals (RFP) in 2018 to add up to 20 MW of solar energy to meet growing customer interest in renewables. The project will be located within Kentucky Power's service territory and is expected to be operational by the end of 2021.

Contracted Renewables

As we balance our resource portfolio mix with renewables, we are looking beyond our traditional service territory for investments. We offer low cost of capital and energy project expertise to potential partners, creating attractive solutions to energy customers. This is especially appealing to companies, universities and municipalities that often have their own renewable energy goals.

Between 2019 and 2023, we plan to invest $2.2 billion in contracted renewables to provide the energy solutions our customers desire. In April 2019, we acquired Sempra Renewables LLC and its 724 MW of operating wind generation and battery storage assets. This accelerates our contracted renewable strategy and expands our total renewable portfolio to 16 percent of our 2019 generating capacity mix, making AEP the seventh largest utility owner of competitive wind projects in the U.S.

In 2018, AEP Renewables formed a joint partnership to re-power roughly 350 MW at two previously wholly-owned Texas wind farms, Desert Sky and Trent Mesa.

The deal includes seven operating wind farms in Colorado, Hawaii, Indiana, Kansas, Michigan, Minnesota and Pennsylvania, and all have long-term power purchase agreements in place for 100 percent of the energy produced. In addition, AEP Renewables signed a separate agreement to purchase a 75 percent stake (227 MW) in the Santa Rita East Wind Project currently under construction near San Angelo, Texas.

In 2018, AEP Renewables formed a joint partnership to re-power roughly 350 MW at two previously wholly-owned Texas wind farms, Desert Sky and Trent Mesa. The project re-powered and/or replaced 207 aging wind turbines with new equipment, resulting in a 20 percent increase in annual energy production. AEP Renewables owns 79.9 percent of the project, or 261 MW.

Today, AEP Renewables portfolio includes 351 MW of wind and solar. With the acquisition of Sempra Renewables and

the mid-2019 completion of the Santa Rita wind farm, the portfolio will grow to 1,302 MW of renewable generation.

OnSite Partners

OnSite Partners is another AEP competitive business offering energy solutions for customers to reduce emissions or lower their cost and energy profile. OnSite Partners' portfolio of distributed energy solutions currently includes 56 projects across 15 states, with a total investment of $335 million. The projects use a variety of technologies, such as behind-the-meter solar, community solar, substations, batteries and a fuel cell. OnSite Partners currently has approximately 85 MW of installed direct current solar capacity and approximately 57 MW under construction.

OnSite Partners also has an active joint venture in New Mexico with PNM Resources to invest in renewable generation for customers and other public power entities. The project has a total of 21 MW of direct current solar sites in operation and another 67 MW of solar under construction.

+ click to enlarge

Traditional Programs

Over the years, AEP has provided a broad array of traditional energy efficiency and demand response programs for customers. We have excelled in meeting the requirements and expectations of legislators and regulators, worked cooperatively with a variety of interested stakeholders, and delivered exceptional results for our customers and environmental benefits.

The same objectives of these traditional programs remain as relevant today as they've always been – helping customers save money, reducing environmental impacts, and optimizing the use of the grid. Only now, there are boundless new technologies and customer engagement options in how we manage energy. Electric vehicles, voice-enabled home energy management apps, and high-tech industrial technologies are just a few of the many ways we can work with our customers to achieve even better results.

Energy Efficiency Programs

We view energy efficiency as a readily deployable, competitively priced and clean energy resource that provides many benefits to our customers and the environment. Today, AEP offers customers more than 120 programs across nearly all of our 11-state service territory. In 2018, AEP's energy efficiency programs were credited with more than 1 million megawatt hours (MWh) of energy reduction and more than 270 megawatts (MW) of demand reduction.

For the period 2008 through 2018, these programs have cumulatively reduced annual consumption by over 8 million MWh and peak demand by approximately 2,555 MW.

2018 AEP SYSTEM ENERGY EFFICIENCY RESULTS & ESTIMATED AVOIDED CO_2 EMISSIONS

Operating Company	Annual Energy Savings (MWh)	Annual Demand Savings (MW)	Avoided CO_2 Emissions (Metric Tons)
AEP Ohio	509,963	80	235,668
Appalachian Power	61,505	4.9	51,677
Kentucky Power	3,064	0.5	3,167
Southwestern Electric Power Company	66,398	30	61,850
Indiana Michigan Power	169,032	32	61,426
Public Service Company of Oklahoma	137,783	74	73,803
AEP Texas	74,512	52	37,599
2018 Total	**1,022,257**	**273.4**	**525,189**

In 2018, the U.S. Environmental Protection Agency announced its annual ENERGY STAR® awards for businesses and organizations that have made outstanding contributions to protecting the environment through superior energy efficiency achievements. AEP Ohio was recognized as ENERGY STAR Partner of the Year – Sustained Excellence winner.

Southwestern Electric Power Company (SWEPCO) was recognized as an ENERGY STAR Partner of the Year for its program in Arkansas. Public Service Company of Oklahoma (PSO) received the ENERGY STAR Partner of the Year – Energy Efficiency Program Delivery award.

In 2019, the American Council for an Energy Efficient Economy (ACEEE) recognized SWEPCO for having one of the nation's outstanding energy efficiency programs. In a national review, ACEEE selected SWEPCO's Arkansas Home Performance with ENERGY STAR program to receive an Exemplary Program Award based on its effectiveness and innovation in helping residential customers achieve greater levels of energy efficiency.

The AEP Ohio Energy Efficiency Marketplace is a one-stop shop for our customers to save energy, money and time. The marketplace analyzes data on more than 50,000 energy-efficient products, such as appliances, televisions, smart thermostats and water heaters. Customers can go online and find prices, consumer ratings, energy efficiency ratings and product details in one convenient spot to help them find the most efficient products at the lowest prices.

Appalachian Power's new TakeCharge energy efficiency programs in Virginia and West Virginia give customers more options for taking control of their energy use, costs and bills. In addition to the portfolio of programs the company has offered in both states, it recently received approval for two new programs in Virginia. The Bring Your Own Thermostat program allows residential customers with qualifying smart thermostats to earn incentives for allowing APCo to adjust their central air conditioning by a few degrees during peak summer demand periods. And the Small Business Direct Install Program helps small businesses with no-cost energy-saving upgrades, such as LED bulbs, showerheads, faucet aerators and more.

We have also taken measures to reduce energy consumption in AEP's office buildings and service centers. We reduced our kilowatt-hour (kWh) usage, when normalized for weather, by 27 percent in 2018, compared to the 2007 baseline, in nearly 280 buildings. The dollar savings from the reduced energy consumption was approximately $6 million in cost savings in 2018. We achieved these energy consumption reductions mostly through equipment investments, such as new lighting, heating and cooling systems, along with employee education.

AEP recently received LEED certification for our transmission service center in Oklahoma and two service centers in Indiana, bringing the total number of AEP LEED-certified facilities to nine.

Demand Response

AEP's demand response programs support the power grid by helping to reduce load in periods of peak demand, such as during heat waves and cold spells. Some programs include special rate structures that encourage our customers to reduce their energy consumption during these peak demand periods. For some customers, we have contracts that allow us to "interrupt" their power consumption during peak times in exchange for reduced rates.

Peak demand is the amount of power used at times of maximum power usage, and varies across our service territory. For example, Appalachian Power Company's system peak generally occurs on winter weekday mornings, when electric heating and appliance usage are happening at the same time that commercial equipment and industrial machinery are ramping up for the workday. Public Service Company of Oklahoma's system, on the other hand, typically peaks in the afternoon of a summer weekday, as people get home from work or school and increase their use of air conditioners and fans while the demand from commercial and industrial customers remains high.

Historically, as peak demand grows with the economy and population, new capacity would ultimately be needed. Today, AEP can reduce the need for building new power plants through the use of our demand response programs that are managed on the grid.

Challenges

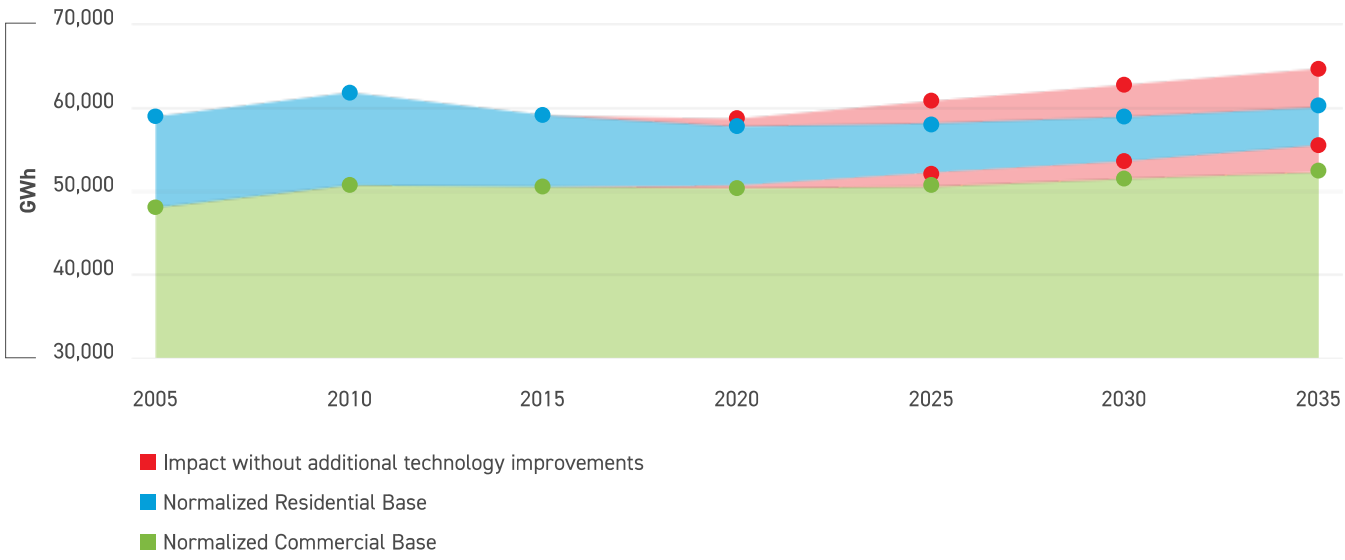
The successes of our energy efficiency and demand response programs in recent years has reduced overall electricity usage and demand requirements across the power grid. A significant amount of this improvement has come from programs such as our efficient lighting upgrades. In the past, we could provide incentives for our customers to upgrade their lighting from incandescent bulbs to compact fluorescent or LEDs. The cost of this incentive was fairly low, and the decrease in energy use was significant, resulting in a very cost-effective efficiency program. However, as lighting and

other appliance standards increase, these low-cost options are dwindling.

The next generation of energy efficiency options includes relatively expensive and more involved customer decisions, such as improving home insulation or upgrading HVAC equipment. The incentives required to achieve these types of energy efficiency reductions are much higher, making them relatively less cost-effective. Even though AEP provides incentives to our customers for these upgrades, they are often prohibitively expensive for many of our customers.

AEP shares the concern that some legislators and regulators have expressed regarding the impact of increased rates resulting from these programs, especially among our low- and moderate-income customers. We have seen this concern raised by policymakers in several states across our service territory. For example, Kentucky regulators ordered Kentucky Power to suspend most of its energy efficiency programs in 2018 to address cost impacts to customers.

ENERGY EFFICIENCY TECHNOLOGY IMPACTS TO AEP'S SALES FORECAST



This chart reflects forecasted impacts of energy efficiency on residential and commercial sales within AEP's service territory. The red shaded area represents what our residential and commercial sales would have been if not for the increasing energy efficiency that is assumed will occur.

Demand Management

Home Energy Management

Our customers have access to an ever-increasing number of choices for home energy management, and they expect a personalized experience with their products and services. To be their preferred choice, we have to provide our customers with the relevant energy insights and tailored solutions they need to understand and control their energy use and bills. And we have to do it in a manner that is consistent with their lifestyle while simultaneously managing the system for the benefit of all customers.

Customer surveys show AEP's residential customers want more timely and detailed information about their energy usage to manage their bills and reduce costs, with 58 percent saying they want personalized energy guidance from us. As 39 percent of customers already own a smart thermostat, we have an opportunity to add value by using the smart hardware already installed in our customers' homes.

Home Energy Management (HEM) is a suite of integrated solutions from AEP that gives us the foundation to do all of these things. In 2018, personalized HEM information was available to customers in AEP Ohio, Public Service Company of Oklahoma (PSO) and Indiana Michigan Power (I&M).

IM Home, Indiana Michigan Power (I&M) Company's innovative home energy management program, allows our customers to use a mobile app and a Wi-Fi-enabled thermostat to control their energy use at any time. The program can automatically pick the best time to cool the home, using the least amount of energy, according to the customer's comfort preferences. The smart thermostat program gives customers year-round energy savings.

A feature of this program was the release in 2018 of our HEM voice-assisted app that works with Google Assistant and Amazon's Alexa platforms. Through the app, customers can use voice commands to access their account or energy use information using either platform. The program is currently available only to I&M customers, but we are considering expansion across our service territory. Learn more in Customer Channels.

Residential customers of AEP Ohio who have smart meters can participate in a home energy management program that allows them to manage their energy use in real time. Through the It's Your Power! program, customers can download an app that allows them to automate and control smart devices as well as receive real-time updates on the energy their home is using. Other benefits of the program include the ability to remotely adjust their thermostat, set a budget goal for electricity usage and pay their bill online.

Beneficial Electrification

Electrification of end-use technologies in industry, buildings and the transportation sector, combined with cleaner electricity from the grid, creates a clear pathway for a low-carbon future and universal access to clean energy. The road to electrification is complex and challenging, but the long-term reward is significant for the environment, society and business.

Electrification technologies, such as electric vehicles (EVs) require effective planning to ensure the technology and infrastructure are in place to meet our customers' needs. We must also have the right policies and regulations in place to support them. We are working with technology and research partners, customers, policymakers and other stakeholders to understand the implications and opportunities of large-scale electrification as we transform to a digital economy. This engagement will allow us to identify and support these technologies, maximize customer benefits and ensure development of policies and regulations that help our customers and communities.

New Opportunities

In 2018, AEP launched a new energyconversionhub.com website as part of our new beneficial electrification program for commercial and industrial (C&I) customers. The intent is to highlight the economic and environmental benefits of using electricity to improve their operations. The website provides easy access to a portal of useful information on:

- Infrared (IR) curing and drying – IR is commonly used to dry textiles and paper products, heat metals and plastics, and dry and cure paint. Electrifying this process is more energy efficient and flexible in terms of achieving the desired heating intensity compared with using natural gas.
- Pipeline compression – Compressor stations for natural gas pipelines serve as a type of engine that compresses gas (increases its pressure) to provide the energy needed to move the gas through the pipeline. Electrification of compressors can improve efficiency and operations, as well as reduce air emissions.
- Induction surface treatment – Induction hardening uses electromagnetic fields to induce electric currents into metal, rapidly heating the steel and then rapidly cooling (quenching) it to increase hardness and durability. The power and frequency of the electromagnetic fields can be adjusted to regulate the depth and temperature of surface heating. Underlying metal layers remain unaffected.
- Forklifts – While forklifts have historically used internal combustion engines and fossil fuels, electric technology advancements allow users to achieve substantial benefits. In addition to being more energy efficient, they are better for the environment, allow service in challenging enclosed spaces and reduce noise while increasing safety.

Electric Transportation

The electric mobility revolution continues to accelerate throughout the world and in our service territory. Electric vehicle (EV) adoption provides substantial environmental and economic benefits for society. It will also have substantial impacts on many major industries, including the electric utility industry.

According to a 2018 study by the Edison Electric Institute (EEI), there are more than 1 million EVs on the road today.

Another million EVs are expected over the next three years, and by 2030, the total number of EVs will climb above 18 million in the U.S. AEP is working to help customers and communities achieve the benefits and rewards of electric transportation by improving customer awareness of and education about EVs, supporting EV charging options where we park, and helping to mature transportation corridors to enable long-distance electric travel for all drivers. We are seeing greater adoption: at the end of 2018, there were more than 10,000 registered EVs and plug-in hybrid electric vehicles (PHEVs) across our service territory, with nearly half of those in Ohio.

We are also providing tools and guidance to our customers on how to better manage their fleet. These analytical tools show that replacing a vehicle with a similar EV that is on the market can provide a 50 percent reduction in first-year fuel cost, as well as a 40 percent reduction in first-year tailpipe emissions. When fleet managers understand these benefits specific to their needs, they are empowered to make decisions to adopt EVs that benefit their business, customers and communities.

We are working today to identify and deploy technologies, solutions and programs to address the challenges and opportunities that EVs will present. Our objective is to increase adoption of electric transportation in our service territory and provide charging options that optimize the use of the grid for the benefit of all customers. This will require leading by example with our own fleet transformation, customer outreach and education; managing charging to optimally integrate EVs with the grid; increasing public infrastructure; and engaging with our legislative and regulatory stakeholders to get the rules right.

AEP'S ELECTRIC TRANSPORTATION STRATEGIC FRAMEWORK

Mission: Increase adoption of electric vehicles in our service territory and provide customer charging options that optimize the use of the grid for the benefit of all customers.

We believe we are well-positioned to play an important role in supporting EV market development. We are actively working with policymakers and customers to develop and implement incentive programs to help jump-start and support adoption of EVs in our service territories.

2018 EV Accomplishments:

In 2018, AEP began expanding the use of EVs throughout our own company, including integration of EVs into our fleet of work vehicles. We have a program in place to prioritize EV charging stations, with approximately 100 ports installed across our facilities and plans to install more. This workplace EV charging system received an Electric Power Research Institute (EPRI) Technology Transfer Award in 2018, demonstrating its applicability across our industry.

In April 2018, AEP Ohio received regulatory approval to implement an EV charging station incentive program. The program offers incentives for up to 375 charging stations at government-owned properties, workplaces, multifamily housing units and in low-income neighborhoods. In 2018, 54 projects were approved through this program, representing 136 Level 2 charging ports and nine DC Fast Charging Stations. Read more in Smart Columbus.

As we optimize our existing grid assets, we are offering customers options and rates that encourage the efficient use of the grid. Our goal is to simplify charge-at-home options and enable our customers to charge their EVs in an affordable way. For example, having a special rate for night-time charging would make it more cost-effective for customers to recharge their EVs later at night to save money. It would also help us better manage the demand on the grid to ensure reliability.

Indiana Michigan Power (I&M) received approval to update its EV tariff to improve home charging options and make it easier for customers to gain access to EV infrastructure. This type of policy change is what's needed to enable quicker adoption of EVs and the supporting infrastructure.

Following a legal settlement between Volkswagen and the federal government over violations of the Clean Air Act, Volkswagen agreed to provide $2.7 billion to the states for environmental mitigation projects. AEP continues to advocate for using these funds to support EV charging infrastructure.

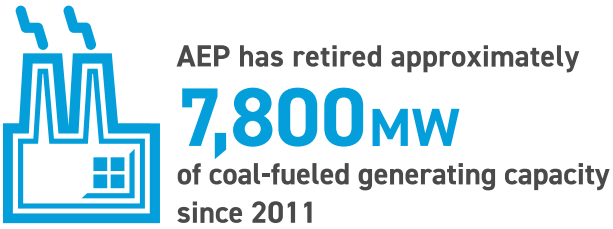
Technology Transfer Award

An AEP team received a Technology Transfer Award from EPRI in 2019, recognizing the team's use of standards and methodologies created by EPRI to figure out how to deploy a network of vehicle charging stations at a workplace in an economical and scalable way. Access to charging at work can be an important enabling factor in wider adoption and leverages one of the longest vehicle idle time applications, second only to residential charging. The team led the installation of EV charging infrastructure at AEP's corporate headquarters, which is one of the largest workplace installations in the country, proving a pathway for reducing the cost of incremental port additions and slashing the installed cost by over 70 percent compared to traditional approaches.

TRADITIONAL GENERATION

Coal Fleet Optimization

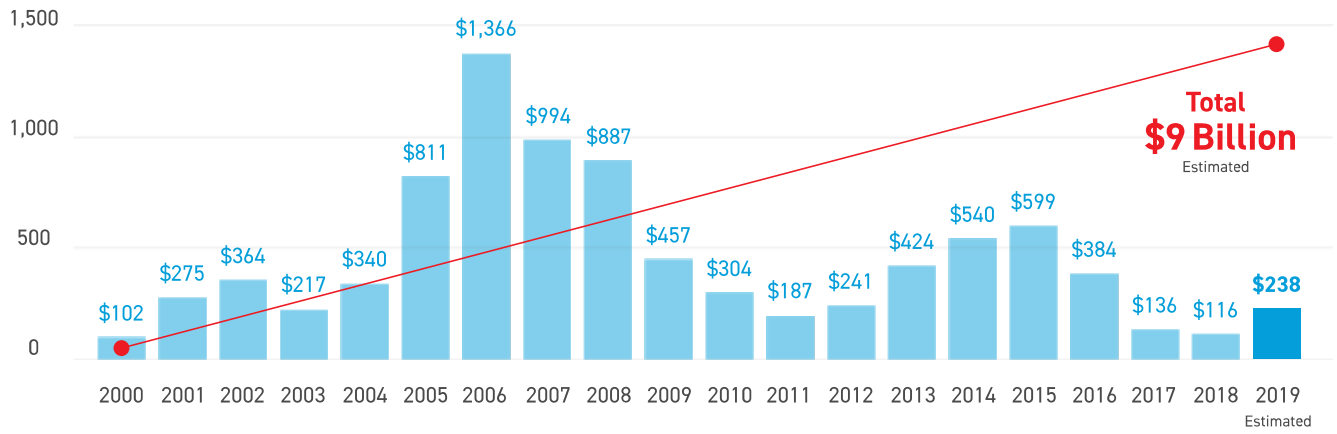
At the end of 2018, coal represented 47 percent of AEP's generating capacity, compared with 70 percent in 2005. While coal is a smaller portion of our fuel portfolio today than in the past, it will continue to remain an important resource for the foreseeable future. Coal helps provide us with the flexibility necessary to manage the intermittent nature of renewable and distributed energy resources and maintain grid reliability.



AEP has retired approximately 7,800 MW of coal-fueled generating capacity since 2011. Our remaining coal units will continue to provide critical 24/7 energy and other services to the grid to ensure reliable, uninterrupted electricity for our customers. These facilities are equipped with environmental controls to assure compliance with current regulations. We make investments as needed to comply with environmental regulations that keep our fossil-fueled generating capacity available to serve customers. These environmental upgrades will continue through 2025.

In 2018, we announced the retirement of two more coal generation facilities. AEP Generation Resources will close Conesville Units 5 and 6 with a total generating capacity of 820 MW (AEP's ownership) – in May 2019 and will close the 651 MW-Unit 4 in May 2020. We also announced the closure of our 460 MW (AEP's ownership) Oklaunion Plant in Oklahoma. The Oklaunion Plant, co-owned by AEP Texas and Public Service Company of Oklahoma, will retire in 2020.

INVESTMENTS IN ENVIRONMENTAL CONTROLS $ in millions



Our use of coal generating facilities changes in response to changing market conditions. Factors such as fluctuating natural gas prices and seasonal capacity needs dictate when coal units are used to serve customer demand. Today, we manage the remaining coal fleet to reduce the need for capital investment over time, allowing us to optimize the operation of the units, as well as investment and depreciation rates. This approach delivers value to both our customers and shareholders. By 2030, more than half of AEP's coal units will be within 10 years of reaching the end of their 60-year typical useful lifespan.

Although we have no plans to build another coal plant, we continue to monitor the development of new technologies, including carbon capture and storage. Should any of these technologies be demonstrated commercially to improve the scalability and cost-competitiveness of low-carbon fossil-fueled power generation in the future, we would want to have those technology options available for consideration.

To support development, demonstration and deployment of these technologies, the industry - along with the Electric Power Research Institute, the U.S. Department of Energy, technology suppliers and academia is working to develop state-of-the-art processes, equipment and components, new metal alloys, alternative materials and advanced manufacturing techniques, all of which could have beneficial impact on the industry.

Learn more about AEP's strategic vision for reducing carbon emissions.

Natural Gas

In 2018, natural gas accounted for approximately 28 percent of AEP's generating capacity. According to the U.S. Energy Information Administration (EIA), natural gas has surpassed coal as the main fuel for electricity generation and will continue to grow its share of power production through 2050. AEP's consumption of natural gas to generate electricity by our regulated utilities in 2018 was up by 29 percent from 2017, largely due to lower natural gas prices and increased demand for electricity. As natural gas becomes an increasingly important 24/7 resource for the future, price, availability and security of supply become higher priorities.

Natural gas is a fundamental part of our portfolio as we seek to diversify our resources while maintaining 24/7 reliability and resilience of the power grid. As wind and solar capacity increases, we need a back-up source of power to ensure the grid operates uninterrupted when other resources are unavailable. Natural gas provides the flexibility renewables need due to their intermittency.

NATURAL GAS

	2016	2017	2018
Total Delivered (billion cubic feet)	103.9	86.3	**111.6**
Average Price Per MMBtu of Purchased Natural Gas	$2.77	$3.37	**$3.26**

Includes Vertically Integrated Utilities

Natural gas emits approximately 50 percent less carbon dioxide compared with coal when burned to generate electricity. High-efficiency combined-cycle natural gas plants can also be built and operated with fewer environmental control systems than a coal-fueled plant. Since 2005, AEP has added over 3,000 MW of natural gas generating capacity to our portfolio, and we anticipate continued growth. At the same time, we are looking for new technologies that are more efficient and have the flexibility needed to meet changing customer

needs.

Reliability of supply is vital to reliability of the grid, which is why we remain concerned that an overreliance on natural gas for power generation comes with great risk to the grid and our customers. Assuming favorable foreign markets, as the U.S. continues to export more natural gas, we expect prices to increase in the long term. If our industry becomes overly dependent on natural gas generation, our customers will be more exposed to the potential volatility and price increases in the natural gas market.

Because natural gas facilities rely on a constant supply of fuel to operate, it is critical that we maintain a steady flow of natural gas to our generation plants at all times. This is why several of our natural gas plants are connected to two pipelines or have alternative fuel capabilities. Another challenge we face is limited and aging natural gas infrastructure, which limits our ability to receive natural gas to meet demand at all times. We continue to work with regulators to help manage this risk and gain more certainty and flexibility when procuring and scheduling natural gas delivery for our units.

We remain concerned that the majority of current natural gas security issues (cyber and physical) are addressed through voluntary guidelines. The Energy Policy Act of 2005 authorized the creation of an audited self-regulatory "electric reliability organization" that spanned North America, with FERC oversight in the United States. The legislation made compliance with reliability standards both mandatory and enforceable. In July 2006 FERC certified NERC as the electric reliability organization for the United States. While NERC takes its security responsibilities very seriously, it does not currently have jurisdiction over the natural gas industry. As the electric industry becomes ever more reliant on the natural gas industry, the disparity in regulation is of growing concern.

Carbon Capture and Storage for Natural Gas

To date, the vast majority of the work on carbon capture and storage (CCS) has been performed on coal-fired generation. However, since AEP completed the Mountaineer CCS validation project in 2010, the development of the technology has slowed significantly. In that time, there have only been two commercial scale demonstrations of CCS technology. This slow pace of development can largely be attributed to the high cost of CCS; technical and financial risks associated with capture, storage and enhanced oil recovery; and the lack of regulatory compliance mandates for CO_2 reductions. We will continue to monitor CCS technology development.

Nuclear & Hydro

Carbon-free electricity has been part of AEP's generating portfolio for decades. Customers across our service territory continue to benefit from our operation of nuclear and hydroelectric generation.

AEP has 933 MW of hydro and pumped storage on its system, serving customers in five states.

Nuclear energy is one of the most reliable carbon-free sources of electricity. The Donald C. Cook Nuclear Plant in Bridgman, Michigan, can provide 2,278 MW of electricity when operating at full power. The plant's two units are located along Lake Michigan's eastern shore, producing electricity to serve our customers in Michigan and Indiana.

Cook's two units were originally designed for a 40-year life, but in 2005 the licenses were extended by 20 years to 2034 for Unit 1 and 2037 for Unit 2. In 2018, Unit 1 surpassed four years of continuous service (excluding time to refuel, which occurs every 18 months), an industry leading accomplishment.

We are undergoing a Life Cycle Management (LCM) project to replace key components and extend the useful life of the Cook facility. We are starting to upgrade the electronic systems throughout the plant, including the reactor protection systems.

The Cook Plant is part of an industrywide, multi-year strategy to transform the industry and ensure the plant's long-term

viability. The strategy, called Delivering the Nuclear Promise, identifies efficiency measures; adopts best practices; and applies new technology solutions that improve operations, reduce costs and drive regulatory and market change to ensure nuclear energy facilities are fully recognized for their value and don't succumb to premature reactor retirements.

Another clean energy resource serving our customers for more than a century is hydroelectric power. AEP has 933 MW of hydro and pumped storage on its system, serving customers in five states.

The Byllesby hydro plant, owned and operated by Appalachian Power, was inducted into the Hydro Hall of Fame in 2018. To be eligible, plants must be in continuous operation for more than a century. The 19 MW plant on the New River in southwestern Virginia began operation in 1912.

GRID RELIABILITY & RESILIENCE

Maintaining the approximately 260,000 miles in our transmission and distribution network comes with an array of challenges even as we upgrade our infrastructure to meet modern-day needs. These challenges include the age of our infrastructure, the threat of external interruptions, the transformation of our generation fleet, the difficulty of siting new facilities, new and future environmental regulations and the magnitude of investments needed.

As we modernize the grid, we are designing in practices, materials and standards for ensuring long-term reliability and security of the system. However, we can't prevent all power outages, so our response to them, when they do occur, is critical for our customers and our reputation.

Severe weather, vegetation that comes in contact with our electric facilities and the collision of vehicles with power poles are major causes of power outages. In fact, distracted driving is fast becoming a leading cause of crashes with poles in parts of our service territory. The terrain in our service territory is also a factor. For example, in West Virginia and Kentucky, where it is mountainous and our facilities are difficult to reach, outages are more likely to be caused by vegetation and harder to restore because of the location of equipment.

In response, we are investing in infrastructure and using technology and data analytics to predict, prevent, and mitigate service disruptions and better communicate with our customers. We are installing new equipment and facilities that support and integrate renewable and distributed energy resources, and using analytics and other tools to monitor and predict events. These efforts make our system more resilient and agile by allowing us to be proactive with maintenance of the system. We are also providing better information to our customers about their energy usage, outages and other issues. Through these efforts, we can ensure our ability to provide our customers with the energy they need, when they need it.

Grid Reliability Modeling

In 2018, AEP Transmission hosted the Power System Modeling Conference, a two-day event sponsored by the North American Electric Reliability Corporation (NERC), the North American Transmission Forum (NATF) and the Electric Power Research Institute (EPRI). Experts from AEP joined about 150 others from around the industry to cover a wide range of topics related to modeling energy reliability and resilience, including energy storage systems, real-time grid assessments and the impacts of distributed energy resources on the power system.

This type of modeling uses real-world information, such as the physical characteristics of equipment deployed in the field, to help system planners and operators predict what could happen on the system during certain conditions and events. This modeling is particularly important due to the growth of distributed energy resources on our system, such as wind and solar, and the evolution of technologies such as energy storage.

RELIABILITY INVESTMENTS

The Regional Transmission Organizations (RTOs) in which AEP operates often determine upgrades to the transmission grid to address region-wide reliability, market efficiency and public policy needs. RTOs will then assign these projects to transmission owners such as AEP to build the lines and facilities.

We plan to invest $24.9 billion between 2019 and 2023 on transmission and distribution infrastructure to strengthen and modernize our network to address critical system reliability risks and protect the grid from physical and cyber threats. AEP will direct a large portion of this investment to improve local reliability issues, many of which are the result of our aging system. In 2018, AEP invested roughly $4.5 billion in these infrastructure improvements.

The primary direct benefit that customers receive from these investments is improved reliability and resiliency. To ensure every dollar we invest counts, we conducted a system-wide audit to identify our least reliable facilities and equipment at the greatest risk of failure and scheduled these for expedited upgrade or replacement. Based on a sampling of 14 completed transmission line rebuild projects, customer outage duration was decreased by 97 percent from pre-investment levels.

A more robust transmission grid also supports economic and job growth. According to an AEP-commissioned study, between 2017 and 2019, our planned $9 billion transmission investment will produce an estimated $12.7 billion in economic activity and support roughly 34,000 jobs. In addition, the new transmission developments will provide more than $600 million in additional state and local tax revenues.

In the same study on the direct and indirect impact of our transmission investments, we applied this historical effectiveness to a sample of 62 transmission local reliability upgrades targeted for completion in the 2012–2019 capital budget. The report concludes these investments will yield an estimated customer outage reduction benefit of approximately $75 million per year and a net present value of $1.4 billion of benefits over the lifetime of the investments.

AEP Texas submitted two major 345-kV double-circuit transmission lines for approval to the Public Utility Commission of Texas (PUCT) in October 2018. The new transmission lines are the Bakersfield to Solstice Project and the Sand Lake to Solstice Project in Pecos, Reeves and Ward counties. The Electric Reliability Council of Texas (ERCOT) recommended both projects as critical to the reliability of the region's transmission system, and we expect a decision to be made on the proposed projects in 2019. If approved, the projects are scheduled to be in-service by December 2020.

In 2018, AEP Transmission became a member of the Midcontinent Independent System Operator (MISO) RTO, bringing to four the number of RTOs within which AEP has assets. A project mandated by MISO in northern Indiana was the $347 million Greentown-to-Reynolds Project, which went into service in 2018. The project was built by Northern Indiana Public Service Company (NIPSCO) and Pioneer Transmission, a joint venture between AEP Transmission and Duke Energy. The 70-mile line links Greentown Station with NIPCSO's Reynolds Station. The new line improves reliability in that region and assures access to regional sources of competitively priced power. The Greentown-Reynolds line is the first phase of Pioneer Transmission's 290-mile plan to connect the Greentown Station to AEP's Rockport Station, east of Evansville, Indiana.

Public Service Company of Oklahoma (PSO) is upgrading the electric transmission grid in McCurtain and Choctaw counties in southeast Oklahoma. The Hugo – Fort Towson – Valliant Transmission Line Rebuild Project upgrades the existing transmission infrastructure to provide a reliable flow of electricity to our customers. The project provides additional electric capacity to better serve local customers and accommodate future growth. The estimated investment on this project is $27 million.

AEP Ohio has more than 30 transmission projects in process to enhance reliability, replace or rebuild aging infrastructure and accommodate future growth across the state. For example, about 13 miles of 69 kV transmission lines between Flushing and Smyrna Stations in Belmont and Harrison counties in Ohio is being rebuilt. In the Findlay area, AEP Ohio is rebuilding approximately 30 miles of 34.5 kV transmission line to 69 kV. This Findlay area improvement project is an example of infrastructure that has reached an age where it needs to be replaced to improve reliability in that region.

Competitive Transmission

Transource® is a partnership between American Electric Power (AEP) and Great Plains Energy (GPE) focused on the development and investment in competitive electric transmission projects across the U.S. Transource is a member of three regional transmission organizations - the PJM Interconnection, the Midwest Independent System Operator (MISO) and the Southwest Power Pool (SPP) - which together serve all or part of 28 U.S. states, the District of Columbia and the

province of Manitoba in Canada.

The Transource West Virginia Clendenin-Walton Area Improvements transmission line project is located in an area north of Clendenin, West Virginia. This project was identified in PJM's 2014 Regional Transmission Expansion Plan (RTEP) as key to ensuring continued reliable electric service in Kanawha and Roane counties in West Virginia. The project provides an interconnection with First Energy and brings a second 138kV power source into the Clendenin area. The project is scheduled to go in service by June 2019.

Transource is also developing the Independence Energy Connection (IEC), a new project to increase consumer access to more affordable power in the PJM region, including Pennsylvania and Maryland. The project will be built in two segments, with approximately 45 miles of transmission line in Pennsylvania and Maryland. The project also includes construction of two new substations in Pennsylvania and upgrades to two existing substations in Maryland.

The need for this project stemmed from transmission congestion impacting the delivery of electricity into the region. Following a competitive bidding process, PJM awarded construction of the project to Transource in August 2016. These new lines and substations are due to go in-service in November 2020.

Electric Transmission Texas (ETT), a joint venture between AEP and Berkshire Hathaway Energy Company, is piloting an initiative to expedite the ability to interconnect generation with the transmission grid. In September 2018, the Public Utility Commission of Texas (PUCT) issued a final order approving a new transmission line to serve the Foard City Wind Project in Foard County, Texas. Without the new line, the wind farm could not connect to the grid. ETT's new approximately 2.7 mile 345-kV line will provide the interconnection needed and is expected to be placed in service in May 2019.

MANAGING AN AGING INFRASTRUCTURE

At AEP, we constantly evaluate the performance and condition of the grid. We prioritize investments by identifying the aging facilities that have historically caused customer outages and using analytics to help us predict where failures will occur in the future. Making the investments necessary to upgrade and replace our aging transmission and distribution grid is essential to maintaining the highest levels of reliability and resiliency.

The Edison Electric Institute (EEI) estimates that at least 30 percent of the U.S. transmission system is at or near the end of its useful life. AEP is a part of this aging system; we own and operate the largest transmission network in America, with approximately 40,000 miles of transmission lines spanning across 11 states. The average age of these lines is 47 years. In addition, the average age of our transformers is 34 years. As a result, replacement parts for certain pieces of equipment are no longer available. This poses a substantial challenge to keeping our system in working order. While AEP has always invested in our transmission system, at this time, there is significant focus on renewing aging transmission infrastructure which is why we are currently investing billions of dollars to modernize the power grid, make it more resilient and increase customer value.

Making investments to upgrade and replace our aging transmission and distribution grid is essential to maintaining the highest levels of reliability and resiliency.

AEP's distribution system is no exception. The average age of our distribution poles is 32 years, with an expected life of 45 years. Throughout AEP's service territory, there are more than 86,000 miles of small conductors that are at least 40 years old.

As we rely on a system that is at or near the end of its useful life, we become more susceptible to experiencing more frequent and prolonged power outages from equipment failure. In addition, older transmission and distribution equipment is not compatible with newer grid technology, such as digital meters and sensors, which poses an increasing challenge to grid modernization efforts.

Some recent examples of our progress in replacing our aging infrastructure include:

- In Shreveport, Louisiana, Southwestern Electric Power Company (SWEPCO) is investing $9 million to replace a three-mile stretch of 69 kV transmission line and 60-year-old wooden poles and upgrade two substations. The installations will improve reliability of the local grid, and the project is scheduled to go into service in 2019.
- AEP Ohio is rebuilding approximately 55 miles of a 138-kV system built in 1954 in Athens and Hocking counties, Ohio. The $62 million project is expected to go online in mid-2019.
- In southern West Virginia, Appalachian Power is investing approximately $100 million to make significant upgrades to the existing transmission system. The two-phase project will strengthen the grid in Boone and Kanawha counties by replacing aging equipment with modern technology. The project is expected to be completed by the end of 2020.
- With more than 210,000 wooden power poles to maintain, a Kentucky Power initiative targeted poles that are 50 years or older to be treated, reinforced or replaced. Treated and reinforced poles are less likely to topple during storms and can last as many as 20 additional years, reducing replacement costs.

We rely on having instantly available accurate data to manage and operate the electric power grid. The two systems integral to operating and managing the grid are the Energy Management System (EMS) and the Supervisory Control and Data Acquisition (SCADA) system. These are critically important because of the wide range of age, health and complexities of the network that makes up the North American Transmission Systems (Eastern Interconnect, Western Interconnect and Texas Interconnect). To help us gain greater visibility of all elements of the grid we have been increasing the scale of these systems to gain more real-time monitoring and assessments. During the last three years, AEP has added up to 130,000 points per year to the SCADA system and up to 5,000 nodes to the EMS system. These enhancements help us detect equipment failures as well as gain advance notice of potential trouble spots before they can affect customers. The investments we are making to enhance these systems also strengthen the resilience of the grid.

ASSET HEALTH CENTER

The Asset Health Center (AHC) exemplifies our early adoption of digital technology to reduce failures, increase safety, improve grid reliability and reduce risks through proactive operational and predictive awareness. Since 2012, the AEP Transmission System and Asset Monitoring teams have installed and managed real-time performance monitors that give us an opportunity to prevent transformer failures, saving the company up to $36 million.

There are two main components to the AHC – an analytical software platform with algorithms that provide health indices, risks of failure and actionable notifications; and a fleet-wide installation of asset monitoring devices that provide instant data through a robust communication infrastructure, allowing us to monitor the system in real-time.

In 2018, AEP Transmission deployed monitoring on 70 additional Extra High Voltage (EHV) transformers and reactors. This brings the total to more than 360 EHV transformers and reactors that are now monitored in real-time through the AHC. We also created and piloted a new standard for circuit breaker monitoring.

The information we receive from the AHC is an input into our Reliability Assessment Tool so we can make more informed decisions about asset renewals for maintenance or replacement. This increased awareness helps us reduce risk by identifying safety issues in real-time and informs our capital investment strategy. In addition, we are using predictive algorithms and the data collected from sensors to see if we can anticipate equipment failures even sooner.

DISTRIBUTED ENERGY RESOURCES

Integrating distributed energy resources (DERs) into the grid presents both challenges and opportunities for the electric power industry. This requires changing the traditional business models, forming strategic partnerships and regulatory reform – all while maintaining the reliability and security of the grid.

DERs have the potential to provide society with increased energy reliability and security while also reducing our reliance on traditional large, centralized generating stations. DERs include rooftop solar panels, wind turbines, home energy management systems and battery storage systems. As these decentralized, local sources of energy generation become more widespread, AEP continues to ensure the infrastructure exists to integrate these resources safely and efficiently.

These smaller power sources can work together – such as advanced renewable technology, small natural gas-fueled engines, turbines and fuel cells – to meet energy and demand. Widespread deployment of DERs requires planning and coordination to integrate them with the rest of the power grid. These are often deployed as demand-side installations by

our commercial customers and can potentially provide benefits for the grid and customers.

AEP is investing in a company that has developed an advanced natural gas-fueled distributed generation solution for customers and communities. The gas-fired linear generator developed by EtaGen is highly efficient and is low-maintenance because it has so few moving parts. These are the types of technologies we are seeking to complement and support the grid.

As power from more and more alternative energy sources enters the grid, we face some significant challenges, such as maintaining grid reliability when voltage levels vary. This includes balancing the load when excess power is generated and flows back through the grid from DERs. We need to understand and plan for these dramatic changes so we can integrate them into our planning and future operation of the grid.

Many of our large commercial and industrial (C&I) customers have been early adopters of local generation. These users want more control over their systems, as well as lower costs and increased reliability of the power that drives their businesses and keeps them competitive. As the economics of DERs, such as private solar, continues to improve, C&I customers are increasing their adoption rate.

Examples of local generation systems in use by residential, commercial and industrial customers

Residential sector	Commercial and Industrial Sector
Solar photovoltaic panels	Solar photovoltaic panels
Small wind turbines	Wind
Natural gas fuel cells	Natural gas or biogas fuel cells
Emergency backup generators	Reciprocating internal combustion engines, including back-up generators
	Combined heat and power systems

Net Energy Metering

As DERs continue to increase in use, the debate over the continued need for and structure of net energy metering (NEM) rules continues in both regulatory and legislative arenas across the country. Under traditional NEM, customers are credited for any excess electricity they generate from DERs and sell back to the grid.

The number of NEM customers in AEP's footprint is relatively modest, but growing. At the end of 2018, 5,369 net metering installations with a capacity of approximately 103 MW were on the grid in our service territory. Most of these are private solar generators who have rooftop solar installations.

In the past few years, policymakers across the country have started evaluating NEM. So far, 17 states have moved to reduce the compensation given to private solar customers on the grounds that the policy is inefficient and/or unfair. This includes several states in our service territory.

We believe the policies around NEM should ensure that customers pay equitably for the electric services they use and do not shift their costs to others, thus ensuring that all customers pay a just and reasonable rate. We continue to review compensation policies and mechanisms in other states to learn what would work best for our operations and our customers.

DERs and Grid Reliability

DERs may be changing the way we view the electric power system, but they won't change our need for a resilient, reliable system that provides customers with the energy and capacity they need every day. All customers – including those with installed private generation – will require supplemental power from the grid at times, such as when weather conditions

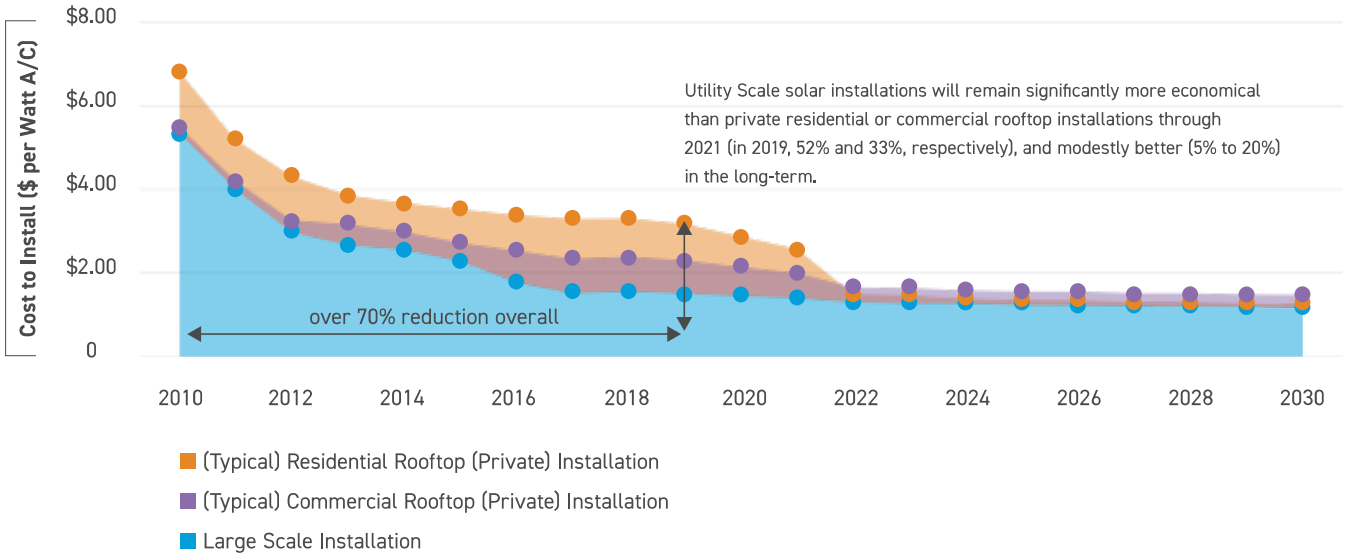
prevent solar and wind farms from producing sufficient energy or during scheduled maintenance of private generation sources. DERs also need the grid to accept excess electricity when they produce more energy than they need, in addition to providing voltage control, frequency support and other services that are essential to reliability and living in a connected society.

As DERs become more common, the demand for traditional generation will decrease. At the same time, we will continue to rely upon 24/7 capacity from reliable resources such as natural gas as a cost-effective way to meet demand and maintain the reliability of the grid. AEP continues to invest in our transmission and distribution systems to prepare the grid to integrate with a multitude of DERs.

As we modernize the grid, we are designing in practices, materials and standards for ensuring long-term reliability and security of the system.

SOLAR PHOTOVOLTAIC (PV) INSTALLATION COST TRENDS (U.S. Average)

Excluding Investment Tax Credit Benefits



Note: All costs reflected in "nominal" (as-spent) dollars with wattage denominated in "alternating current" (AC) basis.

Source: AEP (Based on Bloomberg New Energy Finance Projections).

VEGETATION MANAGEMENT

Outages and equipment failures related to overgrown and/or fallen vegetation – trees and other vegetation – are among the biggest challenges to AEP's service reliability. To meet AEP's standards for transmission and distribution system reliability, we must manage vegetation in, and along, our rights-of-way (ROW). We manage vegetation growth immediately surrounding our power lines with a combination of performance-based (such as targeting low-performing circuits) and cycle-based (regularly scheduled) maintenance strategies.

Executing an effective tree-trimming cycle across our service area is a significant expense that has a direct effect on service reliability and customer satisfaction. During the past five years, AEP has spent more than $1.78 billion on vegetation management, including $388 million in 2018. We carefully manage our programs to ensure they are cost-effective; we do this by using a variety of tools and techniques to manage vegetation. But challenging terrain in parts of our service territory can often limit the options we can use. For example, in the mountains of West Virginia, Appalachian Power (APCo) regularly uses helicopters for aerial inspections, herbicide applications and tree trimming. In these rugged, undeveloped areas, the use of helicopters reduces impacts to the local environment by eliminating the need to build access roads to each structure. It is also a safer alternative than having workers hike through thick forests and climb steep

terrain with chainsaws, tree climbing equipment, and backpack spray units loaded with herbicide.

Our operating companies continue to work with state regulatory commissions for approval to implement more aggressive and proactive cycle-based vegetation management programs. Such management cycles have already been established in Ohio, Oklahoma and Kentucky. In West Virginia, where vegetation growing into and trees falling onto power lines are major causes of outages, 2018 marked the fourth year of a program to aggressively clear all distribution circuits end-to-end to establish a formal vegetation management cycle.

Outages and equipment failures related to overgrown and/or fallen vegetation – trees and other vegetation – are among the biggest challenges to AEP's service reliability.

In 2019, Kentucky Power's five-year trimming cycle began across its entire service area. The increased trimming efforts we've used to prepare for this new cyclic program have resulted in significant reductions in tree-caused outages. Since 2010, Kentucky Power has cleared nearly 10,000 miles of overhead lines in its service territory, reducing outages caused by trees inside the ROW by over 70 percent.

Falling trees and limbs from outside the traditional ROW are increasingly a major threat to reliability. When a heavy tree or tree limb hits a power line, the poles and wires are often broken, extending the time it takes to restore service to customers. In 2018, falling trees accounted for approximately 24 percent of the total AEP customer minutes of interruption, and, over the past five years, we have seen the number of these outages caused by trees outside of the ROW increase by 29 percent across our system. The largest increases in outages due to this are in APCo and AEP Ohio, with 72 percent and 80 percent increases, respectively. Ash trees are a prevalent species in eastern forests and infestations of the emerald ash borer insects that kill these trees are primary contributors to downed trees and outages.

In 2018, AEP spent approximately $103 million on proactive tree removals – including approximately $11 million to widen "up-the-hill" ROWs in targeted areas above our transmission lines in the mountains of West Virginia and Kentucky.

With the increase in outages caused by trees outside of the ROW and with sensitivity toward the customer experience, AEP Ohio conducted a yearlong review of its forestry program which resulted in several changes to our vegetation management approach. In addition, we are using historical data to help us more methodically maintain at-risk circuits.

We have also stepped up our community outreach to alert residents of upcoming tree maintenance and hazard-tree work that is scheduled in their neighborhood. Our intent is to keep customers more informed about the work we are doing and what they should expect during these projects.

RELIABILITY PERFORMANCE

The electric power grid is essential to the economic vitality and well-being of society. It is our top-priority to provide customers with a safe, reliable, secure and resilient power grid to meet their energy needs at all times. We are dedicated to meeting this standard and continuously improving upon it.

Despite our excellent service record and our continuous efforts to improve reliability, there are times when our performance does not meet our customers' needs or expectations. Equipment failure from aging grid components, falling trees and tree limbs, and damage from severe weather cause outages that, depending on the severity, can have negative impacts on our customers.

We rely on three key metrics to measure the reliability of our system.

- The System Average Interruption Duration Index (SAIDI) represents how many minutes the average customer experiences an interruption in electric service in a given year. During 2018, the AEP System SAIDI was 256.6 minutes, excluding major events, a 19% percent increase from 2017. The growth of vegetation contributed to about 38 percent of SAIDI results, and equipment failure accounted for about 22 percent of SAIDI.
- The System Average Interruption Frequency Index (SAIFI) represents the number of interruptions experienced by

customers in a year. During 2018, the system's SAIFI was 1.531, a 10 percent increase from 2017. Vegetation and Distribution Line equipment failures were also the major contributors to SAIFI performance.

- The Customer Average Interruption Duration Index (CAIDI) represents the average length of time it takes to restore service when an outage occurs. AEP's 2018 CAIDI was 167.7 minutes, an 8 percent degradation from 2017.

ANNUAL AEP SYSTEMWIDE RELIABILITY INDICES

	2016	2017	2018
SAIFI[1]	1.428	1.389	**1.531**
SAIDI[2]	216.3	215.0	**256.6**
CAIDI[3]	151.5	154.8	**167.7**

[1] System Average Interruption Frequency Index is the average number of sustained interruptions experienced by customers in a year.

[2] System Average Interruption Duration Index is the average number of minutes customers are without electric service in a year.

[3] Customer Average Interruption Duration Index represents the average time required to restore service after a sustained interruption occurs.

The deterioration of performance in 2018 was due to a combination of many factors, most notably a higher frequency of storms, an increasing number of vehicle accidents that damaged equipment and trees outside of rights-of-way (ROW) falling into our equipment.

When an outage occurs, the first thing a customer wants to know is when the power will be restored to their home or business. One of AEP's primary concerns during these events is to quickly establish and share with customers a global estimated time of restoration (ETR). Providing an accurate ETR – and restoring power within that timeframe – is crucial to maintaining high customer satisfaction. Because it is such an effective and important tool for keeping our customers informed, we are continually looking for new ways to share and improve the accuracy of the ETR.

AEP provides customers with an array of tools to make it easy to report service interruptions and track their ETR. Customers who sign up to receive service alerts can receive timely information about their ETR by text message or email. More than 2 million customers have already enrolled in AEP's mobile alerts. In addition, the mobile app is particularly useful during outages as it allows customers to use their smart-phones to instantly report and monitor our restoration progress. Read more about this in the customer experience section of this report.

AEP also provides public access to mobile-friendly, online interactive maps that provide detailed information about power outages. These maps are easily accessible on the AEP website and mobile app and provide all interested stakeholders with greater transparency regarding outages. Users can search for details and updates by street, city, ZIP code or county to track AEP's restoration progress, without the need to log into a customer account.

Public Service Company of Oklahoma's Distribution Automation Circuit Reconfiguration Program allows circuits to "self-heal" to the extent that is practical in the event of a power outage. This technology is currently on 45 circuits including locations where customers have expressed a need for continuous power.

We are currently working on the development of a storm prediction model in partnership with major universities. In addition to enhancing our ability to predict and prepare ourselves when severe weather is imminent, the prediction tool will also alert our customers to help them prepare for potential power outages that could impact them as a result of severe weather. This is an example of enhancing the customer experience by providing value-added information they can use.

Momentary Average Interruption Frequency Index

We expect momentary outages will become a more significant concern for our customers as consumers use more electronics. The Oklahoma Corporation Commission now requires electric utilities to start reporting a Momentary Average Interruption Frequency Index (MAIFI) to the extent possible. Due to the nature of this metric, gathering the data necessary to track and report MAIFI was not possible before we implemented smart metering.

In 2018, PSO partnered with GridCure, a third party data company, to develop a "blink module." The technology uses Advanced Metering Infrastructure (AMI) data to target potential power quality issues on the distribution system before they become a problem for customers. This will allow us to pinpoint areas where problems occur and take proactive corrective action. The technology will be released in 2019.

GRID RESILIENCE

Resilience is our ability to maintain optimal grid performance and recover quickly from system disruptions. Many external factors influence how AEP addresses the resilience of the grid, including severe weather, cyberattacks, terrorism, theft, electromagnetic impulses, vandalism and supply chain disruptions.

Making the grid more resilient goes hand-in-hand with grid modernization. Today, we are using technology to help us find, fix and restore service faster. For example, we are putting sensors on power lines and circuits that can quickly tell us where a system fault has occurred so we can dispatch crews to make repairs. Without the sensors, our crews would first have to find the problem before they could make repairs. These initiatives have the support of state utility commissions because these types of activities improve system reliability and satisfaction for all customers.

Weather remains one of the greatest threats to the electric power grid, and the impacts caused by significant storms can be long-lasting and widespread.

Grid “hardening” refers to the ability of the grid to withstand and recover from abnormalities and external forces. Actions that we take to harden the grid include replacing infrastructure when needed or before assets fail in severe weather. Grid hardening incorporates higher-strength line designs, effective tree trimming and vegetation management and strategic system reinforcements (e.g., storm guys) to assure a reliable delivery of energy to customers.

Building out our fiber communication systems and cybersecurity protections allows us to manage the system remotely. We are implementing several telecommunications projects that will modernize the grid and improve the speed and efficiency by which AEP can relay and respond to information in the field. We have also invested significantly to modernize our underground networks on our distribution system to give us real-time visibility to how the system is working.

Severe Weather

Weather remains one of the greatest threats to the electric power grid, and the impacts caused by significant storms can be long-lasting and widespread. In 2017, AEP Texas experienced its strongest storm in 44 years when Hurricane Harvey hit the southeastern Texas coast, knocking out power to approximately 220,000 customers. While power was restored to all remaining customers following the storm, the work of repairing transmission lines and poles, substations and service centers continues today.

As part of these restoration efforts, AEP Texas is executing a long-term plan to enhance the resiliency of the system against future severe weather events. This includes using stronger transmission poles and shorter line spans between towers.

In 2018, we completed an expedited rebuild project near Aransas Pass, Texas, to replace a 69 kV transmission line knocked out during Hurricane Harvey. The new line spans an eight-mile section between substations in Aransas Pass and Mustang Island and will serve to strengthen the local power grid.

During the course of one week in April 2018, five tornados touched down in the state of Ohio, including an EF-1 tornado that caused significant damage in Grove City. The storm knocked down 32 wooden poles and cut power to 8,500 people. In the immediate aftermath of the tornado and before our crews began restoring power, they safely rescued nearly a dozen people trapped in their cars under downed power lines. We were able to restore power to nearly all customers within a few hours thanks to creative solutions to route power around the damaged areas and minimize the disruption to our customers. As a result of that storm, we replaced 24 wooden transmission structures with new steel poles.

The electric utility industry has a longstanding mutual aid agreement that provides support – people and equipment – to utilities in the wake of a natural disaster. AEP has helped other utilities in states across the U.S., and we have also received help when we needed it. The original agreement did not provide for mutual aid to utilities off the mainland, so when Hurricane Maria struck Puerto Rico in 2017, the industry worked with Edison Electric Institute (EEI) and the island’s utility to extend the agreement to Puerto Rico.

Recovery efforts in Puerto Rico continued well into 2018, during which time AEP deployed 157 employees, including incident command teams and frontline workers, in support of the mission. In total, nearly 60 electric companies and public power utilities sent more than 3,000 employees, plus equipment and/or materials to Puerto Rico. Eleven months after Hurricane Maria struck the island, the Puerto Rico Electric Power Authority (PREPA) announced that power had been

restored to its customers, ending the longest blackout in U.S. history.

Each year, EEI recognizes member companies who show outstanding efforts to restore service to areas following severe weather or other natural disasters. In 2018, EEI presented AEP with the 2018 Emergency Assistance Award for Puerto Rico Power Restoration. This award was also given to each AEP operating company and AEP Transmission for their support in the emergency power restoration mission after Hurricane Maria.

Grid Assurance

While the nation has improved its ability to respond to major grid disasters and power outages that frequently result from catastrophes, there are increasing threats – including more frequent and extreme weather events and physical, cyber or electromagnetic attacks – which present new challenges for protecting and recovering quickly from a catastrophic power outage. Maintaining an adequate inventory of vital equipment needed to replace critical infrastructure in the case of such an event is one challenge to improving grid resiliency.

Transmission components are expensive and often difficult to transport over long distances, and the manufacturing process itself is complex, with many components being hand-assembled at the factory. This dramatically increases lead time in ordering new equipment, and it is not uncommon to wait 18 months for delivery of some components. As a result, it is expensive for individual companies to purchase and keep a large quantity of spare transmission equipment on standby. For this reason, in 2018, AEP joined seven other major utility companies in becoming founding subscribers of Grid Assurance, LLC.

Grid Assurance was designed to help restore power more quickly following a high-impact, low-frequency event by providing subscribers a cost-effective method of meeting the collective resilience needs of the transmission grid. The new company houses and maintains long-lead-time critical transmission equipment, such as transformers, in secure storage facilities throughout the country. Grid Assurance also offers pre-planned transportation and logistics support for equipment delivery. As a subscriber, AEP has faster access to both the equipment and logistical support necessary for quickly deploying equipment to an affected location following a catastrophic event.

GRID MODERNIZATION

Today, customers expect their electric service to be more flexible, efficient and reliable. As we modernize and strengthen the system to meet their needs today and in the future, we are creating a smarter and more sophisticated system that provides universal access to cleaner, cost-effective power and tailored energy solutions.

Each of our operating companies varies its speed and level of investment in grid modernization based on customers' needs and regulatory support. We strive to find the right mix of projects and technologies that modernize and optimize the grid while maintaining affordability for our customers. Having the right public policies and regulations in place directly impacts our ability to meet customers' expectations.

We strive to find the right mix of projects and technologies that modernize and optimize the grid while maintaining affordability for our customers.

In Ohio, state regulators convened a grid modernization initiative, called PowerForward, which explored how the distribution system can be improved through innovation to better the lives of Ohioans. The result was a comprehensive roadmap, which AEP provided input for, that lays out a path for supporting innovation to enhance the customer experience. PowerForward Roadmap envisions the distribution grid as a secure and open access platform that allows for customer applications to interface seamlessly with it. The Public Utilities Commission of Ohio also identified advanced meters as a core component of this platform.

In 2018, the Commonwealth of Virginia adopted a new energy plan designed to "promote the transition to a more flexible, resilient, affordable and environmentally responsible energy system." The Grid Transformation and Security Act (Senate

Bill 966) outlined recommendations for the electric sector as well as the shifts anticipated in the transportation sector that will impact the electric sector. Virginia's new energy plan for the Commonwealth includes:

- 5,000 MW of utility-owned and utility-operated wind and solar
- 500 MW of rooftop solar resources less than 1 MW of which are in the public interest
- $1.1 billion investment in energy efficiency programs by investor-owned utilities
- Cost recovery structures for projects that modernize the grid and support the integration of distributed energy resources

The initiatives in Ohio and Virginia are examples of the types of public policies that are needed to support the growth of a modern grid. Read more about this in Public Policy.

SMART METERING

Automated Metering Infrastructure (AMI), or smart metering, is a foundational technology of the modern power grid that enables other technologies and grid modernization efforts. With AMI meters, customers have access to both historical and real-time usage data, giving them more control over their energy consumption and helping them identify ways to save money through more efficient energy use.

As early as 2008, AEP's operating companies began installing AMI meters and their supporting infrastructure across our footprint. As of January 1, 2019, we have deployed nearly 2.6 million AMI meters, with 537,000 more planned over the next several years. Our long-term goal is to achieve full installation across our entire customer base, as AMI becomes the industry-standard metering technology and replaces older equipment.

AMI, or smart metering, is a foundational technology of the modern power grid that enables other technologies and grid modernization efforts.

AMI continuously captures a massive amount of data across many metrics, including energy usage, voltage and temperature. These data points enable a wide range of customer engagement programs, as well as other service enhancements. These include:

- Reduce the number of estimated bills
- Quickly initiate service and reconnect customers
- Identify, communicate and restore customer outages more quickly
- Educate customers about their energy habits by sharing usage data through web portals and mobile applications to allow more customer control over their energy use
- Empower customers to manage their specific energy usage through energy efficiency and/or other approaches
- Proactively identify and address customer theft of service

The data that AMI meters collect also helps us operate the grid more efficiently as local generation, such as rooftop solar integration, increases.

ENERGY STORAGE

As we introduce more renewable generation, such as wind and solar power into our energy mix, the need to invest in energy storage grows. Energy storage helps us maintain a constant flow of power when intermittent resources such as wind and solar are not available.

Storage technology supports local reliability and demand response for our customers and is integrated into our distribution and resource planning processes. For example, batteries are a relatively flexible solution that can be mobilized and relocated to meet changing demand in the system. Today, we are also exploring new ways of combining energy storage with renewable generation to support the grid.

The system provides one of the first energy storage systems in the PJM transmission region to support frequency regulation.

The concept of energy storage is not new, but the need for reliable, cost-effective solutions has never been more critical. We are exploring new ways of using different types of energy storage to manage demand and support a more agile grid. Today, as the energy landscape transitions to more distributed and intermittent energy resources, we need to expand our ability to store energy to maintain grid reliability.

Another type of storage – pumped storage – has been serving customers of Appalachian Power since the mid-1960s. APCo's Smith Mountain Pumped Storage Project can generate 585 MW of electricity for up to 11 hours or can be used for short periods of time to meet peak energy needs.

Applications of Distributed Energy Storage

- Reliability improvements - AEP has more than a decade of experience with battery storage, which can provide back-up power in case of an outage. During that time we installed three 2-MW NaS (sodium sulfur) batteries in Appalachian Power, Ohio Power and Indiana Michigan Power. Each battery is capable of providing back-up power for more than seven hours when loss of power from the substation occurs.
- Frequency regulation - Batteries have the ability to rapidly respond to balance load and generation in real time on the grid. Regional transmission organizations (RTOs) are recognizing the need for greater amounts of frequency regulation to maintain system stability with the increased integration of variable generation resources.
- Firming of renewables - Wind and solar often do not generate energy when and where it is needed most. Deploying batteries to combine with wind and/or solar energy can allow for better use and management of variable renewable energy sources.
- Peak shaving - Batteries can provide power during peak demand times to meet customer demand while alleviating strain on the power grid.
- Power quality - Batteries are capable of conditioning the flow of power so it can be used to protect sensitive electronic equipment.

New energy storage projects will allow solar power to extend operation past sunset and into evening peak demand periods. We continue to explore new opportunities to leverage the unique aspects of energy storage resources for expanded use in transmission, distribution and wholesale applications. Policymaking on these issues is extremely important to our ability to enable new technology and deploy it on the transmission and distribution grid.

MODERNIZING DISTRIBUTION

As we incorporate more smart technologies, the distribution grid becomes more complex and an increasingly important resource. We use advanced planning tools to help us better understand how changing energy resources will impact our distribution system. We are also coordinating with transmission planning to understand how the changes in distribution affect the transmission grid.

Replacing our aging infrastructure to provide higher levels of reliability and grid resilience is just one piece of the puzzle. Our modernization efforts also include increasing substation and circuit capacity to prepare for increased use of Distributed Energy Resources (DERs), such as photovoltaic solar, fossil fuel generation and energy storage. We are also physically relocating and strengthening circuits to make them less vulnerable to weather-related damage and to reduce the time it takes to make repairs. In some areas, we relocate overhead facilities underground to improve local reliability. As electric vehicles become more common, our modernization efforts are critical to managing the increased loads from electric vehicle charging across the grid.

In remote areas historically prone to outages, we are working to provide power redundancy in the form of back-up energy sources such as new circuits, circuit ties and substations. Depending on local site conditions, we also consider DERs to provide enhanced grid reliability and resilience.

In 2018, AEP Ohio continued installation of distribution automation circuit reconfiguration (DACR) in our systems. DACR automatically detects outages and reconfigures an affected circuit to isolate the problem, quickly restoring service to other parts of the circuit. Using this "self-healing" technology, we can strategically reroute electricity, reducing the number of customers affected during an outage while AEP crews make repairs to the damaged circuit(s). AEP Ohio is in the midst of installing DACR on 250 distribution circuits serving more than 330,000 customers. When the project is completed in 2023, we estimate that the added DACR will reduce SAIFI by nearly 16 percent.

GRID MODERNIZATION ACTIVITY SUMMARY

Company	Smart Meters	DACR Circuits	VVO Circuits
AEP Ohio	706,027	90	41
AEP Texas	1,077,173	27	0
Public Service Company of Oklahoma	575,574	45	52
Indiana Michigan Power Company	15,366	36	49
Kentucky Power Company	—	24	27
Appalachian Power Company	197,985	46	3
Southwestern Electric Power Company	—	34	0

Smart Grid plans are continuously evolving. Data is approximate/estimated.

DACR — Distribution Automation Circuit Reconfiguration. VVO — Volt VAR Optimization. As of March 2019.

AMI/Smart Meter data through January 25, 2019.

We are seeing results from the investments we've already made. For example, in April 2018, an equipment issue led to a power outage affecting 6,000 customers in northeast Columbus, Ohio. DACR restored power to every single customer in just 100 seconds. Without DACR, this type of outage would typically last approximately 83 minutes.

Another technology being implemented through AEP Ohio's gridSMARTSM program is Volt/VAR Optimization (VVO). In some areas, the technology is also known as Conservation Voltage Reduction (CVR). This technology automatically controls voltage levels on distribution circuits to more closely match the voltages demanded by our customers. Using VVO/CVR helps both the distribution system and our customers achieve greater energy efficiency while ensuring the same customer experience. In addition, the technology helps the power grid balance DER hosting capacity, improving grid adaptability. We plan to install VVO on 1,600 distribution circuits serving nearly 110,000 customers.

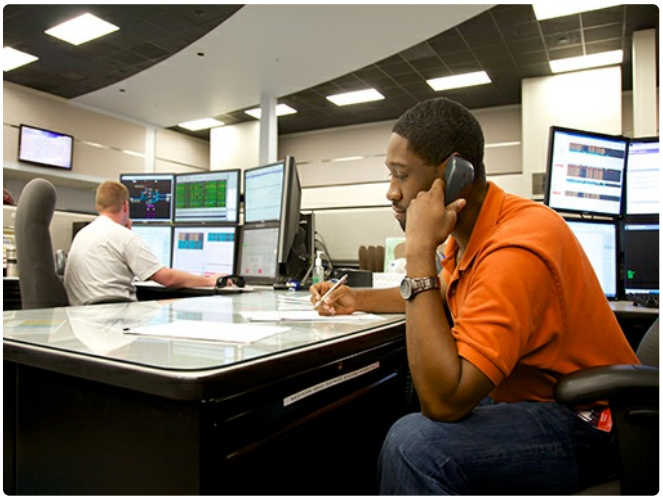
In 2018, PSO expanded its CVR program and began implementing new technology using data from its automated metering infrastructure (AMI) to better determine problems that may affect power quality for customers. PSO installed this technology on an additional 14 circuits in 2018. Currently, 52 PSO circuits are equipped with this technology.

Successful implementation of technologies such as DACR and VVO must be rigorously tested to ensure a seamless and reliable experience for our customers. Field testing new equipment can be a time-consuming and labor-intensive process, which can lead to delays in bringing these smart grid technologies online. In 2018, AEP Ohio opened a commissioning lab at our Operations Center in Groveport, Ohio. The new lab can complete critical diagnostic tests remotely with fewer employees than traditional on-site testing. This new testing process is a much safer and more efficient way for us to meet our smart grid goals.

Smart Grid Command Center

Network disruptions do not always happen during normal business hours. For this reason, our experts must be available quickly to identify and resolve issues whenever they occur. Our Smart Grid Command Center in Gahanna, Ohio, now offers 24/7 service monitoring for our entire network communications between AMI, DACR, VVO/CVR and underground network vaults. The Command Center team also supports the smart meters being installed throughout our Ohio operations.

What does this mean for our customers? More reliable service through faster identification and resolution of issues. If a router fails on a utility pole in Texas, the first to know about it will be our Smart Grid Command Center, more than 1,300 miles away. The Command Center will identify the problem and resolve it remotely, if possible, or dispatch a local work crew to the site to make the repair.



Our Smart Grid Command Center offers 24/7 service monitoring for our entire network communications between AMI, DACR, VVO/CVR and underground network vaults.

Underground Network Monitoring

At year-end 2018, we completed our multi-year, $84 million initiative across six operating companies to modernize and reinforce AEP's 14 underground electrical networks. This Underground Network (UGN) monitoring project is changing the way we collect, communicate and use information and data to support the Operations, Engineering and Planning functions of the operating companies' critical UGN systems.

The UGN project gives us the capability to monitor the networks in real time using fiber optics and cutting-edge sensor technology to capture data in five-second intervals. This gives us a real-time view of the distribution underground network. Our future success as an energy company depends on this capability as the distribution system becomes a more diverse, flexible system, allowing all resources to connect and manage demand at the same time.

With sensors and state-of-the-art telecom technology, we have a view of the underground system that we've never had before, allowing us to proactively manage the system. The insights we get from monitoring the system in real-time will also give underground network line crews more information about the facilities before they enter and as they prepare to perform their work, making it a safer work environment. Having this data will also support our ability to predict and prevent failures and fulfill other needs.

MODERNIZING TRANSMISSION

AEP continues to make significant investments to modernize the transmission grid, replace aging facilities, target poorly performing assets such as outdated substations and utility poles, and improve grid security. Investing in these updates helps reduce our future costs to maintain the electric power system and ensures the continued reliability of the power grid for our customers. A large portion of AEP's investment is focused on replacing or upgrading facilities that have been identified as underperforming or obsolete. These aging facilities require more frequent and costly maintenance. Replacing them not only reduces the cost of maintenance but it also improves efficiency and reliability performance. In addition, AEP is investing in projects that enhance grid security and modernize the telecommunications network that supports the electric system. These improvements help us locate, diagnose and respond more quickly when reliability issues occur.

Our transmission modernization investments are providing significant financial benefits for our customers, as well as operational improvements for how we manage the grid. We studied a sample of 84 transmission modernization projects and found that line losses decreased by an average of 55 percent after the projects. Reducing these transmission losses means that AEP needs to produce or purchase less power, which directly reduces the cost of serving our retail customers. The total estimated savings are forecasted to be $108 million over the lifetime of these investments. In addition to these energy savings are potential avoided capacity cost savings. We would expect to see similar savings from other grid investment projects. Economic and Business Development

Our transmission modernization investments are providing significant financial benefits for our customers, as well as operational improvements for how we manage the grid.

In addition to modernizing the hardware, we are modernizing the fiber-optic telecommunications system that is the backbone of the transmission grid. In 2017, we began an initiative to address several key issues, including:

- bandwidth demands;
- reliability and resiliency of our network;
- data connectivity to substations; and
- asset renewal.

The $480 million Telecom Transmission Modernization Program will continue through 2021. Our initial focus has been to upgrade major backbone routes and expand telecom networks to our substations. Through 2018, we have installed 1,260 miles of fiber optic cable, with another 3,300 miles currently in-process through 2020.

Demonstrated Performance Benefits of Investments in Transmission

Tangible Reliability Improvements

- A sample of line rebuild projects shows a projected 47% reduction in total transmission-related power outages

Efficient Solutions

- Recently completed projects have shown to be 97% effective in cutting the duration of customer outages
- New transmission lines are 55% more energy efficient than those being replaced

Resilient New Infrastructure

- Modern engineering standards ensure public safety and protect against severe weather, terrorism and other threats
- New fiber-optic communications networks expand system automation capabilities and enhance cybersecurity

BOLD® Advantages

When it comes to electric infrastructure, size and aesthetics matter to the public. That's where AEP's new Breakthrough Overhead Line Design® (BOLD®) technology comes in. BOLD features lower, more aesthetically pleasing tower profiles and provides increased capacity within the same right-of-way. This makes it an attractive design option in dense areas and a conscientious response to public objections to taller and more conspicuous traditional towers. In addition, the single-pole design reduces or eliminates avian nesting, potentially reducing outages caused by birds. The deployment of BOLD continues to grow throughout our service territories.

BOLD is an example of groundbreaking innovation designed to improve reliability, grid resilience and services for customers.

We completed Phase 1 of a rebuild of the Roanoke-Marion transmission line to replace aging infrastructure with more than 200 new towers southwest of Fort Wayne, Indiana. This project was the first to deploy a double-circuit 138 kV BOLD line design. Though completion is scheduled for December 2019, parts of the line rebuild have already been energized.

In addition to BOLD projects in Indiana, we broke ground on a BOLD line near New Albany, Ohio in November 2018. We selected BOLD for this location due to the new power requirements in the area and limited rights-of-way. The small footprint of BOLD and its shorter towers will allow more power to pass through an existing right-of-way that traverses soccer fields and communal parks and will be nearly the same height as the existing lower-capacity lines. Additional BOLD projects are in the planning stages.

BOLD is an example of groundbreaking innovation designed to improve reliability, grid resilience and services for customers. It also provides important environmental benefits, including fewer line losses and avian interactions, as well as lowering the electromagnetic field (EMF) levels. We are now marketing BOLD technology to other utilities around the world. In 2018, we licensed four engineering firms to promote and use BOLD technology for their clients. We are proud of our employees who helped make this innovative design a reality and who continue to lead the way as we prepare our company – and the industry – for the future.

MODERNIZING TELECOMMUNICATIONS

Although we are an energy company, not a single part of our jobs can happen without a robust telecommunications network operating behind the scenes. Our ability to capture and communicate the vast amounts of data coming through our smart grid is essential to every single one of our business activities – and our data needs are growing every day. Our telecommunications system is a complex and integrated complement of technologies, devices, equipment, facilities, networks and applications that make it possible to communicate effectively with customers and deliver high standards of customer service.

Having the proper infrastructure in place to support our evolving telecommunication needs to meet both current and future operational demands is imperative. Much like the aging grid, our telecommunications system is undergoing a significant transformation.

Having the proper infrastructure in place to support our evolving telecommunication needs to meet both current and future operational demands is imperative.

AEP operates one of the largest private fiber optics network of any energy company in the U.S. From collecting and transmitting outage updates to customers via our mobile apps to downloading real-time grid data in the field, this network supports everything we do. We are expanding the network to meet the data needs of an increasingly digital smart grid, our operations and our customers' needs.

This is a 10-year, $1.5 billion initiative ($480 million approved so far), and we are in the third year of modernizing a system that serves as the backbone of the power grid and our business operations. Key benefits of these investments will be the creation of system redundancies to ensure reliability of the grid and reduce our reliance on third parties to maintain the infrastructure we rely upon so heavily.

The capital investment plan includes running new fiber along portions of AEP's 40,000 circuit miles of transmission lines, a new 800-megahertz (MHz) radio system that is critical to communicating with crews in the field, upgrading network systems on dozens of facilities, improved cybersecurity protections and additions of system redundancies that allow rerouting of data during outages to keep the system running.

As the use of online videos increase, we need more bandwidth to support this business need. One example is the increased use of drone technology for maintenance and assessment of storm damage. Without a strong telecommunications network, the videos from those drones would not be available or would take a long time to download, making it inefficient. Read more about using AEP's fiber network to expand broadband.

TECHNOLOGY & INNOVATION

Innovation has been fundamental to AEP's growth and development throughout our history. We understand the continually increasing demands of modern society will require smart, integrated, and sustainable infrastructure and technology solutions. That is why, as one of the largest energy companies in the U.S., we work each day to identify innovative solutions that meet the rapidly evolving needs of our customers. This means staying ahead of the curve with advanced energy infrastructure, piloting new technologies and preparing for advancements in transportation and other major catalysts for economic growth – before they become commonplace.

TECHNOLOGICAL INNOVATION AT AEP

In 2018, we took bold steps to create new avenues for corporate-wide innovation. From generation to transmission to distribution, we are employing the power of data analytics to better understand our infrastructure and our customers. We are harnessing new, digital technologies – such as smart

metering and sensors, mobile applications and process automation – to create a smart, distributed grid. We are partnering with our communities and entrepreneurial businesses and using next-generation tools, including virtual and augmented reality, autonomous vehicles, robots and more, to propel our services and solutions forward.

We believe AEP is well-positioned to leverage our scale, industry experience and skilled workforce to achieve our goal of being the energy company of the future. In many ways, we are still at the beginning of this journey, and we know it will take time – but we remain committed to providing our customers the innovations that will power the 21st century.

DATA ANALYTICS

Technology advancements in analytics are making things possible today that were unimaginable not so long ago. At AEP, we are using these advancements to help position ourselves as the energy company of the future.

We are advancing the use of data and analytics to solve problems, optimize processes and discover new business opportunities. For example, we completed a strategic segmentation of our residential customers to help us better understand what they need and expect of AEP. This gives us important information as we design new programs and services.

Within grid operations, several initiatives have been completed that provide monitoring, prediction and optimization capabilities that we didn't have before. These efforts enable increased safety, reliability and customer value.

Examples of data and advanced analytics initiatives:

- Microgrid analytics leverages internal and external data to optimize the siting of distribution microgrid/distributed energy resources. This reduces the amount of time needed to conduct site research and provides innovative partnership opportunities with the Enterprise Innovation and Charge organizations.
- In 2018, we developed an analytics tool to automatically generate a list of transmission meter points requiring investigation. It is critical that meters are accurate to ensure more accurate bills for customers.
- In 2018, we continued the development of a new tool to help automate the classification of some network faults on the grid. Where there's an outage on the transmission grid, our dispatchers are expected to make a determination of what caused it. The classification of network faults can be a time-consuming process that in some cases requires a physical inspection to confirm the problem before repairs can be made. This tool allows us to target our outage response more accurately, saving time and money and enhancing the customer experience.
- In 2017, a data analytics team was established to support both distribution- and customer-related needs. On the customer side, the focus was on customer segmentation and propensity modeling to help identify potential new service offerings. For distribution, the focus is on improving operational efficiencies and driving more informed business decisions.
- We are planning to build our text analytics capabilities to automate document searches in our system. For example, our Enterprise Risk Management group is examining how to automate the review of current and historical damage or insurance claims. The result will be faster claim resolution for customers at a reduced operational cost for AEP.

To learn more about process automation, visit The Future of Work. As we continue to learn and advance in this space, we are beginning to focus on cognitive analytics to enable us to make recommendations to our customers based on their interactions with us. Currently, our customer interactions are largely transactional, such as paying a bill or turning power on and off. Having this new functionality will give us more information to better serve our customers, based on their usage and interests.

BECOMING DIGITAL

Across society, consumers are increasingly integrating mobile digital technology into their daily lives, from online shopping and operating their home security systems to remotely turning lights on and off and adjusting thermostats. At AEP, we are integrating digital into the way we organize, behave and operate to remain competitive, better serve our customers and create sustainable value. This agile operating model gives us a place to test insights and develop valuable products, services and solutions quickly for customers and become more efficient ourselves.

We envision a future where the power grid is fully digital. From a diverse and decentralized network of distributed energy

resources (DERs) equipped with advanced monitoring and controls and a self-healing grid, we empower our customers to understand and manage their energy use from their mobile device. Through these advancements, we are reinventing what it means to be an energy company.

As we continue our digital transformation, we are creating opportunities for employees to stay curious and test new ideas. We are encouraging a collaborative mindset that sparks creativity and innovation – staying true to our heritage of innovation. We developed new work spaces that are more conducive to creating, innovating and developing new ideas. This also gives us the freedom to develop those that show promise with an avenue to fast-track them to market when ready or move on when they don't. We are also giving employees tools such as mobile apps, augmented and virtual reality environments, and automated controls and sensors that provide real-time data to improve network operations, resilience and safety.

Digital transformation is a massive undertaking, and we have a five-year roadmap to align our actions around a new organizational and governance structure and strategic workforce plan. Our employees must be agile, willing to challenge the status quo to test new ideas and insights and able to accept failure as part of success. In preparation, we are undertaking strategic workforce planning as we create the future of work – what the work will be and which skills are needed to be successful.

What Digital Can Do

Becoming digital will change how we work, as well as alter the processes we use to get the work done. We are using integrated digital solutions throughout the company and using technology to make these solutions effective across our footprint, so our jobs can truly become more efficient and measurable and skills are transferrable.

AEP Charge

In 2018, AEP created Charge, a new team who represent all functions across AEP and who will manage transformative innovation projects focused upon delivering incremental value to our customers and employees. Charge works closely with our IT, Innovation, Continuous Improvement and Customer Experience teams. Charge is led by our Chief Digital Officer, a new role formed in 2018.

The Charge team engages the business at large, prioritizes opportunities against an established framework and rapidly creates technologies for immediate consideration and implementation at a proof of concept scale. Upon successful rollout and realization of benefits, Charge partners with IT to scale the solution for broader consumption.

In early 2019, Charge moved into a new development factory space in an up-and-coming technology center in Columbus, Ohio, to foster an environment of innovation, a departure from the traditional corporate workplace. The organization is sub-divided into pods consisting of four to six technologists who work on specific new ideas in rapid succession.

Charge's goal is to achieve $200 million in savings for AEP over the next five years. The team has already delivered the first big innovation to improve the customer experience – a Claim Submission Portal that went live in early 2019. The new portal allows customers to quickly and easily file claims digitally with AEP online. It eliminates the need for call centers to handle claims, freeing them up to focus more on servicing other customer needs.

In 2019, Charge will continually seek to develop internally generated intellectual property and to build partnerships in the Columbus, Ohio, area to potentially co-author offerings. We are also investigating ways of sharing solutions we develop with others in our industry.

IllumiNation Energy Summit & LAB

On May 15-16, 2019, AEP will co-present the IllumiNation Energy Summit with The Ohio State University, Battelle Memorial Research Institute and Smart Columbus. The Summit is designed to ignite conversations that reimagine the future of energy and how we can collaborate with our various stakeholders to make it happen. The Summit will feature panel discussions, immersive technology experiences and thought-provoking discussions with policymakers, technology companies, customers and other stakeholders.

In early 2019, AEP launched IlluminationLAB, a strategic initiative designed to identify innovative technology solutions that will drive improved performance and enhance customer experiences in the energy industry. IlluminationLAB will help AEP find promising new technologies and innovative ideas focused in four areas – customer experience; grid optimization; efficiency, operations and maintenance; and electric mobility/electrification. We partnered with innovation specialist L Marks to help identify promising entrepreneurs and early growth stage companies in the energy sector to apply. If selected to participate, each tech start-up will work directly with an AEP mentor and industry experts for 10 weeks to help advance and shape its idea or technology. The start-up will be given access to working space, potential funding and the chance to develop products, platforms and processes that will help AEP expand its technology-driven offerings and processes. In addition, the start-ups will have the opportunity to further develop their companies alongside leading subject matter experts in the energy sector.

Enterprise Innovation

At AEP, innovation has been part of the fabric of our culture for more than a century. Today, our sights are set on the next 100 years. In 2018, we formed an Enterprise Innovation and Technology team to establish an experimentation process to bring forward ideas that deliver value to customers, test them and, if validated, deploy them. Our strategy is to bring technical and business insights to AEP while seeking partnerships and potential investors to bring new products and services to market.

The speed of innovation is measured in two ways, the rate that learnings are translated into new value and the speed in which that value is delivered to customers. The faster the velocity of learnings the more cost-effective and likely a new value will be discovered and delivered to customers. AEP's innovation company, Kyte Works, was created to give us the ability to validate an insight or concept in the same way a start-up company would.

For example, we developed a pilot process to validate microgrid and distributed energy technologies using a shared value business model. The shared value model produces benefits for the grid and society while addressing specific customer needs. We interviewed customers and employees who work with customers to gain insights. We will use what we learned to develop a value proposition and present a valid business case for the expanded use of microgrids and distributed resources.

We focused on commercial and industrial customers who might be willing to pay for the specific benefits offered by these technologies. For many large industrial and commercial customers, energy is a major factor in their success.

Our plan to develop microgrids as part of AEP Ohio's Smart City initiative is an example of creating shared value. The planned microgrids, which received regulatory support in 2018, would be designed to maintain power in areas where critical public service facilities, such as police and fire stations, medical facilities and emergency shelters are located. This also provides a measure of resilience for the local communities.

In 2017, AEP Transmission piloted the use of a remote-controlled robot for inspecting the internal components of power transformers using a decommissioned 1950s-era transformer. Today, our Generation team also uses autonomous underwater vehicles, known as remotely operated vehicles (ROVs), to conduct inspections of submerged equipment. Crews use ROVs to inspect intake screens, storage tank liners and other submerged facilities at our dams and power plants. Using ROVs instead of human divers, saves time and money, and avoids the safety hazards associated with working in confined, submerged spaces. We are also conducting similar robotic inspections at our coal-fired plants, achieving similar cost and safety benefits.

Spark Tank Challenge

As technologies advance at an unprecedented pace, our customers expect us to develop innovative solutions and technology to move us into the future. In 2017, we launched our first enterprise wide Spark Tank Challenge, challenging our employees to collaborate, amplify and pitch their innovative ideas as products or services that customers will want today or in the future. Our intent is to convert viable ideas into revenue streams for AEP that bring value to those we serve.

The ideas were evaluated by AEP's Innovation Council before being presented to a panel of internal and external judges. A handful of ideas made it to the last round; some were reserved for future development; and others offered continuous improvement value. We invited employees to participate in another innovation challenge in 2019, called Spark Tank 2.0.

AEP's Enterprise Innovation Council (functions represented)

Transmission	Strategy & Innovation
Chief Customer Officer	Enterprise Innovation & Technology
Charge	Regulatory Affairs
NERC Reliability Assurance	Strategic Investment
External Affairs	Utilities
Chief Information Officer	Regulated Generation Development
Corporate International Affairs	Distribution Asset Management
Advanced Transmission Studies & Technology	Customer Solutions & Policy
Innovation & Technology	

Smart City

AEP continues to play an important role as a Foundational Partner in the Smart Columbus initiative that began in 2016 when the City of Columbus, Ohio – home to AEP's corporate headquarters – won the U.S. Department of Transportation's (DOT) $40 million Smart City Challenge. Columbus was awarded an additional $10 million for the initiative from the Paul G. Allen Vulcan Foundation. Smart Columbus is executing on its vision to reinvent mobility, improve people's quality of life, drive local economic growth, improve access to jobs and job opportunities, foster a sustainable community and become a world-class logistics center.

As a partner, AEP supports and contributes to the Smart Columbus priorities where we can have the greatest impact. Our initiatives include modernizing the transportation network with incentives to increase the number of electric vehicle charging stations and reducing carbon emissions in the electric power sector through energy efficiency and grid modernization.

This includes making strategic investments in a seven-county region in central Ohio to establish the smart grid as the platform for a clean energy future. While the partnership is focused on central Ohio, the lessons we learn will benefit all of AEP. In 2018, we continued implementing several smart technologies to modernize the grid, including:

- Deploying smart meters throughout Columbus and across Ohio. Since 2017, we have installed over 700,000 smart meters in Columbus and across the state, and our goal is to install more than 900,000 smart meters. In a filing with state regulators, we are seeking approval to complete installation of smart meters for all of our remaining Ohio customers. This will enable real-time data collection, such as meter readings and power outages.
- Leveraging distribution automation circuit reconfiguration (DACR), which detects outages and

reroutes energy to quickly restore service.
- Deploying Volt/VAR Optimization, which enhances our ability to monitor and control voltage across the system.
- Providing customers with real-time information on their energy usage through a mobile app, which gives customers greater control over their energy use.

Read more about these technologies in Grid Modernization.

As part of this initiative, AEP Ohio helps drive consumer adoption of electric vehicles (EVs) by removing barriers and investing in and supporting the deployment of EV station infrastructure. In 2018, the Public Utilities Commission of Ohio (PUCO) approved AEP Ohio's Electric Security Plan (ESP), supporting expanded access to EV charging infrastructure and authorizing up to $10 million for incentives to support it.

In August 2018, AEP Ohio launched its Electric Vehicle Charging Station Incentive Program for business customers. This enables the installation of hardware and networking for 300 Level 2 and 75 direct current fast charging stations throughout Columbus and our Ohio service territory. This is a critical step toward enabling faster adoption of EVs.

To ensure underserved communities also benefit from having access to this technology, we will locate a minimum of 30 Level 2 chargers and eight fast chargers in low-income areas in our service territory, as required in our ESP agreement. Since 2016, AEP has invested approximately $12 million in fleet electrification. We are also pursuing a plan to invest approximately $175 million to improve energy efficiency, advance clean energy and energy storage, and usher along the electrification of transportation systems throughout the state.

AEP Ohio also received approval for renewable generation and reliability improvements to the distribution system. Up to $10.5 million was approved for demonstration microgrid projects targeting nonprofit, public-serving AEP Ohio customers, such as fire and police stations, municipal and medical facilities, social service agencies, emergency shelters and water and sewer facilities. Microgrids provide resiliency to a community in the event of a major outage event by allowing critical services to stay connected and serving vital community needs.

AEP Ohio will invest up to $200,000 to research ways to continue developing and to maintain Smart City efforts in the long term. We are excited about the opportunities this partnership provides, including improving quality of life in our communities through innovations in transportation and data collection.

In October 2018, Columbus, Ohio, was selected one of 20 winning cities in Bloomberg Philanthropies' American Cities Climate Challenge. The Cities Climate Challenge is a $70 million program to promote efforts in cities to fight climate change and provide a more sustainable future for their citizens.

Columbus is using resources from the Cities Climate Challenge to establish a workforce development program for energy efficiency auditors to increase the number of homes that receive an energy audit. The city plans to expand programs for financing energy efficiency and renewable energy for commercial buildings. AEP Ohio's robust energy efficiency programs support the city's goals and help broaden our reach in delivering energy efficient solutions and clean power to customers.

INNOVATION GOES GLOBAL

AEP is developing initiatives and forming partnerships in the U.S. and around the world to scout new innovation technologies, validate them fast, demonstrate their benefits to customers and policymakers, secure timely regulatory support or contractual approvals for innovation and deployment, and deploy them at scale.

By participating in global accelerator programs for startup companies, technology innovation networks, joint utility collaborations and global technology innovation information hubs, we can move faster to identify and deliver new solutions for all of our customers within the next five years.

AEP is one of 10 international utilities in the Free Electrons global energy accelerator program, giving us access to the world's most innovative technology entrepreneurs from more than 60 countries. Free Electrons allows us to choose the ones that we think will best fit our customers' needs which we then validate with other members of the group and within our service territory. We are currently validating two technologies in Oklahoma and Ohio.

The CEOs of AEP, Enel (Italy) and Hydro-Quebec (Canada) formed the International Energy Innovators Consortium to co-develop technologies that are not currently available. This collaboration of technology experts for microgrids, big data analytical tools and e-mobility yields joint initiatives with the potential to serve the customers of all three companies.

We are also partnering bilaterally with Enel-X (Italy), Innogy (Germany), ESG (Ireland), China Light and Power (Hong Kong), Hydro-Quebec and other international utilities, to identify opportunities to co-validate, co-develop and co-invest in new technologies.

In addition, the CEO-led Global Sustainable Electricity Partnership provides access to a global information hub for innovative technologies, business models and public policies that are enabling new technologies to be developed and deployed. AEP has been a member since the 1990s and gains important insights from other international CEOs on how they are working to solve similar challenges facing our customers.

Augmented/Virtual Reality

The thread that connects the legacy analog power grid of the past with the modern, digital grid of the future may lie in the three-dimensional and colorful world of augmented and virtual reality (AR/VR). We are learning how AR/VR and its wearable technology can help us bridge the real world with the digital to become as common as smart-phones and tablets, saving us money and time while enhancing safety and training efforts.

We began learning about the benefits of AR/VR when we initiated a proof of concept in 2017 as a potential tool for conducting virtual site visits of field operations. One of the project's deliverables was a white paper to document what employees will need to know in order to use AR/VR technology to meet a business need. AEP also signed on to an Electric Power Research Institute (EPRI) study identifying practical AR/VR applications in the industry. What we learned will improve operational efficiency and safety for our employees. For example, a single employee equipped with the AR/VR goggles can conduct a virtual site visit, entering a station and interacting with stakeholders remotely through web streaming.

We are learning how AR/VR and its wearable technology can help us bridge the real world with the digital.

We have found that people who wear the goggles and immerse themselves in the experience of AR/VR actually forget they are not physically there and start solving problems through what they are seeing. This demonstrates that we can collaborate remotely, using technology to "see" our way to a solution. In addition, this technology enables us to study and possibly identify defects in construction projects before they are built can keep employees safe.

We have developed several new projects around this exciting technology. These include:

- A mobile phone application for the BOLD transmission line that incorporates AR, giving viewers a real-world look at the structure on their phone. In addition, we developed two Microsoft HoloLens applications (a mixed reality technology). One is used to share information about BOLD with industry and public stakeholders. A second version is more technical for engineers.
- A mobile app that allows workers at one of our power plants to view certain types of equipment through a phone's camera to see real-time data and visuals. This allows employees to stay a safe distance from the equipment while inspecting its performance.
- We are leveraging Microsoft's HoloLens to enable transmission engineers to remotely collaborate on station standards design. They can virtually walk through their designs in an immersive 3-D experience to correct potential issues earlier, before construction begins.

Drones in Flight

Drones are an effective means of inspecting power lines for regular maintenance and to survey damage after storms. In

2017, we began using a camera-equipped drone for power line patrols to test how well the drones work for inspections. We also use drones to conduct inspections of generation, transmission telecommunications and distribution equipment. The advantages include:

- Cameras can capture images underneath components on a structure, such as insulator assemblies, compared to helicopter pilots and observers, who can only look down
- Safer working conditions because no one is required to climb a tower or ride in a helicopter
- Drones can access hard-to-reach areas possibly not accessible by helicopter
- Drones are quieter than helicopters, which is a benefit when flying in populated areas

Drones are an effective means of inspecting power lines for regular maintenance and to survey damage after storms.

Drones also can help us assess damage more quickly after an outage. In late 2018, an ice storm swept through the Appalachian Power service area, leaving more than 50,000 customers without power. Following the storm, we hired a commercial drone company to test the effectiveness of drone fly-bys to survey the damaged areas. Within 30 minutes, the drone pilot identified three spans of downed wire and one span where vegetation needed to be cleared. The drone video was also streamed directly to our operations center for further analysis by our employees. The drone flight saved at least a half-day of work and kept employees out of challenging terrain.

As drone usage becomes more widespread, we are establishing a governance structure to ensure our use of drones complies with specific requirements around physical and cybersecurity, corporate risk assessments and federal regulations.

Transmission Integrated Design and Construction

Integrated design and construction (IDC) is a new process to bring cost and schedule certainty to projects. It requires the creation of 3-D and 4-D models that help guide collaborative stakeholder discussions and facilitate the early engagement of construction experts. The IDC process also allows engineers to design and build a project virtually before steel goes in the ground, enabling us to identify and mitigate issues that could cause project delays and cost overruns. The IDC also improves safety because the work is done in a virtual environment rather than in the field.

In 2018, AEP Transmission leveraged the IDC process for six station projects that are in different stages of development. We are learning important lessons that will improve future project work. Brownfield projects are among those that benefit most from the IDC process because of their complexity with sequencing of work, limited construction space and the engagement of multiple stakeholders.

Prefabricated Transmission

Since 2015, AEP has increasingly worked with prefabricated technology to build transmission substations more efficiently, safely and less expensively. In addition to efficiency gains, prefabrication can reduce the length of construction-related outages, speed up installation, improve safety by minimizing risk exposure and minimize waste. There were 14 prefabricated bus and structure installations in 2018, with 17 more currently projected to be installed in 2019.

In 2018, we installed 184 prefabricated foundations in eight different stations, including four hurricane restoration projects along the Texas Gulf Coast. The ability to prefabricate foundations and streamline material handling and construction allowed us to restore station functionality more quickly than would have been possible using traditional construction methods. In fact, it only took approximately 30 minutes to complete bolting the prefabricated bus and structure assembly onto the awaiting columns at the Verhalen Substation near Pecos, Texas.

It is our intent to make these foundations the standard, rather than the exception, as cost savings and time efficiencies grow.

SOCIAL RESPONSIBILITY

ZERO HARM

No aspect of our work is more important than safety and health, whether it is an AEP employee, contractor or a member of the public. Zero Harm is at the heart of everything we do. It means we believe all occupational illnesses and injuries are preventable Because We Care that everyone goes home in the same or better condition than when they came to work.

UNLOCKING THE POWER OF PERSPECTIVES

We are committed to providing a pathway for employees to advance and unlock the power of perspectives to better serve our customers, drive innovation and generate sustainable growth for our company.

Learn more

WORKFORCE DEVELOPMENT

AEP provides a broad range of training and assistance that supports lifelong learning and transition development, which is especially important as we move toward a more digital future.

Learn more

DIVERSITY & INCLUSION

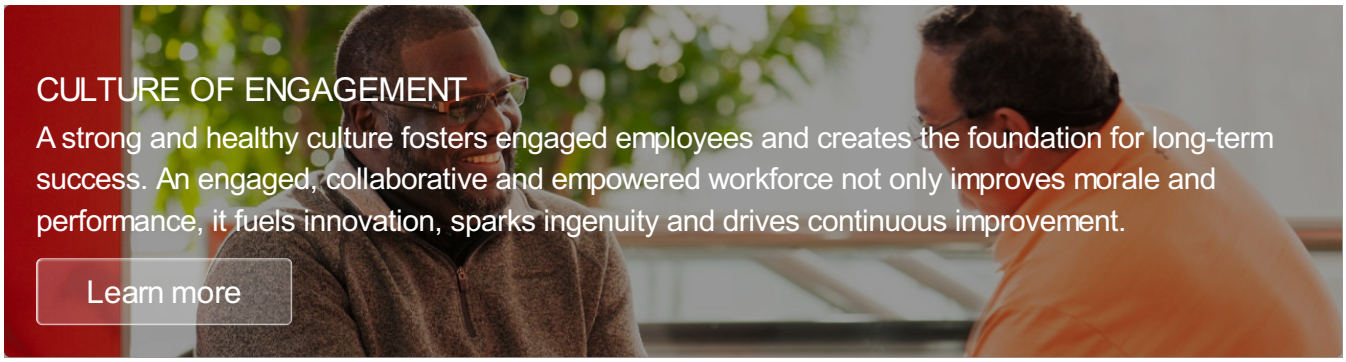
A diverse, inclusive and highly engaged workforce not only improves performance, it also improves company culture.

Learn more

SUPPLIER DIVERSITY

AEP's diversity and inclusion efforts extend beyond our workforce to the customers and communities we serve, including our supplier base.

Learn more



SAFETY & HEALTH AT AEP

No aspect of our work is more important than safety and health, whether it is an AEP employee, a contractor or a member of the public. Zero Harm is at the heart of everything we do. It means we believe all occupational illnesses and injuries are preventable Because We Care that everyone goes home in the same or better condition than when they came to work. We Care about our people, our customers and our communities.

Sadly, we lost one employee in 2018 and one in 2019 to injuries sustained on the job. A line mechanic with our Southwestern Electric Power Company died on the job from an electrical contact in Shreveport, Louisiana. In March 2019, an Appalachian Power Company meter servicer was fatally injured when his vehicle rolled over a hill due to road erosion.

AEP's comprehensive safety programs are the foundation for our safety and health transformation.

The impact of these losses to their families and coworkers is profound and unacceptable to us. We believe safety is personal, and we accept that each of us has a responsibility to look out for each other and say something when safety and health are at risk. We are committed to doing all we can to prevent this from happening again. We took immediate action to refocus our workforce by taking time to pause and think about additional steps that can be taken to mitigate risks. We held company-wide Safety Stand-Downs, during which employees discussed the events, as well as the importance of work planning.

2018 marked the beginning of the third year of our five-year safety and health transformation to achieving Zero Harm – zero injuries, zero occupational illnesses and zero fatalities. Getting to Zero Harm means reflecting on our past, with an understanding of how much we stand to lose with just a single shortcut. We have established several programs and activities that serve as the foundation for our journey. Our objective is to take our safety and health culture from good to great by making it personal and holding each other accountable. We are doing this one day at a time.

We know we can achieve Zero Harm because work groups across the company achieve it every year. We are creating a learning-centric safety culture where events are looked at objectively and used as opportunities to prevent future harm, while learning from those who do it well. It's a culture that focuses on communicating, learning and continuously improving so the same events aren't repeated. Our efforts include:

- Building a comprehensive governance structure that allows us to be more proactive, break down silos and remove obstacles to preventing harm

- Enhancing training to objectively evaluate safety-related events
- Implementing employee recommended policies to make driving safer
- Improving accessibility of safety and health information through online platforms
- Analyzing and sharing injury data and trends with business units in a timely manner
- Producing video messages to educate employees
- Coaching employees to have meaningful conversations about safety and health

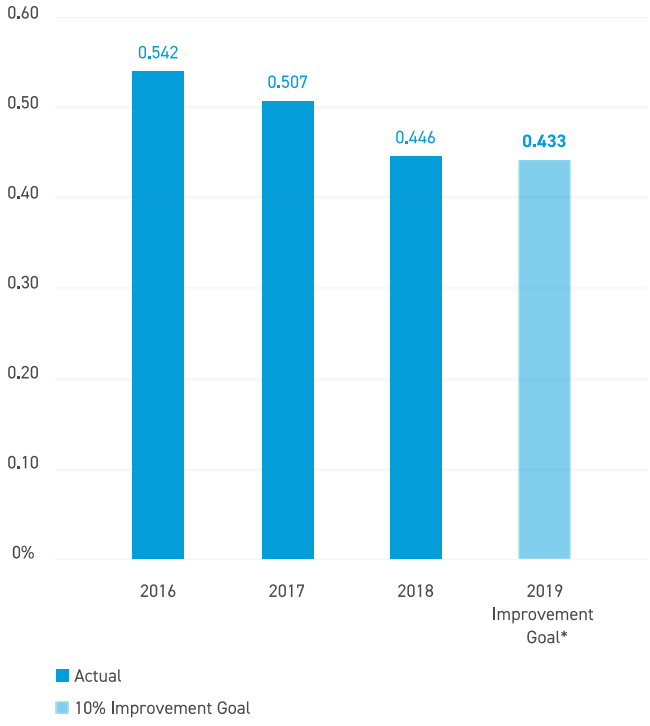
SAFETY & HEALTH PERFORMANCE

We are making steady improvement on our journey to achieving Zero Harm. We are on a journey with no end and can't afford to take our eyes off the ball for a single second. In 2018, 11 fewer employees and contractors were injured, and more than 80 percent of AEP work reporting locations did not experience a DART (Days Away, Restricted or Job Transfer) event.

2018 Safety & Health Performance Overview:

- The DART rate for AEP employees was 0.393 compared with 0.445 in 2017.
- We calculate a combined DART rate for employee and contractor performance, which gives us a total picture of the progress our entire workforce is making toward Zero Harm. The combined DART rate was 0.446 compared with 0.507 for 2017.
- AEP contractors' DART rate for 2018 was 0.507 compared with 0.582 for 2017. There was additional focus on contractor safety in 2018, which will continue.
- In 2018, AEP employees and contractors experienced 161 DART events compared with 172 in 2017.
- The severity days/rate for 2018 was 17.568, a reduction from 22.324 in 2017. The severity rate is meant to show how critical each injury and illness is. The concept is that an employee who must miss time from work or be restricted in their activity to heal and recover has a more severe injury or illness than one who can immediately return to work.

AEP EMPLOYEE & CONTRACTOR DART RATE



DART Rate = *Days Away, Restricted or Job Transfer Cases x 200,000/hours worked.* DART Rate is an industry-accepted measure that allows companies to isolate more serious events.

* Improvement goals are based on three-year historical averages.

We are proud of the progress we have made so far; however, we know that reaching Zero Harm takes persistence and continued effort. No single solution or activity will improve AEP's safety and health performance. However, we are confident that the programs, policies and procedures we have in place will make a positive difference in the lives of our employees, contractors and their families.

Managing Performance

Internal audits of our safety and health management system and compliance processes are part of our quest for Zero Harm. The audits help flag potential hazards that could lead to harm, allowing us to take proactive corrective and preventive action. In 2018, we audited safety and health programs at more than 50 locations. We share the audit results with business unit leaders and safety professionals across the company to leverage best practices and lessons learned.

Assessing Effectiveness

We want to take every opportunity to get better at what we do and learn how we can work safer. This is why Safety and Health and AEP Texas are partnering on a pilot to set up an assessment process. It looks at how we use our skills and training, along with critical safety measures and protections, to influence the outcome of our work. We'll take what we learn to create a framework for an assessment standard that can be applied to a variety of tasks across all business units.

SAFETY & HEALTH INITIATIVES

The safety and health of our employees, contractors and the public is our highest priority. We continue to make significant progress; however, we still have work to do to get to Zero.

AEP's comprehensive safety programs are the foundation for our safety and health transformation. To achieve it we focus on engagement, accountability, proactive hazard identification and correction and continuous improvement.

To empower a culture of safety across the organization, we have created several technical committees that tap into the experience of front-line supervisors and employees to create and implement safety solutions. These committees enable quick communication and planning on safety issues and ensure our safety messages reach everyone at AEP and drive deeper safety engagement within the organization.

The Good Catch program encourages employees to proactively share information about unsafe conditions or events where there was no resulting harm or damage.

To help us gauge our progress, in 2018 we conducted our second Safety Perception Survey. Results from this survey help us identify areas where our safety programs are effective and where they can be improved. More than 90 percent of our employees participated in the survey, which showed many strengths in our safety culture, including:

- A strong focus and commitment to safety
- More employees believe leaders are accountable for preventing injuries
- Employees appreciate the structure of the new Safety and Health committees
- Employees continue to feel empowered and expected to take action to prevent injuries

We know we are making progress. Today, more employees believe all injuries are preventable compared with the survey results in 2015, when the survey was first administered. To achieve Zero Harm, everyone must believe all injuries and illnesses are preventable. It's the only way to change the way we behave. We look for ways to mitigate risks instead of accepting them. The Safety Perception Survey identified the following areas of opportunity for improvement:

- Better recognition of safety achievements and milestones is needed
- Office-based employees want a greater connection to safety
- Greater employee engagement will be critical to achieving sustainable best safety performance

Safety & Health Analytics

We continue to see the benefits of data analytics on our safety and health programs. In 2017, we began using data analytics to provide business unit leaders and their safety committees more detailed analysis regarding injuries in their respective organizations. Data visualization tools are used to help illustrate safety data in a graphical way so that we can more easily spot patterns and trends. The data showed that similar injuries occur across AEP. By using these reports, we can help our employees better understand the underlying causes of common injuries and how to improve injury prevention efforts.

Safety & Health Manual

We know that our employees have the greatest insight on how to work better and safer, because they are performing the work every day. In 2018, we enlisted our employees to help revise the AEP Safety and Health Manual, which is available

in multiple formats. The eBook version is accessible through mobile devices and offers additional features to users beyond the print manual, such as infographics, a search function, and a bookmark feature to save key safety information for quick access.

The revised manual includes AEP's newly developed, company-wide Life Saving Rules. Rather than maintaining a set of rules for each business unit, this update provides a standard set of rules that are foundational to our safety culture and apply to everyone. These rules rise above the rest at AEP, and they come with the highest standard of accountability and enforcement.

Site Inspection Program

We established our Site Inspection Program in 2016, following a fatal crash between a train and an AEP vehicle at a private rail crossing at a construction laydown yard. Through this program, we inspect sites across our service territory to identify potential safety hazards that could put our employees and contractors at risk. Our Site Inspection Team uses a standardized approach, with an owner assigned to each facility inspection. More than 3,700 sites were inspected during the first year of the program, including substations, laydown yards, generation plants and office facilities.

In 2018, we expanded this effort to create mitigation plans for the next tier of risks. Through 2018, the Site Inspection Team completed 159 physical projects and developed 80 revised work practices. This work will continue in 2019. The types of risks we focused on included vehicle crashes while turning onto public roadways and vehicle impact by a train in the entrance/exit area of specific sites.

CORE Visits

Coaching through Observation, Recognition and Engagement (CORE) visits are a leadership tool that can be used to assess a variety of activities. The visits connect employees with their leaders in a two-way dialogue to improve engagement and performance. Even though safety and health is the focus, the interactions can include discussions on continuous improvement, work expectations and opportunities to develop standard work. In 2018, leaders documented more than 16,000 CORE visits. This information is used to identify trends on where we can improve across AEP as well as be an early indicator of risk or harm.

In 2018, we continued the Shadow of the Leader – CORE Visit Training to improve employee engagement and reinforce positive behaviors. This provides leaders with more ways to build trust and engage with their team members. In 2018, more than 400 employees participated in 30 classes. In total, more than 4,000 employees have participated in this training.

Good Catch Program

The Good Catch program encourages employees to proactively share information about unsafe conditions or events where there was no resulting harm or damage. Through the program, situations are reported and corrected, and learnings are communicated throughout the organization. In 2018, nearly 5,000 good catches were reported by employees and more than 500 good catches by contractors.

Preventing Overexertion

One of the more common types of employee injuries is overexertion. In 2018, we formed an employee team to develop a strategy to reduce these types of injuries. About 25 percent of all reported serious injuries are attributed to overexertion, such as muscle sprains and strains. The team developed four key recommendations to prevent overexertion injuries from occurring. These include:

- Improve lifting and weight limit awareness
- Create instructional videos on how to provide feedback about safety issues

- Incorporate ergonomics into tool selection criteria
- Develop role-specific stretching and flexibility plans for employees

We conducted a series of pilot programs on lifting and weight awareness, during which employees weighed, tagged and developed lifting plans for a variety of common objects at their work location. Employees also received ergonomics training to remove risk hazards that lead to common injuries. The training focused on those areas most vulnerable to lifting and repetitive task injuries, including arms, elbows, wrists, knees and the neck.

Driving Safety

Driving is a critical task for many people at AEP. Our employees collectively average more than 91 million miles behind the wheel per year for work. AEP's Attentive Driving Policy prohibits the use of cellphones and hands-free devices while driving for company business. The policy reinforces the importance of seat belt use to saving lives. In 2019, we extended this policy to our contractor workforce.

Driving is a critical task for many people at AEP, which is why we have an Attentive Driving Policy to help keep employees safe while operating a vehicle.

In 2018, we began using new telematics technology across our fleet and coaching our drivers on its use. Many companies use telematics for a number of reasons, including to improve safety on the job. Telematics equipment is used in vehicles to monitor speed, idling, braking, driving, seat belt use, fuel consumption and other vehicle data.

We now have telematics installed in more than 5,200 AEP vehicles, which include tools such as dual-facing dash cameras and vehicle health-monitoring equipment on hydraulic vehicles. The information gathered from these technologies will help improve our drivers' skills and safety, as well as reduce fuel usage and improve vehicle maintenance and claims costs. AEP uses this information to coach our drivers.

Our employees who operate heavy equipment or drive large vehicles for their work are required to have a commercial driver's license (CDL). Training is integral to driver safety, and we want to ensure our employees are receiving consistent training that matches our expectations for safe vehicle operation. In 2018, we instituted a new CDL program to ensure the training our employees receive comes from a certified provider. One feature of the CDL program is to pair our newly licensed drivers with a mentor, so they can gain valuable on-the-road experience from a more experienced driver. Between 300 and 500 AEP employees will participate annually.

Communicating Safety & Health

To be effective in communicating important safety and health information, communication has to be clear and sent through multiple channels. To maintain our focus on safety throughout the year, we communicate key safety events and outcomes with one-page alerts sent to affected employees. We also communicate when there are new or changing policies that impact safety. Alerts prove to be an effective way to communicate with employees in an easily accessible format. In 2018, we issued 15 safety and health alerts.

We implemented several web-based communication platforms for instant and easily-accessible safety-related information, including a safety and health dashboard on our internal website. This gives employees instant access to information on Good Catches, DART and other recordable events. We also maintain a private Facebook page where we share valuable safety and health information and recognize safe behaviors at work and home.

AEP has its own Safety and Health Video Channel, where we share safety messages monthly across the company. These messages elevate awareness of our greatest safety challenges. We also feature first-hand accounts of safety experiences

from employees from across the company. So far, we have released 16 safety videos featuring our frontline employees, with more planned in 2019.

SAFETY OF OUR CONTRACTORS

The safety of our contractor workforce is as important to us as the safety of our employees because harm doesn't discriminate in the pain it causes. We have a strong contractor safety program that we continuously improve upon. We're doing this in collaboration with contractors to ensure understanding and to set clear expectations.

To help our contractors achieve Zero Harm, each business unit has a rigorous contractor pre-qualification process that sets clear expectations for compliance and commitment. We are beginning to incorporate leading indicators into the contractor safety management program so we can proactively address trends.

To help our contractors achieve Zero Harm, each business unit has a rigorous contractor pre-qualification process that sets clear expectations for compliance and commitment.

We frequently communicate with our contractors to ensure compliance with our Safety & Health requirements. In addition, we meet regularly and set an expectation for them to align with our value of Zero Harm. We also regularly seek opportunities to learn best practices from them.

When performance doesn't match expectations, we hold in-person meetings with contractors to identify the areas in which they can improve upon their safety practices, and ultimately improve their performance. In 2018, we conducted 50 in-person safety meetings with our contractors and saw immediate, positive results. Out of the 19 Transmission contractors who completed an in-person safety meeting, 18 experienced improved DART rates in 2018, and 15 had zero DART cases for the entire year. The results were similar for Distribution contractors, with 11 of the 13 contractors improving their DART rate following a face-to-face safety review, and eight contractors experiencing zero DART cases in 2018.

Our continued focus on contractor safety is an important part of our strategy and our goal for Zero Harm, especially as our contractor workforce continues to grow.

Contractor Safety Committee

In 2018, we created a Contractor Safety Technical Committee to accomplish four initiatives to improve contractor safety. These initiatives included a common data collection system, a standardized contractor prequalification process, a common set of supplemental safety terms and conditions, and oversight training. The data system houses the contractor qualification data we collect and keeps track of all contractor hours worked. The system also serves as a resource center where users can find AEP's Contractor Terms and Conditions, document templates and safety and training videos.

This new committee is focusing on creating a common contractor onboarding and work experience, regardless of the AEP business unit for which they are working. To achieve this, we are working toward establishing an AEP systemwide common prequalification process and set of supplemental terms and conditions. The committee will also develop oversight training for those with contractor management responsibilities at AEP.

Safety Recognition

Being recognized for our safety programs means a lot to us. We are committed to Zero Harm, and we don't do it for awards. It is gratifying to know that we are making a difference.

In 2018, the National Maintenance Agreements Policy Committee, Inc., presented Zero Injury Safety Awards (ZISA) to 10 different AEP projects. ZISA is a premier award for industry safety, honoring union contractors, labor representatives and

owner-clients who create injury-free jobsites. To qualify for ZISA recognition, a project must have zero OSHA recordable incidents.

SAFETY OF THE PUBLIC

Our commitment to safety extends to the public. We are constantly seeking better ways to communicate safety information to our neighbors, public contractors and first responders who may come in contact with our electrical facilities. We use multiple communication channels, including videos, direct mail, in-person training, social media campaigns and school education programs.

Unfortunately, despite our education and outreach efforts, six public fatalities occurred in the AEP service territory in 2018 due to electrical contact. In response, we redoubled our public safety efforts to increase public education and awareness for staying safe near AEP facilities.

One of our focus areas is on public commercial contractors and businesses. We are providing them with printed information about how to work safely around overhead and underground electrical facilities, and we encourage them to contact us at any time.

Because first responders may be the first to encounter a downed power line, we conduct outreach and education with them to ensure they stay safe when responding to an emergency. We also engage with the public in a variety of ways, including:

We are constantly seeking better ways to communicate safety information to our neighbors, public contractors and first responders who may come in contact with our electrical facilities.

- Electrical safety awareness events and school safety programs
- Social media safety campaigns
- Videos and reference materials with graphics to promote public safety
- Promotion of “Call Before You Dig”

We continue to develop our public safety education program, including participating in an Edison Electric Institute (EEI) working group that is developing common public safety messaging for all electric utilities to use. Once complete, this will provide a stronger, more consistent message about public safety across our industry.

WORKFORCE SAFETY & SECURITY

AEP’s quest for Zero Harm reaches beyond occupational safety and health to include employee security and workplace aggression. While in the field or in the office, we believe every employee should come to work feeling safe and secure. In response, AEP has developed policies, procedures and training to increase employees’ ability to recognize, report and respond to workplace aggression.

AEP has a mandatory self-reporting policy that requires all employees to report within 24 hours to their immediate supervisor and/or their local Human Resources representative the following events:

- An arrest, charge, indictment or conviction of a felony or misdemeanor criminal charge (except minor traffic offenses that will not result in incarceration)
- Service of a protection order or restraining order when the employee is listed as the subject of the protection or restraining order.

The mandatory self-reporting policy makes us aware of these events sooner so we can prepare for events that could potentially put our employees or our operations at risk.

We offer several workplace safety training initiatives to our employees. In 2018, we launched an Active Shooter Response

table-top exercise to train our employees on how to handle active shooter situations. This training teaches people to think about safety not just at work, but at home and in public as well.

While we take great measures to ensure our employees' physical security at work - such as identification badges, secured turnstile entrances and physical security desks and personnel - we stress the need for situational awareness at all times. In 2018, we conducted more than 180 active shooter training sessions that reached more than 3,000 employees.

While in the field or in the office, we believe every employee should come to work feeling safe and secure.

For our field employees, we provide face-to-face and video Customer Threat and Aggressive Behavior training, which includes de-escalation techniques that can be used when someone threatens the safety of our employees. In 2018, we completed 69 sessions with more than 2,800 employees. In March 2019, we rewrote our policy for dealing with threatening customers. If a customer threatens physical violence to our employees, business partners or company assets, we now require a police escort and we're training our employees on what to do. We also code these customers in our system so that we know in advance of the potential threat and can prearrange a police escort.

We are developing a training program in 2019 to focus more on prevention techniques, such as understanding the warning signs of an event. If we see employees are struggling emotionally, we want to be able to identify it and provide any help that we can. Once developed, this type of proactive training will be provided to managers and supervisors across AEP.

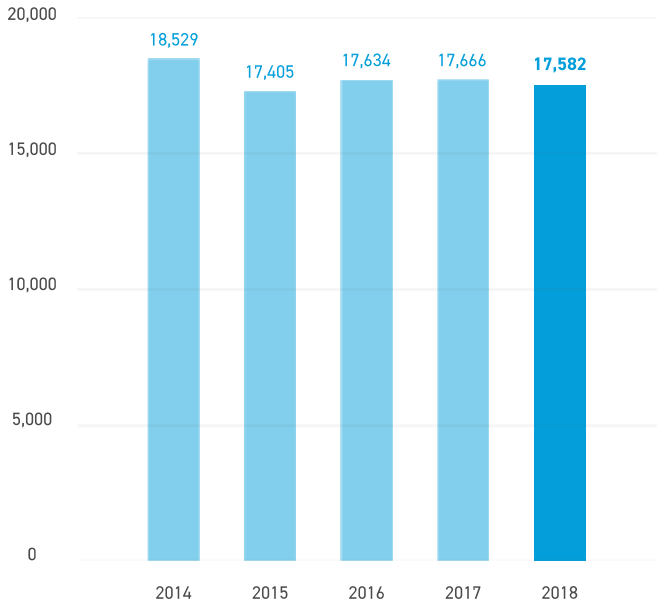
By putting these efforts in place, we stay true to our commitment to providing a safe working environment for all employees.

OUR WORKFORCE

A fundamental transformation is occurring in the way we do our work, the skills we need and the expectations of new generations who are fast becoming the majority of our workforce. The competition for talent is fierce, and the skills we are looking for are evolving. Technology is playing a pivotal role in how this unfolds. Digital platforms and artificial intelligence (AI) are creating greater efficiencies, cost savings and new career opportunities. Access to enormous amounts of data are informing how we act, invest and engage.

Amid this rollercoaster of change, agility and speed are essential. At AEP, we are preparing our workforce for the future by providing opportunities to learn new skills and engaging higher education institutions to better prepare the next generation with the skills that will be needed.

NUMBER OF AEP EMPLOYEES* year-end



* Does not include Dolet Hills Lignite Mine employees.

The Future of Work

The rise of mobile and wearable technology, artificial intelligence (AI), Internet of Things (IoT), virtual and augmented reality, drones and networks powered by 5G are among the transformational changes that are forever reshaping the workplace and how we do our work. We rely on smart devices to organize our lives, conduct business and do our jobs. Today, these technologies make life easier and are also changing how we do our work.

As our physical and digital worlds converge, we have to innovate more aggressively and constantly transform. At AEP, we

are experiencing the disruption and change that come with the need to adapt to this evolving landscape. We now have a multigenerational workforce that prefers alternative work styles and work environments beyond the traditional office. At the same time that the work is changing, the technical and physical skills required to maintain and operate the grid remain critical. Merging these needs requires a core mindset of continuous learning and continuous improvement.

The new demands of our work include implementing process automations and augmenting our systems with digital technologies. We must transform our workforce by helping employees develop the skills needed to accomplish their work using these new digital platforms.

The workplace as we know it today will also transform to accommodate the work of the future. We will adapt our offices and other facilities to accommodate new technology and enable our employees to be more productive and collaborative. We are also rethinking where work is required to be performed by assessing options such as virtual or remote work, and we're exploring new talent models. For example, we are asking ourselves whether the work can be done more effectively and efficiently through contractors or third parties. This allows us to be more flexible as business needs and skillsets change.

Process Automation

When looking at the future of work, one of the ways our work is changing is through process automation. We use process automation to free up our employees to focus on more complex or valuable tasks, and to reduce error rates and improve standardization of administrative tasks across the company. Tasks frequently selected for process automation include data entry, performing calculations, filling out paperwork and logging in or out of applications.

To socialize the benefits of process automation, a series of work planning strategy sessions were held across AEP. These sessions challenged teams to assess their future needs by asking questions such as: Can we accomplish our work in a different way, and can we get people to think differently about the work that needs to be done?

This socialization resulted in submission of over 150 process automation ideas for consideration in 2018. And, subsequently, a governance structure was established to review and approve the ideas for automation appropriateness and viability.

In 2018, several new process automations were implemented, including:

- Decreasing the turnaround time for assigning customer "No-Bill" events to the appropriate member of the Customer Operations Billing team for further investigation. When customers don't receive bills, there are financial ramifications for them and for AEP. The "No-Bill" assignment process is done during off business hours prior to when the team starts its day, saving time and resources from having to manually conduct these assignments during work hours.
- Automating the creation of contractor user IDs during the employee and contractor onboarding process. Individuals must be properly credentialed before they can access AEP facilities and critical infrastructure. During 2018, over 3,500 new user IDs were created through process automation, saving time and resources while expediting the process.

We are exploring additional process automation capabilities, including chat bots and other cognitive technologies. Chat bots simulate a conversation with human users – such as between our customers and employees. While still limited to a few specific purposes, this new technology will provide us with additional opportunities for automating some of our most basic and repetitive tasks.

WORKFORCE PLANNING & DEVELOPMENT

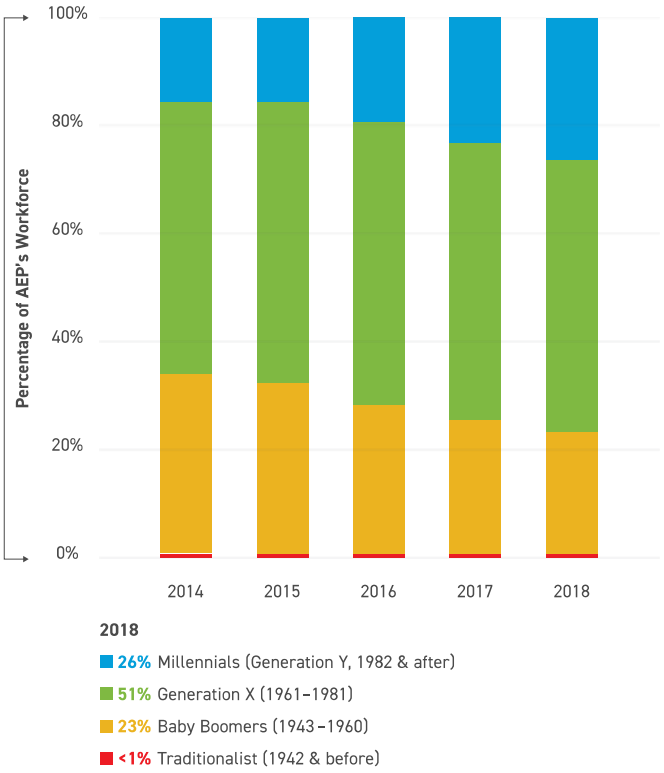
Although our annual employee turnover rate remains steadily low at approximately 6.8 percent, we anticipate that approximately 4,000 employees will retire or leave for other opportunities within the next five years. Many of these employees have institutional knowledge of the company, our operations and systems. In a robust economy where employment levels are high, the competition for talent is fierce, and we have to be more deliberate and strategic in seeking individuals with the right mix of talent and experience.

We see this level of turnover across our workforce as an important opportunity to change our approach to how we identify our true talent needs within AEP. While we will still have a significant need to hire new talent, we are re-organizing many of our traditional job roles and reassessing how we will get our work done in the future. For example, several expected job

vacancies can be absorbed through new process automations and the use of other technologies. In other areas of the company, some of our existing job functions may no longer be required due to the shifting nature of our work as an energy provider.

Our digital transformation will require employees to have skillsets that merge analytics with traditional job functions. The need for analytics integration is occurring everywhere, from our facility maintenance staff and our line workers to our customer service teams. Sometimes, a new technology simply requires a quick update of existing equipment. Other times, it requires a more thorough examination of the staffing capabilities needed to manage new equipment, new processes or new software. Developing or acquiring these new skillsets is critical to becoming the energy company of the future.

AEP WORKFORCE DEMOGRAPHICS



We must also look to new sources of talent to meet our future demands. Many of the skill sets we will require may not exist in today's job market, so we must be proactive in creating a talent pool that meets our specific business needs. One example is our work with the Business Roundtable (BRT), the Ohio BRT, the International Brotherhood of Electrical Workers, and universities and community colleges in Ohio to develop a reskilling of the workforce plan. Together we are working to develop educational programs to provide students, as well as current and future AEP employees, with the tools to transition into these new skillsets.

AEP also has training alliances with several community colleges, universities and vocational and technical schools across our 11-state service territory. We work with these institutions to develop academic programs that will prepare employees for upward mobility opportunities and to attract external job seekers interested in careers in our industry. Our education partners include The Ohio State University, Columbus State Community College, Mid-East Career & Technical Center, Texas State Technical College, Morgan State University, Tennessee State University and Oklahoma State University Institute of Technology, among many others. In 2018, AEP supported more than 1,100 employees with education reimbursement.

We are also committed to equipping our employees with job readiness as we retire coal plants. Our Conesville Plant, located in Coshocton, Ohio, will retire two units in 2019 and the remaining unit in 2020. Approximately 165 employees will be impacted; some will continue to work at AEP, while others will be challenged with finding new jobs. To help support their search, AEP partnered with Coshocton County Job and Family Services to provide a series of job readiness programs and resources. Through the Ohio Means Jobs program, displaced employees will have access to workforce trainers and career counselors to prepare them for their next career move.

Developing our Employees

Transformational change requires a more progressive and thoughtful approach in how we train, develop and retain our employees. As the nature of our work changes, so do the skillsets, experience required, and knowledge that are necessary to remain competitive. Our goal is to prepare our company and workforce for those changes so that we are aligned with our future strategy. AEP provides a broad range of training and assistance that supports lifelong learning and transition development. This is especially important as we move toward a more digital future that requires a more flexible, innovative and diverse workforce.

We have robust processes to achieve this, including ongoing performance coaching, operational skills training, resources to support our commitment to environment, safety and health, job progression training, tuition assistance and other forms of training that help employees improve their skills and become better leaders. In 2018, AEP employees completed just over 1 million hours of training in programs for which we track participation.

AEP provides development opportunities for employees at every level, whether through informal professional

development opportunities or formal targeted development programs. Several of AEP's Employee Resource Groups and utility professional groups, such as Women's International Network of Utility Professionals (WiNUP), sponsor programs and events that focus on employee education, career advancement, and personal and professional development.

In 2018, we launched Transmission University (TU), a development initiative that seeks to transform learning within the organization. This initiative equips Transmission employees and contractors with self-guided learning opportunities that empower them to take control of their professional development.

CULTURE OF ENGAGEMENT

A strong and healthy culture fosters engaged employees and creates the foundation for long-term success. An engaged, collaborative and empowered workforce not only improves morale and performance but also fuels innovation, sparks ingenuity and drives continuous improvement. We need a culture that supports agility to succeed in a fast-paced, changing work environment. This includes building on our commitment to customers, safety, operational excellence and innovation. Our focus on culture is deliberate and unwavering and we are making good progress to achieving the high-performing culture we are seeking.

To measure our progress, AEP conducts an annual employee culture survey through Gallup, Inc. In 2018, we achieved an 89 percent participation rate for the second year in a row. While we are proud of this level of engagement, we continue to reach for 100 percent participation because we truly believe that every voice counts.

At AEP, we continually work to foster a culture that supports the agility and focus needed to succeed in a fast-paced, changing work environment. We measure our progress through employee culture surveys.

Our 2018 engagement survey results were very positive, as we achieved top-quartile performance in Gallup's overall company database – a full year ahead of our stated goal. This includes our improved overall average engagement score in the 76th percentile, compared with the 69th percentile the previous year.

Our progress is a result of a deliberate and determined effort throughout the year to engage with employee teams who were struggling to improve their performance. We also improved in our Inclusiveness Index score, which was in the 77th percentile, compared to the 68th percentile in 2017. We are confident that this score will continue to increase as we build our diversity and inclusion programs.

In 2018, we introduced a question about well-being to the survey to begin measuring the overall well-being of our employees. Gallup defines well-being as a life well-lived – how we experience our lives, measured by purpose, social and community connections, financial well-being and physical health. Well-being is an important indicator of employee engagement. It follows that companies who build a culture of well-being position their employees to perform at their best.

Today, AEP provides a wide range of programs that support employees' well-being. These include a wellness program, financial planning and advice experts, mental health benefits, adoption assistance, and many other benefits that support employees in their personal and professional lives.

Having a high-performing, highly engaged workforce requires giving people the tools they need to be successful and to contribute in meaningful ways. One way we do this is through our Power up & Lead culture leadership workshop. Since the workshop began in 2013, more than 19,000 employees have completed Power up & Lead. The workshop equips them with knowledge, tools and resources to be more collaborative, effective and engaged. In 2018, we began offering refresher courses to employees, and we will continue to offer Power up & Lead workshops.

SUPPORTING OUR VETERANS

AEP actively supports, recruits and hires military veterans, and educates, trains and prepares them to successfully

transition into rewarding energy industry jobs. Our veterans have the technical training, experience and personal characteristics that make them a great fit for careers in the energy industry. They bring important skillsets to the workforce, including leadership, discipline, teamwork and reliability. They also bring a mindset of safety, which is a core value of AEP's business, making them attractive recruits for our company.

We are proud that approximately 10 percent of AEP's employees are military veterans, and 8 percent of AEP's new hires are veterans. We hold open houses for veterans so they can learn about skilled craft positions within the company, watch live demonstrations of line mechanic work and learn about technologies used to operate the grid. We encourage veterans to actively seek and apply for jobs at AEP that match their training and skills.

Veteran's from Appalachian Power participate in a Veterans Day Parade in Welch, West Virginia.

AEP is a member of the U.S. Army Partnership for Youth Success (PaYS), a program designed to accelerate the transition of veterans to careers in the private sector. Through the Army PaYS program, active and reserve servicemen and servicewomen in the Army and Army Reserve Officers' Training Corps (ROTC) are matched with civilian job opportunities that require the skills acquired during their military service. Soldiers who qualify with a skills match are guaranteed an interview for the job by participating companies.

We also support our military veterans through the benefits we provide them. Military veterans and reservists are allowed paid time off to attend funeral services for a service member with whom they have served. This is in addition to AEP's regular employee bereavement policy. We understand that a fellow service member is often as close as a family member, and the loss is deeply felt by our veterans. We also provide pay differential for employees in the Reserves or National Guard who are ordered to active duty in emergency situations.

AEP's Military Veteran Employee Resource Group (ERG) is another way we support our more than 1,800 military veteran employees. The mission of the Military Veteran ERG is to promote the roles and contributions of veterans and active-duty military employees, provide professional development and networking opportunities, and serve as a liaison between AEP and the veteran and military communities.

We are proud of our work to support military veterans. AEP was one of six energy companies that developed the Troops to Energy Jobs initiative to provide veterans with a career path for jobs in the energy industry. AEP also participates in the Veteran Jobs Mission, which has grown to more than 200 companies. The coalition is committed to hiring veterans and has collectively hired more than 450,000 veterans since its inception in 2011.

LABOR RELATIONS

Nearly one fourth of AEP's workforce is represented by labor unions. We value the relationships we have with our unionized employees and believe in a trusting, collaborative and respectful partnership. We are working with our labor partners to strengthen these relationships to ensure we have a culture that attracts and supports employees who can adapt to the rapid changes occurring in our company and industry. Our partnership with labor unions is critical to meeting the growing expectations of our customers and adapting to the challenges of rapidly changing technologies. We also have in place multiyear contracts with our union partners to enhance continuity for both the company and the workforce.

2018 ORGANIZED LABOR AT AEP

Labor Unions	Number of Employees
International Brotherhood of Electrical Workers	3,374
Utility Workers Union of America	549
United Steelworkers of America	360
United Mine Workers of America	132
International Union of Operating Engineers	2
Total	**4,417**

Our relationship often goes beyond the confines of a contract. Together, we're expanding our focus on safety while enhancing productivity. We are also working together with labor leaders to support infrastructure development across the

nation. And we are partnering with labor leaders to develop the talent pipeline and skills needed for the future. Our labor-management relationship continues to strengthen as our workforce becomes more flexible, creative and engaged.

DIVERSITY & INCLUSION

To be a successful business, we must embrace diversity and inclusion as an integral part of our business strategy and company culture. We are committed to providing a pathway for employees to advance and unlock the power of perspectives to better serve our customers, drive innovation and generate sustainable growth for our company. At AEP, we value a supportive, inclusive business environment for our employees that reflects the diversity of the communities where we live, work and operate.

Diversity and inclusion have become increasingly important concepts to our employees and leaders, shareholders, suppliers and customers.

Our Diversity & Inclusion Vision Statement – We are committed to a culture where differences are valued and recognized as a significant, positive influence on AEP's ability to serve and support our employees, customers, suppliers and other key stakeholders.

> Diversity – Boundless range of differences and similarities represented by ALL of our employees, customers, suppliers and stakeholders.
>
> Inclusion - Intentional focus on ensuring that ALL employees are valued, respected, and have a sense of belonging.

Diversity and inclusion are key components to our business strategy and help us remain competitive and attract and retain the best talent. A diverse, inclusive and highly engaged workforce not only improves performance but also improves company culture – creating an environment that welcomes different experiences, beliefs, ideas, backgrounds and thoughts.

2018 was the second year of the Diversity and Inclusion Strategic Plan – The Roadmap to 2025. The plan focuses on four key areas:

- Diverse Workforce: Build a diverse, high-performing workforce that reflects the communities we serve. Eliminate barriers that prevent employees from maximizing opportunities and potential.
- Inclusive and Engaged Workforce: Cultivate a collaborative and inclusive work environment that empowers all employees.
- Accountability & Sustainability: Establish accountability measures to ensure that AEP's management and leadership teams model the behavior that advances diversity and inclusion initiatives.
- External Partnerships: Foster relationships with external partners and stakeholders to broaden access to diverse talent by building partnerships with educational institutions, diverse community organizations and professional associations.

Each of the four goals is accompanied by strategies and measures designed for successful companywide implementation. In addition, we created a shared accountability structure to ensure our continued progress. This structure includes the accountability of AEP's leadership team for implementation and management of this plan, a Diversity and Inclusion Advisory Council, and employees who are responsible for living AEP's inclusive culture. Learn more about our progress in our 2018 Sustainability Goals Progress Report.

Listening Tour

In 2018, AEP launched a Diversity & Inclusion Listening Tour – a process designed to hear firsthand the state of diversity and inclusion across our company. The listening tour gave employees a safe place to talk about diversity within AEP, to

engage leaders and discuss ways to take ownership by cultivating a culture of inclusion. We held 54 sessions at 21 locations across the AEP service territory, reaching more than 700 employees.

Participants were asked to grade AEP and their local workplace on diversity and inclusion. Overall, 64 percent rated the company and their local workplaces an “A” or “B” but more than 25 percent gave us low marks. During the sessions, employees asked about the business case for diversity and inclusion – how it supports our business, employees, shareholders, communities and our customers. Participants also stressed the need for accountability, education and engagement from leadership and for change readiness – equipping leaders to have conversations with employees on these issues.

The second phase of the tour takes place in 2019. It will include sharing feedback with all participants and developing action plans to address site-specific biases.

Inclusive Leadership Education & Awareness

As part of our commitment to the CEO Action for Diversity & Inclusion Pledge and as part of our strategic initiatives, executive leadership attended an Inclusive Leadership education and awareness session that focused on understanding and disrupting biased decision-making patterns in talent management. Based on feedback from senior executives, we will launch a 2019 leadership initiative with a goal to have 90 percent of all AEP leaders attend an Inclusive Leadership workshop.

Multicultural Holiday

In 2019, we began offering employees the choice of a multicultural holiday such as religious observances, cultural celebrations and federal holidays that are not currently observed by the company. This approach fosters a more openly inclusive work environment for all AEP employees.

PARTNERSHIPS FOR SUCCESS

Our diversity efforts are fueled by a number of internal and external initiatives, programs and partnerships. Whether through educational institutions, professional associations, community organizations, employee resource groups (ERGs) or leadership development forums, we are focused on building and fostering partnerships that give us greater access to diverse talent.

We are proud to support and participate in Paradigm for Parity®, the CEO Action for Diversity & Inclusion™ pledge and the Columbus Commitment: Achieving Pay Equity. We also have relationships with many other diverse organizations such as the National Society of Black Engineers, to assist us with our diversity efforts. These partnerships not only expose AEP to more diverse talent but also help us become a recognized partner and leader among potential employees.

AEP has relationships with many diverse organizations such as the National Urban League, to assist us with our diversity efforts.

We have alliances with several colleges and universities that broaden our access to diverse candidates. Through our 2025 Diversity and Inclusion Roadmap, we will implement a companywide targeted college recruiting initiative that focuses on partnerships with schools representing Historically Black Colleges and Universities, the Hispanic Association of Colleges and Universities and women’s colleges and universities, as well as working with offices of diversity and inclusion at other colleges and universities. We set a 2025 goal that at least 10 percent of new hires into full-time, entry-level jobs will come from targeted high school development programs, technical colleges and/or universities (based on available opportunities).

EMPLOYEE RESOURCE GROUPS

One of the best ways for AEP to demonstrate its commitment to a trusting and inclusive work environment is to empower employees to form and participate in Employee Resource Groups (ERGs). Our ERGs reflect the diverse makeup of our workforce and enable us to gain valuable insight into the diverse communities we serve. They also help increase engagement across the company by providing employees with a safe space to discuss work-related issues and to develop innovative solutions.

In 2018, Indiana Michigan Power launched a new multicultural ERG called VOICE – Valuing Organizational Improvement and Community Excellence. The group's mission is to foster an inclusive work environment that promotes respect and value of employees through cultural awareness where employees are provided the opportunity to develop while giving back to the community.

AEP's Employee Resource Groups

- Abled and Disabled Allies Partnering Together (ADAPT)
- African-American Employee Resource Group (AAERG)
- Asian-American Employee Partnership (AAEP)
- Hispanic Origin Latin American Employee Resource Group (HOLA)
- Military Veterans Employee Resource Group (MVERG)
- Native American Tribes Interacting Observing Networking (NATION)
- Pride Partnership (for LGBTQ employees and their allies)
- Valuing Organizational Improvement and Community Excellence (VOICE)

Open to all employees, the ERGs sponsor programs and events focused on culture, education and personal and professional development. ERG members are active community volunteers supporting efforts such as Project Mentor and Make a Difference Day. ERGs also play an active role in AEP's diversity and inclusion efforts, including recruitment of new employees.

The support from senior managers is a key factor to the growth and success of the ERGs. Executive sponsors advocate for the ERGs and their interests, provide strategic guidance, enlist the support of other senior leaders and connect ERG members with relevant stakeholders.

RECOGNIZING DIVERSITY & INCLUSION

At AEP, we take deliberate actions to create a work environment in which employees are valued and the diversity and richness of the backgrounds and perspectives of our people are embraced. An inclusive environment allows us to leverage the diverse talent of our workforce for business success. In turn, employees who are included and respected are more likely to be engaged, to be innovative and creative, and to be high-performing contributors. It also says a lot about who we are as a company.

AEP EMPLOYEE REPRESENTATION*

as of Dec. 31, 2018	Employees	Females	%	Minorities	%
Total Employment	17,930	3,409	19%	3,127	17%
Officials & Managers	3,288	494	15%	384	12%
Professionals	5,598	1,503	27%	1,062	19%

as of Dec. 31, 2017	Employees	Females	%	Minorities	%
Total Employment	17,716	3,299	19%	3,014	17%
Officials & Managers	3,228	457	14%	363	11%
Professionals	5,413	1,433	26%	995	18%

* Does not include all AEP subsidiaries, co-ops and interns, AEP Energy and employees on unpaid leave-of-absence.

According to the latest Gallup research, the most engaged employees are those working in an open, fair and diverse environment. For the second consecutive year, we are continuing to use the Inclusiveness Index to measure our progress. On a scale of one to five, our mean score was 4.01. We anticipate continued improvement based on the tactics in the diversity and inclusion roadmap through 2025.

Recognition for our Diversity and Inclusion efforts:

- For the third year in a row, AEP was recognized as one of the nation's 2018 Best Places to Work in the Disability Equality Index (DEI). The Abled and Disabled Allies Partnering Together (ADAPT) ERG is one of the driving forces behind our continued recognition.
  In January 2019, we were recognized among the top 230 companies in 10 sectors included in Bloomberg's 2019 Gender-Equality Index (GEI), which recognizes companies who are trailblazers in their commitment to gender reporting and advancing women's equality.
- In early 2019, AEP was named to Forbes America's Best Employers for Diversity, which includes 500 of the top companies that disclose the most diverse boards and executive ranks and the most proactive diversity and inclusion initiatives.
- We also earned a spot on Forbes inaugural Best Employers for Women list in 2018. AEP ranked 193 out of 300 corporations, universities and organizations, and third in the Utilities category.

LEADERSHIP DIVERSITY

It is important to us to be diverse from the board room to the front line. Having employees and board members who represent different experiences, thought processes, generations, genders, and racial and ethnic backgrounds gives us a broader perspective on business issues, challenges and solutions. It moves us to a place of viewing differences as strengths. It also solidifies our commitment to building a high-performing workforce that reflects the diverse communities we serve.

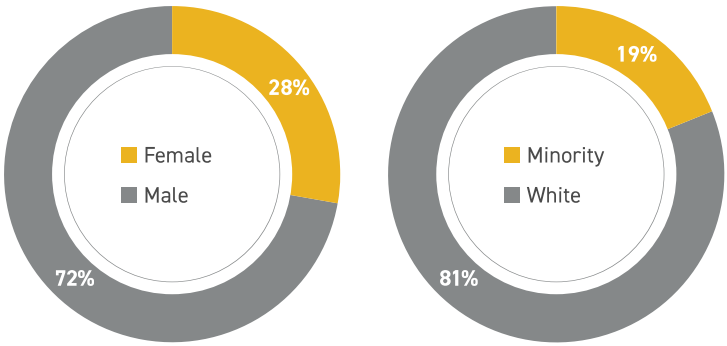
In 2018, AEP was recognized as a Winning "W" Company by the 2020 Women on Boards campaign, whose mission is to increase the percentage of women who sit on U.S. company boards to 20 percent or greater by 2020.

In 2018, AEP was recognized as a Winning "W" Company by the 2020 Women on Boards campaign. The mission of the campaign is to increase the percentage of women who sit on U.S. company boards to 20 percent or greater by 2020. In 2019, the number of women serving on AEP's board has increased to four with the election of Margaret McCarthy at the Annual Meeting of Shareholders. Women now account for 31 percent of AEP's Board of Directors. Additionally, three members of our Board of Directors have been named to Women Inc. magazine's list of 2018 Most Influential Corporate Directors.

At the leadership level, we are proud of our efforts in conjunction with the Paradigm for Parity®, which seeks to fix the corporate leadership gender gap. In 2018, Public Service Company of Oklahoma announced the promotion of a female leader to serve as president and chief operating officer. Currently, two of the seven AEP operating companies are led by women.

Today, AEP's leadership is made up of 28 percent women and 19 percent minorities due to recent leadership changes. Our Board of Directors, AEP leadership team and regional utility presidents include nine women, three African Americans, two Hispanics and one Asian American. Leadership diversity lays the foundation for enabling a more inclusive workforce that breaks down silos and creates a trusting, engaging and collaborative work environment. While we are making progress, this is a journey and we still have a way to go.

AEP'S LEADERSHIP DIVERSITY



Includes AEP's Board of Directors, AEP Leadership and Regional Utility Presidents.

SUPPLIER DIVERSITY

AEP's diversity and inclusion efforts extend beyond our workforce to the customers and communities we serve, including our supplier base. Small and diverse suppliers enable innovation, increase competition, improve savings and enhance the AEP brand. We want our pool of suppliers and business partners to align to the diversity of our communities by making it easier for diverse suppliers to do business with us.

SUPPLIER DIVERSITY — 2018

$6.9 billion
Total corporate spend on goods & services in 2018

49 percent
Total corporate spend on locally based suppliers ($3.4 billion)

$971 million
Total corporate spend on goods and services from small businesses (only Tier 1 spend reported & includes small diverse businesses)

$365 million
Total corporate spend on goods and services from diverse suppliers (only Tier 1 spend reported & includes small & large diverse businesses)

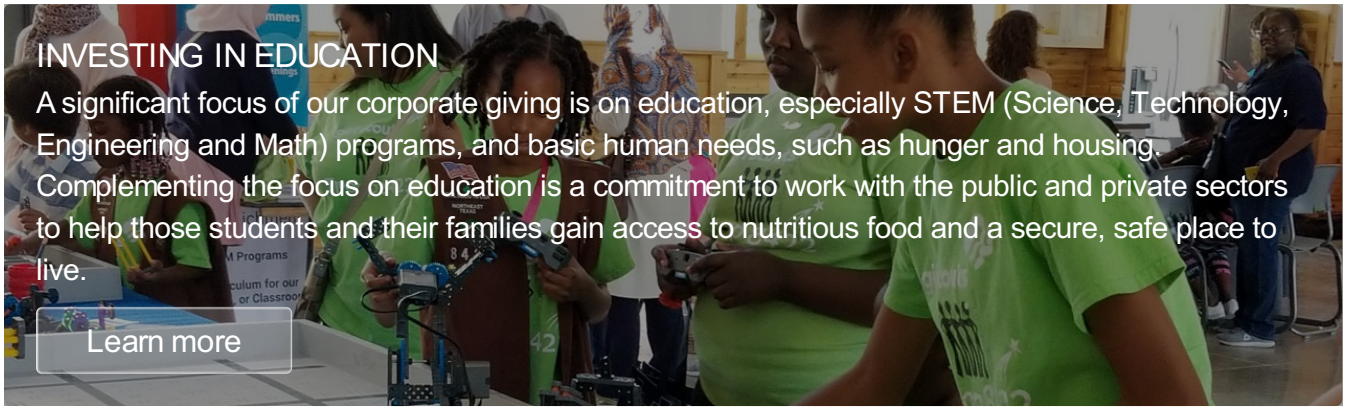
The Supplier Diversity Program focuses on maximizing opportunities for diverse businesses, which include businesses owned by women, minorities (including Hispanic, African American, Asian American, Native American), veterans, LGBTQ, HUBZone and service-disabled veterans. We set a goal to generate a pool of diverse strategic suppliers and business partners that mirror the customers we serve by reaching 13 percent diverse spend by 2023 (includes Tier 1 (prime) and Tier 2 (subcontractors) suppliers. In 2018, we increased our diverse spend by 1.45 percent ($95 million) and achieved our goal of 1 percent enterprisewide.

We continue to improve our Tier 2 supplier program, which allows us to understand the impact our spend is having on diverse suppliers through our direct suppliers. The Tier 2 program demonstrates the importance we place in understanding how our spend trickles down through our supply chain to impact the communities we serve. We are focused on specific outreach with targeted suppliers to create more opportunities that will grow our Tier 2 program.

CUSTOMER & COMMUNITY

CUSTOMER EXPERIENCE

At AEP, our goal is to provide world-class service while creating positive, lasting relationships with our customers. We want to be the people that our customers and communities turn to first when they have energy needs. We also want to meet our customers in the communication channel of their choice while providing tailored solutions and making it simple, fast, and convenient to do business with us. That's how we create value for each customer.



INVESTING IN EDUCATION

A significant focus of our corporate giving is on education, especially STEM (Science, Technology, Engineering and Math) programs, and basic human needs, such as hunger and housing. Complementing the focus on education is a commitment to work with the public and private sectors to help those students and their families gain access to nutritious food and a secure, safe place to live.

Learn more

CUSTOMER ENGAGEMENT

Expectations and new technologies are changing the way we interact with our customers. Giving customers multiple channels to engage with us, including self-serve options, is critical to their experience with AEP.

Learn more

ECONOMIC DEVELOPMENT

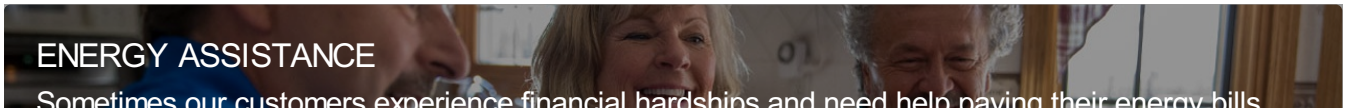
Whether through supporting business expansion or relocation, community training and education or financial support – we are connecting customers with communities to create shared value for all.

Learn more

COMMUNITY SUPPORT

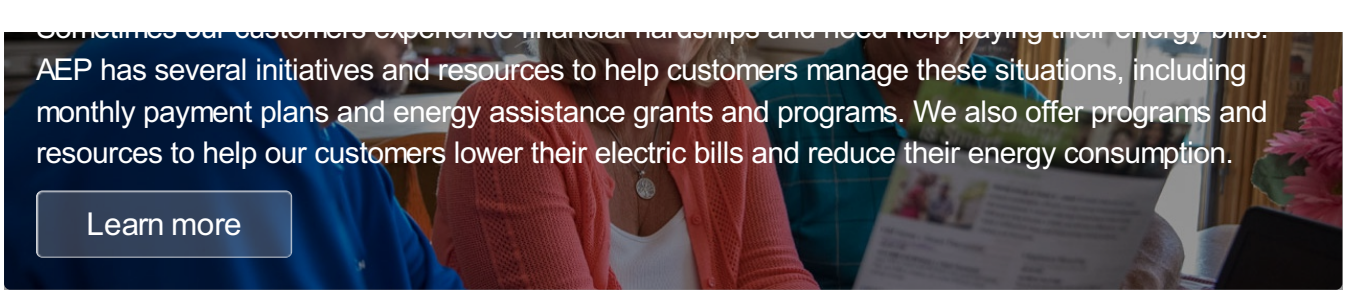
Through volunteerism and corporate giving, AEP is proud to support the vibrancy and resilience of the communities we serve – as an energy provider and a system of community support.

Learn more



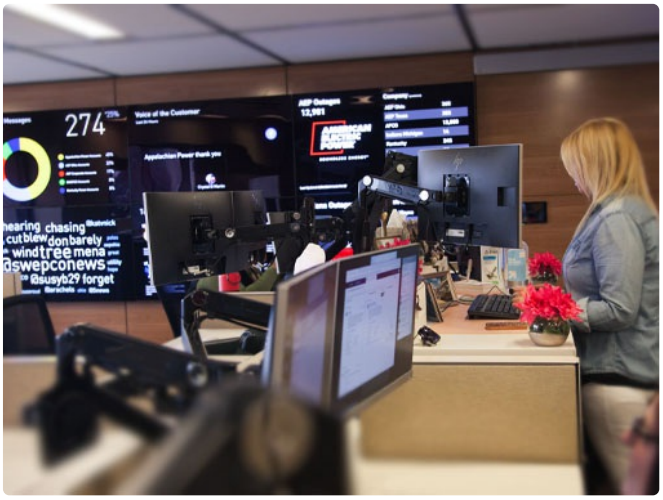
ENERGY ASSISTANCE

Sometimes our customers experience financial hardships and need help paying their energy bills



CUSTOMER EXPERIENCE

We are experts at producing and delivering safe, reliable electricity to our customers. However, we want to be much more than that. At AEP, our goal is to provide world-class service while creating positive, lasting relationships with our customers. We want to be the people who our customers and communities turn to first when they have energy needs. We also want to meet our customers in the communication channel of their choice while providing tailored solutions and making it simple, fast and convenient to do business with us. That's how we create value for each customer.



In 2018, we opened a dedicated Social Media Center to better meet our customers needs in the communication channel of their choice.

Our customer experience strategy includes a variety of initiatives over multiple years focused on developing people, processes and customer-driven insights to help us exceed our customers' growing expectations and changing needs. We are moving from being transactional focused to emphasizing the total customer experience. As part of this change, we are improving the interactions customers have with us. From first contact to delivery of service, changes in service and even termination of service, we are studying each touchpoint with our customers to improve their overall experience and satisfaction. We are also using new tools and technologies to help us do it better and more efficiently.

CUSTOMER-DRIVEN INSIGHTS

To understand what our customers want, what their perceptions and expectations of AEP are, and how they want to engage with us, we need their input. One way we gather this information is through surveys, online panels, email and phone interviews.

Through the J.D. Power Customer Satisfaction Survey coupled with data we receive from Market Strategies International, we are able to compare our performance with that of our utility peers and other industries, such as banking, telecommunications and retail.

We also monitor customers' experience after a phone or online interaction. This feedback is collected through phone interviews and email invitations and helps us understand how difficult or easy it was for them to get their needs met. We also randomly select residential and commercial customers and survey them about their overall satisfaction with our brand, ease of doing business and other relationship attributes.

We collect all of this information in a dashboard so that we can get a total picture of a customer's experience with AEP, including any feedback they provide and preferences. This gives us a centralized location to look at all of this data on each customer so we can better serve their needs through tailored energy solutions.

ENGAGING WITH CUSTOMERS IN THEIR CHANNEL OF CHOICE

Expectations and new technologies are changing the way we interact with our customers. In 2018, our customers

conducted nearly 31 million online transactions, more than a 37 percent increase over the previous year. Giving customers multiple channels to engage with us, including self-serve options, is critical to their experience with AEP. For example, if customers can check their bill through a voice channel (such as Amazon's Alexa or Google Assistant) or mobile app, they won't need to call us. This expedites the solution they are seeking and reduces the volume of calls to which we must respond. In addition, with the integration of new customer relationship management tools, we will be better equipped to respond to customers' individual needs more efficiently and cost-effectively.

Improving the interaction customers have with AEP is better for them and for us. In 2018, we installed new technology in our Customer Solutions Center that allows customers to engage with AEP more easily using the communication channel of their choice. This includes online chat, email or phone.

In 2019, we are rolling out an automated call-back feature where customers will be able to opt for a return call rather than waiting on hold. This will be especially helpful during times of heavy call volumes, such as during a major outage event. In preparation for this technology change, our customer care agents received 15 weeks of advanced skills training, empowering them to give every AEP customer a positive experience

Social Media

Our customers are increasingly using a variety of social media platforms to connect with us. Because they are always plugged in, they expect immediate response from us, day or night. This is especially true during outages, when customers expect real-time, accurate information about restoration efforts. AEP manages several social media channels including Facebook, Twitter and LinkedIn. Over the past several years, we experienced a significant increase in social media followers and activity, which only increases the need for AEP to provide effective, real-time communications with our customers on our social media channels.

To do this, in 2018 we opened a dedicated Social Media Center at our corporate headquarters in Columbus, Ohio. The new center is run by a combined staff of Customer Care Agents and Corporate Communications team members who are now available seven days a week. The team closely monitors social media feeds for all AEP-related customer posts and interacts instantly with customers, letting them know we are listening and responding to their needs.

With our Social Media Center staff, we are able to quickly respond to customers' online posts or begin a direct dialogue to learn more about the issue they are experiencing. Through technology enhancements, we are also able to collect better data, such as message sentiment and how often the Social Media team is able to "elevate" an AEP-related post from negative to neutral, or from neutral to a positive post.

Having a dedicated Social Media Center will help us make a significant impact on our customer sentiment, improve our overall customer satisfaction, provide new marketing channels and enhance our company's reputation. Social media is important because it gives us a near-real-time snapshot of our overall customer satisfaction levels.

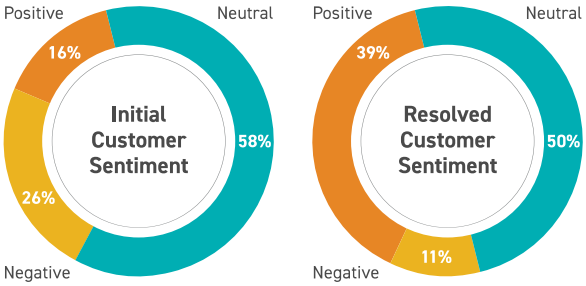
Social Media Center Strategy:

- Deliver proactive communications to our customers and stakeholders
- Enhance relationships with key organizations, businesses and other stakeholders
- Protect and enhance our reputation
- Promptly address customer questions and complaints
- Enhance the customer experience
- Promote self-service options
- Deliver real-time outage and safety communications
- Identify and mitigate reputational, information security, physical security and legal risks through 24/7 listening
- Learn what customers and stakeholders say about us and our industry

Customer Digital Assistant

Advancing our capabilities to use new technology systems and communication tools is a fundamental focus of our Customer Experience Strategy. Customers today expect more personalized products and services, and we recognize the opportunity to increase their satisfaction by making it easier for our customers to interact with us. A significant number of consumers are adopting digital assistance technology, illustrating a growing interest in the voice channel, including the use of smart home applications to handle everyday tasks.

SHIFTING SOCIAL MEDIA SENTIMENT



AEP's social media team captures a customer's sentiment at the beginning and end of a conversation, known as a case. The Initial Case Sentiment and Resolution Case Sentiment demonstrate our ability to improve the customer experience by responding and providing service through social media. This sentiment tracking is a subjective record of feelings expressed by a customer during a conversation. Data includes Q1 2019 cases with a brand response from AEP corporate, AEP Energy or any of our seven operating companies on Facebook, Twitter, Instagram, LinkedIn or YouTube.

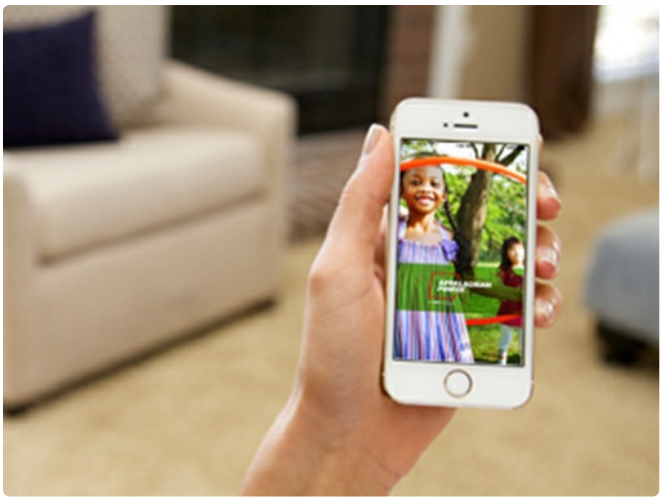
In 2018, Indiana Michigan (I&M) Power partnered with Google and Tendril (a home energy management technology platform) to launch a new voice channel application on Google Assistant for I&M customers. We also made this application available on Amazon Alexa with a soft launch in late 2018. With this new voice/digital assistant channel, customers can more easily interact with us. They can also get answers to questions, such as "How can I save energy?" or "How much is my average bill?"

We are developing a plan to provide a common home energy management platform, complete with voice channel access. The new voice engagement channel will allow customers to access information within their home energy management platform and other AEP digital customer applications, such as the mobile app.

In the future, we plan to integrate additional features into our voice/digital assistant channel, including the ability for customers to report an outage or enroll in an AEP program or service.

Customer Mobile App

Mobile apps are popular because of their ease of use and access to self-serve options, such as online banking, shopping or bill payment. In 2017, AEP launched a mobile app to give customers tools to make it easier to do business with AEP using mobile devices. The top requests customers ask for are the ability to pay their bill, monitor their energy use and report or check on the status of an outage.



AEP's mobile app makes it easier for customers to do business with us, including the ability to pay their bill, monitor their energy use and report or check on the status of an outage.

New features we added in 2018 include:

- Biometric login capability
- Proactive outage alerts and interactive outage maps
- Meter barcode scanning for outage reporting and account registration
- Ability to edit account information, including signup/cancel billing and outage alerts, edit payment accounts, view payment history and add additional electric accounts
- Access to 13-month historical energy usage data and graphs

One of the top pain points for our customers is their billing and payment experience. Our customers want simple, secure and multiple digital payment options. In 2018, we completed many projects to meet these customer expectations. We integrated our third-party credit card vendor to streamline the customer experience by removing duplicate entry of their information.

In addition, third-party fees charged to customers who use a credit card to pay their bills is another common pain point. In 2018, we reduced our customers' credit card fee from $2.95 to $1.85 per transaction. I&M elected to eliminate the fee altogether, serving as a model for the rest of AEP in the future. Based on feedback from our business customers, we also expanded our credit card payment option to our commercial and industrial customers.

Some customers want options, such as auto- or pre-pay and monthly billing plans. Others simply want the ease of paying with their smartphone. In 2019, we will roll out a simplified auto-pay process providing an easier and faster sign-up process. Customers using the new feature can save their payment information online, expediting their transaction. We will also pilot a "flat bill" concept to some of our I&M customers.

In Oklahoma, we introduced a pre-pay program, known as Power Pay, which functions similarly to a prepaid phone card. This program offers customers of Public Service Company of Oklahoma a voluntary payment option, giving them more control over when and how they pay for their electric service.

CUSTOMER ENGAGEMENT & RELATIONSHIP MANAGEMENT

We have many touchpoints with our customers that help shape their overall AEP experience. Traditionally, these customer interactions were managed and tracked by separate groups within AEP. But what if we could bring a customer's entire history with us onto a single platform?

To do this, we need to understand every interaction a customer has with us, from initial communication and account management to billing, payment history and social media posts. We call this the 360-degree view of the customer. This tells us what we need to know up front so that we can provide the best solutions for customers.

An important tool to effectively do this is known as a customer relationship management (CRM) system. In 2018, AEP kicked off a project to implement a new CRM system from the ground up. The new system, once operational, will consolidate customer touchpoints into a single place and allow us to view the total customer experience and provide more tailored solutions.

Transmission Customer Experience

When we think about customers, we generally think about the customers of local distribution companies. However, AEP also serves very large customers who directly connect to our transmission grid and have very different needs. These customers include Independent Power Producers (IPPs) and other transmission owners, such as electric cooperatives (co-ops). Power quality is a priority issue with these very large customers. As companies continue to modernize their manufacturing equipment, their systems become more sensitive to quality issues such as voltage variations and momentary power outages. We are working to understand the operating needs of our commercial and industrial (C&I) users and will continue to improve our level of service and reliability to meet the increasingly strict standards required by these key customers.

We provide targeted support to our electric co-ops and municipal electric utility partners through internal communication groups and ongoing stakeholder process meetings.

This group's objective is to proactively identify customer pain points and work to resolve them. This includes conducting root cause analysis and developing backup service delivery plans for our large transmission customers. Our goal is to solve a customer's problem before the customer is aware a problem even exists.

ENERGY ASSISTANCE

Sometimes our customers experience financial hardships and need help paying their energy bills. These hardships can put customers in a tough situation where they have to choose between electricity and other basic human needs. This problem is not limited to just a few people. According to the U.S. Energy Information Administration, in 2015, nearly one-third of U.S. households struggled to either pay their energy bills or maintain acceptable levels of heating and cooling in their homes.

AEP has several initiatives and resources to help customers manage these situations, including monthly payment plans

ENERGY ASSISTANCE PROVIDED THROUGH AEP TO HELP CUSTOMERS PAY THEIR ELECTRIC BILLS in millions

Operating Company	2016	2017	2018
Appalachian Power	$26.6	$26.0	**$24.1**
AEP Ohio	$13.0	$10.2	**$7.2**
Public Service Company of Oklahoma	$9.9	$10.1	**$13.3**
Indiana Michigan Power	$6.9	$7.0	**$12.1**
Southwestern Electric Power Company	$6.1	$5.9	**$6.9**
Kentucky Power	$2.8	$3.6	**$2.7**
2018 Total	**$65.3**	**$62.8**	**$66.4**

and energy assistance grants and programs. We also offer programs and resources to help our customers lower their electric bills and reduce their energy consumption, such as energy efficiency programs, rebates and incentives. Learn more about some of the many energy assistance programs offered across AEP's service territory:

- Low Income Home Energy Assistance Program (LIHEAP)
- Appalachian Power: Neighbor to Neighbor Fund
- AEP Ohio: Ohio PIPP Plus, Community Assistance Program, Neighbor to Neighbor Program
- Indiana Michigan Power: Neighbor to Neighbor Fund
- Public Service Company of Oklahoma: Light A Life Fund
- Southwestern Electric Power Company: Neighbor to Neighbor Fund

The funding available to support our energy assistance programs comes from a variety of sources, including the government, social service agencies and even other customers. Income guidelines determine eligibility. The funding level of different programs can fluctuate from year to year based on several factors, including improvements in the economy that lessen demand for aid, increased or decreased government funding and other contributions or grants awarded to support these programs.

Government-sponsored energy assistance programs provided approximately $66.4 million in federal and private energy assistance in 2018. We also received more than 24,800 pledges totaling more than $5.9 million in energy assistance from our self-serve agency websites.

The U.S. federal government shutdown in late 2018 and early 2019 caused financial hardships for many of our government-employed customers. In response, we empowered our customer service agents to work in every way possible to help those impacted by the government shutdown.

In 2018, Kentucky Power revamped its former Home Energy Assistance Program (HEAP) and nearly doubled the number of low-income families who can be served. An order from the Kentucky Public Service Commission increased customer contributions to the HEAP program from 15 cents to 30 cents a month. In addition, Kentucky Power matched the customer contributions dollar for dollar with shareholder funds.

Together, the programs generated nearly $1 million in 2018 to provide heating and cooling assistance to about 2,500 customers in the region. Program funds are distributed to customers who meet income requirements set by community action agencies. Additionally, Kentucky Power offers an opportunity for customers to contribute to the energy assistance program through their bills.

In 2018, Indiana Michigan Power (I&M) set up a Neighbor to Neighbor program to help qualified customers with their energy bills. The program provides an option for customers to contribute to the program simply by checking a box on their bill and specifying the amount they want to contribute above their bill amount. The contribution is tax-deductible. To qualify for aid, customers must meet the guidelines of the federal Low Income Home Energy Assistance Program (LiHEAP) and other eligibility standards.

I&M also provided $400,000 to the Indiana Community Action Association (IN-CAA) to help families pay their energy bills and use energy more efficiently. IN-CAA is a nonprofit comprised of Indiana's 22 community action agencies. I&M's assistance stemmed from discussions with these agencies as part of the company's Building the Future regulatory rate review, and was approved by the Indiana Utility Regulatory Commission.

In addition to federal and private energy assistance, the AEP Foundation contributes financial support to help our customers meet basic needs including food and shelter. In early 2018, the AEP Foundation awarded a $50,000 grant to assist low-income residents in Eastern Kentucky. The grant to the Christian Appalachian Project helped fund the nonprofit's Elder Housing and Family Housing programs. Both programs make home repairs or install weatherization measures for families and individuals who cannot afford repairs. The need is so great in this region that the Christian Appalachian Project has a waitlist of families in need.

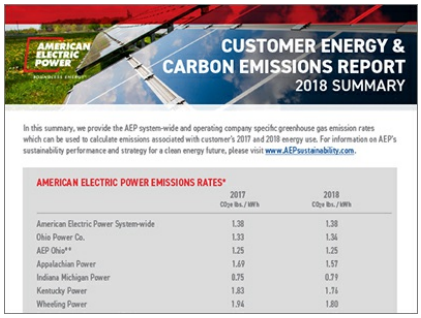
CUSTOMER EMISSIONS REPORT

At AEP, we understand the importance of providing clear, accurate and consistent data and information in a timely manner. AEP's Customer Energy & Emissions Report reflects our commitment to transparency by proactively sharing data and information about AEP's performance and strategy for a clean energy future. This demonstrates that we are

listening to our customers, addressing their need for relevant and timely information to better inform their sustainability goals and strategy.

In this summary, we provide the AEP system-wide and operating company specific greenhouse gas emission rates which can be used to calculate emissions associated with customer's 2017 and 2018 energy use.

Supplemental GHG Emissions Data



View Report

COMMUNITY ENGAGEMENT STRATEGY

The power and the human energy AEP brings to the table move people forward. We're powering a new and brighter future for our customers and our communities by:

- Expanding our employee volunteer programs companywide to encourage more volunteer activities and track positive impacts.
- Offering Community Care grants to nonprofit organizations where AEP employees volunteer significant hours.
- Focusing our philanthropic giving on causes that support our priorities around STEM education and basic needs of food, emergency and affordable housing and clothing, and measuring impacts.

Through these and other engagement initiatives, we are building on our history of helping communities thrive. And we are looking to do even more.

Giving back to our communities is fundamental to our vision of powering a new and brighter future for our customers and communities.

Corporate Giving

Giving back to our communities is fundamental to our vision of powering a new and brighter future for our customers and communities. Through volunteerism and corporate giving, AEP is proud to support the vibrancy and resilience of the communities we serve – as an energy provider and a system of community support. In 2018, AEP and the American Electric Power Foundation donated approximately $25.5 million to support more than 1,800 community organizations. Since 2016, we have donated more than $63 million through our philanthropic giving efforts.

For more information, see AEP's Community Impact Report.

Investing in Education

A significant focus of our corporate giving is on education, especially STEM (Science, Technology, Engineering and

Math) programs, and basic human needs, such as hunger and housing. Complementing the focus on education is a commitment to work with the public and private sectors to help those students and their families gain access to nutritious food and a secure, safe place to live. We also support many cultural and community initiatives important to our customers.

PHILANTHROPIC GIVING Corporate & AEP Foundation

	2016	2017	2018
Arkansas	$156,106	$206,181	**$182,515**
Indiana	$1,127,127	$825,889	**$2,874,554**
Kentucky	$346,380	$913,229	**$502,627**
Louisiana	$645,145	$1,277,686	**$1,262,107**
Michigan	$514,302	$518,117	**$1,002,976**
Ohio	$12,619,206	$7,913,164	**$13,588,375**
Oklahoma	$736,367	$1,455,584	**$648,412**
Tennessee	$510,694	$45,950	**$72,822**
Texas	$1,614,117	$1,137,950	**$1,742,257**
Virginia	$552,211	$704,271	**$1,505,815**
West Virginia	$933,808	$1,226,449	**$1,134,545**
Other*	$1,134,458	$547,790	**$981,558**
Total	**$20,889,921**	**$16,772,260**	**$25,498,563**

* Giving to organizations outside AEP's Service area or those that benefit multiple states.

AEP's most significant area of philanthropic giving is STEM education. Focusing on STEM provides a pathway out of poverty for urban and rural youth. Many 21st century jobs will require proficiency in STEM courses, and these jobs have a high likelihood of delivering a living wage. Credits CountSM, the signature program of the AEP Foundation, addresses the issues of college preparedness and affordability for underserved urban and rural students who want to seek STEM-related career opportunities. Since the program's creation in 2014, the AEP Foundation has committed $14.2 million to the program across our service territory.

The Credits Count program, funded by the AEP Foundation and carried out in partnership with local community colleges and public school districts, now operates in all seven AEP operating companies:

- AEP Ohio - Columbus State Community College and Columbus City Schools, launched in 2014
- AEP Texas - Laredo Community College and Laredo Independent School District, launched in 2017
- Appalachian Power – BridgeValley Community & Technical College and Kanawha County Schools, launched in 2017
- Indiana Michigan Power – IVY Tech and Marion Community Schools, launched in 2016
- Kentucky Power – Ashland Community and Technical College and Lawrence County Schools, launched in 2015
- PSO – Tulsa Community College and Tulsa Public Schools, launched in 2015
- SWEPCO – Bossier Parish Community College and Bossier Parish and Caddo Parish school districts, launched in 2014

In conjunction with state and higher education institutions, AEP Transmission launched the AEP Opportunities iN Energy (ONE) career-readiness program in 2018. The program offers high school students a 10-week internship and mentorship. Interns participating in AEP's ONE program can earn the OhioMeansJobs Readiness Seal from the State of Ohio, a formal designation on their high school diploma and transcript indicating that they have the personal strengths, strong work ethic and professional experience that businesses need. Students who complete the program and their technical degree will be qualified to apply for permanent positions with AEP and other energy companies. 2018 marked the pilot year in central Ohio. In the future, we hope to expand the program to other areas and business units.

Having a strong higher education system directly supports economic development and growth of the local economy. In West Virginia, this is especially important in the wake of coal plant retirements and coal mine closures in the state. In 2018, the AEP Foundation awarded West Virginia State University (WVSU) a $250,000 grant to equip laboratories in its new chemical engineering program. West Liberty University (WLU) also received a $25,000 grant from the AEP Foundation for its STEM lab, which serves more than 200 students per semester in courses such as physiology, histology and anatomy.

The Energizing STEM Initiative – a partnership between The Education Alliance and Imagine Learning – received a $450,000 grant from the AEP Foundation to help young students in West Virginia build a strong foundation in math. The grant provides more than 2,200 elementary students in Lincoln and Logan counties with an effective computer-based supplemental curriculum to improve math outcomes over a three-year period. West Virginia is projected to have over 25,000 jobs in STEM-related fields in the next several years, and this initiative helps ensure students are ready with the knowledge and skills they will need.

More than 1,000 students from Columbia, Hempstead, Howard, Lafayette, Little River, Miller, Nevada and Sevier counties in southwest Arkansas attended Explore Success, a youth manufacturing conference intended to introduce career

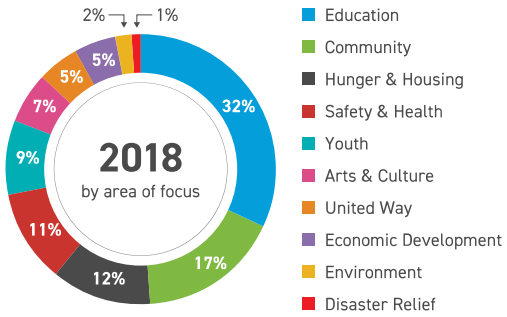
opportunities in manufacturing in the region. SWEPCO and our John W. Turk, Jr., Power Plant supported the event. This conference is another example of our commitment to investing in and educating students at a young age about future career opportunities with our local industries, which is key to maintaining the region's vitality.

In 2018, the AEP Foundation awarded Junior Achievement of Northern Indiana (JANI) a $300,000 grant for a new facility to provide localized career development programs and an entrepreneurial center that can meet the needs of a younger, savvier generation of entrepreneurs. During the 2017-18 school year, JANI reached more than 142,000 students in 30 counties and has the greatest market share of any Junior Achievement chapter in the nation.

Investing in Basic Human Needs

Community organizations play a pivotal role in the well-being of individual community members, as well as the social fabric of the community. These organizations provide assistance for housing, food, education, skills training and more. Investing in the resources of community organizations helps to bridge the gap between the potential of an individual to be independent and the obstacles to success that person might face. When we elevate and invest in our communities, we are helping to build a brighter future.

CHARITABLE GIVING BY AREA OF FOCUS



Being a good neighbor means helping others in need:

- In 2018, SWEPCO responded to two local Arkansas fire departments in need of equipment and land to bolster their public safety services. We provided a decommissioned truck from AEP's fleet to the Gillham volunteer fire department. The fire station needed the truck to help extinguish wildland fires that larger firefighting equipment cannot easily reach. In Gentry, SWEPCO donated land near the Flint Creek Power Plant for a new fire department helipad. The donation gives the fire department a safe and readily accessible landing and loading location for air ambulances.
- In 2018, Mountain Mission School, a century-old southwest Virginia resident school for children in need, received a $1 million grant from the AEP Foundation. The boys' residence was damaged by a fire in April 2018, and its more than 100 disadvantaged young men were being temporarily housed in the school gymnasium and chapel while the school was being refurbished. The AEP Foundation's grant allowed the school to substantially upgrade the residence hall.
- Pelotonia is a bike ride in Ohio that raises funds for cancer research at The Ohio State University Comprehensive Cancer Center. The AEP Foundation is a major funding partner with Pelotonia and announced in 2018 that its donations will double to $500,000 a year for three years. Because of the AEP Foundation's increased contributions, Pelotonia will be able to magnify its impact in raising funds for research to end cancer.
- The Rescue Mission is a nonprofit organization that provides restorative care to those facing homelessness in Fort Wayne and Allen County, Indiana, and their nine surrounding counties. The AEP Foundation awarded a $300,000 grant to its City on a Hill campaign to help the organization relocate to a larger facility and expand its women's and children's ministry. AEP supports the Rescue Mission with additional donations, including a $50,000 AEP Foundation grant for the mission's Learning Center and volunteer work provided by Indiana Michigan Power (I&M) employees.

VOLUNTEERISM AT AEP

Supporting community projects and programs requires more than financial support. It requires time and labor to make progress possible. Every year, AEP employees from around our service territory give their time, talent and financial donations to a variety of organizations throughout our service territory. Our employees are a force of voices, hands and hearts caring together to make our communities stronger and better for us all. Most importantly, our employees are consistent in their efforts, both when times are good and when hardship strikes.

The value of employee volunteerism to our communities and to AEP is long-lasting and impactful. It helps to enhance the quality of life, advance and expand education opportunities for underserved populations, and create shared social and

economic benefits. Through the collective efforts of our employee volunteers, we are strengthening the social fabric of our communities. We set new corporate sustainability goals to better engage our employees in company-led or supported volunteer activities as well as better track the impact our employees are having within our local communities.

We were reminded of the importance of community giving as natural disasters devastated parts of our service territories and beyond. In 2018, our employees gave more than $20,000 in special relief donations to The Salvation Army through the AEP Emergency Disaster Fund. The AEP Foundation matched 100 percent of the employee contributions to help relieve the impacts of Hurricane Florence in the Carolinas. Since 2004, employee giving along with company and AEP Foundation matches have provided more than $1.4 million for natural disaster relief.

In 2018, our employees gave more than $20,000 in special relief donations to The Salvation Army through the AEP Emergency Disaster Fund.

When disaster strikes, AEP employees are quick to respond. Whether they are on the job repairing storm damage or giving money and their time to help those affected by disaster or tragedy. To improve our ability to help those in need, AEP, with the help of concerned employees, established the AEP Emergency Disaster Relief Fund. Distinct from the special disaster recovery efforts, the fund provides a vehicle for the company and our employees to support each other and dependent family members who suffer losses as a result of disasters and tragedies. Employees are able to donate to the fund through a one-time donation or payroll deduction.

Employee Volunteerism in 2018

Public Service Company of Oklahoma (PSO) offers a mini-grant program to encourage and support employees' and retirees' community volunteer activities. The PSO Connects Volunteer Grant was started in 2015 and is part of the company's legacy of volunteerism in its communities. One of many examples of the company's volunteerism includes participation by dozens of PSO employees each year in the Tulsa Area United Way Day of Caring, one of the largest single days of community service in the nation.

Restoring the past for the future was the intent behind an employee-led restoration effort of a rundown 165-year old cemetery located on the property of Southwestern Electric Power Company's Welsh Power Plant. Over the course of two years, employees restored the historic Lev Old cemetery, which dates as far back as 1855. The Titus County, Texas, Historical Commission awarded the plant and its employees with its Merit Award, and installed a marker at the site – a visual symbol of the historic significance of the site.

In Corpus Christi, Texas, an elementary school nurse's plea for help with supplies for the "Nurse's Closet" became a rallying call for AEP Texas employees that sparked a new and lasting relationship. The closet stocks basic clothing needs and toiletries for students of the Crockett Elementary School, located in an economically challenged area where many students are homeless or lack basic needs such as shoes and clothes. Employees at AEP Texas responded with clothing and supplies. The company has established a long-term relationship with the school to help meet basic needs before the school year begins as well as mentor students.

Most weekdays, many AEP employees in Central Ohio can be found delivering meals to those in need over their lunch hour. During the past 13 years, an army of AEP employees have delivered more than 100,000 meals to homebound seniors. The AEP Foundation made a $1 million commitment to LifeCare Alliance, which provides a wide range of health and nutrition services to older adults and medically challenged residents in Central Ohio. The AEP Foundation's donation enables LifeCare Alliance to buy one new delivery van annually for four years, and support the organization's core programs to keep clients safe, independent and living in their own homes. The grant is the largest in LifeCare Alliance's history, and they graciously nominated AEP for the 2019 Medical Mutual Pillar Award for Community Service for our long history of volunteerism and philanthropy. AEP was honored with this award.

INVESTMENTS SUPPORT LOCAL GROWTH

Between 2019 and 2023, AEP will invest nearly $33 billion in capital to modernize the electric power system. Most of those investments will be directed to transmission and distribution. This magnitude of investment has significant positive impact on our communities. In 2018 we acquired a new software tool called IMPLAN, to help us more accurately measure the economic impact of our capital investments. We ran a model looking at the 2019-2023 investment plan to identify direct and indirect benefits to communities where this will occur. Here's what we learned:

- Our capital investment will create or support approximately 40,000 jobs within our service territory per year over the course of our investments. The majority of these jobs are in construction, and employed directly by AEP or through contractor or vendor relationships. The additional jobs created are in supply chain and retail sectors.
- The total labor income generated is over $2 billion annually.
- The investment will impact the gross regional product by $3 billion annually.

2018 AEP Economic Impact

Employees (year-end)	**17,582**[1]
Wages	**$2.3 billion**[2]
Capital Investments	**$5,964 million**
Local Taxes	**$827 million**
State Taxes	**$339 million**
Federal Taxes	**$80 million**
Goods & Services (does not include fuel)	**$6.9 billion**
Total Corporate Spend on Goods & Services from Small Businesses (includes small diverse businesses)	**$971 million**
Total Corporate Spend on Goods & Services from Diverse Suppliers (includes small and large diverse businesses)	**$365 million**
Total Corporate Spend on Locally Based Suppliers	**$3.4 billion**
Remaining Value of all Contracts	**$2.87 billion**[3]
Philanthropic Giving	**$25.5 million**[4]
Economic Development Contributions	**$1,323,038**[5]
Number of Jobs Brought to Local Economies	**14,700**

[1] Includes subsidiaries of AEP

[2] Includes wages, incentives and fringe benefits (expensed and capitalized) and AEP's portion of certain payroll taxes.

[3] Supply chain purchased contracts and inventory system.

[4] Includes Corporate and AEP Foundation grants.

[5] Includes all grants and contributions by utility units to support economic development.

We are reaching out and meeting with stakeholders across our service territory to help them understand why the magnitude of these investments is not only warranted but imperative to the future stability and resilience of the grid and the communities we serve. By investing capital to modernize the system, we are actually lowering customer bills in the long run because we are mitigating the future need for costly repairs when old equipment fails.

The bottom line is that the investments we are making in the grid make it more reliable, resilient and secure, and have significant positive local benefits through job creation and economic growth.

ECONOMIC AND BUSINESS DEVELOPMENT

Building strong, vibrant and sustainable communities requires innovation, investment and collaboration among state, regional and local business partners. AEP's Economic & Business Development (E&BD) team puts its expertise and partnerships to work supporting economic development and growth within our local communities. Whether through supporting business expansion or relocation, community training and education or financial support – we are connecting customers with communities to create shared value for all.

Our National Customers team manages corporate relationships with many of our largest customers to provide customized solutions to meet their energy needs. For example, when Cinemark USA, Inc., one of the world's largest motion picture theaters, needed a partner to help identify renewable energy for its facilities, AEP provided a solution.

In addition to business development, the AEP National Customers team is focused on providing exceptional customer service. Based on feedback from a group of 25 national chain customers, Edison Electric Institute (EEI) recognized the team for exceptional customer service in 2018. AEP won the National Key Accounts Executive Award for Sustained Excellence in Outstanding Customer Service. Two of our customer managers were also recognized for

AEP provides comprehensive location advisory services to

their individual performance.

companies looking to expand or locate new operations in our service territory.

AEP also provides comprehensive location advisory services to companies looking to expand or locate new operations in our service territory. This includes property searches and screening, custom community and site analysis, and introductions to local economic development partners and industry resources.

Beyond our current customers, AEP proactively identifies and manages business relationships with prospective customers in target industry sectors to try to secure investment in new facilities across the AEP system. In addition to pursuing domestic companies, our efforts include attracting foreign direct investment (FDI) to our service territory, which is a key source of capital, job creation and innovation.

In 2018, we supported 110 projects that will bring 14,700 jobs to the local economies across our 11-state service territory. Economic development helps our communities in several ways, including increasing the tax base, job development, economic diversification and capacity-building for long-term sustainability.

AEP actively works to support industries experiencing high growth, including petrochemical, data centers and shale gas. Below are examples of economic development projects we supported in 2018.

- JSW Steel returned an electric arc furnace to service in Mingo Junction, Ohio, after nearly 10 years of sitting idle. The reopening of the mill is expected to eventually create 1,000 jobs and will house the largest Consteel® Tenova electric arc furnaces in North America. The company already has expansion plans in the works, including the installation of a second mill in Ohio.
- AEP Ohio helped Amazon Web Services to site three data centers and a distribution center in Central Ohio in 2016. Amazon added the second of five planned data centers at each of three sites served by AEP Ohio; they have plans to continue to grow in Central Ohio. Amazon's total investment will be approximately $1.1 billion. The combined direct and indirect impacts of Amazon's investment could create thousands of new jobs in Ohio and hundreds of millions of dollars in new regional income and gross domestic product (GDP) growth for the region.
- Appalachian Power (APCo) celebrated its partnership with the ELDOR Corporation with the grand opening of its first North American plant – a $75 million facility – in southwest Virginia. This Italian auto parts manufacturing facility is located on an AEP Quality Site and will employ 120 workers. The company's expansion plans could employ 350 workers within four years. APCo's economic development strategy is focused on new manufacturing and job growth and increased tax base for its communities.
- Sofidel Group, an Italian manufacturer of tissue paper, broke ground on a $360 million integrated paper plant that will create 300 jobs in Inola, Oklahoma. The land for the facility was sold to Sofidel by PSO. Recognizing the need to attract capital investment to the region, PSO worked to prepare the site for industrial development through the AEP Quality Sites Program. We continue to market the remaining Inola property for additional economic development projects. Sofidel's other greenfield investment in the U.S. is also AEP-served. Located in Circleville, Ohio, the $400 million facility opened in 2018 and, at capacity, will employ approximately 700 people.
- AEP's service territory overlaps many of the most productive shale gas regions in the U.S. In our AEP Texas territory, this includes the Permian Basin in West Texas and the Eagle Ford Shale in South Texas. These shale plays provide a plentiful supply of natural gas, petroleum, and natural gas liquids for current and future petrochemical facilities including liquid fractionators and cracker projects. In 2018, Cheniere Energy, Inc. opened a $15 billion liquefied natural gas (LNG) export facility in Texas, making the state a competitive player in the global LNG market. The Corpus Christi Liquefaction project will result in the creation of more than 430 permanent jobs when fully operational, and more than 4,000 jobs during peak construction. It is projected to have a $5 billion economic impact in the Coastal Bend region during a nine-year construction period, and $17 billion for the State of Texas during that same time period. We also worked collaboratively with EPIC Pipeline LLC, whose pipeline project will connect crude oil and gas from West Texas to the Corpus Christi markets. We will provide electric service to some of the compression stations along the pipeline. Other petrochemical and LNG export facilities are being pursued in the region.

Quality Sites Program

A primary focus of our activities is the development of build-ready industrial properties across our 11-state territory. AEP's Quality Sites Program identifies sites that have infrastructure and utilities in place and have completed due diligence studies to help growing businesses minimize overall site location risk, save time and reduce development costs. In 2018, we added three new industrial properties to our Quality Sites Program, bringing the total number of sites to 50. Learn

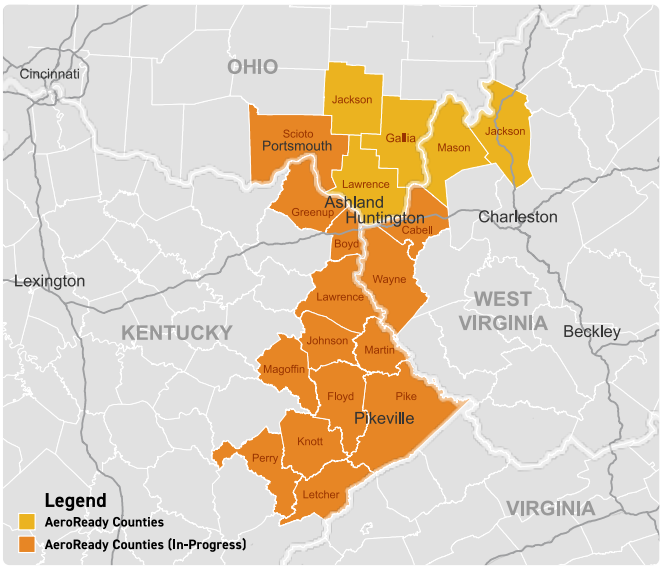
more about this program and the location of quality sites in AEP's service territory.

In 2018, we were named one of the nation's top utilities for economic development by Site Selection Magazine, for the seventh consecutive year. AEP was recognized for its effort to cultivate commercial and industrial business development and for creating new jobs. The recognition is based on end-user project activity, website tools and data, innovative programs and incentives for businesses, and the utility's own job-creating infrastructure and facility investment trends.

SUPPORTING APPALACHIAN COMMUNITIES

We are building stronger partnerships with our local communities to help revitalize some of the hardest hit communities by the changes in the coal industry. Three states in the heart of Appalachia have been particularly affected. Kentucky, Ohio and West Virginia have experienced job losses, the loss of tax revenue to support local public services, and the loss of indirect economic benefits from having a locally employed workforce. In response, AEP is making targeted efforts to revitalize those communities to attract new industry and jobs and empower local leaders to take the lead in rebuilding their communities.

In 2017, AEP and our regional economic development partners launched Appalachian Sky – an initiative to attract the aerospace and aviation industry to AEP's central Appalachia service region. A comprehensive regional workforce analysis of AEP's Kentucky territory was the catalyst that showed that coal miners, many of whom lost their jobs due to recent mine and coal plant closings, have the skills that aerospace and advanced manufacturing companies need. The study, funded in part by a Kentucky Power Economic Growth Grant (K-PEGG), concluded that the region had eight times the national average of skilled metal workers - recognizing the potential of the aerospace industry to diversify the central Appalachian economy.



AEP commissioned a leading aerospace consultancy to determine the viability of aerospace in Appalachia's coal and steel country. Several counties in the region have been certified as AEROready™. The AEROready certification ensures aerospace companies that the certified regions, sites and communities are suitable for aerospace operations. We continue to work collaboratively with our partners in an effort to further develop and market the Appalachian Sky initiative.

Other areas within AEP's service territory are attractive for aerospace and aviation investment, and we have pursued similar AEROready certifications:

- In October 2017, the City of Shreveport and surrounding communities were certified as AEROready. They saw immediate impact when Western Global Airlines announced it would establish an aircraft maintenance facility at Shreveport Regional Airport. The $3 million investment will ultimately create 170 new direct jobs and an estimated 308 new indirect jobs.
- In April 2018, the San Patricio County Economic Development Corporation and Corpus Christi Metropolitan Statistical Area announced the region received the first AEROready Certification in Texas. The move sets the stage for the Coast Bend to attract high-quality aviation and aerospace jobs to the region.

SUPPORTING THE FEDERAL SECTOR

Military and other federal government agencies and facilities are an important customer segment and growth area for AEP. We provide electric service through our regulated business to over 3,500 federal accounts. Our focus is on three areas of interest:

- Utility Energy Services Contracts (UESC) within our regulated footprint
- Various business development opportunities outside of our regulated service territory with our competitive

businesses (e.g., AEP Energy Partners)
- Utilities Privatization (UP) of military facilities both within and outside our regulated footprint

Through these avenues, we help our federal and military customers meet their sustainability and resiliency goals and measures. The federal government has a comprehensive framework for action through 2020 that calls for using resources more efficiently and acquiring more energy from renewable resources. To support that initiative, we help the federal government mitigate the effects of climate change on military operations, installations and national security.

AEP has proposed energy resilience solutions to the Department of Defense (DoD) to assist in preparing for and recovering from energy disruptions impacting mission assurance on military installations. Further, energy resilience encourages the necessary planning and capabilities to ensure available, reliable, and quality power to continuously accomplish DoD missions.

Thirty of our large federal accounts may present new opportunities for UESC-type work. UESC provides federal customers with comprehensive energy and water efficiency improvements and demand reduction services. These projects can encompass a broad range of energy conservation measures, including system upgrades and recommissioning, retrofit projects, renewable energy, cogeneration plants and microgrids.

In 2018, AEP Energy was awarded a $362 million contract with the Defense Logistics Agency (DLA) to provide over 6.5 terawatts of electricity to various U.S. government and military installations operating in the PJM Interconnection (regional transmission operator) over a five year period beginning in 2019.

We are also partnering with military facilities to offer solutions to privatize on-base utility systems (electricity, natural gas, water and wastewater). These opportunities allow AEP to operate and maintain the facilities' electricity systems and allow the military to stay focused on its mission. Two examples of where we are working with the military to manage their utilities include Goodfellow Air Force Base in San Angelo, Texas and Red River Army Depot in Texarkana, Texas.

SUPPLY CHAIN AND PROCUREMENT - NON-FUEL SUPPLIERS

AEP purchases billions of dollars in goods and services every year, ranging from chemical solvents and office supplies to vehicles and industrial equipment from national, regional and local suppliers. As a large company, we are able to manage costs by negotiating prices, strategically sourcing and managing inventory. By applying a procurement-category management model, we can look at the whole value chain from sourcing through inventory.

We continue to improve efficiency through strategic sourcing – optimizing what we buy and how we buy it to manage inventory and costs as well as provide standardization in our purchasing practices. Our procurement team gets involved earlier in the purchasing process to educate employees on best procurement practices.

We continue to seek opportunities to deploy technological solutions. In 2018, we went live with a robotic process automation solution in Asset Recovery that streamlines the scrap metal billing process. Additionally, we have launched a barcoding and RFID technology project to improve the materials management activity throughout our operations.