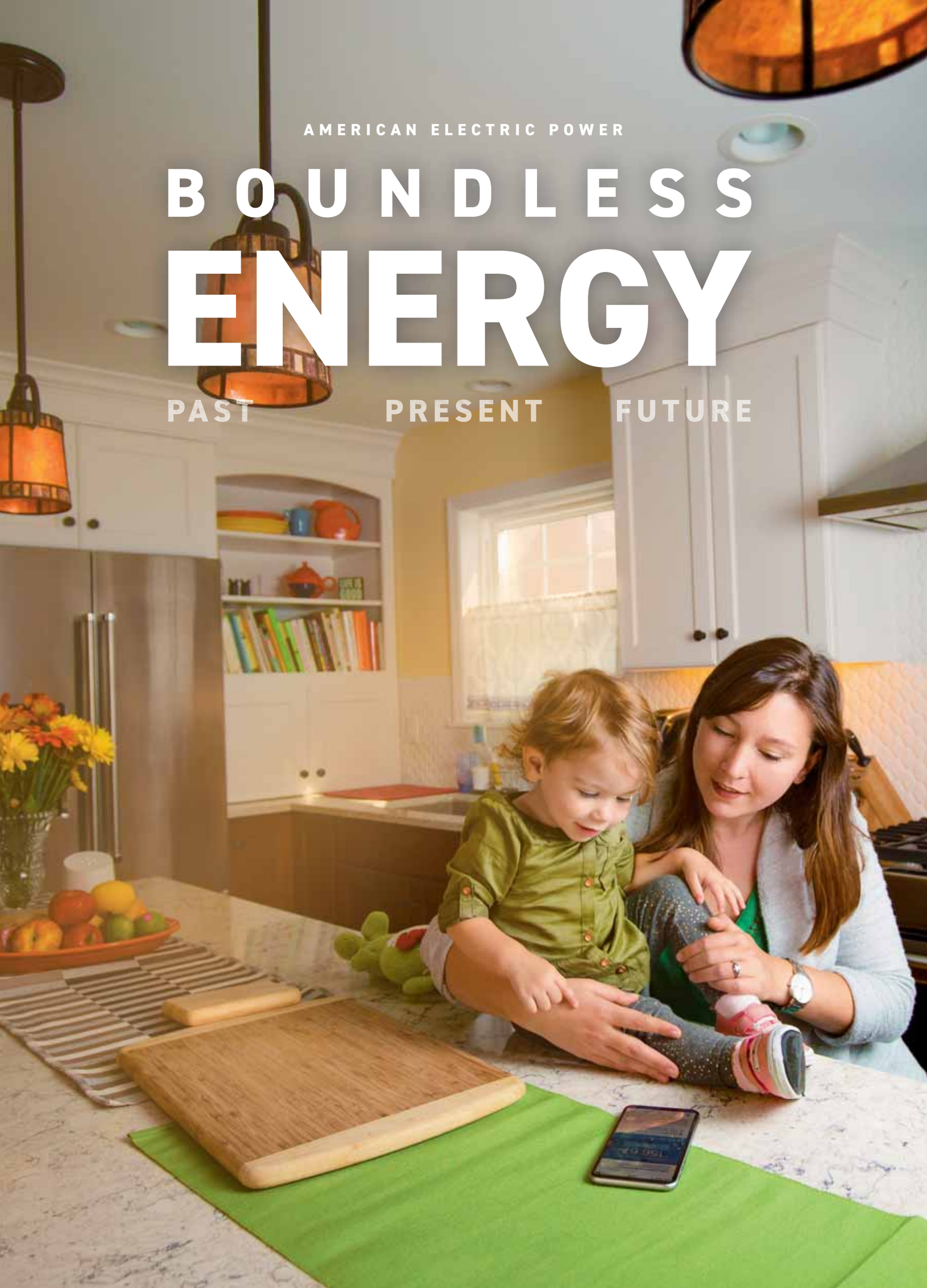

AMERICAN ELECTRIC POWER

BOUNDLESS ENERGY

PAST PRESENT FUTURE

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Chapter 1

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Chapter 5

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CONTENTS

INTRODUCTION

For more than 112 years, American Electric Power has stood at the forefront of the electric power industry, with predecessor companies American Gas and Electric and Central and Southwest playing pivotal roles as the electric industry raised streetlights on Main Street and spread to illuminate more and more American homes and businesses. Although they worked under legacy companies with different names, AEP's people have always shared a focus on serving communities and pursuing new opportunities to efficiently generate and deliver reliable, affordable power.

The stakes of this enterprise became clear on a hot summer afternoon in August 2003, when a massive power surge set off blackouts across 11 states in the Northeast and Midwest. The sight of New York City completely dark at night — a fact unremarkable a century before — wreaked havoc across the metropolis. The blackout came in "a blink-of-the-eye second," as one official said, just after 4:00 p.m., after the New York stock exchanges had closed for the day. Office workers watched their computer screens go blank. Hospitals and government buildings turned on emergency backup generators. Thousands of subway passengers were suddenly stranded.

The next morning's edition of *The New York Times* showed the city skyline silhouetted against the night sky, a stark visual argument for reliable power. Across the Northeast, the blackout affected 50 million people. It was the biggest blackout in North American history and showed how much Americans relied on electric power. American families, communities and businesses depended on their power companies for essential light, communication, safety, information and transportation, along with many conveniences like the internet and cable television.

An investigation identified the blackout's source at a generating plant owned by a utility near Cleveland. Spiking demand had strained high-voltage lines that had come into contact with overgrown trees and then shorted out. That pushed electricity demand to nearby transmission networks, and the outages snowballed to more than 100 power plants.

American Electric Power managed to limit the damage and shield its customers from that disastrous cascade. In fact, AEP system managers in Columbus saw the warning signs that afternoon and worked quickly to avert a larger outage. They couldn't prevent the surge in northern Ohio, but AEP's own systems for transmission and monitoring proved their value, in spades. The company's system of 765-kilovolt transmission lines, the most efficient and highest-voltage class in commercial operation, withstood the surge flows. AEP's network held up.

"It never flickered," said E. Linn Draper, then-CEO of AEP. "The protective devices and the people who were manning the control rooms really did exactly as they should have done, and we didn't lose any customers. I can't think of a time when I felt better about AEP than at that time, when our system performed as it should have."

The 2003 episode highlighted AEP's good stewardship and the strength of its network and vividly demonstrated the value of a reliable grid. But the blackout also started discussions among policymakers and led to a significant shift in government policy, with the 2005 Energy Policy Act and related regulatory changes. Those federal regulations deeply influenced the industry for years afterward and ultimately led AEP to reorganize its transmission business for an even bigger investment in that part of its enterprise.

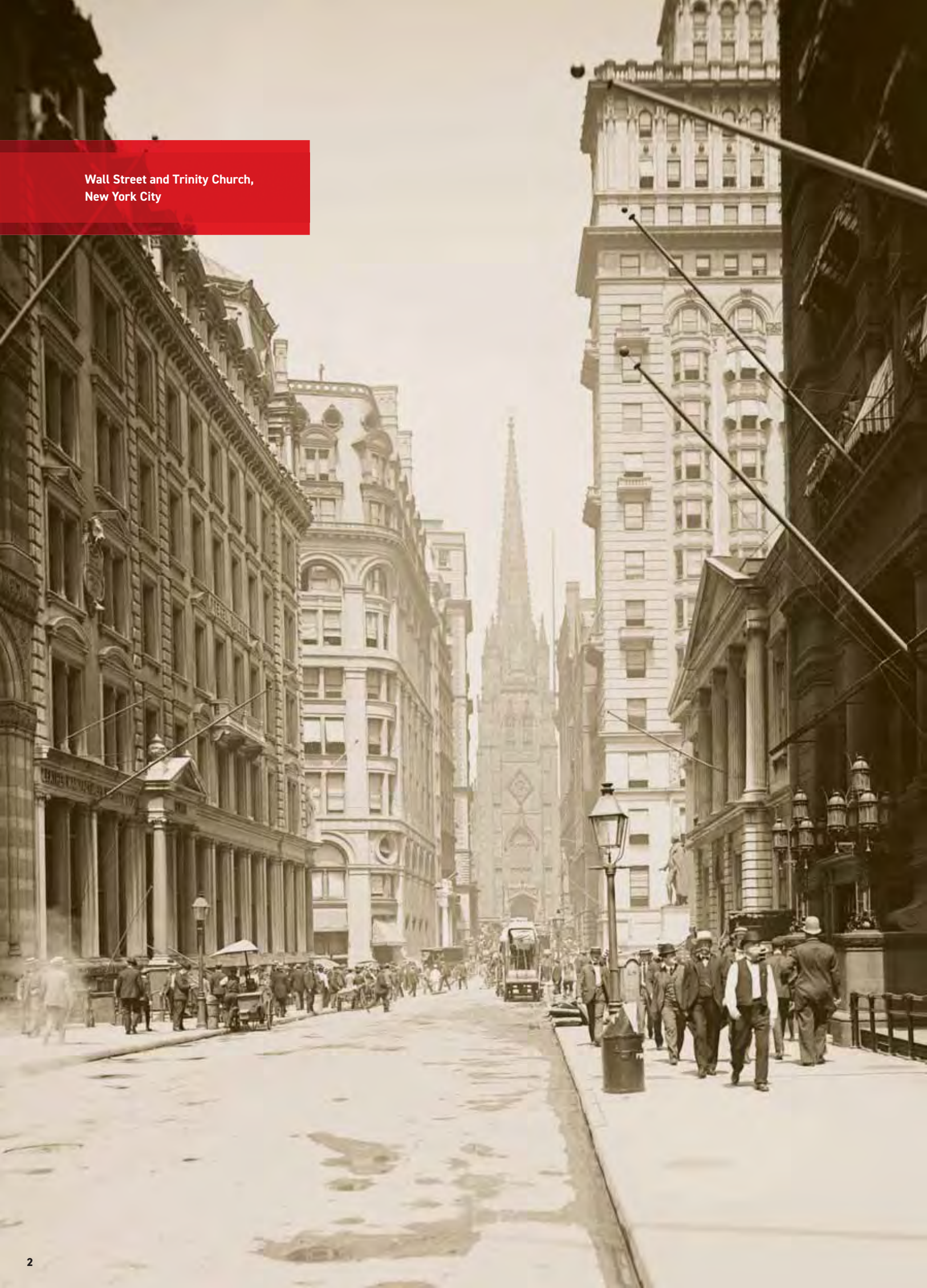
Among other things, the blackout episode shows how such regulatory actions and their market consequences influenced the path of AEP and the power industry as a whole. Ultimately, as it cast one region in shadow while keeping another in light, the 2003 blackout underscored a bedrock value of American Electric Power: the commitment to reliability, through high-quality transmission and flexible power generation, to supply the needs of our society and our economy.

The 2003 blackout reminded Americans of their compact with their local utility, and it came at a time when American Electric Power was also reawakening to that compact's importance. As AEP stood at a crossroads following decades of remarkable growth, it looked to revive its bond with the communities it served, which made that growth possible. The tacit agreement between utility and community stretched back to Thomas Edison and his original power plant in Lower Manhattan.

This story is about two companies that, after being launched independently by Edison's disciples, grew and stretched the bounds of what communities could do with electric power. The two ventures came together in the last decade of the 20th century to form a greater company for the new millennium.

This story showcases larger-than-life characters who saw the potential of electric power beyond the dim glow of gas lamps. It also features field technicians who strung the first transmission lines and emergency response crews who came after deadly storms and restored power to remote communities. It's a story full of ups and downs, setbacks and victories, following the path of pioneers as electric power established its place in American life.

Readers will also see how in recent years American Electric Power renewed its commitment to all stakeholders—city governments, communities and businesses, shareholders, employees and families. We hope this chronicle makes clear the basis of our confidence for facing the future together with our communities as one American Electric Power.



Wall Street and Trinity Church,
New York City

AN UNCERTAIN INVESTMENT

ROOTS TO 1906

In one telling, the story of American Electric Power starts in the summer of 1906, when the electric power industry was just over 20 years old, a young industry in a new century. That summer, Alabama-born businessman Sidney Z. Mitchell met in New York with two Midwesterners, Richard Breed and Harrison Williams, to consider a business deal. The result would change the future for thousands of American communities.

The country was eager for that future. Ever since the electric industry started, the public had heard about the benefits of electric lights: no odor of gas; an even, clear illumination. And no smoke or danger of fire. However, for decades, only wealthy families could afford the shift from gaslight to electricity. In 1907, only 8 percent of Americans nationwide had electricity at home.

That was about to change.

Electricity was taking off. Thirteen years later, in 1920, the proportion of Americans with electricity would more than quadruple, to 35 percent. In the largest cities, including Chicago, a majority of residents would have electricity by the 1920s. For business owners, the prospect of mechanized production using electricity opened boundless opportunities. Electric-powered railroads and streetcar systems were emerging. The horizon for communications, too, looked bright.

Chicago's Halstead Street, Fullerton Avenue and Lincoln Avenue intersected by power lines, c. 1910

Downtown Columbus at Broad and High streets

In 1906, all that lay in the future. That year, the U.S. stock market was jittery as investors fretted over the chaotic state of American banking. Other industrial sectors were in flux. In August, markets declined sharply, and Richard Breed, a leading stockholder in the utility holding company Electric Company of America (ECA), became anxious about his investment. The company had grown, and its board hoped for a sale to the American Railways Company, but those hopes vanished when the railway walked away from the deal. That summer, Breed and his brother-in-law, Harrison Williams, engaged Sidney Z. Mitchell to study the health of ECA's subsidiaries.

Samuel Insull, 1920

Mitchell, a protégé of Thomas Edison, had experience with a range of utility business models, and he liked what he found in examining ECA — at least enough to work with. The three men struck a deal that took several months to hammer out. On December 20, 1906, their shared commitment to electric power yielded American Gas and Electric (AGE), a holding company that they would use to grow the best of the industry.

But the roots of what eventually became American Electric Power go back much farther than that founding date. They go back to the dawn of the electric age and its earliest incubator, Edison's groundbreaking plant in Lower Manhattan. Another Edison protégé and visionary who would have a lasting impact on this story, British-born Samuel Insull, got his start at the Pearl Street Station and would influence the growth of electric power throughout the Midwest and Southwest. Eventually local utilities across that wide region would come under his holding company, bringing together providers in Arkansas, Louisiana, Oklahoma and Texas. Consolidation was already starting in those early days. Southwestern Electric Power Company, incorporated in 1912, united three utilities founded by three brothers: Rufus, Henry and Charles Dawes. The brothers had independently operated their utilities for years: Shreveport Gas, Electric Light and Power Company of Louisiana; Caddo Gas and Oil Company; and Texarkana Gas and Electric, straddling the Texas-Arkansas border. The companies' histories reached back to 1890. They would share a future with a much larger vision in Insull's Central and South West Corporation (CSW).

By 1906, most of the elements for the industry's growth were in place. George Westinghouse had created a company based on transformer technology, which made high-voltage transmission from alternating current (AC) power stations cost-effective and efficient. The contest between direct current (DC) and AC would continue across the century, but the model was crystallizing: central power stations with ever greater reach to communities via transmission lines. The grand design was set. The important themes that would guide American Electric Power — reliability, adaptable problem-solving, responsibility to investors and communities — were cornerstones of its predecessors in AGE and CSW from the start.

The New York Stock Exchange, alongside J.P. Morgan's office in New York City, both powered by Edison's Pearl Street Station in the early 1880s

Thomas Edison's Pearl Street Station

ORIGINS ON PEARL STREET

The story of a national giant begins with Edison's first U.S. power plant, sited on a low-rent block of Pearl Street in Lower Manhattan. Built by the Edison Electric Illuminating Company of New York, the Pearl Street Station began producing power on September 4, 1882, at 3:00 in the afternoon. The concept was straightforward: A natural source of energy — in this case, steam engines powered by coal — fueled a rotating generator that converted the mechanical power into electrical power.

The Pearl Street Station also pioneered the idea of an investor-owned electric utility. Financial magnate J.P. Morgan, whose office was a half-mile away at 23 Wall Street, was both an early investor and Edison's first customer.

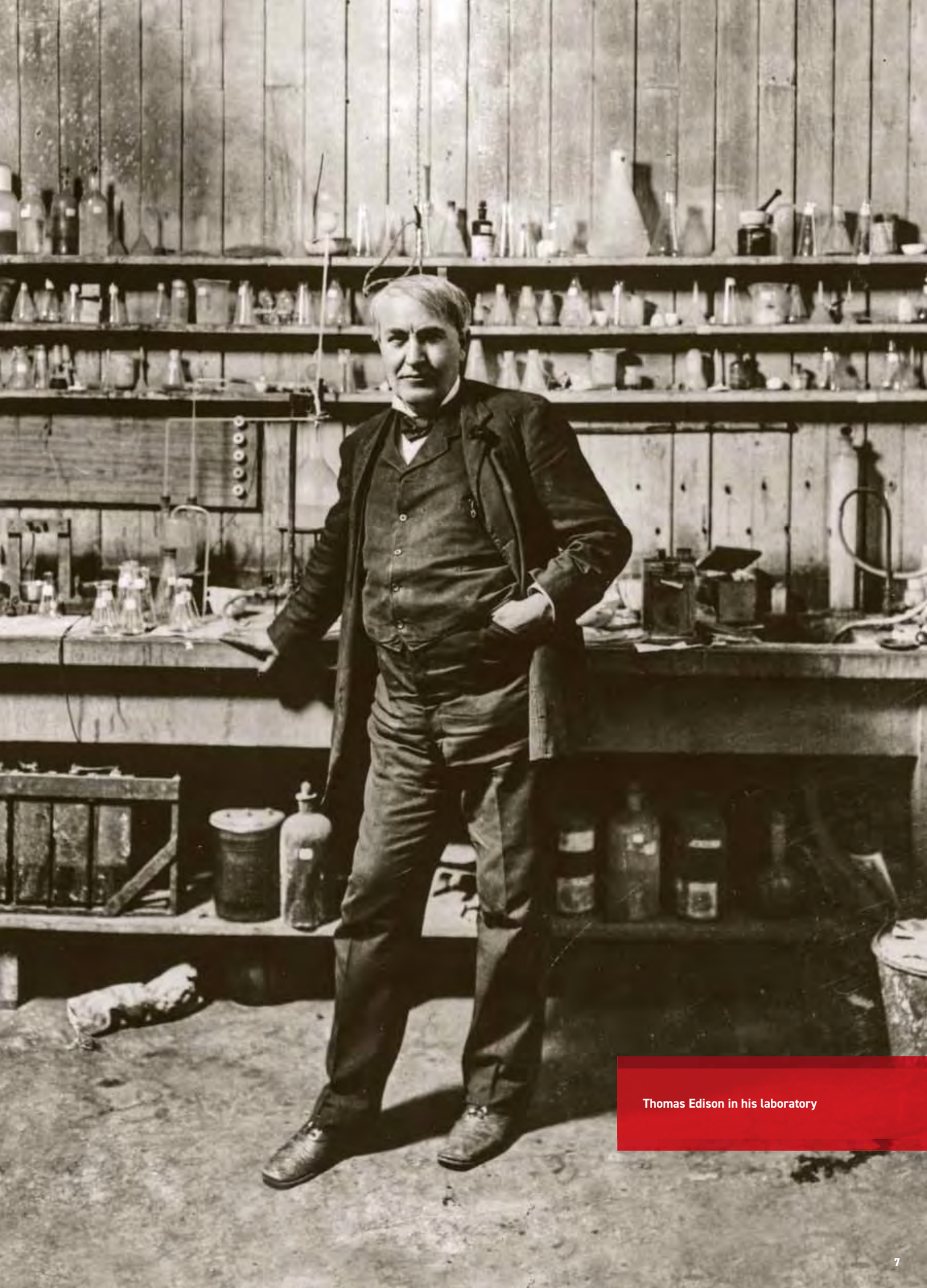
Edison's customers soon included the New York Stock Exchange, a municipal steamboat company, another Wall Street firm, and an insurance company on William Street. Edison was bundling groups of business customers nearby and in communities across America to make centralized power stations like Pearl Street viable. A central station demanded a larger initial investment than an isolated standalone plant, which could operate with just a single factory owner or hotel as its customer. Regardless, the central power station model showed how the young industry could grow along with community needs.

Many fights among competing standards and systems would unfold in the decades that followed — including the contest between Edison's direct current (DC) approach and the alternating current (AC) stations of George Westinghouse — but Edison's business model and the conversation between a company and its customers and communities provided an enduring template for Edison protégés Sidney Z. Mitchell and Samuel Insull.

Electricity in America began that September day in 1882 with a gamble. After facing a number of setbacks and delays, an afternoon lighting ceremony was staged with great fanfare. To break the tension, one of the board members offered to bet $100 that the lights wouldn't go on.

"Taken," said Edison, and he reached for the switch. In moments, Morgan's office on Wall Street lit up. That night, Lower Manhattan made the news for replacing the flicker of gas lights with a glow that was, according to *The New York Times,* "soft, mellow, and grateful to the eye" — the glow of electric streetlights.

For years, the Pearl Street Station kept the lights on, with just two short interruptions of a few hours each.



Thomas Edison in his laboratory

Samuel Insull and Sidney Mitchell, pictured here in 1930, started major electric utilities across the United States in the early 20th century.

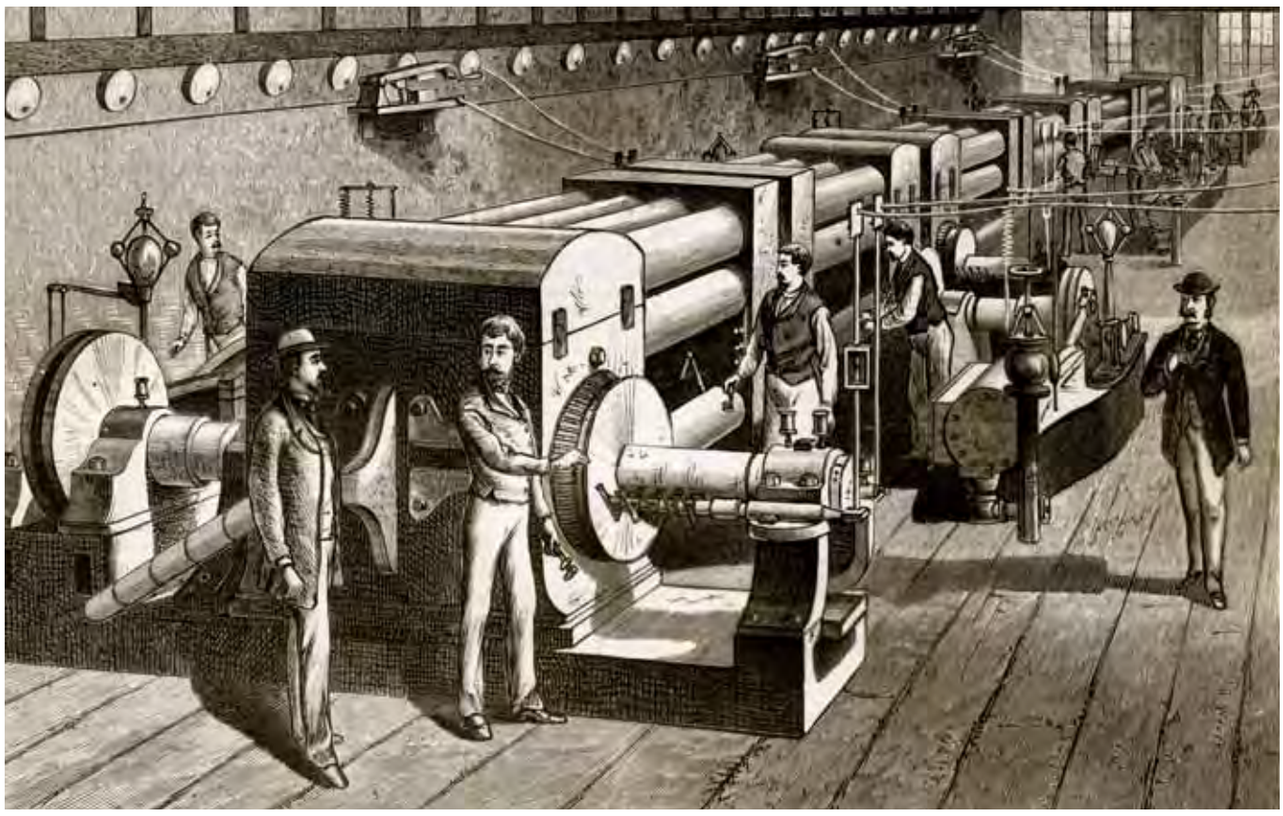
Laredo district office

Mitchell, a young naval officer, was inspired by Edison's achievement. He left his first calling with the Navy and soon moved to New York on a mission to learn directly from Edison. In the late 1880s, Mitchell was the first Edison affiliate in the Pacific Northwest. Eventually, he returned to New York with the skills and experience to restructure utilities for better performance, including how to manage the interests of holding companies.

Insull started working as Edison's secretary at Pearl Street in 1881 and set out on his own before the decade was out. He moved to Chicago, which was ripe for its own approach to the electric revolution, in 1892. He arrived just in time to contribute to the 1893 World's Fair, which proved to be a valuable testing ground for new ideas. The fair's landmark "White City" was, as author John Wasik wrote, using "electricity in a way that the world had never seen before." The fair's planners dreamed up the most extravagant ways to electrify structures and make them spectacular — part carnival, part educational spectacle that was "1850s Paris taken to a Barnumesque extreme." The fair sucked up more electricity than Chicago itself. Millions came long distances to visit the fair and left mesmerized by the White City. It conjured a world tangibly different from 1800s America and inspired the Emerald City of L. Frank Baum's novel *The Wizard of Oz.*

Insull was especially fascinated by the applications of electricity that the fair demonstrated for people's daily lives: lights, phonographs, kinetoscopes and more. Within a few years, Insull had devised new approaches allowing for different low- and high-demand rates, which would slash residents' electric bills by one-third by 1898 and make power more broadly affordable.

The companies created by these two early protégés of Edison who struck out on their own and shaped very different companies, rooted in different regional cultures, would merge a century later to become what is known today as American Electric Power.



Pearl Street's jumbo dynamo (generator)

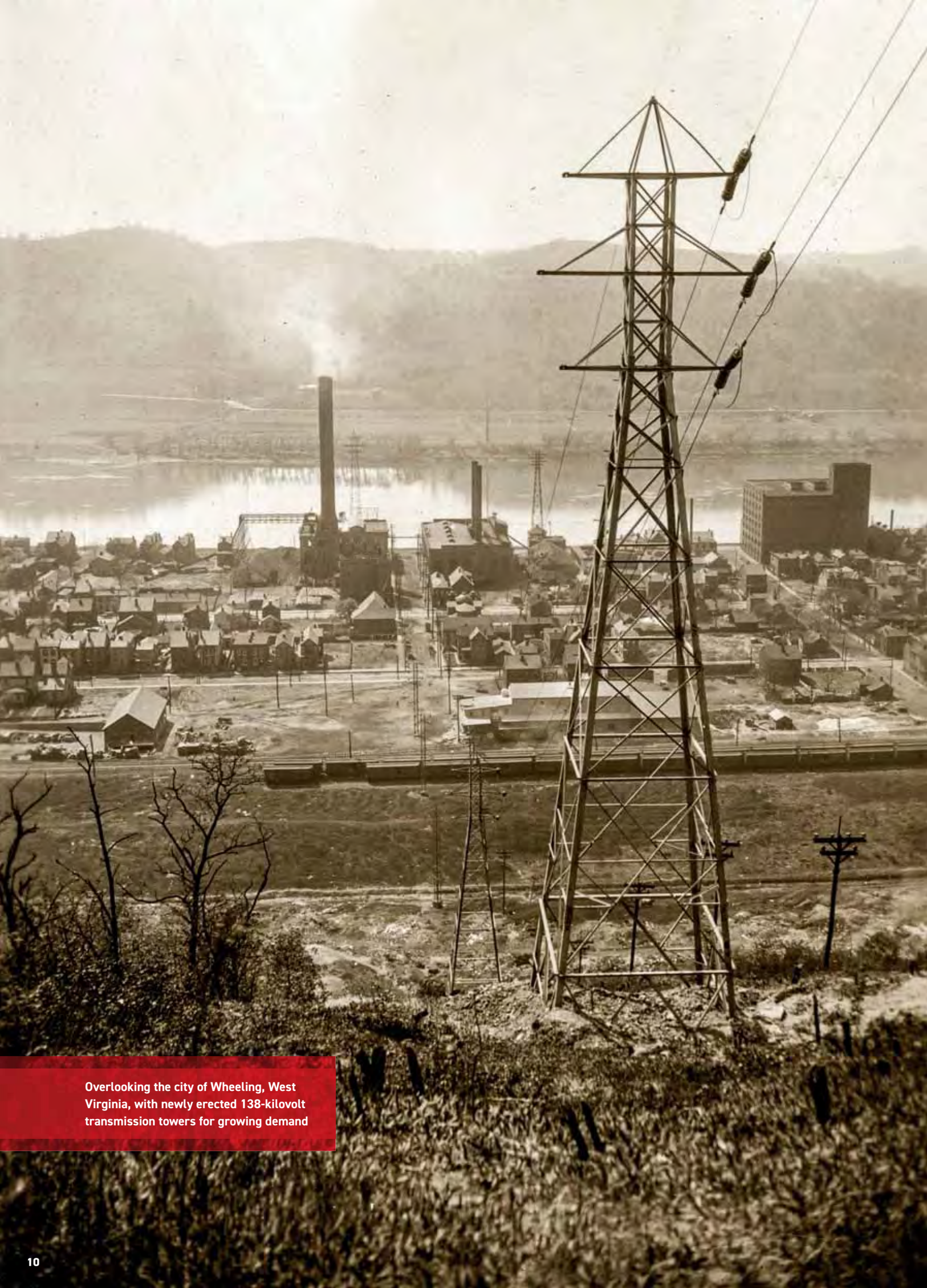
CUSTOMERS FOR BETTER QUALITY OF LIFE

Life for most Americans in 1900 was full of the drudgery of hard toil, with hours each day taken up by tasks such as drawing water from a well, gathering and cutting wood to heat the home and for cooking, and the tedium of laundry and cleaning. The burden of these chores fell heavily on women. Electricity was spawning new inventions for cooking, cleaning, laundry and ironing that promised to make these household chores faster and easier. As local power stations sprang up, initially to serve businesses, families quickly saw the value of household appliances for their own lives.

One afternoon in Marion, Indiana, at the offices of Marion Light & Heating Company, an electric company that Richard Breed had helped to launch, a contingent of the city's women arrived to express their desire that power be available at their homes every Tuesday afternoon. That was traditionally when families did laundry, and that was when the women aimed to use that new time-saving invention, the electric clothes iron.

From the first, Breed's company engaged in a dialogue with its customers about their power needs and how to supply them. Local utilities took different forms across the country. Utilities were often tied with other infrastructural needs of the community, such as transportation. In Columbus, Ohio, the Columbus Railway & Light Company, a local holding company, acquired Columbus Edison Company and Columbus Railway. Columbus had installed street lighting earlier than most cities: Its gas-powered lights dated back to 1844. The service expanded to interior lighting at the *Ohio State Journal* office in 1880. Then, in 1896, Columbus residents approved a bond sale to build a new city-owned power plant.

One of the first electrical appliances embraced by families was the electric iron, which plugged into a lightbulb outlet before wall plugs became standardized.



Overlooking the city of Wheeling, West Virginia, with newly erected 138-kilovolt transmission towers for growing demand

This plant started generating electricity in 1899, and in the early 1900s, it took over the job of lighting the landmark decorative arches on High Street. By 1910, Columbus was extending power to public buildings and businesses downtown. City Hall came online, followed by Grant Hospital, the library, churches and businesses. Soon, drugstores and hardware stores in downtown Columbus had the modern convenience of shopping by electric light.

The intersection of Goodale and High streets in Columbus, with electric streetcar line and overhead power lines, c. 1910

On January 2, 1907, American Gas and Electric, less than two weeks old, took over from ECA the assets of 20 utilities and assorted companies owned by those utilities, mostly in small communities spread from New Jersey and Wheeling, West Virginia, westward to Marion and Muncie, Indiana. These early utilities were rough at the edges, with horse-drawn carts hauling coal through the streets to plants that smoked all the time. AGE President George Tidd looked back on those early days and admitted the coal-hauling teams "congested districts and were a downright nuisance." He added, "Hand-fired boilers aggravated the smoke nuisance . . . [with] smoke coming down all the time from these plants."

Employees worked for low pay, and rates per kilowatt-hour could be 12 to 16 cents and up. But the plants were producing power to meet a growing public demand.

One of the co-founders' first objectives for AGE that spring was to clean house: Sell off the poor performers and consolidate others. Another goal was to link the most promising plants together where possible. So in April 1907, Muncie and Marion were selected to be joined by a remarkable 25 miles of electric lines, a new distance record. As outlandish as the idea was at the time, the reasons were reliable service and efficiency. Tidd, then Muncie's general manager, wrote, "we have opportunity for efficient organization in labor and material unparalleled." The Muncie-Marion connection was an early instance of the company's commitment to innovation in the service of its communities.

> **"We have opportunity for efficient organization in labor and material unparalleled."**
>
> AGE President George Tidd

Muncie suffered loss of voltage for customers outside the central business district. Marion, the smaller of the two, had new generators. Soon, Muncie received a larger turbo generator and a coal crane. With interconnection, the larger plants could exchange current between them to meet peak demand. The plants could use their equipment more effectively.

The new industry was improvising solutions at every turn, and customers often didn't realize when they pushed the limits. A traveling moving picture show could overload the fuses and cast a big patch of Muncie into darkness on a Saturday night. Educating customers on safety and good maintenance started at a very basic level.

To increase efficiency and reliability, utilities in communities up and down the Ohio River merged operations, following the strategy that AGE pioneered in Muncie and Marion. That spring of 1907 in Ohio, Canton Electric Company was consolidated from three local competitors. And in Wheeling, West Virginia, customers drew power from Bridgeport Electric Light and Power located across the Ohio River, which was soon consolidated into Wheeling Electric.

Muncie's new turbo generator and coal crane helped increase production after its connection with Marion.

In eastern Pennsylvania, utilities along the Lackawanna River Valley were growing. Five companies were fused into the Scranton Electric Company, and within a year, seven more smaller companies joined to serve a 30-mile sweep of the valley.

Laredo Electric plant, 1905

Charles Dawes and his brothers were influential in Southwestern Electric Power Company. Later, Charles became U.S. vice president under President Calvin Coolidge.

POWER IN THE SOUTHWEST & MIDWEST

Meanwhile, in the Southwest, hometown utilities in Texas and Oklahoma were consolidating, too. The forerunners of CSW had been taking shape since soon after Edison opened Pearl Street Station. In Laredo, the lights came on in 1888. Corpus Christi, Columbus and Victoria, Texas, followed quickly. Laredo and Corpus Christi built electric streetcar systems. In West Texas, the Abilene Light and Water Company launched in 1891. That same year, the town of Vinita, in what would soon become Oklahoma, incorporated Vinita Electric Light, Ice and Power Company for maintaining cold storage, selling ice, and providing power. By 1908, Abilene had two streetcars shuttling between the city fairgrounds and Simmons College.

In the Southwest, as in Ohio, Monday was laundry day, and Tuesday was ironing day. Another part of the daily routine was lights out at 11:00 p.m. In Pleasanton, Texas, the plant gave customers a three-blink notice that it was time for lights out. In Eagle Pass, Texas, 11:00 p.m. sometimes proved too early when poker games were heating up; on those nights, the plant manager would would run overtime for an extra $2.

As Mitchell, Breed and Williams set out to create AGE in 1906, Insull sought to demonstrate successful investment models for utilities outside of New York. Insull was buying up Chicago Edison's competition, convinced that he could reduce the cost of power for customers. Evidence for Insull's alternative model was growing from Chicago to Southwestern Electric Power's territory.

Just after the turn of the 20th century, America was a place where big dreams could become real. President Theodore Roosevelt hired an engineer to start on a canal in Panama, bridging the Atlantic and Pacific. Film director Sidney Olcott made his ambitious 15-minute moving picture *Ben Hur.* And in December 1907, for the first time, an electric ball descended in Times Square, creating a new tradition for New Year's Eve.

Panama Canal construction, cutting through last of Cucaracha slide

Times Square held its first New Year's Eve ball drop in 1907.

NEW GENERATION

In the early 1900s, Bellaire, Ohio, was humming with the sound of industry and commerce. Since the discovery of natural gas there in the late 1880s, Bellaire had become a hub for railroads and a number of industries, including glass making, which had earned it the nickname "Glass City." But it was the coal mining industry that would drive Bellaire's future growth, and it was the coal mines that were AGE's biggest untapped opportunity. Mines in Bellaire hauled out a million tons of coal per month, using power they generated themselves. To cater to the mines and to cultivate a base of industrial customers, AGE started a subsidiary for Wheeling Electric. The plan was to name the subsidiary Shadyside, for a town just south of Bellaire. But a clerk in the state office handling the application apparently had other ideas and processed the paperwork for Sunnyside Electric Company.

The argument for greater efficiency from a dedicated power producer won over the mining companies; they signed up, and soon Sunnyside Electric was generating power at full steam. By 1916, the Bellaire plant was producing nearly 5,300 kilowatts for more than 40 customers, most of them in the mining business.

Across the Ohio River in Wheeling, West Virginia, the community's demand for electricity was also growing. To meet the growing demand, AGE built a plant in Bellaire, along with a 33,000-volt transmission line to cross the river.

Constructing the line over the river was a tremendous engineering feat for that time. The tower on the Ohio side of the river anchored the river span. To ensure it was strong enough, designers planned for the tower to hold up against the strain of the most extreme conditions imaginable: They calculated for the six wires to be burdened with the weight of nearly an inch of ice on each line and then added the punishing force of 100-mile-per-hour wind.

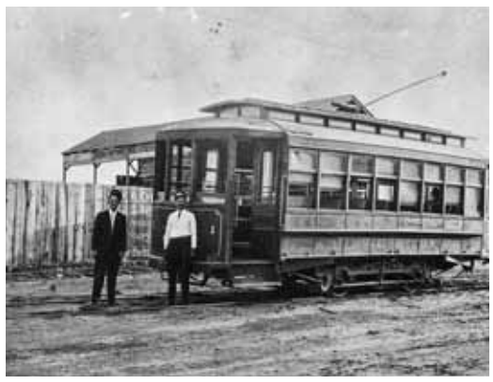
Sunnyside division

Barnesville, Ohio, was one of many cities connected to Sunnyside Electric's lines in the 1910s.

Vinita Electric Light, Ice and Power

Construction crews erected the towers for the Wheeling-Canton transmission line. The company sold bonds for plant and facilities, and construction went forward. The strategy for seeding demand on both sides of the river worked, and AGE soon paid down its debt.

Towns nearby were being transformed by the new access to electricity. In Neffs, Ohio, kerosene had been the only source of light; its residents gained electric lights in late 1913. In 1914, Sunnyside Electric purchased the local utility in Barnesville, 30 miles west of Bellaire in the Allegheny foothills, and built a new line to serve that town. The line then hooked up several more villages in between, including Belmont and Bethesda, Ohio. Another line was extended north to Steubenville. In 1917, Sunnyside Electric merged into Central Power, along with Ohio Light & Power. Eastern Ohio was on its way into the future.



Abilene's "Galloping Goose" streetcar, 1908

Line crew and wagon on a street in Bellaire, Ohio

GRANDDADDY OF POWER: THE WINDSOR PLANT

Starting in 1916, another landmark in the country's power landscape rose up about 10 miles north of Wheeling, on a narrow strip of land at a coal mine between the Ohio River and the Pennsylvania Railroad in West Virginia's northern panhandle. The new power plant, known as the Windsor Plant, followed a design that was straightforward but bold. For one thing, it was the largest plant of its kind — a "mine-mouth" plant located near the coal source.

More significant was the plant's organizational structure: Windsor was the first partnership of two companies that started from the design stage. When AGE's Breed and Tidd found out that a Pennsylvania utility wanted to build a steam plant on the Ohio River, they came up with a grand proposal: AGE and Penn Power Company should be partners in building and operating a bigger plant than either company could realize on its own. Together they would share the risk, which was sizable. Such a visionary approach to a power partnership was a first. It reinforced AGE's identity as a company that embraced innovative and collaborative solutions for the communities it served.

The plant design simplified the partnership prospect. A "party wall" made the facility into two equal and identical halves. West Penn would operate three turbine units on the north end, and AGE's Central Power would operate the south three units. That way, they could make a clean divide if legal or operational conditions forced an end to the partnership. "Each party could have a complete generating station on its side of the party wall," said Earl Breen, the plant's accounting manager, "and each could then operate this generating station separate and distinct from the other, should it ever so desire."

Each turbine generator had a 30,000-kilowatt capacity, making for a facility with a record-breaking total capacity of 180,000 kilowatts. That was more than five times the capacity of the world's largest plant at that time, which had a capacity of just 35,000 kilowatts.

The Trailblazing Windsor Plant

Completed in 1917, the Windsor Plant put the company that would become American Electric Power at the forefront of technological innovation and excellence. Windsor provided the blueprint of the company's technological vision and a training ground for AGE technical staff.

The city of Canton, Ohio, was growing and desperately needed more power to meet the demand of its population and industry. In the Windsor Plant's first full year of operation, it produced 259 million kilowatt-hours. That nearly doubled in 1919 to 413 million kilowatt-hours and rose again in 1920 to 565 million kilowatt-hours. As American business grew, the relationship between AGE and its corporate customers stayed strong.

Windsor Plant Firsts

First major steam plant built many miles from the main source of demand

First plant that originated as a joint venture

First plant to serve customers in three states

Highest temperature and steam pressure of any plant in the world

Largest-capacity generators outside the four largest cities in the United States

First to get commitments from major industrial customers, including B.F. Goodrich and the Timken Roller Bearing Company

The Windsor Plant

The Windsor Plant's big vision paved the way for an approach to providing power that harnessed central power generation with expansive transmission capacity. The company's 138,000-volt line from Windsor to Canton, Ohio, ran 55 miles, with four-legged steel towers holding up double-circuit copper conductors. These towers were the sturdiest structures ever built for transmitting power. Soon, the Windsor Plant was supplying the bulk of Canton's power needs.

Windsor Mine provided the coal for the Windsor Plant.

As AGE leaders later noted, the Windsor Plant helped America achieve victory in World War I in a very tangible way. "The industries in Canton during the World War were on a 90 percent war basis," the company stated. Without the reach of the holding company to finance large plant construction and transmission lines, the defense companies "would not have been in a position to do what they did to cooperate with the Government in the measures that resulted in victory."

Beyond Canton, the Windsor Plant supplied power to Wheeling Electric and East Liverpool, as well as to Springdale and Connellsville, Pennsylvania. The plant's transmission lines were hauling the energy equivalent of 500 to 700 railroad cars of coal, wrote the plant's first manager, E.H. McFarland.

Ohio Power baseball team, Canton, Ohio 1920

CREATING COMMUNITY

Windsor Plant housing

In addition to serving customers hundreds of miles away, the Windsor Plant was building a strong community both on and off the job. Most employees lived in a village named Power, appropriately enough. Housing stock was limited, so the company bought buildings in nearby Nitro, West Virginia, and moved in an entire town. The power company provided utilities, with water coming from the factory's wells. Beyond the family housing, a clubhouse accommodated the plant's few single male employees and housed a community center, a library, a Victrola for listening to music, a pool table, and an outdoor tennis court. The clubhouse dining room served meals billed as close to home cooking. Residents established a volunteer fire department, a women's club, and social groups that organized picnics, dances, and occasional entertainment.

The real action, however, was on the baseball diamond, where the competition was fierce. "Baseball was the real thing," said Ron Marshall, a 10-year veteran of Windsor. "It was rumored — but also true to a great extent — that ability as a baseball player determined employment of new applicants." When the Windsor team squared off with its AGE counterparts at the Philo Plant, Canton, Wheeling or the Valley Camp Coal teams, the games were highlights of the season. The Windsor team "did a great deal for the esprit de corps of the employees," wrote historian William Corbitt.

AGE players at Windsor established a healthy sense of competition. With its bold business plan and its technical achievements, Windsor set a high standard for the company's approach to power generation and transmission.

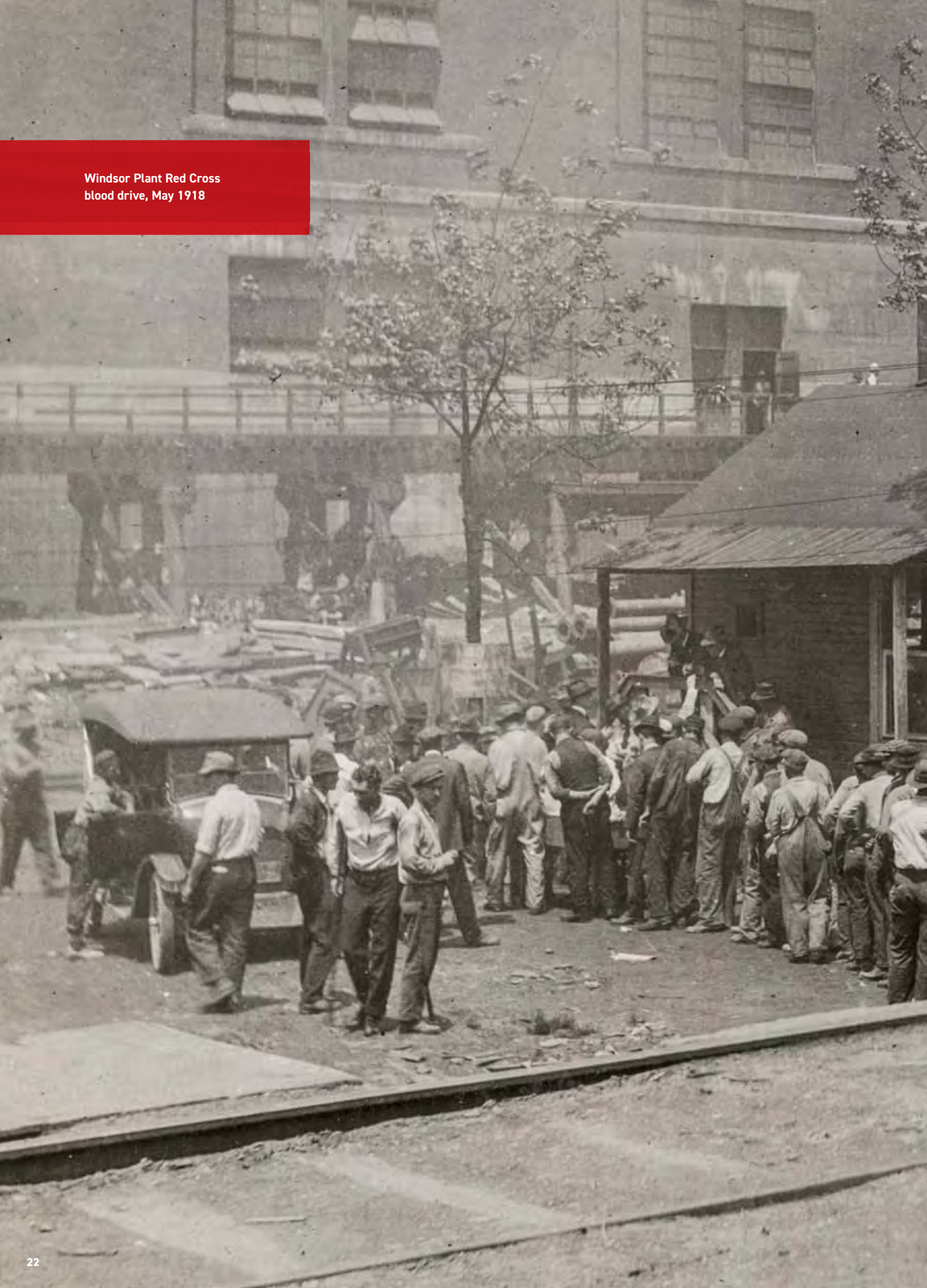
ACROSS THE REGIONS

Windsor Plant operators

In a little over a decade, AGE's production had jumped tenfold, from 53 million kilowatt-hours in 1907 to 538 million kilowatt-hours in 1918. Utilities in Texas and Oklahoma consolidated in 1912 into Southwestern Gas & Electric. And in Chicago, Samuel Insull's company was breaking new ground, growing to 6,000 employees by 1920 and serving a half-million customers, with annual revenue of nearly $40 million.

There would be rocky stretches along the way and points where there appeared to be no way forward. Mitchell, Breed, Williams and Insull, and those who followed them, would ride the tributary companies through tremendous highs and lows in the century that followed. Together with communities, government regulators and other stakeholders, they would chart an unprecedented role for how utilities touched people's daily lives. They would find traps that the young companies would get ensnared by — or learn to dodge. Some would rise to the top of American enterprise. Others would lose their footing in the dramatic changes of the years ahead. From a marginal startup industry, electric power had already become central to the country's economic growth.

In every case, things were just getting started.



Windsor Plant Red Cross blood drive, May 1918

Sidney Z. Mitchell

Sidney Z. Mitchell:
Stepping Out of Military Line to String New Lines of Power

Sidney Z. Mitchell did not set out in life to enter business. Born in Dadeville, Alabama, in 1862, Mitchell studied at the United States Naval Academy and was heading for a naval career. Just after graduation in 1883, he installed the first incandescent lighting on a U.S. Navy vessel, the three-masted USS *Trenton*, a year after Edison cranked up the Pearl Street Station. Despite the occasional short circuits and small fires aboard the *Trenton*, Mitchell's lighting worked.

Inspired by the possibilities, Mitchell changed his career path. At age 23, he left the Navy, moved to New York and went to visit the great Edison, who suggested the young man work for him during the day and study electricity in night school. In the Edison Machine Works on Goerck Street, Mitchell learned about dynamos. He learned about wiring, insulation, lamp sockets and power connections as well as power distribution, both underground and overhead. During night school, Mitchell absorbed the principles behind those tasks of delivering electric power so well that he could launch new utilities on his own.

In September 1885, Mitchell became the exclusive agent for the Edison Electric Light Company in the Pacific Northwest, including British Columbia. He had his hands full, setting up electrical systems from Idaho to Alaska. With a fellow Annapolis classmate, Frederick Sparling, Mitchell set up an office in Seattle. There, people had heard about electricity and its wonders, but hardly anyone was knowledgeable about details. Mitchell got Seattle started with 250 lamps for the town of 4,000, generated by Seattle Electric Light Company, the first electric light plant west of the Rockies.

For 20 years, Mitchell brought light to the Northwest. In town after town, he handled everything: from finding local investors to getting city approvals, buying land for the plant, and building and installing the equipment. In three years, he and Sparling covered Washington, Oregon and Idaho, and they moved into British Columbia, spreading what became Northwest General Electric.

After the West was hard hit by the Panic of 1893, Mitchell became an expert in reorganizing and refinancing electric utilities. In 1905, General Electric President Charles Coffin invited Mitchell to come back to New York and help create the Electric Bond & Share Company. And that is where Richard Breed and Harrison Williams found him at the threshold of their adventure.

First Avenue, Seattle, 1891, powered by Seattle Electric Light Company

The USS *Trenton* was the first Navy vessel with electric lighting.

Richard E. Breed: Businessman Drawn to the Energy Flame

Richard E. Breed

Born in 1866 in Pittsburgh, Richard E. Breed was a successful glassmaker and newspaper owner. He studied law and gravitated to Marion, Indiana, in the 1890s, during the Indiana gas boom triggered by the discovery of America's largest reservoir of natural gas. Alert to new forms of energy emerging in the early 1900s, Breed became involved in electric power almost by accident when he extended a loan to the local electric company; and, when it faced financial problems, he accepted stock in place of cash. In that way, he became a stockholder in Electric Company of America (ECA), a holding company for a score of local utilities.

When the proposed sale of ECA to an electric railroad company fell through, Breed saw his investment at risk and took action. In 1906, Breed and his brother-in-law, Harrison Williams, contracted with Mitchell to see how to turn ECA into a vital business. Breed became lead negotiator for ECA in its transformation. In good measure, it was his initiative that birthed American Gas and Electric.

American Gas and Electric, authorized to issue collateral trust bonds, was incorporated in New York on December 20, 1906. Breed was made vice president and a member of the Executive Committee. He became company president in 1910 and chairman in 1923.

Breed devoted tremendous energy to his leadership in the company for 20 years, until his death at age 60. "His character and personality gained the confidence of those with whom he came into contact," said good friend Anson Burchard, an AGE director. "He was painstaking and conscientious in the discharge of his civic obligations." In 1956, AGE announced plans to build a generating plant near Sullivan, Indiana, and give it Breed's name, "a family name prominent in the affairs of American Gas and Electric."

Breed and his family

Early line construction crew
for Appalachian Power

Harrison Williams: Bookkeeper Turns a Profit

Harrison Williams

Harrison Williams was already a rising star in the electric industry when he partnered with his brother-in-law, Richard Breed, to start American Gas and Electric. Williams was born to a banker and his wife in Avon, Ohio, in 1873 and got his start in business as a bookkeeper for a bicycle-manufacturing company before his 20th birthday. Williams married Katharine Breed, Richard's sister, in 1900.

In 1903, the couple headed to New York, where Williams, intrigued by the early electric power industry, set out to make his fortune. A slender man with piercing eyes, Williams was seven years younger than his brother-in-law. Yet Williams had a forceful personality. After Katharine died in 1915, he threw himself into the company with more energy. He remained a commanding presence in AGE for nearly half a century, until his death in 1953, at age 80.

From humble beginnings in rural Ohio, he scaled the highest peaks of American business. He hosted British royalty at his home on Long Island. He owned a villa on the Italian island of Capri. And he financed an expedition to the Galapagos Islands, where a volcano was named in his honor.

"Mitchell, Harrison Williams and R.E. Breed were among the few in those days who foresaw the fantastic growth of electric power and, consequently, planned ahead to anticipate the increasing demand," wrote Mitchell's son, Sidney A. Mitchell, an AGE board member.

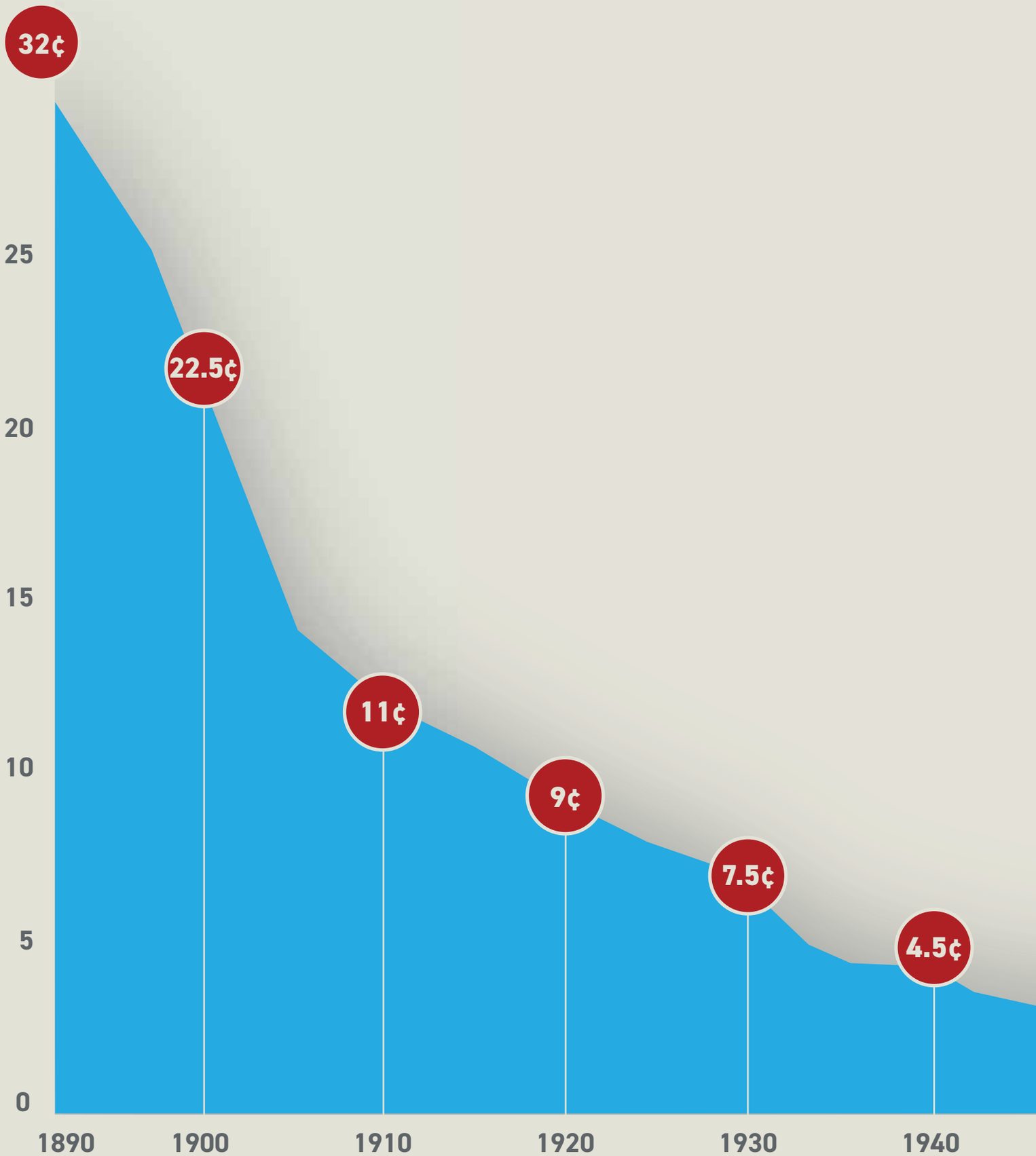
In 1920, Williams saw an opportunity to buy a large block of shares in North American Company, another holding company. He soon became its chairman. In a few years, North American controlled more than 70 electric utilities in cities from Cleveland to San Francisco. By 1946, its utilities served 1.2 million electric customers. Williams was ranked the wealthiest man in the country in 1929, with a fortune estimated at $680 million (about $9.68 billion in 2017).

Eleven years after the death of his first wife, Williams married Mona Bush, and they embarked on a round-the-world honeymoon. Williams' passions extended to travel, sailing and playing golf, and he gave generously to a number of institutions, including the New York Zoological Society and the Metropolitan Museum of Art.

Backfilling crew on tower construction, 1925

NATIONAL AVERAGE RESIDENTIAL PRICE OF ELECTRICITY

Current-year cents per kilowatt-hour



OTHER HISTORICAL PRICE COMPARISONS

Bread
In 1920, the average price for a loaf of bread was 12 cents. In 2000, the average price was $1.72.

Milk
In 1920, the average price for a gallon of milk was 67 cents. In 2000, the price was $2.88.

Coffee
In 1920, the average price for a pound of coffee was 47 cents. In 2000, the average price was $3.44.

Automobile
In the mid-1920s, a Model T Ford cost on average $265. In 2000, the average price of cars was $17,500.

A Dozen Eggs
In 1920, the average price for a dozen eggs was 47 cents. In 2000, the average price was 89 cents.

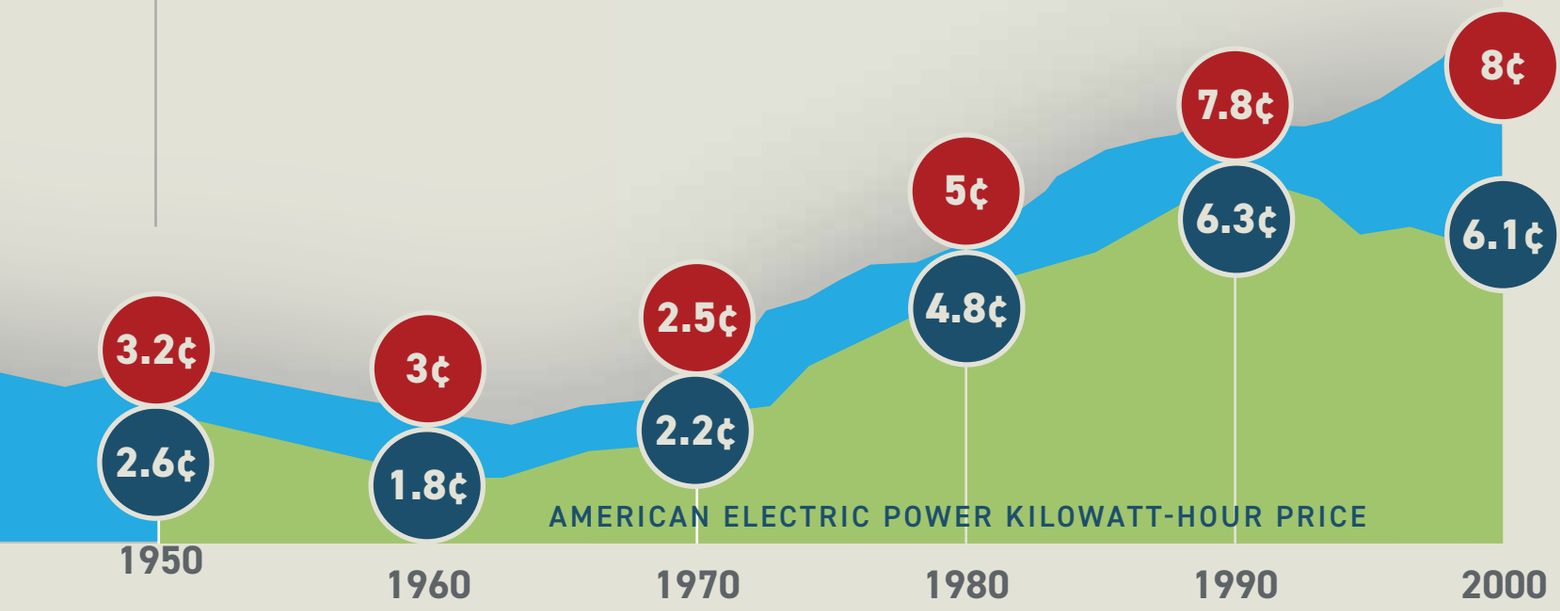
Butter
In 1920, the average price for a pound of butter was 70 cents. In 2000, the price was $2.80.

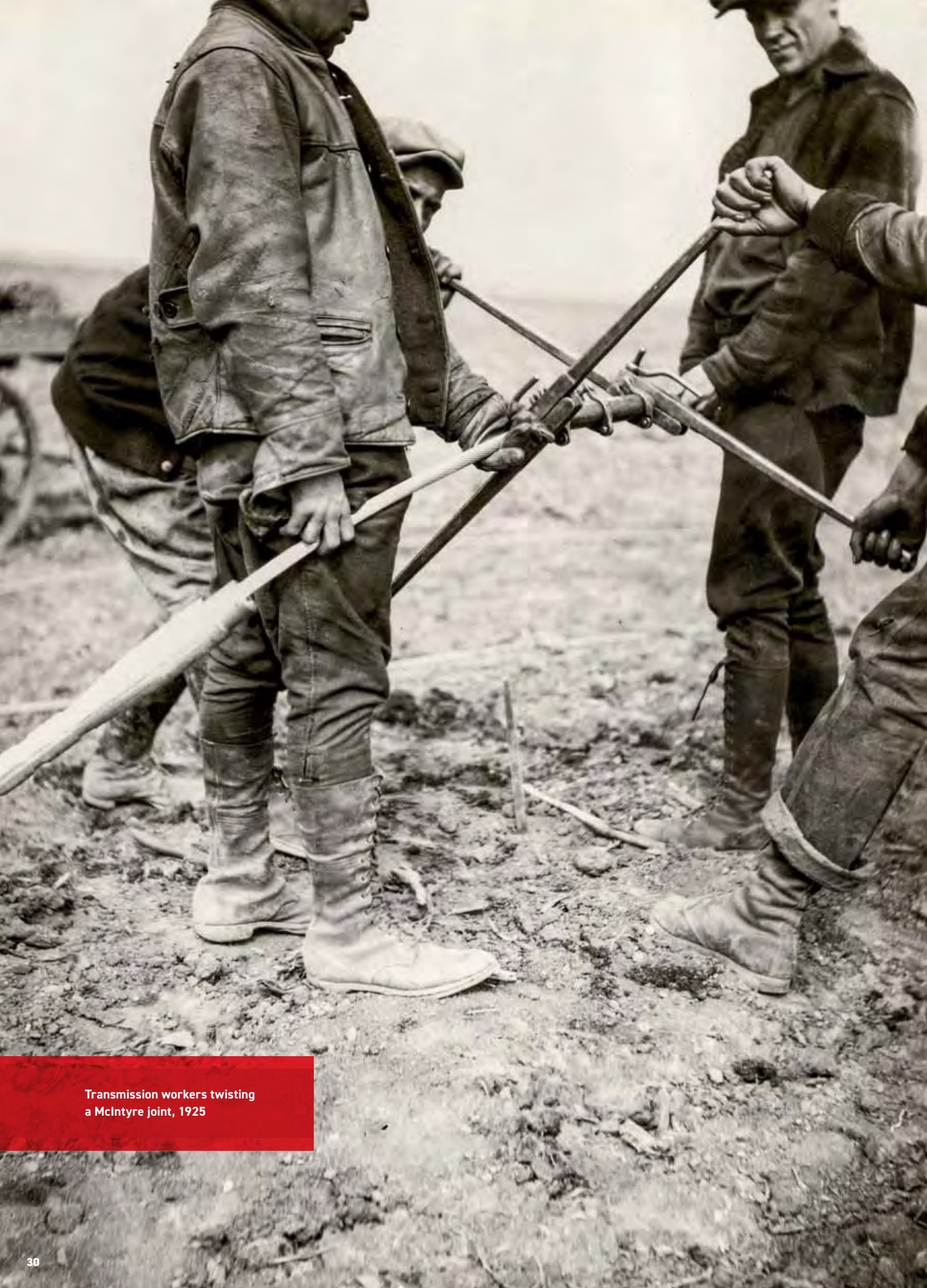
Bacon
In 1920, the average price for a pound of bacon was 47 cents. In 2000, the average price was $2.97.

Gasoline
In 1920, the average price for a gallon of gas was 25 cents. In 2000, the average price was $1.48 per gallon.

AEP'S AVERAGE RESIDENTIAL PRICE OF ELECTRICITY

COMPARISON TO NATIONAL AVERAGE





Transmission workers twisting a McIntyre joint, 1925

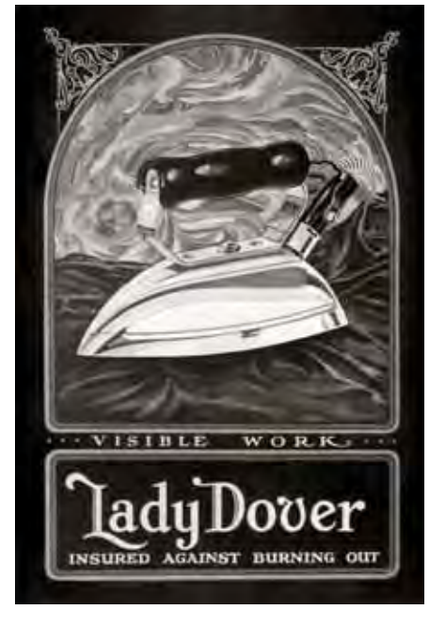
GROWING PAINS

FROM 1919 THROUGH WORLD WAR II

After launching Middle West Utilities Company in 1912, Samuel Insull continued to acquire utility properties across the middle of America. He was steadily working toward a vision that he saw more clearly than most of his contemporaries: a large utility, connected across broad areas, which could achieve economies of scale and reach a wider range of customers.

The 1920s brought a new age of light and sound. Electrification spread ever more quickly across America, fueled both by people's demand for electric lighting and their desire for the new technology of "wireless" radio communication.

As demand bloomed, electric appliances were catnip for the popular imagination in the Roaring Twenties. Refrigerators meant people didn't have to buy food every day. The food-processing industry grew to meet new demand for frozen and canned foods. Time-saving appliances and new ways of cooking promised to make women more independent.



After lighting, the two most popular appliances were electric fans and laundry irons, which were cheaper and easier for most Americans to adopt than refrigerators. With light, families began doing more activities at night, especially reading. As a result, the publishing industry grew, and electric lighting became reflected in artists' visions of modernity. In Ernest Hemingway's story "A Clean, Well-Lighted Place," incandescent light is a symbol of civilization and safety. In F. Scott Fitzgerald's 1925 novel, *The Great Gatsby,* the ascendant Jay Gatsby lights his house "from tower to cellar" as a beacon to attract his beloved Daisy.

Besides watching customer demand rise, Insull also saw possibilities for growth in the business tools of the day. He adopted the vehicle of the electric utility holding company in a new way to achieve his vision of a connected system. Typically, utility holding companies were organized to provide financial or engineering services to independent operating utilities in a loose relationship. Insull organized his holding company to do more — including centralizing strategic planning to promote growth across geographic boundaries and create a unified network of interconnected utilities. With an extended system that covered a region, he could improve efficiencies across the whole system, reduce rates and increase profits. If he occasionally paid more for a utility than it was actually worth, he believed the economies of scale would even out that imbalance in the long run.

Seeing J.P. Morgan's interference in Thomas Edison's holdings, Insull was unwilling to rely on major investors like banks to raise capital. Instead, Insull turned to a larger number of small investors. He translated the already-familiar idea of war bonds into the sale of preferred utility stock to small investors. He got his employees to sell bonds and stock to their neighbors and acquaintances. This sale of corporate stocks and bonds to small investors gave Insull the capital he needed independent of the financial industry. Insull believed strongly that utility companies thrived when they had strong, independent management.

Electrifying Entertainment

More than two decades after Guglielmo Marconi pioneered radio transmission in the 1890s, "wireless" technology took off as a commercial venture in America. Early broadcasting technology was crude: Announcers shouted into the large end of an 8-foot-long horn shaped like a morning glory blossom. Yet as soon as radio stations sprouted in Chicago, big companies quickly gravitated to them to promote their businesses. The *Chicago Tribune* labeled its radio station WGN (for the newspaper owner's boast, "World's Greatest Newspaper"), and Sears Roebuck called its station WLS (for "World's Largest Store"). Samuel Insull was investing in radio alongside those other giants. Insull bought a station that broadcast opera, which was widely popular in the early 1920s.

Radio had a galvanizing effect for popularizing electricity. In Chicago schools, a wave of students registered for new courses in electrical theory. Insull's interests in broadcasting and railroads were fueling the growth of his empire in Chicago.

ANCHORING OHIO: THE PHILO PLANT

To the east of Insull's empire, the visionaries at American Gas and Electric (AGE) were also thinking big. Their Windsor Plant, with its principle of large-scale generation to serve far-flung demand, had shifted the industry's thinking about how to grow. With the success of the Windsor model, AGE managers in New York examined every acquisition plan to ensure the proposed deal offered synergies of connecting adjacent geographies.

In 1922, AGE made plans to build another super plant in central Ohio as a hub for sending power to customers across the state. Richard E. Breed and George N. Tidd chose the town of Philo on the Muskingum River, about 65 miles east of Columbus. They contracted with the design team of Sargent & Lundy, the same firm that had designed Windsor. Breed and Tidd wanted the Philo Plant to anchor the middle of AGE's footprint in the way that the Windsor Plant grounded the east.

In addition to being centrally located, Philo was also at the center of Ohio's coal country. The town had an old canal that could provide coal storage — up to 600,000 tons — and that could channel water for the plant's steam turbines.

The Muskingum, a tributary of the Ohio River, offered water for the plant's condensing and cooling operations. The river had a storied history: It was an important trade route in the 1800s and had served as an artery on the Underground Railroad by which African-Americans had migrated north through Zanesville and up to Canada.

From its start, the Philo Plant had a state-of-the-art turbine with pioneering 40,000-kilowatt capacity and new design elements that boosted its efficiency. Philo, which began producing power in 1924, had the first turbine to heat steam to 700 degrees Fahrenheit, at a groundbreaking 600 pounds per square inch. Philo also boasted innovations in process: It was the first plant in the country to reheat steam after it passed through part of the turbine.

Philo Plant, 1928

Philo also was the first "triple-compound" unit anywhere, with a capacity more than four times that of AGE's largest unit at the time: 165,000 kilowatts. A compound generator passed the energy-driving steam through two or more turbines, taking advantage of higher pressure levels as new technologies became available; the Philo triple-compound unit thus broke new ground to greater efficiency and scale.

The competition was on. In 1930, Samuel Insull installed his own triple-compound unit at the State Line Plant in Hammond, Indiana, surpassing Philo's size with its 208,000-kilowatt capacity.

The Philo Plant was just starting its run of historical firsts. Eventually, it would build and bring online six generation turbines (the last one added in 1957), with a total capacity of an astounding 495,000 kilowatts.

The technology of power transmission at Philo was just as innovative. The new lines could carry 132,000 volts,

Philo turbine number 2 at startup, September 1924

Tower for the 132-kilowatt line from the Philo Plant to Canton

enough to send energy all the way to Canton, 73 miles north. The Canton line used steel-reinforced aluminum conductors on 292 towers across the miles to Canton. Another line stretched southwest some 20 miles to Crooksville.

As it did at Windsor, AGE created a community for its staff at Philo. The company laid out streets, installed water and sewer service, and set up a central playground. It also made a rule to encourage creativity: Every house would have its own character, and no two could be identical.

Employees of the Philo Plant

Other AGE holdings, such as Ohio Power, were becoming business powerhouses, as well. Having merged with Ohio Light and Power and Sunnyside Electric in 1916, it joined with Buckeye Power in 1921 as well as several Lima, Ohio, utilities, adding to AGE's holdings. In 1924, AGE reorganized the company to allow it to issue 1.8 million shares of stock (1.5 million no-par common stock plus 300,000 shares of 6 percent preferred stock).

AGE GAINS FOOTHOLD IN NORTHWEST INDIANA

After Philo, AGE built the Twin Branch Plant, marking its western foothold on the St. Joseph River in northwestern Indiana. Advances in generation technology came in tandem with AGE's aggressive acquisition strategy. With Tidd as president, the company purchased Indiana and Michigan Electric Company in September 1922; its 30,000 customers in northern Indiana brought AGE's total customers served to a quarter million. On the same day, AGE purchased a foothold in southwestern Michigan with the Benton Harbor-St. Joe Railway and Light Company. Customer demand for the power from Twin Branch was assured.

The linkages across the AGE system were coming into place, just as Tidd had hoped. "It is not good for a utility — not wise or prudent — to stand alone," he said.

The Twin Branch Plant

CORNERSTONE IN THE SOUTHEAST WITH APPALACHIAN POWER

The Welch office, one of several offices of Appalachian Power acquired by AGE

Another purchase that Breed and Tidd arranged in 1922 was that of Kentucky and West Virginia Power. AGE's 1924 purchase of American Electric Power (an earlier holding company formed in a reorganization of American Railways Company, not related to today's AEP), made for a cluster of Southern utilities in Kentucky, Tennessee, Virginia and West Virginia, located in Ashland, Bluefield, Charleston, Huntington, Kingsport, Lynchburg, Pulaski, Roanoke, and Wytheville. This strategic extension south and east served to shape the boundaries of what emerged on April 1, 1926, as Appalachian Electric Power.

Kentucky and West Virginia Power represented AGE's first acquisition south of the Ohio River. Appalachia was a region with parallels to the utility landscape that Breed had pioneered as an investor in Ohio in 1909, a mix of promising and underperforming properties.

Tidd explained the strategy behind the expansion: "We saw the point that . . . all of these properties, while separately they were not earners at all and probably would not have been to any extent, the moment we connected them up into a whole and could get the diversity . . . we did well with them, and that is the success of this situation which we foresaw."

When AGE bought the utilities of Charleston, West Virginia, in 1923, the company gained its first state capital. Charleston was a growing industrial hub and an entry point into the Virginia properties.

In 1925, the consolidation of these utilities began. AGE formed Appalachian Power & Light to take over the various smaller utilities it was collecting. Appalachian Securities was created as an institutional vehicle to make the merger with AGE conform to a puzzle of various states' laws. For the merger, shareholders of the old AGE received one new common share in exchange for each old common share and one new preferred share for every two old preferred shares of the company.

Wheeling Plant

Glen Lyn Plant

AGE's Charleston Plant, 1925

With Virginia added, AGE now operated in a dozen states, and the sizable towns of Roanoke, Lynchburg and Huntington came into its fold. Roanoke, a railroad hub on the Roanoke River, grew with the coal industry, more than doubling in size from 1900 to 1920, when its population topped 50,000.

Soon, the leaders of Kingsport, Tennessee, at the border with Virginia, had had enough of local utility problems and invited AGE to buy the property. In 1927, Appalachian Electric Power extended transmission lines into Kingsport. The rivers in that part of Appalachia snaked north into the Ohio River, to Wheeling and throughout AGE's region.

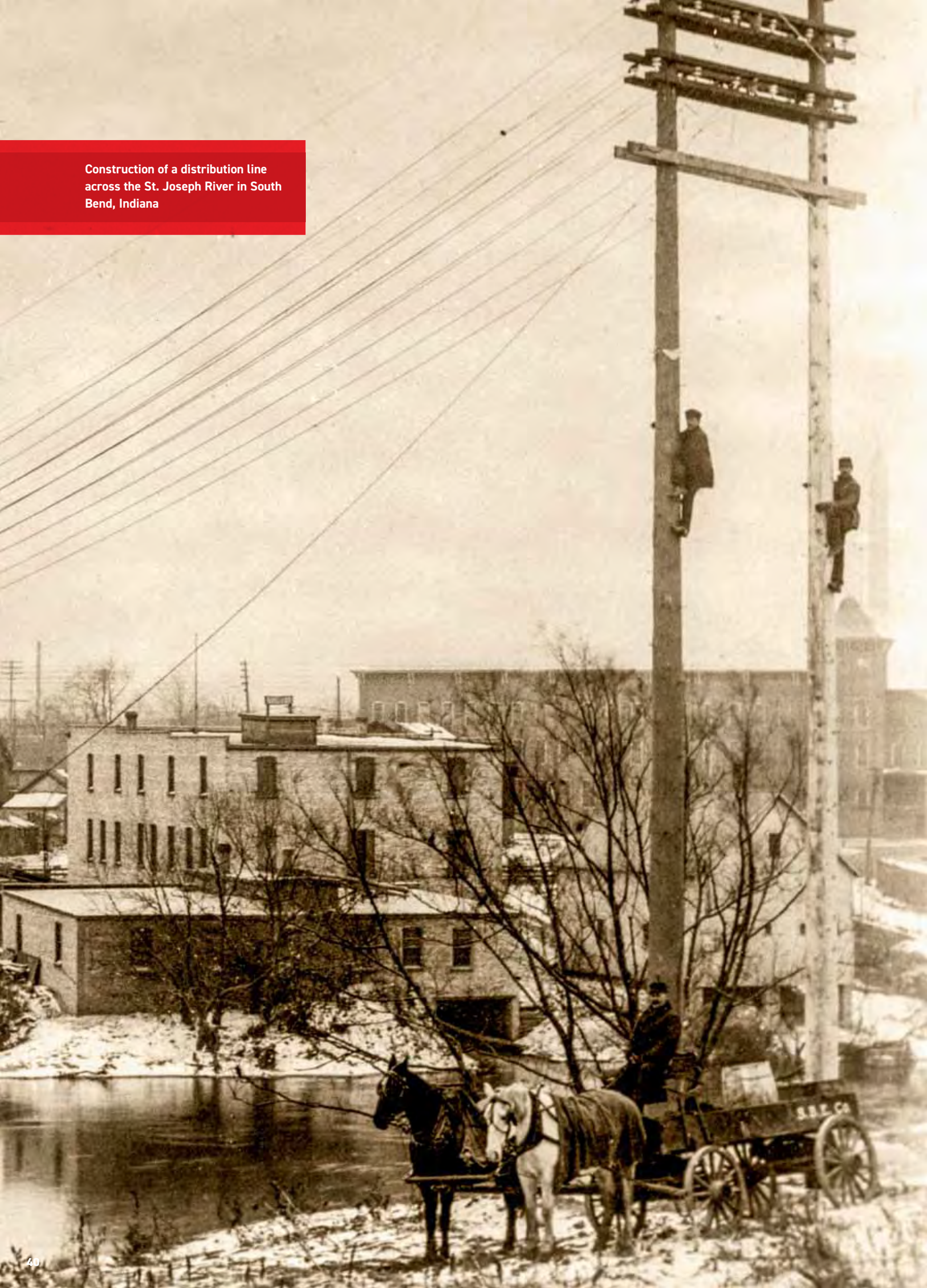
The city of Wheeling continued to grow, fueled in the 1920s by the steel and tobacco industries. The Ohio River itself became a more active artery of trade, vital to the region's economy and infrastructure. The Wheeling wharf was a "beehive of activity," a destination for steamers and tourists coming up the Ohio. With AGE service reaching the North Carolina border, the company had a vast footprint across the Ohio River watershed, a territorial outline that would endure for many decades.

Pioneer With a Mental Calculator and Ground-Truth Knowledge

As it moved into the new territory of Appalachia, AGE turned to a resource that had been with the company since 1910. AGE assessed the purchase price for the Appalachian utilities it proposed to buy in 1922 with a remarkable combination of local knowledge and high-powered financial acumen, in the person of N.M. Argabrite. A native of the mountains northwest of Roanoke, Virginia, Argabrite had worked his way up from a general superintendent of utilities for Ohio Valley Electric Railway Company to become AGE's chief appraisal engineer and vice president of operations. Now he was the lead for AGE's advance in the Southeast. On a six-week trip through Kentucky, West Virginia and Virginia, Argabrite calculated what it would cost AGE to build the facilities he visited. He wrote up his findings, he said, "on a piece of paper about two inches wide" and presented the tally to AGE's Board of Directors. Based on that figure, AGE invested $77.6 million in the companies of Virginia and Kentucky.

The investment paid off, and Argabrite endured to see it flourish. He remained an AGE senior officer for more than 20 years. In August 1945, he was elected president of Atlantic City Electric, an AGE subsidiary. Two years later he turned over the reins of Atlantic City Electric to the man who had been AGE vice president alongside him for years, Philip Sporn. With that, Argabrite "completed forty years in the utility field," noted *The New York Times*.

N.M. Argabrite, center, visits the Hartland Power Plant in Hartland, West Virginia, 1925.



Construction of a distribution line across the St. Joseph River in South Bend, Indiana

New Technology From the Jazz Age — the Deepwater Plant in New Jersey

In 1927, AGE-affiliated Atlantic City Electric began purchasing municipal utilities in southern New Jersey. Many of the municipal facilities were at the end of their life cycles and in bad shape. In this expansion to the edge of Philadelphia, Tidd and company saw that Atlantic City Electric needed more generation capacity. For the site of a new plant, they chose Deepwater, Delaware, just south of Penns Grove, New Jersey, where AGE already had underwater lines connecting the two states.

Like Windsor, Deepwater was a partnership with another utility. Together, the partners made plans for a state-of-the-art generating station that would come online in 1930. At the same time, Atlantic City Electric erected 60 miles of 138,000-volt transmission line to take the Deepwater-generated power across the state, bolstered with several loops of 66,000-volt lines to connect major load centers.

The Deepwater turbine had a massive 53,000-kilowatt capacity, using a first-ever cross-compound unit to operate at a steam pressure of a mind-boggling 1,200 pounds per square inch, taking operational power to a new level. The cross-compound design employed two turbines, both extracting power from a single steam source, rotating on separate axles. The Deepwater generator rotated at an unheard-of speed of 3,600 revolutions per minute. Design engineers from Stevens & Wood calculated that the 5 percent increase in cost of the superspeed generator would pay for itself in increased efficiency. Eventually, they would be vindicated in that assessment. When two more turbine generators of the same capacity were added later, Deepwater would have a combined cost per kilowatt of capacity of a remarkably low average $105.31.

REACHING FARM HOUSEHOLDS

Electricity's reach was spreading, along with economic promise, to even the most isolated communities. In AGE's original home territory of Indiana, farm families at an ever-greater distance from Marion were approaching the power grid. Indiana and Michigan Electric Company, the local AGE affiliate, held a meeting to see about extending service to a remote area if a group of farms would agree to pool their resources and buy $70 a month of electricity. Several farmers pledged a few dollars each, but the discussion stalled. Finally, a woman named Mrs. Mills announced, "I'm not going to stay on this farm any longer if you folks are so behind the times as not to want electricity." With that, the other farmers agreed and signed up.

Once the power did arrive, another woman recalled the big difference it made in people's lives:

"Instead of getting up in the morning and stumbling around for a match to light a lamp and then carrying an old smoky lantern to the barn, we just push the button that brings light even before you get out of bed. The difference between cranking a gasoline engine to do the milking and water pumping and turning on the motor is so great that you feel kinda shaky when you remember the time the engine was so hard to start."

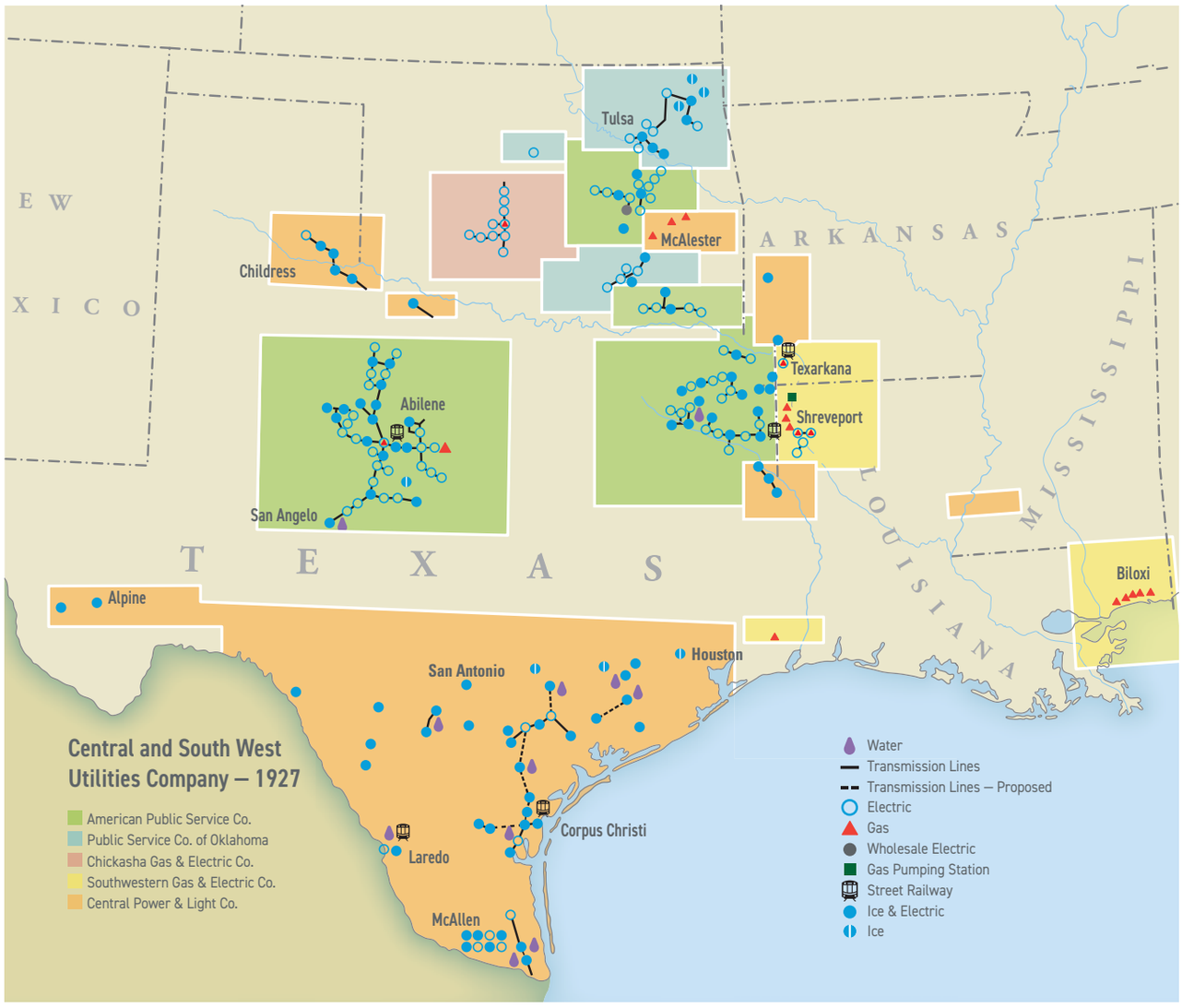
ENERGY BOOM IN THE SOUTHWEST

As Samuel Insull's utilities in the Midwest grew, he recruited his younger brother, Martin, to help manage them. Martin Insull grasped the nature of the empire his brother was creating and helped to enlarge its possibilities. Their cousin Fred relocated from Colorado to Oklahoma to manage what would become Public Service Company of Oklahoma (PSO). Fred brought Colorado talent with him, persuading his assistant, Ruby Frank, to come lend a hand in Oklahoma. PSO emerged as the first true instance of the interconnected utility that Samuel Insull envisioned in the territory of what would become Central and South West Utilities Company (CSW).

By 1925, Middle West Utilities owned operations across 19 states, mostly far afield from Insull's Chicago base. Sam and Martin and their cousin Fred called their properties in the South and Southwest the "Cactus Patch." Sprawling across a vast area, that region's utilities — especially after Insull's 1925 acquisition of Central Power and Light and Southwestern Gas and Electric — finally required a new holding company to manage them. So the Insulls created CSW on July 31 of that year. Formed under Middle West Utilities, CSW provided a structure for finance and management and a new layer of professional managers to strengthen the independent operating companies.

Fred Insull

Like AGE, CSW became known for advancing progressive employee policies and pushing technological innovations. CSW made a point of valuing its employees, providing generous benefits such as an annuity plan. At a time when most companies offered no retirement benefits, CSW was ahead of the curve. Being a part of the Middle West Utilities holding company gave CSW's subsidiaries access to important specialized expertise that enabled



them to grow aggressively: bookkeeping, legal frameworks, and design for plants and transmission lines. From 1925 to 1929, CSW quadrupled the length of transmission lines in its area (from Oklahoma and Arkansas south through Louisiana and western Texas), topping 8,000 miles. The company then began to link its properties into a more efficient interconnected system.

Electricity demand in the region was soaring, boosted by the discovery and industrialization of oil. Starting from the Spindletop Strike in 1901 and the discovery of oil near Beaumont, Texas, derricks had sprung up across the state. Oil production in Texas had pushed the United States ahead of Russia as the world's leading petroleum producer. The "gusher age" transformed Texas into an industrial powerhouse, and that meant more cities clamoring for electric power. In 1930, drillers discovered large oil deposits under Henderson, east of Dallas. This was a territory served by CSW affiliate Southwestern, and the company saw an opportunity. Expanding the utility's typical offerings, Southwestern bid on a contract to build a tremendous network of pipelines to get the oil industry of Henderson up and running. With that, CSW's experience with scale and big industrial customers took a new turn.

As oil mining expanded in Texas, CSW and its utilities raced to expand to serve each camp.

PSO line crew putting up a new pole in Tulsa, c. 1924

Ice Age for Corpus Christi

In the arid Southwest, the boon of electric refrigeration changed lives, possibly more thoroughly than it did anywhere else. It also changed the business of moving food, and CSW companies expanded into icing railroad cars bearing produce. The practice often used about 5 tons of ice per freight car to keep fruits and vegetables cool and fresh over long distances. (Only later, after World War II, would refrigeration surpass icing as the way to get food to market.)

Corpus Christi was the heart of Texas vegetable production in that era. Huge harvests of carrots, spinach and radishes rolled out in all directions in iced freight cars. Robstown, at the city's western edge, was a main station where CSW subsidiary Central Power and Light had teams that iced freight cars. The railroad inspector oversaw the work of chopping a 300-pound ice block down to size and manhandling the pieces into position. Working in the intense heat of a South Texas summer, two men would ice an entire freight car in 10 minutes.

INSULL'S BIG GAMBLE

While buying utilities throughout the Midwest, Insull was also investing in new powerful generation capacity with an enthusiasm that rivaled Breed and Tidd at AGE. The new triple-compound turbine for Hammond, Indiana, outperformed AGE's biggest turbine at the Philo Plant. Insull kept ahead by using greater and greater generation capacity as a driver for ever-increasing advantages of scale.

Insull and his brothers also zealously engaged in the public debate about utilities and their place in the economy. The Insulls were deeply involved in Chicago politics, and courted the risk of legal action and charges of antitrust behavior and buying influence. Martin contributed more than $150,000 to the Senate campaign of just one Illinois candidate, a vast sum in those years. The Senate nullified the election, and Martin Insull received a citation for contempt of Congress, a scandal that tarnished his reputation. Martin Insull was unrepentant. He insisted he had not exerted undue influence, and that "the public utilities are owned by 40,000 stockholders," adding "of whom I am one."

TAKING STOCK BEFORE AN UNCERTAIN FUTURE

By June 1928, AGE had matured through two decades of growth and restructuring and had reached the point of a grand, interconnected grid. *Electrical World* magazine hailed the accomplishment of interconnection, saying the new arrangement was "spectacular chiefly in that it links the great electric systems of the Southeast with those of the Ohio River," adding, "the future is exceedingly bright for such a superpower system, extending as it does from the Gulf of Mexico to the Great Lakes and tapping every great city and industry in that important area." This came less than two years after the passing of one of AGE's keystone founders, Richard E. Breed, who died just as his goal of an interconnected utility came into view.

Breed's funeral brought together his friends and colleagues, with many as honorary pallbearers. For Harrison Williams, Breed's founding partner at AGE and brother-in-law, the ceremony brought poignant memories, as the grave of his first wife, Katharine, lay several feet from Breed's grave in Tarrytown's Sleepy Hollow Cemetery.

For George N. Tidd, 1927 was turbulent. On one hand, he had the opportunity to share the accomplishment of the company's prosperity with shareholders in a remarkable 40 percent dividend — among the largest in the company's history. At the same time, the fast growth came with awareness of risk. The Deepwater Plant, which was still on the drawing board, and the Twin Branch Plant, which went online in 1925, required tremendous resources. AGE had also seen a backlash to its rapid growth, with antitrust lawsuits in the mid-1920s.

AGE and Tidd's counterparts at CSW had weathered the early years of a transformational industry's growth. Both companies would in time emerge from their legal troubles, but at the moment, both faced a turning point and what appeared to be great uncertainty. Samuel Insull's aggressive strategy with CSW had laid the groundwork for a strong, resilient enterprise, but he would pay a steep personal price.

Hammond, Indiana: home of the world's largest generator

A migrant family heading to California during the Depression

NATIONAL CALAMITY

The stock market crash of October 1929 set off the Great Depression, an economic disaster of epic proportions. Suddenly, families could not afford to pay their bills; instead of spurring invention of more appliances, they turned the lights out. Businesses felt the squeeze, too. Together, these trends for residential customers and businesses cascaded to utilities, which saw demand for power shrink by double digits compared to pre-Depression demand. Utility companies that had invested in new plants to grow their generation capacity were suddenly strapped for cash and facing a steep rise in the price of debt.

Still, AGE continued to pay stockholders a dividend and looked for ways to help ease the public crisis. When President Herbert Hoover asked utility companies in 1930 to invest in building infrastructure for future load as a way to jump-start U.S. employment, AGE co-founder Sidney Z. Mitchell rose to the challenge: His companies spent $97 million on building load capacity that year. Hoover later said the companies' "cooperation was more than patriotic. It was heroic."

After the 1929 stock market crash, Samuel Insull served as an extreme case of the situation's consequences. He had plowed his ingenuity and business skills into one of America's great business empires and outsized philanthropy, building a 42-story home for the Chicago Civic Opera. He had also made enemies. By 1929, Insull held a large portion of America's utility bond business and had netted a rival in J.P. Morgan. Insull also attracted unwanted attention in politics, with a Senate investigation of his influence and a comprehensive probe by the Federal Trade Commission. When the crash sent his shares' value plummeting, bankers required more collateral on the margin trading that Insull had championed. Martin Insull issued $50 million in serial gold notes and sowed the seeds for disaster when they came due a few years later, requiring $10 million a year. Overextended, the Insull empire turned to Wall Street for financing, and Morgan and Insull's other enemies took their revenge: They drove down the price of Insull's stock. In April 1932, Insull was stunned when his efforts to get financing failed, and he lost control of his empire.

Demand for power declined during the Depression as families struggled just to put food on the table.

Yet the crash did not immediately affect the utilities of CSW. The operating companies continued to grow during the first few years of the Depression. But in 1932, the nation's worst year of unemployment and low farm prices, a wave of foreclosures hit CSW's customers. For the first year in its history, CSW companies saw revenue drop. They cut costs in many ways: To save $50,000 in rent, Central Power and Light moved offices from San Antonio to Corpus Christi. The CSW office in Dallas closed, and a much smaller staff moved to Chicago. The Oklahoma operation also saw staff reductions. Managers reorganized in various ways to ensure that more families could receive a paycheck and have food on the table.

CPL's Corpus Christi district office, c. 1920s

Middle West Utilities struggled until it finally went into receivership in 1932. The court-appointed receivers slashed costs further and reduced payroll by 40 percent. By the next year, the company's cash position had improved, and the prospects for the operating companies also looked better. CSW companies reduced the value of their common stock and worked to repay loans.

CPL bought buses to replace electric streetcars in some cities.

REGULATORS AND A NEW PLAYING FIELD

In the Depression's darkest days, utilities and other big businesses found themselves under public scrutiny. The federal government passed the Securities Act of 1933 and the Securities and Exchange Act of 1934 in an effort to prevent a repeat of the 1929 crash. The 1935 Public Utility Holding Company Act represented the government's longest reach to control how large utilities determined customers' rates. The law covered most aspects of a utility's operations and required utilities to limit operations to a single state or divest for integrated operations in a limited geography. It also required holding companies to register with the Securities and Exchange Commission, which would ensure each holding company owned only one integrated system and divested its interests in unrelated holdings, limiting its size.

George Tidd in Atlantic City

Tidd saw the new law's vast implications. He led the fight against the law's toughest provisions — including the requirement that AGE register with the government, calling it unconstitutional. At the same time, he readied AGE for inevitable changes. When its legal appeal failed, AGE complied and registered as a holding company in April 1938. In 1940, the SEC held hearings on AGE's holdings that resulted in AGE's divestitures of utilities in New Jersey and eastern Pennsylvania. In accordance with that ruling, Tidd continued to take necessary steps, including selling off Atlantic City Electric Company, the last of AGE's divested properties, in 1946.

Jurisdictional restrictions also spelled big changes for CSW. After a protracted reorganization, the company came out on the other end, one of the few holding companies to survive. One visible byproduct of the 1935 law was its effect on many city streetcar systems. Most cities of that time had privately owned streetcar companies held by the electric utility holding companies, as in Columbus. The new law forced the divestment of those streetcar holdings. After that, many were replaced by buses or trackless trolley cars. In Columbus, the streetcar companies were separated from the local utility and eventually dismantled. The same change happened in Corpus Christi.

The Public Utility Holding Company Act remained on the law books for seven decades. The 1935 law signaled a shift in regulation of the utility industry, with the added challenge, in some places, of competition from government-owned

Philip Sporn and AGE's leadership on the steps of the Federal Trade Commission's Office in Washington, D.C.

Tennessee Valley Authority lineman repairing a transformer

CSW meter readers used bicycles during World War II to conserve gasoline and car tires.

utilities. The Roosevelt administration in 1933 created the Tennessee Valley Authority (TVA), a government-owned utility intended to improve electricity access in one of the country's poorest regions. The TVA was also intended to serve as an economic driver for the impoverished region. Surviving a legal challenge, the TVA showed how the government had come to see the energy sector as an essential part of the American economy.

REBUILDING LOAD

America gradually recovered from the Depression and faced a broader, global threat in World War II. Thousands of workers for AGE and CSW joined the armed forces and put their lives on hold to fight overseas. At home, women working in CSW's Home Service Departments contributed to the war effort by coaching customers on how to keep old appliances in good shape until wartime shortages eased. They also helped with Red Cross drives and classes.

Expanding military bases, especially in territories served by Southwestern Gas and Electric, put a heavy burden on the utilities as the war started. The plants that supplied those military facilities became enemy targets themselves, requiring plant employees to shoulder additional duties as security officers. Supply shortages forced everyone to make do with less while oil producers in Louisiana, Texas and Oklahoma provided the fuel that sent the U.S. tanks, bombers and battleships to victory. Following victory in 1945, the companies worked to help returning soldiers: CSW affiliate CPL pitched in for workers' insurance premiums and guaranteed them a job when they came home.

Coming out of World War II, Americans could once more see a future for modern electrical appliances. Vacuum cleaners and other new home appliances once again promised to simplify housework, and utilities that sold those appliances began to grow again. Utility offices installed lobby showrooms, staffed with salesmen to demonstrate the latest gadgets. West Texas Utilities, a CSW operator, even offered to provide repair service on appliances it sold — a huge benefit for customers where the nearest repair shop could be over 100 miles away.

In isolated stretches of West Texas, where decades hence the wind itself would generate power for urban centers in East Texas, new transmission lines were moving into position.

Samuel Insull: Switchboard Operator Takes Over the World

Samuel Insull

Born in Dickensian London in November 1859, the son of a tradesman and temperance preacher, Samuel Insull made himself into a businessman and investor. As a champion for affordable energy for all Americans, Insull founded many companies, including CSW, and for decades guided the utility industry's expansion. He started working at age 14, first as an apprentice clerk and then as a stenographer. At 19, he became a switchboard operator for the London office of Thomas Edison's telephone company. He became Edison's personal secretary at age 21 and left England for the United States. Insull quickly proved that he had a head for business, co-founding Edison General Electric. By 1889, he was vice president of General Electric. He grew disillusioned with Edison's New York model, however, and believed that the company was losing its engineering advantage to competitors. When he failed to get elected president of the company, Insull grew more disenchanted with the control that New York financiers exerted over the business. He set out on his own to lead Chicago Edison.

In 1897, Insull incorporated Commonwealth Electric Light and Power. Ten years later, his companies merged to form Commonwealth Edison. Insull saw how to use economies of scale to enter new markets and attract customers with reduced rates. He invested in related industries, too, buying a railroad to haul coal to his power plants. He also took a very public role, advocating for better mine safety rules. With his range of business interests and high profile, Insull provided inspiration for the character of Charles Foster Kane in the Orson Welles classic *Citizen Kane.*

Like many businesses, Insull's holding companies collapsed during the Great Depression, taking down the life savings of thousands of shareholders. Insull's political adversary, Harold Ickes, was by 1933 a senior national adviser to President Franklin Roosevelt, and the federal government launched an investigation of Insull's businesses. He was arrested in France and sent back to the United States to face trial for mail fraud and antitrust violations. Although he was acquitted on all counts, the trial left him depleted emotionally and financially. Insull died of a heart attack in a Paris subway station in July 1938.

If Edison proved the value of a centralized power grid in New York, Insull challenged accepted wisdom and established the blueprint for a thriving network of independently operated utilities in the Midwest. Nearly a century later, his example still holds lessons for disrupters of the status quo, said former AEP board member Richard Sandor. "I'm an economist by training," Sandor said, "so I knew something about the Insull empire. I was fascinated by the fact that there was a group outside of Edison that was turning the country towards other vendors of electricity." Citing Tesla and its effect on the Big Three automakers as an example, Sandor said: "The idea that there could be a set of electric utilities not controlled by Edison but independent startups is relevant today. Insull's approach has a contemporary ring to it, of the disrupters or competition to existing franchises."

George N. Tidd

George N. Tidd: Soft-Spoken Visionary for Growing Utilities with Integrity

George N. Tidd, who enjoyed the longest tenure as AGE president in the company's history (1923-1947), said early in life: "The business cannot stand still. It must grow or diminish; there is no middle road." He worked with that same single-minded dynamism to expand the industry. Tidd saw early the need for growth. Until the 1906 takeover of Electric Company of America, he had worked as an ECA field manager in Marion. Tidd was known for his directness, plain speaking and sense of humor. When ECA was sold to form America Gas and Electric, he joked that he was "one of its liabilities."

Born in January 1874 in the logging town of Barclay, Pennsylvania, Tidd started his career as a telegrapher. As a young man, he worked for a local electric utility on the Pennsylvania-New York border and rose to become the company's manager. In 1904, the 30-year-old caught the notice of Richard E. Breed, who recruited him to become manager of the Marion utility, beginning a working relationship that would last 22 years.

Tidd became one of Breed's most trusted colleagues, working to consolidate and improve utilities in the Lackawanna Valley of Pennsylvania. Tidd helped move AGE's headquarters to New York, where it would stay for 71 years. Tidd was elected vice president in 1910 and promoted to president in 1923, a position he held until May 22, 1947.

A hallmark of Tidd's business leadership can be seen in his reaction to the 1929 stock market crash. As AGE president, he reached out personally to shareholders with an informative letter. His plain-spokenness and transparent, direct style reassured them of the company's health. He protected the company's financial integrity through the disastrous era.

Tidd's devotion to his work left little time for other interests, but he did enjoy golf and sailing as well as collecting rare books, manuscripts and paintings. His health declined after a fall in 1948, and he resigned the chairmanship on New Year's Eve in 1949. He died in 1952 at age 78. By then, he had engineered a smooth transition to another generation.

Changing a streetlight in New York, 1930

Our Job *(The AEP Company Creed) 1934*

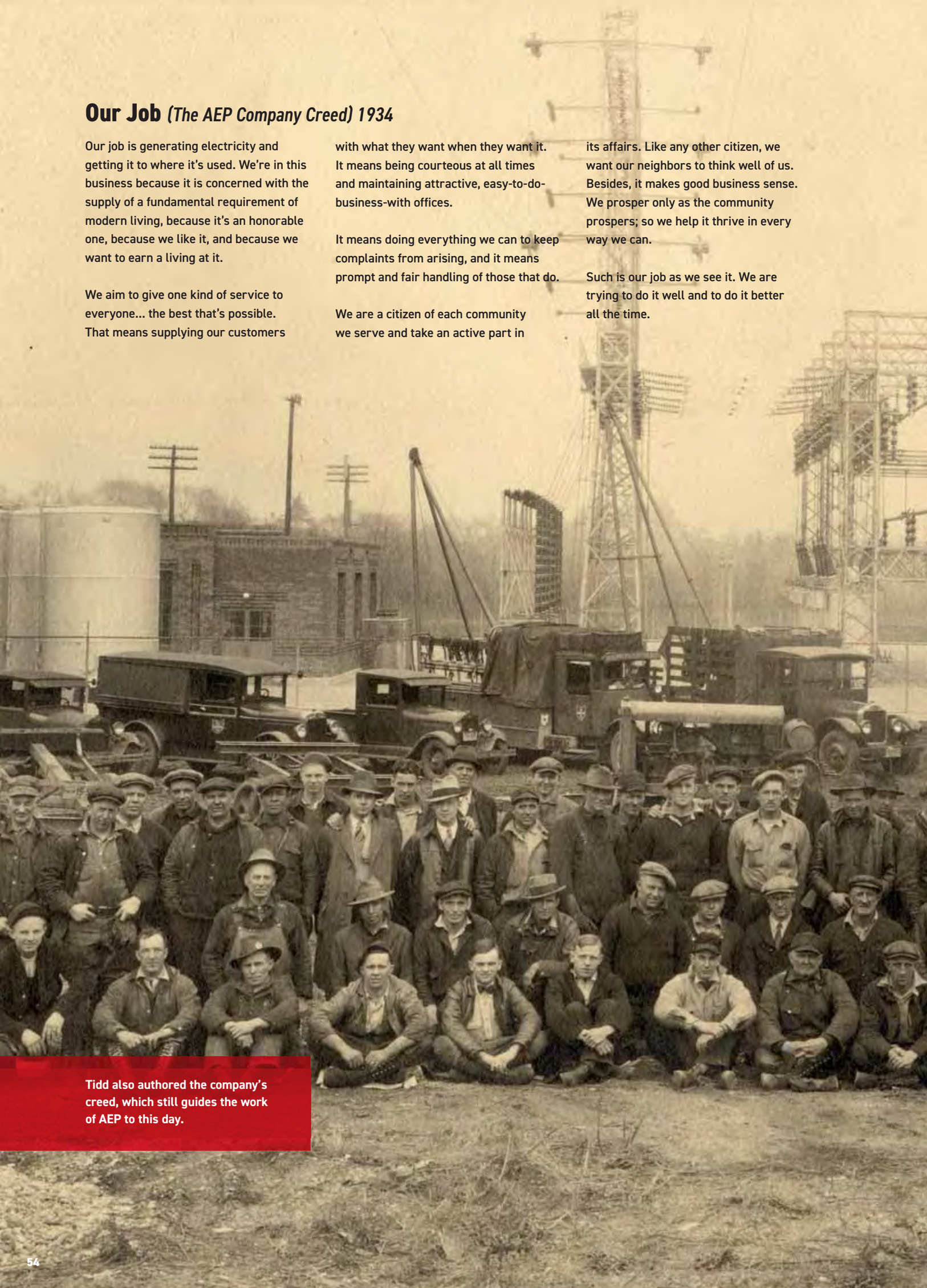
Our job is generating electricity and getting it to where it's used. We're in this business because it is concerned with the supply of a fundamental requirement of modern living, because it's an honorable one, because we like it, and because we want to earn a living at it.

We aim to give one kind of service to everyone... the best that's possible. That means supplying our customers with what they want when they want it. It means being courteous at all times and maintaining attractive, easy-to-do-business-with offices.

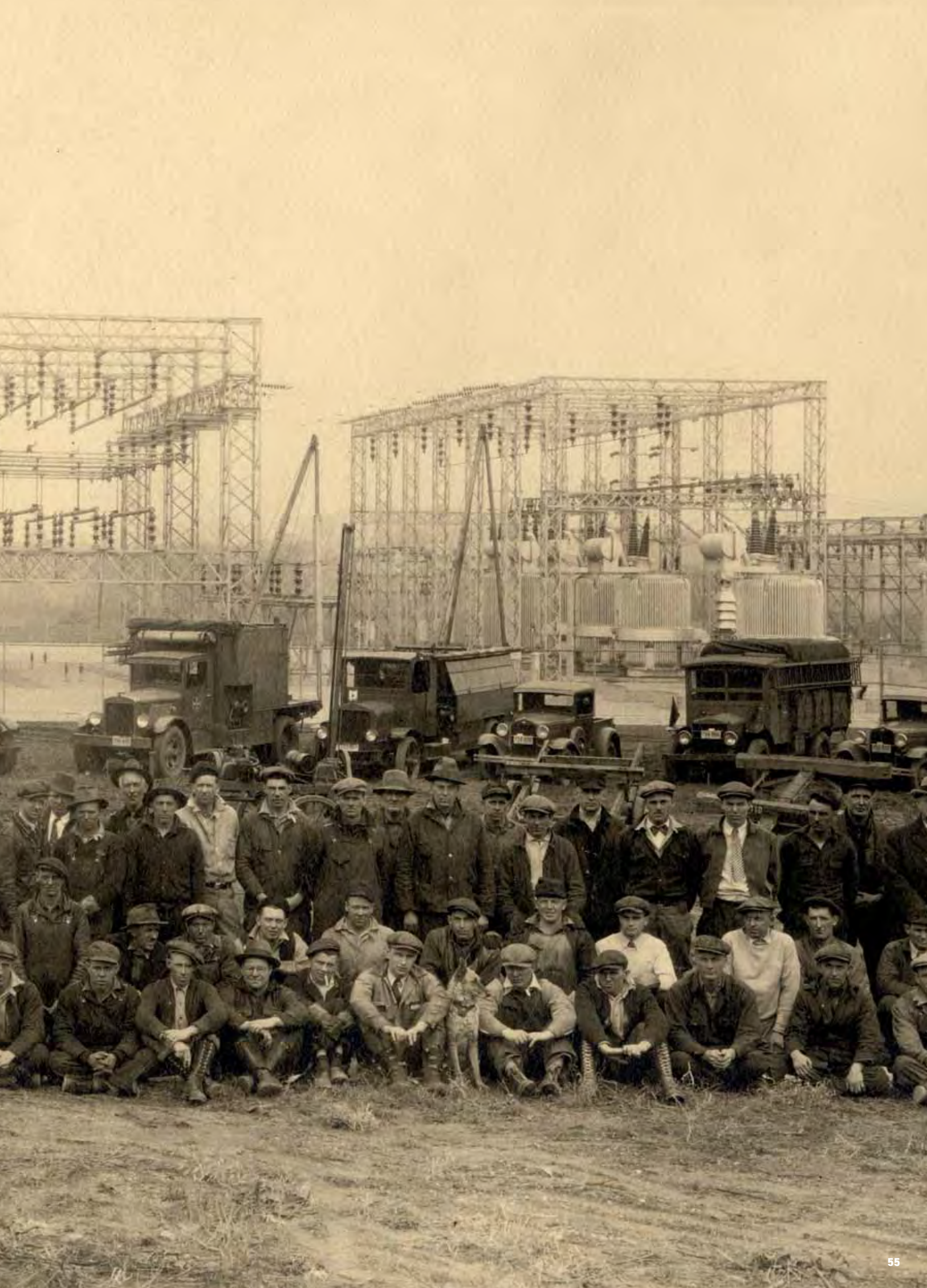
It means doing everything we can to keep complaints from arising, and it means prompt and fair handling of those that do.

We are a citizen of each community we serve and take an active part in its affairs. Like any other citizen, we want our neighbors to think well of us. Besides, it makes good business sense. We prosper only as the community prospers; so we help it thrive in every way we can.

Such is our job as we see it. We are trying to do it well and to do it better all the time.



Tidd also authored the company's creed, which still guides the work of AEP to this day.



THE BOOM OF HOUSEHOLD APPLIANCES

550,000

Number of customers: 1929

Amid continuing advances in technology during the 20th century, two especially significant social effects became clear. We gained control over light in homes and offices, independent of the time of day. And electric light brought networks of wires into homes and offices, making it relatively easy to add appliances and other machines.

1920s


Lighting


Fans


Electric Irons


Pop-Up Toasters


Washing Machines


Vacuum Cleaners


Clocks


Refrigerators


Dishwashers


Radios


Blenders


Waffle Irons


Electric Coffeepots


Hair Dryers


Hand Mixers


Electric Ranges


Electric Mixer


Popcorn Makers


Hot Water Heaters


Air Conditioners


Hi-Fi Stereos


Televisions

By 1950, the AGE system was serving more than 362,000 rural customers. Its 46,332 miles of rural lines had been built at a cost of $108 million. About 99 percent of the population was using electricity, and the remaining 1 percent had it available to them.

In 1950, AGE residential customers installed more than 63,390 electric ranges and 41,200 water heaters, establishing an all-time high in sales for these two major load-building appliances.

829,721

Number of customers: 1939

1930s

1940s

1,087,120

Number of customers: 1949

Garbage Disposals

Electric Frying Pans

1950s

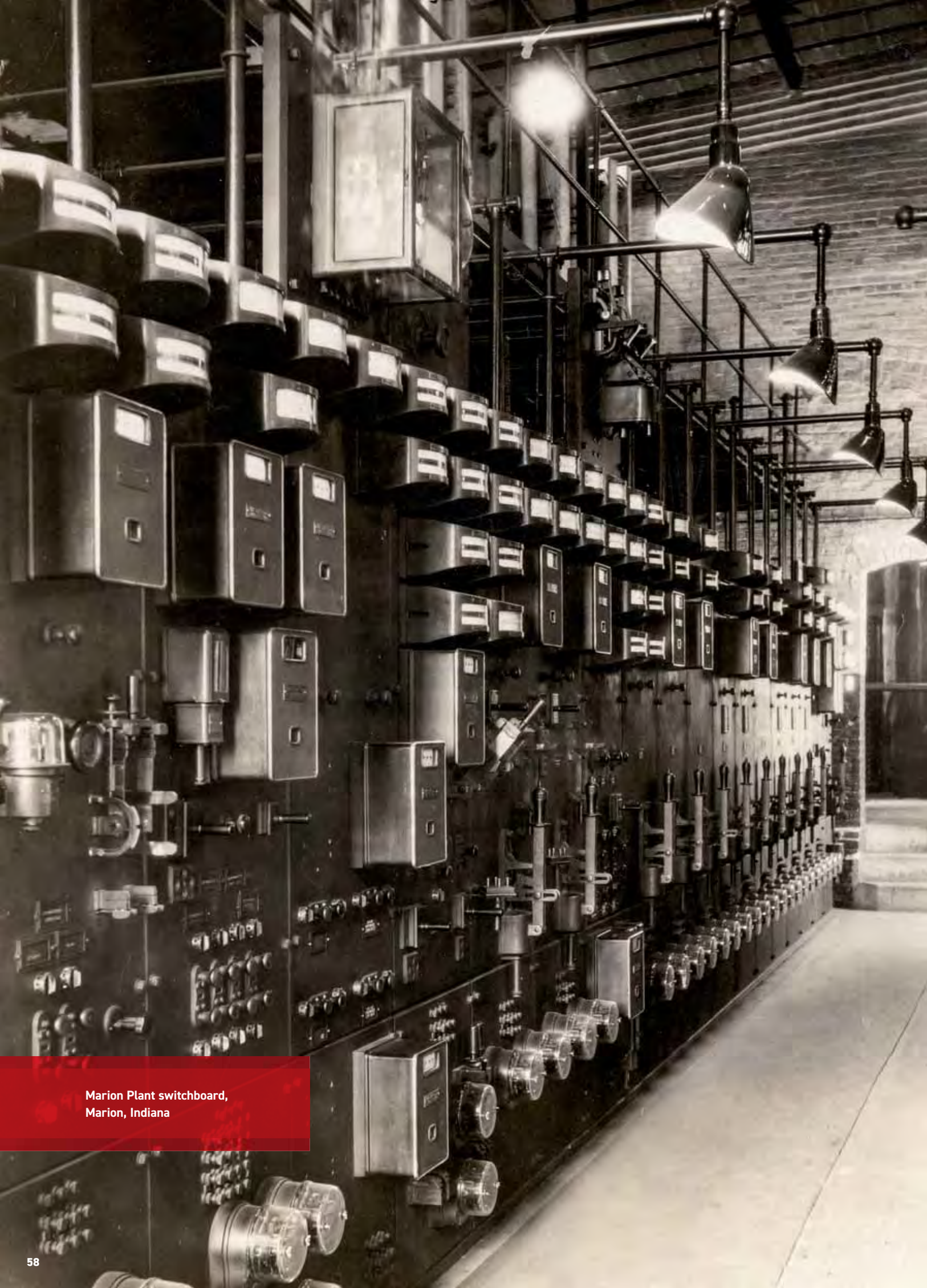
Clothes Dryers

Popcorn Makers

Can Openers

1,367,800

Number of customers: 1959



Marion Plant switchboard,
Marion, Indiana

THE CURVE OF PROGRESS

1947-1968

As World War II ended, George Tidd saw the need to pass leadership to a new generation. Having guided American Gas and Electric (AGE) for nearly 40 years, Tidd made preparations to orchestrate a smooth transition. Through two world wars and even the Great Depression, Tidd's steady leadership delivered consistent returns to shareholders. Ever since issuing its first dividend on May 1, 1907, just months after its founding, AGE had delivered regular dividends to its stockholders. Tidd arranged for the company's leadership to continue that tradition of dependability. In 1947, he passed the baton of the AGE presidency to a brilliant younger engineer he had mentored for more than two decades, a dynamic leader named Philip Sporn.

Philip Sporn inspects equipment at the plant named after him.

MYSTERY AT MARION

When Sporn joined AGE in 1920, just three years after getting his degree in electrical engineering, one of his first assignments was to travel to Marion, Indiana, and solve the problem of costly power interruptions there. Sporn approached the problem carefully, looking for a way to prevent the surges of current that were causing expensive interruptions for AGE's glass factory customers. He spent days inspecting the equipment and watching the substation operator and his wife manage the circuit switches manually. He studied the options, but it was an intractable problem: Nobody had yet created a way to throw circuit breakers automatically.

Sporn, an assiduous and energetic engineer, found a solution. But it took years. When he became AGE's chief electrical engineer in 1927, he hadn't solved the problem, but he had made headway.

Marion experienced a plateau in prosperity after the Indiana natural gas boom ended, in the years between World War I and World War II. General Motors established a new tool plant there in 1955, giving the area another boost. The glass factories remained an engine for the local economy, and the city supported its own professional sports teams and opera houses. Attending to AGE's customers there would be a long-term project.

AEP's plant in Marion, Indiana

SYSTEMATIC INVESTMENTS IN PEOPLE

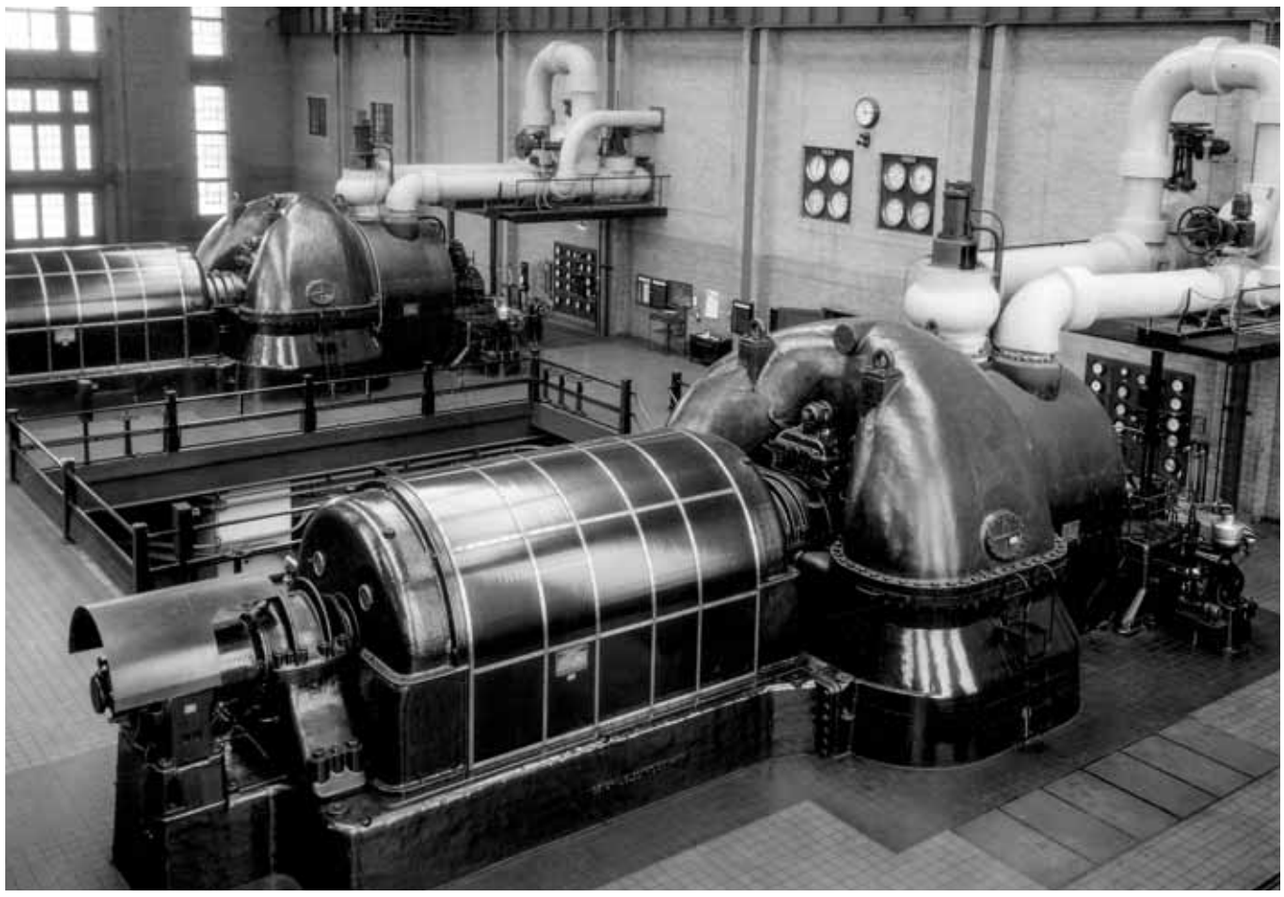
Sporn was a shining example of AGE's ambitious recruitment practices. From the first generation of businessmen and practitioners like George Tidd, the company reached out to hire the best and most innovative minds across the industry. Sporn was a thought leader who had a national reputation for solving problems and delivering customer solutions. He was a frequent contributor to scientific papers published by the American Institute of Electrical Engineers (AIEE). Over the course of his career, he produced more than 100 papers as well as 10 books.

Sporn's paper on improving the transmission system serves as a vivid example of how problem-solving became institutionalized. The paper, for which he earned AIEE's first prize in engineering practice in 1928, proposed coordinating all the components of transmission for a better result. That suggestion fed a long-term collaboration across the industry and led to the basic insulator standards accepted by the electricity industry in 1940.

AGE was investing more systematically in getting the best staff. One funnel for engineering talent was Sporn's alma mater, Columbia University's engineering department. Theodore Baumeister, a professor of mechanical engineering at Columbia, often sent his best talent to study at AGE, including John Tillinghast and John Dolan. Charles Hurme, who earned an engineering degree from New York University and later advised the Saudi ministry of electricity, started with AGE in 1930.

During the Depression, Tidd and Sporn planned for the increase in electric demand that would eventually come when America's economy recovered. In West Virginia, they prepared three hydro units in 1935 and a more efficient coal unit at Logan. Under Sporn's first AGE supervisor, chief electrical engineer Maurice Sindeband, standardization became the way to improve efficiency. Standardized specifications made the plant construction process smoother, and inventory could be systematized. Sporn took this principle further, installing turbines at Windsor, Logan and Twin Branch that shared greater capacity and specifications.

The new turbines that went into place at the western end of AGE's territory starting in 1939 signaled that the electric utility industry would look very different in postwar America. AGE was preparing to help shape a modern sector for meeting new challenges.



Twin Branch Power Plant turbine room, 1939

STIRRING IN SOUTH TEXAS

When the companies of Central and South West (CSW) went into receivership after the collapse of Samuel Insull's empire, it was a slow journey out of the Depression for affiliate Central Power and Light (CPL). Texas-born Lon C. Hill was an investment banker in Chicago who took on the challenge of leading CPL in 1939. Hill moved to Corpus Christi, where he led CPL to renewed vitality for 15 years as South Texas prospered. Although some industry analysts expected the region's growth to slow after the war ended and military bases in the region closed, Hill planned for continued growth. He approved a $45 million expansion plan to roll out from 1946 to 1950. During that time, CPL added 1,500 miles of transmission lines, growing from 69,000-volt cables to 138,000-volt lines.

The United States Unit of the Falcon Power Plant generated power for both countries across international borders.

The company's revenues rose 43 percent from $16.2 million in 1946 to $23.2 million in 1950, enabling it to repay the financing debt.

As part of the postwar boom, CPL built eight gas-fired plants to keep power generation on pace with growing demand: First, four at Nueces Bay, La Palma, Victoria and Laredo. Then, four more: the Lon C. Hill Station northwest of Corpus Christi, the J.L. Bates Station in the Rio Grande Valley, the E.S. Joslin Station on the southeast coast of Victoria and the Barney M. Davis Station south of Nueces Bay. Natural gas was cheap, and the Rio Grande Valley's agricultural industry flourished alongside the oil industry.

The region's energy was getting national attention. In 1953, a new hydropower dam was built on the U.S.-Mexico border. For the dedication ceremony in October, the presidents of both countries came to the Falcon Dam. President Dwight Eisenhower called the dam "living testimony to the understanding and the cooperation binding our two peoples," adding that "the sound of its rushing waters and spinning generators speaks of this understanding."

During his years at the helm of CPL, Hill worked tirelessly on behalf of the entire community of Corpus Christi. He championed the effort to build a harbor bridge, promoted tourism and served on fundraising committees for local charities. It was fitting that after he retired, a powerhouse station bearing his name would continue to serve South Texas.

CPL President Lon C. Hill, center right, at Laredo Power Station, 1951

The Lon C. Hill Plant, which opened in 1954

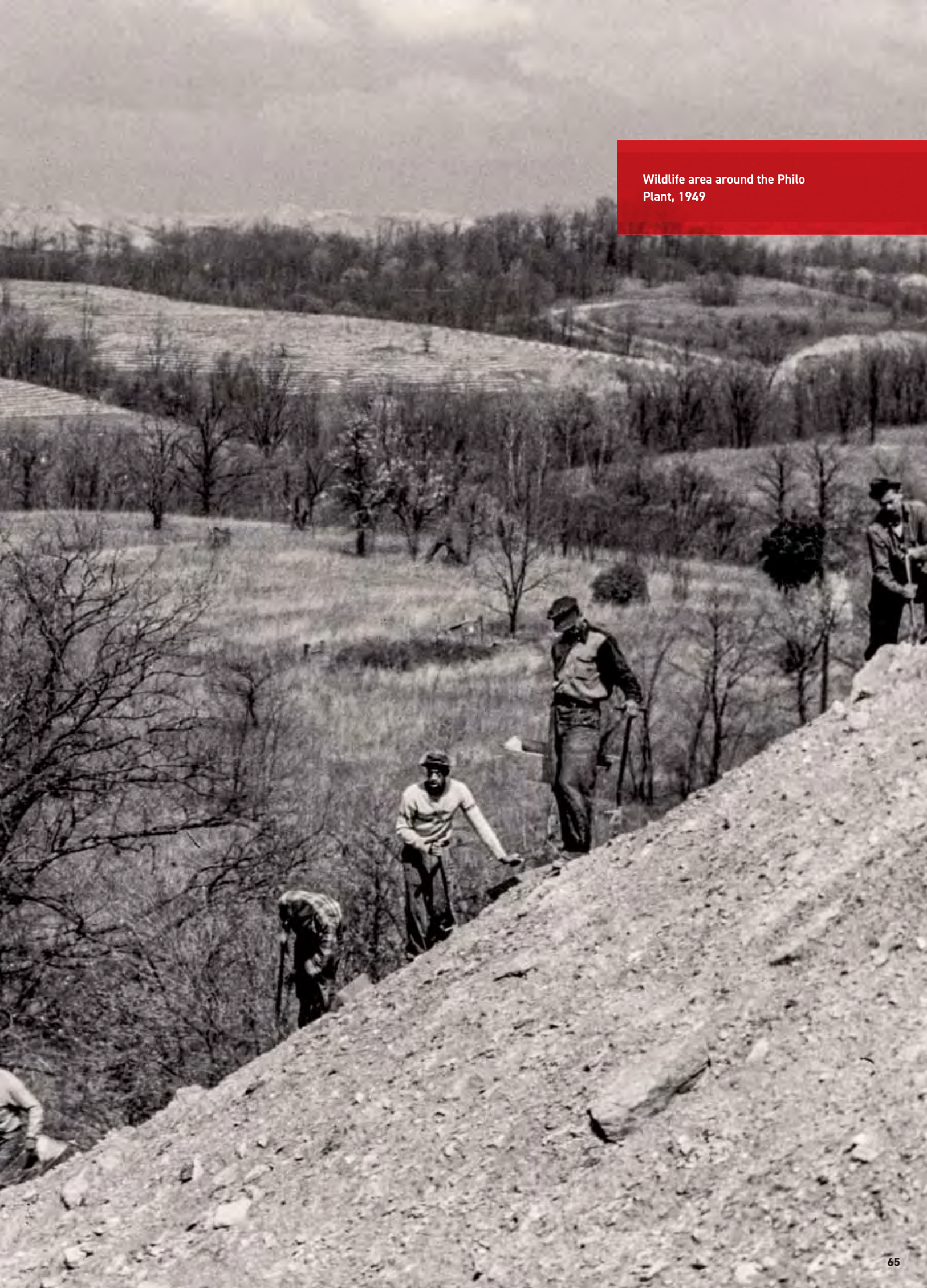
CSW workers in South Texas contended with more than a booming economy: They also faced some of America's roughest weather. As early as the Galveston hurricane of 1900, still listed among the deadliest natural disasters in U.S. history, South Texas utility workers helped customers stay connected to the grid, or recover as quickly as possible, through hurricanes and ice storms. In February 1947, a storm deposited a three-quarter-inch layer of ice on transmission lines on the far western edge of CPL's territory, forcing line technicians to work around the clock to restore power. And when a hurricane flooded the Pecos, Rio Grande and Devil's Rivers in a single evening in 1954, it caused tremendous damage, inundating four CPL plants, severing CPL's connection with West Texas Utilities Company, and destroying miles of CPL's 138,000-volt transmission lines. Fortunately, the Lon C. Hill Station, which had come online two months before, provided most CPL customers with power throughout the week's crisis, without interruption.

COMMITTING EARLY TO LAND RECLAMATION IN OHIO

Obtaining fuel for the generators had always been a crucial part of running a power plant. For decades, each coal-fired plant bought its own coal supply. In 1942, though, George Tidd announced that AGE had bought coal land in Muskingum County, Ohio, for the purpose of surface mining and shipping coal to the Philo Plant. A larger mine soon opened east of Philo, also run by Ohio Power. And in 1945, after surface mining for only a year, the company began a program of land reclamation — restoring the land and surface vegetation to close to its natural state. The company started doing this 27 years before the Ohio mining code required it and 32 years before a similar federal regulation applied.

The practice started at AGE because workers cared about the environment. John Reiser worked in Ohio Power's Real Estate and Right-of-Way Department in the 1940s. His job often had him on the road buying coal lands for the company's fuel needs. After seeing many lands left barren by companies' surface mining operations, Reiser vowed that would not happen to the lands in his jurisdiction for Ohio Power. His coworker Chuck Keffler recalled, "John and I sat down at a hotel in Zanesville one night — it was just up the street from the old Rogge Hotel, but worse than the Rogge — and over a few drinks, we developed a reclamation program. We were going to plant trees. In fact, John already had planted a few."

Land reclamation



Wildlife area around the Philo Plant, 1949

Reiser approached his supervisors with the idea they had hatched, of restoring surfaced-mined land to its natural condition and replanting trees to hold the soil. The practice would prevent the sedimentation of the Ohio River's tributaries and would help restore the health of the ecosystem. It was for the most part uncharted territory, but he persuaded Ohio Power's vice president and general manager, Harold Turner, to give it a try.

"We went to different foresters and even some farmers throughout the state, to anybody who knew anything about growing trees," Keffler said. "Later, we used foresters to develop a plan for the planting of different species." In a three-phase planting scheme that mirrored nature, fast-growing locusts and alders would provide initial stabilization and shade for slower-growing hardwoods like sycamore and cottonwood, and even slower species of oak, ash, black walnut and poplar. Small lakes were added in some places, and fishing stock was added by the state's Department of Natural Resources.

New growth on land formerly mined by AEP

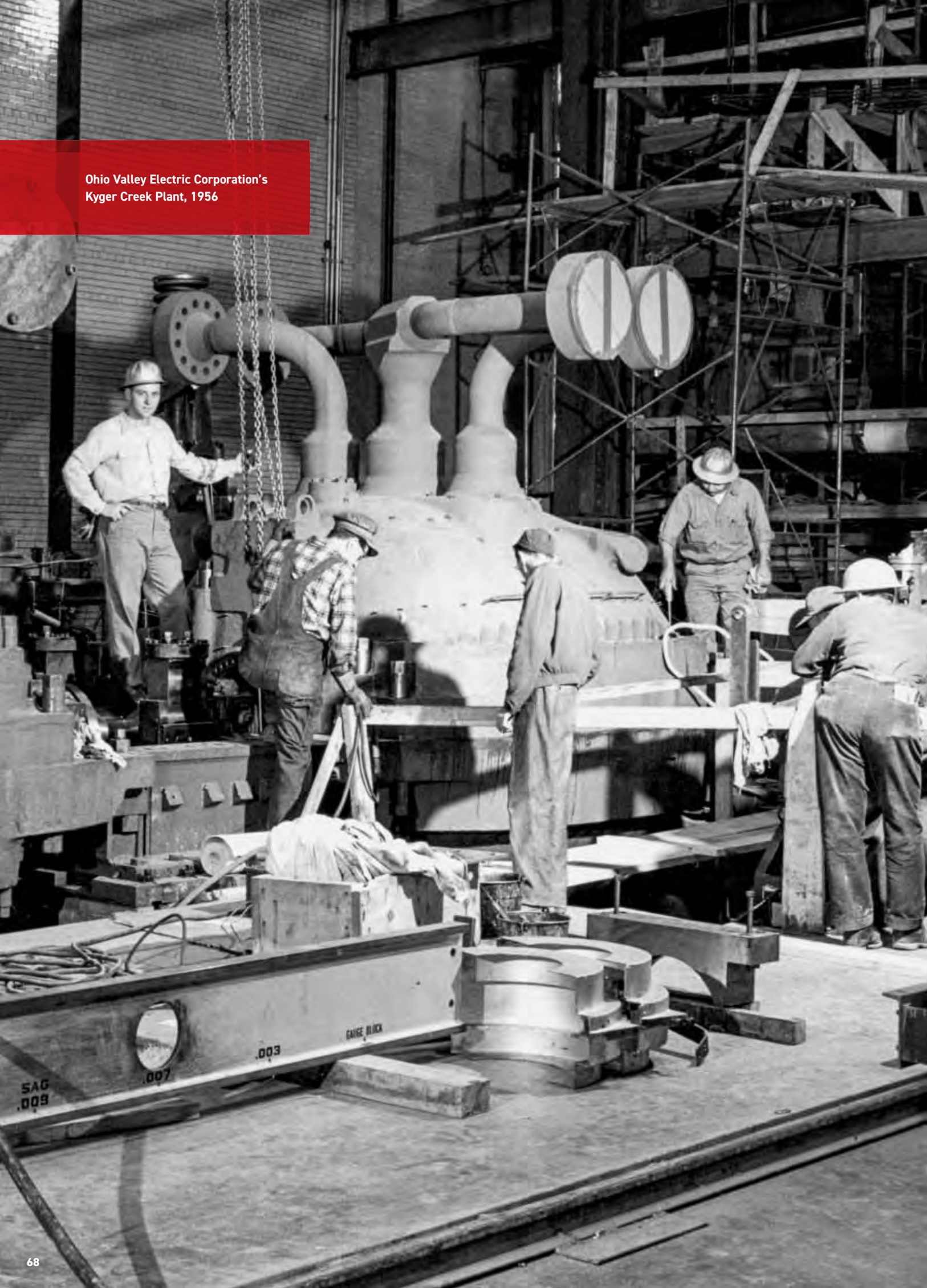
AGE started a recreation program. "Eventually, we held an annual tour for foresters and conservation groups," Keffler said. "We'd bring them in and show them what we were doing and get their ideas on what else we could do to improve it … the thing just snowballed."

Central Ohio Coal became a nationally recognized example of land stewardship.

Ohio Power created a public park in the decade after Reiser's first reclamation efforts, with sites for camping and fishing. The state stocked the lakes with bass, pickerel, muskellunge, bluegill and other fish. In the 1960s, the park sites numbered 14. Reiser retired in 1967.

A 1948 seedling had grown into a 28-inch-diameter tree by 1980.

One of several lakes created in the restored area



Ohio Valley Electric Corporation's
Kyger Creek Plant, 1956

Philo Unit 6

William Corbitt described the breathtaking advances with a space-age analogy: "For its day, Philo 6 was like flying to the moon without taking the intermediate steps of first orbiting the Earth and then sending up an unmanned space ship."

"If you ever see a steam pipe carry 1,150 degree Fahrenheit steam, it's glowing cherry red," said Dick Pawliger, AGE manager for mechanical engineering. "You get a feel for the amount of energy that the stuff flowing in the pipe contains."

The true breakthrough was that the plant achieved a thermal efficiency of 40 percent, more than one-third more efficient than its peers. (Thermal efficiency of a heat engine is the energy it produces divided by the heat energy supplied to it.) To put that in historical context, Edison's Pearl Street Station had a thermal efficiency of just 2.5 percent. Average unit efficiency in the mid-1950s was 30 percent.

Remarkably, Philo's tandem-compound machine occupied the same footprint as the unit that it replaced — more than twice as much generating capacity in the same space. Shortly before the company adopted its new name, American Electric Power, it had a state-of-the-art facility that it had coaxed out of the leading makers of power equipment with its constant urging for improvement. In that sense, Philo Unit 6 marked a high point for the industry, shared with peers General Electric and Babcock & Wilcox.

At a time when America felt challenged by the Soviet Sputnik satellite to raise the bar in science and technology, Americans could point to their electric power providers for reassurance that at least in some areas, the country had no peer in technology achievements.

At the same location where AGE had made history with the Philo Plant in 1924, the company achieved a stunning technology breakthrough in 1957: a turbine generator with a capacity of 107,000 kilowatts. The turbine marked a threefold advance of power technology:

Philo Plant Firsts

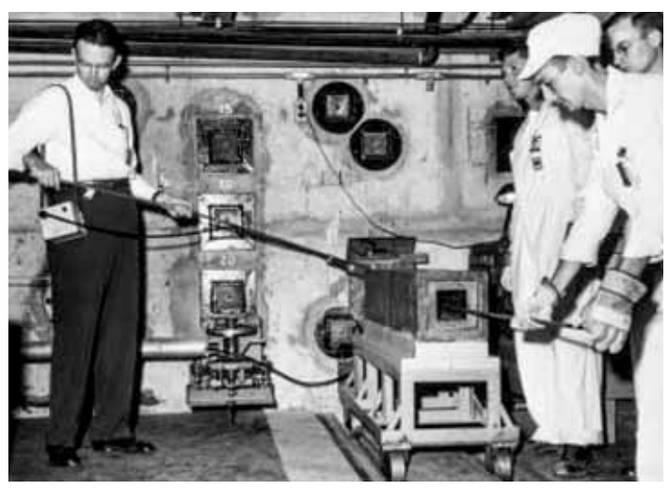
First use of steam at 4,500 pounds per square inch (psi), more than 1,200 psi above the critical pressure barrier

First use of steam at 1,150 degrees Fahrenheit (followed by first reheat at 1,050 degrees and second reheat at 1,000 degrees)

First use of steam at 1,150 degrees

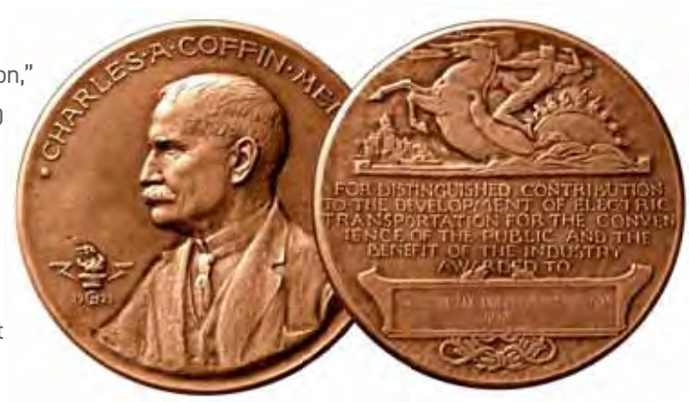
A NUCLEAR AGE

After World War II, the government set about harnessing nuclear power for civilian rather than military purposes, starting with electric power. The new Atomic Energy Commission made plans to build three gaseous-diffusion plants. One would be in the Tennessee Valley Authority's territory at Oak Ridge, Tennessee. The TVA would also provide half the power for a second plant, in Paducah, Kentucky. The third location was targeted in AGE's area, farther east on the Ohio River. This struck Sporn as an opportunity for the private sector, not another federal initiative. "Sporn took the position that this is our territory. We'll do it, and we'll do it well," said John Tillinghast. A consortium of utilities formed as the Ohio Valley Electric Corporation (OVEC) would tackle the challenge of providing 16 billion kilowatts a year, more than the energy then consumed by New York City. The plan was to build two plants: one at Kyger Creek and another, under Indiana-Kentucky Electric Company (IKEC), at Clifty Creek. Together, the plants would bring a massive capacity online. Under Sporn's leadership, the plan went forward: five generators at Cheshire, Ohio, and six units at Madison, Indiana, each cranking out 200 megawatts. All units had to be completed within three years.



The Philo Plant in the 1950s

The operation challenged even the powerful postwar machine of AGE. "At the height of construction," William Corbitt wrote in *And There Was Light,* "3,000 workmen were on the job at the Indiana site, 2,400 at the Ohio site. All told, they excavated or moved more than eight million cubic yards of earth, poured almost 440,000 cubic yards of concrete, and erected 33,000 tons of structural steel." AGE accomplished the titanic feat ahead of time and under budget.

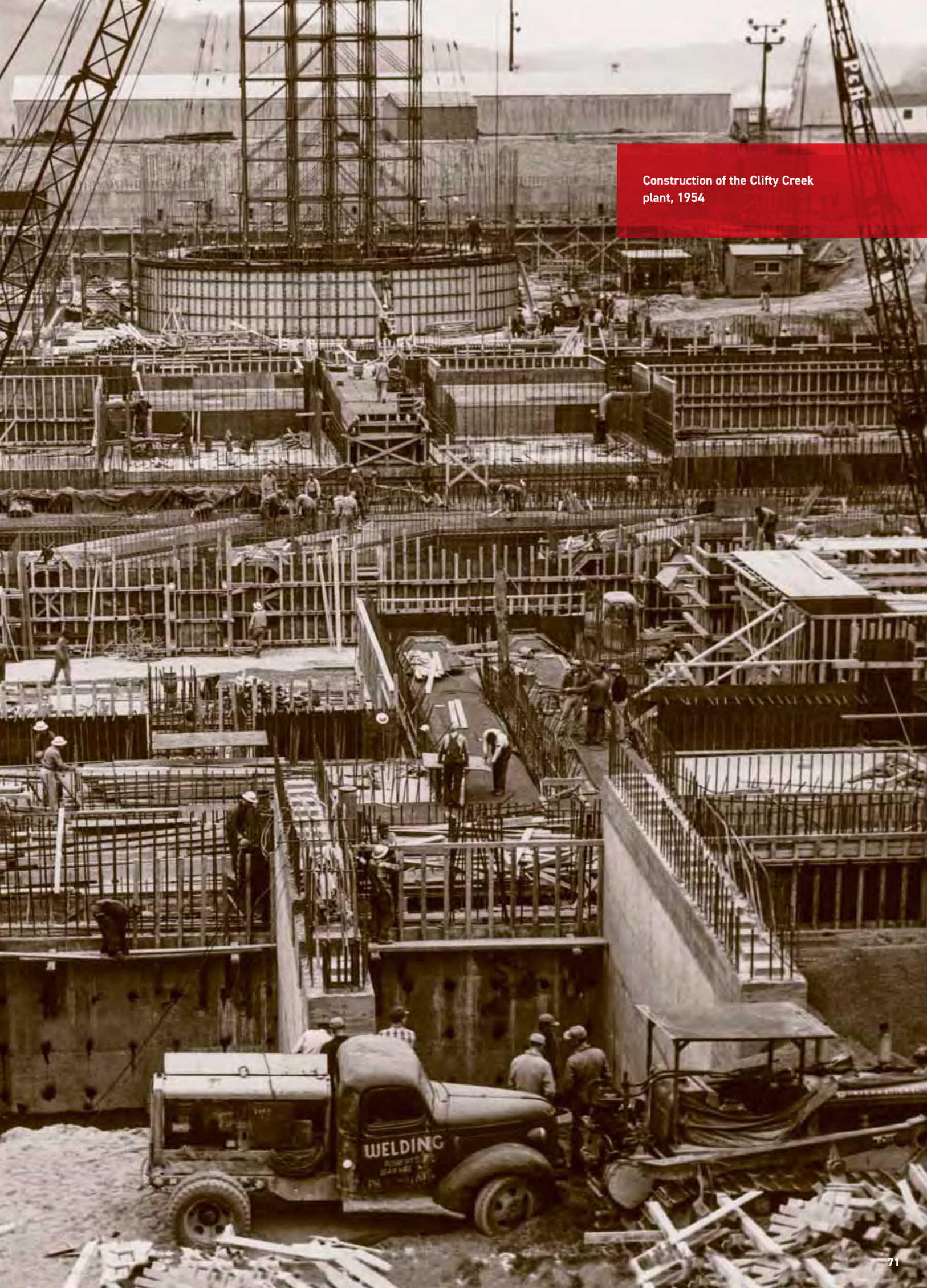


The Charles A. Coffin Award

In recognition of this accomplishment, AGE received the industry's highest award, the Coffin Award, in 1957. "This was not accomplished by the American Gas and Electric Company," Sporn said when he accepted the award. "It was accomplished by 15 great utility organizations and their people."

It was the second Coffin Award AGE had received in just three years. After the first, AGE dedicated the $1,000 prize to endow an education trust fund for children of its employees. In the first year's disbursement in 1955, the company gave the $500 award to John Winesdorfer, whose father had worked for Wheeling Electric for many years. Winesdorfer used the scholarship to study at Kenyon College and went on to a teaching career at Olympic College in Washington. As of mid-2017, the AEP Educational Trust Scholarship had made 1,953 awards for a cumulative $8.85 million investment in the future of its working families.

During Sporn's tenure as president, AEP won the coveted Coffin Award (now the Edison Award) for the year's outstanding job by an electric utility. Above, Sporn, at right, accepts the award in 1954.



Construction of the Clifty Creek plant, 1954

Construction at the Michigan plant that would eventually be named after Donald C. Cook, who became president of AEP in 1961

AN ECONOMIC DRIVER

Philip Sporn was pioneering partnerships in technology production and deployment that made for phenomenal growth in the 1950s. And he had a vision that along with growing plant capacity and transmission, the company could fuel economic growth for the entire Ohio Valley region. With that, he made an economic case with the new aluminum industry, which was heavily invested in the hydropower facilities of the Pacific Northwest. Sporn proposed that AGE could meet the significant power demands required for aluminum manufacturing at a competitive price, using generators closer to their East Coast customers. "In effect what we are trying to do is speed up the tempo of development of the upper Ohio Valley," Sporn wrote in his monthly letter to staff in July 1955.

It was only a matter of time before the company entered nuclear power production. AGE sent staff to learn about nuclear engineering at the Oak Ridge School of Reactor Technology as early as 1952. While the company was deeply involved in providing power for nuclear research and development, it held off on starting its own nuclear project until 1966. The main reason involved waiting for nuclear technology to be economically competitive with coal in the company's region. Even in the 1960s, the economics were not as attractive as Sporn and company had hoped, but as world leaders in power generation, they embarked on nuclear energy as a point of pride.

"Atomic power that can take its place in the marketplace and meet the test of economics," Sporn said, "is not likely to be here for some time, [but] that does not mean that a great deal of work is not going on to help develop it."

By that point, many of the largest U.S. utilities had already entered the nuclear field. Not until December 15, 1966, would American Electric Power, formerly AGE, announce it was soliciting bids for "a major nuclear power plant in southwestern Michigan on the shore of Lake Michigan." Estimated price tag: $130 million.

Positioning of nuclear reactor at Cook Plant

In 1955, Public Service Company of Oklahoma founded the Transok Pipeline Company, which constructed a 142-mile natural gas pipeline.

POWER AND GAS

In the decades after World War II, CSW, too, grew in new directions. The company was building on its roots, boosting its capacity for transmission and generation using cheap natural gas, and trying to keep up with unprecedented demand. Its residential customers nearly doubled in a decade, from 366,000 in 1947 to over 600,000 in the mid-1950s.

CSW had recovered from the collapse of the Insull empire and the Middle West Corporation. A reorganized CSW chose as its new president Frank Kruesi, who had managed Middle West properties (Wisconsin, Nebraska and the Dakotas) before the war. Kruesi made his headquarters in Texarkana, close to the locus of demand, where he could focus on growing the transmission and generation interconnections across CSW.

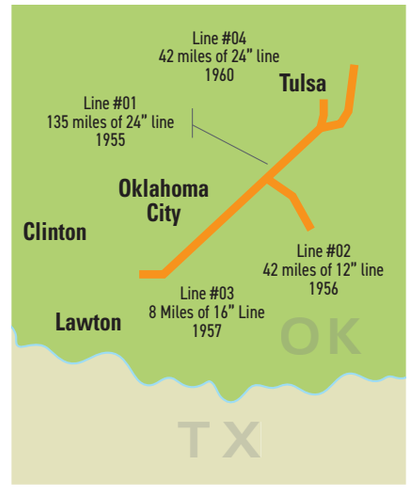
Renovated Corpus Christi Plant

CPL in southern Texas had an office and power plant in Corpus Christi since 1922, located downtown on North Chaparral, a few blocks from the Gulf of Mexico. An ice plant toward the back of the site reminded visitors of the days when industrial ice was part of the corporate identity. By the mid-1950s, it was time for a renovation that reflected its new identity and new opportunities.

CSW found its territory awash in inexpensive natural gas, and it capitalized on its access to the resource for power generation.

Then, when gas prices started to rise, CSW companies began securing future affordability with 20-year gas contracts. It was a prescient move. During the fuel crisis of the 1970s, those contracts more than paid for themselves. CSW also purchased the gas pipeline company Transok, thus acquiring another business with a profitable track record. Transok's 227-mile pipeline had made nearly $350,000 the previous year, and its capitalization now topped $19 million.

CSW established a reputation for financial success. Besides investing in the growth of the company's generation and transmission capacity, CEO John Osborne continued its steady dividends performance. CSW had instituted quarterly dividends in 1948 (previously semiannual) and total dividends grew from $0.75 for the year 1948 to $1.70 a decade later, without interruption.



Transok system map

NEW NAMES AND PLACES

In 1958, AGE sold more electric power than any investor-owned utility in history. That year, its shareholders voted to change the name to American Electric Power Company (AEP). Philip Sporn said the old name misrepresented the company's work and focus: The company had not sold gas since the 1920s. What the company should be known for "are the achievements that it has made in the field of power generation, transmission, distribution and utilization, and in the highly successful administration of its affairs from the shareowners' and the employees' points of view," Sporn said. "We, under the new name, are the direct and legitimate inheritors of all that tradition."

On September 30, 1958, AEP announced it would move its headquarters from Church Street to a new building at 2 Broadway, a half-mile south, which Sporn called a "strikingly handsome building." The new office represented design innovation, the world's largest building to use curtain-wall construction. This was the first move of its headquarters in five decades. The old headquarters would soon become part of the footprint of the World Trade Center.

Sporn wanted the new home to be a vessel where the company would be strong and have strong leadership. In 1961, he passed the torch to Donald Cook, a brilliant lawyer and financial expert, who became AEP's president. In a canny business move, Sporn had enlisted Cook to join the company eight years before. Cook, as chairman of the Securities and Exchange Commission, was responsible for enforcing the law that had changed the landscape for utility holding companies. Future President Lyndon Johnson, who had met Cook in 1942 and called him "the smartest man in government," was the one who persuaded Cook to take the job with AEP in 1953. Now the company had a savvy business leader to complement Sporn's engineering expertise.

Donald C. Cook and future U.S. President Lyndon Johnson

NORTHEASTERN BLACKOUT EFFECTS

On November 9, 1965, a small relay in the power system of the Ontario Hydro Commission at Niagara Falls malfunctioned on a cold night when power demand was high. By shutting the Niagara Falls plant off from its network, the malfunction pushed 1.1 million kilowatts into the network in upstate New York. The massive inrush of power tripped circuits across New England and southern New York. Within 15 minutes, 30 million people in eight states and Ontario lost power. It was the largest blackout in American history up to that point.

The starkest images came from New York City, where the front page of *The New York Times* carried a photograph of the city skyline in black silhouette. The triple-stacked headline cried, "Power Failure Snarls Northeast; 800,000 Are Caught in Subways Here; Autos Tied Up, City Gropes in Dark." Although parts of Brooklyn had power restored by 11:00 p.m., the city didn't return to normal till the next morning.


The New York Times.

POWER FAILURE SNARLS NORTHEAST; 800,000 ARE CAUGHT IN SUBWAYS HERE; AUTOS TIED UP, CITY GROPES IN DARK

The blackout did not affect AEP or its customers directly — not one of the AEP system's lines went dark. But indirectly, AEP had to face the public loss of confidence in the electric grid. Cook acted quickly to reassure customers, shareholders and staff that the company's network was safe and secure. While on one hand the blackout had little to do with AEP (in fact, it demonstrated by contrast the stability of AEP's network), it exposed a regional blind spot. Cook sent company representatives to each of the state capitals, where they worked to explain how AEP's system prevented such outages.

Sporn, still active although no longer president of the company, took a hard look at AEP's vulnerabilities to adjacent networks in the interconnected system. In May 1966, he called a meeting of the CEOs of almost every power company in the eastern and central states adjoining AEP's territory. With fresh eyes on the entire national grid, Sporn urged his peers to coordinate their planning and operation schedules for power generation and transmission. He also recommended they agree on certain technical standards across systems. These changes would ensure reliability and quality performance for customers and the public. The meeting culminated in the East Central Area Reliability Coordination Agreement (ECAR), a coalition of 26 power supply leaders.

In the wake of the 1965 blackout, AEP confirmed the resilience of its equipment and staff and demonstrated how the company stood out from its peers.

TRANSMISSION NETWORK VARIATIONS

Throughout the regions where AGE and CSW teams worked, the landscape for power transmission evolved. The discovery of rich gas fields under the southwestern territory prompted other transport issues. When the gas-fired Tulsa Power Station planned to quadruple its capacity in the early 1950s, the Public Service Company of Oklahoma (PSO) looked for ways to stabilize its fuel supply. The company had the option to build and operate its own gas pipeline or find an independent party to finance, build and operate a pipeline. After geological studies and financial assessments, the company decided to outsource the job to an experienced Tulsa partner, Transok Pipeline Company, which it later acquired. Transok became so successful that it soon was building supply lines to three more PSO power stations in Oklahoma: Weleetka, Southwestern and Northeastern.

Coal pile at the Tulsa Power Station

Between 1948 and 1968, CSW increased its capacity nearly tenfold, from 508 megawatts to 4,960 megawatts. New plants came online nearly every year, and new transmission solutions had to follow, with larger and larger transformers and higher-voltage lines. The widely scattered communities across the territories of CPL and West Texas Utility were finally connected. By 1953, the company was allocating more money to transmission than to new generation. In 1950, the first 138,000-volt line went up, between Pleasanton and Victoria. By 1957, PSO was installing two more lines, creating a transmission loop around Tulsa and improving reliability with double feeds. If bad weather took out one line, a second line took up the load to prevent interruption of service.

In the 1960s, CSW line workers used new equipment, from hydraulic bucket trucks to fiberglass hot sticks. Corpus Christi and Laredo were the first two cities in the CPL system to get underground lines. The operating companies encouraged suburban developments to install underground lines also, and they integrated distribution equipment in environmentally and aesthetically pleasing solutions. Substations were fenced, landscaped and painted so that they blended into their surroundings, and streetlights were upgraded.

A 138,000-volt transmission line in PSO territory

The Donald C. Cook Plant,
Bridgman, Michigan

BOOSTING THE POWER AGAIN

In 1966, AEP, too, was gearing up for the greater power demands of modern American life, with the first of three landmark changes. First, it introduced a new series of dramatically more powerful 800,000-kilowatt plants. Then, it unveiled the world's highest-voltage network for transmission.

Finally, Cook announced in 1968 the plans for AEP's first nuclear plant, to be located on the shore of Lake Michigan. Indiana & Michigan Electric would build and own the plant, located near Bridgman, Michigan, and covering 650 acres. Meticulously planned, the plant was designed for a capacity of 2.2 million kilowatts — one of the largest in America. The plant design called for two units: The first pressurized-water reactor would come online in 1972, and the second unit a year later. Cook explained that the design marked another first: the debut of an ice condenser reactor containment system. Using nuclear fuel at the new plant would save roughly $4.8 million a year compared to the cost of coal delivered to the site. And the plant would provide power to the AEP network via brand new 765,000-volt transmission lines.

There would be delays, caused especially by the financial crunch of 1974 and its effects. And the 1974 crisis brought a reassessment, with accelerated work on Unit 1 completed so it could start generating power, and work on Unit 2 suspended until "better times." Ultimately, Unit 1 began producing power in 1975, bearing Cook's name. The second unit came online in 1978. The facility included the Donald C. Cook Nuclear Center, with educational exhibits and resources that drew hundreds of thousands of visitors every year.

Meanwhile, two Ohio utilities, Cincinnati Gas & Electric (CG&E) and Columbus and Southern, launched their own joint venture in nuclear power, independently. The plant on the Ohio River at Moscow would generate 800,000 kilowatts and was expected to come online in 1975. Occupying a narrow, wedge-shaped footprint, it would be named for CG&E's then-president, William H. Zimmer. The design allowed the prospect of making the plant a two-unit facility. The Ohio operating companies were hesitant to make such a big commitment to a technology that was still proving itself, but ultimately the project launched, and the companies entered the era of nuclear power. Although AEP was not yet involved, the Zimmer Plant would provide a memorable chapter to its own history.

Construction of the William H. Zimmer Plant, Moscow, Ohio

Home Service Departments: New Heights of Customer Service

World War II brought tremendous changes in the utility landscape of the American Southwest. Military bases grew fast, boosting electric power usage. At the same time, wartime reallocation of resources from the private sector to defense meant that civilian businesses and communities had to make do with less: Families had to stretch a tank of gasoline further, tire rubber was rationed so that the defense industry could meet production quotas for bomber planes and tanks, and record collections were recycled for their shellac. Even shoes were in short supply. With the United States serving as the "arsenal of democracy" for the Allied cause, U.S. industry was producing to save the world. That caused a strain on the families and businesses back home. At CSW's operating companies, teams of women in the Home Service Departments advised customers on power solutions to these issues. Across the Southwest, the home economists provided a helpful hand, advising young mothers who had to make smaller quantities of meat, milk, cheese and sugar last through the month.

CPL created in 1929 the first Home Service office, led by Leola Seastrunk. The office sent teams of home economists out to help customers "in the selection, care and operation of their electric appliances." Seastrunk, a former instructor at Simmons University in Abilene, oversaw classes in home management and cooking in addition to individual consultations. Schools invited CPL Home Service instructors to lecture science classes on "electricity in the home, electric cookery, refrigeration, and correct and decorative lighting."

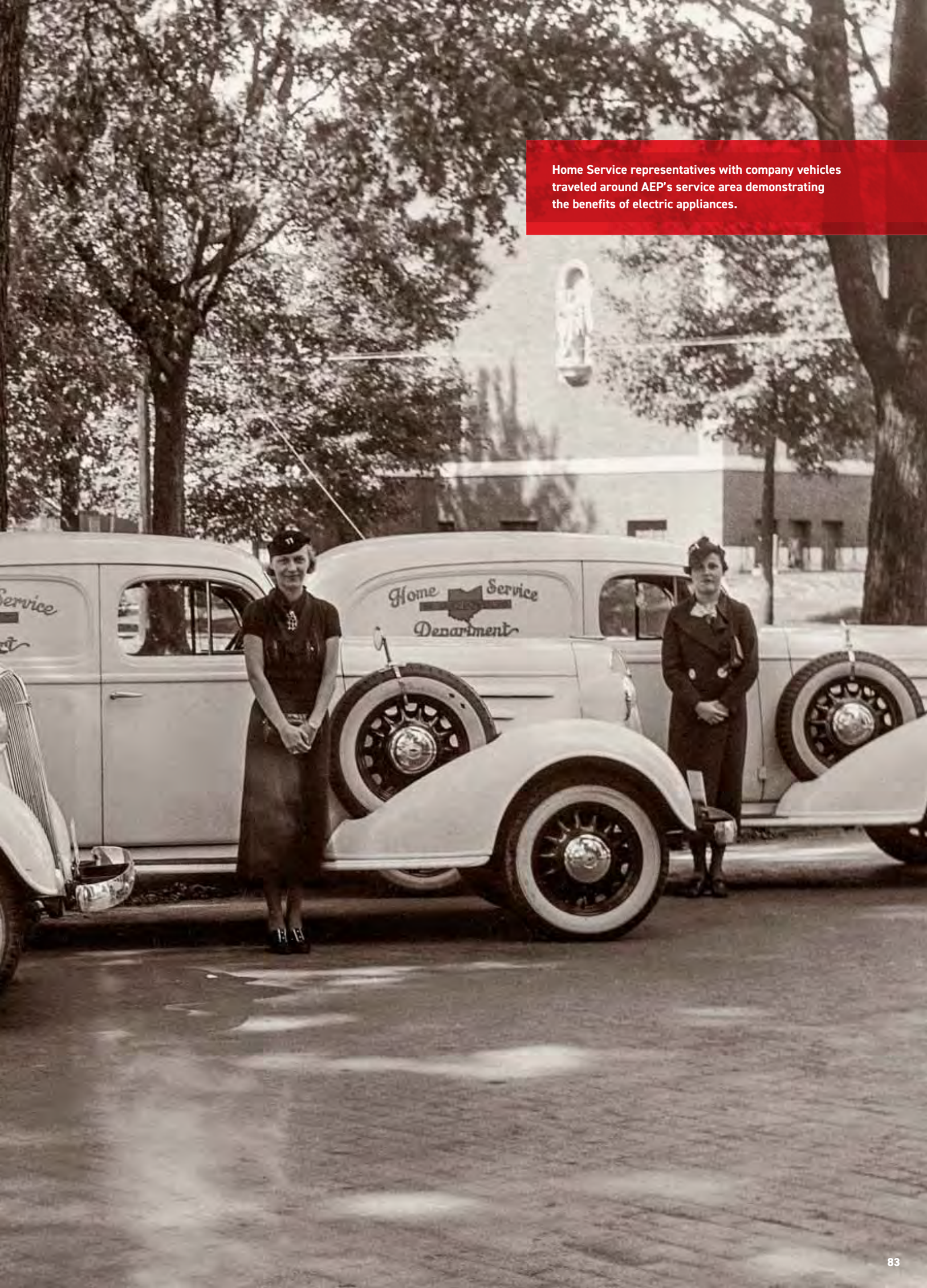
Electric kitchen demonstration, Public Service Company of Oklahoma

Over a decade later, when Texas communities were adapting to the war effort, the Home Service teams faced new questions. How do you keep old appliances working well when war shortages made replacement purchases impossible? The instructors also led Red Cross and Civilian Defense programs on nutrition and health, teaching homemakers how to prepare delicious meals that didn't use ingredients rationed by the government. In Tulsa, the Home Service Department set up a snack bar for the new military units stationed in Oklahoma, providing energy for crews that stopped in Tulsa to refuel on cross-country flights.

CSW Home Service Department on KO TV Channel 6 in Oklahoma

In the 1950s, Home Service Departments shifted for a new era, helping customers learn how to use their new appliances. In rural communities, farmers were adopting technologies like infrared heated growing beds for nurturing young chicks, and homes were accommodating dishwashers, cooking ranges, dryers, freezers and televisions. (Dishwashers became especially popular around Christmas and Mother's Day.) The home economics teams gave demonstrations of these wonders at county fairs and appliance showrooms, offering everything from tips on how to remove a tough stain in clothes to the latest delicious hamburger recipe.


Service
Department.
Home



Home Service representatives with company vehicles traveled around AEP's service area demonstrating the benefits of electric appliances.

Philip Sporn, Engineering Polymath

Philip Sporn

The career of Philip Sporn spanned eras and continents. Having started at AEP under the leadership of George Tidd and Richard Breed, Sporn took the company's engineering expertise from electricity's first generation to nuclear generation. Born in Austria in November 1896, Sporn and his family immigrated to the United States in 1906, the year that AGE incorporated. Although he spoke no English when they arrived in America, he was fluent and accomplished by the time he graduated from high school seven years later. He received an electrical engineering degree from Columbia University in 1917. When he joined AGE in 1920, he was sent to Marion to fix the power interruptions that Marion's glass factory customers were experiencing. Sporn saw that the manual switching of lines common at AGE plants was costing the company money. He determined that the plants needed to accelerate communications about circuit problems and devised a relay system to make a circuit breaker respond immediately.

> **"Sporn has developed Edison's industry with the same enthusiasm with which the inventor began it."**
>
> Associated Press

Harold Scherer, later an AEP senior vice president, called Sporn an industry giant. He said Sporn "built a tradition of 'inventing the future,' taking chances. He had the first supercritical boilers in operation, the first 345-kilovolt [lines] in the United States, the first 765-kilovolt."

Sporn had close relationships with many innovators across the industry. When a new design for a circuit breaker, boiler or turbine generator became available, he quickly secured it for the company.

Sporn read voraciously. "Bookshelves lined the walls of the living room from floor to ceiling" in his homes in New York and Connecticut, as well as "in the hallways, in the bathrooms, in the closets."

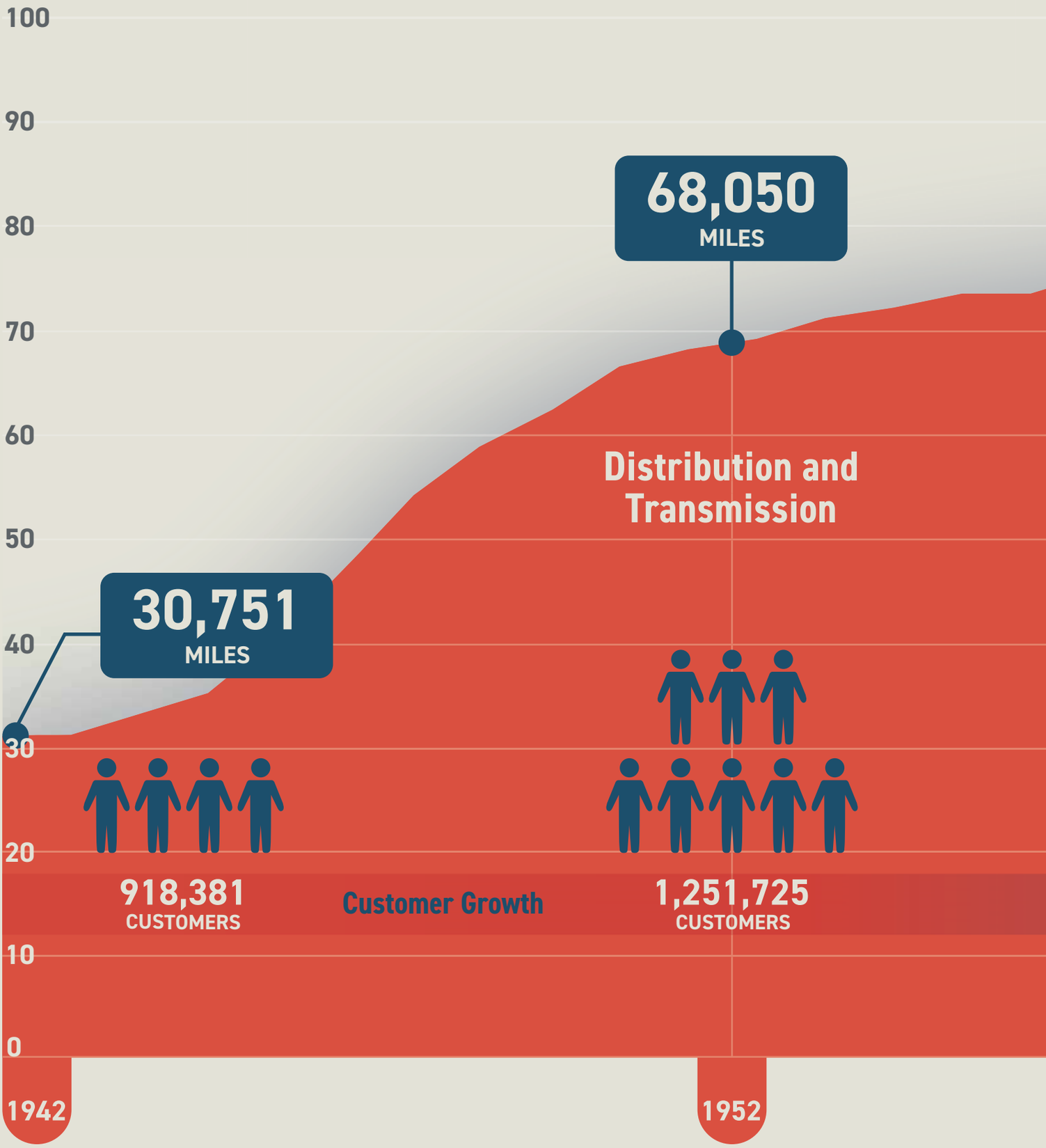
"I learned a lot from him how to get things done," said Charles Hurme, who was Sporn's assistant for some time. People had stories of Sporn's high standards, his energy and his dynamism. "He was a multitasker to say the least," said Gerald Maloney, senior vice president and secretary of AEP's Board of Directors. During meal service on a business flight, Sporn would have the tray table cleared as soon as he finished eating so he could use it as a work surface. "And as soon as the plane hit the ground, he was up and moving toward the exit," Maloney said. "There was no time to waste, and he was totally focused on what he was doing."

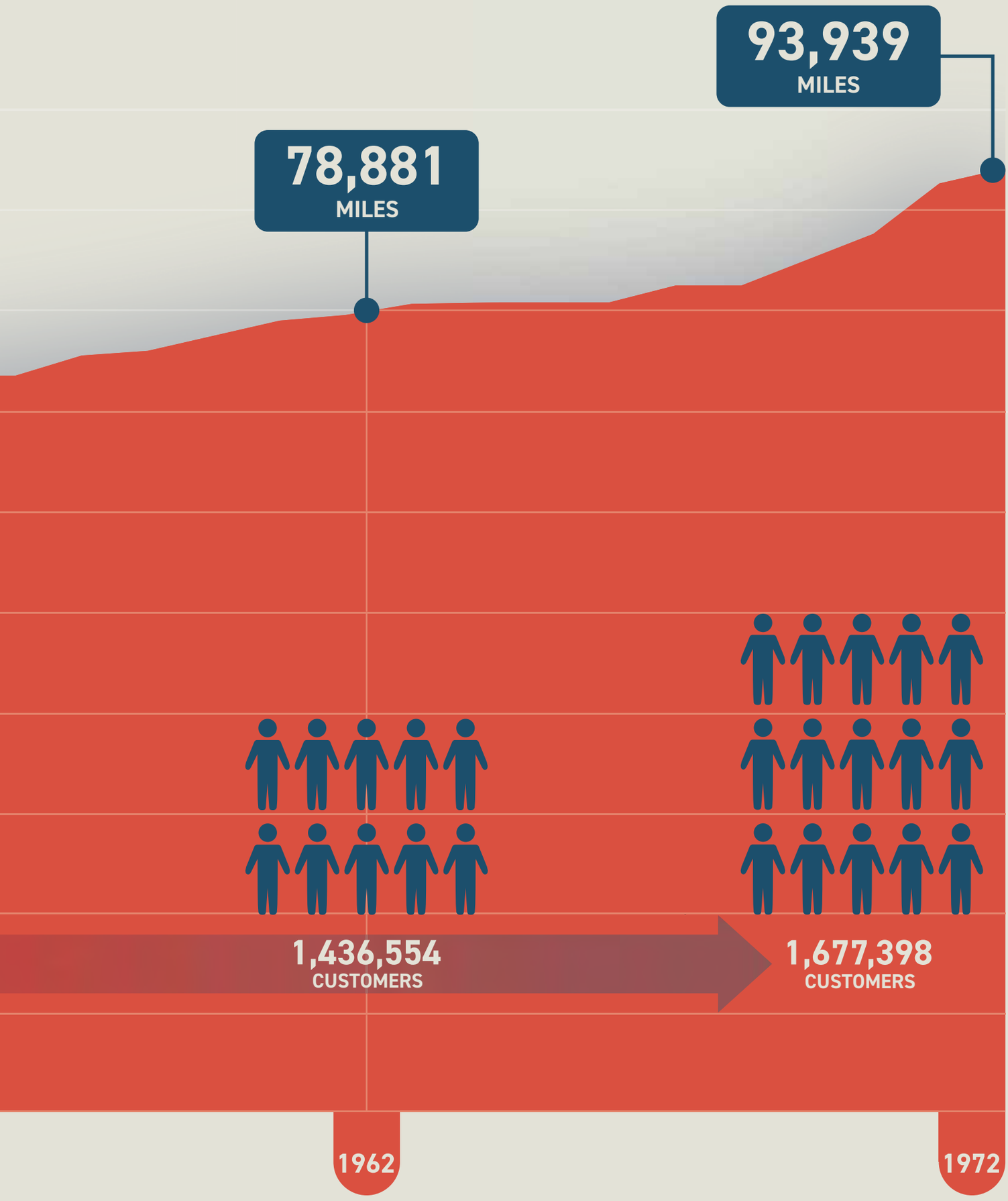
Sporn was driven by a desire to do more than improve AGE as a company. He wanted to optimize the entire electric industry. As The Associated Press once reported, "Sporn has developed Edison's industry with the same enthusiasm with which the inventor began it."

SWEPCO company President J. Robert Welsh, left, reviewed plans for the 1958 expansion of the Arsenal Hill Power plant with General Electric spokesman Ronald Regan and other SWEPCO executives.

DISTRIBUTION AND TRANSMISSION

AGE/AEP Growth in Circuit Miles of Distribution and Transmission, 1942-1972




93,939
MILES
78,881
MILES
1,436,554
CUSTOMERS
1,677,398
CUSTOMERS
1962
1972

Northeastern Plant in
Tulsa, Oklahoma

ADVENTURES IN RED TAPE

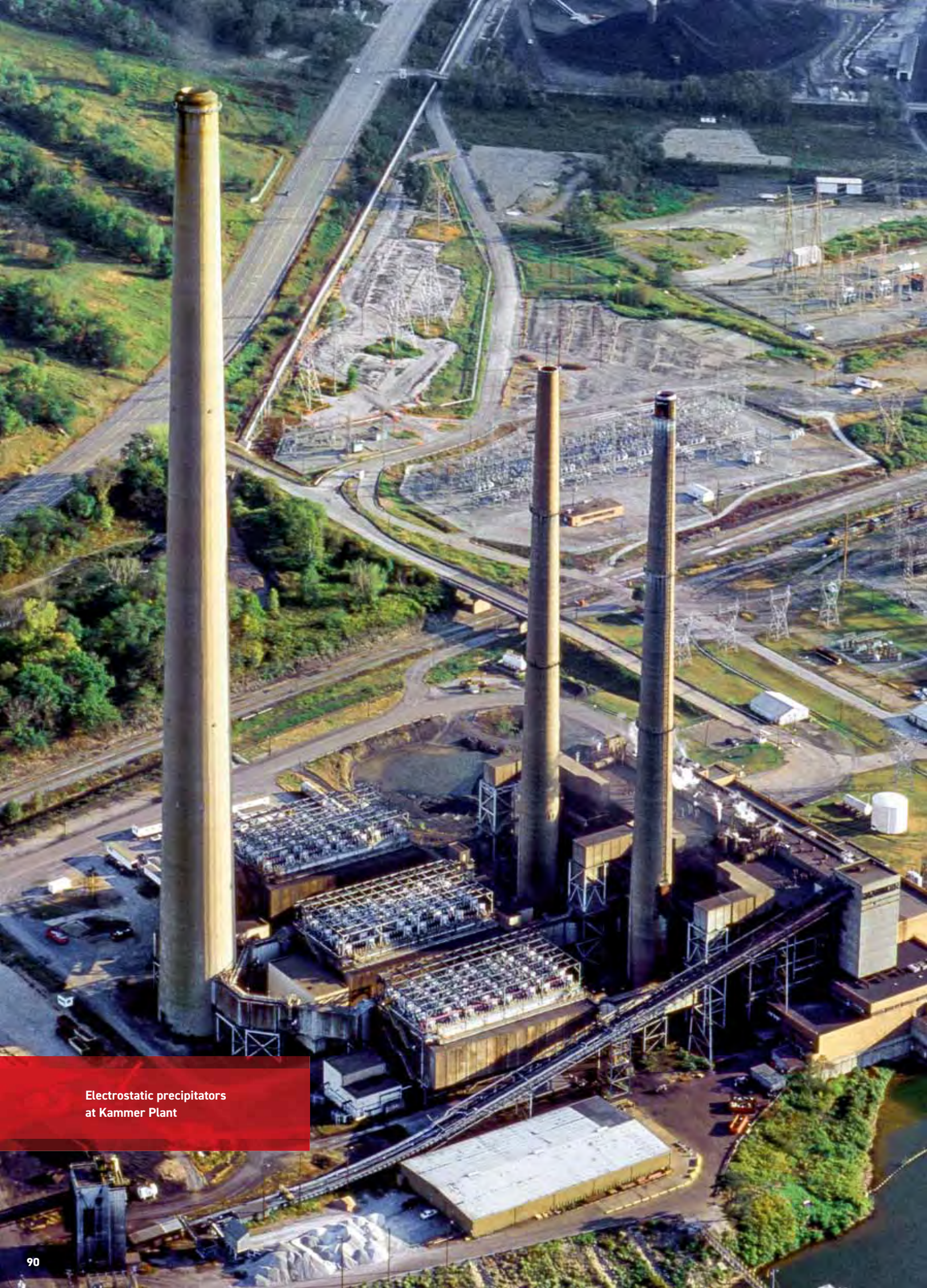
1968-1989

Most Americans living in the 1960s grew up with electric power. After being considered a luxury early in the century, electricity was now essential to people's daily lives. Few could imagine living without electricity as their grandparents had. Philip Sporn's boyhood job as a lamplighter in the early 1900s, reaching up with a wand to light gas streetlamps one by one across Lower Manhattan, had almost disappeared from living memory.

Now that people considered electricity essential, the electric industry faced a new era in which government assumed a larger role in the way utility companies could act, and growth would come in smaller increments than in the early days. In the late 1960s, AEP and CSW worked harder to find efficiencies and to navigate new regulations. Technological innovations came fast, along with questions about how to apply them. The first use of a laser beam to monitor power lines came in 1966. Three years later, AEP put up the nation's first 765-kilovolt transmission line, connecting Kentucky Power and Ohio Power and setting the industry standard for decades.

Appetite for electricity continued to rise. Between 1966 and 1972, CSW's capacity to generate power nearly doubled to keep pace with household demand, which grew by nearly 70 percent. The cities and towns of CSW's territory also continued to grow. Between 1965 and 1975, the CSW system gained 19 new generating plants, producing more than 100 megawatts each.

Riverside Plant, Tulsa, Oklahoma



Electrostatic precipitators
at Kammer Plant

NEW RULES AND PRICE TAGS

New federal laws affecting power plants included the 1965 Water Quality Act and the 1967 Air Quality Act. The laws regulated everything from smokestack heights to emissions of carbon monoxide and oxides of nitrogen and sulfur. To comply with standards reducing sulfur dioxide (SO_2) emissions, plants needed to install new, expensive scrubber technology. The Clean Air Act of 1970 brought more stringent requirements and enforcement. The new rules on power plant emissions — along with rising costs of emissions-control technologies and fuels — led both AEP and CSW to explore a wider range of fuels.

In 1968, AEP launched a 10-year, $500 million program to install electrostatic precipitators designed to remove more than 99 percent of fly ash emissions, meeting the new government standards. A precipitator was essentially a huge chamber in the plant's emission stack that contained large collecting plates. When electrically charged, the plates sucked the fly ash out of the residue from the coal-burning process. A precipitator could sometimes cost nearly as much as the plant itself and necessarily reduced the amount of electricity distributed to customers. In the case of a 1.3-million-kilowatt unit, the precipitator used as much energy as about 10,000 average residential customers.

AEP's engineers, accustomed to maximizing benefits for minimum cost, keenly felt the frustration of pouring money into incremental efficiency benefits. It cost AEP $140 million to achieve a 1.2 percent improvement in precipitator efficiencies at the Mitchell and Amos plants in West Virginia. That small improvement was necessary to achieve the 99.7 rating required by regulators.

Conesville Plant

Glen Lyn Plant

INTERCONNECTIONS, SOUTH AND WEST

Utilities also took another look at how to make the best use of a fully interconnected network. The Texas affiliates of CSW bucked for freedom from government oversight of an interconnected system. Managers walked a fine line between, on one hand, the legal requirement that operating companies under the same holding company be interconnected and, on the other hand, the freedom that within-state networks enjoyed. Southwestern Electric Power Company had affiliates in Arkansas, Louisiana and Texas. To fulfill the interconnection requirement, Public Service Company of Oklahoma (PSO) connected across the Red River with West Texas Utilities (WTU), but that link put other Texas utilities on its grid at risk of capturing the attention of interstate regulators at the Federal Power Commission. E.R. "Dick" Brooks, a longtime WTU employee who became CEO of CSW, said later that WTU employed a sleight of hand. WTU remained connected to PSO but used a direct current link that technically kept it separate from the rest of the Texas grid. In the end, Brooks said, regulators let WTU's independence stand. Texas energy utilities, he added, had a fierce independent streak.

PSO's Riverside Station, 1974

Among the sister operating companies gathered in the sphere of CSW, WTU stood out. Spread out over the largest area of the four sister companies, WTU was the smallest, and it faced the steepest challenge in making earnings. "We had two bucket trucks: one in San Angelo and one in Abilene. So we couldn't afford to buy all this expensive operating equipment," Brooks said. "But we were able to make a profit, too."

WTU invested in the communities where it worked, bringing new businesses to the cities that it connected, supporting the local chambers of commerce and contributing to local charities. The company fostered growth across a vast stretch of West Texas. The strength of its performance brought WTU's management talent to the attention of the leadership of its big sister, Central Power and Light, and the other CSW properties.

Brooks was hired by WTU after getting his engineering degree and started out on a field crew. "I worked one month on one crew and one month on another crew. And I learned how to climb poles, and they loaned me their hooks to learn how to do it. I even changed the lights out on our Little League ballpark, because I wanted to learn what they were

West Texas Utilities' Fort Davis transmission lines at Altamont Pass

doing. And I was able to establish some credibility with the employees because they found out I was willing to work and get creosote on me."

Later, when Si Phillips, a former WTU executive, became CEO of CSW in 1965, CSW moved its headquarters to Dallas. The aim, said Brooks, was to forge the operating companies into "more of a system instead of just four separate operating companies with a parent in Chicago." The fiercely competitive CSW utility operators were becoming an actual family.

Employees of Central Power and Light and other utilities worked around the clock after Hurricane Celia to return service to normal.

COMING TOGETHER FOR EMERGENCY RESPONSE

The Texas utilities came together for a shared purpose when Hurricane Celia struck South Texas on August 3, 1970, with gusts of up to 200 mph. The storm hit Corpus Christi directly, destroying or badly damaging 90 percent of the city's downtown, and left 97,000 Central Power and Light customers without power — the first time in the company's history. Besides destroying the distribution system, Celia wiped out 1,079 transmission line structures and 27 steel towers. Only one of the 17 high-voltage transmission lines carrying power still worked.

CPL employees and workers from neighboring utilities pitched in for the recovery effort. The emergency response mobilized 1,300 workers from 11 utilities in Texas, Louisiana and Oklahoma. Working around the clock, they replaced 1,600 transformers, 7,500 poles and 500 miles of line. By 18 days after the storm, CPL reached a new system peak and returned life in Corpus Christi to normal following the worst natural disaster in South Texas memory. That year, the Edison Electric Institute awarded CPL the Edison Award for its workers' swift and inspiring response.

OIL EMBARGO SHAKES THINGS UP

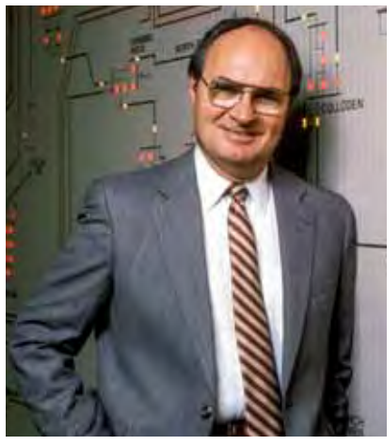
The war in Vietnam and its economic effects were stirring inflation. The price of natural gas started to creep up, while domestic production was going down. America was becoming more dependent on cheaper imported oil. Then the oil embargo of 1973-1974 sent fossil fuel prices soaring and marked the start of a market downturn. Rising costs affected the power industry, too. When Con Edison decided not to declare a dividend in 1974, the announcement sent shockwaves through the industry. Banks began to question the utility industry's soundness. By mid-1974, AEP, too, was under scrutiny from financial analysts — even though it continued to provide regular dividends.

The gas crisis of the 1970s

INTERCONNECTIONS AND RATES, NORTH AND EAST

In New York City, memories of the 1965 blackout lingered. To secure the grid's integrity, industry members created reliability councils to set standards for transmission and share information. Ten regional councils came about, including the Northeast Power Coordinating Council for the region hit by the blackout. Even though AEP customers had not been affected, the company welcomed regional coordination.

In the midst of these discussions, AEP CEO Donald Cook faced a personal dilemma. Highly regarded for his intelligence and experience, Cook was offered the job of heading up the New York Stock Exchange in 1967. It was tempting.



W.S. "Pete" White, Jr.

Chillicothe Gazette

Rate increase 'vicious circle' for utility

Local rates compared to others in state

AEP faced loud public outcry for its rate increases.

Cook had struggled at the helm of AEP in the long shadow of Philip Sporn, who continued to have a major presence as an advisor. Cook spoke with the board. The board then clarified AEP's leadership roles; they persuaded Cook to stay as CEO, and Sporn stepped aside.

After a history of cutting electrical rates for customers — more than 100 reductions over the years — the rising costs of coal, construction and labor brought an unnerving first. In 1970, AEP needed to increase rates to manage rising costs. Cook decided to make the case for adjusted rates directly with the governors of the states that AEP served. Politicians and media organizations, however, were not favorably inclined to hear his message. In West Virginia, Cook's request for the first rate increase in decades went over poorly. Wheeling was far less prosperous than it had been 20 years earlier. The city's population had crested in 1940 and decreased by more than 10,000 in the 1970s.

"One might think we had built up a reservoir of good will," said A. Joseph Dowd, AEP's general counsel. "We asked for a modest increase. It hit the fan! Maybe we shouldn't have been surprised, but I was, and I think most of us were at the reaction of the public, the newspapers and the politicians."

Consolidation was another way to gain economic efficiencies. AEP started on a deal to acquire Columbus and Southern Ohio Electric Power Company in 1968. The legal requirements made that a slow process that was not completed until 1980. Once the acquisition was finalized, another big change came for AEP: the move of its headquarters from New York to Columbus.

W.S. "Pete" White, Jr. took the reins as AEP chairman and CEO from Donald Cook in 1976. White had joined AEP in 1948 and had come up during the Philip Sporn years (one of his first jobs was preparing charts for Sporn's meetings with Wall Street analysts).

Embracing Sporn's record of top professional achievement, White was just the seventh engineering executive elected to the National Academy of Engineering. He continued AEP's tradition of nurturing the best engineering talent and its connection with university research while grappling with the new challenges. "Until the '70s, the electric utility industry had been blessed both with new technologies and reduced costs," White said. "All of that changed…from an era of declining costs with technological progress to rapidly increasing costs — of everything."

MOVING TO THE CENTER

AEP announced in October 1979 a plan to move its headquarters from New York, where it had been for over a half-century, to Columbus, Ohio. The Columbus community warmly welcomed the new arrival. The headquarters on the Scioto River at 1 Riverside Plaza was developed on land purchased from Nationwide Insurance. Construction of the 31-story building, built to hold 2,000 AEP employees, took just over a year. The new headquarters was officially opened with a ceremony on October 7, 1983.

For AEP workers and their families, the move from New York to Columbus involved a big decision. The company recognized this and made a video introducing the new home to workers. For those who had relied on public transportation, the company offered to pay for driving lessons. If they had never owned a car, they could get help with an automobile loan program. Families wanting to buy a home could get help with the financing or down payment.

"Moving to Columbus on the surface was traumatic, but in the end, it was the best thing that could have happened," said Pete Splawnyk, who would retire from AEP as senior vice president of energy distribution. "Actually, we did a lot better than I would have expected in retaining talent."

Timing was another challenge. The recession of 1982-1983 was at its worst point. Across the AEP system, industrial customers were failing or cutting way back. The drop in demand and revenue for AEP was painful.

AEP headquarters in Columbus, Ohio

Construction of AEP's custom-built all-electric headquarters in the heart of Columbus, Ohio

REDUCING COSTS IN THE CACTUS PATCH

Amid the rising fuel prices of the 1970s, CSW had, like AEP, explored ways to cut costs. In the Southwest, natural gas had been the cheapest option, but that was changing. SWEPCO looked to the lignite in Texas and Louisiana. The operating companies had used lignite, sometimes called "brown coal," back in the 1910s. Because lignite had relatively low heat content, the industry had moved away from it in the search for efficiency. Now, the economics had shifted. SWEPCO built a mine-mouth plant near the lignite fields of East Texas, and a joint venture with Central Louisiana Electric Company developed another lignite-powered plant near Mansfield, Louisiana.

For Central Power and Light, as with other operating companies of CSW, staff training in customer service was paramount. Nancy Earnest went from being a CPL customer to employee in 1978, when she took a job with CPL as a meter reader in Mission, Texas, 165 miles south of Corpus Christi. As a customer, she had always found the utility reliable. As a CPL employee, she learned the level of dedication that reliability required.

The company provided good training, a pickup truck, and a free hand for Earnest to do her job supporting customers. "I always had wonderful supervisors," she said later. Earnest listened to customers' concerns and responded with the best information she had. When connecting new CPL customers for electric service, she made every effort to complete their hookup the same day they requested it. And when the job required a fix after hours, she responded. Back when Earnest had two small children, she kept the phone number of a housekeeper handy in case she needed someone to watch the children while she responded to a customer call in the middle of the night.

SWEPCO's lignite mine-mouth Pirkey Plant opened in 1985.

South Texas Dome construction, late 1970s

NUCLEAR OPTIONS

With the changing energy economics of the early 1970s, leadership at both CSW and AEP looked again at the full range of options for meeting customers' power needs. In 1973, Central Power and Light in Texas joined with Houston Lighting and Power, City Public Service of San Antonio and the City of Austin to build a nuclear plant, the South Texas Project. Construction began in 1975.

In Oklahoma, PSO announced in 1973 its plan to build the state's first nuclear facility, the Black Fox Plant, about 23 miles east of Tulsa. The plant would house two 1,150-megawatt units manufactured by General Electric.

Since AEP had announced its decision to pursue nuclear power in the late 1960s, construction of the two reactors at the Donald C. Cook Nuclear Plant in Michigan had begun in 1969 and progressed well. Unit 1 went into service in 1975, but the financial squeeze on the energy industry forced delays in completing Unit 2. On December 23, 1977, Unit 2 received its operating license from the Nuclear Regulatory Commission and by July 1978 was in commercial operation.

Following that accomplishment, AEP immediately made plans for another nuclear plant at the other end of its territory, in central Virginia. AEP engineers made preliminary site explorations where the Tye River flowed into the James River as well as at other sites in Virginia. They used maps, aerial reconnaissance, geological studies, and an array of impact studies to assess the effect of a nuclear plant on the region's people and environment.

> **"We looked at what it would cost to complete it as a nuclear plant, and it was just beyond reason."**
>
> Pete White

Meanwhile, a chorus of protests against nuclear power mounted as activists raised concerns over safety and potential radiation hazards. Nuclear engineers built safeguards into the systems, and nuclear power gained acceptance at the highest levels. Jimmy Carter, a nuclear physicist trained in reactor technology, was elected to the White House in 1976. There was optimism that the new technology would weather this early period, and dozens of plants nationwide were under construction in the mid-1970s.

Then, on March 28, 1979, a reactor in the Three Mile Island nuclear plant in Pennsylvania, built by General Public Utilities Corporation and operated by Metropolitan Edison, experienced a series of mechanical failures that led to a relief valve stuck open and the release of some nuclear reactor coolant. No significant radiation contamination occurred, according

Three Mile Island gained international notoriety in 1979.

Protestors with concerns about nuclear risks, 1970s

to the Environmental Protection Agency, which immediately began daily sampling at three nearby locations around the plant. Still, the incident heightened public perceptions of risk, and resistance to nuclear power intensified.

The implications for both AEP and CSW were far-reaching. At CSW affiliate PSO's Black Fox Plant, police arrested nearly 500 protesters in June 1979, and legal costs of responding to court challenges to the plant mounted. In 1982, PSO announced that it would not complete the plant.

Similar dynamics forced changes for other plants, both on the drawing board and already completed. The Zimmer Plant, which was partially owned by AEP affiliate Columbus and Southern Ohio Electric Power Company, had moved forward from the drawing board into construction on the north bank of the Ohio River. All was going according to plan until November 1982. The plant was 97 percent completed when a call came from the Nuclear Regulatory Commission. They demanded that work stop at Zimmer. The commission expressed concerns that construction was not up to the permitted standards.

CEO Pete White faced a huge dilemma. With the changing economic climate, costs had spiraled out of control. "We looked at what it would cost to complete it as a nuclear plant, and it was just beyond reason." They would have to find another way.

CONVERTING PROBLEMS TO WINNERS

New technologies at the Cook Plant were encountering hiccups, as well. One of the big challenges was a problem of tube cracking in the steam generator. AEP Vice President John Jones brought in a young engineer with a doctorate named James Markowsky to address the problem. The cracking, Markowsky's team found, was due to a phenomenon affecting the particular metal used in the tubes, only discovered after the plant was operational. The team examined the metallurgy and obtained information from the equipment vendor, Westinghouse, Markowsky said. "I was working with the plant manager, and I made the recommendation that we had to replace those steam generators." It was a tough decision, but his study showed that it would continue to be a problem. "We've got to bite the bullet," he said. His supervisors backed him up.

With that resolved, Markowsky tackled another challenge: What should they do with the Zimmer Plant? The owners had already invested $1.7 billion in the facility. Markowsky reviewed the options from a technical perspective. One of the utility partners made a strong case for converting the plant to natural gas. Another option was to walk away from it altogether.

There was a strong financial argument for abandoning the project. Reconfiguring a plant to use a different fuel was a mammoth undertaking, both in engineering and cost. Only AEP's commitment to its customers in Ohio made continuing with Zimmer palatable.

Construction on the conversion of the Zimmer Plant

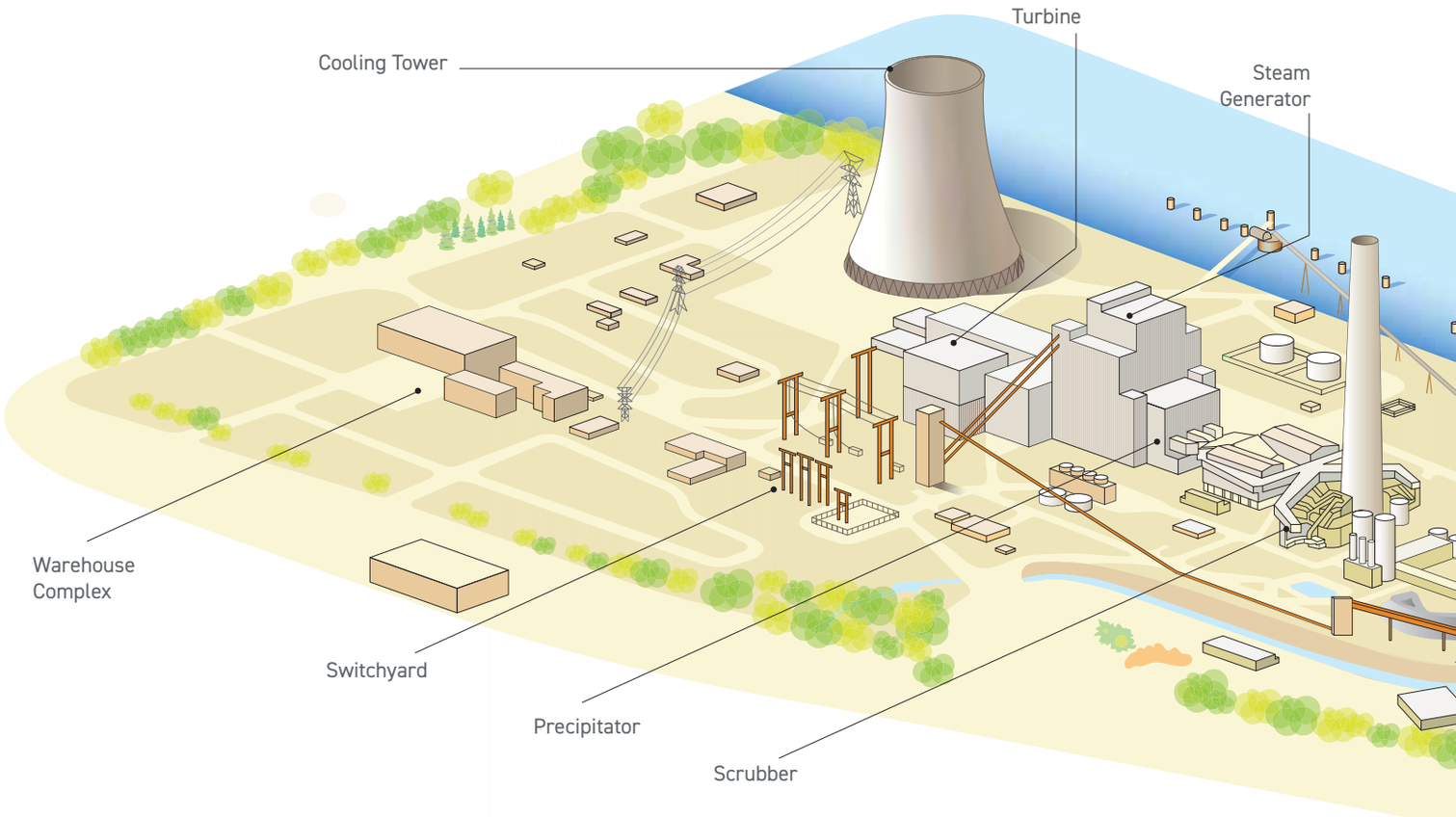
Markowsky and John Dolan, vice chairman for engineering and construction, argued for converting the plant to coal power and scaling up its capacity from 800 megawatts to 1,300 megawatts. If it put a high-pressure turbine in front of the 800-megawatt turbine generator that was already in place, AEP could make use of almost all of its investment in the plant and expand its capacity.

Such a conversion would be a first in the industry's history, but Dolan ticked off the advantages: savings of 45 months typically required to locate and qualify a new plant site, no risk of developing a new fossil steam cycle, the opportunity to use several key equipment pieces that were in storage, and added capacity when it was needed.

Eventually they persuaded all the partners to choose that option and the regulators to approve the conversion. The owners held a press conference in Cincinnati in January 1984, where they announced the unorthodox decision to convert. With approvals from the Public Utilities Commission of Ohio and the Army Corps of Engineers regarding the Ohio River site, work resumed in March 1987.

The innovation of the proposed solution captured the imagination of the industry. *Electrical World* magazine called the conversion project "one of a kind."

The next big challenge was how to make a coal-fired plant work on the small wedge of a footprint beside the Ohio River. "It took some creative layout and construction techniques to do that," Markowsky said. The site had to include



Zimmer Coal Conversion Project

equipment for handling coal, an electrostatic precipitator and a scrubber for emissions. The price tag of conversion was an additional $1 billion.

They had the modules for the vast components — boilers, scrubbers — built elsewhere: the electrostatic precipitator came from a shipyard in Mobile, Alabama; two 450-ton auxiliary boilers were built in Paris, Texas; and 14 coal pulverizers, each weighing 150 tons, were assembled in Mount Vernon, Indiana. Then they put these components on barges, floating them up the Mississippi River, which made much more efficient use of field manpower. A Lampson crane installed at the site unloaded the massive modules from the river barges.

The Zimmer Plant opened in 1990.

Dolan raced to complete all the contracting before he retired in February 1988.

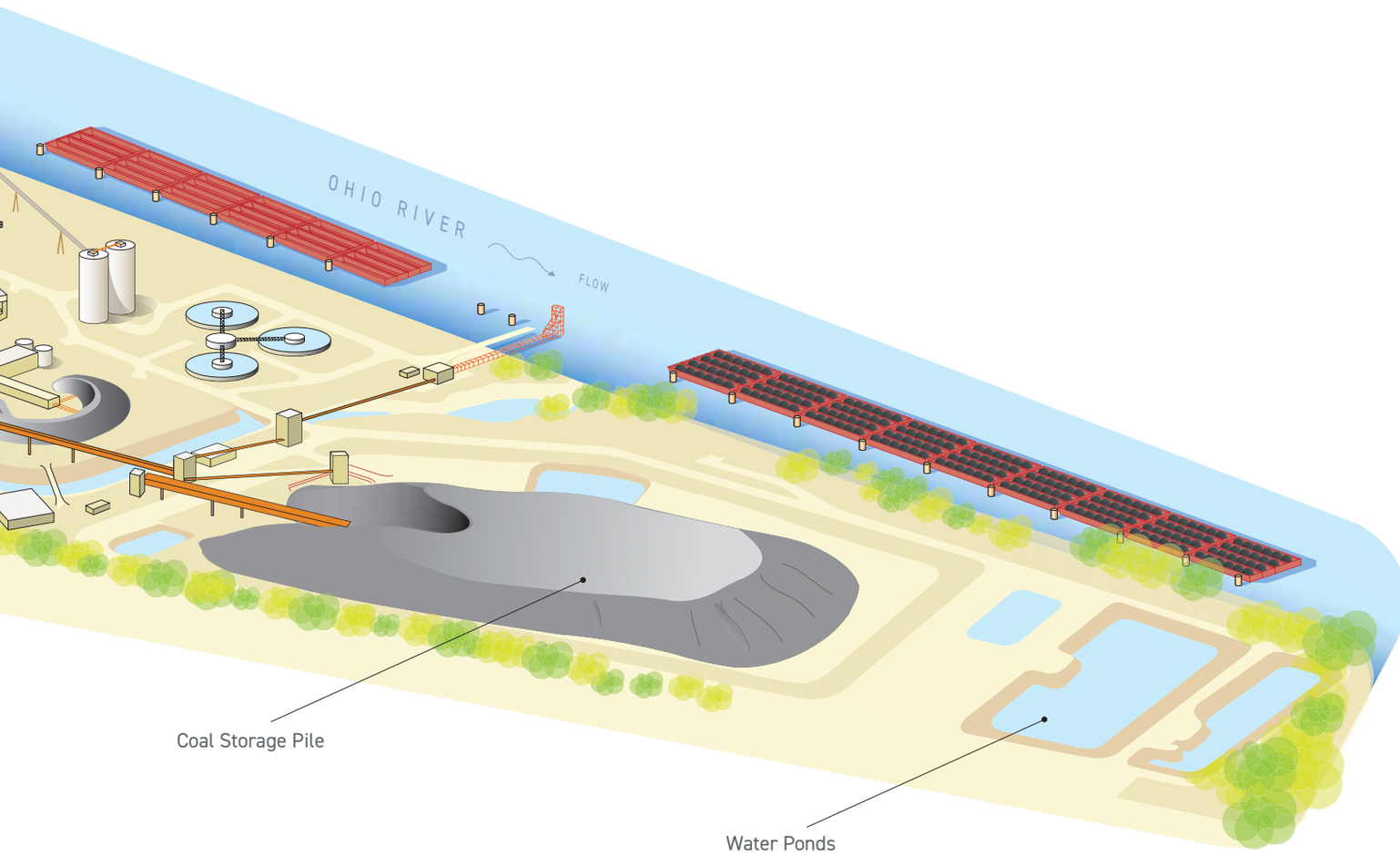
Despite the tremendous challenges and almost no margin for error, the Zimmer conversion was completed several months ahead of schedule and $300 million under budget.

Peter DeMaria, executive vice president for administration and chief accounting officer, said "that engineering challenge of turning that thing around was so great — with our pride in engineering — they had to show it could be done. And they did it."

"Zimmer was probably the biggest, the most difficult matter that I had to deal with during my period as chairman. It was a very complex project with an unhappy beginning," Pete White said. "In large measure due to the substantial achievements of our engineering department, it's a very reliable and very efficient coal-fired plant."

The Zimmer Plant started operation on New Year's Eve 1990, sending 35 megawatts out to customers. It was a smooth start at the end of a journey that was anything but smooth. In its first year, it produced a net 10.23 billion kilowatt-hours of energy, with a net capacity factor of 94.9 percent.

The Zimmer Plant soon received three significant awards. *Power* magazine named it 1992 Power Plant of the Year. The American Boiler Manufacturers Association lauded it with its award for energy and environmental achievement. And the Environmental Protection Agency cited the plant for exemplary design and operation of its flue gas desulfurization system.



NEW LAB FOR INNOVATION

AEP responded to the increasing complexity of the science behind new and alternative sources of energy by creating a new laboratory, the first of its kind. The John E. Dolan Engineering Laboratory, honoring Markowsky's mentor, opened in the summer of 1987. The dedication ceremony on October 28, 1987, came shortly before Dolan's retirement after 38 years of service. The state-of-the-art facility on the southeastern edge of Columbus, near AEP headquarters, unified the capabilities of four AEP teams along with a mapping/survey team. The lab included the Environmental Engineering Laboratory, having moved from Appalachian Power's office in Huntington, West Virginia.

A scientist at work in the Dolan Lab

FRONTIERS IN TRANSMISSION

Through the tumultuous decade, the AEP and CSW companies continued to invest in new technology for transmission, where the horizon was expanding rapidly. AEP smashed another record in 1978 when it became the first utility with 100 high-voltage or extra-high-voltage transmission interconnections. By 1986, the company had America's highest-capacity transmission network: more than 2,000 miles of 765,000-volt transmission lines. That backbone, with the protective support and monitoring of people at the controls, made AEP a paragon of resilience even amid national transmission crises. CEO E. Linn Draper later said, "It's a remarkable technical organization."

That year, 1986, marked another innovation in AEP's transmission maintenance. Line crews tested a new technique that permitted a line mechanic to handle a conductor while it was "hot" from the safety of a work platform suspended from a helicopter. The technique involves two helicopters that in effect form a moving assembly line, speeding repairs in remote, hard terrain. To replace an old spacer, the line mechanic on the lead helicopter removes the old spacer, and a mechanic on the second chopper installs the new spacer. They can move in tandem from one work location to the next, eliminating setup time. After the first use in August by Appalachian Power in West Virginia, crews across the AEP network adopted the procedure.

The helicopter-based technique saved time and money, and solved many problems that ground crews typically faced in remote locations, especially in mountainous or swampy areas. In 1987, after a full year of using helicopters for line work, the company found it had saved an estimated $1.4 million in labor costs.

Again, AEP was the first utility in America to deploy the new technique on 765,000-volt lines. The standard of 765,000-volt transmission would endure for over three decades, even as AEP grew its network of those high-powered lines.

A line mechanic working on a live wire from a helicopter platform

Construction on AEP's network of 765-kilovolt lines, the largest in the nation

AEP Transmission's high-voltage power lines are located throughout the company's footprint and are vital to the effective delivery of electricity to customers.

AEP partnered with Chinese engineers to expand into the Chinese market.

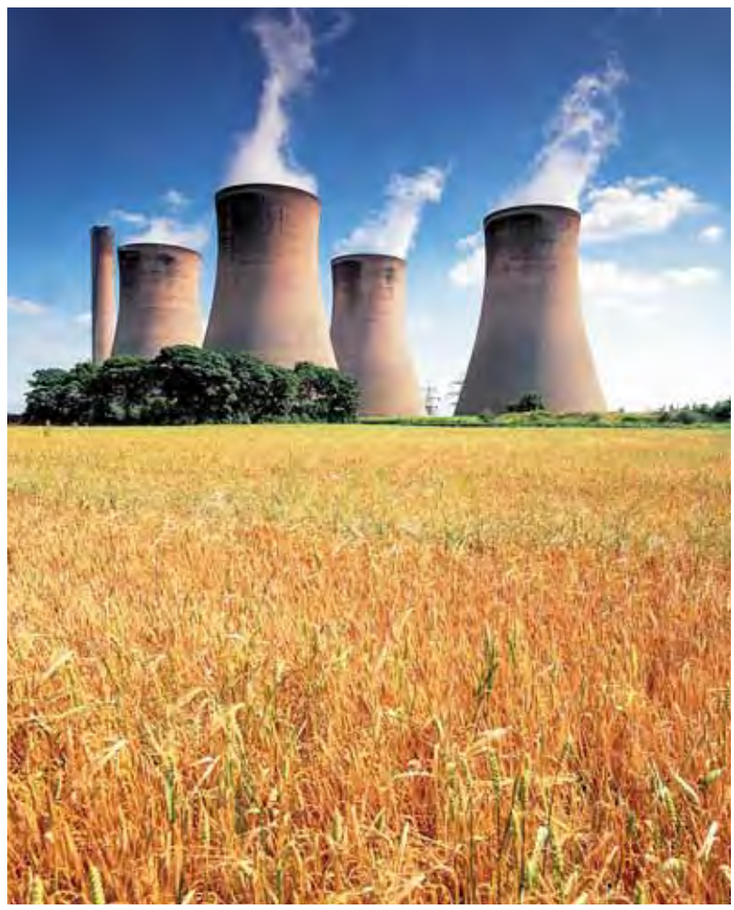
LOOKING BEYOND BORDERS

As he navigated the challenges of the 1970s, AEP CEO Donald Cook had looked wider for opportunities. He saw the potential to make the company a leading competitor worldwide in turbine generation. During Cook's tenure, AEP's annual earnings nearly quadrupled, from $55 million to $201 million. After Cook's retirement in 1976, the company continued to explore the international landscape of energy.

The look beyond U.S. borders continued in April 1982, when the Securities and Exchange Commission gave AEP permission to open a frontier that had been off limits before. The SEC allowed the company to form a services subsidiary, AEP Energy Services, Inc., to market its expertise both domestically and worldwide. After a turbulent decade of limited growth domestically, the new services subsidiary offered a channel for AEP to maintain and burnish staff capabilities throughout the world. Gradually, demand for its services grew; by 1990, the subsidiary was averaging annual revenues of more than $2 million. These projects brought AEP's expertise to bear on challenges in 16 countries, including China, Chile, Mexico, Sudan, New Zealand and the former Yugoslavia. In Pakistan, AEP Energy Services helped to provide rural electrification in mountainous regions. Among U.S. utilities assisting developing countries, "American Electric Power … probably has the most extensive foreign program," *The Wall Street Journal* wrote in 1989.

CPL's Matamoros Plant across the Rio Grande in Mexico

In the coming decade, the international energy realm would experience its own variety of turbulence and tide changes — for example, in power plant construction in the 1990s in China. Linn Draper, who became AEP's CEO in 1992, said: "The theory of the China business was that China was a fast-growing energy consumer that needed to add generation capacity in the electric business rapidly. We knew how to build great big, very efficient coal-fired power plants. What better market for 1,300-megawatt plants than China?" Unfortunately, AEP ultimately found that China was not comfortable starting with such large plants.



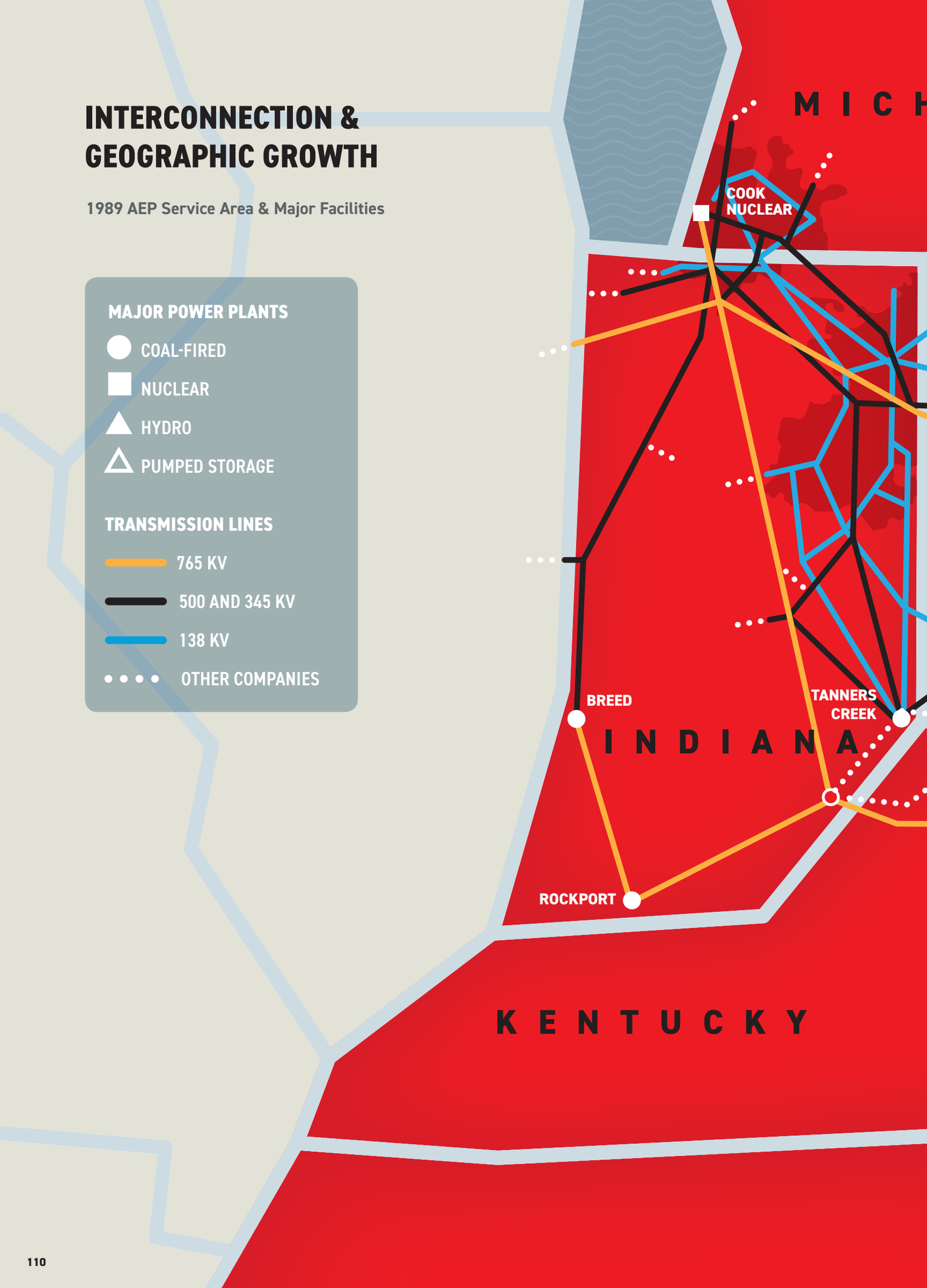
AEP's Fiddler Plant in the United Kingdom

In Great Britain and Australia, the company's leadership saw potential partners for more efficient distribution operations. Rule changes in the United Kingdom, however, altered that calculation. "The big opportunity passed in both the U.K. and in Australia because they changed the rules of the game," Draper said.

Moving into the last decade of the 20th century, neither AEP nor CSW was thinking about blending the two companies. The pioneering technological prowess of AEP and the scrappy, renegade operating companies of CSW had many differences, but they shared what Jim Markowsky called a "can-do spirit." Combining the two was not yet imaginable, but it just might be inevitable.

INTERCONNECTION & GEOGRAPHIC GROWTH

1989 AEP Service Area & Major Facilities

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GAVIN
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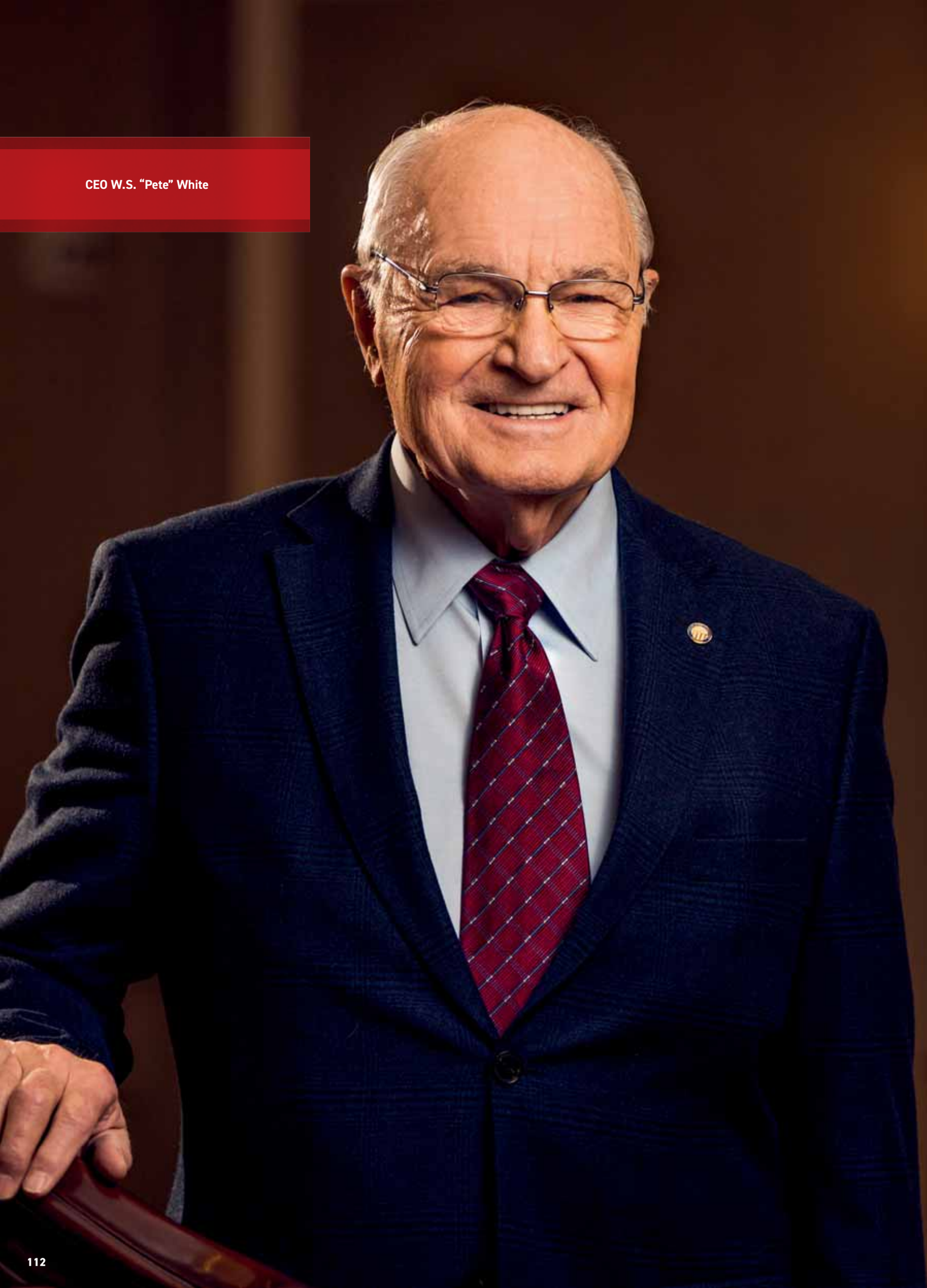


CEO W.S. “Pete” White

MAPPING NEW DIRECTIONS

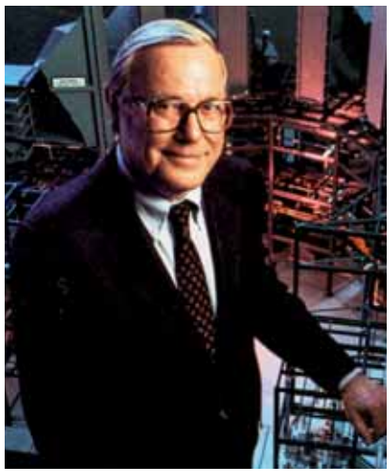
1990-2005

As the 1990s began, America stood on the threshold of another shift in the energy industry. AEP and CSW were moving on converging paths. These two companies, with shared origins stemming from Thomas Edison and his Pearl Street plant, took very different paths of innovation through the 20th century.

AEP's CEO W.S. "Pete" White took stock of the waning century in a speech at an industry conference in California. White reflected on the ups and downs of the industry's history and the volatility of the 1970s and '80s, "a period unlike any other that the industry lived through." He revisited the industry's early days of "cutthroat competition" and hard-won capital financing, the trauma of the Depression and the threats of government takeovers. It was easy to forget those challenges in the wake of the "golden era" of postwar growth, technological advances and a favorable political climate.

Then came the disruptions of rising fuel prices, the Three Mile Island accident and hostile winds from regulators. These factors, along with increasing international competition and a turbulent world energy market, "will demand creative solutions if our economy is to have the abundant energy supply it will need to fuel its growth," White said.

A PSO line mechanic in Chickasha, Oklahoma



AEP CEO Richard Disbrow

Looking ahead to the competition that federal deregulation would bring, with more independent producers and wholesale customers seeking lower rates, White warned of the "risk to the reliability of our electric system that simply did not exist in the past."

Despite the consequences of environmental regulation, the electric utility industry would continue to be where America looked for its power supply. White doubled down on AEP's commitment to serving customers reliably and fostering America's economic growth.

White passed the CEO baton in 1992 to Richard E. Disbrow, a longtime AEP worker and brilliant engineer. Disbrow, a protégé of Philip Sporn, joined American Gas and Electric in 1954, after graduating from Lehigh University and spending two years as an airborne electronics officer in the Air Force. Like his fellow AEP leaders Pete White and Jim Markowsky, he attended MIT as a Sloan Fellow. He ultimately earned a master's degree in industrial management and two additional master's degrees in electrical engineering.

AEP CEO E. Linn Draper, Jr.

Disbrow attacked problems head on. "He had a little bit of Sporn in him but in a different kind of way. Nothing was ever quite good enough," White said. "He always had the ability to get at the heart of a problem very quickly. Then he'd give his analysis of it, and more times than not, he was right," said Pete DeMaria, executive vice president for administration and chief accounting officer. The following year, for health reasons, Disbrow passed the title to E. Linn Draper, Jr.

Draper, who came aboard as president and chief operating officer from Gulf States Utilities, was struck by AEP's top-quality staff. "They had hired the best and the brightest from all over the world. When I went to AEP in 1992, if you walked in the lobby and you spoke Lithuanian, we could find somebody to talk to you," he said. "Their capabilities exceeded my expectations."

Coming from outside the stream of engineering leadership that AEP had fed since before the Sporn era, Draper brought valuable experience managing a range of fuel sources, especially nuclear energy. He also brought a fresh perspective to the challenges the company faced. Some of these were structural. He saw redundancies across operating companies and an opportunity to reduce them. "We could streamline the organization, cut down the size of the service corporation and also the operating companies," he said, "and we did that pretty effectively."

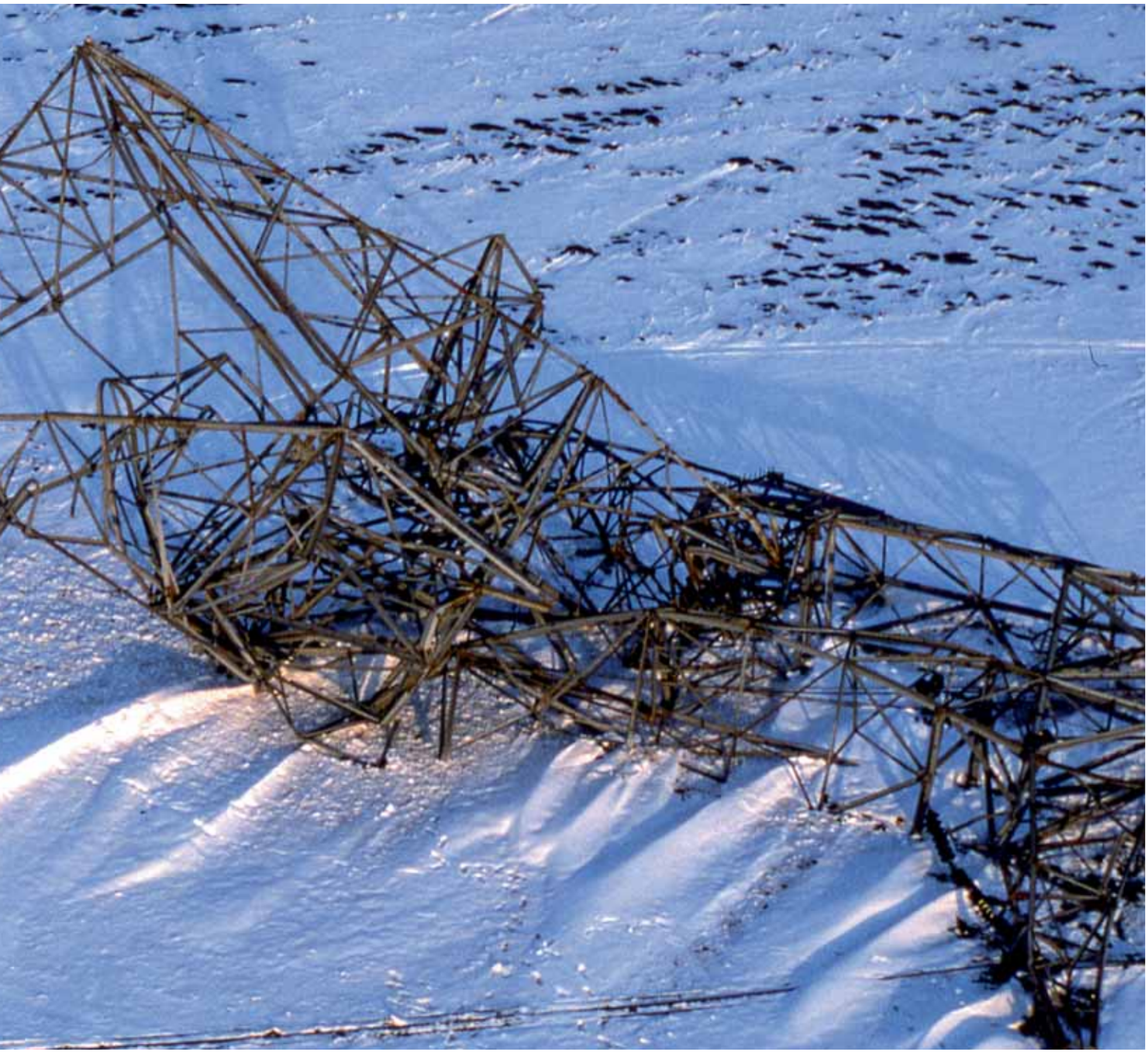
Storms often threaten the AEP network, but the company strives to restore power for its customers quickly and implements measures to prevent power outages in the first place.

MAINTAINING STANDARDS AMID CURVEBALLS

Amid its institutional changes, AEP maintained its high standards for managing the country's largest electric network and delivering value to customers despite challenging outside conditions. When extreme weather demanded rapid response, the transmission crews braved the storms and ensured uninterrupted service. Other extremes caused headaches for the power generation teams, too. During the record-breaking winter temperatures in early 1994, the Ohio River froze over. Barges couldn't get fuel to some of the power plants for extended periods. As the freeze went on, power companies started rationing coal.

Despite performing a rigorous schedule of winterization and maintenance that anticipated temperatures of zero degrees Fahrenheit, AEP plants faced additional tasks when the mercury dipped below zero: They had to place portable heaters called salamanders in critical parts of the plant to keep equipment from freezing. They also kept regular visits to ensure the salamanders remained fueled and running.

"Always, always, you've got winterization issues," said Mark McCullough, AEP's executive vice president for generation. Air temperature sensors are affected by dew point (the temperature where air becomes saturated by water vapor) and need to be heat-traced and kept above freezing. A frozen sensor could cause a turbine to go offline. Plant staff



also had to respond to water-fed systems exposed to subzero temperatures. Furthermore, the longer the temperature remained below zero, the more likely other equipment problems could emerge later. To anticipate them, AEP monitored the plants with infrared guns. "It's just a lot of extra labor to keep units running when temperatures are below zero for extended periods of time, and then in the single digits for a time after that," McCullough said.

Costs for maintaining top performance became more difficult to recover when Ohio and other states deregulated their markets — an issue that would arise again later.

GENERATION ACHIEVEMENTS AND DELAYS

The Cook Plant, which had operated well for years, encountered difficulties in the mid-1990s. In February 1994, Cook Unit 1 completed a 470-day run, generating 11.2 billion kilowatt-hours, and went out of service for routine maintenance. That year, the Cook Plant ranked No. 2 among the country's nuclear plants. In September 1997, though, AEP halted operations at the Cook Plant after the Nuclear Regulatory Commission questioned the safety of certain systems. It took months to address the questions, and the plant remained shuttered until early 2000. "It took a couple of years to right the ship," Draper said. "It was extremely painful because it is a big plant — over 2,000 megawatts. It really hurts when you lose that low-cost generation capability. Clearly, we did take our eye off the ball, and the nuclear plant suffered the consequence of that, and it was an expensive, painful consequence." Still, due to AEP's robust generation capacity, the company managed to absorb the temporary loss of the Cook Plant — under 10 percent of the company's capacity at the time — without causing hardship for its customers. As a result of the investment, both units at Cook had their operating licenses renewed for another 20 years.

In the meantime, after a successful conversion to coal fuel, the Zimmer Plant was brought into the calculation of energy rates for the territory it served. That meant that the Public Utilities Commission of Ohio (PUCO) had to approve incorporating the Zimmer construction costs into the rate base for Columbus Southern Power. That procedure took more than a year and involved arguments before the Ohio Supreme Court to resolve the impasse with the PUCO. In the end, the court upheld the PUCO's decision that Columbus Southern Power should write off $165 million of the Zimmer conversion costs.

The Zimmer Plant marked an industry first for its conversion from nuclear to coal.

Cook Plant employees worked tirelessly to bring the plant back up to full power and renew the operating license.

ENVIRONMENTAL CHALLENGES

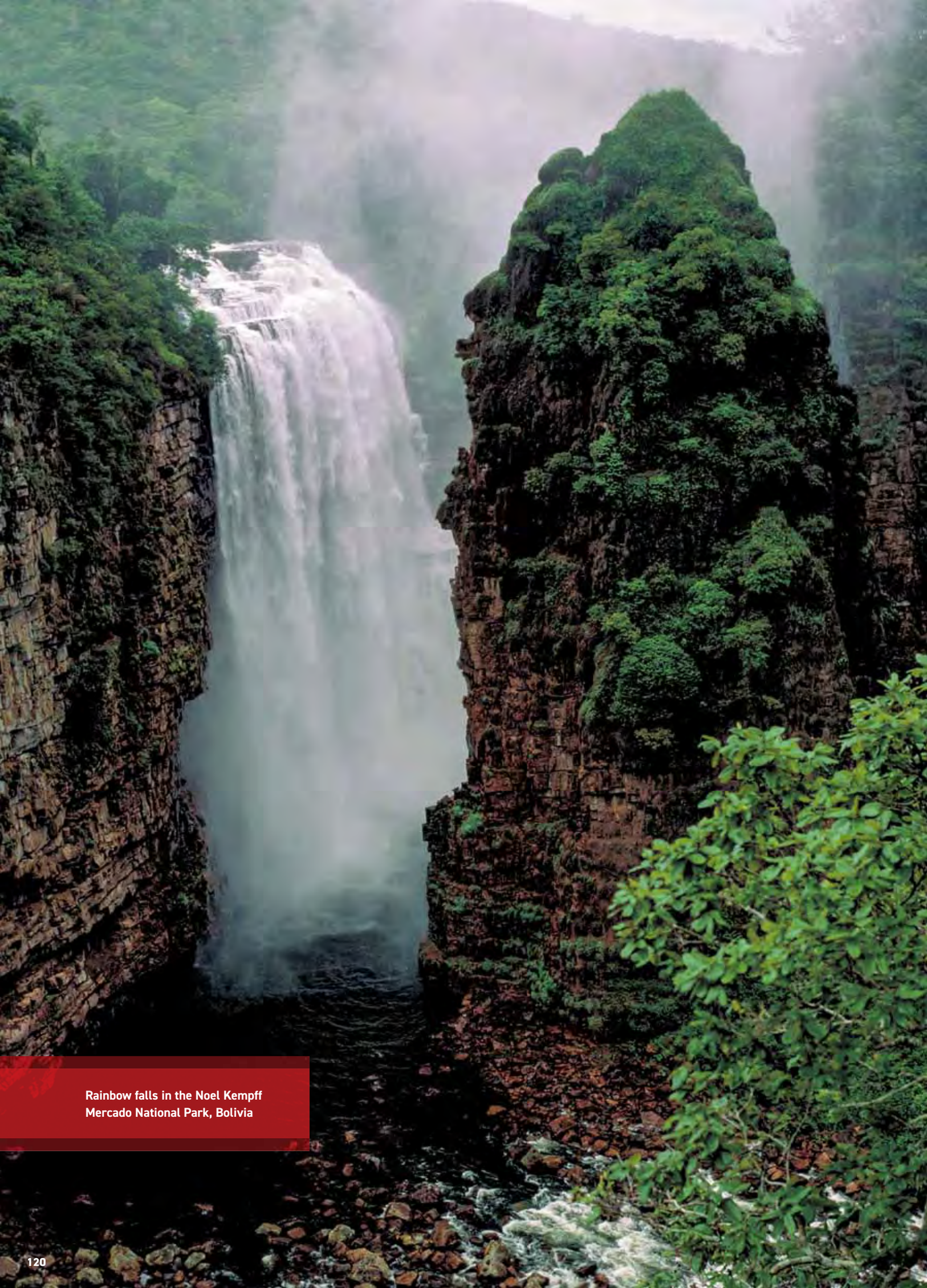
The utility industry was among the sectors that were hardest hit by the greening of the American economy. Amendments to the Clean Air Act in 1990 raised the standard nationally and brought more adjustments to the industry as scientists' understanding of acid rain grew. In particular, the revised law brought a mandate to cut in half the emissions that caused acid rain. The main emissions regulated — sulfur dioxides and nitrogen oxides — posed a costly task. A focal point for those changes was the Gavin Plant, where AEP operated two massive 1,300-megawatt boilers at Cheshire, Ohio. AEP prepared a plan for reducing emissions that included flue gas scrubbers to remove sulfur dioxide from the Gavin Plant smokestacks, use of low-sulfur coal at Muskingum River's Unit 5, and other fuel shifts at other plants, including Kammer, Picway and Tanners Creek. Total cost: $1 billion.

Draper saw clearly that the industry and the national dialogue were changing, and he began to take a fresh look at the company's position on the issue. He encouraged more creative thinking among AEP's people on how the company addressed environmental challenges.

Draper saw clearly that the industry and the national dialogue were changing, and he began to take a fresh look at the company's position on the issue. He encouraged more creative thinking among AEP's people on how the company addressed environmental challenges. Draper told Dale Heydlauff, vice president for environmental affairs, that the company was "way too late in recognizing the political reality that [environmental] controls were going to come. We fought it too long and sullied the reputation of a fine company as a result. We won't do that in the future. We will take a much more proactive and positive approach to environmental issues." Under Draper's guidance, AEP undertook a number of cutting-edge environmental initiatives, including a partnership with The Nature Conservancy in a groundbreaking effort to measure the carbon uptake of forests and their role in reducing greenhouse gas emissions.

Through the 1990s, such innovations burnished AEP's emerging reputation for supporting the environment. AEP's leadership was recognized in 1998 when it received the industry's highest honor, the Edison Award, for "aggressive work to develop sustainable, environmentally responsible operations that meld bottom-line results with environmental stewardship." The citation from the Edison Electric Institute highlighted the company's involvement in the Bolivia forest conservation project, along with a joint venture with the West Virginia Department of Natural Resources for maintaining wildlife habitat along AEP's transmission passages. The citation also recognized projects in Ohio that gained certifications for the state's largest outdoor recreation area, the Gavin Wetlands, and AEP's accomplishments in sustainable land reclamation.

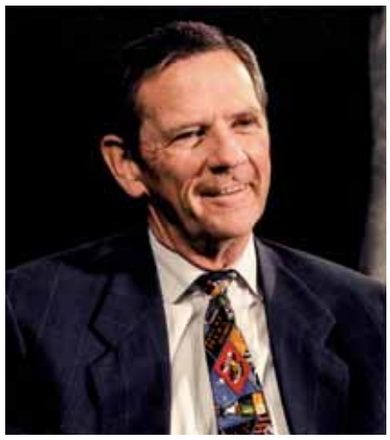
The Gavin Plant was one of several to add flue gas scrubbers in its smokestacks.



Rainbow falls in the Noel Kempff Mercado National Park, Bolivia

GROWTH AND CHANGE AT CSW

When E.R. "Dick" Brooks became chairman of CSW in 1991, he brought with him from his days at West Texas Utilities the pride and independent spirit of the CSW operating companies, along with a fierce dedication to quality. Those values kept CSW a top-performing utility. In the decade from 1987 to 1997, CSW consistently ranked among the top three companies in the utility industry for delivering shareholder value. Brooks attributed this performance record to employees' efficiency as well as the standardization and centralization of certain tasks in the late 1980s. Bringing the four operating companies of CSW into alignment for an overall system approach wasn't easy, but Brooks led with what he called a "system-first mentality."



CSW CEO E.R. "Dick" Brooks

Still, the operating companies kept their independent streak. Southwestern Electric Power Company (SWEPCO) staff approached CSW headquarters in Dallas to resist initiatives that curbed their autonomy. But Brooks prevailed and brought the companies together. The overall system, said Nick Akins, who was then working for SWEPCO, "became a much better, much stronger company, with all four companies together."

Brooks cultivated teamwork CSW-wide by rotating promising up-and-coming leaders across the four operating companies. That program gave Akins the opportunity to manage fuels at West Texas Utilities in Abilene. The exposure to different forms of collaboration and exchange shaped the culture of CSW.

In 1993, Brooks saw a chance to sustain growth in a sagging market and established CSW Energy to enter the nonregulated wholesale energy market. "We could see where the regulation was going," he said, "and a lot of companies were developing nonregulated activities." Growing demand and limited supply led to rising prices for wholesale energy through the decade.

CSW FACES A BIND

At the start of the 1990s, when Draper was still CEO of Gulf States Utilities, the regulatory and market climate introduced the prospect of mergers. CSW moved toward a deal to buy Gulf States Utilities until Entergy, another large player in the sector, announced its own bid for Gulf States. That raised the price, and CSW's deal fell through. Still, the momentum for consolidation continued.

> **"Central Power and Light is a well-run company. We respect you and admire you, but we've got to make an example to get everybody's attention."**

CSW faced headwinds in 1992 when the Public Utility Commission of Texas disallowed Central Power and Light's proposal to recover the high investment costs of its South Texas Nuclear Plant Project through an increase in consumer utility rates. However, the commission told CSW that if CPL delayed increasing its rates, the company could come back to the commission with its request in five years and would get approval for a 5 percent increase. Brooks accepted that deal in good faith. In 1997, however, the commission once again rejected CSW's request for an increase.

Suddenly, CSW was in a bind, unable to cover its investments in the plant. The commission's chairman apologized for reneging, Brooks recalled, saying, "Central Power and Light is a well-run company. We respect you and admire you, but we've got to make an example to get everybody's attention."

Brooks had to look beyond CSW for options for the company's survival. It was a frustrating time: As CSW navigated these choppy business waters, its achievements as a utility were finally getting industry recognition. *Electric Light and Power* magazine named CSW Electric Utility of the Year for 1997. It was a bittersweet validation.

While CSW studied candidates for a merger, the Texas utility commission once again "jerked the rug out" from under the company, cutting its market rating deeply in one week. On Wall Street, CSW lost $2 billion in market value in two weeks. Brooks moved quickly to restore shareholder value and talked with several national buyers. The clock was ticking. Brooks began looking at AEP.

THE BIG MERGER

Draper, meanwhile, was examining CSW closely. He saw that the two companies complemented each other in the weather patterns of their geographies, their fuel sources and the economies of their respective regions. In Draper's first years as CEO, AEP streamlined its workforce substantially so now it could consider growth. AEP served customers in seven states from Michigan to Tennessee, while Central and South West served four states in the Southwest. From his years with Gulf States Utilities, Draper had known CSW's CEO, Dick Brooks. Brooks, too, understood the rationale for consolidation and had streamlined tasks among the CSW operating companies. "There's no reason to have four different back-office operations, doing exactly the same thing," Brooks said. So he had standardized engineering design, accounting and other operations, and CSW provided those services for its operating companies.

With time running short, AEP and CSW started to see how their differences might combine for strategic strengths. Draper said of AEP: "We were primarily a company that served industrial load in the Midwest, which was automobiles, glass, steel — that sort of thing. They were primarily an industrial load in the Southwest that was chemicals, petrochemicals, refining. So we had different industrial customers." With complementary geographies, weather patterns and fuel sources, a merger could give a larger company greater diversity and flexibility.

Draper and Brooks at the merger of CSW and AEP

While the opportunity for a merger came amid CSW's need to find a buyer, both Brooks and Draper regarded this transaction as a merger of equals. The two companies formally announced a merger agreement for a tax-free, stock-for-stock transaction in December 1997. In terms of customers and generation, they formed the largest electric utility holding company in North America.

"We knew that when we combined with Central and South West that there were economies of scale," Draper said. Blending the cultures of the two companies would pose challenges, but he was familiar with his colleagues at CSW. "They had been my next-door neighbors at Southwest Electric Power and at Central Power and Light. I knew Dick Brooks and Tom Shockley quite well and other executives at the company. And I thought that their values and mine were alike and that we would fit pretty well." It would not be easy. Both companies would have to make tough choices, selecting the best talent from each to create a winning team. And it would not be fast. Although agreed upon in three months, the merger took two and a half years to complete. "It was a painful, painful long process because of the regulatory approvals required," Draper said.

On the CSW side, many regarded the merger warily. Nick Akins was then working in CSW's mergers and acquisitions group, where he was project manager for the acquisition of Cajun Electric Power as that company went through bankruptcy proceedings. When the merger with AEP was announced, Akins along with other CSW and AEP leaders began a two-year process of merging the companies.

AEP leaders received this cartoon to commemorate the CSW merger.

For his part, Draper wondered: What would a unified brand look like to customers and investors? He reviewed successful past examples of branding after a merger: Some big companies had operated under a single brand, while others had worked well through many local brands. Customers could see the local connection with a name like Kentucky Power or Ohio Power. Yet Draper also saw a major advantage in a single brand: Investors were more likely to buy stock in that brand. And if a company was listening to its customers carefully and addressing their needs, it didn't have to wear a local brand. Draper experimented with a distillation to a single corporate brand. Ultimately, he knew, a brand's value relied on the company's field staff and their responses under pressure. "Whether it's a hurricane on the Gulf

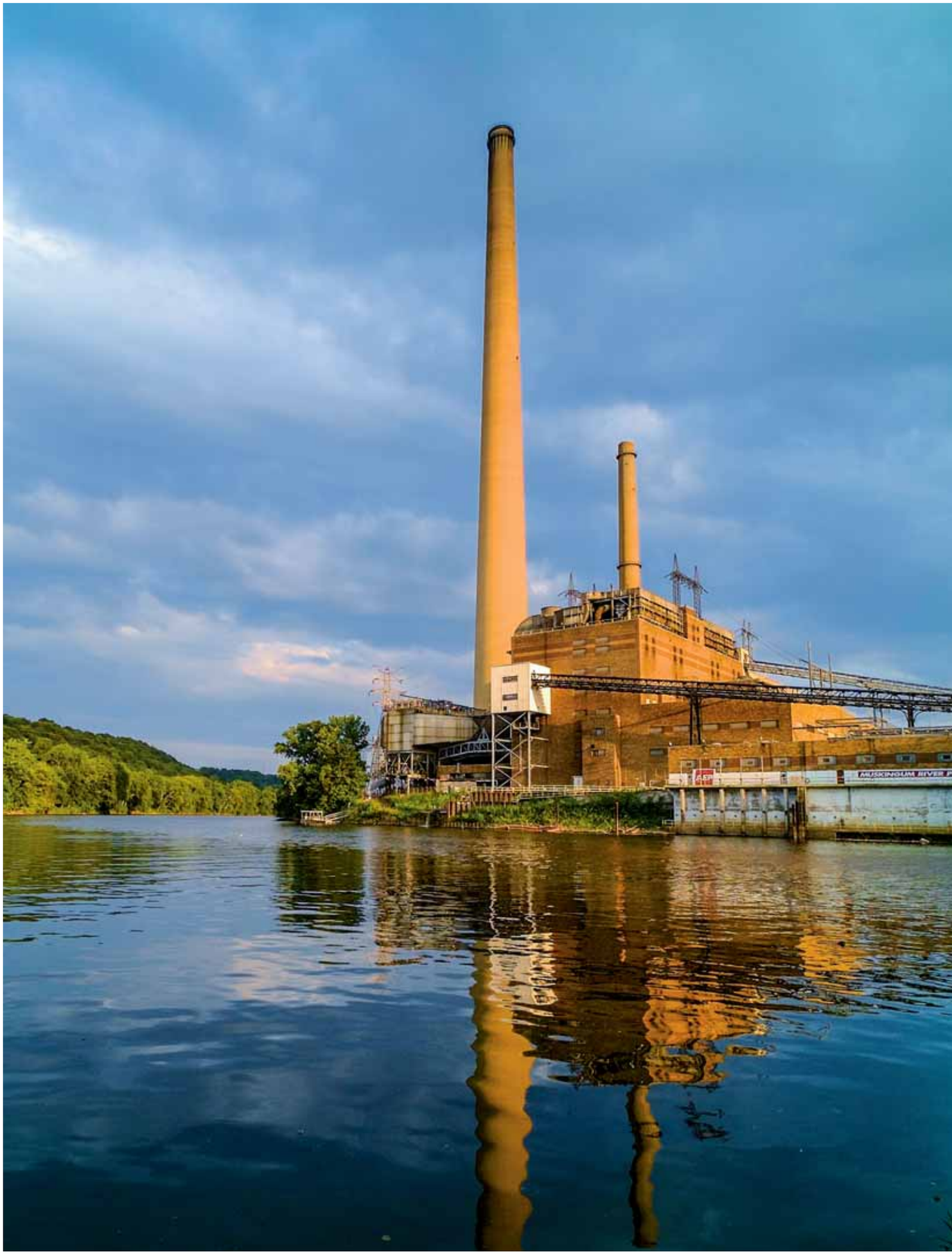
New line installation in Abingdon, Virginia

Coast or an ice storm in the middle of the country," Draper said, "people appreciate what they get when the utility company is there to get the lights back on."

Merging the two boards formed another piece of the puzzle. Here, too, the concept of a merger of equals, at least in spirit, guided Draper and Brooks. One member of the CSW board was Richard Sandor, a financial innovator known as the father of financial futures. He was impressed by how the management team handled the blending. Sandor worked on the board's finance committee, and after the merger took place, he joined the combined company's board, where he served until 2014.

In the early 2000s, inspired in part by his experience on AEP's board, Sandor established the Chicago Climate Exchange, a pioneering effort to address climate change with market-based incentives. AEP became a founding member of the exchange, committed to reducing its aggregate emissions. Sandor called the company's decision to join "a very important time in the history of the exchange, to have a utility that was essentially coal-based still willing to enthusiastically support a cap-and-trade system that would reduce their CO_2 emissions." Sandor believed that AEP joined the effort based on a shared, genuine conviction that pursuing market-based solutions for the environment was "part of the soul and consciousness of the company."

Richard Sandor speaking at a business governance webcast, alongside Linda Goodspeed and Richard Notebaert



The Muskingum River Plant

WORKFORCE DEVELOPMENT IN A TURBULENT DECADE

The utility industry experienced several waves of workforce changes in the 1990s as technology made some positions obsolete, and mergers brought consolidation of work functions. AEP, alert to the need to cultivate its future workforce even amid uncertainty, took on several initiatives. In 1995, the company revived Project Probe, in which AEP introduced summer interns from undergraduate engineering programs to the power industry. Begun in 1956, its alumni included high-impact leaders such as James Markowsky, who ended his AEP career as executive vice president of power generation and subsequently served in the U.S. Department of Energy as assistant secretary for fossil fuels. In the early years, students helped with plant maintenance as they pursued their own projects. Students presented their work to plant management and AEP senior staff, and then answered questions and made recommendations for future work. Besides fostering students' interests, AEP recognized that the program also benefitted AEP with improved relationships with engineers in university programs. The program operated continuously until 1979, when it was put on hiatus.

Working at AEP's Muskingum River Plant, Tracy Elich witnessed AEP's restructuring in 1995-1996 and again after the merger in 2000. At Muskingum River, managers explored piloting a program to outsource plant maintenance. Questions arose for the plant workers: Would they hire former AEP staff for those maintenance contracts? Despite uncertainties, Elich saw the company respond with a new spirit of openness. "We pulled all of our employees together who were going to be impacted by this if we did it and shared that this was a possibility, in the spirit of transparency," she said. In the end, the company went down a different path, but the episode showed her a new dynamic of engagement; Elich saw that play out again in other challenges that came with the merger.

Testing water quality near Muskingum River Plant

WHOLESALE ENERGY MARKETS

Both AEP and CSW grappled with the structural shift in energy marketing toward deregulation and greater competition in the wholesale market. The 1992 Energy Policy Act had changed the regulatory framework for greater emphasis on clean energy. The law also outlined new rate-making standards, introducing two paths that states could follow that eliminated restrictions on the price of wholesale electricity. In a regulated market, utilities controlled the full flow of electric power from generation to a customer's meter. Kentucky and other states followed that path. In a deregulated market, a utility must be divested of generation assets and only control operations from the interconnection of the grid to the meter. Deregulated markets aimed to provide all customers their choice of electric suppliers while ensuring grid reliability. Ohio and Texas were among the states that chose that path.

AEP's energy trading floor

AEP was deeply affected by these changes. Its transmission grid was so extensive that "we were the highway or the pathway for a lot of transactions," Draper said.

RATE NEGOTIATIONS

As energy markets evolved, states adopted different procedures for regulating and negotiating utility rates. In Ohio and Kentucky, for example, large industrial users negotiated rates with utility providers.

Michael Kurtz, an attorney for two industrial groups in Ohio and Kentucky, negotiated across the table from AEP in 1986, when talks regarding AEP interconnection were in the final stages. Kurtz's clients sought the lowest rates, while AEP aimed to recover Rockport Plant costs in its rate structure. Despite its conflicting agenda, Kurtz held AEP in high regard, describing AEP as a "good utility, well-run, high on the engineering scale."

Ultimately, the high-stakes negotiation involving AEP operating company Kentucky Power, state regulators, and state and federal courts concluded in a mutually beneficial agreement, one that stood for nearly 30 years afterward.

After 1999, when Ohio chose to follow the deregulated utility model, the wholesale market promised good profits, Kurtz noted, but shifts in the price of natural gas led to the collapse of the wholesale energy market.

The implications of Ohio's decision continued to unfold for years. When wholesale prices were high, industrial consumers complained the system was broken. Conversely, when wholesale prices dipped lower, industrial customers thought wholesale markets were great. "This is the way it's supposed to work," they'd say. Those low-price periods were, conversely, when utility providers thought the system was broken. "Both sides can be blamed in terms of being selective with their like or dislike of federal regulation," Kurtz said.

Kurtz helped to establish the Ohio Energy Group in 2003 to represent large industrial customers in negotiating electricity rates. From his vantage point over three decades, he said: "AEP has navigated the turbulent Ohio waters probably better than any of the other utilities in Ohio. They maintained very strong earnings at the utility level all throughout the 2000s and recently." AEP appreciated its industrial customers, Kurtz added. "They recognize the importance of industry and manufacturing for jobs and the economy."

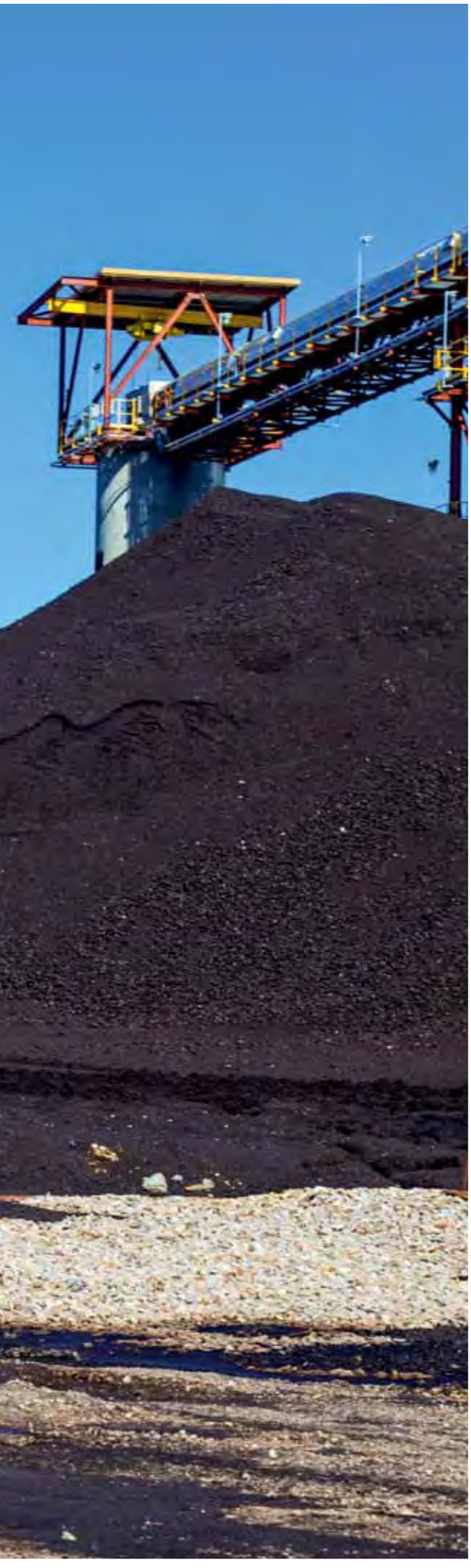
LEAVING ENERGY MARKETING

A leader in the new field of wholesale energy marketing was Houston-based Enron, which achieved infamy later when it declared bankruptcy in December 2001. In 1997, however, it was flying high on remarkable earnings from its wholesale energy trading operations. AEP jumped into the wholesale market with its own energy trading operation, which meant grafting a new culture onto the regulated utility culture that was AEP's foundation.

It was a difficult process. Yet AEP's trading business, on a surer footing than Enron's, made solid profits. After Enron collapsed, however, financial analysts tarred all energy traders with the same brush. "It was a huge disappointment," Draper said. "I thought the energy business was a big, robust business with lots of players that could survive the departure of Enron." AEP was successful in the energy-trading business, but the credit-rating agencies became nervous about the company's balance sheet, prompting AEP to issue $2 billion in new equity. "They were concerned that there was too much debt on the books," Draper said. After that, AEP largely scaled down its energy trading business.

"It's an unforgiving sort of business," Draper said of that period. "If you have investments in entities that fall out of fashion, the time to recover from that is short. You've got to take quick action." AEP had to add several billion dollars of equity "almost overnight," he said. "And we really had no choice if we wanted to retain an investment grade rating."

Coal adjacent to power plant



MARKET-BASED ENERGY IN OHIO

In another shift in the way energy was marketed, the Ohio legislature voted in July 1999 to deregulate the state's energy market, with the goal of allowing customers to choose their energy provider, including independent options certified by the Public Utilities Commission of Ohio. The law took effect in 2001, with a freeze on household customer rates. For years, Ohio's utility landscape was volatile, and customers faced unclear choices. With concerns lingering, the PUCO announced in 2005 that it would continue the rate freeze while it negotiated with AEP and the state's three other major power providers for a stepwise raising of rates to market levels. The energy market experiment in Ohio continued to unfold over the following decade. AEP pursued creative ways and new business solutions to respond to the challenges of a deregulated market in Ohio and in other states.

In October 2008, Chuck Zebula christened the boat named after him in downtown Pittsburgh.

HISTORIC SHIFTS

Coal power reached its historic peak around 2000. Chuck Zebula, a 1990 Penn State engineering graduate with master's degrees in mineral processing and industrial administration, landed a job with AEP's fuel supply division in 2002, bringing valuable experience in mining and processing as well as sharp business acumen. At that time, AEP bought and consumed almost 85 million tons of coal, nearly one-tenth of U.S. coal production. "Coal was king, and it was a real challenge to buy 85 million tons of coal," he said.

As if to underscore the trend and its peak, AEP acquired Kentucky-based Quaker Coal, which included surface and coal mining assets and coal reserves in Kentucky, Ohio, Pennsylvania and West Virginia. The deal boosted AEP's own coal production by about 7 million tons.

But Zebula and others in AEP's generation division foresaw an emerging pattern. After 2000, the company's consumption of coal dropped by half. One of the great strands of AEP's story in the early 21st century is that historic shift: AEP rode coal's ascent as a fuel supply all the way through the 20th century, and then it rode the start of coal's downturn.

A RETURN TO CORE STRENGTHS

In 2003, Draper announced he would retire, and the board began its search for a new CEO. After a series of interviews, they chose Mike Morris, recruited from Northeast Utilities. Morris's experience at Northeast Utilities had reinforced in his mind the value of building a company's infrastructure and value, growing relationships with communities and state regulators, and ensuring return to shareholders. When he first arrived at AEP, he felt humbled by the scale of the venture, which spanned 11 states. "The magnitude of it was overwhelming," he said. "The depth and the breadth of the footprint was just incredible. And so quite honestly, I'm thinking to myself on many lonely nights, 'This thing is a monster.'"

CEO Mike Morris

Morris was equally awed by the innovative power of AEP's people. "It really was an overwhelming impact to me, the obligation I had as the then-CEO of this great, iconic name in this incredible industry, to carry it forward and husband it and polish it and make us all proud of it again."

One aspect of that, he saw, was to give the operating companies more freedom to take initiative by reducing the layers of hierarchy — as Morris put it, getting decision-making authority closer to the customer.

Morris also started a shift to more collaborative management and closer ties with stakeholders. And in 2005, as part of its commitment to reconnect with local communities, the company established the AEP Foundation to "play an active, positive role in the communities where we live and work." The Foundation supports community initiatives in education, basic needs, arts, culture, health and the environment.

In 2007, the Foundation partnered with the City of Columbus and donated $10 million to revitalize the city's riverfront as a beautiful park, called the Scioto Mile. Covering over 175 acres of scenic fountains, overlooks and promenades beside the Scioto River, the park created a vibrant space for gathering in downtown Columbus.

Chairman's Life Saving Award

In his first year as CEO, Mike Morris established a new award to recognize the "extraordinary efforts of AEP employees to help people in need." That first year, Morris presented awards to employees of Public Service Company of Oklahoma (PSO) and AEP Ohio. PSO employees Lee Ann Myers and Frank Phillips saved a woman from violence and alerted neighbors to escape a fire. AEP Ohio employee Steve Frisch rescued a toddler wandering a busy street and went door to door to find the child's family while on duty restoring power to a neighborhood hit by a hurricane.

Over the years, the award has recognized dozens of AEP staff members, including many who risked their lives to save others, such as Mike Walls, a meter electrician from Logan, West Virginia, who saved a family from a house fire; the crew of an AEP river operations boat that saved a fellow deckhand's life after a heart attack; Lydia Rios, Rick Ramos and Ramiro Martinez III of the AEP Texas Pharr Service Center, for three life-saving incidents; and Bernie Maynard, of Bluefield, West Virginia, who rescued a 3-year-old boy from a car crash, unstrapping the toddler from his car seat moments before the vehicle burst into flame.

Because of his quick response to save a woman's life, Mike Doswell was awarded the 2007 AEP Chairman's Life Saving Award, presented by Mike Morris.

"The AEP Chairman's Life Saving Award is proof that our employees do extraordinary things, on and off the job," said Nick Akins. "We have brave and compassionate people who strive to do the right thing, every time."

FINE-TUNING THE STRATEGY

Transmission was a strength that grew from AEP's history and geography, and transmission would prove to be an even more important driver of value and growth going forward. Philip Sporn had invested in building power plants at the fuel source and delivering service to customers across a robust network. AEP was the first U.S. utility to build 765-kilovolt transmission lines. That strategy for a wide network of power generation and transmission particularly made sense for AEP's vast geography, Morris said. It might not make sense for Commonwealth Edison to build plants in Iowa to serve Chicago customers or for Con Ed to build plants far from its service area in New York City. "But our footprint was such that it made sense for that approach," Morris said.

Morris also began exploring how AEP could institute voluntary renewable-energy requirements, with the operating companies setting their targets for renewable energy sources and energy efficiency. The former CSW operating companies led the way.

AEP ended 2005 once again on firm footing, with plans for the next generation of power plants. The initiative this time came from SWEPCO: In December, SWEPCO announced it was seeking proposals for a new plant. "It has been nearly 20 years since the company last brought new generating facilities online," Akins said at the time. Customer growth in SWEPCO's three-state service territory required new capacity.

Ultimately, the plant named for SWEPCO's former CEO, John W. Turk, Jr., would prove to be one of the cleanest, most efficient generating plants, the first ultra-supercritical power plant in the United States, using less coal and producing fewer emissions than any existing coal plant. In addition, SWEPCO put the 340-megawatt Henry D. Mattison natural gas peaking plant in service in Springdale, Arkansas, in 2007 and the J. Lamar Stall 550-megawatt natural gas combined cycle plant in service in Shreveport, Louisiana, in 2010. These investments helped ensure fuel diversity in AEP's generation portfolio. As it completed its first century, AEP was turning another page.

Construction of AEP's award-winning Turk Plant, the industry's first ultra-supercritical plant

A Turk Plant employee


HILTI

Dr. E. Linn Draper, Jr.: Leader Into Times of Change

E. Linn Draper grew up in Houston in the 1940s and '50s. After studying chemical engineering at Rice University, Draper pursued a Ph.D. at Cornell, with an interest in nuclear engineering. From an industry perspective, he said, nuclear energy "had the advantage that you weren't hostage to fuel suppliers, particularly. It had the disadvantage that it was capital intensive. But nuclear plants are long-lived investments, and if properly managed, they're a good investment."

Draper worked for over a decade as a professor of mechanical engineering at the University of Texas, where he taught and researched nuclear technology. Then, in 1979, he joined Gulf States Utilities (later called Entergy Texas) as vice president for nuclear technology. He became CEO in 1986.

Draper would become CEO of AEP in 1993 after 13 years with Gulf States Utilities. He was not looking to make a change, but a headhunter called and spoke frankly: "Well, look. You're a little less than 50 years old. You've been the CEO already at Gulf States for five or six years. Are you going to do that the rest of your life?" Maybe Draper should consider AEP, the man said. Ultimately, Draper did exactly that.

He and AEP were heading into an exciting decade of change in the energy industry. Draper's approach to leadership and knowledge of his counterparts at other utilities, including Dick Brooks at CSW, would shape the companies' shared future. When the time came, Draper was determined to present AEP's purchase of CSW as a merger of equal partners, Brooks noted, "because they realized that a merger of equals ends up with employees being treated equally and everybody feeling like they have equal input into what's going on." Draper insisted on that parity. "Linn said from day one we're going to treat this as a merger of equals," Brooks said. "And consequently, the people came together a lot better than they would have had it been treated as a purchase."

Draper participates in a science project during an AEP school volunteer program in Columbus, Ohio.

AEP CEO E. Linn Draper, Jr.

CSW CEO E.R. “Dick” Brooks

E.R. "Dick" Brooks: Guiding CSW to the Top

Dick Brooks grew up on a Texas farm, where his daily chores and responsibilities shaped his attitude toward work. "I didn't want to be an engineer sitting behind a desk. I wanted to be an engineer that was out working with people," he said. He began his career as a transmission engineer for West Texas Utilities in the 1960s, first on a field crew and then as a distribution engineer, and then moving to transmission design. At that time, WTU was the smallest, scrappiest company under Central and South West, covering the largest area.

As the price of natural gas rose in the 1970s, Brooks became a fuel engineer — a very different kind of challenge. Transmission design got "into my blood," Brooks said, like a ballplayer eager to best his previous scores. "It's all about the numbers and all about building a line that will do the job, and not necessarily like other lines that have been built, but one that fits what you need."

In 1982, Brooks moved to Central Power and Light as vice president and chief engineer. And in 1986, he became CEO. The following year, he moved to Dallas for a management position with Central and South West.

When the time came to navigate a merger with AEP, Brooks approached it with long consideration of both companies' cultures. He and Linn Draper worked hard to propagate a blended culture, with values from both founding firms, across the entire new company. The job of preparing everyone for the change — and tackling logistics during the 30 months the process took — was titanic.

In the end, Brooks saw his commitment to corporate stewardship bear fruit. "When we signed the contract, we were in New York and had a celebration," he said. "Everybody was in a great humor. At the very first board meeting, the AEP board welcomed the CSW board members with open arms. We could see from day one, this is going to be good, because there was a camaraderie."

Draper asked Brooks to stay on the board until Draper retired. After Draper's retirement in 2005, the board asked Brooks again to stay. "I saw it work," Brooks said. "There's a whole lot of pride in having a part in it going together like that."

A CPL line crew works on transmission lines near Harlingen, Texas.

Mike Morris: The Language of Leadership

Mike Morris served as AEP's CEO from 2004 to 2011. He grew up in Fremont, Ohio, and went into business after a formative experience leading an army platoon. His model of leadership came by ownership. "This was something my dad taught me deeply," Morris said. "If you cause a problem, you've got to fix the problem. And the only way to fix it is own up to it and then get about fixing it." That type of ownership helped him land a number of leadership positions — as president of Colorado Interstate Gas, then Consumers Power, then Consumers Energy. Finally, after a time as CEO of Northeast Utilities, he was recruited to lead AEP. Bringing in another CEO from outside following Linn Draper, the board charged Morris with growing leadership within AEP's ranks. The mandate to groom another generation tapped Morris's core skills.

"I started out to be a high school biology teacher," Morris said. "That was the plan." After ROTC and graduate school, Morris found himself on a different path. He was conducting environmental studies for various companies, including a number of electric and gas utilities.

When he joined the utility industry, Morris saw a need for better communication, particularly in public meetings, where corporate representatives often responded to community members' questions in technical language. "We, as an industry, were speaking technically to people who were asking us emotionally about how these things fit together."

When he came to AEP, Morris saw the potential for cross-pollination among the operating companies, rotating talented people into different positions for exposure to a variety of functions, as Dick Brooks had done at CSW. "It gave us a chance to take the leadership of both Central and South West and American Electric Power and put them in the field." A more diverse company was part of that vision, Morris said. "I surely had in my heart and mind that it needed to be diverse."

"We re-established American Electric Power as the go-to player in the industry," Morris said. "I believed that American Electric Power had the skill sets, had the responsibility, to go forward and do those things. And really, if not us, who?"

Then the great recession hit. For a year after the stock market plummeted in late 2007, America's energy demand remained steady. But by December 2008, industrial demand dropped, and Morris had to look hard at AEP's debt obligations and ensure the company could weather the downturn. With customers in the steel, aluminum and automotive industries deeply affected by the recession, Morris knew the recovery could take a while.

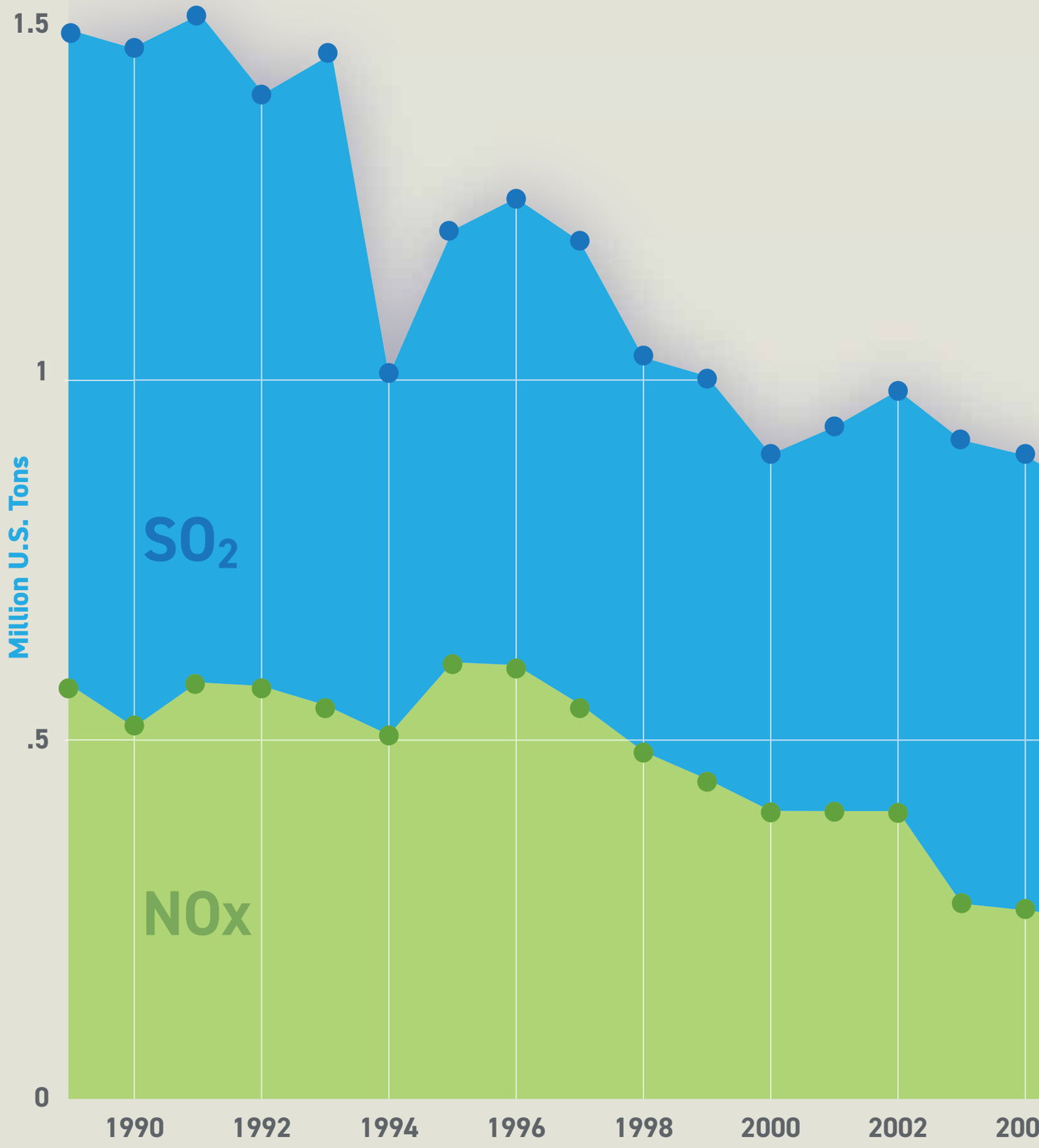
Morris made plans to retire on November 11, 2011. As that date approached, he received the Distinguished Leadership Award from the Edison Electric Institute. Morris accepted the honor as an acknowledgment of the team he had created. Among his fondest memories, Morris recalls an observation made by a leader of the Natural Resources Defense Council, who said, "You know, Mike, one of the very interesting things about American Electric Power recently is that I used to know your company by the name of your power plants. I now know your company by the name of your executives." Morris savored that comment.

An AEP Ohio employee prepares to install a smart meter in central Ohio as part of the gridSMART demonstration project.

AEP CEO Michael G. Morris

EMISSIONS REDUCTIONS AND TECHNOLOGY CHANGE

Total AEP System NOx & SO_2 Emissions



33%

REDUCTION IN
WATER WITHDRAWAL IN 2016
COMPARED TO 2014

$2.8 MILLION

TONS OF BENEFICIALLY
REUSED COAL COMBUSTION
RESIDUAL PRODUCTS IN 2016

44%

ESTIMATED REDUCTION
IN CO_2 EMISSIONS FROM 2000
THROUGH 2017

94%

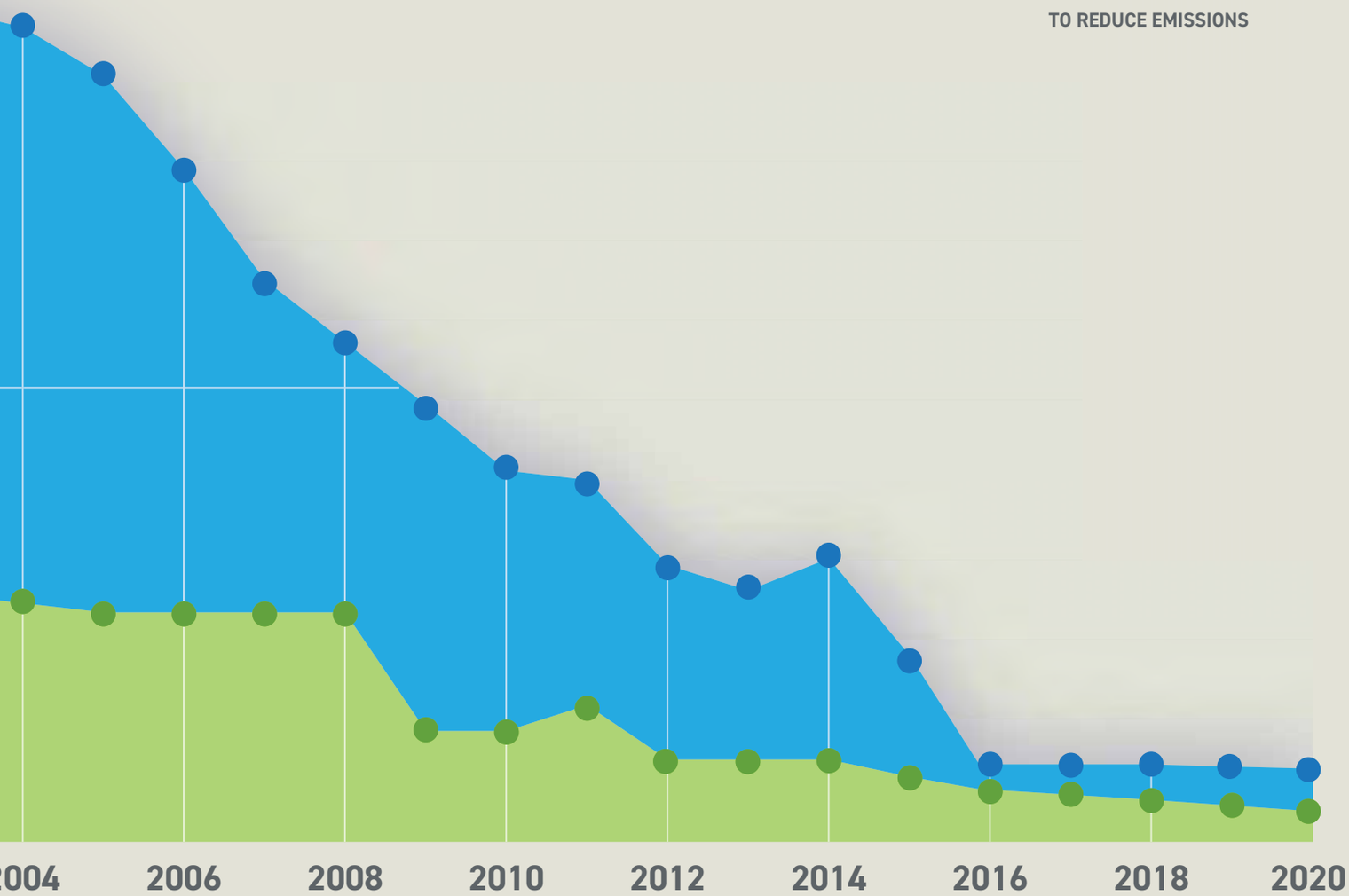
ESTIMATED REDUCTION
IN SO_2 EMISSIONS FROM
2000 THROUGH 2017

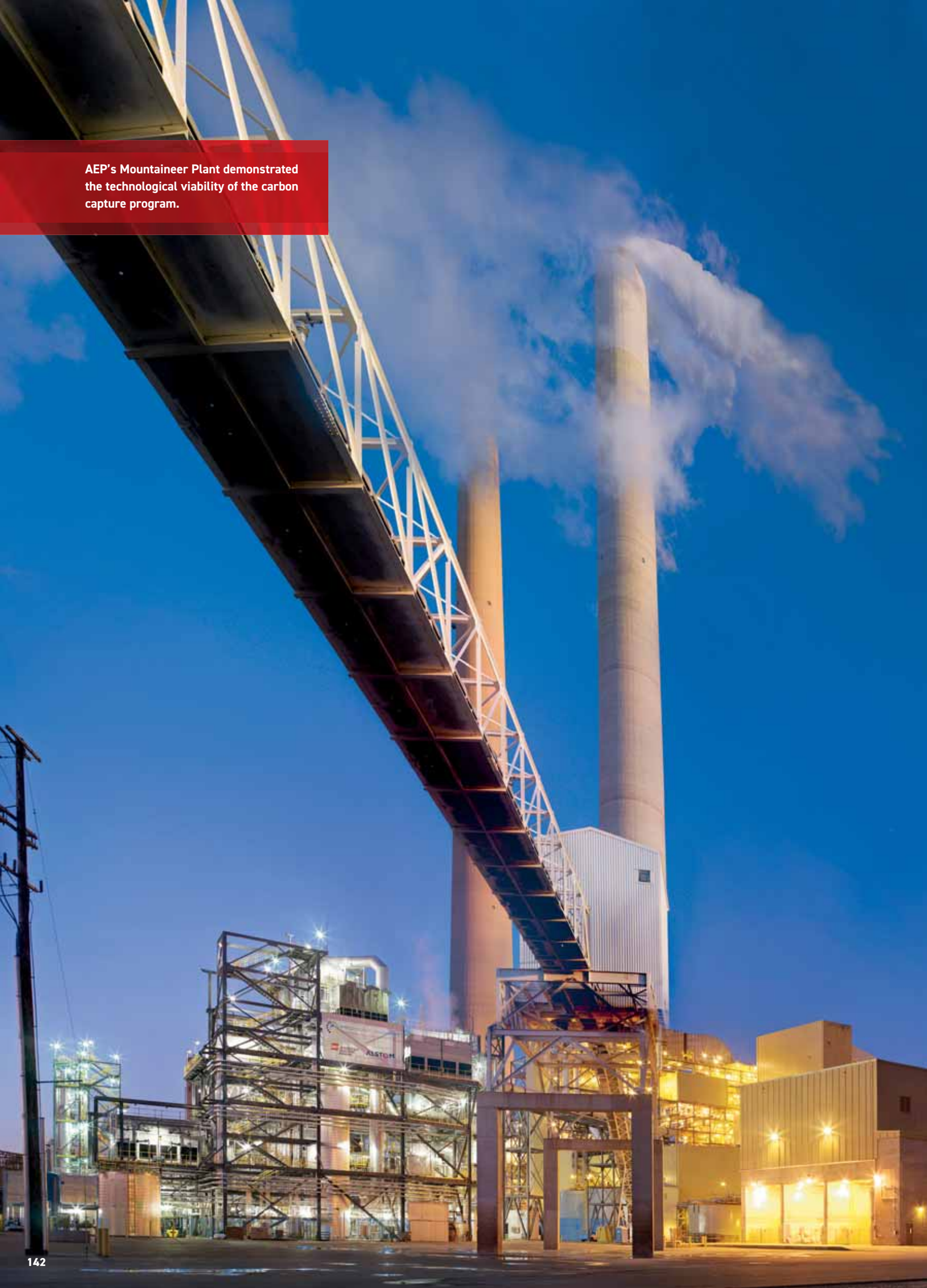
4,198 MW

AEP'S TOTAL
RENEWABLE PORTFOLIO

$8.7 BILLION

ESTIMATED TOTAL INVESTMENT
IN ENVIRONMENTAL CONTROLS
BETWEEN 2000 AND 2017
TO REDUCE EMISSIONS





AEP's Mountaineer Plant demonstrated the technological viability of the carbon capture program.

A NEW KIND OF ENERGY COMPANY

2006 to PRESENT

In early 2006, CEO Mike Morris challenged his leadership team to engage more fully with the company's employees and stakeholders on priority issues, especially environment, safety and health. For the outreach effort, Morris recruited Sandy Nessing, who came from Northeast Utilities. In a tour of 18 AEP power plants, from the eastern edge of AEP territory in Virginia to the far western edge in Texas, Nessing listened as employees and other stakeholders expressed their concerns. Traveling through Oklahoma, Arkansas and Louisiana, she met the people and learned the geography that the merger with CSW had knitted together six years before. At every stop, Nessing met with plant managers, environmental coordinators, safety and health managers, and anyone who wanted to join the discussion. Usually the room was full. AEP employees were eager to discuss their ideas and concerns — everything from the environment and power sources to workplace safety and workforce development.

Sandy Nessing

RENEWED CONNECTIONS

It was an exciting time. The utility's role in the communities it served was changing. AEP's management showed a new appetite for stakeholder involvement, with outreach expanded beyond traditional allies to include groups that had opposed corporate decisions or public policy positions. Some historic impressions lingered from AEP's past pushback against environmental rules. Some people felt that corporate decisions happened in executive suites, behind closed doors. Workers across AEP also pushed for greater transparency.

That desire for openness fit well with Morris's own vision for the company. He shared AEP's evolving environmental position and progressive actions through newsletters and announcements. Still, the information wasn't reaching the communities. Many people outside AEP didn't know about AEP's innovations in addressing climate change, such as capturing and storing greenhouse gas emissions.

In West Virginia, AEP had developed engineering solutions for capturing and safely storing carbon dioxide in deep underground formations. The company had started making plans in 2002 to install cutting-edge technology at its Mountaineer Plant. The $120 million pilot project went forward in one of the world's first examples of carbon capture. A study completed by Battelle determined the geology under the Mountaineer Plant was well-suited for permanent carbon storage. West Virginia Governor Joe Manchin endorsed the project, but plans to expand it hit a roadblock when the project was rejected in Virginia, the other state involved in regulating the Mountaineer Plant. Nonetheless, AEP had captured 50,000 metric tons of CO_2 per year and stored it underground, demonstrating a potential mitigation measure for a monumental global challenge.

Mike Morris tours the Mountaineer Plant with West Virginia Governor Joe Manchin.

Mountaineer Plant

THE ECONOMY THROWS A CURVEBALL

The Great Recession hit the power sector in 2008 the same way it hit other Americans: by surprise. Chuck Zebula, who was in charge of procuring fuel and other commodities for AEP power plants when he was asked to become treasurer in July 2008, accepted the challenge with enthusiasm. Power demand remained steady in the early months of the recession, but then industrial demand shrank by 9.1 percent in one year.

Less than two weeks after Zebula sat down in the AEP treasurer's chair in September, the venerable Wall Street investment firm Lehman Brothers declared bankruptcy. The U.S. economy's dominoes began to fall. Lehman, which had dug itself deep into subprime mortgage lending, filed for what remains the largest bankruptcy in U.S. history, triggering a 500-point drop in the Dow Jones index. AEP was deep in the process of investing $8.7 billion in new scrubbers and other air emissions control technologies, and it found itself financially vulnerable. The debt it had used to fund investments in the network's infrastructure was suddenly much more burdensome. To ensure AEP had ready access to cash, Zebula had to reduce AEP's short-term debt exposure and draw on other credit lines at a time when banking conditions were imploding.

Moody's message to AEP was: "If you continue to spend money like you are, we are going to downgrade you."

AEP faced another test two months later, when Zebula met with representatives from Moody's, the financial rating agency. As he recalled, their message to AEP was: "If you continue to spend money like you are, we are going to downgrade you." A downgrade would cause AEP to have a non-investment grade or junk rating, which would spell disaster. "It was a pretty stern message. And I think they were also testing to see what kind of mettle I had," Zebula said.

Companies across the country were facing similar dilemmas. Zebula conferred with Morris and the Board of Directors and reviewed options for a path forward. In Zebula's view, the options included reducing the shareholder dividend, cutting capital and other spending, or raising equity through a stock issuance. AEP chose to hold the dividend flat, cut capital and other expenses, and issue equity. With the equity, the company could pay down its debt and improve credit metrics. So, in March 2009, AEP issued about $1.6 billion in equity and immediately used that equity to pay down credit lines. Moody's responded positively to the move, and AEP emerged on a stronger footing. "That removed a downgrade threat immediately," Zebula said.

SWEPCO Mattison peaking plant

A scrubber installed at a plant

Over the next four years, AEP continued to reduce its debt. During his four years as treasurer, between 2008 and 2012, Zebula lowered the debt-to-equity ratio from 62.5 percent to 55 percent, improving the company's balance sheet significantly. "You can get spoiled in this industry pretty easily when sales keep growing," Zebula said. "But when there's a break in that cycle, when you lose revenue almost immediately, and you have these grand spending plans, it's really kind of hard to pull the brakes and stop the car." Many challenges remained before AEP could fully recover, and it had to make tough decisions about its assets and its workforce. Capital budgets were cut to about $2.2 billion in 2010. But the company came out of the recession stronger and nimbler, with a renewed commitment to innovation and a way forward.

CENTURY MILESTONE

Daylight emerged at the end of that financial tunnel as an important anniversary came into view in early 2010. That spring, the company declared an increase in its regular quarterly dividend. Moreover, that quarter AEP marked a century of continuous quarterly cash dividends delivered to shareholders.

With that anniversary of 400 consecutive quarters of regular dividends, AEP joined a rare handful of U.S. companies — fewer than two dozen — that shared such a strong record and unwavering commitment to its shareholders. To celebrate the occasion, on June 3, Morris, along with former CEOs Pete White and Linn Draper, members of the Board of Directors, and other senior leaders went to Wall Street and rang the closing bell at the New York Stock Exchange. The event spoke to the company's resilience, and Morris gave the credit to AEP's employees.

AEP's leadership team rang the opening bell at the New York Stock Exchange in recognition of the company's 400th consecutive dividend.

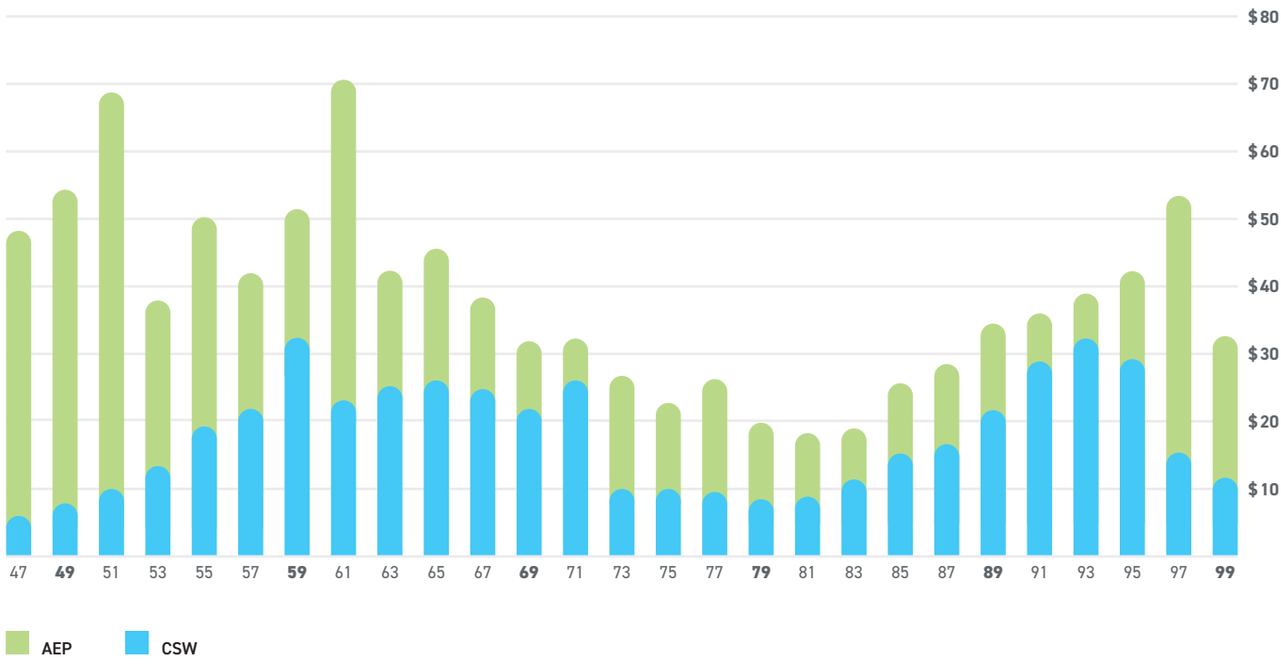
As Morris approached retirement in November 2011, he and the Board of Directors identified four internal executive candidates to replace him as CEO. The Board selected Nicholas K. "Nick" Akins, who had been president and COO of SWEPCO before Morris promoted him to executive vice president for generation. Akins had shown himself adept at leading teams across the entire company and alert to opportunities for improving performance. At the board's meeting in October 2011, Akins was elected CEO. The transition took place the following month.

For years, Morris had hoped to pass the baton on the auspicious date of November 11, 2011, which was his 65th birthday. On that day, Morris and Akins attended a meeting in Atlanta. At 11:11 a.m., Morris handed Akins a baton made for the occasion and gave Akins his new business card, with the title "President and Chief Executive Officer." Morris continued as non-executive chairman of the board for two years.

The transition fulfilled a personal mandate for Morris, who, from the start of his tenure, had focused on cultivating robust leadership within AEP. Akins later said, "When Mike was brought in, he had the definite intention to ensure that later there were internal candidates who were viable for that role. And so, he did a great job of developing people in different roles along the way. And he did exactly what he was supposed to do, and you wound up with . . . competitive candidates who were friends."

HISTORICAL 52-YEAR-END CLOSING STOCK PRICE OF AEP AND CSW

(Historical data from 1906 to 1946 was incomplete)



Charles Dixon, a member of Friends of Caddo Lake National Wildlife Refuge and an AEP stakeholder

Leading Role as Community Convener

In the late 1990s, when Mike Morris led Northeast Utilities, he often worked with the New England regional administrator for the U.S. Environmental Protection Agency, Mindy Lubber. Morris impressed her with his willingness to look for solutions to questions about climate change and the energy sector's role at a time when most in the industry avoided those questions. Then in the early 2000s, when Morris became head of AEP, Lubber was struck by the company's new openness on climate change and its risks. AEP and its board addressed thorny questions with long-term thinking and specific goals for greenhouse gas reduction. "That was nothing short of revolutionary at that time," she said.

When AEP decided to integrate sustainability goals into its business, on everything from facilities management to supply chain, it asked for help from Lubber as CEO of Ceres, a national nonprofit organization working with investors and companies to build leadership on climate change. AEP impressed her with its commitment to tackling big issues, even where they sometimes disagreed on solutions. That kind of commitment started from the top. "Mike clearly was the person who stepped in and said, 'We're going to do this,'" Lubber said.

AEP management took a higher profile in the public policy conversation at a difficult time. Convening a gathering with Ceres, AEP invited a range of stakeholders to meet in Columbus in early 2007. After that first meeting with stakeholders, the company gained a new appreciation for listening and for how to better articulate its values and actions. In 2008, a major piece of climate legislation known as the Waxman-Markey Bill went to a vote in Congress. The bill introduced a market-based cap-and-trade system for addressing climate change. AEP took a stand and vocally supported the bill. In the end, Congress did not pass Waxman-Markey, but AEP's support marked a bold step, one that helped move the entire industry forward, according to Lubber.

CEO Nick Akins further strengthened AEP's commitment to environmentally friendly technologies and to a sustainable business model that better served customers' and investors' concerns about the environment. Led by Akins, AEP also became a leader in its relationships with communities. "They take consistent steps every year to engage with a wide range of stakeholders who may not agree on every issue, but they get a hearing. They get a clearer sense of where the company stands and why," Lubber said.

Ceres

Turk Power Plant construction, Fulton, Arkansas

DIRECTIONS FOR POWER GENERATION AND EFFICIENCY

For a century, AEP's generation business was the company's revenue powerhouse, yielding nearly $1 billion a year from sales of excess power in the market. In the Great Recession, two factors changed that picture significantly, according to Mark McCullough, executive vice president of generation. First, customer demand dropped, which sent energy prices down. Second, new technologies for accessing underground natural gas deposits brought stability and lower prices to the gas market. Since then, McCullough said, natural gas has been "stabilizing the price, bringing a lot of value to our customers and the country."

Edison Award

These changes signaled a shift in the balance between power generation and transmission. Looking ahead, AEP management saw that power generation would likely be much more widely distributed than in the past. Apart from the large plants already under construction, the company was less likely to build new large central generation plants. "I think it's more likely that we'll see more distributed generation that brings a resiliency element," McCullough said. That shift to distributed power generation — including renewable sources — makes the whole system more efficient. It moves power generation closer to the consumer.

AEP had begun a shift toward a cleaner and more diverse generation mix under Morris. During his tenure, AEP purchased and built new natural gas plants. Early in Akins's tenure, he led AEP to another milestone: the 2012 opening of SWEPCO's John W. Turk, Jr. Power Plant, America's first and only ultra-supercritical coal-fired plant. The 600-megawatt facility in Arkansas extracted more energy from coal than any previous technology and achieved even greater reductions in emissions of carbon dioxide, sulfur dioxide and nitrogen oxide.

For these advances, AEP was recognized with the 2013 Edison Award. The citation from the Edison Electric Institute recognized AEP "for engineering and operating an extremely efficient power plant that utilizes the most innovative technologies to meet 21st-century electricity needs," said EEI president Tom Kuhn. The opening of the Turk Plant came the same year that SWEPCO celebrated its 100th anniversary, with a celebration on June 29.

Along with these milestones in power generation, AEP set new targets for energy efficiency and began a series of investments to modernize its distribution operations. Again, this priority came from listening to stakeholders and customers. AEP saw efficiency as a part of the climate solution, so it set goals of reducing demand by a thousand megawatts by the end of 2012 through greater energy efficiency. While 20th-century electric power companies encouraged customers to buy appliances to use more electricity, now AEP was partnering with its customers to use electricity more efficiently. And it was installing smart meters and automation systems to improve reliability and give customers real-time information on their energy consumption. This partnership with customers brought a greater sense of shared purpose within the company as well, between management and employees.

Nick Akins visits Turk Power Plant construction

CEO Nick Akins in 2012 unveiled a four-part strategy proclaiming sustainability as a strategic investment that ties AEP's balance sheet and daily operations to its responsibility to the environment and society. With an eye on the larger trends, the strategy grew from the company's regulated utilities and a more sustainable mix of power sources and distribution. Akins set out to "rethink our generation strategy, and resource strategy, and even what we called resources. So, it wasn't a matter of just generation; it was a matter of looking at other technologies, as well." The strategy's four components were: invest in AEP's regulated utilities and optimize those investment returns; reposition the company's generation assets for a more sustainable fuel mix; grow short- and long-term earnings through the transmission business; and create a robust, competitive retail energy business that could provide significant growth while reducing risk.

AEP's Turk Plant, the first ultra-supercritical coal-fired plant in the United States

AEP created AEP Energy to serve deregulated energy markets.

MANAGING CHANGES IN OHIO

A significant test early in Akins' tenure came in March 2012, when the Public Utilities Commission of Ohio (PUCO) proposed to move quickly toward full competition in electric service. They pressed for a shortened one-year timeline that threatened AEP Ohio's stability with immediate multimillion-dollar losses in revenue.

Akins pushed back, explaining that AEP needed a period of three years to unwind the legal and contractual obligations it had already entered with the PUCO's approval. AEP also engaged with the public on the issue, launching an advertising campaign to counter misinformation with clear messages explaining how a shortened timeline would hurt AEP's ability to deliver service in Ohio.

By August 2012, Akins' team achieved a compromise and gained a three-year phase-in period for the shift to full competition, averting a financial crisis. Akins still had to act quickly. The following month, AEP submitted six filings with the Federal Energy Regulatory Commission (FERC), addressing corporate separation in Ohio. One problem was that the proposed change threatened to upend the decades-long arrangement by which AEP's operating companies "pooled" power generation to achieve the most efficient use of the total load across the states in the utility's territory. An interconnection agreement governed the "East Pool," which dictated how energy and capacity were shared and paid for among the east operating companies. AEP's filings with FERC included asking permission to end the East Pool compact and replace it with two new contracts. Under the new contracts, AEP Generation Resources would step down its supply to Ohio Power with its energy requirements to cease by January 2015. By mid-2015, the transition would be complete and competitive energy auctions would determine the supply of all of Ohio Power's energy.

"2012 was a tumultuous year, but we did a lot of tremendous things," Akins said in early 2013. Besides the Ohio regulatory shift, he noted the Turk Plant opening and new investments in transmission, all of which provided stability for future growth.

In December 2013, AEP received all the approvals it needed from FERC to move ahead. "The diligence of our employees and the cooperation of the affected state and federal commissions allowed us to execute our Ohio restructuring plan right on schedule," said Akins. Deregulation of the market in Ohio cost AEP significant lost revenues on an ongoing basis and led to a $2.3 billion write-down of the value of Ohio generating assets, but the company had avoided the worst.

AEP Ohio line mechanics prepare to install a utility pole.

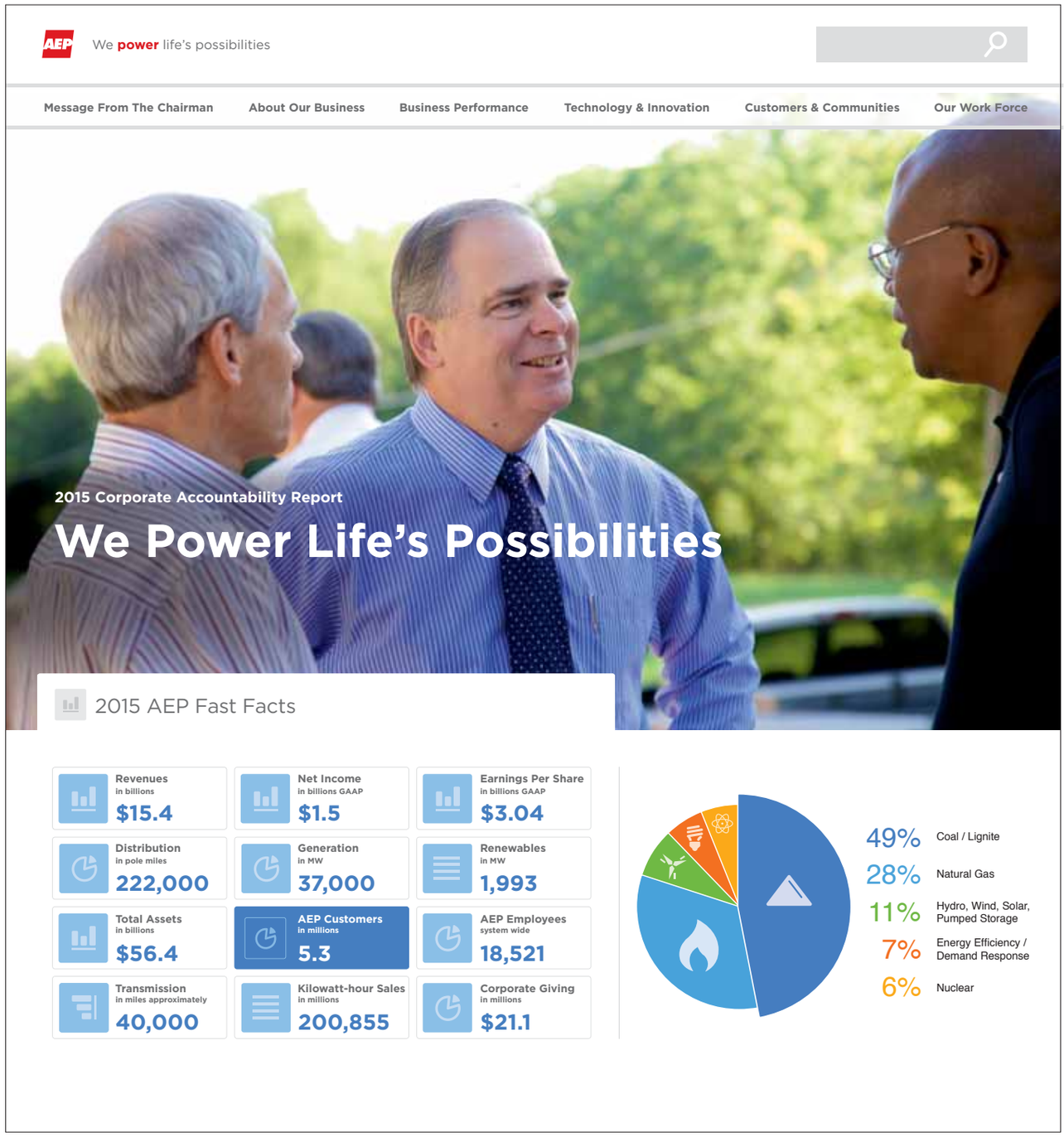
AEP Ohio line mechanics perform a LineVue test.

AEP River Operations was sold in 2015.

COMING OUT STRONGER

AEP created a subsidiary for the competitive energy market in 2014 called AEP Generation Resources. It was a rewarding time to be in that sector: The first quarter of 2014, when the polar vortex brought an intensely frigid wave of cold to the Midwest, saw unprecedented profits. But the trend was short-lived. Within a year, management saw the greater stability of the regulated energy sector as the path forward. "There's a lot of volatility," Zebula said, "so therefore it didn't meet the mold of what a utility investor's looking for, which is more stable, steady earnings and growth in supporting the dividend."

Having navigated the separation of Ohio assets into AEP Generation Resources, the company sold four plants in January 2017 and made plans to sell or close the remaining competitive generating plants previously owned by AEP Ohio so it could focus on its regulated businesses. In a parallel move, the company in 2015 sold AEP River Operations, the nation's second largest inland waterway carrier, for approximately $550 million. It kept the portion of its river transport business that served its own coal-fired plants in its regulated utilities, nearly 500 barges and their crews. AEP invested the proceeds from that sale in its regulated energy business.



Responding to Unpredictable Hazards

AEP has always faced natural disasters with a commitment to speedy response and recovery. Extreme weather tested this responsiveness in extreme ways. In 2008, Hurricane Ike struck a large swath of the country, slamming both AEP's eastern and western utilities. Nearly 650,000 AEP customers in Ohio and 187,000 customers in Louisiana and Arkansas lost electricity, and crews needed over a week to restore power. Then, in 2012, a freakishly fast storm known as a derecho caused unprecedented damage across the Midwest and Atlantic coast states in AEP's territory. The June 29 storm brought gusts up to 91 miles per hour, left 22 people dead and caused over $2.9 billion worth of property damage from Ohio eastward through the Appalachians. Over 1.4 million AEP customers lost power. The storm took 424 stations offline, causing possibly more damage to AEP transmission facilities than any in the company's history. Thousands of workers battled scorching heat, thunderstorms and rain to restore power to all customers within 16 days.

Another unexpected hazard combined natural and manmade elements when two underground explosions occurred under Columbus, Ohio, on February 28, 2014. In the middle of the night, the explosions sent several manhole covers popping up downtown. Fortunately, nobody was injured. Investigators said the explosions likely resulted from a combination of a water main break several weeks before, corrosion of lines, and salt distributed to keep streets clear of ice. CEO Nick

When disaster strikes, AEP can pull assets from across its wide service area to resolve issues as quickly and safely as possible.

Akins noted that AEP worked very fast to restore power to the downtown network and called the Columbus explosions "a very, very tough learning experience for us. And so we have a much more robust risk management process as a result."

One disaster effort for the record books was AEP's response to Superstorm Sandy, which struck the East Coast in October 2012. For that epic recovery, roughly half of all AEP's staff and contract line resources worked long hours to help other utilities regain power, especially in New York, New Jersey and West Virginia. That effort beyond its own territory earned AEP the honor of EEI's Emergency Assistance Award. Longer term, Sandy's destruction led the entire industry to push for a more resilient grid in the face of major storms.

The 2012 derecho toppled hundreds of poles and lines throughout AEP's service area.

AEP employee resource groups interact with fellow employees at lobby events.

WORKFORCE AND CULTURE

Coming out of the recession, a significant challenge was to shape a workforce that would be suited to the new reality while maintaining respect for each individual AEP employee. Early retirements and layoffs during the recession were followed by a period when few new graduates were hired. Tracy Elich, vice president of human resources, resumed contacts with top schools to recruit the talent needed and led the creation of employee resource groups to foster a more inclusive and healthy workplace. These employee-led groups supported co-workers in their needs and encouraged the sharing of experiences and insights. By 2017, AEP had seven employee resource groups. Whether an employee resource group served the interests of workers of color, veterans, multicultural, or gay and lesbian communities, it provided avenues for support both within an individual's workplace and across the company. "Depending on your physical location, there are different resources within those communities," Elich said. Employees get resources for a better overall life experience and a more successful career.

Elich noticed that over the past decade, AEP managed such topics with more openness. In the past, the company might have reviewed the issue in management meetings and announced its action plan. Now, management engaged employees earlier in the decision-making process to help chart a way forward together.

Akins led the AEP team to create a supportive, inclusive corporate culture. "AEP is all about collaboration and mutual respect, so that every employee can contribute in a positive way," he said in March 2012. That year, a survey of employees early in that process pointed to areas where management and front-line employees saw the company differently. Akins embraced the survey results and the needs it identified. "We'll work on this together," he said. "This gives us a better understanding of what we need to accomplish, and valuable information that we can use to get the health of this company right, so we can get the company to perform right."

Lana Hillebrand, executive vice president and chief administrative officer, led the culture initiative. In October 2013, she announced an update on the effort, detailing forums and workshops throughout the organization that helped to grow and nurture AEP's inclusive culture. The series of actions steadily strengthened AEP's culture and staff bonds. In April 2017, AEP created an advisory council to advance the company's diversity and inclusion strategy. "This is another step toward building a foundation to become the next generation energy company," she said at the time.

CREATING TOMORROW'S AEP

While the culture program created connections among the different generations of AEP's working community, management reached out to address the different expectations, needs and desires that younger workers may have for their lives. In 2013, Lisa Barton, then-director of transmissions planning, worked with the human resources team to create the GOLD Program (Growing Outstanding Leadership through Development), an initiative for fostering young professionals' growth over the course of a year. The program was an enrichment initiative that showed young employees a wide range of positions — for example, the 2,600 positions in transmission, spread across 90 offices. The GOLD Program was designed, Barton said, to give workers opportunities they would not get otherwise. "You might be in the field and in that job for 40 years and not necessarily appreciate some of the other jobs that are out there," she said. "So we really wanted a vehicle to take folks and give them a different experience."

In 2013, AEP also enacted a program called Lean/Continuous Improvement, to foster new ideas that increase productivity and reduce waste. Growing from the findings of a repositioning study that year, the continuous improvement efforts initially aimed to save $200 million in 2013, in part to react to a sharp decline in energy capacity prices in the eastern part of the AEP system, according to David Feinberg, executive vice president, general counsel and secretary. The Lean program has focused on improving performance and has been a valuable tool in enabling the company to keep its operation and maintenance budget essentially flat for several years. "This process is very much focused on customer service — what adds value to the customer and what doesn't," Feinberg said. Workers at the John E. Amos Plant in West Virginia identified ways to reduce the plant's coal costs by $10 million annually, with an upgraded barge-unloading facility. The Lean process enabled staff to identify the need for faster coal unloading, which in turn led to new equipment that allowed workers to connect two barges. That slashed barge-unloading time from 30 to 45 minutes to just 5 minutes.

After two years, AEP took stock of the progress and expanded Lean to all 32 distribution districts. "We have seen many employees devote a lot of time to Lean," Feinberg said. "There has been very positive impact because of this hard work." One outgrowth was the Lean Management System, introduced in 2016. The system provided business units with a framework for solving problems and improving business outcomes. One component of the system, the New Idea Visual Management tool, helps employees share new ideas more effectively with their peers.

Members of the GOLD Program collaborate on a project.

TRANSMISSION TO THE FORE

With engineering excellence and creative strategies, AEP strengthened its strategic advantage in power transmission. That began when AEP became the first company to install high-voltage transmission lines, continuing its string of industry firsts: In 2006, it installed the country's first six-conductor phase bundles for 765-kilovolt lines in Appalachia; introduced groundbreaking high-temperature super-conducting triaxial cables at the Bixby Station in Ohio; and started using virtual digital fault recorders, which record incidents at substations. The transmission milestones kept coming. In 2011, AEP installed the first prefabricated drop-in control module at West Millersport Station in Ohio. Using a full online monitoring package, the control module detected a problem and prevented a catastrophic failure of an extra-high-voltage transformer. This advance marked a new frontier in online system management and overall efficiency.

AEP's six-bundle spacers provide increased service along the Wyoming-Jackson Ferry Line in West Virginia.

Barton, the executive vice president of transmission, saw opportunities to improve AEP's prominence in transmission. When the company made large investments in scrubbers and other improvements in generation, that meant there was less capital available to support needed transmission investments. During her tenure, she pushed to create financial transparency with respect to the company's transmission business and attract new investors to support this side of the business. Starting with a series of project-based transmission joint ventures, she created a portfolio of investment opportunities outside of AEP's traditional footprint that provided a clear line of sight for investors and favorable returns for shareholders. To increase the financial transparency to investors and secure the necessary capital to support large-scale transmission investments needed to support coal plant closures, she worked to create a series of wholly owned transmission companies that deliver the second-largest source of earnings for the company. These projects also helped to bring renewable energy to markets and solve transmission constraints.

Akins saw the potential for transmission to focus on improving customer reliability. Barton and her team built a portfolio of projects that, by 2017, enabled

AEP's reconductoring in South Texas established new processes for the industry.

AEP to invest over $3 billion annually in transmission. Through these investments, AEP replaced lines that were over 100 years old and reinvested in the infrastructure to make the system more reliable and resistant to storms, physical attacks and the ever-changing needs of a modern grid.

Barton also found opportunities to harmonize systems by focusing on constant improvement. Over a decade after the merger, there was still at times "an East way" and a "West way" of handling transmission issues within the company. As a team, the organization focused on being "solutions-oriented," a mantra that Barton brought to all aspects of the transmission business. Soon, the transmission team refocused its efforts to use systemwide standard solutions and approaches. By focusing on greater standardization, the team was better able to focus on driving down the cost of projects while shortening the construction time to meet the ever-changing needs of AEP's customers.

AEP BOLD towers provide improved aesthetics and efficiency along current rights-of-way.

The transmission team worked more closely with the sustainability team on issues such as power-line corridors and rights-of-way. Together they created demonstrations of technical options, such as environmentally friendly rights-of-way that allowed contiguous wildlife habitats.

AEP led another transmission solution in Texas. After the Texas Renewable Portfolio Standard, enacted in 1999 and 2005, mandated utility companies to create more than 3,000 megawatts of renewable energy by 2009, Texas became the country's leading producer of wind power. The second law set a goal for 2025 of 10,000 megawatts of capacity from renewable sources; AEP's contribution helped to meet that ambitious target 15 years early. The question then became: Once you have that capacity to convert the wind in West Texas into power, how do you move that energy to where the demand is? The cities of Houston and Dallas and other urban areas in East Texas had the highest customer demand.

AEP supported the Texas Competitive Renewable Energy Zone (CREZ) program sponsored by the Electric Reliability Council of Texas (ERCOT) through investments in its Texas operating companies and by creating Electric Transmission Texas (ETT), a joint venture between AEP and Berkshire Hathaway Energy Company, in 2007. The ERCOT region's reliance on wind for its energy generation grew to about 45 percent of total customer demand by April 2017, a ninefold increase in five years. Beyond adding wind power to the grid, the ETT partnership also boosted solar power generation and transmission system reliability.

New large-capacity storage batteries are tested to support current load in several areas.

ETT lines cover AEP's footprint in Texas, from the panhandle to the Rio Grande Valley and east to Corpus Christi. Matt Sieker, an AEP electrical engineer with ETT, says the venture provides "a highway to bring it to the masses of Dallas and Austin." During this period, AEP also found new ways to think about the role of batteries in power transmission. Once the domain of power generation, batteries now play a bigger role in transmission, bridging the gap between generation and transmission. New kinds of batteries provide backup capacity for distribution in the event of a power outage. In Presidio, Texas, near Big Bend National Park, ETT has a battery for that purpose, serving the remote city and keeping its power supply reliable. Presidio's battery was one of the first allowed by the Public Utility Commission of Texas and ERCOT to serve a transmission role.

The groundbreaking Texas wind operation worked through compliance issues with government agencies and oversaw sites from Corpus Christi, Brownsville and Laredo north and west to Abilene and the panhandle. In 2017, the ETT team built a line near Corpus Christi from Barney Davis Station to the naval base, where about 2.5 miles of the line had to be underground for security around airports. The technical challenges included burying pipes in saturated soil near the Gulf of Mexico. AEP managed the challenge with rapid pumping as the lines went in.

Texas's rise to become the top wind-energy state may have surprised Siefker, but AEP had anticipated the development in the CREZ plan for about 15 years. This was an example of how the changing world of energy transmission has opened new horizons for young engineers. Siefker's advice to engineering students is to work for a utility. "The future is bright for electric power," he said. "It's only going to get better, and they're going to need some good engineers who understand that and take the forefront. … Definitely stay engaged and think of new ways to move electric power."

Addressing the need to adapt and achieve has led to numerous technological achievements. Experiencing pushback for 765-kilovolt lines to be a solution of choice by Regional Transmission Organization's, AEP Transmission once again applied its ingenuity to the problem. The team found a solution that enabled double-circuit 345-kilovolt lines to perform as well as higher-voltage solutions.

In 2017, AEP unveiled a new logo in the company's first rebranding in 30 years.

AMERICAN ELECTRIC POWER®

BOUNDLESS ENERGY℠

New Logo

AEP

Old Logo

Following a year and half of research and development, the AEP team unveiled a solution. The resulting line involved less noise and a pleasing design, which they patented. BOLD lines are capable of moving greater volumes of power through existing rights-of-way. This was a case where engineers discovered an innovation that delivered increased capacity while reducing the heights of transmission lines. That technical breakthrough in turn sparked a new business opportunity: BOLD became a subsidiary of AEP to commercialize licensing and distribute the technology. AEP also created Grid Assurance in partnership with other utilities to create a nationally based logistics company to provide spare large power equipment to electric utilities across the country to support the reliability and resiliency of the grid. When subscribing to Grid Assurance, transmission owners have direct access to long-lead-time equipment ready to be deployed.

With a dynamic workforce and strong communication with its communities, AEP is poised to continue its streak of innovation well into the next century.

By 2030, AEP's integrated resource plans call for the company to add approximately 8,000 megawatts of additional renewables to its regulated portfolio.

Perpetual Innovation and a String of Edison Awards

In 2017, AEP Transmission received the Edison Award for the design and installation of its BOLD technology in Fort Wayne, Indiana, the country's first operating BOLD transmission line. That marked the seventh time AEP had received the industry's highest award, more than any utility in the Edison Electric Institute's history. AEP takes pride in upholding the standard of excellence and innovation established by pioneers like Philip Sporn and carrying that standard forward into the future.

AGE pioneering of advanced engineering concepts, including the first 330,000-volt transmission line.

AGE engineering, design and construction, which yielded unprecedented transmission and thermal efficiencies.

Central Power and Light rapidly restored service after Hurricane Celia.

AEP's development of sustainable, environmentally responsible operations for coal-burning power companies that meld bottom-line results with environmental stewardship.

AEP's construction and operation of the John W. Turk, Jr. Power Plant, the first ultra-supercritical coal-fired plant.

AEP's upgrade of the Rio Grande Valley's transmission system to include two 345-kilovolt lines.

AEP's Robison Park-Sorenson project, which included the first BOLD transmission lines.

AEP BOLD transmission lines, part of the Robinson Park-Sorenson project near Fort Wayne, Indiana

The Pirkey Environmental Park in Hallsville, Texas, provides a place to interact with nature and learn about using electricity responsibly.

A RETURN TO CORE VALUES

With new ways to move power, people in Corpus Christi saw electricity demand soar and power prices drop to an all-time low. The energy industry's vigor was visible in the port, where rows of giant wind blades and tower sections lined up, ready to be assembled on West Texas wind farms. Corpus Christi became the eighth-largest city in Texas and the Gulf of Mexico's largest handler of wind equipment. The scene marked a striking contrast with a century before, when the city's population of about 10,000 savored the novelty of a streetlight system fueled by Central Power and Light.

Several states away, Muncie, Indiana, another historic city in AEP's territory, was one of the first cities to be connected by miles of transmission lines when the company started over a century before in 1907. Since then, Muncie's peak demand had grown from 700 kilowatts to over 217,805 kilowatts in 2016 — a growth factor of over 300. During that period, Muncie's population more than tripled (from 20,942 in 1900 to just over 70,000 in 2010). Electric power had transformed American lifestyles to a level that George Tidd would scarcely recognize from his days as AGE general manager for the Muncie plant, when a traveling picture show could overload the system. In 2017, videos streaming on the city's website introduced visitors to its parks and recreational experiences, wired classrooms, advanced health care facilities, and thriving economy.

Tidd would recognize his company's local commitment, evident in the AEP Foundation's connection to Ball Memorial Hospital, with $40,000 pledged for the hospital's green roof construction, support for Ball State University's planetarium and observatory, and the city's Children's Museum Discovery Park.

An AEP employee volunteers at a Habitat for Humanity site.

AEP employees volunteer with youth baseball leagues.

A student in the Credits Count program works on a project.

AEP CEO Nick Akins addresses students at West High School in Columbus.

Across the AEP System, AEP's engagement with communities included donations to local charities such as Big Brothers Big Sisters, Boys and Girls Clubs, and partnerships with schools and homebuilding projects. AEP energized efforts to redevelop the riverfront in downtown Columbus. Those improvements revitalized that core of the city and catalyzed hundreds of millions of dollars in investments.

In 2013, under Akins' leaderhip, the American Electric Power Foundation created a signature philanthropic program called Credits Count℠. This program introduces middle school students to STEM (science, technology, engineering and mathematics) fields and delivers college-level courses to high school students in high-poverty urban and rural public school districts in seven states. Through 2017, the Foundation has committed $14.2 million to the program. Credits Count is helping students envision career paths in STEM fields through Columbus State Community College (Ohio); Bossier Parish Community College in Shreveport, Louisiana; Tulsa Community College (Oklahoma); Ashland Community and Technical College (Kentucky); Ivy Tech Community College in Marion, Indiana; Laredo Community College (Texas); and Bridge Valley Community and Technical College in South Charleston, West Virginia.

Possibly most of all, the company's founders would recognize the restless innovation that allowed today's AEP to manage a historic shift from coal-powered energy to a future of clean energy. In 2018, AEP issued its strategy for a clean-energy future, with sensible targets for reducing carbon dioxide emissions and investments in renewable resources and new technologies.

"Our customers want us to partner with them to provide cleaner energy and new technologies, while continuing to provide reliable, affordable energy," Akins said in February 2018. "Our investors want us to protect their investment in our company, deliver attractive returns and manage climate-related risk. This long-term strategy allows us to do both." The plan maps a scale-up of 3,065 megawatts of new solar generation and 5,295 megawatts of new wind resources by 2030. The constant stretch to find the most resilient and reliable energy for customers and shareholders continues.

A SWEPCO employee plants flowers at a community park.

COMMITMENT TO SHAREHOLDERS AND CUSTOMER EXPERIENCE

In July 2018, as the company issued another quarterly dividend of 62 cents a share on its common stock, AEP marked its 433th consecutive quarter of common stock cash dividends, paid every quarter since July 1910. In that stunning, unbroken record of stewardship, the company has upheld its promise to shareholders and found new ways to give back. It's an unparalleled commitment that AEP renews and extends every three months.

Through the period covered in this chapter, despite stiff headwinds and the worst economic recession since the Great Depression, AEP delivered consistent growth in shareholder value by adroitly investing capital to drive earnings, carefully controlling operating and maintenance expenditures, and prudently ensuring a strong balance sheet. Brian Tierney, executive vice president and chief financial officer, summed it up this way: "AEP leveraged the collective ingenuity and commitment of its talented employees to do what we promised our investors — executing, with resolute focus, on the company's strategic plan. The result has been turning a company with a stock price that traded at a discount to our peers in the industry to a company with stock performance consistent with a premium regulated energy company."

Along with that commitment to shareholders came a new approach to improving the company's connection with communities and customers. In 2017, AEP launched its new customer experience strategy. "Our employees have always demonstrated customer service as a core value of this company; however, customer expectations are changing and it is important that we keep pace," said Charles Patton, executive vice president for external affairs. "Our ability to enhance our relationships with customers by making their interactions with the company easier and by enabling greater control of how they consume energy will continue to honor our core values and strengthen our ties to the customer, creating greater opportunities to grow our business in a meaningful way."

The company's exceptional performance reflects the same core commitment to people, on and off the job. "I believe the foundation for the future of the utility industry is not only providing unique customer solutions but also to provide universal access to everyone," Akins said.

AEP YEAR-END CLOSING STOCK PRICE POST-MERGER

LEANING IN TO ANOTHER CENTURY

Through more than a century of dramatic changes — the ups and downs reflected in this book — the communities and stakeholders of American Electric Power have together overcome countless challenges. What AEP achieved as a business in the past dozen years, in a dramatically changing energy landscape, is astonishing. Its people have seized opportunities with a drive to make the future better. AEP is better positioned than ever to pursue that goal through another 100 years.

The current electric grid is being upgraded to take advantage of emerging technologies and offer more benefits to customers. Smart meters will replace the current meters used in homes to record electric usage.

Nicholas K. "Nick" Akins: Growing Leadership From Within

Nick Akins aspired to be a rock drummer who needed to pay the bills with a sideline in electrical engineering. "I never would have envisioned myself as CEO of a Fortune 200 company," he said. A native of Louisiana, Akins studied electrical engineering at Louisiana Tech University and received his bachelor's degree in 1982. He started out in the utility industry with SWEPCO, one of the operating companies of CSW. He pursued postgraduate studies at Louisiana Tech while working for SWEPCO and was awarded a master's degree in electrical engineering in 1986. SWEPCO sent Akins to Florida, where he served as a company liaison with a new energy management system. At that time, CSW companies had boldly built for customer demand growth and were facing challenges on rate recovery, so efficiency was the watchword. Under the leadership of Dick Brooks, Akins learned how to bring together the independent-minded operating companies. Brooks, he said, "would purposely put people in roles that they knew nothing about just to test their leadership skills but also their teamwork abilities." Akins took the helm of fuels management at West Texas Utilities in Abilene, Texas.

Akins modeled his own leadership style after that of Brooks. "What really comes naturally is the ability to be collaborative, to be open, to be honest with one another, but engage a culture that says you can be challenged at any time," Akins said.

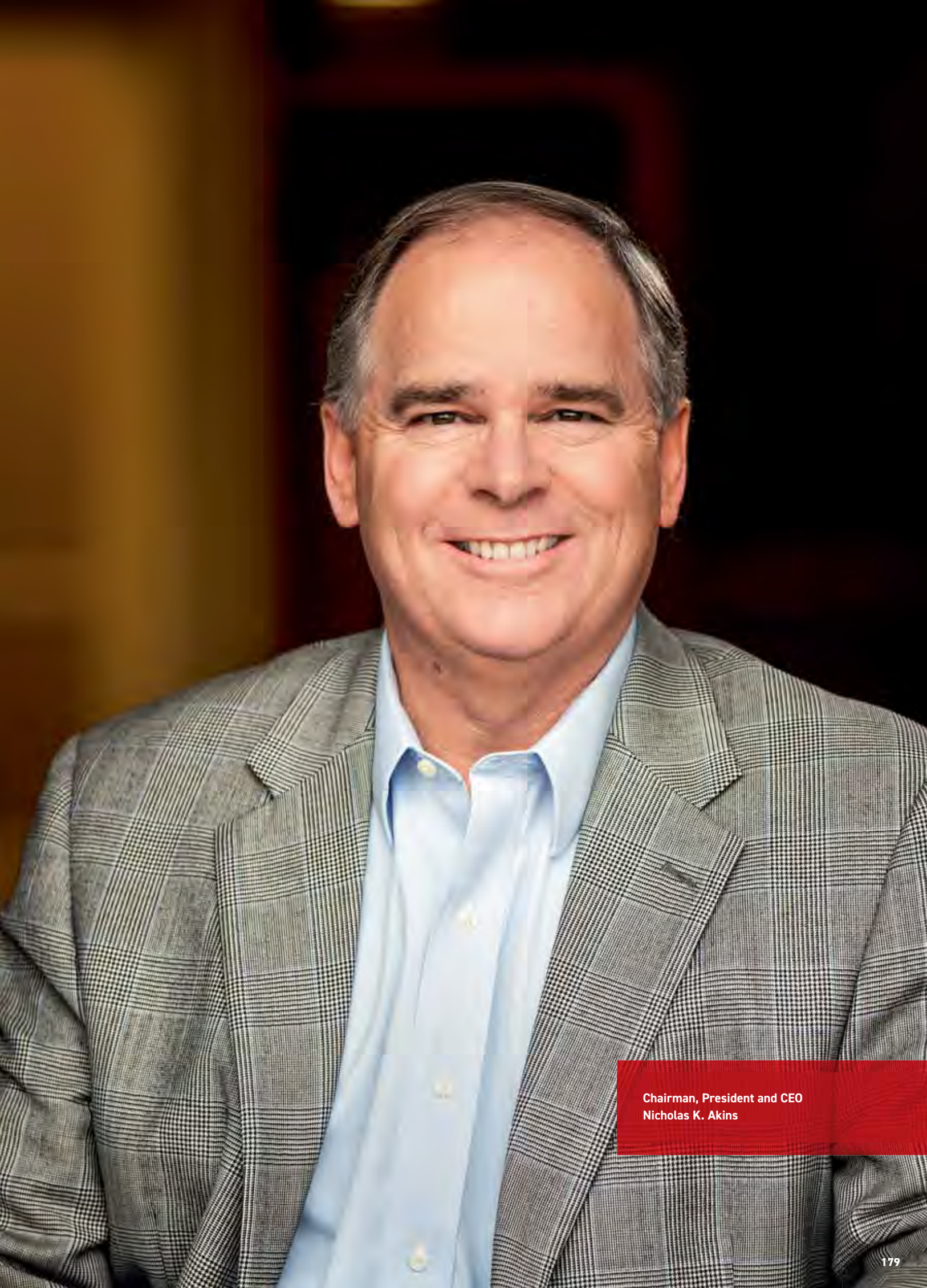
Later, while working with CEO Mike Morris after CSW merged with AEP, Akins embraced the full scope of the company, sharpening his leadership in a number of roles. Morris tapped Akins to be president and COO of SWEPCO in 2004 and then appointed him AEP's executive vice president of generation in 2006, working across the entire range of energy fuels and challenges. After five years leading the generation business, with responsibility for all of AEP's approximately 38,000 megawatts of generation resources, Akins took the reins as CEO in 2011.

Under his leadership, AEP has strengthened systems for open dialogue and improvement across the whole company, as well as communication among staff, shareholders and the communities served by AEP. His team's initiative of Lean and Continuous Improvement has brought higher standards and significant savings to operations across the entire company, bolstering its competitiveness.

In recognition of his leadership to the industry, Akins received the Edison Electric Institute's Distinguished Leadership Award in January 2017.

Today's AEP embraces its legacy of innovation, pushing the boundaries of technology in service of the community's changing needs. "Really, the AEP culture was centered around ingenuity and technology," Akins said. "It's a very proud culture around the ability for us to be nimble in terms of how we look at technology, and that's across the board." The business savvy that contributed to AEP's success during the golden age of electricity, reinforced by the CSW acquisition, resulted in a synergy of best practices that has become a hallmark of Akins' leadership and AEP success. "CSW was very focused on culture," he said. "AEP was very focused on efficiency and accountability associated with results. And so you put those two together and you've got a culture that's agile enough and that has the ingenuity to literally make things happen."

AEP Board of Directors

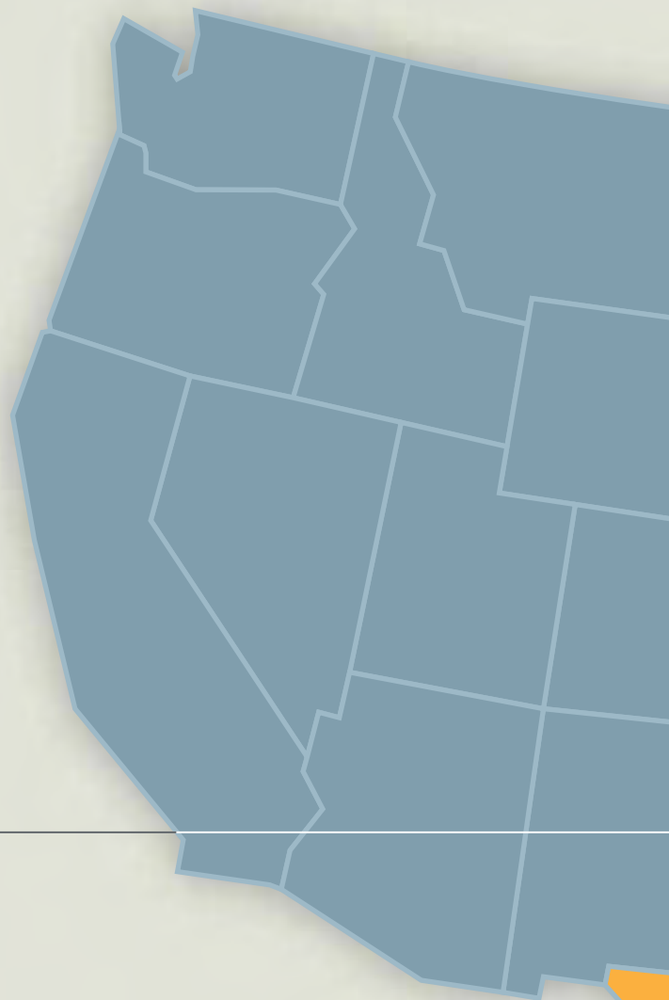


Chairman, President and CEO
Nicholas K. Akins

EARLY INVESTMENTS IN SMART TECHNOLOGY

Smart meters provide multiple benefits to customers, including more information and control over their energy usage and virtually eliminating estimated meter readings.

Implementation of these smart grid technologies is a fundamental change in how we will serve our customers. Our business is changing. In today's technology-driven world, we must meet customers' growing expectations of keeping the power flowing while having more information and choices easily available to help them save both money and energy. These technologies will help us achieve these goals.

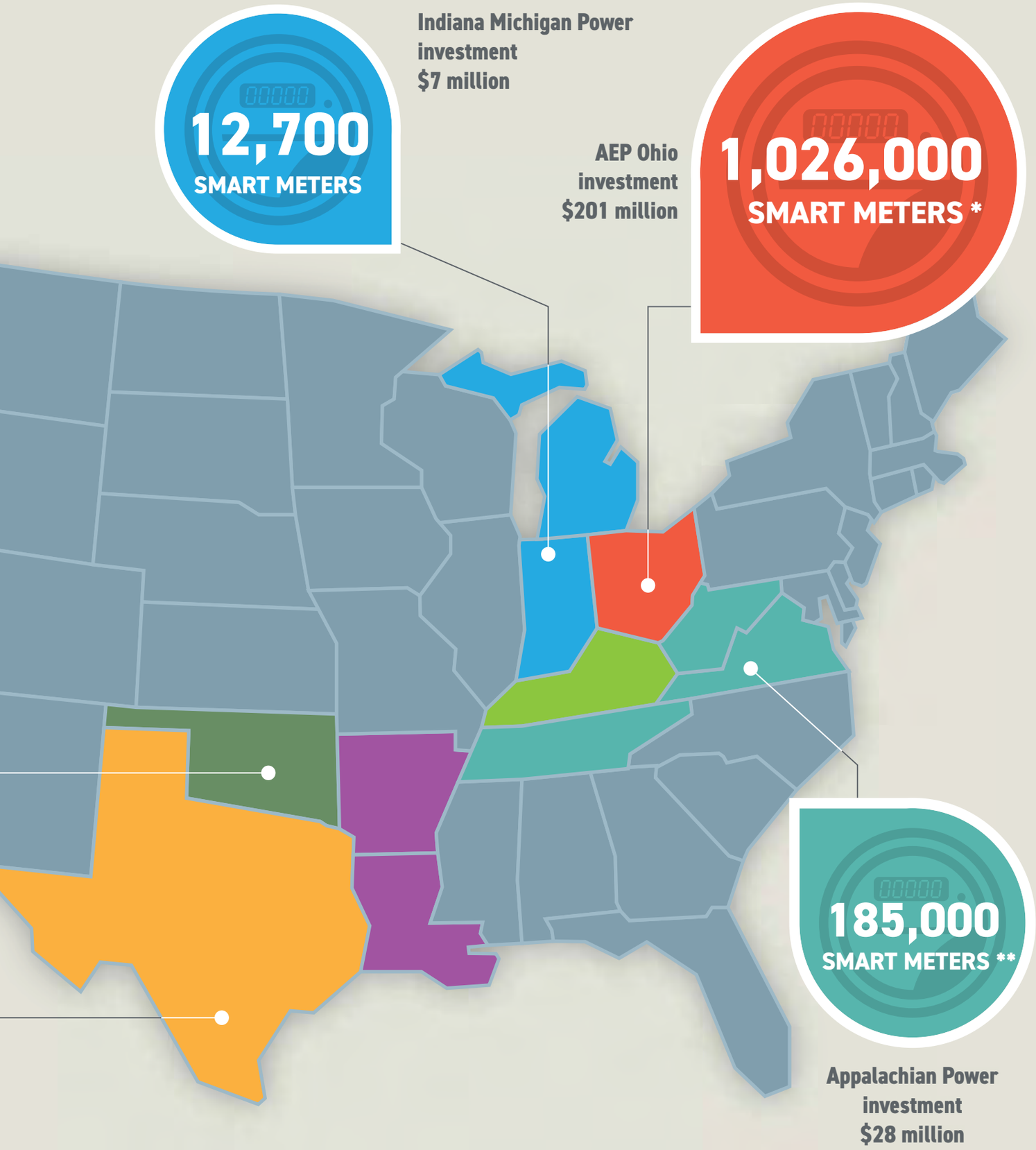


PSO investment
$121 million

565,000
SMART METERS

AEP Texas investment
$300 million

1,068,712
SMART METERS



* Number reflects the total smart meters to be installed by 2021.

** Number reflects the total smart meters to be installed in Virginia by the end of 2018.

EPILOGUE

As part of the effort to transform Ohio's capital city into a model for urban planning and development in the 21st century economy, AEP Ohio has invested approximately $1.5 million in fleet electrification since 2016 and installed nearly 60 electric vehicle charging stations in 2017.

POSITIONING FOR FUTURE SUCCESS

We at American Electric Power move forward with a clear view of our opportunity to become the energy company of the future. We envision a vibrant energy future for our customers and our company. In fact, we are making that vision a reality by expanding our energy resources and forging a power system that is more interactive, reliable, clean and secure than ever.

Across the AEP system, we are investing in technologies that not only improve the efficiency and intelligence of our grid but also provide protection and resilience against cyber and physical threats. The fast pace of technology development and adoption creates opportunities and challenges for the power industry. AEP and other utilities already use applications to increase the grid's efficiency, safety and reliability, including advanced metering systems and smart grid technologies.

In 2017, we developed our first smart cities project, a partnership with the City of Columbus, Ohio. Smart Columbus is an initiative that is modernizing the grid with technologies ranging from advanced meters to electric vehicle charging stations, microgrids and street lighting. We're proud that Smart Columbus won the U.S. Department of Transportation's Smart City Challenge, gaining the designation of America's Smart City. And we're committed to ensuring that in addition to the technology benefits, the program's social benefits include clean transportation options in disadvantaged neighborhoods and better access to jobs and new opportunities for everyone.

Smart Columbus is just one example of how we can manage change and pursue our strategic goals to position the company for future success. We define those four goals in active terms: Aggressively Pursue Customer Experience and Sales Channel Growth, Grow Regulated Utility Infrastructure Investments, Pursue Resource Transition Investments that move toward a clean energy future, and Engage in Targeted Strategic Relationships.

In order to achieve these objectives, we are building on the culture of innovation that is the hallmark of AEP's history. We benefit from the most diverse and skilled team of employees that we've ever had. As the future of our work changes, our employees will never stop working to improve our customers' experience and strengthen our communities. We see our commitment to a dynamic, innovative and inclusive organization as the magnet that will attract the most diverse, talented and dedicated people to continue our success far into the future.

Transformational change requires a more progressive and thoughtful approach in how AEP trains, develops and retains employees. This includes identifying new ways to work and reinventing how people, automation, and technology work together.

We embrace our customers' desire for cleaner energy and have aggressively pursued investments in renewable energy. In both regulated and competitive energy markets, we're investing in solar and wind generation projects and advanced energy storage technologies. To keep improving the customer experience, we use data analytics to segment and understand our customers and their preferences. That understanding drives how we deploy new technologies, from a customer service mobile app to smarter energy management tools.

Our infrastructure investment goal challenges us to build on our transmission prowess, developing a more advanced, efficient grid that can flexibly handle all energy resources in real time. New technologies, including batteries, will overturn the industry's old paradigm and blur the lines between power generation, transmission and distribution.

For continued growth, we support regulatory policies that enable a nimble industry to meet changing customer demands. We use our experience with energy production and delivery to push for those policies that ensure affordable, reliable and responsive service to our residential and business customers. Our team is committed to making the AEP of the future economically, socially and environmentally sustainable.

On a personal level, AEP has provided me with an opportunity to help position AEP for the next century of success. Our history and culture of innovation will support that success. AEP's story is one of courageous leadership and an unwavering commitment to the people and communities we serve. It continues to inspire me every day. I am confident that by continuing to tap our boundless energy, we are on the right track to create a brighter future for the communities we serve.

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

AEP is diversifying its resource mix to better serve customers' needs, with an eye to the future of an electrified economy.

ACKNOWLEDGMENTS

This book is the result of a team effort, and we would like to thank everyone who played a role in bringing the remarkable history of AEP to the public.

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This list is not exhaustive. Many more people helped us document this story and provide its proper context.

Finally, we dedicate this book to the pioneers who forged the company that has brought electricity and a better quality of life to millions of Americans, and we sincerely hope we have rendered their experience accurately.

Nicholas K. Akins
Chairman, President and CEO
American Electric Power

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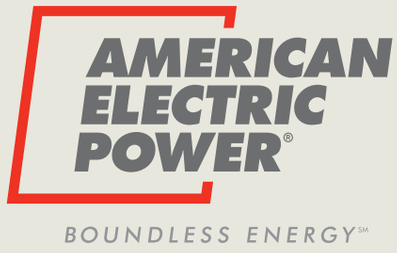
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