Planning,
Working,
Investing

for a better tomorrow.

KUB

2017 Annual Report
We value the safety and well-being of our customers and employees.

We value fairness, and try always to make decisions that provide the greatest good for the most people.

We are in a position of trust and hold ourselves to high ethical standards.

We improve the value of our services through efficiency, innovation and communication.

We value the commitment and hard work of our employees.

We are environmentally responsible in our operations and support the sustainability of our communities’ natural resources.

We participate in the communities we serve.

Our mission is to act as good stewards of our communities’ resources: utility assets, customer dollars, and the environment. We work to safeguard those resources and enhance their value for the people of the communities we serve and generations to come.

KUB exists to serve its customers, improving their quality of life by providing utility services that are safe, reliable and affordable.

Our Vision:
KUB exists to serve its customers, improving their quality of life by providing utility services that are safe, reliable and affordable.

Customer Satisfaction System Performance Financial Performance Safety Performance

Managing Our Utility System Infrastructure Meeting Or Exceeding Regulatory Standards Managing Our Finances Effectively Improving The Customer Experience Being Environmentally Responsible Partnering For Economic Development Investing In A Skilled, Diverse Work Force

KUB consolidated audited financial statements are available as an insert, and both the consolidated and full audited financial statements are online at www.kub.org.

KUB Board of Commissioners:

Celeste Herbert Chair
John Worden Vice Chair
Jerry W. Askew
Kathy Hamilton
Sara Hedstrom Pinnell
Tyvi Small
Nikitia Thompson

Management
Mintha Roach
President and Chief Executive Officer
Mark Walker
Senior Vice President and Chief Financial Officer
Susan Edwards
Senior Vice President and Chief Administrative Officer
Gabriel Bolas
Senior Vice President and Chief Engineer
Eddie Black
Senior Vice President
Derwin Hagood
Senior Vice President

Vice Presidents
Mike Bolin
Julie Childers
John Gresham
Dawn Mosteit
Paul Randolph
Dennis Upton

Management

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Planning, Working, Investing for a Better Tomorrow

There are a lot of “moving parts” that must work together for KUB to deliver utility services to our more than 453,000 customers. We keep the parts in sync through our proactive Century II infrastructure management plan. Century II helps us meet customers’ needs for safe, reliable utility service today and plan for future needs. To do that, we must balance our systems’ needs with our customers’ ability to pay.

Our strategy includes ongoing cost management and steady investments in system replacement plans. Thanks to KUB’s Board of Commissioners, which again endorsed a 10-year funding plan for Century II and a three-year rate increase schedule for all systems, we are making meaningful progress replacing aging infrastructure.

Many utilities nationwide, however, are still struggling, as reported in The American Society of Civil Engineers 2017 Report Card, which gave U.S. infrastructure a D+. We are pleased to note that the Report Card’s key solutions for meaningful progress replacing aging infrastructure.

Sound, Balanced Financial Philosophy
KUB’s 10-year plan continues our proactive financial strategy to manage costs, support customer growth, use debt responsibly, and adopt modest rate increases. Our systems have sound financial plans and strong, high-quality credit ratings on outstanding bonds, which helps keep our borrowing costs lower. Following a Water Division upgrade from Moody’s in fiscal year 2017 (FY17), our ratings are the highest ever in KUB history. Moody’s reported that it based the upgrade on “the well-managed operations of the water system.” In its most recent rating report, Standard & Poor’s noted, “based on our financial management assessment, we view KUB to be a 1 on a scale of 1–6, with 1 being the strongest.”

FAIR BORROWING COSTS
Our systems have sound financial plans and strong, high-quality credit ratings on outstanding bonds, which helps keep our borrowing costs lower.

KUB’s Financial Strategy
- Manage costs
- Support customer growth
- Use debt responsibly
- Adopt modest rate increases

KUB’s 10-year plan continues our proactive financial strategy to manage costs, support customer growth, use debt responsibly, and adopt modest rate increases.

FY17 was a great year for KUB, with an excellent performance record in all four systems. The most recent customer survey yielded KUB’s highest-ever customer satisfaction rating. And our employees’ workplace satisfaction is reflected in KUB’s recognition as one of Knoxville’s Top Workplaces by the Knoxville News Sentinel in 2017.

Century II is paying off in terms of stronger systems—we had historically high electric reliability in 2016, for example, with a 32 percent improvement since 2006. To maintain a strong electric system and achieve high reliability, we have plans in place under Century II that focus on everything from ongoing maintenance, to vegetation management, to rehabilitation and replacement of electric assets.

The Electric System’s strong performance shows that the whole system can be strong only if all the parts are strong and working smoothly together. The same is true for our other systems, too, which also performed well in FY17:
- The Tennessee Department of Environment and Conservation awarded us a perfect score on a water system survey.
- KUB had zero violations at each of our four wastewater treatment plants.
- KUB had zero violations in a Tennessee Public Utility Commission natural gas system inspection.

We are receiving positive feedback from regulators, utility organizations, and—most important—our customers.

KUB employees remain committed to good stewardship of our community’s utility assets. They focus on day-to-day management and on planning and investing for the long term. That will help us continue to meet the needs of our current and future customers.

Top Public Power Provider
Zero violations in natural gas system inspection
Zero violations at all four wastewater plants
Perfect score on TDEC’s water system sanitary survey
Highest-ever customer satisfaction rating
Recognized as one of Knoxville’s Top Workplaces

Bond Ratings Highest in KUB History

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<th>Standard &amp; Poor’s</th>
<th>Moody’s</th>
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<td>Electric</td>
<td>AA+</td>
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<td>Natural Gas</td>
<td>AA</td>
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<td>Water</td>
<td>AA</td>
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<td>Wastewater</td>
<td>AA+</td>
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Mintha Roach
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Electric Reliability Remains Strong

Customers today enjoy the highest electric service reliability in KUB history. KUB has significantly improved reliability in the past 10 years through a combination of ongoing maintenance programs, including regular tree pruning, and increased investment in our Century II long-term infrastructure management program.

For example, KUB replaced 2 percent of electric poles in FY17 to stay on track with renewing this important asset. We completed a 10-year cycle to inspect distribution and transmission poles and immediately started another cycle to ensure poles inspected 10 years ago are still sound.

KUB also continued Century II efforts to modernize substations in FY17. At the Lonsdale Substation, we began work to replace the oldest transformers on our system, which dated from 1942. We also upgraded existing infrastructure and added capacity at our Arlington Substation, which is one of our oldest substations and a major switching point with ties to three infeed stations.

In the next 10 years, KUB will invest $741 million to continue replacing aging electric infrastructure and add facilities to improve reliability. KUB will build five new substations and complete modernization of all existing substations. We will also rebuild our transmission lines and add new technology, including automated meters.

Reliability is important to most customers, but it is essential for some. Plastics manufacturer Lifetime Products, for example, cited “cost-effective utilities and dependable service” as the deciding factor to locate in Knoxville. It will bring 500 jobs to our area when it is fully operational in three years.

Electric System Renewal

<table>
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<th>Transmission Lines</th>
<th>Underground Cable</th>
<th>Substations</th>
<th>Poles</th>
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<tbody>
<tr>
<td>100% Completed</td>
<td>100% Completed</td>
<td>67%</td>
<td>30%</td>
</tr>
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$106.90/month
$3.51**/day

* A kilowatt-hour (kWh) is the amount of electricity required to burn a 100-watt light bulb for 10 hours.
** Based on monthly rates 7-1-16 to 6-30-17.
KUB’s natural gas system is safe and reliable, and we work every day to keep it that way. In FY17, for example, KUB hired a specialized contractor to complete a leak survey of our high pressure pipelines from a helicopter. In addition to using helicopters—and drones—we inspect for leaks by walking and by driving trucks, Segways, and all-terrain vehicles. Those measures help us exceed regulatory standards for the frequency of leak detection.

Natural gas is highly regulated for safety, and Century II supports all regulatory requirements through programs that cover corrosion control, damage prevention, valve maintenance, and more.

In FY17, KUB continued work on a 35-year program to replace cast iron mains with long-lasting, low-maintenance polyethylene pipe. We also started the next phase of infrastructure replacement: a 20-year program to replace steel distribution pressure mains with polyethylene pipe. At the conclusion of this program in 2035, KUB’s natural gas distribution system mains and services will be made up of high performing, polyethylene pipe.

To improve system reliability and support growth, KUB is investing $7.7 million for a new gate station and main in South Knoxville. The new station will have modern, automated controls that will help improve operational flexibility and reduce costs.

Under our Century II infrastructure management program, KUB will invest $243 million over the next 10 years to ensure the system continues to meet customers’ needs and help our community grow.
Water is a fundamental necessity, and KUB’s water plant, which was built in 1926, has a perfect record of supplying safe, reliable water to our customers. To continue that record, KUB continually upgrades the plant with new technology.

In FY17, KUB substantially completed work to transition the plant’s treatment process from gaseous chlorine to sodium hypochlorite. The new sodium hypochlorite disinfectant requires much less maintenance and eliminates gaseous chlorine hazards.

In addition to focusing on the water plant, we continued to upgrade our water distribution system in FY17. We replaced 1 percent of our mains, for example. That keeps our system on a sustainable replacement cycle. It also puts us in the American Water Works Association’s top quartile for infrastructure investment.

KUB also continues to replace galvanized pipe at a rate of 8 miles per year, and we are on track to replace it completely by 2023. We are replacing cast iron and cement pipe at the rate of 6 miles per year.

KUB will invest $330 million in the water treatment plant and distribution system over the next 10 years. [See next page for a partial list of major projects.] That includes $104 million to add a second treatment train at the water plant, to provide redundancy and offer more flexibility for daily operations and maintenance. We will invest $113 million to replace aging mains and improve water tanks and booster pump stations.

By 2055, we will have replaced 100 percent of the older pipe types in our system. As pipe replaced early in the plan ages to the end of its useful life, we will start another proactive replacement cycle to continue to ensure we meet the needs of our customers and our community.

Four hypochlorite tanks and multiple feed pumps help ensure continuous water treatment even if there is an equipment failure.

Major Water System Investments in KUB 10-Year Plan

These investments will help KUB continue to provide safe, high-quality drinking water to our customers. The KUB Board’s commitment to funding sustainable replacement helped put us in the American Water Works Association’s top quartile for infrastructure investment.

- $102M replaces 129 miles of main
- $15M replaces main for highway projects
- $29M improves water treatment plant
- $104M provides water treatment redundancy
- $18M upgrades 59,500 water meters
- $9M supports adding 2,400 water customers
- $11M improves tanks and booster stations

KUB will invest $330 million in the water treatment plant and distribution system over the next 10 years.
Wastewater System Operating At Historically Strong Level

In 2016, all our treatment plants had perfect records with zero violations from more than 18,000 total compliance checks. The collection system also continued to see a decline in sewer overflows, which are down 83 percent from 2003. Those accomplishments are proof positive of the substantial progress we have made under Century II to improve our systems and processes.

To keep the system performing well, KUB will invest $467 million over the next 10 years. That includes $265 million to continue to maintain a sustainable lifecycle for the collection system. By replacing 2 percent per year, as we did again in 2016, we renew our system every 50 years.

KUB also budgeted $120 million for treatment plant upgrades, including $55 million by 2021 at our Kuwahее treatment plant for a project that completes KUB’s federal Consent Decree requirements. It will also ensure Kuwahее can provide full treatment during heavy rain events.

By 2021, we will spend $13 million on alternative disinfection to convert our plants from gaseous chlorine disinfection to safer, more environmentally friendly methods, such as ultraviolet light or sodium hypochlorite. KUB is also partnering with TVA on a $5.9 million project at Kuwahее to convert biogas from the treatment process to heat and electricity; that will be completed in late 2019. [See page 12 for more.]

KUB also continues its environmentally friendly Biosolids program. KUB’s biosolids, nutrient-rich organic matter from wastewater treatment, are registered as a fertilizer with the Tennessee Department of Agriculture. In 2016, 22 area farms received over 29,000 tons biosolids, which helps improve soils and keeps the biosolids out of landfills.

Zero Violations Earn Plants National Recognition From Clean Water Agencies

With zero violations in 2016, all four KUB wastewater plants won recognition from the Kentucky-Tennessee Water Environment Association (WEA) and the National Association of Clean Water Agencies (NACWA). KUB’s Eastbridge plant also maintained the NACWA Platinum status, awarded for no violations in five years, that it first earned in 2010. With no violations since 2005, Eastbridge received a Platinum 11 award for 2016.

KUB also continues its environmentally friendly Biosolids program. KUB’s biosolids, nutrient-rich organic matter from wastewater treatment, are registered as a fertilizer with the Tennessee Department of Agriculture. In 2016, 22 area farms received over 29,000 tons biosolids, which helps improve soils and keeps the biosolids out of landfills.
KUB is committed to being a good steward of the environment. In January 2017, KUB opened its new compressed natural gas (CNG) fueling station to the public. The station is the first in Knoxville to provide this cleaner burning and more affordable fuel to current and future CNG public fleets. The station, which replaced KUB’s aging facility used only by our fleet, supports the goal to increase our CNG fleet to about 100 vehicles by 2020. Helping that goal is a $67,500 grant from Tennessee Department of Environment & Conservation (TDEC) that will assist in funding the conversion of three new KUB dump trucks for dedicated CNG use. The public station promotes broader adoption of alternative fuel vehicles and provides a new source of revenue, which makes good business sense.

Construction was also completed in July 2017 on a 50-kilowatt rooftop solar array for KUB’s Corporate Services Building. The system will offset 15 percent of the building’s electric load and 45 metric tons of carbon dioxide equivalent annually, which is equal to preventing emissions from over 100,000 miles driven or 5,000 gallons of fuel consumed. The project provides KUB an opportunity to better understand solar impacts on the electric system and support customers who are interested in installing their own systems.

The combined heat and power (CHP) system in design for Kuwaahe Wastewater Treatment Plant is an environmental project that not only produces renewable energy, but also saves KUB money. The system will provide clean power by using biogas from the wastewater treatment process to fuel generators to supply approximately 85 percent of the plant’s electrical demand (up to 11,250 megawatt-hours annually). The project is estimated to reduce net carbon dioxide equivalent emissions by 20 million pounds each year, which is equal to removing 2,000 cars from the roads. KUB was selected by TVA to receive funds for a portion of the project as one of TVA’s Waste Heat Recovery EPA mitigation projects. In addition to the environmental benefits, the CHP system improves operational efficiency by lowering the plant’s energy costs.

KUB has a proud tradition of being involved in the communities we serve. The Vol Time program offers employees the opportunity to receive up to eight hours of paid time annually for approved volunteer efforts in KUB’s service territory. Employees set a record with their volunteer spirit in 2016 with 579 employees volunteering more than 4,000 hours.

In addition to the highest-ever Vol Time participation, KUB received the Helping Hands Award at the Salvation Army of Knoxville annual awards dinner in 2017. The award recognized KUB employees for their hard work on behalf of the Salvation Army over many years.

KUB employees also show their community spirit with the annual United Way fundraising campaign. Through various fundraising events and payroll contributions, employees once again exceeded the fundraising goal by raising more than $226,000.

KUB’s community involvement also includes partnerships with TVA and other agencies on programs that help create positive change in the community. KUB partnered with the Knoxville-Knox County Community Action Committee (CAC), the City of Knoxville, and The Alliance to Save Energy to apply for the $15 million TVA grant that funded the Knoxville Extreme Energy Makeover (KEEM) program, which weatherized about 1,300 homes from August 2015 to September 2017.

Since May 2015, KUB customers have donated more than $1.7 million to the Round It Up (RIU) weatherization program by rounding their bills up to the next dollar. Over 130 energy inefficient homes for low-income families have already been weatherized in our area, and many more homes are on the waiting list. KUB forwards 100 percent of RIU funds to the CAC weatherization program.

These weatherization programs provide a root-cause solution to an ongoing problem in our community—low income residents in energy-inefficient homes that are costly to heat and cool.