





Gabriel J. Bolas
KUB President and CEO

KUB works hard every day to make sure our customers have safe, reliable and affordable utility services. But our work doesn't stop there. KUB is also committed to being a good steward of the environment and our communities' resources.

KUB has taken sustainable steps forward for decades. Our first investments in alternative fuels in our fleet were made in the 1970s. Fifty years later, we continue to introduce new initiatives and programs to not only reduce our environmental footprint as a utility company, but also serve as a resource for community members about ways they can save energy and water.

Our most recent example of this, and one that I am particularly proud of, is KUB's new H2O To Go mobile water unit (pictured below). Available for community events, the mobile water unit offers clean water from five taps, reducing the use of plastic bottles, and educating event goers on the importance of good water quality from the Tennessee River to the tap.

KUB's Environmental Stewardship Strategic Initiative Team is made up of representatives from throughout KUB to ensure we are doing what we can for our natural resources in all facets of our work from our fleet to our recycling program. KUB is also grateful for strong community partnerships that help with programs including Round It Up and Home Uplift for low-income weatherization assistance.

This report provides more information about KUB's environmental initiatives, as well as the various other achievements that align with KUB's goal to be environmentally responsible.

I am excited to continue KUB's commitment to a more sustainable future.

Gabriel J. Bolas



Environmental Stewardship Recognized Through Awards, Achievements

From everyday operations, to employee initiatives, to facility design and construction, KUB values our role as an environmental steward in the communities we serve. Our commitment to incorporating sustainability into every facet of KUB's services is recognized through our achievements and awards.

KUB's Environmental Performance was Recognized with the Following Achievements in FY 19:

- The National Biosolids Partnership (NBP) again certified KUB's biosolids program at its highest platinum level. KUB has been certified with the NBP since 2011.
- The 100 Best Fleets in the Americas program again recognized KUB's fleet as one of the 100 Best Fleets in 2019, with KUB ranked number 93. KUB first received Best Fleets Recognition in 2009 and has been recognized as either an "Honorable Mention" or "Best Fleet" each year since then.
- KUB maintained our certification in the Tennessee Green Fleets Program. KUB serves on the Board of the Tennessee Clean Fuels Coalition and has been a Gold Partner since 2004. KUB shows commitment to the program through our alternative fuel fleet, including three new compressed natural gas powered dump trucks (pictured below).
- KUB again received the Arbor Day Foundation's Tree Line USA Utility Award. KUB has received this award annually since 2001.
- The Kentucky-Tennessee Water Environment Association featured KUB's Second Creek Trunkline Rehabilitation project in the Spring 2019 issue of its "Stream Lines" publication. This project was previously chosen to receive the Outstanding Overflow Abatement Project Award for Tennessee at the 2017 Water Professionals Conference.



Environmental Report **2019**

- 2** Community Partnerships
- 4** Operational Sustainability
- 7** Employee Environmental Initiatives
- 8** Community Service and Outreach

TVA Recognizes KUB With EnergyRight® Awards

KUB customers helped reduce energy use by over 4.7 million kilowatt hours (kWh) in TVA's 2018 fiscal year. That is enough energy to power 400 homes for a year.

KUB achieved status as a top performer in the following programs in TVA's FY 2018:

- **Green Power Switch:** Second place; over 8,683 MWh sold
- **eScore Energy Efficiency:** Fourth place; energy savings: 1.02 million kWh
- **eScore Self Audit:** Fourth place; energy savings: 296,296 kWh
- **Home Uplift:** Fifth place; energy savings: 211,489 kWh

Low-Income Weatherization Programs Support Communities

KUB continues work to support energy efficiency in our communities by partnering with local organizations to weatherize low-income homes. In partnership with the City of Knoxville, the Knoxville-Knox County Community Action Committee (CAC), TVA, and others, KUB continues to make a positive impact on the environment and the community through support of low-income home weatherization programs.

To continue serving customers in need of this assistance, TVA, KUB, and CAC implemented the TVA Home Uplift Pilot in support of Round It Up. TVA provided \$1.6 million and the Federal Home Loan Bank of Cincinnati's Affordable Housing Program granted \$500,000 for the program. These funds serve as a match for Round It Up and are doubling the number of homes that can be served—making customer contributions to Round It Up go twice as far. The program includes a study of the non-energy benefits of home weatherization, such as improved health and quality of life for the participants. This study is intended to help build additional program support from the health care industry and other philanthropic partners. Since 2015, more than 1,600 energy inefficient homes have been weatherized through partnerships including Round It Up, Home Uplift, and the Knoxville Extreme Energy Makeover.

Melissa and Brent Lane's (pictured right) home received weatherization upgrades through the program, including a new heating and air unit, all new duct work, energy efficient lightbulbs, and insulation. Brent Lane has been on disability since 2009, and his wife's income could not support the upgrades their home needed. Round It Up allowed the Lanes to keep their home and cut their monthly utility bill by nearly half during high-usage months.



"We would not have been able to get (the weatherization) without the program. It cost way too much, and we can't afford that. We live paycheck to paycheck, and you know we have a little bit left over, but there is no way we would have been able to get it."

— Melissa and Brent,
RIU Program Recipients

Energy and Water Saving Workshops Empower Customers

Sharing information about how our customers can save energy and water and lower their bills is a priority for KUB. In partnership with TVA EnergyRight®, KUB provides energy and water savings workshops to local community groups. The workshops include interactive displays to illustrate how small changes can lower monthly utility costs. The workshops highlight where customers' money goes each month, debunk energy and water savings myths, and provide simple fixes for problems that cause energy and water loss. Workshop participants are provided take-home conservation kits to get started with the savings. Since presentations began in April 2019, more than 350 customers have been served with these interactive workshops.

KUB and TVA's partnership to provide these workshops supports the City of Knoxville's Savings in the House outreach initiative. This initiative is also supported by a \$300,000 grant from the Southeast Sustainable Communities Fund. The grant is enhancing Savings in the House to include expanded content for water efficiency, healthy homes, and emergency preparedness, and it is also funding low-cost water efficiency and health and safety improvements in homes being weatherized through Round It Up.



"I love being a part of these workshops so we can empower our customers to take control of their energy and water use and make their homes more efficient."
—Veronica Andrews,
KUB Customer Counselor,
Customer Technical Services



New Engineering Building Highlights Environmental Commitment

KUB's new 45,000 square-foot Engineering Building at the Hoskins Operations Center was completed in summer 2019. Sustainability features included in the building's design and construction are expected to result in Leadership in Energy and Environmental Design (LEED) certification. These features include a rooftop solar array, electric vehicle charging stations and more.

Continuous Sustainability Focus at KUB's Plants

Water treatment is an energy intensive process, and KUB continually looks for ways to save energy in its plant operations. KUB has worked steadily on optimizing efficiency at the plants over the years, and third party energy assessments have confirmed the plants are efficient. To build on those efforts, KUB appointed a Plants Energy Management Team that continues to identify opportunities.

KUB has installed variable frequency drives in nearly all large pumping applications. These drives increase motor efficiencies by varying the speed of the pumps throughout the day as they are needed. This reduces the energy usage and reduces wear and tear on the motors. Lighting throughout the plants is being converted to LEDs, with over 550 lights already replaced and the remaining lights planned for conversion over the next three years. KUB is also improving energy management to use energy during times when costs are lower, and the plants participate in TVA's demand response program to alleviate strain on the electric grid during periods of peak demand.



KUB's Engineering Building

Designed and Built with Sustainability in Mind

- On-site concrete recycling during construction
- Off-site asphalt, steel, and wood recycling during construction
- 100% LED light fixtures
- 57-kilowatt rooftop solar array
- 8 new electric vehicle charging stations with capacity for expansion
- Hot water solar panel serving restrooms and break rooms
- Daylight sensing perimeter lighting
- Highly efficient water fixtures and HVAC system with smart capabilities

LED Conversion of Outdoor Private Lighting Saves Energy

KUB completed the first year of a new program to convert its outdoor private lighting system to LED. In FY 19, over 6,600 lights were exchanged, and when the system of approximately 30,000 lights is fully converted, annual energy savings will be more than 14.5 million kilowatt-hours (kWh). This is enough energy to power 1,800 homes for a year and equal to removing nearly 2,200 cars from the road. This conversion project is equal in scale and environmental benefit to the City of Knoxville's LED streetlight conversion program.



6,685
lights converted in FY 19

When system conversion complete...

14.5 million kWh annual savings

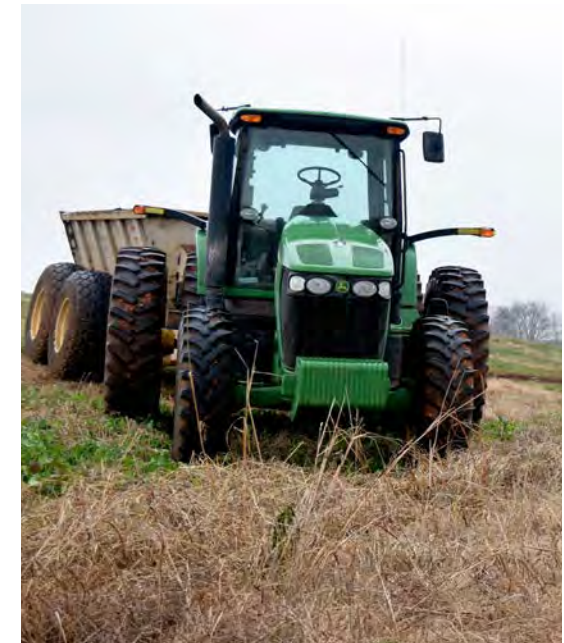
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Biosolids Program Reduces Waste, Benefits Area Farmers

KUB is the only Tennessee utility to hold Platinum Status with the National Biosolids Partnership. For more than 20 years, KUB has provided biosolids from the wastewater treatment process for beneficial reuse.

Each year, local farmers receive free, nutrient-rich biosolids, approved by the Tennessee Department of Agriculture as registered fertilizer, to apply to their farmland. In 2018, 21,363 wet tons of biosolids were applied to 1,324 acres of farmland instead of being sent to a landfill.

"Other farmers have noticed how well the grass is growing, (since) it is visible from the roads," one farmer wrote in 2018. Another wrote, "I saved money on fertilizer, and I like the way grass grows better, especially in the dry season."



Fifty Years of Green Efforts in Fleet, Fuel

KUB first invested in an alternative fuel fleet in the 1970s, and its current fleet includes vehicles that run on compressed natural gas (CNG), electricity, and electric hybrid technology. KUB is in its third year operating a public CNG station and is active in outreach and advertising to encourage use of alternative fuels. These efforts have proven effective—KUB sold six times more CNG from the station in FY 19 than in FY 18.



Materials Reuse Program Saves Waste From Landfill

Through KUB’s surplus materials reuse program, community members can request items that are no longer of value to KUB, such as wood utility poles, wood pallets, 5-gallon buckets, empty wire reels, and wood timbers and crates that are part of the shipping materials received with KUB construction materials. The program allows for beneficial reuse of the materials and keeps them out of a landfill.



Digital Steps Forward Increase Environmental Sustainability

Technological improvements throughout KUB’s operations have decreased the company’s environmental footprint. KUB is starting its final year of the four-year Century II grid modernization initiative to provide advanced meters to all customers. These meters reduce field technician visits to homes and businesses, keeping vehicles off the road. When the deployment is complete next year, the reduced trips are expected to save more than 500,000 miles and 33,000 gallons of fuel annually.

KUB’s paperless billing participation has continued to increase thanks, in part, to a recurring \$5 gift card incentive campaign for new paperless customers. With 14,640 new paperless billing customers this fiscal year, KUB now has over 40,000 customers participating in paperless billing, which saves more than nine tons of paper annually.

KUB is the first utilities provider in North America to use TaKaDu, an innovative software that analyzes water consumption data in order to identify potential problems. For example, in FY 19, this software alerted KUB to a large leak in the median of Interstate 640. If the leak had not been detected and repaired, more than 45 million gallons of water would have been lost over the course of a month. TaKaDu’s data analysis technology helped KUB pinpoint the leak location and stop the water loss quickly.



“The TaKaDu management system is truly advanced data analytics, and has become an integral part of how we identify and address leaks in the water distribution system. As a result, hidden, underground leaks can be located more quickly, and scheduled for repair. That allows us to be better stewards of our community’s most precious resource..... water.”

—Ted Tyree, Engineer, Water Systems Engineering

Employee Environmental Initiatives

Employees Contribute to a Greener Workplace

KUB’s employees are active in finding ways to be environmentally responsible in our operations and everyday work practices.

This year, KUB’s Environmental Stewardship Employee Engagement team encouraged all departments to “Think Green” in their offices and breakrooms. Six departments participated in the challenge by voluntarily reducing purchases of single-use office and break room supplies, and by investing in more environmentally friendly options, such as reusable supplies and those made with recyclable or recycled materials.

Employees took the challenge further by looking beyond the breakroom and converting 60 gas-powered chainsaws to electric for our Overhead Construction crews (pictured below). Over a five year service life, a battery-powered tool results in approximately one-third the carbon emissions as compared to a combustion engine-powered tool.

The employee team also introduced an on-campus “Swap ‘N Shop” to offer gently used office supplies for reuse. This new employee resource discourages ordering new supplies while others go unused, saving money and limiting waste.



Giving Back to Community Through Environmental Efforts

KUB is proud to be part of Knoxville-area communities and have the chance to be a steward of our communities' natural resources. Our employees' stewardship efforts put that pride into action.

Through KUB's Volunteer Time program, employees support environmental efforts throughout the year. Through Ijams Nature Center's River Rescue and KUB Employees Association's Adopt-A-Stream event, employees cleaned a total of approximately 100 bags of trash and more than 80 pounds of large items out of the Tennessee River and its streams.

Employees also participate in community outreach events like EarthFest and WaterFest each year to provide the public with information on energy efficiency and water quality. This year, KUB offered EarthFest visitors free tree seedlings and LED light bulbs, and taught elementary school students at WaterFest about the importance of clean water and how they can help protect it.

KUB has a long-standing partnership with Habitat for Humanity, which allows KUB to plant a tree at each new Habitat home in our service area. In 2019, KUB planted trees for 10 new homeowners, bringing the total number of trees planted for Habitat since 2008 to 275. As an Arbor Day Foundation Tree Line USA Utility, KUB has an active tree planting program for other customers as well.

The H2O To Go mobile water unit is KUB's newest environmental effort. To encourage use of reusable water bottles, the mobile water unit will provide clean water at community events. KUB staff are also on site at events offering information about the importance of water quality and tips on how community members can help protect our water resources.



Employee Accomplishments

- 100** Bags of trash removed from area rivers and streams.
- 80** Additional pounds of large items removed from rivers and streams.
- 275** Total trees planted at new Habitat homes since 2008.

