



Building Community®

JEA’s Sustainability Initiatives

As the eighth largest utility in the nation, the actions JEA takes have a profound impact on the growth and sustainability of Northeast Florida. To ensure the continued viability of our community, JEA has adopted an Environmental Sustainability initiative to consider environmental, economic and social factors in all of our major decisions affecting the growth of our community. Striking a balance between providing reliable electric, water and sewer services and ensuring the sustainability of our community is at the very core of our business. JEA’s Circle of Excellence embodies the core strategies JEA must balance to achieve its goal of improving the quality of life in the communities we serve by being the best electric, water, and sewer utility in the nation. Prominent within the circle of excellence is the initiative of environmental sustainability. JEA policies address sustainability of our precious Floridan aquifer water supply, the issues of climate change, the recycling of production byproducts, and the protection of the St. Johns River.



Sustainability is much more than a concept at JEA, it is becoming our culture. To achieve this, a comprehensive internal communication and education program has been established to instill the concepts of sustainability, conservation, and pollution prevention within our staff.

- New employees are first introduced to environmental stewardship at orientation.
- Pollution Prevention (P2) program – The P2 program encourages all employees to participate in activities that help reduce pollution at the source. These programs include two sided printing, recycling of office paper, cardboard, plastic/aluminum, and batteries.
- Environmental Events – Employees celebrate Earth Day and Pollution Prevention Week by participating in educational activities that reinforce environmental concepts.
- Internal communication – Continuous communications via e-mails, internal web sites, newsletters, and lunch & learn presentations provide staff with ways to practice sustainable lifestyles at home and work.

- Community Events – JEA provides opportunities for and encourages employees to participate in environmental events in our community like Earth Day and the St. Johns River Cleanup.

JEA’s sustainability efforts have been implemented within each of the services that JEA provides its customers; electric, water and sewer. Key practices being utilized within each of these production areas are conservation, reuse, and pollution prevention.

Economic Viability/Stability

As the provider of reliable electricity, clean and safe water, the actions JEA takes have a direct impact on the environmental and economic viability of northeast Florida. The utility is focused on maintaining the very practices that enable it to be at the heart of the Jacksonville area’s economic engine. JEA invests heavily to make certain that its infrastructure continues to support the growth of our community.

Since the merger of the City of Jacksonville water and sewer department into the electric utility in 1997, JEA has invested more than \$2 billion in the city’s water and sewer infrastructure (\$800 million in the sewer system alone) to achieve fundamental environmental and operational improvements. These include:

- Sewer Pipe Rehabilitation – \$40 million to replace more than 400 miles of failing sewer pipes and upgrading sewer pump stations, reducing annual street cave-ins by 80% and reducing annual reportable sanitary sewer overflows. This has all occurred while JEA’s service area has grown by more than 20%.
- Wastewater Treatment Upgrades - \$220 million to upgrade regional treatment facilities, leading to a 90% reduction in annual facility permit violations.
- Nitrogen reduction - \$67 million has been spent to date reducing nitrogen levels by 49%, with further investments to reduce nitrogen levels.

Environmental Integrity

Conservation, reuse and pollution prevention strategies are key components of JEA’s environmental sustainability initiatives. These principles have been successfully incorporated in all JEA production and support facilities.

Conservation – JEA is a leader in the State of Florida and the nation in programs with measurable results in natural resource preservation.

- Alternative Energy Sources – JEA has an aggressive goal of producing 7.5% of its energy capacity from clean and green resources by the year 2015. By investing in renewable resources, JEA conserves traditional fuels and reduces associated air emissions. JEA’s alternative fuel program accounts for 78 MW of power generation capacity.
 - JEA has installed solar photovoltaic cells at several public facilities including local high schools, local universities, the Jacksonville Zoo, the Jacksonville Chamber of Commerce building and the Jacksonville International Airport.
 - To encourage conservation within the residential and commercial customer bases, JEA provides rebates for the installation of solar water heaters.



- Wind Power – JEA has a share of a 10 MW wind farm in Ainsworth, Nebraska with the Nebraska Public Power District (NPPD).
- Methane gas produced naturally at locally closed landfills and JEA’s wastewater plant is captured and used to generate up to 6.8 MW of energy. In addition, 9.1 MW of power from landfill gas is received through a purchase power agreement from the City of Jacksonville’s Trail Ridge Landfill.
- With 36% of its vehicles powered by biodiesel and ethanol fuels, JEA was recently ranked in the top 100 of U.S. fleets utilizing alternative fuels by Automotive Fleet Magazine.
- Energy and Water Demand Side Management – This comprehensive program has a goal to reduce consumer energy and water use and utility peak demand. Some features of Demand Side Management include;
 - Compact Fluorescent Lights (CFL) – At community events such as Earth Day, residents sign a pledge card to “Change a light, Change the world” and receive a free CFL. JEA also sponsors CFL discount coupons for customers and through a grant from the Community Foundation provides free CFLs to low income and elderly customers. These efforts are expected to result in a profound reduction in fuel consumed and air emissions.
 - Promotion of energy efficient (Energy Star) appliances.
 - Monthly training classes for home builders and building trades on energy and water efficient construction techniques.
 - Neighborhood Efficiency – This program augments government subsidized housing repairs with installation of energy efficiency measures accompanied with conservation training for customers receiving the repairs.
- Residential Audits – Free energy and water audits are available that teach customers how to reduce electrical and water consumption by making simple changes at their homes.
- Green Built Homes of Florida - This incentive-based program offered by JEA and Northeast Florida Builders Association promotes the use of energy and water efficient building practices in new single family homes constructed in Northeast Florida.
- In partnership with the St. Johns River Water Management District, JEA has provided numerous community conservation messages via radio, TV, print, and billboards.

Reuse – To conserve resources, energy, and valuable byproduct storage area space, JEA is committed to beneficial re-use whenever feasible.

- Using innovative strategies, the electric generating facility, St. Johns River Power Park, has found beneficial re-uses for over 66% of the byproducts of power generation.
 - Calcium sulfate (gypsum), a by-product of removing sulfur dioxide from air emissions, is used locally to supplant natural gypsum in drywall production. Since 1998, JEA has distributed over 2.6 million tons of this byproduct.
 - High carbon content fly ash is separated and reused as a fuel source.
 - Other grades of fly ash and bottom ash are re-used as concrete additives.
- EZBase® is a byproduct made from circulating fluidized bed (CFB) boilers located at the JEA Northside Generating Station (NGS). These CFB’s are fueled by a combination of coal and petroleum coke. Limestone is added during the power generation process to create thermal mass and to aid in the removal of sulfurous gas emissions. At the conclusion of this generation process, two dry byproducts are generated, fly ash and bed ash. These dry ash byproducts are mixed with water to create a slurry that is further processed into the value-added byproduct, EZBase®. EZBase® has excellent cementitious properties that allow it to be used in construction applications where limestone, cement and concrete would otherwise be used.
- At the Brandy Branch Generation Station, excess heat from combustion turbines that would otherwise be lost to the atmosphere is captured and used to generate up to 50% more emission free power without consuming additional fuels.

- In 2003, JEA voluntarily converted its wastewater sludge incinerator to a state of the art biosolids recycling facility. With this change, the facility now produces an average of 39 tons/day of fertilizer pellets, GreenEdge, used in agricultural and turf applications. This process lacks the emission issues associated with the old incinerator and even generates green power that is re-used within the facility.
- Approximately 9 million gallons per day of wastewater is subjected to further treatment and reclaimed for industrial uses as well as irrigation at parks, golf courses, right of ways, and residential lawns and gardens. Utilizing reclaimed water for non-potable uses, JEA is helping to preserve one of our most precious natural resources, the Floridan aquifer.



Pollution Prevention- Understanding the impact JEA electric, water, and wastewater facilities can have on our community, JEA is committed to developing and employing innovative pollution prevention projects to mitigate potential impacts.

- Northside Generating Station
 - Repowering Project – By converting two old boiler units into new efficient circulating fluidized-bed technologies, JEA was able to achieve a 10% reduction in emissions while doubling its power production. The new technology also led to a reduction in the amount of process water consumed at the power plant.
 - Turbine upgrade – To further increase power plant efficiency, JEA upgraded three turbines with a resulting increase of 47 MW in power generation with no corresponding increase in fuel use or air emissions.
- Wastewater Treatment
 - Nitrogen Reduction Initiative - In a voluntary effort to reduce nitrogen discharges to the St. Johns River, JEA has found inventive ways to modify wastewater treatment processes resulting in a 49% reduction. Furthermore, as a charter signatory of the River Accord, JEA has and will invest in upgrading treatment technologies and infrastructure to further reduce nitrogen levels well below anticipated regulatory limits.
 - JEA Fats, oils and grease program – The JEA fats, oils, and grease (FOG) program is a national model best management practices (BMP) that has reduced sanitary overflows caused by restaurant grease by over 90%.

Replication

Many of the sustainability initiatives detailed in this nomination can easily be adopted by any utility. JEA already is a leader in communicating its sustainability efforts to other utilities. Many of the JEA staff are members and hold leadership positions in organizations such as Florida Coordinating Group, First Coast Manufacturers Association, the Florida Water Environment Association, American Water Works Association, Air & Waste Management Association, and the National Association of Clean Water Agencies. Through participation in these organizations, JEA actively disseminates information on its many initiatives at both the local and national levels. Through these forums JEA looks forward to continuing to share its success stories, lessons learned and bring back new ideas and technologies that can be used in the Jacksonville area to continue to build a sustainable future.

Regulatory vs. Voluntary

Adopting the philosophy of “More Than Mandated” at JEA, most of the conservation, re-use, and pollution prevention initiatives described were implemented on a voluntary basis to ensure the sustainability of the region. The following highlights voluntary programs of note:

- Renewable energy source goal of 7.5% of power generation capacity
- Almost 50% of JEA fleet vehicles can use alternative fuels
- Near 50% reduction in nitrogen discharged to the St. Johns River, with further planned reductions
- Energy and water demand side management programs
- Conversion to circulating fluidized-bed power generation
- CFL recycling program
- Reuse programs for byproducts of both electric generation and wastewater treatment

Innovation/Leadership

Always an industry leader, JEA remains on the cutting edge of technological advancements with sustainability as the end goal.



- At JEA’s Northside Generating Station two of the plants three generation units were converted from a traditional oil-fired steam electric generation to a new technology called circulating fluidized-bed (CFB) units. As one of the largest power plants in the world to use CFB technology; the new technology has resulted in an increased power output by 100%, while at the same time reducing air emissions by 10%. Besides improvements in air quality, this technology allows JEA to maintain one of the lowest electricity rates in the state, thus allowing for continued growth in Jacksonville.

• CFL Recycling Program – Since these power saving bulbs contain a small amount of mercury, JEA considered the environmental impacts of spent bulbs as it implemented its various CFL marketing programs. Taking a “cradle to grave approach”, JEA has partnered with the City of Jacksonville (COJ) Solid Waste department to increase awareness on handling CFLs and established a mechanism for residents to properly dispose of bulbs. By teaming with participating retailers to collect CFL from residents for transport to the COJ reclamation site, JEA and the City developed the Green Partners Program, a one of its kind alliance that will become a model program for local product stewardship.

- Water Treatment Plant – With a goal of sustainable water resources, JEA’s Ridenour Water Treatment plant was certified ISO 14001 compliant; the first water plant in Florida to achieve this level of environmental certification.

