

Public Works efforts to Sustain Columbia

The City of Columbia has taken a proactive approach to reduce our carbon footprint by altering methods of transportation, energy consumption, urban planning and sustainable architecture to preserve the city for future generations.

Environment/Beautification

Stream Buffers: The City of Columbia protects streams from potentially harmful encroachments, as well as protects property from the harmful effects of flooding and soil erosion, by the stream buffer provisions of Chapter 12A in the City Code (Land Preservation).

Adopt-A-Spot Beautification volunteers care for 80 landscaped beds throughout Columbia located on city or state street right of way.

Adopt-A-Spot Litter Control volunteers pick up trash in 100 locations in city right of way; adoptees commit to picking up litter at least four times each year.

1000+ Trees: City staff started planting street trees as part of public highway construction projects during the 1990's. City staff are responsible for tree maintenance for over 1,000 trees, which increase shading and absorb CO₂.

Tree Preservation: A portion of the native tree canopy is required to be preserved on large development projects. Tree planting is required to mitigate the creation of new paved surfaces for parking and driveways.

City Buildings

LEED Buildings: The City has three buildings that are LEED certified by the U.S. Green Building Council (USGBC). The Wabash Station was the first to be LEED certified in 2008 with a Certified rating. Since then, Fire Station #9 received a Gold rating in 2010 and Fire Station #7 received a Silver rating in 2010. One other city building also qualifies for LEED certification, the new addition to City Hall, which was completed in 2011. LEED is the USGBC's leading rating system for designing and constructing the world's greenest, most energy efficient, and high performing buildings.

Green Cleaning- A green cleaning program has been adopted by the City's custodial staff for all city office complexes. Cleaning equipment and products are evaluated to ensure they meet sustainability criteria. Cleaning products must meet the Green Seal GS-37 standard or comply with maximum allowable VOC levels. Staff receives ongoing training opportunities on products and equipment.

Fleet

Hybrid Vehicles: City departments are integrating hybrid vehicles into their fleet to improve fuel economy and reduce emissions. Several hybrid vehicles are used by the city. The City purchased its first hybrid vehicle in 2004.

Biodiesel: The City of Columbia has been using biodiesel since May 2002. 300 city vehicles run on biodiesel, including the city buses operated by Columbia Transit and Solid Waste collection vehicles. City cars run on an ethanol blend. The fuel site at the Grissum Building provides approximately 500,000 gallons of biodiesel fuel a year in support of municipal operations.

Recycling Motor Oil: The fleet maintenance division recycles used motor oil. All used motor oil is collected and is used for heating approximately 30,000 square feet of the city's Operations Center. Excess used motor oil, not used for heating the building, is collected and sold to oil recycling companies for processing back into motor oil.

Scrap Metal: Additionally, all used metal parts from vehicle maintenance operations, including filters, are recycled through the scrap metal process.

Stormwater

Stream Clean-up: Volunteers assist with stream cleanups throughout the city, such as the annual Hinkson Clean Sweep. Over the last year 1,400 volunteers donated over 3,800 hours and picked up 33,000 lbs of trash and litter from our local creeks, streams and local waterways.

Storm Drain Decals: The Stormwater Education & Outreach program works with volunteers to place "Dump No Waste – Drains to Stream" decals on storm drains in an effort to protect stormwater. Volunteers place the decals throughout the city and distribute informational door hangers to home owners in the areas where the decals are placed to help cut down on pollution in the creeks.

Solid Waste

Volunteers: The Public Works Volunteer Program uses volunteers to help with household hazardous waste collection and mulch sites as well as teaching the public about composting, recycling, and vermicomposting. Compost workshops are taught in the spring and fall months. Volunteers provide over 5,700 hours per year. The Volunteer Program started in 1993.

Recycling: There are 11 local recycling drop-off sites that collect recyclable materials. Solid Waste picks up commercial and residential recyclables and delivers them to the city's Material Recovery Facility for processing. Last year, 9,668 tons of recyclables were recovered at this facility. The Apartment Recycling Program consists of 9 drop-off containers that rotate among 33 apartment complexes. Curbside recycling began in Columbia in 1986. Major appliance recycling includes the recycling of washers, dryers, freezers, dehumidifiers, stoves, dishwashers, refrigerators, water heaters, air conditioners, trash compactors, and conventional ovens.

Convenience Store (C-Store) Recycling: The program has 43 local convenience stores participating in the collection of used beverage containers (UBC) using blue recycle bins placed beside the gasoline pumps and store entrances. The program was started in 2007.

Tiger Tailgate Recycling is a partnership between the City, the University of Missouri and Sustain Mizzou student volunteers. Over the past five football seasons, 108 tons of recyclable containers have been diverted from the landfill.

Tiger Treasures Sale, an annual event hosted by the University, keeping nearly 18 tons of unwanted but usable items from going to the landfill.

Partnership Recycling: The City has collaborated with Superior Garden Center in a community-wide recycling event of plastic garden containers. Over 4,500 pounds in containers were recycled.

Household Hazardous Waste Facility is a place where citizens can dispose of hazardous household products (paint, oil, pesticides). HHW collected 125,900 pounds of material annually. This program began in 1992.

Compost: The City has 15 acres dedicated to making compost from yard waste and reselling it in bulk and bag quantities. Windrows of a 50/50 mixture of mulch and casings are turned and watered weekly to enhance decomposition and minimize odors. It takes 4 to 6 months to produce finished compost. The process began in 1991. Bulk sales of finished compost product began in 2003. In 2008, “Columbia’s Own” compost bag sales began in local retail stores in 1 cubic foot bags. In early 2011, the City obtain approval from the Missouri Department of Natural Resources to compost food waste. Food waste composting operations will begin in the fall of 2011.

Compost Workshops: The Public Works Volunteer Program sponsors six free composting workshops annually. Workshop attendees learn composting methods and how to improve the soil by recycling organic matter from their homes. Free or reduced price compost bins are made available to the attendees.

Kraft Foods produces more than a billion hot dogs a year at their Columbia facility. This generates 32 tons of wiener casings every week. These products are now used to make compost rather than being landfilled. Nearly 14,000 tons of wiener casings have been composted since the program began in 1999.

Recycled Asphalt Road constructed going to the Landfill Operation Center and Material Recovery Facility. The asphalt mix design is comprised of 9% recycled glass, 20% recovered roofing shingles, and 71% standard asphalt mix.

Waste Water Treatment Facility

Eliminate Small Treatment Facilities: More than 75 small wastewater treatment facilities throughout Columbia were eliminated by construction of the Columbia Regional Wastewater Treatment Plant in 1983. In 2008, voters approved a sewer bond issue for improvements to the city’s waste water treatment plan and collection system. The improvement project for the WWTP began in February 2010 and slated to be complete in 2012.

Wetlands Units: In order to continue the City’s efforts to protect streams in the area, four wetland treatment units (ponds) were added in 1994. Construction of the wetlands deferred

mechanical expansion of the Waste Water Treatment Plant for 15 years. The Columbia wetlands currently provide the sole external water supply for the Eagle Bluffs Conservation Area. The treated wetland effluent is used to maintain wetlands at Eagle Bluffs, in preference to Missouri River water, which must be pumped at considerable expense. The Conservation Area is used for hunting, fishing, bird-watching, and other public recreation. The Columbia wetlands provide direct recreational benefits, because the system is located adjacent to two popular hiking/biking trails, the City of Columbia's "MKT" trail and the Katy Trail State Park, which provide easy access for bird watchers and nature lovers. Internal access to the wetland units is not allowed. The treatment wetlands get heavy use by waterfowl suggests, especially during cold weather when other open water resources are unavailable. The Columbia wetlands were approved and constructed in accordance with the City's desire to provide needed secondary treatment, plus a small measure of advanced treatment, plus a greenspace amenity, plus beneficial reuse of the water at Eagle Bluffs. These goals have been achieved."

Methane Gas: Columbia Regional Wastewater Treatment Plant (CRWTP) generates low-grade methane gas through the anaerobic digestion of biosolids that are produced during the treatment process. The sewer utility uses this methane gas to heat buildings, provide process heating and produce electricity in order to reduce costs and conserve energy. The CRWTP currently utilizes a 240 KW methane powered engine generator produces approximately 990,000 KW of electricity valued at over \$79,000 and uses over 50% of the methane gas each year. An additional 6 million cubic feet of methane gas is used to heat buildings and to keep the digester at operating temperature. This generator was installed with the plant construction in 1983. As part of the CRWTP Improvement project, the existing 240KW engine generator is being replaced with two 375 KW engine generators. The two new units are anticipated to produce approximately 5,000,000 KW annually at a value of \$300,000.

Biosolids: Columbia Wastewater Treatment Plant recycles the biosolids through land application. Biosolids are a byproduct of wastewater treatment. Specialized processes and equipment are used to stabilize the solid component removed from the treatment of the wastewater. After stabilization, approximately 2000 dry tons of material, or approximately 18 million gallons per year in liquid form, are applied to farm land to be recycled as a fertilizer source. This has been a routine operation of the Columbia Wastewater Treatment Plant for over 20 years.

Alternative Modes of Transportation

GetAbout Columbia: Columbia was selected as one of four communities in the nation to participate in the Federal Highway Administration's Non-Motorized Transportation Pilot program. Columbia's designation as a pilot city came with \$22 million in federal funds over a four-year period to help build infrastructure and establish national standards for public awareness and willingness to use active modes of transportation. This project and its affiliated activities have been named "*GetAbout Columbia.*"

Multi-modal transportation: The City of Columbia capital improvement projects incorporate bike lanes and sidewalks, and connect to neighborhoods, parks and trails for better access to multi-modal transportation and recreation.

Errand Bicycle: Public Works staff uses a city bicycle for field checking design and construction projects. Using the bicycle for short trips saves time. Employees also use the bicycle for construction inspection of trail and sidewalk projects. This allows inspectors to cover more project area in less time when compared to walking the trail corridor.

Landfill

Bioreactor: Construction of cell 4 began in 2007 and received a permit from the Department of Natural Resources in April 2009. It is being constructed for operation as a bioreactor, where liquids are added to the waste to accelerate decomposition, waste stabilization, and gas production. Construction for a second bioreactor (Cell 5) began in January 2011 with completion planned for Fall 2011.

Landfill gas: The Columbia project uses the gas created from decomposing waste at the landfill to generate 2.1 Megawatts of renewable energy. This will supply approximately 1.5% of Columbia's energy use per year and will continue to grow to as much as 2.5% of Columbia's energy portfolio.

Phytoremediation: 1950 cottonwood trees were planted on buffer ground between Columbia's Sanitary Landfill and the Hinkson Creek. Phytoremediation is the depolluting of contaminated soils, water or air with plants. The theory is that should contaminants leave the landfill and enter the groundwater, the cottonwood trees would absorb them and contaminants would remain in the wood.

Construction

Porous Pavement: The city is beginning to use porous pavement in some projects which allows storm water to pass through the surface. The underlying crushed stone stores storm water and release it slowly. The use of porous pavement, also called permeable pavement, can reduce the volume of storm water runoff.

Bio-retention systems: Bio-retention systems are used in various city projects. These are storm water best management practices (BMP's) that use filtration to treat storm water runoff. These systems use deep-root vegetation, such as trees, shrubs, and grasses, and soil microbes to remove pollutants from storm water runoff. Sources of runoff are diverted into a bioretention pond through a storm water drainage system.

Rain gardens: Rain gardens have been included in various city projects, such as at the city salt dome and the recycling drop off center on State Farm Parkway off Nifong. These rain gardens are designed to retain some water during then year, cleanse and then slowly release storm water runoff into nearby streams.

Streetscape: Street trees are regularly installed as part of the city's new road construction projects.