

# Clean Air Action Plan – APPENDIX: Updates & Accomplishments

## Overview

In 2005, the original Clean Air Action Plan was approved. This appendix covers updates and accomplishments related to strategies laid out in the original plan.

## Power plant and utility emissions reductions

All the new power-plant controls referenced in the original Clean Air Action Plan have been installed at KCP&L's La Cygne Generating Station Unit 1 and Iatan Generating Station Unit 1; the reduction in NO<sub>x</sub> emissions has exceeded projections. A selective catalytic reduction system (SCR) began operating on La Cygne Unit 1 during the second quarter of 2007, and low-NO<sub>x</sub> burners and an SCR began operating on Iatan Unit 1 during the second quarter of 2009. As anticipated, the new 850-megawatt coal-fired Iatan Unit 2, located next to the existing Iatan Unit 1, began operating in late 2010.

KCP&L installed and began operating an SCR on Sibley Generating Station Unit 3 — and selective non-catalytic reduction systems (SNCR) on both Sibley Units 1 and 2 — in late 2008. KCP&L is test-burning biomass fuels at its Sibley generating stations to ascertain constraints for equipment operation and emissions impacts that could result from combustion.

In 2007, KCP&L and the Kansas Department of Health and Environment (KDHE) executed a Regional Haze Agreement. The agreement further reduces emissions from the La Cygne Generating Station that contribute to regional haze, and establishes a schedule by which KCP&L will achieve regulatory compliance and emissions reductions through equipment modifications. KCP&L also

## NO<sub>x</sub> reductions from new power-plant equipment

Generating Unit	Percent NO <sub>x</sub> reduced	Reduction (tons/day)
La Cygne Unit 1 *	90	66
Iatan Unit 1*	NA	NA
La Cygne Unit 1**	91	69
Iatan Unit 1**	71	16

\*Represents annual reductions \*\*Represents ozone-season reductions

entered into a Collaboration Agreement in March 2007 that states it will seek regulatory approval from the Missouri Public Service Commission and the Kansas Corporation Commission to undertake renewable energy, energy-efficiency and other projects that will offset carbon dioxide emissions generated from Iatan Unit 2.

KCP&L completed a 100.5 MW addition at the Spearville Wind Energy Facility in late 2006. It signed an agreement in May 2011 to purchase 131 MW of wind-generated electricity from a wind farm in Cimarron, Kan. Construction is expected to begin in fall 2011, with 100 MW of commercial energy online by June 2012, and the remainder available by the end of that year. KCP&L also pledged to add 400 MW of wind power by 2012, and the Cimarron facility puts it on track to achieve this goal. If KCP&L obtains regulatory approval, it intends to add an additional 300 MW capacity of wind-generated electric power by Dec. 31, 2012.

A number of program tariffs approved since 2005 have provided total energy savings of

nearly 94,000 megawatt-hours, with a total demand savings of nearly 160 MW. With regulatory approval, KCP&L plans to reduce annual electricity demand by a total of 300 MW by Dec. 31, 2012.

Finally, KCP&L is requiring its generation and fleet facilities to comply with the heavy-duty diesel idling emission rule (10 CSR 10-2.385) that became effective Feb. 28, 2009, and purchase RVP 7 reformatted unleaded gasoline during ozone season.

### Retrofits for on-road diesel engines/replacement of diesel-construction equipment

Since the Clean Air Action Plan was approved, the Diesel Emissions Reduction Act (DERA) was established, creating a funding mechanism for retrofitting on- and off-road diesel engines and equipment. Through this program, the states of Kansas and Missouri have run programs and local projects that have also been funded through a larger national-level program.

The Environmental Protection Agency's (EPA) Clean School Bus USA program, along with Congestion Mitigation/Air Quality (CMAQ) funding from the Kansas and Missouri departments of transportation, allowed the Mid-America Regional Council (MARC) to install pollution-reducing retrofits on 646 school buses in 19 school districts on both sides of the state line.

Through the Sustainable Skylines grant awarded to the Kansas City region, the Constructing Clean Air project explored new opportunities for retrofit projects through newly-available clean-diesel funding from DERA and CMAQ. Although the original goal of the project — working toward contractual language encouraging contractors of local governments and departments of transportation to reduce emissions from their diesel vehicles — became a second priority, Kansas City, Mo. passed an anti-idling resolution that included language addressing construction projects that use city funds.

An off-road mobile source workshop was held in February 2009 in conjunction with the

Johnson County Environmental Department (JCED) and the Kansas Small Business Environmental Assistance Program (SBEAP). The workshop discussed retrofit options for private contractors, and encouraged upgrades prior to any regulatory action. In June 2010, a diesel idling workshop was held in conjunction with SBEAP and JCED. Similar to the off-road mobile source workshop, the workshop was an opportunity to inform the public about different types of diesel funding available to off-road fleets.

### Truck-stop electrification

At this time, there are no known projects to increase truck-stop electrification in the Kansas City region.

### Idling-reduction programs for public and private diesel fleets

Installing auxiliary power units, or APUs, was one of the main strategies recommended for reducing idling in the original Clean Air Action Plan. APUs have been one of the most popular technologies proposed by private companies to date. Another popular technology is automatic start-up/shut-down devices — which shut down a vehicle's engine after a pre-determined length of idle time — that have been installed in many fleet vehicles.

Through Sustainable Skylines and its Constructing Clean Air and KC Idle Free projects, partners encouraged construction companies to initiate their own on-site idle-free policies and post signage to encourage customers to turn off their engines.

### Switching locomotive emissions-control technologies

Rail is an efficient method of transporting goods. The Environmental Protection Agency (EPA) estimates that freight rail reduces greenhouse emissions by two-thirds for every ton of freight hauled. According to the Association of American Railroads, a train hauling a ton of freight averages 484 miles per gallon, and can accommodate the same load as 280 trucks. Nonetheless, the regions' railway companies are actively engaged in

finding ways to improve both efficiency and reduce emissions.

### Burlington Northern Sante Fe (BNSF)

BNSF is collaborating with KDHE to complete repowers using three Genset engines on a series of 1970s vintage switching locomotives. These repowers will reduce emissions from 17 grams per horsepower to 3.9 grams, classifying them as ultra-low-emitting locomotives. This will not only reduce NO<sub>x</sub> in the Kansas City region, but make the engines 15–30 percent more efficient at reducing greenhouse gases.

BNSF has a nationwide program to install automatic idle-control devices on their fleet of locomotives. The program installs 150–200 APUs annually, depending on available funds. To date, about 65 percent of its nationwide fleet has been retrofitted with automatic shutdown devices that activate after 15 minutes of inactivity. Fifty of those units were installed on low-power switch engines.

In addition to idle-reduction strategies, BNSF has invested in a number of other programs that improve the energy efficiency of its operations. It is one of only a few rail operators that install low-torque friction bearings on its cars, making the cars 40 percent more efficient at reducing drag. BNSF has also conducted its own research to understand the most effective way to stack containers to reduce drag.

It has also invested in training that teaches engineers how to drive to conserve fuel. Engineers are rewarded for high performance in energy conservation.

Air quality concerns receive additional attention when new purchases and development decisions are made. All activity related to emissions is reported to SmartWay, as well as the federal government. More than 350 new Tier 2 road locomotives were purchased last year, and BNSF plans to purchase a similar number this year. Although these engines do not reside in Kansas City, they travel through the region regularly.

BNSF has also developed plans for a new intermodal yard in southwest Johnson County

that will alleviate emissions concentration at its downtown Kansas City intermodal. The new station will have a much longer switching yard (8,000 feet long) so fewer switches will be needed. In addition, it will have electric cranes and other new technologies that reduce the number of hostlers needed to move goods around the facility.

### Union Pacific Railroad (UPRR)

UPRR manages over 8,000 locomotives across 32,000 miles of track in 23 states in the western two-thirds of the United States.

UPRR operates one of the youngest and cleanest fleets of any North American railroad, and almost 4,000 of its units (approximately half its fleet) have either a factory-installed or after-market idle-reduction device (IRD).

A recent snapshot of UPRR locomotives in the Kansas City area indicates that 53 of its 67 low-horsepower units are retrofitted with IRDs. Fifty-one percent of its high-horsepower units are retrofitted with IRDs.

Since 2001, UPRR has required that every new locomotive purchased be equipped with a factory-installed IRD. It has purchased over 2,800 new, cleaner locomotives and retired over 1,800 older units. UPRR owns and operates the largest fleet of hybrid and ultra-low-emitting locomotives (20 hybrids and 172 Gensets), and uses low-sulfur diesel fuel when available.

UPRR performs more than 1,500 visible emissions inspections per month on its locomotives, and provides an average of 425 employees per year with visible emissions inspection training. UPRR has provided locomotive shutdown training to more than 16,000 employees since June 1, 2005. UPRR is a member of the EPA SmartWay Transport Partnership. The UPRR Fuel Masters program is credited with saving 20 million gallons of diesel fuel in 2007, 58 million gallons in 2008, and 25 million gallons in 2009.

### Kansas City Southern Railway (KCS)

On June 22, 2009, KCS received the first two of 27 locomotives to be repowered by Electro-Motive Diesel (EMD). The process

of repowering will update its 40-year-old yard and road switchers with new microprocessor-controlled engine technology. The new system will increase fuel economy and lower engine emissions; the software can be fine-tuned in the future for stricter emissions standards.

These repowered locomotives minimize fuel consumption while maintaining emissions compliance. They are EPA Tier 2 compliant, producing 25 percent fuel savings, 50 percent lube-oil reductions, and a 70 percent reduction in greenhouse gas emissions. KCS has received some state and federal funding for these projects, and will continue to seek more.

## Public education and government/institutional ozone programs

### Unified Government of Wyandotte County/Kansas City, Kan. (UG)

UG employs approximately 2,400 individuals. It has begun developing a climate protection action plan, and has already established programs in a number of environmental areas.

UG has a recycling program for paper, newsprint, cardboard, plastics, aluminum and printer cartridges. In addition, it recycles electronics twice a year, and invites employees to bring personal electronics for collection.

Batteries can be recycled at UG's household hazardous waste facility every third Saturday of the month. It has purchasing policies for minimum recycled content, an excess office supply reuse program, and a reuse policy for furniture. Employees have reusable water bottles and shopping bags.

UG has reduced its mowing schedule at vacant lots, and shortened its mowing season to reduce emissions from landscaping maintenance. The Parks and Recreation Department has incorporated native landscaping in parks and established native prairie plantings. It also does gas-can exchanges for its departments to ensure that all gas cans are "no-spill."

In buildings, UG has upgraded heating and cooling, thermostats and lighting as old devices fail, rather than replacing pre-existing units. Power-conservation policies have been put in place to turn off equipment and adjust heating and cooling after business hours and on weekends.

Although funding cutbacks have limited its ability to green its fleet, UG is working on a policy to retrofit equipment. In addition to owning one hybrid vehicle, it owns a number of flex-fuel vehicles that operate on E85 and biodiesel. It has continued to recommend and push guidance related to refueling and mowing.

UG is a RideShare Connection member, and encourages employees to use that service to carpool. As a member of the regional Air Quality Workplace Partnership, it also encourages employees to take actions that reduce emissions by distributing pollution-reducing tips via email, its intranet and bulletin boards. To encourage employees to use alternative transportation, it has a bike-loan program for both commuting and personal use. Ozone alerts are sent to all employees by email.

UG has provided financial support and representatives to a large number of forums and partnerships, including Clean Cities, Blue Skyways, CMAQ, the Air Quality Public Education Committee, the Air Quality Forum, and many other state and national committees. Kansas City, Kan., is a recognized Tree City, and — like many local communities — holds an Arbor Day celebration.

UG participates in an array of public-education and outreach events targeting many different sectors of the community; it shares a general message with audiences at transportation fairs, during periodic presentations to service organizations such as Kiwanis and the Rotary Club, and at community events like EarthFest. More focused outreach to the building community was achieved at the Board of Public Utility's Build Green Conference, and fun, engaging

messages are promoted to families at Science Week, the Water Rally, monthly school fairs and events, Hip-Hop Health, and Math and Science Night.

In addition to educating the public, UG has programs that assist its citizens in taking positive actions to improve air quality. Twice a year, it holds a wood-debris dump day to reduce backyard burning. It also offers to exchange charcoal chimneys for lighter fluid. It works with MARC to conduct gas-cap testing three times a year, and periodic community-wide electronic-waste recycling events. It supports a farmer's market with locally grown produce each Wednesday during the growing and harvest season.

### Kansas City, Mo.

Since 2004, the city manager has required each city department to develop and implement an ozone action plan to identify and reduce ozone-generating activities on Ozone Alert days and throughout the ozone season. Many city departments also require or encourage their contractors to participate in ozone-reduction efforts. Ozone action plans may include strategies such as postponing refueling, nonessential driving and small engine-use; reducing idling; offering commuting alternatives; and burn bans on Ozone Alert days.

The city fleet includes more than 1,200 alternative-fuel vehicles, more than any other city in the region. This includes more than 225 vehicles fueled with compressed natural gas (CNG). All diesel equipment use a biodiesel mix of at least 20 percent non-fossil fuels. Public Works and Water Services department vehicles use more than 900,000 gallons of biodiesel annually. All airport shuttle buses — which drive 1.5 million miles a year — operate on CNG. In January 2009, the city purchased 10 CNG Ford F150 trucks with a CMAQ grant to supplement its growing CNG fleet; later that summer it received the first three medium-duty CNG trucks to be built in the U.S. The city of Kansas City, Mo., will be among the first adopters of CNG mowers next year.

More CNG vehicle acquisitions and infrastructure are in progress with additional CMAQ funding.

To support these and other CNG vehicles, the city operates four CNG fueling stations. Between 2008 and 2009, the city began evaluating the use of electric and plug-in electric vehicles. In order to facilitate this transition, the city entered into a partnership with Missouri University of Science and Technology, KCP&L, KOKAM America (a local manufacturer of advanced lithium polymer batteries) and Smith Electric (a local manufacturer of all-electric vehicles).

In 2003, the city Parks and Recreation Department started an initiative, Nature First, to convert turf grass to native plants, which require less water, fertilizer and mowing. The program began with 10 acres, and has expanded to include a short-term target of converting at least 300 acres to native plants.

To reduce emissions through energy savings, all new city facilities must be built to achieve a minimum Leadership in Energy and Environmental Design (LEED) silver certification from the U.S. Green Building Council (USGBC). The Bartle Hall ballroom expansion received a LEED silver certification in 2009. Two additional city projects, the Southeast Community Center and the vehicle impound facility, have applications pending for LEED silver and LEED gold certifications.

The city's Million Lights campaign encouraged residents and businesses to convert to energy efficient lighting. The city partnered with KCP&L to provide a rebate on compact fluorescent lights (CFLs) for residents. In addition, local organizations donated more than 30,000 CFLs for distribution to low-income families and elderly residents. The city also identified incandescent light bulbs in its buildings, and converted them to CFLs; more than 2,500 CFLs were installed in Bartle Hall and Kansas City International Airport. Across the metro area, more than 1.5 million incandescent light bulbs were converted to CFLs between January 2007 and April 2008.

Kansas City received a \$4.8 million Energy Efficiency and Conservation Block Grant (EECBG) in August 2009 from the U.S. Department of Energy to complete nine energy-efficiency and renewable-energy projects. The EECBG program is a part of the 2009 American Recovery and Reinvestment Act (ARRA). The nine projects include:

1. Building a new bicycle-pedestrian trail.
2. Modification of the city's development code and area plans to address transportation and other areas of energy-efficiency improvements.
3. Enhancements to the city's energy codes to address long-term energy efficiency in new construction and renovation projects.
4. Energy-efficiency and renewable-energy improvements to the city hall complex and health department building.
5. Purchase and installation of computer software that automatically shuts down more than 3,000 city employees' computers on evenings, weekends and holidays.
6. Development and implementation of a public education and outreach program to promote energy efficiency and the use of renewable energy.
7. Participation in a regional committee to create a strategic regional energy framework.
8. Replacement of less efficient traffic signals with LEDs to reduce energy costs and emissions.
9. Creation of a Traffic Signal Synchronization Center that allows the city to control traffic signals to reduce idling and improve traffic flow.

### Johnson County Sustainability Program (JCSP)

Johnson County is currently undertaking numerous projects, including greenhouse gas (GHG) inventory and tracking, and organizational sustainability. The projects are described in further detail below.

### Greenhouse gas inventory and tracking

Johnson County staff developed GHG inventories in 2009 under the direction of the Johnson County Board of County Commissioners (BOCC). One inventory quantifies all county government operations, and the other accounts for all emissions generated by human activity in Johnson County. The BOCC's goal is to reduce county-wide organizational GHG emissions by one-third by 2020, and by 80 percent by 2050.

### Building design and construction

Johnson County became a leader in constructing sustainable buildings in 2006 with the construction of the Sunset Drive Office Building, which earned a LEED gold certification. The county constructed a LEED silver building in 2009.

### Energy efficiency and conservation in buildings

Johnson County is working to be a leader in reducing energy consumption in existing buildings, in addition to constructing efficient facilities. Fifteen buildings have been retrofitted with energy-efficient light fixtures. The project — which cost \$987,000 — has a payback period of only 3.2 years, will reduce power consumption by 1.17 million kilowatt-hours per year, and prevent 689 metric tons of GHG emissions annually.

The U.S. Department of Energy awarded Johnson County \$552,500 in EECBG funding in 2009 to conduct comprehensive energy audits of 20 county buildings and explore opportunities for renewable energy. The audits will identify opportunities for improvements to mechanical systems, lighting, plumbing and building shells.

### Environmentally preferable purchasing

The county uses recycled paper and environmentally-friendly cleaning products in all offices and facilities. Computers purchased by the county must have a minimum silver rating through the Electronic Product Environmental Assessment Tool (EPEAT).

## Waste reduction

The goal of Johnson County's Solid Waste Management Plan is to achieve zero government waste by 2020. To reach this goal, the Waste Reduction Work Group is currently exploring options to increase recycling in county buildings. One example of efforts to decrease consumption and promote the use of recycled content was the county manager's paper-reduction campaign. The county uses a minimum 30 percent recycled-content paper, asks employees to avoid printing nonessential documents and adopt paper-saving strategies such as double-sided printing. A paperless payroll system has also been implemented. The county has decreased the number and size of solid-waste dumpsters due to agreements with recycling vendors that provide pickup of recyclable materials at county buildings.

## Education and outreach

Johnson County educates employees about sustainability through:

- Staff sustainability committee and work groups: A staff sustainability committee including representatives from all departments and agencies and work groups focus on five sustainability strategies: waste reduction, environmentally-preferable purchasing, green building, developing a GHG inventory and sustainability integration.
- Sustainability intranet: An internal sustainability website was established for employees. The site shares information about current initiatives, committee meetings and sustainability news, and also provides employees opportunities to collaborate on work-group documents. It also shares tips for living a sustainable lifestyle.
- Ozone-reduction campaign: In 2004, Johnson County established an ozone-reduction campaign during ozone season. The Johnson County Environmental Department organizes the program, which educates staff, and promotes ozone-reducing strategies,

policies and procedures. From 2004 through 2008, the campaign:

- ♦ Decreased employee driving by over 1 million miles.
- ♦ Prevented 1 million pounds of air pollution.
- ♦ Tested over 5,000 gas caps for leakage.
- ♦ Distributed more than 500 no-spill gas cans and charcoal chimneys to residents and county departments.

## Wastewater cogeneration projects

Improvements to the Douglas L. Smith Wastewater Treatment Plant include expanding capacity to process 14.5 million gallons of wastewater daily; an anaerobic digester; a fats, oils and grease-receiving station, and a cogeneration system. The upgrades were funded by the American Recovery and Reinvestment Act.

## Fleet operations

The county's fleet includes 43 gasoline-electric hybrid vehicles, and more than 50 E85 flex-fuel vehicles. In 1992, two vehicles were retrofitted to run on propane gas.

The county took measures to reduce ground-level ozone and emissions of volatile organic compound (VOCs) by installing vapor-recovery systems on gas pumps at two refueling stations. The project was funded by CMAQ funds, and reduces VOC emissions by two-thirds of a ton per year.

## Information technology

The Johnson County Information Technology Services (ITS) department began a power-down initiative in 2008 to reduce employee computer electricity consumption by automatically putting 1,500 computers into low-power mode between 6:15 p.m. and 5:50 a.m. Monday through Friday, and all day weekends. The initiative saves the county around \$64,000 per year in utility costs, and helps prevent 679 metric tons of carbon dioxide emissions annually.

## Mission

Mayor McConwell appointed a special task force to develop a comprehensive sustainability action plan to incorporate sustainable thinking into all strategic plans for the city. Mission also became a signatory to the U.S. Conference of Mayor's Climate Protection Agreement on Nov. 2, 2007. This agreement calls for a 7 percent reduction in greenhouse gas emissions from 1990 levels by the year 2012. In summer 2007, the city began the process of conducting an energy audit of all city buildings. The goal of the audit is to identify ways to reduce operating costs and increase efficiency. The city also conducted a greenhouse gas emissions inventory, and finalized its climate action plan in June 2009. The plan calls for a 20 percent reduction in emissions by 2020, and promotes regional collaboration toward an improved transportation system that includes bike/pedestrian facilities and public transit.

The city grows plants for landscaping projects at its new public works facility, which incorporates a greenhouse, at a reduced cost than plants from a commercial greenhouse. The city is incorporating native, low-growing buffalo grass into all medians in the city, resulting in less watering, fertilizing and mowing.

The city council considers the carbon emissions of every activity that includes travel, and requires its finance director to offset emissions by depositing the equivalent in real dollars into the city's Carbon Offset Fund. The police department is exploring the feasibility of adding higher fuel efficiency standards in its next fleet vehicle bid and conversion to alternative fuel vehicles.

Mission participates in Clean Commute, which promotes walking and biking to work to employees. The city purchased and installed a bike rack in response to an increased interest in bicycle commuting. Two to four employees at city hall bike to work year-round. The city was selected as one of eight local businesses in Wyandotte and Johnson counties to participate in the next round of the program.

Participation includes speakers for lunch-and-learns, on-site bike clinics and two new fully equipped TREK commuter bikes and bike parking racks.

All city buildings offer paper, plastic, aluminum and tin recycling, and containers for cans, bottles, and paper are available to the public at the community center. In the spring 2008, the community center began using only biodegradable cups, utensils and stir sticks for special events and rentals at the facility and switched to hydrogen-peroxide cleaning products. The community center has been able to discontinue using nine other cleaners.

Curbside recycling is available to all single-family homes in Mission at no cost, and is picked up on the same day as trash pickup. City employees can also use their personal trash bin for recycling, and put trash in a communal bin. The city has purchased 100 percent post-consumer waste, acid-free and chlorine-free copy paper since 2007. To save paper, the city has considered distributing digital book readers to its governing body for digital distribution of city council meeting packets.

In outreach to homeowners, the city has started hosting home renovation workshops. The first, "Old is New if You Know What to Do," connected residents with vendors specializing in green building practices, energy-efficient remodeling and updating older homes.

## Shawnee

Shawnee has a sustainability program run by its internal green team, which has implemented a number of programs that support air quality. The city has also made significant fleet and infrastructure investments. Internal awareness efforts include introducing an idling policy for city vehicles, participating in the Green Commute Challenge, distributing Ozone Alert information, and partnering with The JO on CityRide, which provides local bus service two days per week.

The city purchased three CNG vehicles and a CNG fueling station, retrofitted diesel engines with oxidation catalysts to reduce tailpipe emissions, and installed solar panels on a fire engine to provide an alternative power supply, reducing the need for idling.

Shawnee's new justice center, which houses the municipal court, police headquarters and a fire station, was completed in 2008 and attained LEED certification in 2009. Shawnee is participating in the EECBG program through the U.S. Department of Energy. The city has received \$533,100 in stimulus funds for energy-efficiency projects, and is in the process of using the money to install a more efficient heating and cooling system at its civic center, implement a lighting-retrofit program for city buildings, develop a partnership with Ripple Glass for glass recycling, and collaborate with MARC and local communities on developing a regional energy-efficiency and conservation strategy. Shawnee also supports residents' environmental engagement efforts by offering recycling at all city buildings, parks and events, as well as providing gas-cap testing for the public.

### Gladstone

Gladstone replaced four gasoline vehicles with smaller, more efficient vehicles in June 2008. In December 2008, Gladstone purchased 18 light-duty HEVs as part of its Green Fleet initiative.

### Mid-America Regional Council

MARC coordinates region-wide programs that reduce emissions and educate residents about actions that improve air quality. Several of these programs are described below in more detail.

#### Air Quality Workplace Partnership

The Workplace Partnership is a network of more than 150 companies, organizations and government agencies across Greater Kansas City that care about clean air and encourage their employees to take simple actions to reduce pollution. Partners receive Ozone Alert notifications, air-pollution-reduction tips by email, access to free workshops, seminars and consultations, air quality awareness materials, and the opportunity to participate in fun

contests. Partners are recognized on the MARC Air Quality website as a partner. Air quality coordinators at each member organization distribute the tips, notifications and materials to employees, and serve as a liaison between the member organization and MARC. MARC also provides technical assistance to organizations seeking to improve energy efficiency or initiate internal programs to improve air quality.

#### School-bus retrofit programs

Since 2007, programs funded by grants from the EPA Clean School Buses USA and CMAQ programs have been used to upgrade diesel-emissions-control equipment on local school buses. Devices that reduce particulate matter from tailpipe emissions by 20 percent were installed on 578 buses. These funds also supported an Idle-Free Zones program for schools, which provides signs for drop-off and pickup zones, and a packet of materials to launch an idling awareness program. PTAs and school staff use these materials to create idling policies and raise awareness among children and their parents.

#### Media campaign

MARC runs a regional ad campaign from April to October to raise awareness about ground-level ozone pollution, and to promote behaviors and actions that reduce pollution. Hundreds of public service announcements run on local affiliates and cable channels, in *The Kansas City Star*, and on several Web pages. In addition to educating the public about actions that reduce pollution, the campaign encourages individuals to observe the SkyCast and take measures to protect their health when needed. Email notifications, news releases and social media messages are sent on Ozone Alert days. Ozone reports are updated weekly and posted on the MARC website.

#### Community events

The Air Quality program staff, along with others from environmental services, participate in tabling events and provide informational materials at community events

throughout the region. Recently, this has included a collaboration with Kansas City Corporate Challenge, Kids Day at the K, Earth Day events, Automotive Career Day at MCC–Longview and others. Program staff respond to requests for presentations at schools, colleges and workplaces, and have spoken at health forums, chambers of commerce and nonprofits.

#### **Coordination between education and awareness groups and support**

MARC continues to expand the range of materials and programs generated by air quality and sustainability programs from communities, nonprofits and private development partners across the region. Sharing information with one another and supporting local or organizational efforts with a shared, regional approach to messaging reinforces themes and improves overall effectiveness of outreach.

#### **RideShare**

RideShare is a free service designed to inform individual commuters and employers about less expensive and environmentally sustainable commuting alternatives. These include carpooling, vanpooling, transit and alternative work arrangements such as flextime and telecommuting.

RideShare provides free online carpool matching, and a module that employers can use to provide in-house ride-matching and tracking of alternative transportation use. Guaranteed Ride Home, a safety net for alternative transportation users, provides a free taxi ride home from work in the event of an emergency. RideShare also offers an online, interactive park-and-ride lot map with links to transit trip-planning tools; incentives and challenges to encourage use of alternative transportation, including the Green Commute Challenge; outreach to employers throughout the Kansas City region; presentations at company and community events; a commute-related newsletter; and other materials related to alternative transportation.

RideShare launched its online ridematching website in 2006 in partnership with Lawrence and Douglas County, Kan. In 2009, St. Joseph, Mo., joined the partnership.

There are currently 9,800 participants registered on the RideShare Connection website, more than 100 employers use the employer module, and 1,600 commuters are registered for the Guaranteed Ride Home service.

#### **Targeted outreach to unregulated emitters and fleets**

Reaching out to heavy emitters is an ongoing goal for MARC's Air Quality public education program as well as Kansas State University's Pollution Prevention Institute. The two entities cooperated on the following workshops from 2007–2010:

- Air Quality 101
- Idling-Reduction Workshop
- Diesel Technologies Workshop and Equipment Expo
- Constructing Clean Air
- Diesel Idling Workshop

#### **Metropolitan Energy Center (MEC)**

MEC encourages the use of technology and other methods to conserve energy and resources at the residential and municipal level. Most recently, MEC collaborated with KCP&L and Missouri Gas Energy (MGE) to provide an energy-efficiency retrofit program called Home Performance with ENERGY STAR. The program provides utility-funded cash incentives to encourage homeowners to improve their homes' energy efficiency. The combined rebates are expected to significantly increase homeowner participation.

MEC is now providing training to the residential energy-efficiency industry to raise the capacity of companies to effectively provide energy-efficiency services to the public through public and private market weatherization programs in both Kansas and Missouri. MEC was named as the Kansas City-area training provider for the Efficiency

Kansas program. MEC has trained more than 150 individuals since mid-2008.

### Kansas City Regional Clean Cities Coalition

Since 1997, MEC has been the administrator of the Kansas City Regional Clean Cities Coalition. The purpose of the coalition is to promote the use of alternative-fuel vehicles in the Kansas City region.

Over the past two years, the coalition has tripled its membership and facilitated the adoption of alternative fuels in fleets throughout the metro area. The coalition was recently awarded a \$15 million U.S. Department of Energy contract to purchase alternative-fuel vehicles and build fueling infrastructure from Omaha, Neb., to Wichita, Kan. The program is a three-year project and includes school districts, cities and private companies involved in alternative-fuel fleets and fueling infrastructure along the I-29, I-35 and I-70 corridors. MEC continues to work with the Electric Power Research Institute to work on heavy-duty plug-in hybrid vehicle technology.

Part of the funding will also go toward purchasing some of the country's first plug-in hybrid electric (PHEV) school buses, and installing more than 20 alternative-fueling stations, including expanded public access to B20 biodiesel, E85 ethanol and CNG. It will also create the metro's first dedicated electric-vehicle charging points in cooperation with the University of Missouri–Kansas City, KCP&L and others. The grant allows the coalition to hire new staff, which will expand the range of services and programs it can offer stakeholders.

In summer 2009, the coalition received funding from the United Soybean Board Check Off fund for biodiesel education and promotion. In July, the coalition and St. Louis Regional Clean Cities co-hosted “The Truth About Biodiesel” with the Missouri Soybean Association.

The June 2009 Kansas State Pupil Transportation Association conference was the site of the state School Bus Rodeo, where

the coalition promoted biodiesel use. Each participating bus ran on a B20 biodiesel blend (20 percent biodiesel and 80 percent petroleum diesel).

### Energy Efficiency and Conservation Block Grants

The U.S. Department of Energy (DOE) has recently awarded more than 1,200 Energy Efficiency and Conservation Block Grants (EECBG), totaling over \$1.4 billion nationwide. Local EECBG funds allocated to municipalities and counties in the region total more than \$14 million. These American Recovery and Reinvestment Act (ARRA) EECBG funds are being used to develop and implement programs that reduce energy use and carbon pollution, and create green jobs locally. Jurisdictions receiving funding must develop an energy-efficiency and conservation strategy listing activities that prioritize energy savings, reduce greenhouse gas emissions, and create or retain jobs. These projects aim to reduce energy consumption and decrease power-plant emissions. Many recipients of these funds have elected to work together to fund a regional program through which they can share information, collaborate on materials, and develop energy-efficiency standards to define a unified approach to achieving a broad vision of sustainability.

### Sustainable Skylines

Sustainable Skylines was a locally-led, EPA-supported, public-private partnership to reduce air emissions and promote sustainability in urban environments. Sustainable Skylines provided a flexible framework for stakeholders to choose projects to implement over a three-year period. These projects were required to achieve several goals:

- Integrate transportation, energy, land-use and air-quality planning
- Yield measurable air-quality benefits within three years
- Promote collaboration among multiple stakeholders
- Identify and leverage resources among partners

Six separate projects were undertaken:

### **KC Idle-Free**

KC Idle-Free worked with a metro-wide team of businesses to improve the region's air quality by reducing vehicle emissions from idling. The program provided free Idle-Free Zone signs to participating organizations, as well as communications materials for their customers explaining the benefits of not idling. The partnership was voluntary and complemented by anti-idling regulations in both Missouri and Kansas. Idle-Free Zone signs and brochures are still available.

### **Constructing Clean Air**

To minimize the air pollution coming from construction projects, Constructing Clean Air created partnerships with the construction industry in Greater Kansas City. The project encouraged contractors, business owners and construction-equipment operators to:

- properly maintain their equipment
- reduce unnecessary idling
- retrofit diesel engines with verified technologies
- replace older equipment with newer, cleaner equipment
- use cleaner fuels

Funding was available to help reduce the financial burden to owners through the EPA and state programs funded by DERA and CMAQ.

### **Parking Lots to Parks**

This project convened local architects, engineers and planners to determine how parking lots in the Kansas City region could be designed or retrofitted to be more sustainable. Potential strategies include:

- Right-sized parking: Encourage installing the minimum number of parking spaces to better accommodate day-to-day use instead of maximum use.
- Permeable pavement: Use materials that allow stormwater to be absorbed, preventing runoff that overburdens

the area's stormwater system and contributes to regional flood problems.

- Cool pavement: Use pavements that store less heat and have lower surface temperatures compared to conventional products. Conventional pavements can reach peak summertime surface temperatures of 120–150 degrees.
- Landscaping: Design landscaping to absorb and filter stormwater runoff. Use plants suitable for local climate conditions, which have deeper root systems and absorb more water.

### **Solar City**

This program supports demonstration projects at schools and city-owned buildings that promote solar energy. Its three project areas include:

- Solar schools: A photovoltaic array, an air-to-solar heater, and a water-heating system were installed at Paseo Middle School. School staff and students were involved in the installation and design, offering teachers the opportunity to introduce monitoring and recording environmental data as part of their curriculum. Schools will be asked to develop an educational program for their students and disseminate results of the installation to other schools and the public.
- Solar homes: Equipment placed on the Project Living Proof residence demonstrates how homeowners can install residential photovoltaic and hot-water solar systems. Equipment installed to monitor solar production allows visitors to see real-time use of solar power. A library will provide homeowners with resources that help them install their own solar-powered systems.
- Solar cities: Initial photovoltaic panels were installed on Wolf Garage across from the Kansas City, Mo., city hall in early 2011. Equipment at government buildings will offer public education opportunities for commercial-scale installations. Local government

buildings will be assessed to identify those that offer the most potential for renewable-energy installations.

### Five Green Things

Actions by individuals, businesses and civic groups can reduce environmental impacts and enable a greener Kansas City region. Bridging The Gap (BTG), a local nonprofit encouraging environmental education and action, has chosen specific actions that all Greater Kansas Citians can take to reduce carbon dioxide emissions and waste.

BTG trained hundreds of community volunteers of all ages to give presentations on the environmental problems the region faces, and what individuals can do about them. By adopting the following “five green things,” individual households can reduce their emissions by at least 4,000 pounds of carbon dioxide each year — more than 15 percent.

1. Give up bottled water — Average household reduction of carbon dioxide emissions: 216 pounds a year
2. Wash laundry in cold water — Average household reduction of carbon dioxide emissions: 327 pounds a year
3. Switch to compact fluorescent light bulbs — Average household reduction of carbon dioxide emissions: 566 pounds a year
4. Set thermostat at 68 degrees in winter, 78 degrees in summer — Average household reduction of carbon dioxide emissions: 553 pounds a year
5. Cut gasoline use by one-quarter — Average single-car reduction of carbon dioxide emissions: 2,500 pounds a year

### WaterWise

The Environmental Protection Agency (EPA) estimates that 56 billion kilowatt-hours per year are consumed by public water supply and treatment facilities in America. Generating this amount of energy creates nearly 60 million tons of carbon dioxide emissions from power plants.

The WaterWise project sought to demonstrate the impact and effectiveness of native planting

and water conservation on reducing energy use and air pollution. Sustainable lawn irrigation practices demonstrated how simple changes reduce water waste. Participants learned about the excess energy consumed by using treated, potable water for lawn irrigation. The project reinforced the message that treating and supplying water to the public is an energy-intense process.

Education about sustainable bioretention strategies helped participants learn about the energy intensity of the wastewater treatment process, and the added burden of stormwater runoff. Features included downspout and outdoor-drain disconnection from the sewer system, permeable paving, techniques for channeling water flow on impervious surfaces, and filtration practices such as rain gardens.

The home interiors portion of the project demonstrated water-conservation strategies and practices adopted in the renovation of the Project Living Proof model home, where information is now available about the relationship between energy-efficient home design and operation, energy costs and reduced water consumption.

## Tree planting/green space preservation

### MetroGreen

MetroGreen is an interconnected system of public and private natural areas, greenways and trails linking communities throughout the Kansas City area. The 1,144-mile greenway plan covers Leavenworth, Johnson and Wyandotte counties in Kansas, and Cass, Clay, Jackson and Platte counties in Missouri.

The concept of a metro greenway system is not new. MetroGreen extends the “parkways and boulevards” concept of the 1894 Kessler Plan for Kansas City, Mo.; builds on existing local greenway plans and systems; and is the next step in a project begun in 1991 by the Prairie Gateway Chapter of the American Society of the Landscape Architects.

MetroGreen identifies more than 75 separate corridors that form a regional network to connect many of the area’s most valuable

natural assets. Over 300 miles of the system have been constructed, and an additional 100 miles are planned for construction in the next 10 years.

## Adopt land-use policies to protect air quality

### Eco-Logical

In early 2008, MARC was awarded funding from the Federal Highway Administration's Eco-Logical grant program, which supports making infrastructure more sensitive to wildlife and ecosystems through greater interagency cooperation and conservation.

With this grant, MARC worked with consultants to create the framework for a regional mitigation strategy, conduct four workshops to convey Eco-Logical principles and approaches, and refine a Linking Environmental and Transportation Planning Action Plan. The action plan includes recommendations for better integration of transportation and environmental planning processes and policies, including encouraging compact, mixed-use development and multimodal transportation options, furthering the goals of the Clean Air Action Plan. The plan was adopted by MARC's Total Transportation Policy Committee and board of directors in 2009.

### Smart Moves Regional Transit Plan

Smart Moves is the Kansas City region's vision for expanded, enhanced public-transportation services. It outlines services in seven counties, and is the first detailed regional transit-service plan cooperatively developed by MARC, the Kansas City Area Transportation Authority (KCATA), Johnson County Transit and Unified Government Transit. Smart Moves builds on prior transit plans and studies, reflects what residents and businesses have expressed desires for, and incorporates models and best practices from across the country.

MARC continues to work with area public-transit providers to refine the Smart Moves plan, identify short-term investments that support implementation and build community support for the plan.

## Regional transit authorities

### Kansas City Area Transportation Authority

In 2011, KCATA offered \$0.75 fares on Ozone Alert days and provided educational materials about ozone in both English and Spanish. Lighted signs on the fronts and sides of buses — and at Metro Area Express, or MAX, stops — announce Ozone Alerts to transit users and the public. Ridership on Ozone Alert days in 2009 increased approximately 4 percent from 52,000 per day to 54,000.

KCATA introduced MAX, a bus rapid transit system, on Main Street in 2005. MAX service on Troost Avenue launched in 2011. Since implementing MAX on Main Street, ridership in the Main Street corridor has grown more than 50 percent.

Bike racks were installed on all 40-passenger and 25-passenger buses to encourage bicycle commuting. Bicycle parking is also available at the Third and Grand park-and-ride, University of Missouri–Kansas City — 51st and Brookside, Waldo park-and-ride — 74th Terrace and Broadway, Boardwalk MetroCenter, Independence MetroCenter, and Prospect and 75th.

KCATA operates a vanpool system, in which commuters drive KCATA-owned vans that serve seven or more people.

### Johnson County Transit (JCT)

JCT expanded service on the K-10 Connector and other express routes to increase mobility and commuting options. New buses have also been purchased.

JCT has experimented with alternative fuels, and currently uses biodiesel for about eight months of the year. It has also instituted sustainability practices that include fueling policies and recycling of parts, oil, aluminum, paper, plastic and cardboard.

Thanks in part to increased CMAQ funding, Johnson County Transit continues to offer expanded service to its riders in several key areas. To raise awareness and market the increased levels of service, JCT has

participated in transit fairs, encouraged transit use at local businesses, run marketing campaigns using social media, and broadcast “Bus Bucks,” which educates and informs citizens about transit and environmental issues while showcasing transit riders’ pleasant experiences. All buses have bike racks and, like KCATA, JCT offers reduced fares on Ozone Alert days.

## Kansas City Chamber of Commerce

### Climate Protection Partnership

The Greater Kansas City Chamber of Commerce coordinates the Greater Kansas City Climate Protection Partnership, an effort to organize and inform businesses across the region about ways to reduce greenhouse gas emissions and increase economic independence. Technical assistance is provided for partnership members that take on activities that reduce greenhouse gas emissions. Tools are provided for self-monitoring and strategic planning, including a carbon-footprint calculator and energy-assessment report. Lessons about what works are shared by fellow members, and leaders in environmentally responsible management are routinely recognized.

Members of the program pledge to make decisions that minimize greenhouse gas emissions and maximize economic opportunities. Some of the actions taken include:

- Taking an inventory of greenhouse gas emissions from purchased utilities and activities such as commuting.
- Setting goals to reduce greenhouse gas emissions, developing a plan to achieve those goals, and documenting progress.
- Using renewable energy where possible.
- Building or renovating facilities to be more energy efficient.
- Purchasing energy-efficient technology and appliances.
- Encouraging energy-efficient behaviors to employees or customers.

- Reducing emissions from fleet vehicles by increasing fuel efficiency, reducing vehicle miles traveled, using clean and renewable fuels, and encouraging vendors and contractors to do the same.
- Reducing greenhouse gas emissions through waste reduction and recycling, purchasing environmentally-friendly construction materials, and promoting green-building practices.

Recognizing the importance of mutual support in addressing climate change in the business community, members collaborate to support sound emissions and energy policies and legislation. The partnership actively recruits new members, strives to improve services and assistance, offers networking meetings and technical-assistance workshops, and shares its progress with members.

## Private business interests

### Missouri Gas Energy (MGE)

MGE makes a concerted effort to educate its customers on the availability of federal tax credits for investments in energy conservation, and offers several energy-efficiency and conservation incentives to its customers.

MGE also signed the climate protection partnership and actively implemented a host of operational changes that promote sustainability and clean air, including forming a sustainability team, assessing MGE’s carbon footprint, fleet monitoring, recycling plastic meter covers and metals from retired gas mains, regulating office utilities and properly disposing of hazardous materials.

### UMB

UMB Financial Corporation employs about 1,200 people in the Kansas City area, and actively promotes air quality and other environmental policies throughout the organization, encouraging employees to take individual action and serve as environmental leaders in the community.

A sustainability manager coordinates an active environmental awareness and outreach program. Offices recycle paper, cardboard,

plastics, aluminum, printer cartridges, and office furniture. The cafeteria uses biodegradable cups and reusable cups. LEED certification is required on construction of all new facilities, and efficiency upgrades to existing buildings are being made in response to findings from an energy audit conducted through the climate protection partnership. Bus subsidies, monthly carpool incentives, monthly bike/walk drawings and other internal programs encourage employees to explore alternative commuting options, and bike racks and showers are provided at three buildings.