Path Forward

July 2016

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Acknowledgements

The Four States Clean Air Alliance would like to thank the following members for their participation in developing the Clean Air Action Plan for the Joplin Metro area focusing on Jasper and Newton Counties in Missouri. Each individual listed below represents the segment of the larger community listed prior to their name while their place of employment is listed behind.

Four States Clean Air Alliance board members

- Environmental Task Force - Dan Pekarek; City of Joplin Health Department
- Inter-Tribal Council – Susie Attocknie, Craig Kreman; Quapaw Tribe
- Jasper County City - Cassandra Ludwig, Kevin Emery; Carthage Water & Electric Plant
- Jasper County Government - John Bartosh; Jasper County Commission,
- Jasper County Industry - Robin McAlester, Jeff Burkett; Empire District Electric Company
- Jasper County Public Member - Mike Kennedy; Missouri Southern State University
- JATSO – Taylor Cunningham; City of Joplin Planning & Community Development
- MoDNR - Emily Wilbur, Assem Abdul; Missouri Department of Natural Resources
- MoDOT - Andrew Seiler; Missouri Department of Transportation
- Newton County City - John Harrington, City of Neosho
- Newton County Government - Jim Jackson; Newton County Commission
- Newton County Industry - Spencer Dobbs; Mercy Hospital
- Newton County Public Member - Bob Hockman; TAMKO Building Products, Inc.
- Regional Planning Council – Brian Ross; Harry S. Truman Coordinating Council
- Southeast Kansas County Government – Carl Hayes; Cherokee County Health Department

Participating Organizations

- Carthage Water & Electric Plant
- Cherokee County Commission, KS
- Cherokee County Health Department, KS
- City of Carthage
- City of Joplin
- City of Neosho
- Empire District Electric Company
- Environmental Protection Agency
- Environmental Task Force of Jasper and Newton Counties
- Harry S. Truman Coordinating Council
- Inter-Tribal Council, Inc.
- Jasper County Commission
- Joplin Area Transportation Study Organization
- Mercy Hospital
- Missouri Department of Natural Resources
- Missouri Department of Transportation
- Missouri Southern State University
- Newton County Commission
- Ozarks Clean Air Alliance
- Quapaw Tribe
- TAMKO Building Products, Inc.

Introduction

Four States Clean Air Alliance

Air quality issues, while for years considered a problem for large metropolitan areas, have more recently been identified as a potential issue in mid-sized or smaller communities such as the Joplin Metro area. This is especially true for the air quality parameter of ozone, as federal ozone regulations have become more exacting in recent years as knowledge of the adverse health and environmental effects of ground level ozone are recognized. With this increased regulation, acceptable ground level ozone levels have been reduced to the point the Joplin Metro area could be considered in violation of these standards in the near future. In an attempt to proactively address this issue before it occurs, the Four States Clean Air Alliance (FSCAA) has been formed through a joint agreement of the Joplin Area Transportation Study Organization (JATSO) and the Environmental Task Force of Jasper and Newton Counties (ETF).

The original purpose of FSCAA was to develop and implement a voluntary Clean Air Action Plan (CAAP) to achieve the following:

- Monitor the results of designated air quality monitoring stations,
- Increase awareness of the local public, governments and businesses regarding air quality issues,
- Inform the local public, governments and businesses on the environmental and health consequences of poor air quality,
- Educate community members about existing and proposed legislation concerning air quality as it affects our area, and
- Promote voluntary participation in the implementation of the CAAP.

The initial area of the FSCAA included Jasper and Newton Counties in Missouri. Invitations to join FSCAA were extended to other relevant government entities adjacent to the Joplin Metro area, specifically Cherokee County, KS and the Inter Tribal Council in northeast Oklahoma. Additional invitations to other nearby entities may be extended as the reach of the FSCAA expands. These entities are likely to be contributors to ozone air quality levels in the Joplin Metro area of Jasper and Newton Counties.

After the CAAP finalization and implementation, the FSCAA Board voted to join EPA's Ozone Advance Program designed to assist communities striving to stay in attainment with current National Ambient Air Quality Standards (NAAQS). This Path Forward document was developed to guide FSCAA participation in the Ozone Advance Program. The Governing Board of FSCAA is charged with the primary responsibility for development and implementation of the Path Forward document. The JATSO has final approval of all aspects of this plan before it may be considered final. While this plan initially deals solely with ground-level ozone, it may be amended in the future to address other air quality parameters (e.g., particulate matter) as relevant to the area.

National Ambient Air Quality Standards

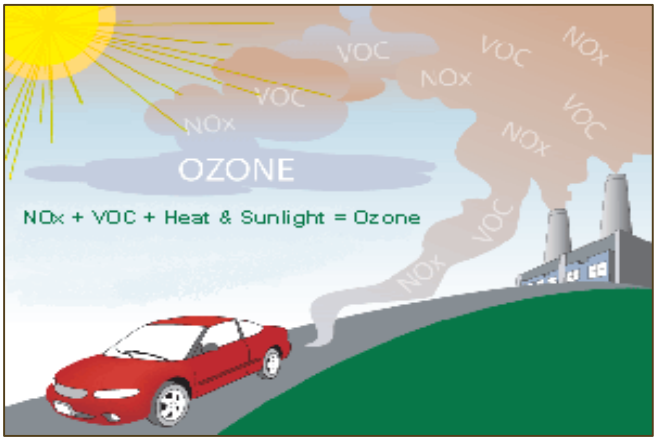
The Clean Air Act, which was last amended in 1990, requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The six principal pollutants EPA has set NAAQS for include:

- Carbon Monoxide (CO)
- Lead (Pb)
- Nitrogen Dioxide (NOx)
- Ozone (O3)
- Particulate Matter (PM)
- Sulfur Dioxide (SO2)

For more information on these individual pollutants, please visit EPA's webpage at www.epa.gov/ttn/naaqs/criteria.html.

Ground-Level Ozone

Ozone is a gas composed of three oxygen atoms. While ozone can be found both in the Earth's upper atmosphere and at ground level, the location where it is found determines if ozone is considered beneficial or harmful to humans and the environment. When it is found in the upper atmosphere, ozone is beneficial by protecting us from the sun's ultraviolet rays. However, when this same gas occurs at ground-level, it is harmful and causes significant negative effects on human health and the environment.



Ground-level ozone can cause the following health effects even at low concentrations:

- Aggravate asthma or other respiratory illnesses
- Irritate respiratory systems causing coughing and throat irritation
- Inflame and damage cells that line the lungs
- Reduce lung capacity, making it difficult to take deep breaths
- Increase susceptibility to respiratory illnesses
- Increase hospitalizations by aggravating respiratory illnesses

High levels of ground-level ozone can damage plants and other vegetation by making them more susceptible to disease, harsh weather, insects and other pollution.

Ground-level ozone is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOx) react in the atmosphere with sunlight and heat. Since ozone requires the combination of sunlight and heat to form, it is mainly of concern during "Ozone Season" from March through November. Consequently, FSCAA will apply concentrated education and prevention campaigns immediately before and throughout this time period.

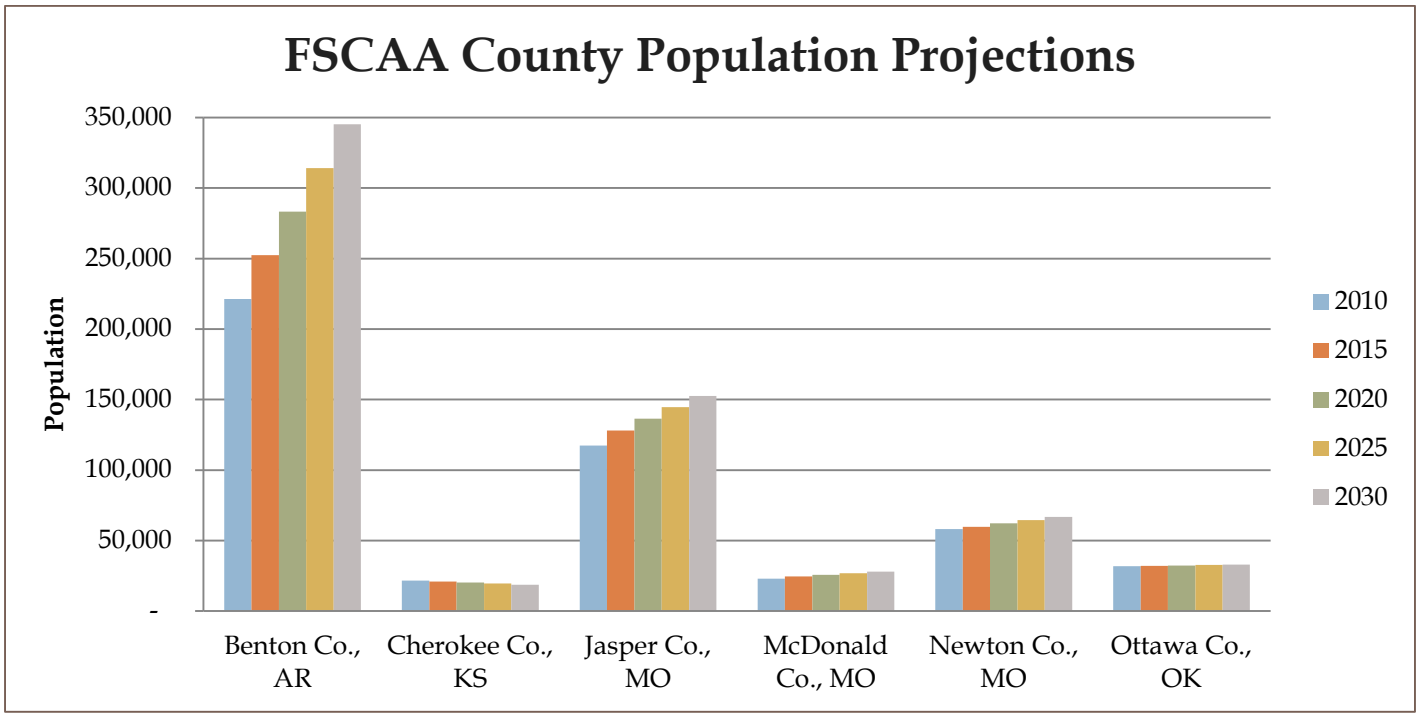
FSCAA Path Forward

The FSCAA serves Jasper and Newton Counties in Missouri; Cherokee County in Kansas and the Inter Tribal Council (ITC) in northeast Oklahoma. However, additional areas to the south (McDonald County, Missouri; Benton County, Arkansas; and Ottawa County, Oklahoma) and to the west are considered vital to ozone air quality improvement efforts in the Joplin Metro area due to prevailing wind direction in the spring and summer months. It is envisioned that FSCAA will be working closely with these other areas as planning and education efforts continue.

This region was chosen based on existing planning boundaries and potential sources that affect them while also taking into consideration the location of the air quality monitors for the region. Three of the counties and ITC are included in the FSCAA, while the three additional counties are upwind from the FSCAA area and therefore

contribute to the area's air quality. There are two ozone monitors in the region, one at Alba (operated by MoDNR) in Jasper County, MO, and near Miami (operated by the Quapaw Tribe) in Ottawa County, OK. A map of the Four States region can be seen in Appendix A.

The focus of most strategies in this Path Forward document is on the Joplin Metro area, which include Jasper and Newton Counties in Missouri. Although not all of the counties are in the Joplin Metro area, the FSCAA is still dedicated to providing education and information to the six counties in the region.



Source: Northwest Arkansas Regional Planning Commission, Wichita State University – Center for Economic Development & Business Research, Missouri Office of Administration – Budget & Planning, and Oklahoma Department of Commerce

Most counties in the Four States region are projected to experience significant growth through 2030. The fastest growing counties, Benton County, AR and Jasper County, MO are expected to grow by 56 percent and 30 percent respectively between 2010 and 2030. The goal of the FSCAA is to implement proactive and feasible voluntary strategies to protect public health and the environment while sustaining growth in the region.

Emissions Data

Ozone Forming Emissions in the Four States Region

Emissions of NOx and VOCs that can contribute to the formation of ground-level ozone in the Four States area are generated from various sources including motor vehicle emissions, gasoline vapors, chemical solvents, commercial/industrial emissions, power plant emissions, gas-powered off-road equipment, and natural sources. These emissions are typically placed into categories of Non-Point, Mobile Non-Road, Mobile On-Road, Electric Generating Unit (EGU), Point and Natural (Biogenics) sources. Listed below are some common examples of different air pollution sources within each category.

NOx Emission Sources

Non-Point	Fires including agricultural fires, wildfires and prescribed burning Residential fuel combustion Small businesses that burn fuel for making products, cooking, space heating, water heating
Mobile Non-Road	Non-Road Engines Construction equipment (excavators, bull dozers, skid steers, etc.) Lawn & garden gas powered equipment (lawn mowers, trimmers, chain saws, leaf blowers, etc.) Off-road motorcycles & ATV's Golf carts Boats Farm equipment (tractors, sprayers, balers, etc) Aircraft Locomotives
Mobile On-Road	Diesel Heavy Duty & Light Duty Vehicles Gas Heavy Duty & Light Duty Vehicles Automobiles Motorcycles Heavy-duty trucks (Semi-tractor trailers, dump trucks, etc.)
EGU	Electric Generation Coal & Non-Coal Fuel Combustion
Point	Commercial & Institutional Fuel Combustion Industrial Fuel Combustion Industrial Processes Factories Large landfills Industrial & commercial boilers Office buildings (heating sources)
Biogenic	Vegetation & Soil

VOC Emission Sources

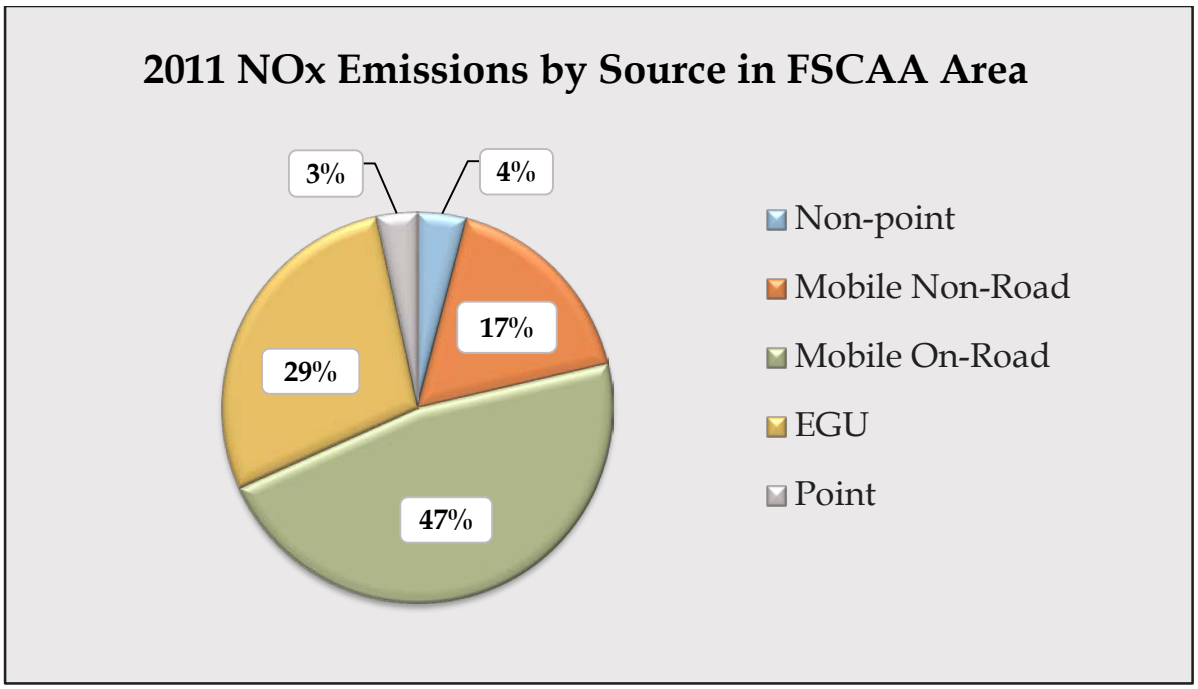
Non-Point	Residential fuel use, painting and solvent use Wildfires Bulk gasoline terminals Gas stations Agricultural sources Pesticide application
Mobile Non-Road	Construction equipment Agricultural equipment Lawn and garden equipment Commercial and leisure boats Railroad engines and equipment Aircraft
Mobile On-Road	Diesel Heavy Duty & Light Duty Vehicles Gas Heavy Duty & Light Duty Vehicles
EGU	Electric Generation Coal & Non-Coal Fuel Combustion
Point	Commercial - Institutional Fuel Combustion Industrial Fuel Combustion Industrial Processes Waste Disposal Chemical processing Large petroleum storage facilities Dry cleaners, auto body shops, printers, painting operations, etc.
Biogenic	Vegetation & Soil

Biogenics

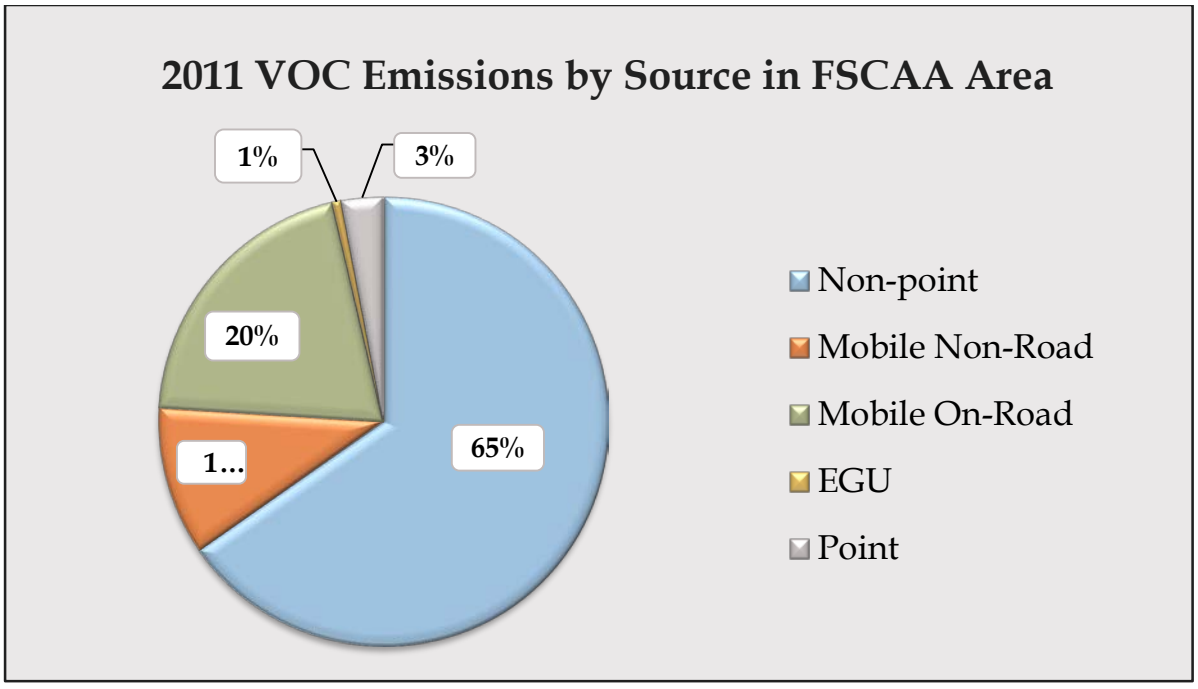
- Plants and trees
- Biologic decay

Plants and trees provide tremendous resources including air pollutant removal, oxygen production and cooling benefits. According to the MoDNR emissions inventory, biogenic sources contribute approximately 5% of the total NOx emissions and approximately 70% of the total VOC emissions for the Four States region. Since humans have no control over biogenic sources of emissions, the CAAP does not include strategies to reduce natural sources of air pollution. Instead, focus will be placed on strategies to reduce emissions from man-made sources of air pollution.

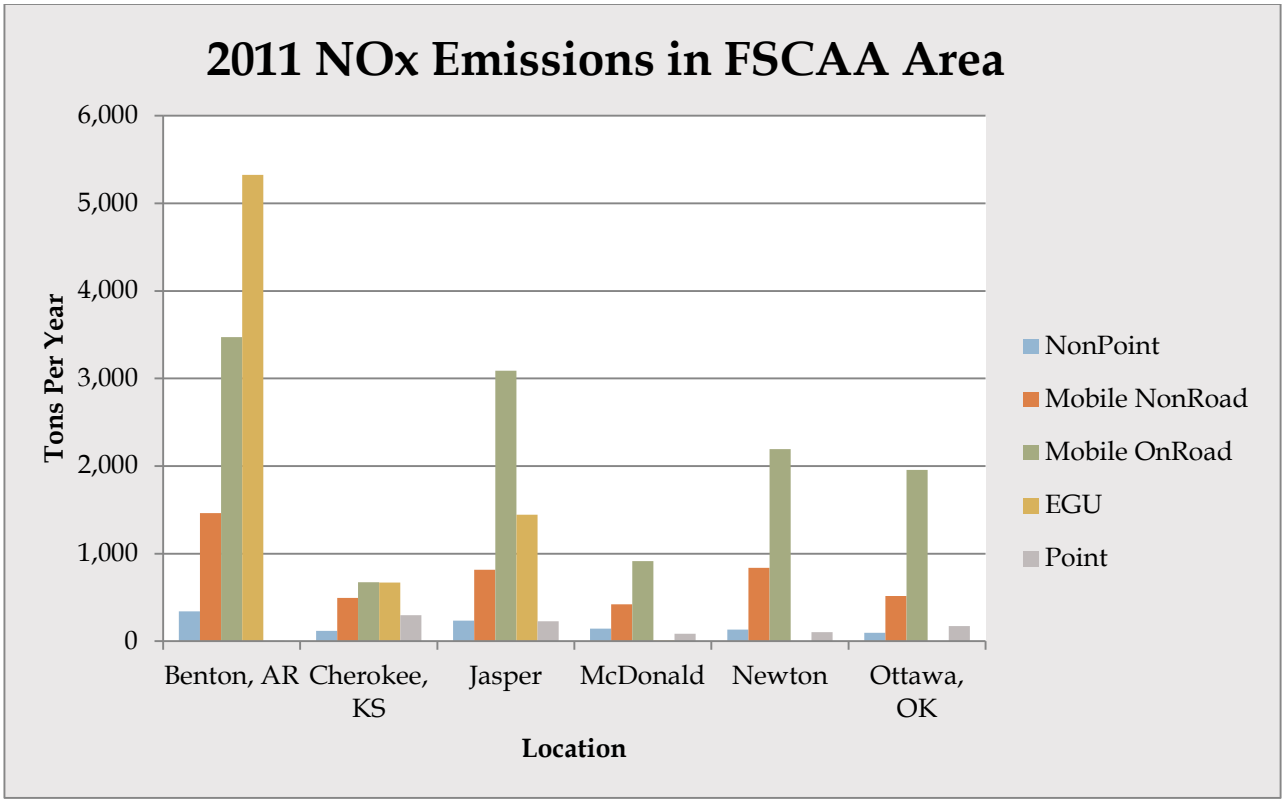
The following graphs show the amount (tons per day) of NOx and VOC emissions from man-made source categories by county.



See pages 6 and 7 for emission source definitions.



Note: Data was provided by MoDNR from 2011 base year emissions (except for mobile on-road emissions which currently include 2008 data for Arkansas, Oklahoma and Kansas). Once MoDNR completes the 2011 on-road emissions for Arkansas, Oklahoma and Kansas, the plan will be updated.



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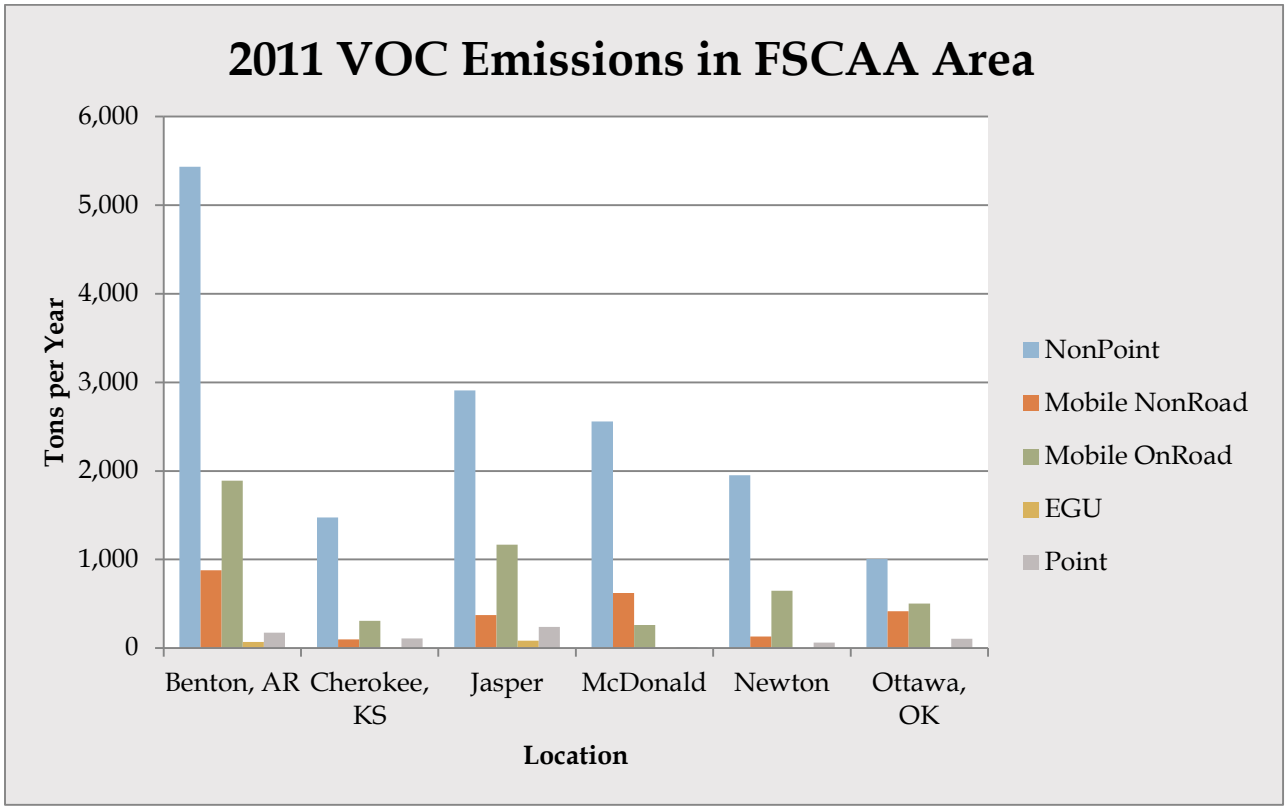
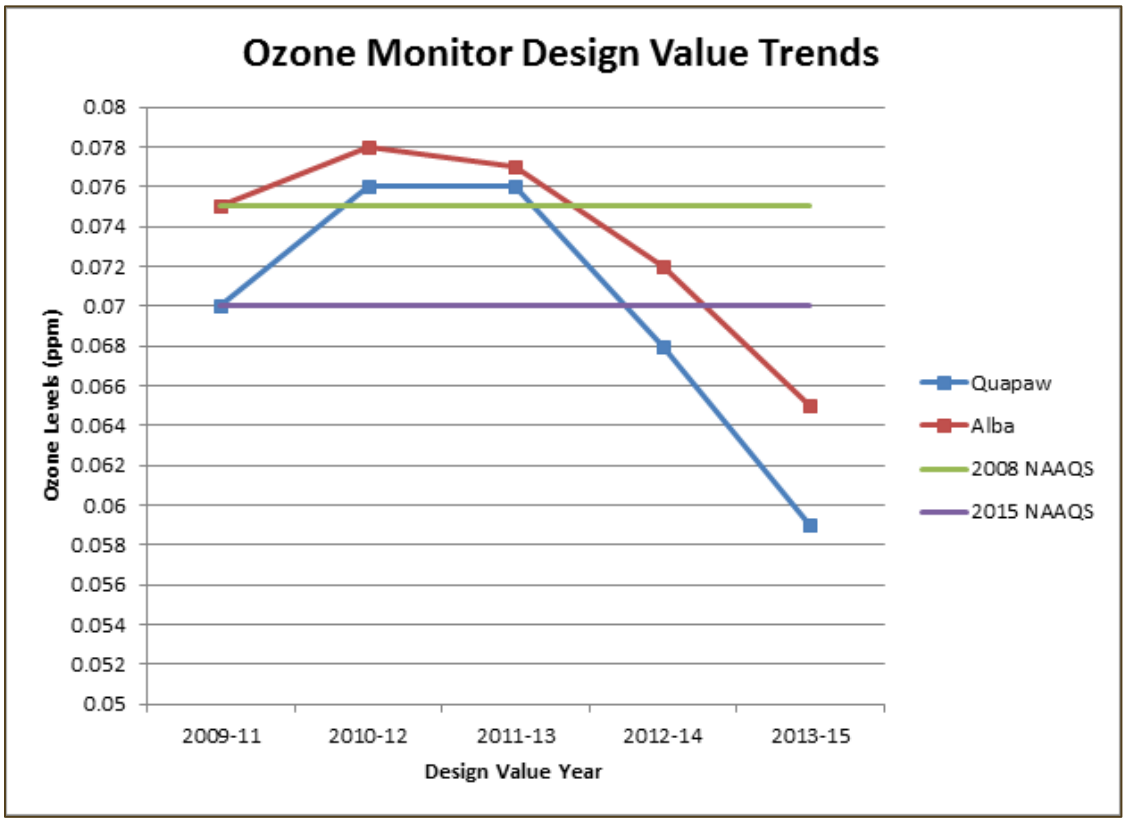


Ozone Design Values

The following chart shows the design values for ozone monitoring conducted in Jasper County, MO and Ottawa County, OK since 2009. The ozone design value is the annual fourth-highest daily maximum 8-hour ozone concentration, averaged over 3 years. A violation occurs if an area's ozone design value exceeds the 8-hour ambient air quality standard established by the EPA. In October 2015, EPA lowered the 8-hour standard from 0.075 parts per million (75 ppb) to 0.070 parts per million (70 ppb).



Pictures above depict air monitoring stations in Alba, MO (right) and Miami, OK (left).

Emissions Reduction Strategies

Reducing ozone levels in the Joplin Metro area will be difficult due to many sources of ozone precursors that are not located in the area. Ozone generation is dominated by up-wind stationary sources and vehicular traffic on the adjacent throughways. The strategies identified in this document can be implemented by organizations and individuals in the region to reduce air pollution. The unavailability of photochemical modeling data prevents the region from quantifying the impacts of various strategies.

Many of these strategies have been proven effective in other communities, providing numerous benefits including:

- Protection of public health and environment
- Prevention of state and federal regulations following a non-attainment designation
- Reducing air pollutants from contaminating surface water
- Improving community health by encouraging bicycling and walking
- Conserving natural resources
- Reducing dependency on foreign oil
- Fiscal savings for individuals, businesses, local governments, and other organizations

The purpose of the CAAP is to implement specific viable voluntary strategies that can reduce the formation of ground-level ozone. There must be strong support and participation by local governments, industries, organizations, and the public for the program to be successful. Four target categories have been identified as specific areas in which to focus to reduce ground-level ozone.

Administrative Strategies

Description

The following duties and responsibilities to be conducted by the FSCAA board will allow the FSCAA to continue its work of raising awareness and reduction of ground-level ozone in the Four States region.

Short Term Administrative Strategies

1. Ozone Advance Program

FSCAA to join and participate in EPA's Ozone Advance Program including the development and submission of a Path Forward document to provide direction for FSCAA efforts to increase awareness and promote reduction strategies of ground-level ozone in this region.

Timeframe: Finalize and submit Path Forward to EPA by September 2016

2. Funding

Since there is not currently a funding stream dedicated for this group, the FSCAA board will continue to research funding sources in the form of state and federal grants, local foundations and other entities that will provide financial support for various educational efforts.

Timeframe: Ongoing

3. Staffing

As there is no dedicated staffing for this group, the FSCAA board will continue to seek out personnel assistance in the form of volunteers, interns and possibly paid staff to do the work required. To date, FSCAA duties have been performed by utilizing board member time as well as City of Joplin staff. The Joplin Health Department has dedicated staff time in form of an Environmental Health Specialist and a Senior Clerk.

Timeframe: Ongoing

4. Outreach

The FSCAA board will continue updating the general education plan including messaging content and appropriate timelines to disseminate into the community. This will involve revising message content as needed and contacting local community and businesses to involve them in message distribution.

Timeframe: Ongoing

Long Term Administrative Strategies

These tasks will be evaluated for completion as funding and other resources become available.

1. Outreach

As awareness efforts continue to reach into the local communities of Jasper and Newton Counties in Missouri, northeast Oklahoma via ITC and Cherokee County, KS, the FSCAA board will potentially reach out to other jurisdictions that impact the Joplin Metro region, including McDonald County, MO; Ottawa County, OK; and Benton County, AR. The board will extend an invitation to these entities to attend FSCAA meetings and events as well as provide education, garner support and cooperation and implement ozone reduction strategies in their residences, businesses and institutions.

Administrative Strategies Accomplishments

- ✓ The formation of coalition of interested stakeholders from Jasper and Newton Counties was completed in October 2013. The Four States Clean Air Alliance (FSCAA) board represents local government, industry, academia, citizens and environmental organizations. The FSCAA board finalized the Clean Air Action Plan (CAAP) in February 2014 and began implementation of CAAP strategies in April 2014.
- ✓ FSCAA joined EPA's Ozone Advance Program to continue focusing on increased awareness and promotion of reduction strategies of ground-level ozone in this region in September 2015.
- ✓ Secured funding from the City of Joplin Health Department for health promotion activities related to ground-level ozone outreach.
- ✓ Obtained funding for creation of four Public Service Announcements (PSAs) from Ramsey MediaWorks, Empire District Electric Co., Carthage Water & Electric Plant, the City of Neosho, the City of Joplin and the ETF.

Education Strategies

Description

Air quality awareness applies to both the general public and businesses. Increasing education about air quality will aid in the decision-making process based on an understanding of the broader impacts of everyday activities. The objectives of the tasks in this section are to increase the level of knowledge of individuals and the business community about actions that can be done to reduce ground-level ozone.

Short Term Education Strategies

1. Message

Continue FSCAA's implementation of the educational communication plan, along with a timeline to deliver components of the various topics at specific times. Identify options for communication message delivery methods, such as press releases, newsletters articles, media appearances, etc. Encourage large companies, schools, hospitals, etc. to disseminate provided information about ground-level ozone during the ozone season. Meet with organizations with large fleets to advocate the "No Idle" message.

Timeframe: Ongoing

2. Website

Promote and maintain the FSCAA website to act as a central site to disseminate information to the community. Embed a link from MoDNR &/or the Quapaw Tribe to graphically show the levels of ozone data, including current data but also historical data from previous years.

Timeframe: Ongoing

www.SummerAir.org

3. Public Service Announcement (PSA)

Continue to develop current PSA series to be released as outlined in the communication plan to increase public awareness of ozone issues.

Timeframe: Ongoing

Educational PSA graphics

4. Social Media

Promote and maintain a presence on social media such as Facebook, Twitter and YouTube.

Timeframe: Ongoing

5. Speaker's Bureau

Use current PowerPoint presentation to continue outreach efforts in local community. Identify appropriate audiences and secure speaking opportunities to promote ground-level ozone awareness to create an educated population who will take actions to reduce O_3 precursors. Reach out to organizations such as Master Gardener, Master Naturalist, Young Professionals, Joplin Trails Association and similar.

Timeframe: Ongoing

6. Bill inserts

Make arrangements to include a message to be distributed with utility bills or other statements mailed on a regular basis to the general public. This could range from a short message consisting of a sentence or two, or the message could be an insert included in the envelope along with the regular mailing. The cost of printing the insert would have to be covered by the entity or other funding means.

Timeframe: By end of 2016 Ozone Season

7. PSA Display on local Jumbotrons

Show PSA's on Jumbotrons in local area, such as school sports venues. Research which area high schools, colleges or universities have Jumbotron screens installed. Make arrangements for PSA's to be shown during games.

Timeframe: By end of 2016 Ozone Season

8. School involvement/participation

Modify current FSCAA PowerPoint presentation for use in local elementary schools, specifically the 5th grade classes as this is an ideal age to present environmental action ideas and encourage students to implement lessons at home to get the family involved. Host an essay or poster contest at schools, possibly involving existing Environmental Clubs or science-based curriculum.

Timeframe: By end of 2016 Ozone Season

Long Term Education Strategies

These tasks will be evaluated for completion as funding and other resources become available.

1. Public Opinion Survey

Develop and administer a survey to determine the public's opinion on emission reduction strategies. Obtaining feedback from stakeholders regarding which specific emission reduction strategies they would be willing to support and adopt would help guide FSCAA's current and future efforts. Survey participants would be provided with a list of proposed ozone-forming emission reduction strategies and asked to prioritize each one, as well as indicate their willingness to adopt or support each strategy. Example

strategies to be included on a survey of this type might include a "Public No Idling Campaign", "School No Idling Campaign", "Public Participation in Ozone Alert Day Activities (such as no mowing, fueling early or late, reduced trips in the car, etc.), "Support biking and walking infrastructure" or "Implement energy efficiency projects at home and at work".

2. Video

Identify partners to produce a 10- to 15-minute video to be used as part of an educational package.

3. Permanent Education Display

Create and purchase a display similar to the portable unit but one that can be installed permanently at an appropriate location, such as the Wildcat Glades Conservation and Audubon Center in Joplin, MO; the Southeast Kansas Nature Center at Schermerhorn Park in Galena, KS or a tribal center in NE OK.

4. Emergency Ozone Alert system

Issue an alert to public when ground-level ozone readings are predicted to go above a specified range. Pull data from AirNow website or from monitoring stations. Make agreement with qualified meteorologist to report on this during weather forecasts during Ozone Season &/or post numbers to website on daily basis. Examples on Tulsa Ozone Alert Program http://ozonealert.com and this local news station air quality alert notice http://wpri.com/blog/2015/07/11/air-quality-alert-2/.

5. Air Quality Flag program

Educate and encourage local schools and other organizations to join the EPA-sponsored Air Quality Flag program to provide visible information about the current air quality forecast through the use of raised colored flags. A list of local schools and organizations will be compiled to encourage their participation in this program. http://airnow.gov/index.cfm?action=flag_program.index

Education Strategies Accomplishments

- ✓ The overall messaging campaign was developed along with four animated PSA's created by a local advertising firm. These PSA's were aired on regional TV, cable, and radio stations as well as displayed on electronic billboards during the 2015 Ozone Season.
- ✓ A focus group was gathered with about 20 members from the public to represent a broad demographic, much like the diversity of the general public that the education campaign reaches. The overall public education campaign goals were shared with the focus group as well as the initial print and TV public service announcements. They responded with specific comments about understanding the message, call to action messages and the general appearance of each. With their help, the committee then made changes to the announcements to help better articulate the overall message for the general public.
- ✓ Outreach materials designed and printed for distribution, such as brochures and fact sheets. Further promotional materials were obtained in the form of a table skirt, pencils, pens and car air fresheners with messaging campaign content printed on them.
- ✓ A pull-up banner with messaging campaign content was designed and purchased to be used as part of the portable display.
- ✓ A portable education table-top display was assembled to be transported and set up at various events and activities. This display pulls together various outreach elements such as table skirting, promotional giveaways, printed materials in display racks, and PSA's display on a TV monitor.

FSCAA exhibit table, Joplin Chamber of Commerce

- ✓ Set up display table at several community events and locations: Chamber of Commerce, Audubon Society Water Festival, local industry environmental awareness day, Neosho Fall Festival, etc
- ✓ Visual displays were created at the Joplin Public Library, both a 3-dimensional display incorporating vintage toys to mimic information in the PSA messaging content as well as a bulletin board display utilizing campaign print ads.

FSCAA display, Joplin Public Library

- ✓ Utilized Speaker's Bureau to present message to community partners such as Rotary, Joplin Safety Alliance, local Boy Scout pack, etc.
- ✓ Participated in several interviews with local programs associated with the news channels, City of Joplin show "Joplin Insider" and Missouri Southern State University's Newsmakers show, broadcast on KGCS-TV. These 30-minute programs provide an opportunity to discuss the goals, projects and public education efforts of the FSCAA.
- ✓ Wrote articles with campaign messaging for the City of Joplin Citizen newsletter that is distributed to residents in Joplin city limits

- ✓ Approached several local city governments in FSCAA area to discuss the inclusion of campaign messaging on utility bill mailers during the ozone season. Space availability and previously scheduled messages are obstacles to overcome during future ozone seasons.

Energy Conservation & Utility Strategies

Description

The implementation of energy conservation programs by individuals, businesses, and municipalities can have an impact on energy production thus reducing air pollutants.

Short Term Energy Conservation & Utility Strategies

1. **NOx reductions from power plants**

Empire maintain NOx levels at or below 2007 baseline - In practice using low-NOx boilers

Timeframe: Measured annually at end of Ozone Season. Data reported annually by year end.

2. **VOC reductions from power plants**

Carthage Water & Electric Plant maintain VOC levels at or below 2011 baseline

Timeframe: Measured annually at end of Ozone Season. Data reported annually by year end.

3. **Energy Conservation Awareness/Programs**

Promote energy conservation and efficiency messaging to customers as developed and provided by the education committee.

Timeframe: Annually April-October

4. **Energy Conservation Awareness/Programs**

Promote energy conservation and efficiency messaging to employees and other internal audiences as developed and provided by the education committee.

Timeframe: Annually April-October

Long Term Energy Conservation & Utility Strategies

N/A

Energy Conservation & Utility Strategies Accomplishments

- ✓ **Empire District Electric Company** (Empire) has already taken steps to significantly reduce NOx emissions from their plants. Since 2009, Empire has reduced an average of 547 tons of NOx per year from the Riverton Plant, 3,202 tons of NOx per year from the Asbury Plant and 629 tons of NOx per year from the Iatan 1 Plant. Empire expects they will continue to produce 15 percent to 17 percent of their total net system input with their hydro facility at Ozark Beach, Missouri and through power purchase agreements with Elk River Wind Farm, LLC and Meridian Way Wind Farm, LLC. Empire anticipates they will sell the majority of the environmental attributes associated with the wind farm generation.

  During 2014, Empire reduced 1052 tons of NOx from the Riverton Plant, 1,589 tons of NOx from the Asbury Plant, and 657 tons of NOx from the Iatan 1 Plant. Improvements at the Asbury and Iatan 1 Plants are due to the installation of Selective Catalytic Reduction NOx Systems. Empire produced 18 percent of their total net system input in 2014 with their hydro facility at Ozark Beach, Missouri, and through power purchase agreements with Elk River Wind Farm, LLC and Meridian Way Wind Farm LLC. Empire has sold the majority of the environmental attributes associated with the wind farm generation.

  From 2009-2015, Empire has implemented 19 different energy conservation incentive programs, saving its customers across four states the electric usage of approximately 11,000 homes (135,000 MWh) and one state with lower natural gas usage.

Meridian Way wind farm

Ozark Beach hydroelectric plant

- ✓ **Carthage Water & Electric Plant** (CW&EP) has already taken steps to reduce VOC emissions from the Carthage power plant. In the winter of 2011/2012, CW&EP installed catalytic converters on its engines, which reduce the amount of VOC being emitted from the plant. During 2014, emissions were reduced by an estimated 42.98 percent. [Note: The Carthage power plant is a peaking facility, meaning the plant only generates power on days when power is in highest demand. Therefore, the amount of generation can fluctuate depending on the weather. Because of these fluctuations, simply stating the amount of reduction in tons per year may not accurately reflect the overall efficiency of reduction. For this reason, the reduction is instead shown as a percentage.]

  CW&EP also has a purchase power agreement with Southwestern Power Administration for hydro power generated at U.S. Army Corps of Engineers reservoirs. During 2014, CW&EP received 3.24 percent of its total net system input from hydro resources operated by Southwestern Power Administration. Most of this

hydro power came during the summer months when the plant was peaking, thereby reducing the amount of power the plant was forced to generate on its own.

In 2015, Carthage Water & Electric Plant, in cooperation with Eagle Picher Technologies LLC, completed the installation of a renewable energy storage system at the Centennial Complex in Carthage. The system utilizes lead-acid batteries in conjunction with solar and wind technologies in order to offer a glimpse at available technologies that can be used for peak shaving in demand metering applications. The system also tracks solar and wind charging so that accurate data can be given to potential customers who would like to install similar equipment in their home or business for peak shaving, net metering, or off-grid applications. The installation utilizes bi-directional metering that measures the utility supply and renewable contributions.

Wind Turbine and Solar Panel Array, Carthage Water & Electric Plant, Carthage, MO

Battery Bank, Carthage Water & Electric Plant, Carthage, M

Transportation Strategies

Description

Transportation sources are a significant contributor to emissions in the region. Steps to reduce emissions in this area can be taken by individuals, businesses, and through engineering and traffic management. FSCAA's role is to

advocate for transportation improvement projects and help spread news about funding notices and related information as it comes available. FSCAA will communicate with interested stakeholders to give support for initiatives as they arise.

Short Term Transportation Strategies

1. Education against overfilling gas tanks

Develop and promote a "stop at the click" message for use at convenience stores and fleet fueling islands. Provide convenience store operators with decals with appropriate messaging about not overfilling gas tanks. Posting these decals on fuel dispenser islands will keep this message in front of the public on a regular basis.

2. Idle Reduction

Develop a message to promote and encourage idle reduction efforts. This would be a 2-pronged approach to address businesses with fleets as well as the general driving public. A survey will be created to gauge the interest level of businesses with fleets in implementing ide reduction efforts. A separate campaign will also be developed for use with the local schools and the general driving public. During the development phase, a library of "No Idle" policies from other entities will be compiled as reference tools.

Timeframe: By end of 2016 Ozone Season

3. Sunshine Lamp Trolley

Partner with the City of Joplin to promote the use of the Sunshine Lamp Trolley system. Increase overall awareness and use of Sunshine Lamp Trolley with a week of Free Fares in the beginning of Ozone Season. On Ozone Alert Days, offer Free Ride Days to reduce the amount of personal cars on the roads.

Sunshine Lamp Trolley, Joplin, MO

4. **Alternative Transportation and Commute Projects**

Advocate the design, construction and/or implementation of alternative transportation and commute projects such as sidewalks, trails, bike paths and public transit, to encourage the development of a multi-modal system. Encourage employee commuter transportation programs. Support additional dedicated funding for such projects.

Planned Alternative Transportation and Commute Projects

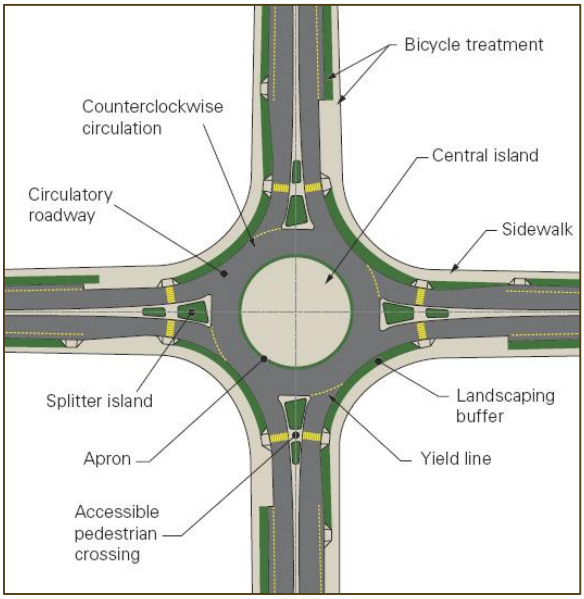
- Connected, regional bicycle and pedestrian system for the Joplin Metro area.
- Development of new Master Trail Plan, which is expected to add an additional 35 miles of trails in Joplin.
- Expansion to the Thom Station Trail in Carl Junction with proposed connections to Joplin trail system.
- Promote additional sidewalks through Transportation Alternatives funding.
- Incorporation of sidewalks and bicycle lanes into new road widening projects (Complete Streets).
- Encouraging multi-modal transportation usage through planning, zoning, and design requirements at the local government level.
- Exploring increased service and expanded routes for the Sunshine Lamp Trolley (Joplin public transportation system).

Timeframe: Ongoing

5. Congestion Management Projects

Advocate the design and construction of congestion management projects targeted at local governments, engineers and others responsible for making improvements to the transportation system that will reduce idle time. Examples of these types of efforts include access management, dual left turn lanes, DDI (Diverging Diamond Interchange), round-a-bouts and ITS (Intelligent Transportation Systems).

Timeframe: Ongoing



Typical Round-a-bout in Joplin Metro area

Long Term Transportation Strategies

These tasks will be evaluated for completion as funding and other resources become available.

1. Rideshare

Develop and promote a Rideshare or similar program in the Joplin Metro area. Goal would be to pool a number of vehicular resources for those individuals that drive into the Joplin Metro area from outlying communities on a daily basis for work, shopping, school or other shared activities.

2. Diesel Emissions Reduction

Continue to research and promote funding for the retrofitting or replacement of commercial diesel vehicles or equipment as it becomes available.

3. Alternative Transportation and Commute Projects

Advocate the design, construction and/or implementation of alternative transportation and commute projects such as sidewalks, trails, bike paths and public transit, to encourage the development of a multi-modal system. Encourage employee commuter transportation programs. Support additional dedicated funding for such projects.

Alternative Transportation and Commute Projects

- Encourage development and use of park & ride lots
- Continue to plan and develop the West Bypass on the west side of the Joplin metropolitan area that will reduce idling on other routes
- Promote use of "walking school bus" or "bicycle train" to encourage children to walk or bike to school
- Update Joplin Master Trail Plan
- Connection of Thom Station Trail with Joplin trail system
- Improved peak hour transit service and expansion of public transit system

Typical transportation alternatives in use in Joplin Metro area

Transportation Strategy Accomplishments

- ✓ MODOT completed a transit project on 20th Street in Joplin, MO. This project promotes multi-modal transportation to reduce passenger vehicle and improve transit, bicycle, and pedestrian facilities. This project included the construction of a 10' wide shared-use path for pedestrians and bicyclists along the north and south side of 20th St from Range Line Rd to Murphy Blvd. A trolley stop was also constructed to encourage the use of the Sunshine Lamp Trolley, a City-owned and operated public transportation system. The total length of the project is 1,877 feet/0.35 miles.



New guardrail (left), new walking path (center), new trolley shelter (right)

Transit project on 20th Street in Joplin, MO

Major Transportation Projects Completed in Jasper & Newton Counties (2009-2016)

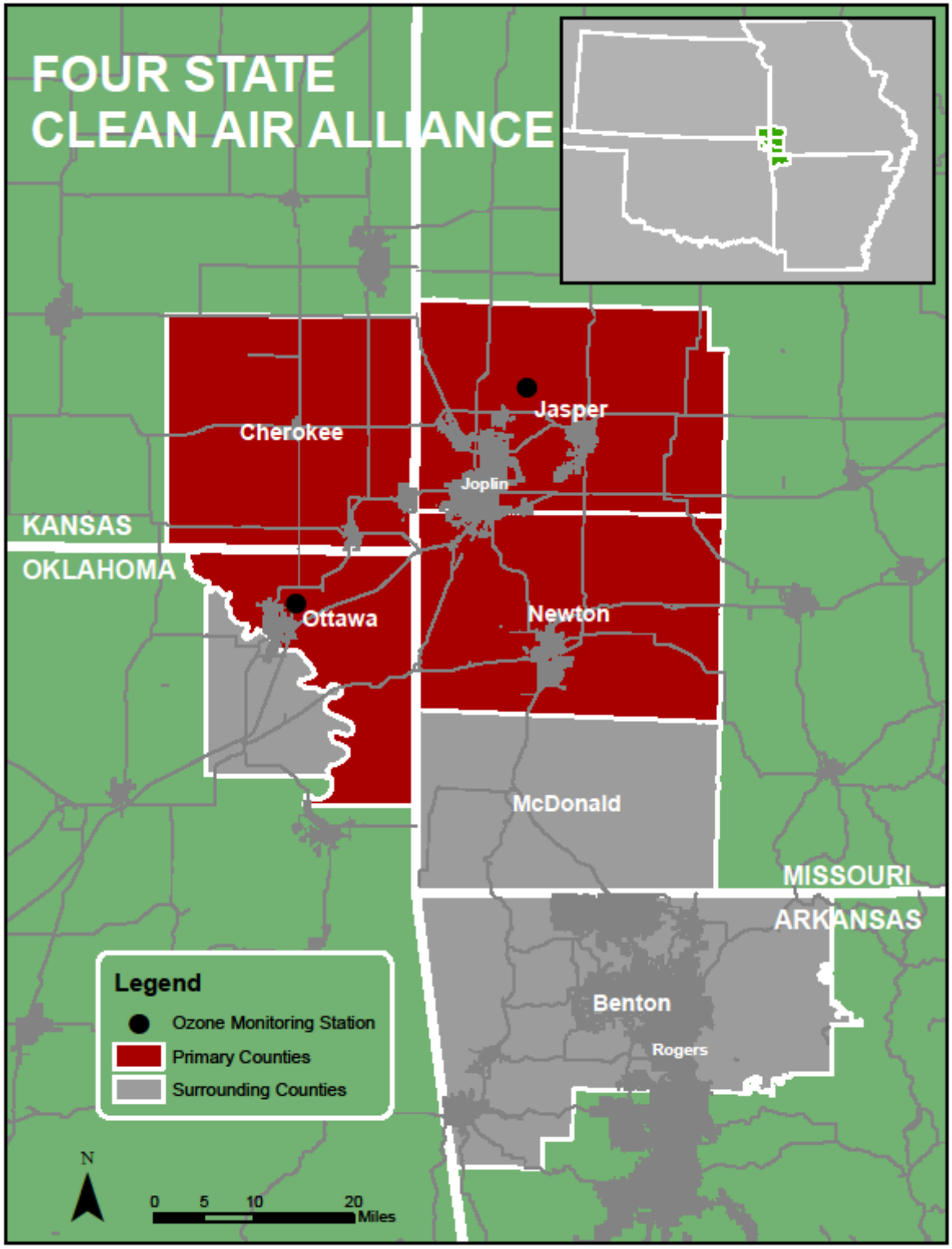
Project	Road	Pedestrian	Bicycle*	Transit**	Completed***
32nd St. 5 lane widening (Main to Jackson)	X	X		X	2009
32nd St. & Main intersection (dual turn lanes)	X	X		X	2009
New signalized intersection on 60 at Howard Bush in Neosho	X				2009
Connecticut Ave. 5 lane widening (Murphy Blvd. to 30th)	X	X	X		2010
Prigmore Rd./CR 190 3 lane widening (32nd & I-44)	X				2010
Video equipment along I-44	X				2010
Ramp improvements at various locations on I-49	X				2012
N. Main/Rte. 43 & Zora Ave. interchange	X	X			2013
I-44 & Range Line Diverging Diamond Interchange (DDI)	X	X			2013
Pedestrian improvement on 571 from E to 71 in Carthage		X			2013
Schifferdecker Ave. 5 lane widening (7th to 32nd Streets)	X	X	X		2014
26th St. 3 lane widening (Maiden to Schifferdecker)	X	X	X		2014
I-44 & Hearnes Blvd. interchange improvements	X	X			2014
MacArthur Dr./Rt. 171 & Centennial Ave. roundabout	X				2014
Pedestrian improvements on Newman Rd. (Range Line to Florida Ave.)		X			2014
Intersection improvements on HH at Hazel St. in Carthage	X				2014
Pedestrian improvements on Roney St. in Carl Junction		X			2014
Pedestrian improvements on Pennell St. in Carl Junction		X			2014
Maiden Lane 5 lane widening (9th to 32nd Streets)	X	X	X	X	2015
20th St. overpass at Kansas City Southern crossing	X	X	X	X	2015
20th St. multi-modal trail (Range Line to Murphy Blvd.)		X	X	X	2015
N. Main/Rte. 43 & Rt. 171 roundabout	X	X			2015
I-44 & Prigmore Rd./CR 190 interchange	X				2015
US 60 access and intersection improvements in Neosho	X	X			2015
MSSU multi-use path (Campus to mall)		X	X		2016
Phase II Pedestrian improvements on Pennell St. in Carl Junction		X			2016
Pedestrian improvements from Fairview Elem. To Carthage High School		X			2016

* Dedicated bicycle lanes on road or trail

** Transit on route

*** Completed or expected completion date

Appendix A: Map of FSCAA Area



Glossary of Acronyms

CAAP	Clean Air Action Plan
EPA	Environmental Protection Agency
ETF	Environmental Task Force of Jasper and Newton Counties
FSCAA	Four States Clean Air Alliance
HAPs	Hazardous Air Pollutants
ITC	Inter-Tribal Council Inc.
JATSO	Joplin Area Transportation Study Organization
MoDNR	Missouri Department of Natural Resources
MoDOT	Missouri Department of Transportation
NAAQS	National Ambient Air Quality Standards
NOx	Nitrous oxides
O3	Ozone
VOC	Volatile Organic Compounds