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OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

MARY FALLIN
Governor

February 16, 2018

Laura Bunte, Mail Code C304-01
U.S. EPA, OAQPS
109 TW Alexander Drive
Research Triangle Park, NC 27709

RE: 2017 Ozone Advance Program Update for the Tulsa Metropolitan Statistical Area

Dear Ms. Bunte:

The Oklahoma Department of Environmental Quality (DEQ), Air Quality Division, in collaboration with the Indian Nations Council of Governments (INCOG) is pleased to formally submit the Tulsa Metropolitan area 2017 update to our Ozone Advance program. This is a "living" document and will continue to be updated as programs are added or evolve. The Tulsa Metropolitan Statistical Area (MSA) has participated in EPA's Ozone Advance program since October 30, 2012 and comprises Creek, Okmulgee, Osage, Pawnee, Rogers, Tulsa, and Wagoner counties. The enclosed document describes Ozone Advance initiatives and ongoing programs, and provides status updates to many of the programs listed in the 2016 submittal, along with several new programs.

The ground-level ozone reduction programs include voluntary and mandatory measures, as allowed in the EPA Ozone Advance Guidance Document. This mix of programs will allow for more expeditious implementation and provide flexibility for program stakeholders.

The EPA designated each of the counties in the Tulsa MSA as attainment/nonclassifiable in November 2017 for the 2015 ozone standard. In addition to the more moderate weather in the area over the last several ozone seasons, it is our conclusion that participation in the Ozone Advance program has had a positive impact on ozone levels.

An updated list of the INCOG stakeholder membership is also enclosed. We look forward to continued participation in the Ozone Advance program. If you have any questions after review of this update, please contact Nancy O'Brien or Melanie Foster at 405-702-4100.

Sincerely,

A handwritten signature in black ink, appearing to read 'Eddie Terrill', is written over a light blue horizontal line.

Eddie Terrill
Division Director
Air Quality Division

cc: Ken Boyce, EPA
Randy Pitre, EPA
Nancy Graham, INCOG

Enclosures





Tulsa Area Ozone Advance Annual Update

2017



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Executive Summary

America's Most Beautiful City, America's Most Generous City, and Green Country are just a few of the credits that have been bestowed on the Tulsa Metropolitan Area. And with the Arkansas River winding throughout its green thriving communities, the Tulsa Metro is indeed beautiful. More than 30 miles of bicycle trails, beautiful lakes, and lush parks is soon to be complemented by nearly 100 acres of transformed world-class waterfront parkland along the Arkansas River. A project of the George Kaiser Family Foundation, Gathering Place, Tulsa's Riverfront Park began its 4-year transformation in 2014 funded by corporate and philanthropic Tulsa organizations. With this becoming the largest private gift to a public park in U.S. history, the world-class parkland proves Tulsa's generosity remains. The Tulsa region boasts diverse businesses and industries, entrepreneurs and artists, vibrant downtowns, and a culture of innovation and inspiration. Packaged in all this wonder is a growing economy, a cost of living well below the national average, and, perhaps most importantly, dramatically improved air quality.

In the Fall of 2013, the Oklahoma Department of Environmental Quality and the Tulsa region formally submitted its Path Forward to the Environmental Protection Agency (EPA) thereby entering into the Ozone Advance Program. Ozone Advance is a voluntary collaborative program to encourage local actions in attainment areas to help these areas continue to maintain the National Ambient Air Quality Standards (NAAQS) and improve air quality. Its guidance states "Each year from the time the path forward is sent to EPA, a participating area should briefly summarize the status of the area's measures and programs undertaken under Ozone Advance (including a comparison between current status for each measure/program as compared with the schedule laid out in the path forward letter), current air quality, stakeholder meetings/events, and any other information the area would like to highlight."

This document provides the Tulsa area's 2017 annual Ozone Advance program update. It is intended to provide general information about air quality, ground-level ozone, and Tulsa's historical challenge with compliance of the standard. This document summarizes the programs identified in the path forward as well as ongoing, new and future projects – resulting in the vastly improved air quality Tulsa enjoys today.

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Background

The Indian Nations Council of Governments (INCOG) is a voluntary association of local and tribal governments in the Tulsa metropolitan area in northeast Oklahoma. Established in 1967, INCOG is one of 11 Councils of Governments in the State of Oklahoma and one of several hundred regional planning organizations across the country. INCOG provides local and regional planning, information, coordination, communications, implementation and management services to member governments and their constituent organizations. Representatives of each member community’s principally elected officials are appointed to INCOG’s Board of Directors, which serves as a forum for cooperative decision-making and solutions to local and regional challenges.

INCOG was designated by the governor of Oklahoma as the Metropolitan Planning Organization (MPO) for the Tulsa region. As the MPO, INCOG, in cooperation with the Oklahoma Department of Transportation (ODOT), and Metropolitan Tulsa Transit Authority (MTTA), is responsible for the development of regional transportation plans and programs for the Tulsa Transportation Management Area (TMA).

The population of the Tulsa TMA is just under 810,000, which accounts for approximately 85% of the entire seven county Tulsa Metropolitan Statistical Area (MSA). The Tulsa MSA is the 55th largest in the country and its primary city, Tulsa, is the 46th largest city in the country in terms of population.

With the INCOG Air Quality Stakeholders Group, INCOG is also recognized as the planning agency for air quality issues in the region.

About Ground-Level Ozone

Ozone, often called smog, is one of our nation’s most common air pollutants. Of the six national standards regulated under the Clean Air Act (CAA) (ozone, lead, particulates, sulfur dioxide, nitrogen dioxide, and carbon monoxide), only ozone has long been a summertime challenge for the Tulsa area.

Ozone is the only one of the six NAAQS pollutants that does not come directly from an emissions source. It is the product of chemical reactions among volatile organic compounds (VOCs) and nitrogen oxides (NOx) emissions from a variety of sources (vehicles, industrial facilities, power plants, human activities, etc.). Reacting in sunlight, the oxygen atoms (O) break apart from their initial compounds and join as three oxygen atoms (O₃). Ozone is highly reactive which is why it increases as the sunlight



intensifies and decreases with sunset and nightfall. Because of the diversity of its precursor emissions in moving air masses and its reactive nature with ever-changing weather factors, ground-level ozone is very challenging to evaluate and control.

Breathing in high levels of ozone is unhealthy and problematic for individuals working outside; children; the elderly; and those with asthma, COPD, and other breathing sensitivities. Long-term exposure to high ozone levels has shown to be one of many causes for the increase in asthma development. Ground-level ozone is also known to damage plants, trees, crops, and other vegetation.

Tulsa Area Ozone Historical Summary

Ozone levels in the Tulsa area have improved remarkably over the past twenty years. With minimal technical resources, Tulsa has embraced voluntary, common-sense emission reduction strategies to avoid nonattainment and the economic burden it would create, dramatically improving air quality.

Prior to 1990, the Tulsa area was in nonattainment for ground-level ozone. Through ingenuity and initiative, just before the only time the Clean Air Act (CAA) was amended, Tulsa regained attainment status and avoided the attainment-maintenance re-designation status which would have occurred at any other time. To achieve attainment status, Tulsa County enacted various SIP measures including Stage I Vapor Recovery for gasoline storage tanks and industrial coating treatment requirements.

Unfortunately and shortly after attainment was regained, in June 1991 Tulsa area monitors experienced two exceedances of the one-hour ozone standard. To develop a pro-active program to diminish the chances of slipping back into non-attainment, the City of Tulsa and other area officials turned to INCOG, the regional planning agency in the Tulsa area. INCOG formed an Air Quality Committee composed of local public agencies, the business community, environmental interest groups, and other interested citizens and established the **Ozone Alert! Program**. The program was developed and implemented in just two weeks' time - a record for a public endeavor. The Tulsa City-County Health Department and the National Weather Service developed the first non-computer model to forecast conditions for a high potential to exceed the ozone standard. Parameters including temperature, wind speed and direction, and cloud cover were used to gauge the potential for levels of ozone.

From 1992 through 1994, the Tulsa region experienced several 1-hr. ozone exceedances. INCOG's Air Quality Stakeholders, in partnership with the City of Tulsa and various regional partners, again began strategic planning and further seeking common-sense initiatives to reduce ozone.

The following timeline of resulting programs identifies Tulsa’s exemplary pattern of improving air quality through partnership, initiative, and voluntary, common-sense strategies.

In partnership with EPA Region 6, INCOG and the Tulsa area completed development of and implemented the **Tulsa Area Flexible Attainment Region Agreement (FAR)** in 1995. The first of its kind, the FAR defined proactive voluntary emission reduction strategies which the Tulsa area agreed to put into place upon designated ozone design values or “triggers.” Future EPA voluntary ozone reduction programs would pattern themselves after this model.

In 1997, EPA established new primary and secondary standards for ozone, based on an 8-hour average ozone concentration. The 8-hour standard was violated if an area’s 3-year averaged Ozone Design Value was greater than 84 parts per billion (ppb). Tulsa’s Ozone Design Value at the time was 89 ppb and not meeting the revised proposed standard. Also in 1997, the INCOG-hosted **Tulsa Area Clean Cities Program** was designated by the Department of Energy (DOE), as the 57th in the nation.

Legal challenges to the new 8-hour ozone standard placed it on hold, preventing EPA from designating areas attainment or non-attainment. However, with a revised, tighter 8-hour standard on the horizon, the Tulsa area again faced the possibility of a non-attainment designation. In order to ensure continued attainment of the 1-hour ozone standard, the INCOG Air Quality Stakeholders developed and submitted the **Tulsa Area 1-Hour Ozone Flex Agreement**.

An integral component of Tulsa area air quality improvement and initiative was the voluntary low Reid Vapor Pressure gasoline program. In 2000, with Tulsa’s ozone design value at critical levels, INCOG held a series of local roundtable stakeholder discussions concerning the **Voluntary Low Reid Vapor Pressure (RVP) Gasoline Program**. At that time, Tulsa area gasoline partners had been voluntarily providing summer gasoline at 8.5 psi or lower since 1991. Although gasoline prices during the summer of 2000 were spiking across the nation, with the continued spirit of local area initiative, Tulsa’s voluntary summer gasoline program was modified to the substantially lower 7.8 psi RVP that remained in place through 2012.

In partnership with DEQ, the Tulsa region signed and implemented the Ozone Flex Agreement in August 2002. And in December of the same year, DEQ and INCOG notified EPA of their intent to participate in the **8-Hour Early Action Compact (EAC)**. The purpose of the EAC was to develop and implement a **Clean Air Action Plan (CAAP)** for reducing ground-level ozone concentrations in the Tulsa area in order to meet the 8-hour ozone standard by December 31, 2007, and to maintain the standard through 2012.

In March 2004, the CAAP was submitted and in conjunction with the concurrent voluntary low RVP gasoline program, regional ozone levels continued to improve. By the end of the 2004 ozone season, the Tulsa area met EPA’s 8-hour ozone standard and was rewarded with an attainment designation.

In 2008, with the release of a proposed tighter ozone standard, the **Tulsa Area Ozone Flex Plan Agreement** was developed and successfully implemented. Tulsa’s air quality improved and an attainment designation of the 2008 ozone standard followed.

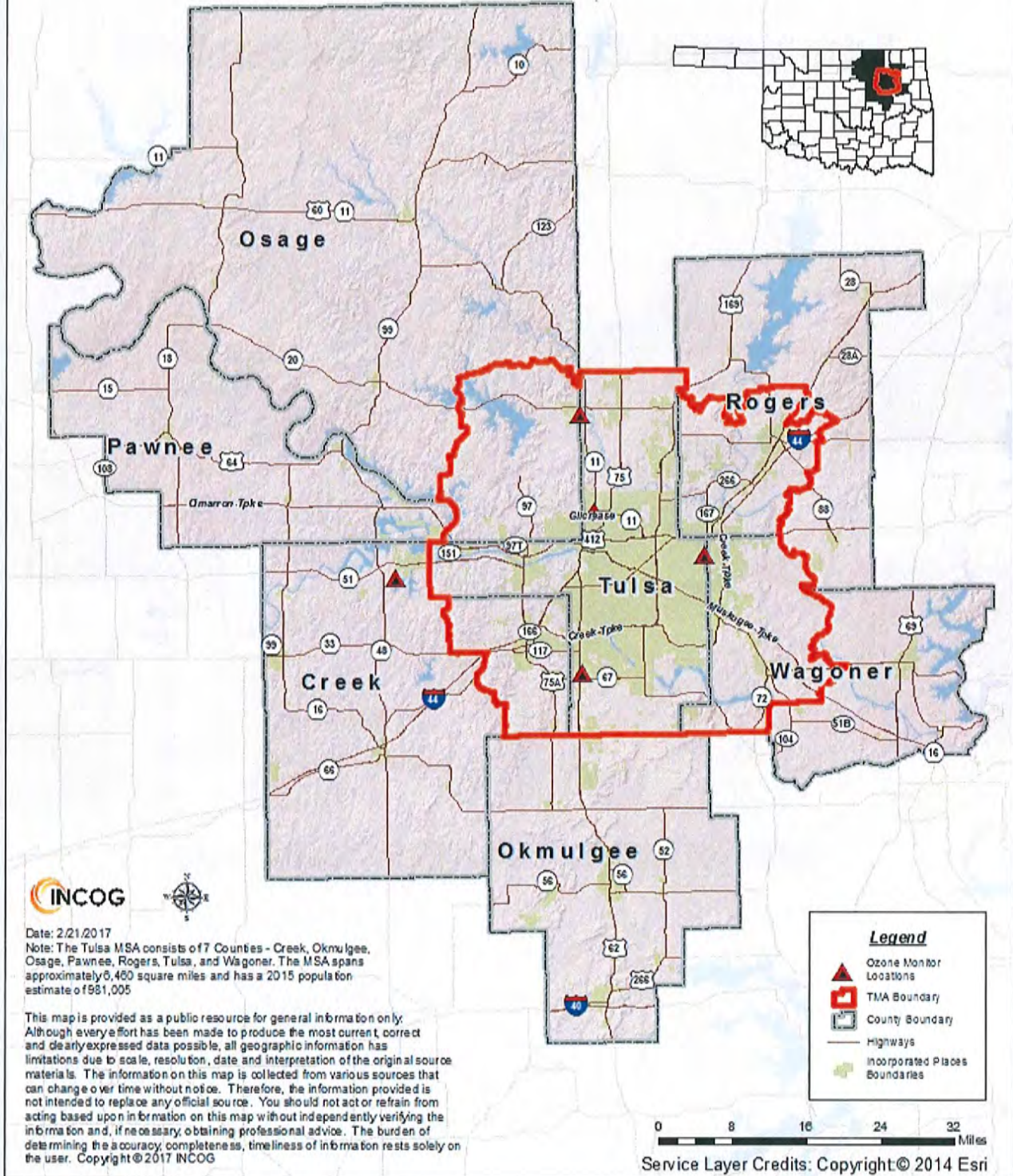
This current proactive and voluntary Ozone Advance Path Forward Improvement Plan, in place since 2013, continues to clear the air and reduce regional ozone levels.

Geographical Boundaries and Monitoring

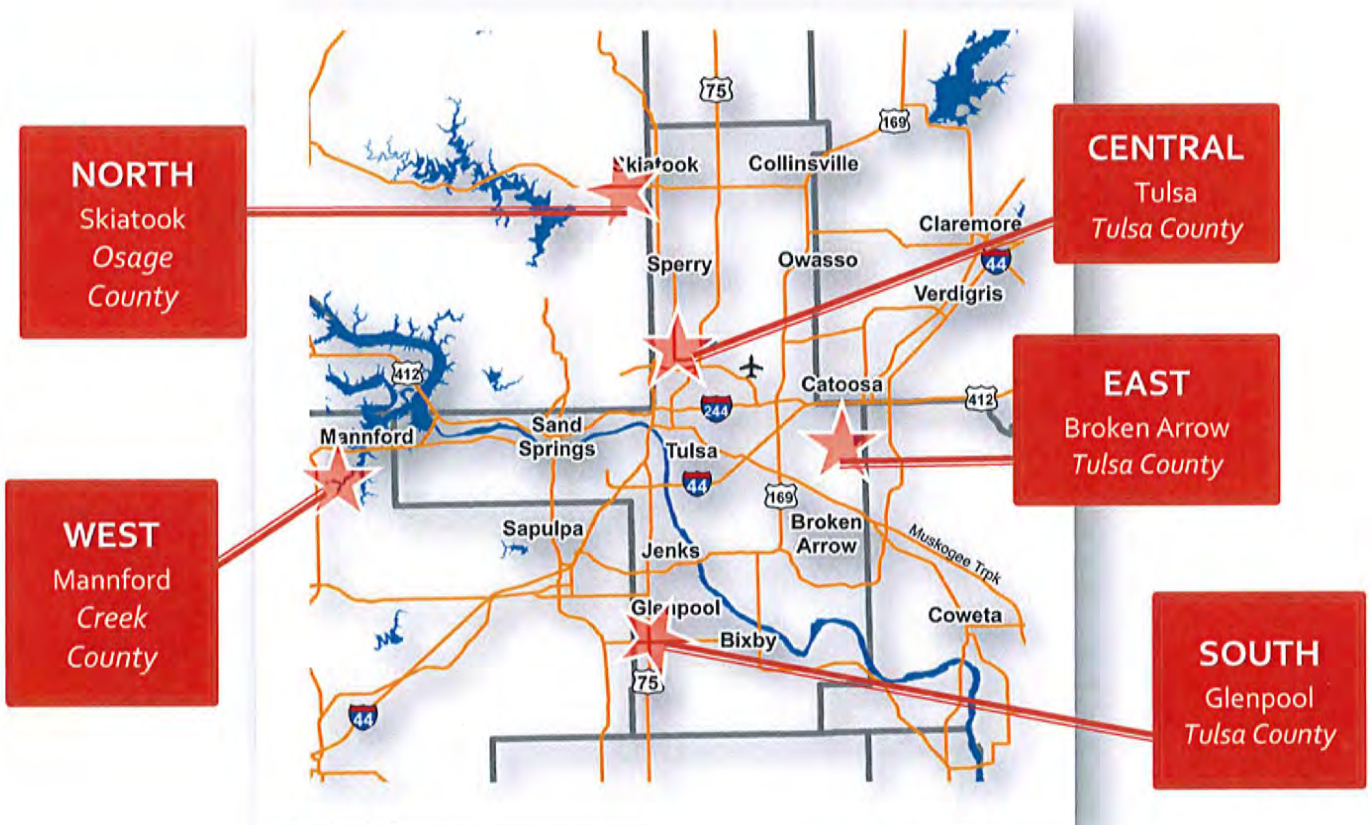
The regional map on the following page identifies the seven-county Tulsa Metropolitan Statistical Area (TMSA). Within the TMSA, the Tulsa Transportation Management Area (TTMA) is generally defined as the “Tulsa Air Shed.”

Tulsa Area 'Air Shed'

The Seven-County Tulsa Metropolitan Statistical Area (MSA)



Tulsa Metropolitan Area Ozone Monitors



Tulsa Area Air Quality Stakeholders

Improving air quality in the Tulsa area began nearly thirty years ago when the INCOG Air Quality Committee was first established. Since then, the stakeholder group has continued to grow and strengthen. The 2017 core stakeholders are identified below. **CoChairman

First	Last	Organization
Isaac	Akem	Federal Highway Administration
Liann	Alfaro	Metropolitan Tulsa Transit Authority
Steve	Amburn	National Weather Service
Kyle	Arthur	Chesapeake Energy Corporation
Michelle	Barnett	ENERCON
Charles	Barney	GRDA
Mike	Bednar	GRDA
Ford	Benham	OG&E Utility Operations
Marla	Benyshek	Phillips66
Craig	Bernheimer	Miratech Corp.
Marjorie	Boone	ONE Gas
Beverly	Botchlet-Smith	ODEQ
Cheryl	Bradley	ODEQ
Graham	Brannin	M.e.t
Rich	Brierre	INCOG, Executive Director
Jeff	Brown	AEP PSO
Angie	Burckhalter	Devon Energy Corporation
Thomas	Byers	Magellan Midstream Partners, L.P.
GT	Bynum	Mayor, City of Tulsa
Gay	Campbell	St. Francis Hospital
Laura	Chaney	ODOT
Montelle	Clark	ODEQ Air Quality Council
Randy	Cloud	Metropolitan Tulsa Transit Authority
Clyde	Cole	Cox Media Group
Gary	Collins	Terra Nitrogen, LP - Verdigris
Jeff	Condray	Tulsa Airport Authority
J.T.	Davis	AEP-PSO
Nick	Doctor	City of Tulsa
Ann	Domin	INCOG, Deputy Director
Austin	Embry	AAON
Jim	Evers	AEP-PSO
Brad	Gemeinhart	INCOG
Bill	Geubelle	Phillips66
Nancy	Graham	INCOG
Steve	Grantham	Up with Trees
Michael	Graves	Hall Estill Law Firm

Casey	Graves	Metropolitan Tulsa Transit Authority
Andrew	Haar	HollyFrontier Corporation
Jim	Haught	One Gas, Inc.
Bruce	Heine **	Magellan Midstream Partners, L.P.
Michael	Henk	Michael Henk, Concerned Citizen
Craig	Immel	Francis Renewable Energy
Adrian	Jaynes	Tulsa Area Clean Cities
Daniel	Jeffries	Tulsa Area Clean Cities
Rhonda	Jeffries	ODEQ Regional Office at Tulsa
Jeremy	Jewell	Trinity Consultants
Bryan	Jewett	ENERCON
Jarrett	Keck	HollyFrontier Corporation
Karen	Keith **	Commissioner, Tulsa County
Stephen	Landers	Georgia-Pacific Consumer Products
Mark	Lawson	Spirit Aerosystems
Nancy	O'Brien	ODEQ
Brian	McQuown	OG&E
Bruce	Morgan	QuikTrip Corporation
Steve	Moyer	HollyFrontier Corporation
Mike	Neal	Tulsa Regional Chamber
Matt	Newman	Covanta Energy
Thelma	Norman	American Airlines, Inc.
Nancy	O'Brien	ODEQ
Elizabeth	Osburn	Tulsa Regional Chamber
Lee	Paden	Law Office of Lee W. Paden, PC
Lydia	Patitsas	Oklahoma Sustainability Network
Michael	Patton	Land Legacy
Whitney	Pearson	Sierra Club
Deborah	Perry	ONEOK, Inc.
Samuel	Peyton	Tulsa Regional Chamber
Bill	Potter	University of Tulsa
Don	Pugh	American Airlines, Inc.
Viplava	Putta	INCOG
Coy	Pyle	ONEOK
Ted	Rieck	Metropolitan Tulsa Transit Authority
Ken	Ruffin	AEP
Jennifer	Sanchez	HollyFrontier
Vernon	Seaman	INCOG

Mike	Shepard	Veolia Energy Tulsa
Ron	Sober	RFS Consulting, Inc.
Keith	Sorrells	Arkansas Valley Companies
Mark	Stout	Chesapeake Energy Corporation
Eddie	Terrill	ODEQ
Wayne	Thomas	Buzzi Unicem USA
Mike	Thornbrugh	QuikTrip Corporation
Usha	Turner	OG&E Energy Corp
Barbara	VanHanken	Sierra Club – Green Country
Randle	White	ODOT
Charlie	Williams	Clean Air Action
David	Yarbrough	Tulsa Port of Catoosa
Lee	Zirk	City of Broken Arrow

Ozone Forming Emissions and Health Effects

Ground-level ozone is not emitted directly into the air. Rather, precursor Nitrogen Oxide (NOx) and Volatile Organic Compound (VOC) emissions react in sunlight. Ground-level ozone precursor emissions come from many sources including on- and off-road mobile, local area businesses such as dry cleaners and paint shops, gas stations, and industrial point sources.

Ozone affects both health and welfare. It can cause health problems by damaging lung tissue, reducing lung function, and creating lung sensitivity to other irritants. It also severely irritates the mucous membranes of the nose and throat, causing coughing and increased infection of the lungs. The effects of ground-level ozone are more severe and are experienced at lower concentrations in individuals with chronic lung disease, asthma, or diseases of the heart and circulatory system. Harm can result from prolonged exposure to low concentrations of ozone, or from exposure to higher concentrations for a shorter period of time.

Exposure to ground-level ozone for several hours at relatively low concentrations has been found to significantly reduce lung function in normal, healthy people as well, particularly during exercise. This decrease in lung function generally is accompanied by symptoms including chest pain, coughing, sneezing, nausea, headache, and pulmonary congestion. Results from animal studies indicate that repeated exposures to high levels of ozone for several months or more can produce permanent structural damage in the lungs. Ground level ozone also interferes with the production and storage of starches in plants, which results in leaf injury or reductions in growth and yield of plants. Some plants such as soybeans, alfalfa, oats, corn, beans, clover, shrubs, and deciduous trees are especially sensitive to and show damage at low levels. Additionally, the deterioration of nylon and other synthetics, as well as degradation of rubber, metal, and paint, is associated with ground-level ozone pollution.

The Ozone Standard

The national 8-hour primary and secondary ambient air quality standard for ozone is 70 ppb. Primary standards set limits to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

A daily 8-hour average higher than the EPA standard is considered an unhealthy exceedance day. It is important to note however, that compliance with the ozone standard is not determined by the number of exceedance days. The standard is met when the average of the annual fourth-highest daily

maximum 8-hour average ozone concentration is less than or equal to 70 ppb using the most recent 3 years of collected data at any one ozone monitoring site.

As stated, the standard uses the 4th highest daily (8-hour average) ozone reading at each monitor. The 4th highest daily reading for each monitor is averaged with the 4th highest reading from each of the two prior years, and a three year rolling average for each monitor is calculated. The highest of these three year averages becomes the area's ozone Design Value. When an area's Design Value (3-year average of the 4th highest reading) is 70 ppb or lower, the area is in compliance with the ozone standard.

Current Ozone Status

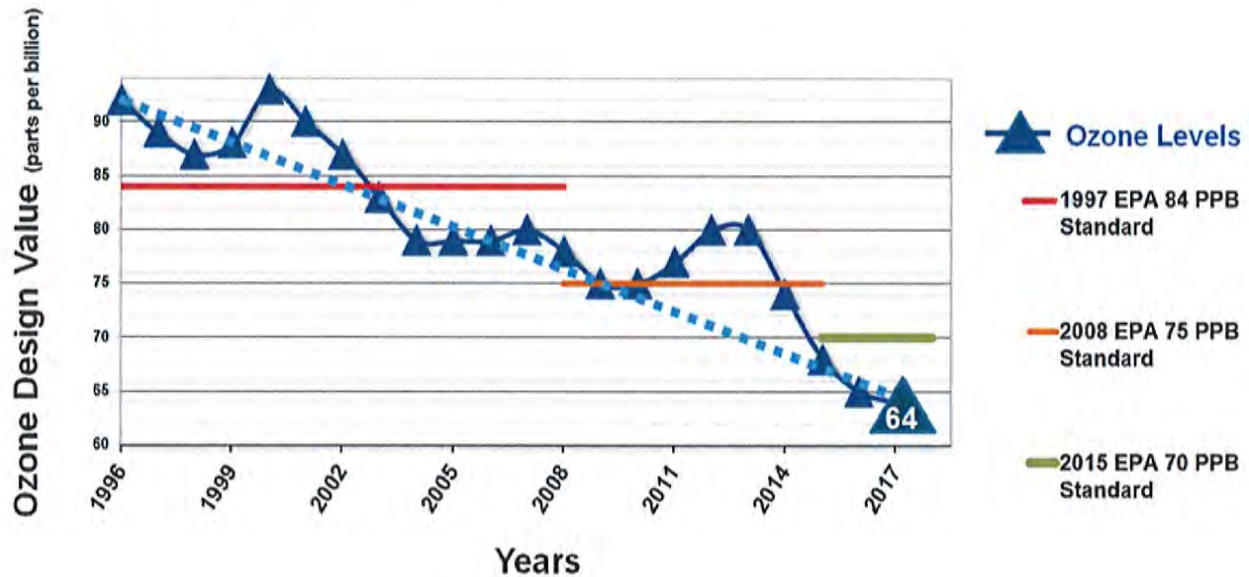
At the end of the 2017 ozone season (pending data QA/QC), Tulsa’s ozone design value is 64 ppb and in compliance of the 70 ppb ozone standard as the following chart and ozone scorecard indicate.

Tulsa Area Ozone Trend

Tulsa Area Ground-level Ozone Trend

Plotting the Ozone Design Value

(the 3-year average of the 4th highest ozone level each year)



Tulsa Area 2017 Ozone ScoreCard

2017 Season ScoreCard

1 Exceedance Day: September 14th

12/31/17

Monitor Site			2017 Highest 8-Hr Ozone Averages (ppm)* (1st through 4th highest daily readings)				DESIGN VALUE 3-Year Average of the 4th highest readings	
2014 4th High	2015 4th High	2016 4th High	1st Highest date	2nd Highest date	3rd Highest date	4th Highest date	2014-2016 3-Yr Avg	2015-2017 3-Yr Average
West (#144 Mannford)			.069 14-Sep	.066 2-Aug	.065 7-Apr	.064 7-Jun	.064	.063
.066	.063	.064						
East (#178 Lynn Lane)			.068 26-May	.068 7-Jul	.065 3-Aug	.064 13-Sep	.063	.064
.063	.065	.063						
Central (#1127 Tulsa)			.068 14-Sep	.063 7-Apr	.063 7-May	.062 8-May	.065	.064
.065	.068	.062						
North (#226 New Location in Skiatook)			.073 14-Sep	.065 7-Apr	.065 8-May	.064 7-May		
		.064						
South (#174 Glenpool)			.069 23-Jul	.066 6-Jun	.066 14-Sep	.065 7-Jun	.062	.063
.062	.061	.064						

An Ozone Exceedance = .071 ppm or greater
 Exceedance days are unhealthy air days and shown in red in the table above.

*Pending QA/QC Verification

Ozone Advance Emission Reduction Project Tables

This section provides the strategic emission reduction projects identified in the original Path Forward as well as new and ongoing projects.

The project tables are divided into 1) Tulsa Area Ozone Advance Ongoing and New Projects and 2) Tulsa Area Ozone Advance Completed Projects. When necessary and noted, additional project information is provided in the Appendices following the tables.

2017 - Tulsa Area Ozone Advance Program Annual Update - New and Ongoing Projects

Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and - /or Completion Date
Enhanced Public Outreach and Education Programs	Tulsa Transportation Resource Center	INCOG	<p>The Tulsa Transportation Resource Center (TRC) is a dynamic program designed to connect people to available transportation options. The website, tulsastrc.org, highlights resources for Tulsa Metro Area biking, walking, and riding (transit and rideshare). Tulsa TRC outreach efforts include working at community events, local company partnership and training, organizational meetings to present information, and more. 2017 Update: Tulsa TRC's website continues to spotlight transportation alternatives, projects, and events in the region. Staffing changes over the past year have resulted in no significant website changes.</p>	Ongoing	2013 -
	Tulsa Area Ozone Alert! Program	INCOG	<p>The Ozone Alert! Program takes a voluntary episodic approach to ozone pollution reduction and healthy air quality. The Tulsa region's award-winning website, ozonealert.com, continues to provide hourly ozone data, AQI information, daily allergy reporting, and much more information. 2017 Update: The 27th Ozone Alert! Program season completed with 3 Ozone Alert! Days issued and just 1 Exceedance Day. This year's public education and outreach campaign featured Tulsa's Mayor GT Bynum encouraging actions to reduce ground-level ozone throughout Tulsa and surrounding communities. With Mayor Bynum, the Ozone Alert! Public Relations team created and produced numerous 15 and 30 second commercials. In addition to traditional TV, Radio, and Print marketing efforts, the campaign maximized digital marketing venues including social media, digital ad banners, targeted pre-roll video, targeted and re-targeted digital, and digital advertising with local media. Tulsa Area 2017 Ozone Alert! Program successes and other program updates are provided in Appendix A of this annual update.</p>	Ongoing	1991 -
	Tulsa Area Clean Cities Coalition (TACC)	Tulsa Area Clean Cities Coalition / INCOG	<p>The U.S. Department of Energy's Clean Cities program's mission is to advance the energy, economic, and environmental security of the United States by supporting local decisions to adopt practices that reduce the use of petroleum in the transportation sector. Designated in 1997, the Tulsa Area Clean Cities Coalition (TACC) works with local businesses and governments through outreach and education, to promote alternative fuel vehicles. TACC works to advance alternative fuels, idle reduction, and to promote the education of alternative fuel fleets, vehicle availability, and refueling options. www.tulsacleancities.com. 2017 Update: The Tulsa Area Clean Cities coalition experienced significant growth and improvement in all areas last year. Their 2016 Annual Report (dated March 2017) captured local alternative fuel projects and actions reducing nearly five million gallons of gasoline (4,669,794), 95% of which is directly attributed to alternative fueled vehicles. Additionally TACC began the Tulsa EV Coalition to advance the use of electric vehicles in the Tulsa region. The goal of the group is to provide a place for advocates, industry, and utilities to discuss EVs and strategically work together to ensure the Tulsa area is ready for the growing number of EVs, which will be available to consumers.</p>	Ongoing	1997 -
	Public Outreach	Department of Environmental Quality	<p>The Oklahoma Department of Environmental Quality (DEQ) participates in multiple public outreach and education programs, which emphasize the importance of informing individuals about the effects of ozone on citizens' health. This includes producing/supplying ozone education materials, creating online videos encouraging energy efficiency, and issuing ozone watches for the Tulsa MSA. DEQ began its Air Quality Health Advisory Program in 2006, issuing real time email notifications of unhealthy concentrations of ozone. In 2014 the Air Quality Division added an infographics gallery featuring original infographics with a local focus on the relationship between air quality and weather. 2017 Update: In 2017, DEQ has utilized its social media sites of Facebook and Twitter to issue Ozone Health Advisories in addition to its list of subscriber emails and text messaging.</p>	Ongoing	2006 -

2017 - Tulsa Area Ozone Advance Program Annual Update - New and Ongoing Projects

Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and - /or Completion Date
Energy Efficiency Strategies and Programs	Mandated Energy Efficiency Requirements	State of Oklahoma	61 O.S. § 213, Enacted 6/3/2008, requires the state to develop a high-performance building certification program for state construction and renovation projects; program must meet the certification guidelines of either the LEED system or the Green Globes rating system. The requirement applies to new construction or substantial renovation projects that begin the design phase after July 1, 2008 in buildings larger than 10,000 square feet. "Substantial renovations" is defined as projects that cost in excess of 50% of the value of the facility. In order to be considered a "state project" for purposes of the requirements, state funds or state-insured funds must constitute at least 50% of the project cost. State agencies are directed to meet the highest level of certification attainable under a payback period of 5 years or less. Public schools (K-12) and state archive buildings are exempted from the requirements.	Ongoing	2008 -
	The Oklahoma Energy Security Act	State of Oklahoma	The Oklahoma Energy Security Act (17 O.S., Section 801.2 et seq.), which became effective in 2010, set statewide goals for alternative and domestically produced energy, including 15% of energy from renewables by 2015, and CNG fueling stations every 100 miles by 2015 and every 50 miles by 2025. 2017 Update: In response to a proposal by Tulsa Area Clean Cities, INCOG, ACOG, and ODOT, the Federal Highway Administration designated all of the interstates in Oklahoma as Alternative Fuel Corridors. Under this designation, there are two categories, "signage ready," meaning the fueling infrastructure exists in sufficient quality and intervals to denote the corridor; and "signage is pending," meaning corridor is prioritized for future fueling infrastructure development. Oklahoma was the only state to have all of its interstates designated as "signage ready" for CNG. OK also received a "signage pending" designation for EVs, paving the way to prioritize and coordinate EV infrastructure projects along those routes.	Ongoing	2010 - 2025
	Oklahoma First Energy Plan	State of Oklahoma	The Oklahoma First Energy Plan lays out policy guidance for a diverse energy portfolio that includes energy efficiency and encourages technologies such as combined heat and power (CHP) and geothermal. https://www.ok.gov/governor/documents/Governor%20Fallin%20Energy%20Plan%20-%20Jan%202012.pdf	Ongoing	2011 -
	Oklahoma State Facilities Energy Conservation Program	State of Oklahoma	The Oklahoma State Facilities Energy Conservation Program, established in 2012 (27A O.S. Section 3-4-106.1), directs all state agencies and higher education institutions to achieve an energy and conservation improvement target of at least 20% by 2020 when compared with 2012 utility expenditures. Oklahoma's energy reporting and resulting savings occur through the Energy CAP calculation and reporting software system. The energy savings database can be accessed from the 20x2020.ok.gov/resources website, the Energy Database menu; then https://web.energycap.com . Login access information for each of the three (Username, Password, and Data source) is the word: Oklahoma. The software tracking system was initiated in 2014 and each reporting year reflects greater state building energy savings. September 2015 - August 2016 reflects a 34.7% daily average cost savings over the previous year with 69.4% of those occurring from reductions in electricity usage. 2017 Update: Expenditures were down 27% from April 2016 to April 2017.	Ongoing	2012-2020

2017 - Tulsa Area Ozone Advance Program Annual Update - New and Ongoing Projects

Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and -/or Completion Date
	Demand Response Energy Performance Reduction Program – Residential and Commercial	Public Service Company of Oklahoma	<p>Public Service Company of Oklahoma's (PSO) Energy Efficiency and Demand Response is a multi-faceted program for business and residential customers encouraging the reduction in energy usage and peak energy demand. Over the 2013 - 2015 years, PSO successfully implemented a Demand Portfolio of six programs which included: Residential - Home Weatherization, High Performance Homes, Energy Savings Products & Services, and Education; and Commercial & Industrial - High Performance Business and Business Demand Response. The 2015 Annual Report released June 2016 indicated an annual net EE & Demand Response Programs Energy Savings total of 100,585 MWh. Since then, PSO has begun an enhanced Energy Savings & Demand Response Programs Portfolio for 2016 - 2018, adding two new programs, Conservation Voltage Reduction (CVR) and Behavioral Modification, to their existing six programs. 2017 update: The 2016 Annual Report indicates an annual net EE Lifetime Energy Savings total of 1,263,404 MWh.</p> <p>2017 Update: ONG's robust Energy Efficiency Program Portfolio continues, with previous year energy savings estimated as follows:</p> <ol style="list-style-type: none"> 1) Heating System Checkup resulting in savings of 206,533 Dth 2) Water Heater Replacement Program resulting in savings of 91,362 Dth 3) Heating System Replacement Program resulting in savings of 1,074,773 Dth 4) Clothes Dryer Replacement Program resulting in savings of 159,816 Dth 5) Range Replacement Program resulting in savings of 65,241 Dth 6) New Homes Program resulting in savings of 784,144 Dth 7) Commercial Custom EE Program resulting in savings of 802,492 Dth 	Ongoing	2012 -
	Oklahoma Natural Gas (ONG) Energy Efficiency Program	Oklahoma Natural Gas (ONG)	<p>Systemwide, OG&E currently projects energy efficiency and demand reductions of up to 549 MW and 1,130 MWh through 2024.</p> <p>2017 Update: In 2016 Commercial Energy Efficiency Program (CEEP)</p> <ol style="list-style-type: none"> 1) Commercial HVAC Tune-up and Plenum Seal 2) C&I HVAC Equipment, Chillers, Air Compressor, motor rebates 3) Midstream LED lighting discounts at commercial distributors 4) Schools and Government, HVAC & Lighting rebates and assessments 5) Small Business direct install measures in 2016 this resulted in savings of 71,541,185 kWh. 	Ongoing	2012 - 2019
	OG&E Energy Efficiency Programs-Commercial	OGE Energy Corp.		Ongoing	2016 through 2018

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Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and - /or Completion Date
	OG&E Energy Efficiency Programs-Residential	OGE Energy Corp.	<p>Oklahoma Gas and Electric Company (OG&E) has the most widespread Smart Grid technology in the country, which offers variable pricing through their Smart Hours program.</p> <p>2017 Update: In 2016 OG&E offered the following energy efficiency programs targeting Residential Customers:</p> <p>2016 Home Energy Efficiency Program (HEEP)</p> <ol style="list-style-type: none"> 1) Residential Free HVAC Tune-up and Plenum Seal 2) OK Schools outreach; Educational Kit including install items for 5th grade students 3) Upstream LED lighting discounts in select stores 4) Insulation and HVAC equipment rebates; <p>This resulted in savings of 41,862,407 kWh.</p> <p>Weatherization—free energy efficiency improvements for lower-income customers which includes ceiling insulation, general air infiltration improvements, LED lighting installations and performance testing; in 2016 this resulted in savings of 13,716,733 kWh.</p> <p>Positive Energy Home—certification for homes that are shown to be 50% more efficient than code; in 2016, this resulted in savings of 2,925,917 kWh.</p>	Ongoing	2013 -
	State Energy Program American Recovery & Reinvestment Act Revolving Loan Funds	Tulsa Area Clean Cities Program / INCOG	<p>In November 2013, a State Energy program - American Recovery and Reinvestment Act (SEP ARRA) revolving loan program previously administered by the Oklahoma Department of Commerce was transferred to INCOG for administration. This loan program consists of \$1,600,000 in funding to provide the capital necessary for the implementation of building energy efficiency retrofits, renewable energy and demand management projects, and alternative fuel infrastructure or fleet conversion. A 1% interest rate for public entities and 2% private interest rate applies. In July 2014, Tulsa County was awarded \$1,055,000 in cooperation with the county's Energy Efficiency and Conservation Strategy (EECS) for the purpose of updating the HVAC systems throughout the County Courthouse, Annex, and Administration buildings. The project entails replacing the inefficient controls with computerized direct digital control systems thereby dramatically improving the energy efficiency of the buildings. TACC/INCOG announced solicitation for the remaining \$652,000 loan program dollars in November 2015. 2016 Update: The Tulsa County EE retrofits are completed. Energy savings are being tracked by total reduced energy cost compared to the 3-year (2014-2015) energy usage average. The 2016 9-month (Jan. - Sept.) cost savings from the combined projects is \$123,811.00. In November 2015, two new EE loan program projects were awarded: \$310,000 to Rogers County to restore the County Courthouse Depression Era building; and \$320,000 to Tulsa County for HVAC and lighting replacements and upgrades critically needed at the O'Brian Park Recreation Center. 2017 Update: The Rogers County project has experienced multiple delays due to staffing turnover and is not yet complete. The Tulsa County Parks project is complete and the energy savings data reporting will begin in Quarter 1 of 2018. Completed last year, the Tulsa County Courthouse project has yielded the following energy savings: 78753.33 therms of steam saved, representing a 25.5% reduction in steam used; and 380,620 kWh of electricity saved, representing an 8.1% reduction in electricity usage.</p>	Ongoing	2013 -

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Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and - /or Completion Date
	Tulsa International Airport Energy Efficiencies	Tulsa Airport Authority	Tulsa International Airport is a modest facility located approximately five miles northeast of downtown Tulsa. Facility operations for this 1961 era building are handled by the Tulsa Airport Improvement Trust (TAIT). In conjunction with the planning for major building renovations, TAIT took the opportunity to turn the Airport into a clean energy and environmentally resourceful model for the Tulsa region. Tulsa's attainment status precludes many funding opportunities intended to encourage voluntary emission reductions projects, such as the Federal Aviation Administration's Voluntary Aviation Low Emissions (VALE) Program which is only available to areas that are in non-attainment or maintenance of the NAAQS. However, even without funding incentive, TAIT's renovation efforts strategically included unique projects and achievements to reduce ground-level air emissions during the renovations and build clean air efficiencies into the Airport's future. 2017 Update: Details on the Airport's continued Energy Efficient successes are located in Appendix B of this document.	Ongoing	2012 -
	Project Green Arm	City of Tulsa	The City of Tulsa has secured funding for an aggressive LED traffic light retrofit project totaling \$2,344,030. Expected to initiate in the Spring 2017, a significant number of old technology traffic lights will be replaced throughout the City. Additional information will be provided in future Ozone Advance annual updates. No 2017 Update is available.	Ongoing	2016 -
	Wind Catcher Energy Connection	Public Service Company of Oklahoma	Public Service Company of Oklahoma (PSO) and Southwestern Electric Power Company (SWEPCO) are embarking on an unprecedented \$4.5 billion project to bring 2,000 megawatts (MW) of renewable energy from the nation's largest wind farm in the Oklahoma panhandle to customers in Oklahoma, Arkansas, Louisiana, and Texas. The Wind Catcher Energy Connection project involves 800 GE wind turbines at an under-construction partner wind farm in the panhandle, building approximately 360-miles of dedicated extra high-voltage 765 kilovolt (kV) power line to connect the renewable energy to two new substations, one located at the wind facility and a second near Tulsa. PSO currently has 1,137 MW of wind energy (22%) and the additional capacity will make up 40% of PSO's generating capacity by 2021.	New	2017-2021
CNG/Alternative Fueled Vehicle & Infrastructure Projects	Alternative Fuel Vehicle (AFV) Tax Credit	State of Oklahoma	For tax years beginning before January 1, 2015, a one-time income tax credit is available for 50% of the incremental cost of a new AFV or converting a vehicle to operate on an alternative fuel. The state also provides a tax credit for 10% of the total vehicle cost, up to \$1,500, if the incremental cost of a new AFV cannot be determined or when an AFV is resold, as long as a tax credit has not been previously taken on the vehicle. Equipment used for conversions must be new. The alternative fuels eligible for the credit are compressed natural gas, liquefied natural gas, hydrogen, and liquefied petroleum gas (propane). Tax credits may be carried forward for up to five years. (68 O.S. §2357.22) In 2014, this credit was extended to tax years beginning before January 1, 2020 and the credit was changed to up to 45% (from 50%) of incremental cost. 2017 Update: In spite of the state's budget shortage issues, this significant tax credit currently remains in place and has been recommended to be retained through 2020. Additionally, there is growing support to reinstate credit eligibility for EVs.	Ongoing	1990 -
	Alternative Fueling Infrastructure Tax Credit	State of Oklahoma	For tax years beginning before January 1, 2015, a tax credit is available for up to 75% of the cost of alternative fueling infrastructure. Eligible alternative fuels include compressed natural gas (CNG), liquefied natural gas, liquefied petroleum gas (propane), hydrogen, and electricity. The infrastructure must be new. A tax credit is also available for up to 50% of the cost of installing a residential CNG fueling system, for up to \$2,500. The tax credit may be carried forward for up to five years. (68 O.S. §2357.22) In 2014, this credit was extended to tax years beginning before Jan 1, 2020. 2017 Update: Although Oklahoma's critical budget situation has essentially all state tax credits at risk of being revoked, this credit currently remains in place with the legislature's Tax Incentive Review Committee recommending retention through 2020. On the infrastructure side, EV charging is technically eligible however effort is currently underway to expand the language so that all entities, not only electricity-providing utilities, are eligible.	Ongoing	1990 -

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Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and -/or Completion Date
	Private Alternative Fuel Vehicle (AFV) Loans	State of Oklahoma	Private loan program with a 3% interest rate for the cost of converting private fleets to operate on alternative fuels, for the cost of purchasing an original equipment manufacturer AFV, and for the installation of AFV fueling infrastructure. Maximum repayment six-years. As of 2015, the state loan program is now managed by the Oklahoma Department of Commerce's State Energy Office. No update for 2017.	Ongoing	2010 -
	CNG Fleet Conversion	Oklahoma Department of Transportation	As of 2016, ODOT had replaced 675 of its approximately 1190 light duty vehicle fleet with CNG vehicles. The agency reported that it was working toward its goal of 90 percent CNG by the end of 2016. The projected savings realized could be as much as \$20,000 over the useful life of each vehicle. 2017 Update: OTA currently has 160 passenger vehicles with 89% of them being CNG. No update available for ODOT.	Ongoing	2016 -
	Alternative Fuels Incentive	Oklahoma Natural Gas Company	ONG is currently offering rebates of \$2,000 for the purchase of a dedicated or bi-fueled vehicle and \$3,000 for the purchase of a residential home-fueling system. The program is expected to continue, with no set cut-off or termination date. In 2014, ONG processed 248 total NGV rebates, which included 158 bi-fuel NGV rebates, 70 dedicated NGV rebates, and 20 home refueling rebates. No update is available for 2017.	Ongoing	2012 -
	CNG Fleet Conversion	Metropolitan Tulsa Transit Authority (MTTA)	MTTA maintains a fleet of approximately 100 vehicles. These include full size fixed route passenger and smaller lift program buses. In 2011, MTTA made the commitment to move toward a 100% CNG fleet and began a concentrated effort to locate and secure funding to do so. In 2012, they completed a \$1.7 million dollar CNG filling station on the property. Within the next several years, funding is being sought to complete the fixed route transition to 100% CNG. 2016 Update: MTTA currently owns and operates 26 full-size CNG Transit buses, 44 CNG Para-Transit buses, and one hybrid electric bus. 2017 Update: MTTA's current CNG vehicle count remains at 2016 levels, however, eleven full sized CNG transit buses have been ordered for the Peoria Avenue Bus Rapid Transit Project (BRT). Addressed below in the table and in Appendix D, the Peoria Avenue BRT project timeline has moved up by 2 years and is now planned to be operational in the spring of 2019.	Ongoing	2011 -
	CNG Fleet Conversion	City of Owasso	In 2010, the City of Owasso chose to incorporate CNG vehicles into their city fleet. By 2011, they had opened their first public-private CNG station in their downtown area and are now well on the way to converting the fleet. The City of Owasso remains committed to CNG and purchased their first fully dedicated CNG Refuse Truck in 2013. In 2014, the City's Public Works Department added three dedicated CNG Ford Pickup Trucks to their fleet (one F250 and two F350s). 2016 Update: The City of Owasso now has one heavy-duty CNG truck and 13 light-duty vehicles, and continues to maintain their downtown Owasso public CNG fueling station. No update for 2017.	Ongoing	2010 -
	CNG Fleet Conversion	Tulsa Public Schools	Currently, 140 of the 300 full-size school bus fleet are operating on 100% CNG fuel. 8 new 2013 BlueBird CNG buses have been ordered and the district continues to seek funding to upgrade their four compressor filling stations. Tulsa Public Schools (TPS) plans to convert 100% of their bus and car fleet to CNG by 2020. In 2014, TPS fully upgraded a compressor station at the fleet's McBirney bus lot, operates nearly 150 CNG school buses and implemented a fleet idle Reduction Program. No update for 2017.	Ongoing	1988 -

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Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and - /or Completion Date
	Tulsa Area Clean Cities Vehicle and Infrastructure Grant Program	Tulsa Clean Cities/ INCOG	<p>The Public Fleet Conversion Program, funded by the Congestion Mitigation and Air Quality (CMAQ) Program, provides grants for converting fleets to alternative fuel vehicles, the purchase of original equipment manufactured (OEM) alternative fuel vehicles, and development of the alternative fuel vehicle infrastructure within the Tulsa area. TACC anticipates this grant program will award a total of approximately \$875,000 in project funding for Clean Vehicle and Infrastructure Projects in the Tulsa area. In 2014, AFV and Infrastructure grants totaling \$271,621 were awarded to Tulsa area municipalities including City of Sand Springs, City of Sapulpa, City of Tulsa, Peilvan Transit, Town of Mannford, and Tulsa County. Projects include: 9 Alternative Fuel Vehicle purchases (CNG Bi Fuel vehicles for Incident Command, Utility and Code Enforcement, Utility Collections, Engineering and motor pool vehicles, Sheriff's Office, and Para-transit); 5 CNG conversion kits; and Town of Mannford CNG fueling infrastructure equipment. 2015 Update: The 9 projects awarded last year are now completed (with the exception of Mannford's CNG station, currently 90% completed). 2016 Update: A new round of Clean Vehicle and Infrastructure Project funding totaling \$239,162.00 was issued for the following projects: City of Broken Arrow - Idle Reduction equipment on 1 ambulance (Stealth Power Smart Mobile Systems, \$32K); City of Owasso - Purchase of 3 new CNG/Bi-Fuel fleet vehicles (\$55,114); City of Sapulpa - Purchase of 2 new CNG/BiFuel 3/4 ton trucks (\$52,048); City of Tulsa - Purchase and installation of Level 2 public access EV Charging stations around the Tulsa metro (\$50K); Tulsa City County Central Downtown Library - Purchase and installation of Level 2 EV chargers in downtown library garage (\$50K). 2017 Update: With some exceptions, the 2016 CMAQ funded projects generally remain in progress and will be reported on in a future update. The Downtown Central Library's Level 2 EV chargers have been installed, are operational and are regularly used by patrons. Because the EV chargers were completed significantly (and surprisingly) under budget, the Library intends to purchase its own electric vehicle with the excess funding.</p>	Ongoing	1997 -
	Electric Vehicles and Charging Infrastructure Strategic BuildOut	INCOG/ Tulsa Area Clean Cities/ Public Service Company of Oklahoma	Strategic Planning for Accelerated Deployment of Electric Vehicles and Charging Infrastructure in the Tulsa Area. Please see Appendix C for additional information.	Ongoing	2016 -
	CNG Fleet Addition	Department of Environmental Quality	DEQ will be replacing up to 12 gasoline fueled vehicles with CNG fueled vehicles on a rolling basis. These will be distributed around the state. 2017 update: The Tulsa office has 6 vehicles, 2 of which are CNG trucks.	Ongoing	2013 -
	Public-fill CNG Station	Sparq Natural Gas, Timmons Oil Company, Dericks Company, Dericks Leasing & Financial Company, and J-W Power	<p>In November 2017, Sparq Natural Gas, Timmons Oil Company, Dericks Leasing & Financial Company, and J-W Power officially broke ground on Oklahoma's 121st and fastest public-fill CNG station. With a target to open by the end of 2017, the station will feature the installation of J-W Power's PowerFill technology – a patented compressor designed with heavy-duty trucks in mind – to speed up the fueling process.</p>	New	2017

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Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and -/or Completion Date
Transportation System Strategies and Projects	Peoria Ave. Bus Rapid Transit	City of Tulsa/MTTA/ INCOG	<p>The MTTA's board of trustees voted February 26, 2013 to recommend implementation of a plan to replace regular bus service along a 15-mile stretch of Peoria Avenue with rapid transit bus service. The rapid transit system would replace Tulsa Transit's 105 Route, which accounts for 15% of the organization's passenger trips. The \$18.8 million price tag would cover the cost of seven dedicated CNG buses equipped with GPS technology to change traffic signals when the buses are behind schedule. Funding for the project was approved by Tulsa voters in November 2013. 2017 Update: This high-profile project continues to gain momentum with a newly branded logo, "AERO," and an expanded route developed by an enhanced public input process. Station designs will be unique to the AERO route and include bicycle racks and covered shelters. The AERO Bus Rapid Transit's new CNG buses have been ordered and the grand-opening launch date is now August 2019. Visuals of the enhanced route, shelters, and AERO logo are provided in Appendix D of this update.</p>	Ongoing	2021-2019
	Tulsa Bike Share System	INCOG/Tulsa Tough/Tulsa Bike Share	<p>Tulsa's New Bike Share System is underway. Tulsa Bike Share, www.TulsaBikeShare.com, is a new 501c3 missioned to transform Tulsa by providing a high quality, convenient, and affordable bicycle transit system connecting people to more places where they live, work, and play in the region. An Executive Director was hired and the new system with roughly 120 bikes and 12 stations in the Tulsa Downtown area was launched in Spring of 2017. 2017 Update: BikeShare and cycling is exploding in the Tulsa region. Since the Tulsa Regional Comprehensive GO Plan was finalized in 2015, both progress and changes have occurred. Details are provided in Appendix E of this update.</p>	Ongoing	2016 -
	OKC - Tulsa Commuter Rail Program Initiative	ODOT	<p>The Tulsa-Oklahoma City Corridor Investment Plan will identify and evaluate a full range of alternatives (FRA) to meet the region's long-term transportation needs. The study will provide sufficient information to support an FRA decision to fund and implement a major investment, or investment in a series of projects, in a passenger rail corridor. 2016 Update: This is a long-term project and other than the website http://www.tulsaokcraillcorridor.com/, no additional information is currently available. No update for 2017.</p>	Ongoing	2013-
	Transportation Management System Considerations	INCOG	<p>Over the next five years, the Tulsa Transportation Management Area will research, analyze, select, and implement a variety of Transportation System Management (TSM) projects. These may include expressway on-ramp congestion traffic flow system projects, intersection improvement projects, signal improvements, signal coordination efforts, Intelligent Transportation System (ITS) enhancements, and more. TSM improves traffic flow, reduces congestion and thereby reduces emissions. As these projects take place, they will be described in our annual Ozone Advance documentation. 2015 Update: Projects ongoing include additional video detection and signal prioritization corridors, and several additions to the overhead ITS Dynamic Message Boards. 2016 Update: Numerous specific intersection spot improvement projects were implemented over the past year. Additionally, real-time traffic flow detection has been added to Tulsa's dynamic overhead message boards - including alerts for traffic incidents and real-time destination travel times. Additional information about the Tulsa Metro Traffic Information System is found on the website: www.OKTraffic.org. 2017 Update: TSM projects continue to be implemented throughout the Tulsa Transportation Management Area.</p>	Ongoing	2013 - 2018
Major Tulsa Area Facility Industrial Retrofits	Reduced Coal Generation NOx Reduction	Grand River Dam Authority	<p>GRDA Chouteau Power Plant - Reduced Coal Generation will result in reduction of NOx emissions by replacement of coal fired generating Unit 1 with natural gas combined cycle unit; and additional wind generation. 2015 Update: The project is underway. Detailed engineering is completed, materials and equipment are being procured, and contractors are being selected. 2016 Update: This project is progressing according to schedule, and should be complete by the end of the 3rd quarter of 2017. No update for 2017.</p>	Ongoing	2017

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Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and /or Completion Date
Energy Efficiency Strategies and Programs	City of Tulsa Energy Efficiency Conservation Block Grant (EECBG)	City of Tulsa	The Energy Efficiency Conservation Block Grant (EECBG) program was administered by the U.S. Dept. of Energy. The City of Tulsa received over \$3.8 million in EECBG funding for programs that increased energy efficiency, reduced dependence on foreign energy, and created or retained jobs. Projects included long term energy & sustainability plan development, OSU medical center retrofit project, Brady Village geothermal project, building LED lighting upgrades, and energy efficient LED traffic and pedestrian lighting.	Complete	2013
	Building Efficiency Improvements	Tulsa City-County Library	The Tulsa City-County Library system's Central Library underwent a renovation aimed at improving functionality, safety, and energy efficiency. The new building was expected to reduce energy consumption by 40%, enough energy to power 56 Oklahoma homes, and reduce water consumption by 91,000 gallons. The final building was expected to meet LEED Silver certification. The completely renovated Downtown Tulsa Central Library held its grand opening October 1, 2016. Building LEED Silver Certification is in progress.	Complete	2010-2016
	Energy Efficiency and Conservation Block Grants	Tulsa County	Tulsa County, with the assistance of INCOG, created an integrated energy strategy to provide actions that would reduce annual energy consumption by 15-25%. This energy strategy utilized funds from a Department of Energy Block grant.	Complete	2010 - 2013
CNG/Alternative Fueled Vehicle & Infrastructure Projects	CNG Fleet Conversion	Tulsa Authority for the Recovery of Energy (TARE)	The Tulsa Authority for the Recovery of Energy (TARE) is the agency responsible for establishing and contracting the City of Tulsa's residential refuse. The City of Tulsa, home to nearly 400,000 citizens, requires approximately 50 refuse trucks operating daily through city streets. In 2012, TARE established and awarded a 10-year refuse hauler contract which required 50% of the vehicles to be fueled by CNG upon startup and 100% of Tulsa's trash trucks to be CNG fueled by the summer of 2013.	Complete	2012-2013
	Tulsa Area Clean Cities i-40 Grant Projects	Tulsa Clean Cities/ INCOG	In conjunction with partners at Arkansas Clean Cities, Tulsa Area Clean Cities (TACC) was awarded a grant by the United States Department of Energy titled the I-40 Collaboration. Projects undertaken by the I-40 grant helped to displace the use of fuels, like diesel and petroleum, by addressing pervasive problems in the Oklahoma alternative fuels market. Specifically, the projects funded by this grant helped reduce ozone levels in Tulsa by advancing the use of cleaner alternative fuels, facilitating the construction of alternative fuel stations, and promoting safety in the alternative fuel market. The educational video covering "CNG Myths" was completed and distributed throughout the DOE Clean Cities national network (https://youtu.be/GzvfQGcsr3A). A "Planning for Alternative Fuel Infrastructure" resource has been developed, distributed regionally, and is being used to assist local governments with issues relating to zoning code regulations and other development issues accommodating alternative fuel infrastructure. Additionally, the national AFV Safety Training curriculum for law enforcement and EMS responders has been completed and the course premiere, a train-the-trainer course, was presented in Tulsa in December 2015. The grant was completed December 2015.	Complete	2012 - 2015

2017 - Tulsa Area Ozone Advance Program Annual Update - COMPLETED PROJECTS

Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and - /or Completion Date
	Tulsa Region Bicycle/Pedestrian Master Plan	INCOG	INCOG prepared a Bicycle and Pedestrian Master Plan for the Tulsa Region. INCOG proposed the development of a transportation assessment process that would identify and evaluate short-, medium- and long-term transportation system needs to enhance bicycle and pedestrian mobility while considering automobile and bus transit operations. The plan area included the municipalities of Bixby, Broken Arrow, Catoosa, Claremore, Collinsville, Coweta, Glenpool, Jenks, Owasso, Sand Springs, Sapulpa, Skiatook, and Tulsa. The Bicycle and Pedestrian "GO Plan" master plan for the Tulsa Region was completed, released at a Public Forum on September 15th, and adopted by the eleven community governments. This exciting initiative was the region's first comprehensive bicycle and pedestrian master plan to equip and connect the region with the vision to make biking and walking convenient for our residents, communities, and visitors. The GO Plan is comprehensive and provides bicycle network recommendations, pedestrian design approaches, policy and funding recommendations, design guidance, and a clear path toward achieving the vision. The results and recommendations from the recently completed bike share feasibility study (below) have also been incorporated into the GO Plan. During 2016, numerous sections and components of the GO Plan (Tulsa Regional Bicycle and Pedestrian Master Plan) were initiated - some are described as stand-alone projects within this Ozone Advance annual update. Additionally, Collinsville, Broken Arrow and Owasso have each adopted their own community sections of the comprehensive regional GO Plan.	Complete	2015
	Bike share Feasibility Study	INCOG	INCOG committed to fund a feasibility study and business plan for a comprehensive downtown focused bike share system. Using Congestion Mitigation & Air Quality (CMAQ) funding, a consultant was retained to determine the long-term feasibility of a bike share program and implementation plan. Funding options and liability were focus areas of the plan. The Bikeshare Feasibility study was completed and a resulting business plan for a downtown Tulsa bikeshare program has been developed. Additionally, results and recommendations from the study have been incorporated into the Tulsa Regional Bicycle & Pedestrian Master Plan.	Complete	2014
Department of Environmental Quality Programs and Rulemakings	Open Burning Rule	Department of Environmental Quality	This rule reduces PM, VOC, and NOx emissions within the Tulsa and Oklahoma City Metropolitan Statistical Areas (MSAs) by requiring the use of an air curtain incinerator (ACI) in place of open burning. This will significantly reduce the amount of ozone precursors generated by the burning of wood waste, with an approximate 90% reduction in total air pollutants. Additionally, this rule prohibits open burning of waste in areas for which an ozone or PM alert is in effect. In 2014, DEQ performed outreach to the fire departments in the OKC and Tulsa Metropolitan areas to explain the rule. These fire departments are now assisting in enforcement of this rule, and as a result, many land clearing operations that would have just piled and burned in years past are either using an ACI, chipping, or having the waste removed from their property.	Complete	Eff. 7/1/2013
	Oil & Natural Gas Permit By Rule (O&NG PBR)	Department of Environmental Quality	DEQ has updated its permitting rules (OAR 252:100-7) to include an Oil and Natural Gas permit by rule (O&NG PBR). The main purpose of this rule was to streamline the permitting process for these numerous small sources and reduce associated permitting fees; however, this measure will also provide better emissions data about the oil and natural gas sector which could be used to develop future control strategies. The Department has registered 2,907 O&NG facilities under the PBR, of which 222 were conversions from the Area Source NESHAP and Small NSPS facilities General Permit (GP). 798 were conversions from the Oil and Gas GP, and 19 were conversions from individual permits. From those numbers, there are 1,868 facilities previously unpermitted that were permitted under the O&NG PBR.	Complete	Sep-13

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Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and - /or Completion Date
	Low NOx Burner Install	Oklahoma Gas and Electric	<p>OG&E Muskogee Power Plant – Low NOx burner installation. Low NOx burners were required to be installed on units 4 & 5 in January 2017 for compliance with the Regional Haze SIP. OG&E anticipated installation before then. As of the fall 2015, all Low NOx burner systems were installed on Units 4 and 5 at the Muskogee Power Plant. This equipment reduces average lb/MMBtu NOx rates by over 50%.</p>	Complete	2016
	Low NOx Burner Systems, and other Air Pollution Control Systems	American Electric Power (AEP) - Public Service Company of Oklahoma (PSO)	<p>AEP-PSO Northeastern Power Station - Low NOx Burner Systems, and other Air Pollution Control Systems. 2017 revisions - Unit retirement, and air pollution control projects:</p> <ul style="list-style-type: none"> • After the installation of the Low-NOx Concentric Firing System (LNCFS) in both the Unit 3 and the Unit 4 coal-fired boilers in 2012, the Unit 4 boiler was retired-in-place in April 2016, eliminating all air emissions from that unit. • Also, the completion of the Refined Tuning project for the LNCFS has resulted in the Unit 3 boiler meeting the NOx limit of 0.15 lb/MMBtu since June 2015 (the project completion date was originally scheduled for April 2016). • Additionally, the Activated Carbon Injection, Dry Sorbent Injection, and Fabric Filter (ACI/DSI/FF) systems have been in operation on Unit 3 since April 2016, lowering the air emissions of mercury, sulfur dioxide, acid gases, and particulate matter. • Furthermore, the Unit 2 natural gas-fired boiler has been meeting the NOx limit of 0.28 lb/MMBtu since the Low-NOx Burner/Overfire Air (LNB/OFA) installation in March 2014. 	Complete	2012-2016
Green Infrastructure and Sustainable Development	Tulsa Urban Forest Master Plan	Up with Trees	<p>A 2-year process beginning in early 2015, the project engaged public and private stakeholders within the greater Tulsa area to plan, build, and fund a comprehensive urban forest master plan that will identify the current needs of Tulsa's urban forest, outline potential challenges and opportunities, and ultimately define what Tulsa's urban forest will be in the decades to come. 2017 Update: Tulsa's Urban Forest Master Plan has officially completed and its resulting resources, strategies, and recommendations will help to assure a resilient, safe and connected urban forest for Tulsa's generations. The complete Master Plan is online at: https://www.upwithtrees.org/about-trees/master-plan/.</p>	Complete	2015-2017

2017 Tulsa Area Ozone Alert! Program



OzoneAlert.com

The 2017 Ozone Alert! Program Advertising Campaign

Tulsa Mayor GT Bynum 2017 Spokesperson for Regional Multi-Media Advertising Campaign

- New Television and Radio Ad Production with 00:15 and 00:30 second audio and video clips, filmed in Tulsa and surrounding communities including ozone-reducing action shots and Mayor Bynum promotional spots
- 2017 Facebook, Twitter, and Instagram Campaigns (initiated with National Clean Air Awareness Week campaign)
- Diverse targeted digital placements including banner ads and video pre-roll



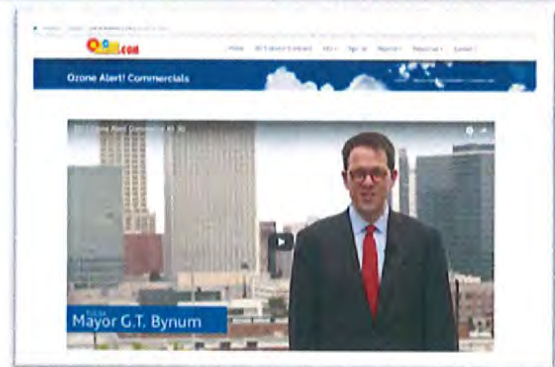
Let's All Join Tulsa Mayor G.T. Bynum to Help Clear Our Air!

On Ozone Alert! Days:

- Walk or Ride Bikes
- Take the Bus
- Share a Ride
- Put Off Mowing
- Refuel After Dark
- Keep Your Car Tuned
- Eat Lunch In

Learn More at **ZONE ALERT.com**

To receive text alerts, text the word "ozone" to #41411



Ozone Alert! Commercials

Mayor G.T. Bynum

Program Statistics

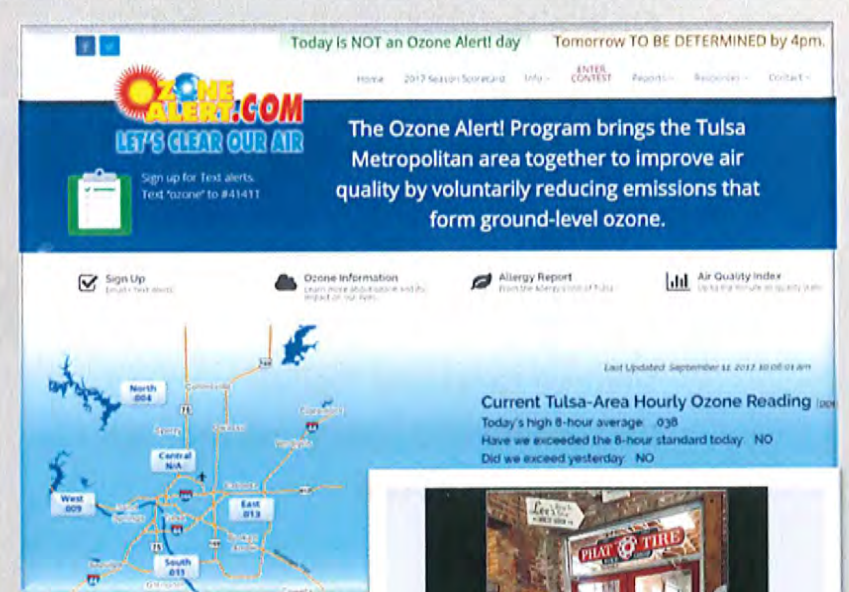
Ozone Alert! Days	
YEAR	Number of Days
2017	3
2016	4
2015	1
2014	1
2013	4
2012	21
2011	25
2010	5

YEAR	Number of Days Ozone Exceeded 70 ppb	Ozone Design Value ppb 3-year average
2017	1	64
2016	2	65
2015	2	68
2014	2	74
2013	10	80
2012	45	80
2011	42	77
2010	8	75

Complete OZONEALERT.COM Website Redesign

Website promotion (including signup for E-Alert and Text Ozone Alert day notification) throughout season including four online contests. Weekly winners' gifts included a bicycle and local gift cards. Program ads sent to multiple media venues including direct email & social media purchases.

- ✓ 665 Text Alert Subscribers
- ✓ 5,828 Email Alert Subscribers



The 2017 Season Kick-Off Event

April 26, 2017

ONEOK Field, Tulsa, OK

3:20 pm KICK-OFF PROGRAM

Welcome Comments

Karen Keith, Tulsa County Commissioner
INCOG Air Quality Stakeholders Group Co-Chairman

The Ozone Alert! Program, Clearly Making A Difference

Bruce Heine, Magellan Midstream Partners LP
INCOG Air Quality Stakeholders Group Co-Chairman

Keynote

Meteorologist Dick Faurot
KOTV Newson6

The Ballpark Song

3:40 pm Hors d'oeuvres Buffet Open After Program

4:05 pm Tulsa Drillers vs. Arkansas Travelers



Did you know that air quality affects you,
and you affect air quality in the entire Tulsa region?
That's a lot of air! So do your part to
"Clear Our Air" all summer long!

Sign up to get e-mail Alert! notifications on Ozone Alert! Days

Sign up at www.OzoneAlert.com

Get Ozone Alerts! Text Alerts

To receive a text message on your phone
text "ozone" to #41411.

"Like" our Facebook Page and Follow Us on Twitter

Be sure to share our posts with your friends and family
on your Facebook page.

Continuing Efficiencies at the Tulsa International Airport



Tulsa International Airport



Tulsa International Airport

Tulsa International Airport is located approximately five miles northeast of downtown Tulsa. The terminal building, built in 1961, has more than 55 scheduled departures and thousands of passengers traveling through it daily.

Tulsa Airport Improvement Trust (TAIT) TAIT was organized in 1967 as a public trust with the City of Tulsa as its sole beneficiary. TAIT's purpose is to operate, maintain, construct, improve, and/or lease airport facilities serving the City, including Tulsa International Airport (TUL).



TUL served over 2.8 million passengers in 2017. Five airlines provide nonstop service to 19 airports. The airport receives no city or state sales tax dollars.

Energy Efficiency In 2012, with the planning for major building renovations, the TAIT developed and began implementation of an Energy Conservation and Efficiency Plan. The renovations provided opportunities for efficiencies and for clearing the air, which is why Tulsa International Airport has become a clean energy and environmentally resourceful model for the entire region.

Tulsa International Airport Completed \$30 Million Parking Garage Expansion and Renovation Project



State of the Air – Clean Parking facility renovations

The garage expansion and renovation project includes:

- Updates to an existing parking structure located directly in front of the terminal
- A new 180,000-square-foot third level parking deck
- Four new vehicle ramps
- Three pedestrian towers with elevators and stairwells
- Three tensile fabric pedestrian crosswalk canopies
- Remodel of two pedestrian tunnels leading to the terminal
- New traffic signs throughout the airport
- New LED lighting now replaces the former fluorescent lighting system throughout nearly all the renovated parking facilities
- Cell Phone waiting parking lot's 4 high pressure sodium lights replaced with LED efficiency lighting



More 2017 Tulsa Airport Notable Efficiencies

Solar Film – Simple Solutions to Energy Efficiency

Just beyond the airport's security gate check point is a huge 26' tall and 141' long east-facing window glass wall. But it's not *just* glass. TIA installed an architectural solar film, Solar Bronze 20, to reduce heat gain and glare, and to lower energy costs. The film placed on this 305 square yard section of glass has a 72% total heat energy rejection in addition to other benefits like a 99% ultraviolet rejection, less glare, and an enhanced view.



Electric Vehicle Charging

Tulsa International Airport Parking now has two electric vehicle charging units installed and operational, allowing four simultaneous vehicle charging slots.



Boiler replacement at Control Tower

In 2017, TIA replaced 3 late model boilers with gas high-efficiency units, anticipating 25% or more improvement in efficiency.

Efficiencies at hand can be significant

A flat plate heat exchanger, still on hand but not having been used for years, was uncovered and tried out to see if it was still operational. Not only did it still work well, but used 51 days over the winter 2016-2017, it resulted in \$33,000 in savings.



TULSA AREA ELECTRIC VEHICLE CHARGING AND INFRASTRUCTURE STRATEGIC BUILD OUT

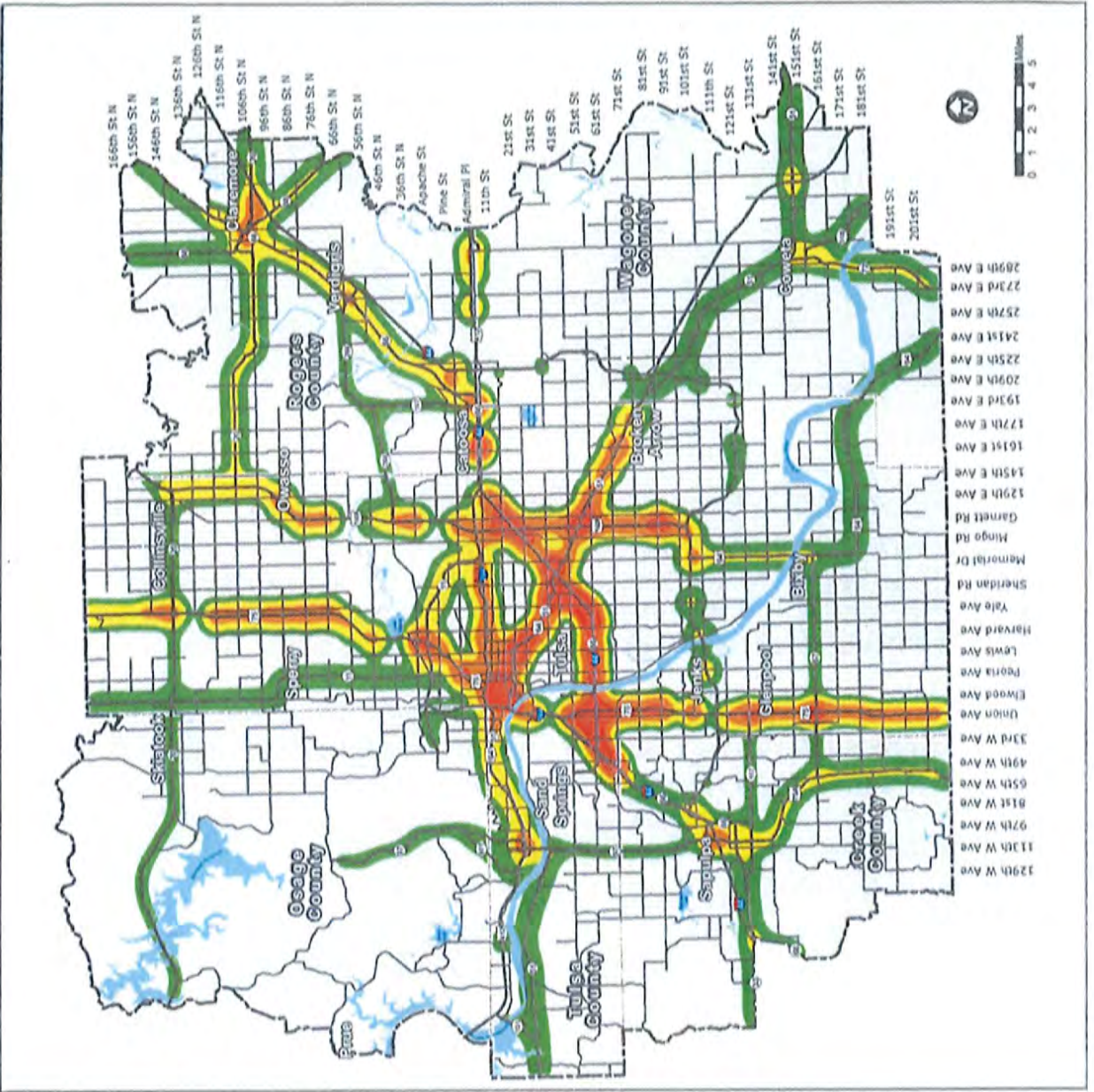


In 2016 INCOG and ACOG, with support from ODOT, submitted a request to USDOT for all Interstates in Oklahoma to receive designation as "Alternative Fuel Corridors." This request was accepted, and in November 2017 INCOG, with support from ODOT, submitted a request for US Highways 75, 69, and 412 to receive the same designation.

Over the past year, extensive planning has been done to identify potential locations of DC fast charging stations both throughout the state of Oklahoma and within the Tulsa metropolitan area. A map of possible locations for eastern Oklahoma is provided below, and a suitable siting map of the Tulsa area is on the following page.

Potential Future EV Charging Stations
US Hwy 75 Corridor





Locations Most Suitable for Siting Electric Vehicle Charging Stations

EV Charging Station Attractiveness*

More Attractive (Red/Orange)

Less Attractive (Green)

* Attractiveness based on:
 • Highway Accessibility
 • Through Traffic

Other Map Elements

- Highways
- Arterial Streets
- County Boundaries
- TMA Boundary
- Waterbodies

Location Map

INCOG



City of Tulsa Urban Mobility Innovation Team

An outcome of Tulsa's accelerated preparation for electric vehicles, charging and infrastructure has been the development of the City of Tulsa's Urban Mobility Innovation Team. INCOG/Tulsa Clean Cities is on this newly developed Team to provide technical and strategic transportation planning expertise as Tulsa embraces emerging transportation technology.



Purpose: Develop a policy and technical action plan to lower barriers for emerging transportation technology adoption in Tulsa.

Outcomes:

1. Tulsa will be among leading cities around the world embracing innovation in transportation technology.
2. Create a team of informed business and government leaders to advise on policy and technical issues.
3. Develop key components of Tulsa's Strategic Mobility Plan.

Process:

1. Create a policy team to focus on reducing the hurdles to implementing autonomous vehicles in Tulsa.
2. Create a technical team to identify the infrastructure needs for autonomous vehicles.
3. Conduct a series of meetings to better understand the issues related to autonomous vehicles and develop an action plan for implementation.



National Drive Electric Week comes to Tulsa

Tulsa Clean Cities and the TulsaEV Coalition hosted the first National Drive Electric Week event in Tulsa September 13, 2017. One of 277 events of its kind around the country, EVs were on display with opportunities for test drives. Vehicles included an i3, Bolt, and Prius Prime for the test drive opportunity; and a Volt, Leaf, and several Teslas were on display as well.

National Drive Electric Week is an annual outreach event to heighten awareness of today's widespread availability of plug-in vehicles and highlight the benefits of all-electric and plug-in hybrid-electric cars, trucks, motorcycles, and more. It was such a success, Tulsa is already planning for the September 8 – 16, 2018, National Drive Electric Week.

Cherokee Nation celebrates first tribal solar canopy car charging station in Oklahoma



The Cherokee Nation held a ribbon-cutting ceremony at the tribe's headquarters in Tahlequah on November 28, 2017, celebrating the first tribal solar canopy car charging station to be built by a tribe in Oklahoma.

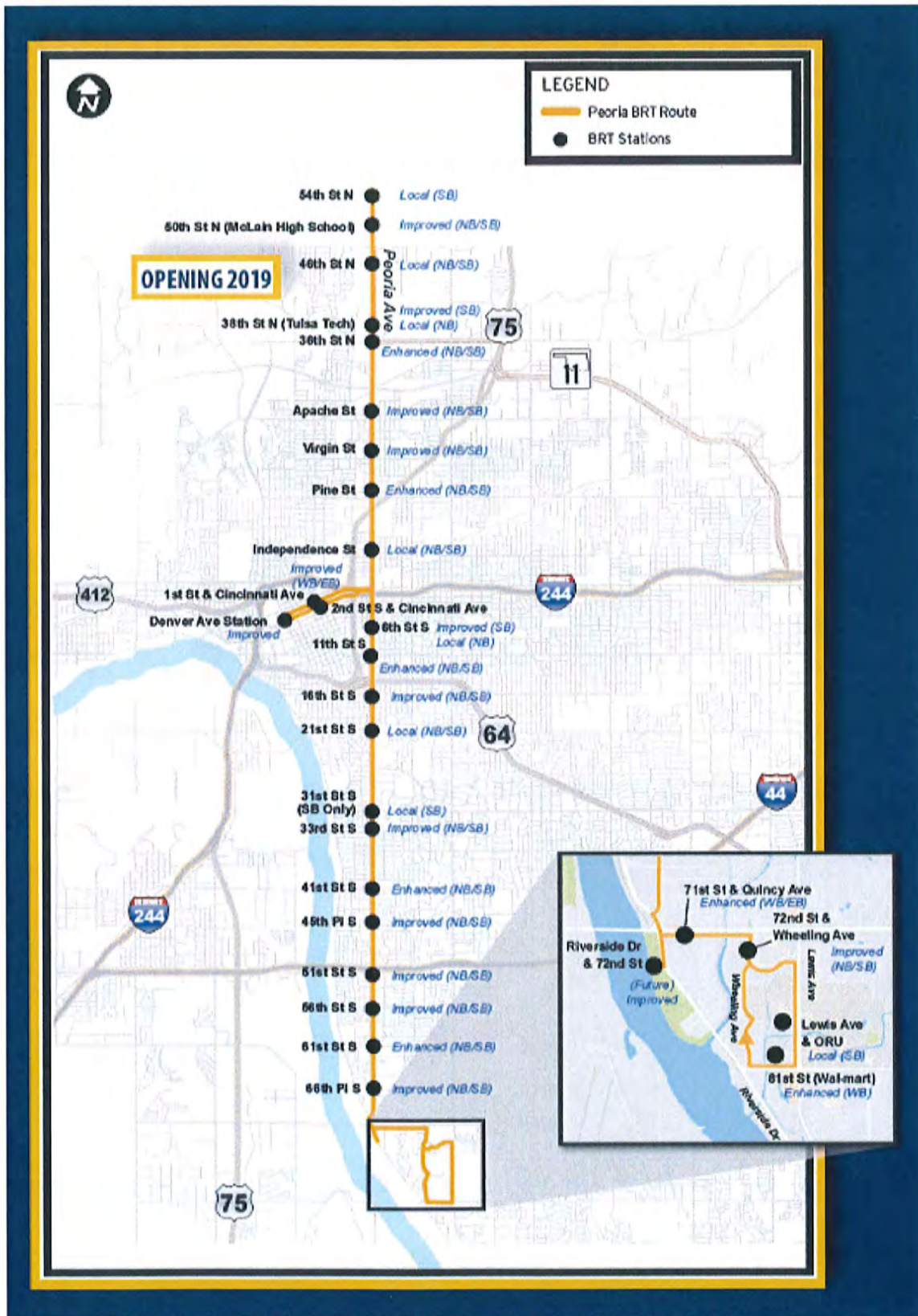
Cherokee Nation's new charging station is capable of charging up to eight electric vehicles and also provides about 58,000 kilowatt hours (kWh) of electricity to the tribal complex each year, equivalent to the amount of electricity needed to power three or more homes.

"Embracing solar panels and adding electric vehicles to our fleet is consistent with Cherokee Nation's leadership in clean-energy usage and carbon-footprint reduction," Cherokee Nation Principal Chief Bill John Baker said. "Cherokee Nation is the first tribal government in Oklahoma to build and utilize a solar canopy like this. We have always been good stewards of the land, and this is another example of exceptional natural resource conservation, a legacy established by our ancestors. Additionally, the structure's design enhances the beautification efforts we have made at the tribal complex."



AERO Peoria Bus Rapid Transit





APPENDIX E

TULSA METROPOLITAN AREA BIKE SHARE AND TRAIL SYSTEM

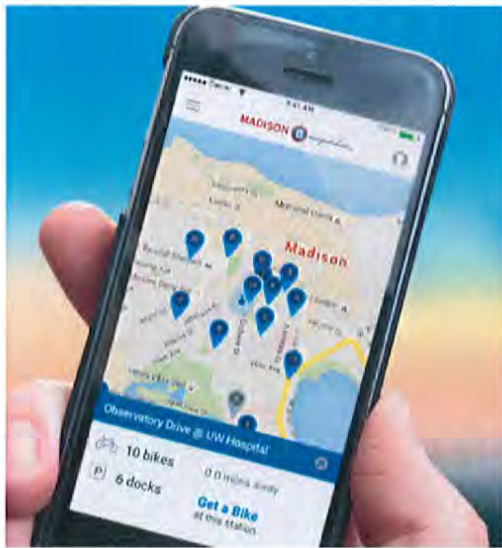
Bike Share In Tulsa

Tulsa has had an operating Bike Share System, Tulsa Townies, since 2007. Although the system has had great ridership numbers, Tulsa has plans to launch an initial 18 stations and more than 200 bikes on routes where bicycle infrastructure is planned to be added to roadways and connecting the region through the trail system.



As the Tulsa Regional Bicycle & Pedestrian Master Plan – The Go Plan – continues to be implemented, building a connected network of bicycle and walking facilities will connect major destinations in the region (including employment centers, downtown business districts, schools, and universities) and the existing trails system with multi-modal active transportation choices. Bike-share programs are networks of public use bicycles distributed around a city for use at low cost. Bicycles can be

picked up at any self-serve bike station and returned to any other bike station, which makes bike-shares ideal for Point A to Point B transportation. Although originally scheduled to launch in 2017, significant changes to the type of bikes the system will use has pushed the launch date to Fall 2018.




Still being designed specifically to augment public transportation, Tulsa's Bike Share team has decided to bring in the latest and best technically integrated system in the industry. The Bike Share system will use B-Cycle's fully integrated smart

system, and when fully implemented, use mobile app integrated software - allowing the system to upgrade and grow with ease. The B-Cycle system


Tulsa Bike Share - Phase I



Tulsa Regional Trail System

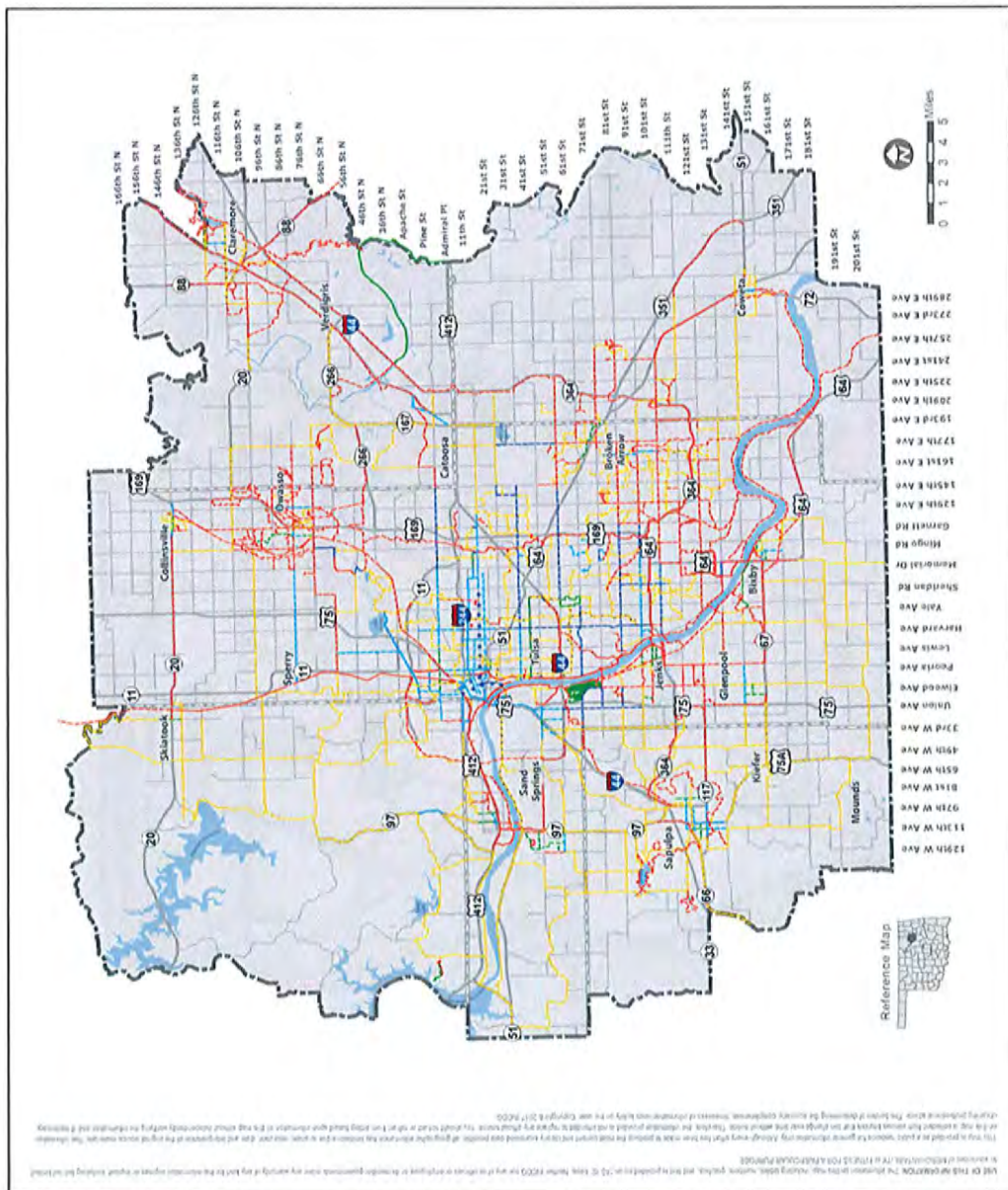


Existing and Planned Multi-Use Trails and Bikeways within the Transportation Management Area



Legend

- GO Plan Recommendations
- Bike Lane/Buffered Bike Lane
- Bike Corridor
- Cycle Track
- Priority Shared Lane/Shareway
- Signed Route
- Sidepath/Trail
- Existing Trail Type
- Bike Lane
- Bikeway
- Trail
- Unpaved Trail
- Highways
- Major Streets
- Bodies of Water
- County Boundaries
- TMA Boundary



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