SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

MARY FALLIN
Governor

February 28, 2017

Ozone Advance
Laura Bunte, Mail Code C304-01
U.S. EPA, OAQPS
109 TW Alexander Drive
Research Triangle Park, NC 27711

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 2016 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 2015 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 Tulsa MSA is currently designated as an attainment area, and based on the preliminary data, the 2016 design values for all ozone monitoring sites in the Tulsa MSA now meet the new 8-hour ozone standard that went into effect on October 1, 2015. In addition to the more moderate weather in the area over the last three ozone seasons as well as the fact that at the end of the 2016 ozone season (pending data QA/QC), Tulsa's ozone level is in compliance of the 70 ppb ozone standard, 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.

Sincerely,

Eddie Terrill
Division Director
Air Quality Division

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

Enclosures

Tulsa Area Ozone Advance Annual Update

2016

INCOG
Regional Partners - Regional Solutions

DEQ
OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Executive Summary

The Tulsa metropolitan area can boast of many things; a growing economy with cost of living well below the national average, cultural diversity, and even being home to one of the largest young professional associations in the country. And arguably leading the list of achievements is the determined and dramatic air quality improvement achieved.

With the Oklahoma Department of Environmental Quality in the Fall of 2013, the Tulsa region formally submitted its Path Forward to Environmental Protection Agency (EPA) thereby entering into the Ozone Advance Program. Ozone Advance 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 2016 annual Ozone Advance program update, summarizing air quality programs identified in our path forward as well as new and future initiatives.

CONTENTS

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. INCOG provides local and regional planning, information, coordination, communications, implementation and management services to member governments and their constituent organizations. Working through a voluntary assembly of area elected officials, INCOG seeks to build consensus in solutions to regional problems. The information INCOG provides assists both the public and private sectors in decision-making and in solving local and regional problems.

INCOG was designated by the governor of Oklahoma as the Metropolitan Planning Organization (MPO) for the Tulsa region in accordance with federal law. 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).

With the INCOG Air Quality Stakeholders Group, INCOG is also recognized as the planning agency for air quality issues in the region. Together, communities in the Tulsa region total approximately 800,000 in population.

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 doesn't 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, heat, and calm air, the oxygen atoms (O) break apart from their initial compounds and join as three oxygen atoms (O_3). 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

The Tulsa area regained its attainment status in 1990 just before the enactment of the revisions to the Clean Air Act. Prior to that, Tulsa County had been a non-attainment area for ozone. To achieve attainment status, Tulsa County enacted various SIP measures including Stage I Vapor Recovery and industrial coating treatment requirements.

Tulsa area monitors experienced two exceedances of the one-hour ozone standard in June 1991. 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-hr. average ozone concentration. The 8-hr. 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 revised proposed standard. Also in 1997, the INCOG-hosted **Tulsa Area Clean Cities Program** was designated by the Department of the Energy (DOE), 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 again followed. Finally, the current 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 (MSA). Within the MSA, the Tulsa Transportation Management Area (TTMA) is generally defined as the "Tulsa Air Shed". The Tulsa area ozone monitor locations, identified on the following map, are within the TTMA.

Tulsa Area 'Air Shed'

The Seven-County Tulsa Metropolitan Statistical Area (MSA)

Osage
Pawnee
Rogers
Tulsa
Wagoner
Creek
Okmulgee
Cimarron Tpke
Gilcrease
Creek Tpke
Muskogee Tpke

INCOG

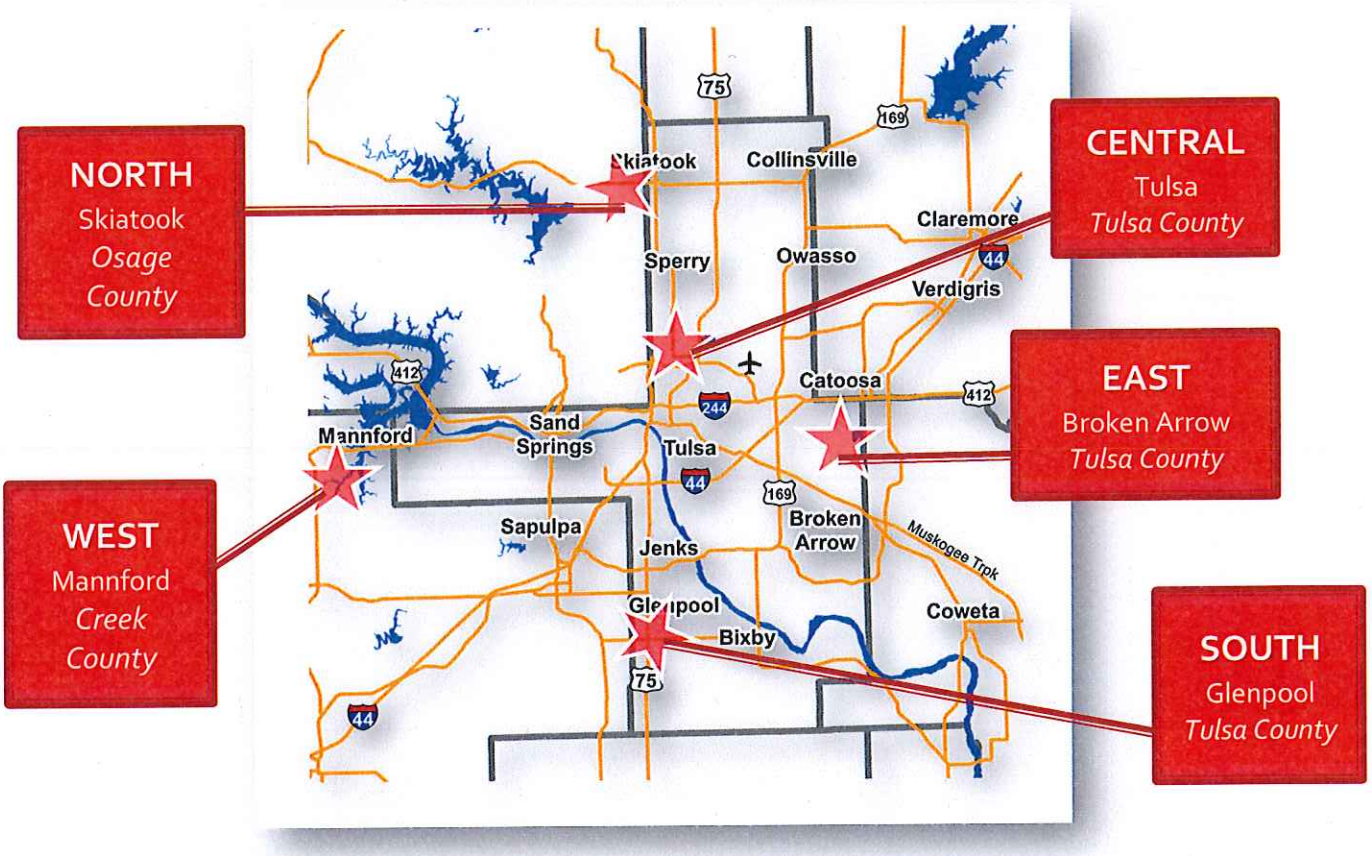
Date: 2/21/2017
Note: The Tulsa MSA consists of 7 Counties - Creek, Okmulgee, Osage, Pawnee, Rogers, Tulsa, and Wagoner. The MSA spans approximately 6,460 square miles and has a 2015 population estimate of 981,005

Legend

- Ozone Monitor Locations
- TMA Boundary
- County Boundary
- Highways
- Incorporated Places Boundaries

0 8 16 24 32 Miles

Tulsa Metropolitan Area Ozone Monitors



Tulsa Area Air Quality Stakeholders

Improving air quality in the Tulsa area began more than twenty-five years ago when the INCOG Air Quality Committee was first established. Since then, the stakeholder group has continued to grow and strengthen. The 2016 core stakeholders are identified below.

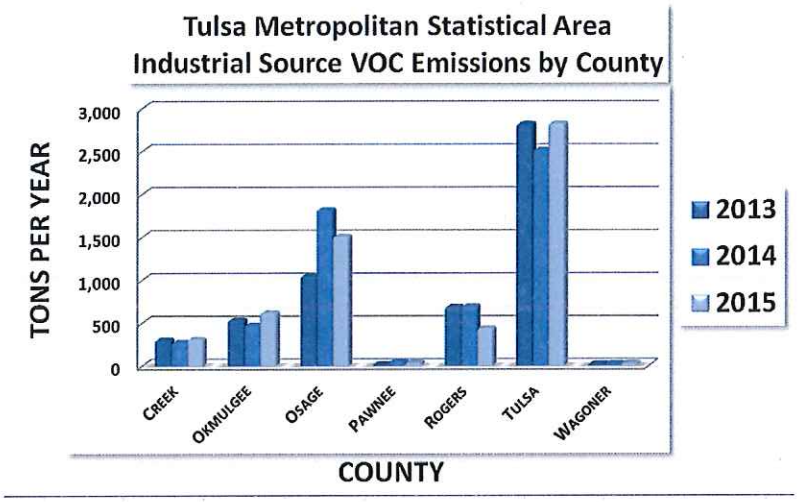
**CoChairman

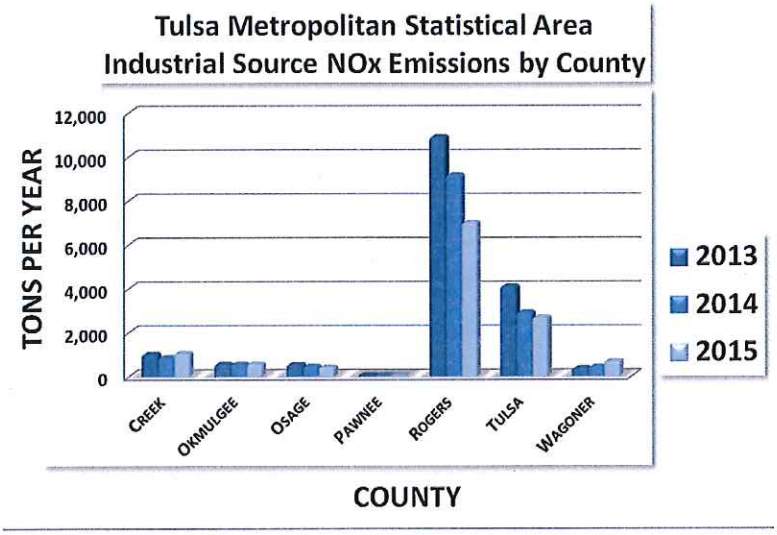
First	Last	Organization
Isaac	Akem	Federal Highway Administration
Liann	Alfaro	MTTA (Tulsa Transit)
Steve	Amburn	National Weather Service
Kyle	Arthur	Chesapeake Energy Corporation
Michelle	Barnett	ENERCON
Charles	Barney	GRDA
Dewey	Bartlett	Mayor, City of Tulsa
Mike	Bednar	GRDA
Ford	Benham	OG&E Utility Operations
Marla	Benyshek	Phillips66
Craig	Bernheimer	Miratech Corp.
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.
Gay	Campbell	St. Francis Hospital
Bill	Cartwright	MTTA (Tulsa Transit)
Laura	Chaney	ODOT
Montelle	Clark	ODEQ Air Quality Council
Randy	Cloud	MTTA (Tulsa Transit)
Clyde	Cole	Cox Media Group
Gary	Collins	Terra Nitrogen, LP - Verdigris
Jeff	Condray	Tulsa Airport Authority
J.T.	Davis	AEP-PSO
Nick	Doctor	Tulsa Regional Chamber
Ann	Domin	INCOG, Deputy Director
Austin	Embry	AAON
Jim	Evers	AEP-PSO
Brad	Gemeinhart	INCOG
Bill	Geubelle	Philips66
Nancy	Graham	INCOG
Michael	Graves	Hall Estill Law Firm
Casey	Graves	MTTA (Tulsa Transit)
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	Marshment	ODEQ
Caysie	Martin	ODEQ Regional Office at Tulsa
Brian	McQuown	OG&E
Bruce	Morgan	QuikTrip Corporation
Jeff	Mulder	Tulsa Airport Authority
Mike	Neal	Tulsa Regional Chamber
Matt	Newman	Covanta Energy
Thelma	Norman	American Airlines, Inc.
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.
Bill	Potter	University of Tulsa
Don	Pugh	American Airlines, Inc.
Viplava	Putta	INCOG
Coy	Pyle	ONEOK
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
Randle	White	ODOT
Charlie	Williams	Clean Air Action
Lee	Zirk	City of Broken Arrow

Ozone Forming Emissions

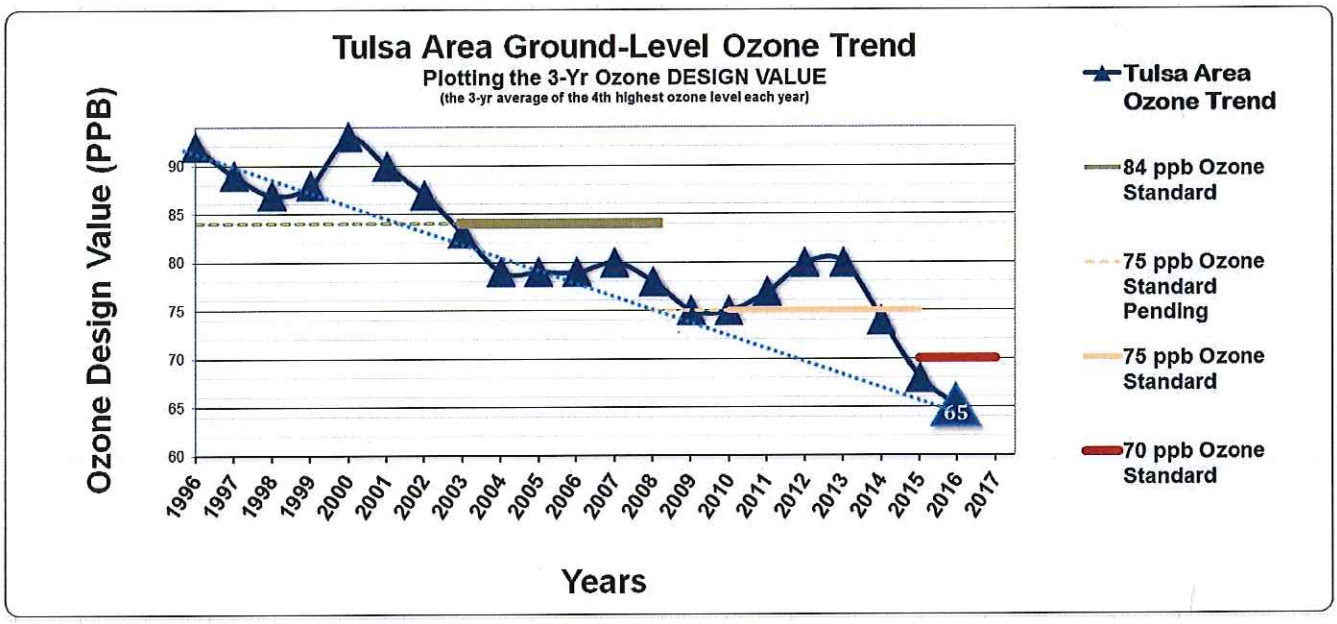
As identified earlier, ground-level ozone is not emitted directly into the air. Rather, precursor Nitrogen Oxide (NOx) and Volatile Organic Compound (VOC) emissions react in sunlight and heat. Ground-level ozone precursor emissions come from many sources including on and off-road mobile, local area businesses such as dry cleaners and paint shops, gas stations, and industrial point sources. The charts below provide a three-year comparison of VOC and NOx emissions by county from large industrial sources in the Tulsa MSA.





Current Ozone Status

As the chart and ozone scorecard indicates, at the end of the 2016 ozone season (pending data QA/QC), Tulsa's ozone design value is 65 ppb and in compliance of the 70 ppb ozone standard.



2016 Tulsa Area Ozone ScoreCard *

2 Exceedance Days: June 7, August 5

Through October 31, 2016

Monitor Site			2016 Highest 8-Hr Ozone Averages (ppm)* (1st through 4th highest daily readings)				DESIGN VALUE 3-Year Average of the 4th highest readings	
2013 4th High	2014 4th High	2015 4th High	1st Highest *date*	2nd Highest *date*	3rd Highest *date*	4th Highest *date*	*2013-2015 3-Yr Avg*	**2014-2016 3-Yr Average**
West (#144 Mannford)			.066 *4-Apr*	.065 *5-Apr*	.064 *2-Oct*	.064 *11-Oct*	*.065*	**.064**
.068	.066	.063						
East (#178 Lynn Lane)			.075 *5-Aug*	.066 *4-Oct*	.064 *7-Jun*	.063 *24-Apr*	*.065*	**.063**
.068	.063	.065						
Central (#1127 Tulsa)			.065 *20-Jun*	.063 *24-Apr*	.062 *18-Feb*	.062 *5-Apr*	*.068*	**.065**
.072	.065	.068						
North (#226 New Location in Skiatook)			.068 *20-Jun*	.067 *2-Oct*	.065 *19-Jun*	.064 *8-Jun*		
South (#174 Glenpool)			.091 *7-Jun*	.070 *6-Jun*	.066 *18-Feb*	.064 *28-Jun*	*.064*	**.062**
.069	.062	.061						

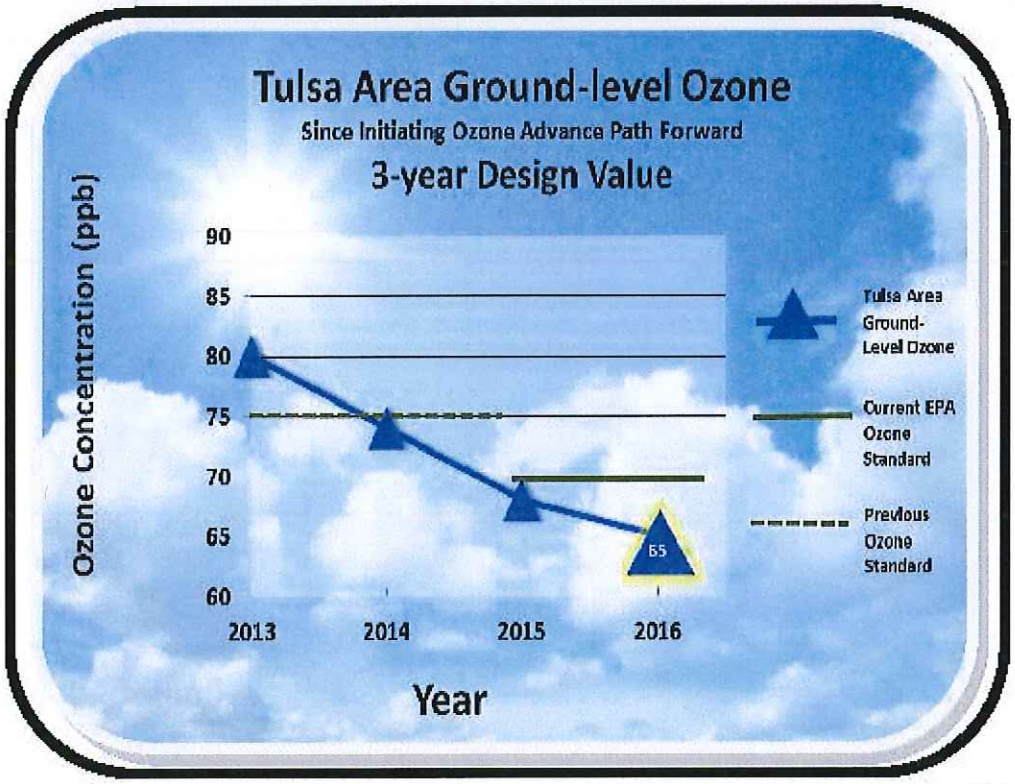
An Ozone Exceedance = .071 ppm or greater
Exceedance days are unhealthy air days and shown in red in the table above.

*Pending QA/QC Verification

The Ozone Standard

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 national 8-hour primary and secondary ambient air quality standard for ozone is 0.070 ppm. These standards are met when the average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to 0.070 ppm using the most recent 3 years of collected data at any one ozone monitoring site. 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.

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. Compliance with the standard occurs when an area's Design Value (3-year average of the 4th highest reading) is 70 ppb or lower.



AMAZING OZONE IMPROVEMENT. Tulsa area's ozone Design Value at 2016 season end is *65 ppb and meeting the standard. Compliance with the 2015 EPA national ozone standard occurs when the 3-year average (of 4th highs) at all monitors is not greater than 70 ppb.

*(pending data validation by Spring 2017)

Ozone Advance Emission Reduction Project Table

This section provides the strategic emission project table provided in the original Path Forward. As intended and necessary, the table identifies as those projects are implemented and completed. Additionally, the table identifies various new regional emission reduction projects. Because we have found the table format inadequate to fully demonstrate the magnitude of additional regional projects especially significant to our air quality improvement, additional information is provided in the Appendices following the table.

2016 - Tulsa Area Ozone Advance Program Annual Update

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	The Tulsa Transportation Resource Center (TRC) is a dynamic and newly launched program designed to connect people to available transportation options. The website, tulsatrc.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. 2016 Update: Tulsa TRC's website continues to spotlight transportation alternatives, projects and events in the region and an integrated transportation mapping utility is being tentatively planned for the website.	Ongoing	2013 -
	Tulsa Area Ozone Alert! Program	INCOG	The Ozone Alert! Program takes a voluntary episodic approach to ozone pollution reduction and healthy air quality. The Tulsa region's award-wining website, ozonealert.com, continues to provide hourly ozone data, AQI information, daily allergy reporting, and much more information. 2016 Update: The 26th Ozone Alert! Program season completed with 4 Ozone Alert! Days issued and just 2 Exceedance Days. The dynamic public relations campaign theme was *VOLUNTEER!* focusing on volunteer actions to help clear our air. With the rise and diversity of screen-media use, the 2016 campaign was especially strong in its digital outreach efforts - emphasizing a simple *VOLUNTEER!* ad banner that clicked through to a landing page design to simplify signing up for Text Alert! messages, Email Alert! notifications, Sharing 'I Volunteer for our Air!' on social media, and simple summer ozone reduction tips. Additional Tulsa Area 2016 Ozone Alert! Program successes and updates are provided in Appendix A of this annual update.	Ongoing	1991 -
	Tulsa Area Clean Cities Coalition (TACC)	Tulsa Area Clean Cities Coalition / INCOG	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. 2016 Update: The Tulsa Area Clean Cities coalition experienced significant growth and improvement in all areas last year. Their 2015 Annual Report (dated March 2016) captured local actions which includes a significant reduction equivalent to nearly five million gallons of gasoline (equaling 664,370 gallons more than the previous year) - 96% of the reduction is directly attributed to alternative fueled vehicles.	Ongoing	1997 -
	Public Outreach	Department of Environmental Quality	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.	Ongoing	2006 -

2016 - Tulsa Area Ozone Advance Program Annual Update

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. 2016 Update: Oklahoma continues to have more CNG stations per capita than any other state in the country, trailing only California in total number of stations. There are currently 99 public CNG stations in Oklahoma – 10 were added in the past year.	Ongoing	2010 - 2025
	Oklahoma First Energy Plan	State of Oklahoma	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's%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. 2016 Update: 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. The most recent annual summary (Sept. 2015 - Aug. 2016) reflects a 34.7% daily average cost savings over the previous year with 69.4% of those occurring from reductions in electricity usage.	Ongoing	2012-2020
	City of Tulsa Energy Efficiency Conservation Block Grant (EECBG)	City of Tulsa	The Energy Efficiency Conservation Block Grant (EECBG) program is administered by the U.S. Dept. of Energy. The City of Tulsa has received over $3.8 million in EECBG funding for programs that increase energy efficiency, reduce dependence on foreign energy and create or retain jobs. Projects include 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

2016 - Tulsa Area Ozone Advance Program Annual Update

Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and - /or Completion Date
	Building Efficiency Improvements	Tulsa City-County Library	The Tulsa City-County Library system's Central Library is undergoing a renovation aimed at improving functionality, safety and energy efficiency. The new building is 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 is expected to meet LEED Silver certification. 2016 Update: The completely renovated Downtown Tulsa Central Library held its grand opening October 1, 2016. Building LEED Silver Certification is in progress. Please refer to Appendix B for details about the Library's renovation achievements and energy efficiencies.	2010-	2010-2016
	Energy Efficiency and Conservation Block Grants	Tulsa County	Tulsa County, with the assistance of INCOG, has created an integrated energy strategy to provide actions that will reduce annual energy consumption by 15-25%. This energy strategy will utilize funds from a Department of Energy Block grant.	Complete	2010 - 2013
	Demand Response Energy Performance Reduction Program – Residential and Commercial	Public Service Company of Oklahoma	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 indicates 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.	Ongoing	2012 -
	Oklahoma Natural Gas (ONG) Energy Efficiency Program	Oklahoma Natural Gas (ONG)	ONG's energy efficiency programs provide incentives for residential and commercial customers encouraging new energy-efficient natural gas appliance choices, and even provides a homeowner rebate for having gas-heating systems checked and tuned-up. 2016 Update: ONG's 2015 Annual Report of Demand Side Management and Energy Efficiency Programs reported a combined annual energy savings of 351,459 Dth. ONG's Current EE Demand Portfolio continues through 2016. Their recently approved 2017 - 2019 EE Portfolio includes a budget increase of more than 3 million dollars. They project an annual energy savings of 314,708 Dth, with the following programs: Home Weatherization, High Performance Homes, Energy Savings Products, Behavioral Modification Program, High Performance Businesses, Business Demand Responses (Peak Performers), Conservation Voltage Reduction and Education.	Ongoing	2012 - 2016; 2017 - 2019
	OG&E Energy Efficiency Programs-Commercial	OGE Energy Corp.	Systemwide, OG&E currently projects energy efficiency and demand reductions of up to 549 MW and 1,130 MWh through 2024. 2016 Update: In 2015, OG&E targeted Commercial and Industrial Customers by offering the following energy efficiency programs: Commercial Lighting Rebates—rebates for lighting and lighting control improvements resulting in savings of 36,458,870 kWh and 6,524 kW; Commercial Energy Efficiency Program (CEEP)—rebates for efficiency improvements such as more efficient motors, HVAC systems and Chillers resulting in savings of 8,914,696 kWh and 4,414 kW; and Industrial Energy Efficiency Program (IEEP)—rebates for efficiency improvements for more efficient motors, HVAC systems and Chillers resulting in savings of 982,553 kWh and 237 kW. NOTE: All numbers are preliminary findings pending finalization of OGE's EM&V analysis.	Ongoing	2013 thru 2016

2016 - Tulsa Area Ozone Advance Program Annual Update

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.	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. **2016 Update:** OG&E offered the following energy efficiency programs targeting Residential Customers: Smart Hours-Summer time of use pricing servicing 115,000 total customers and deploying 113,000 programmable thermostats since inception. The estimated savings for the 2013-2015 period are 147 MW. In 2015, OGE installed 15,793 thermostats and enrolled 26,693 customers. HEEP—a free on-line energy audit, free HVAC tune-up, and duct seal and repair; resulting in savings of 11,268,226 kWh and 11,343 kW. Weatherization—free energy efficiency improvements for lower-income customers which includes ceiling insulation, general air infiltration improvements, CFL lighting installations and performance testing; resulting in savings of 11,900,957 kWh. Geothermal Rebates—rebates for the installation of geothermal HVAC systems; resulting in savings of 843,421 kWh. Positive Energy Home—certification for homes that are shown to be 50% more efficient than code; resulting in savings of 2,430,927 kWh. NOTE: All numbers are preliminary findings pending finalization of OGE's EM&V analysis.	Ongoing	2013 -
	State Energy Program American Recovery & Reinvestment Act Revolving Loan Funds	Tulsa Area Clean Cities Program / INCOG	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. At the time, all three county buildings contained outdated pneumatic control systems. The project entails replacing the inefficient controls with computerized direct digital control systems thereby dramatically improving the energy efficiency of the buildings. The project is expected to decrease Tulsa County's energy consumption by approximately 574,200 kWh, 191,400 ton hours of chilled water and 4,147 klb of steam per year. This project is approximately 90% completed. 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.	New	2013 -

2016 - Tulsa Area Ozone Advance Program Annual Update

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. Details on the Airport's Energy Efficient successes are located in Appendix C.	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.	New	2016 -
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.	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.	Ongoing	1990 -
	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.	Ongoing	2010 -
	CNG Fleet Conversion	Oklahoma Department of Transportation	In the past 3 years, ODOT has replaced 675 of its approximately 1190 light duty vehicle fleet with CNG vehicles. The agency is 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. OTA currently has 75 CNG fleet vehicles and 8 CNG pool vehicles. Plans are to add another 34 CNG fleet vehicles and 6 pool vehicles this fiscal year, which will bring the total percentage of CNG to 75%.	2012-2016	2016

2016 - Tulsa Area Ozone Advance Program Annual Update

Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and - /or Completion Date
	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 currently available for 2015 rebate totals.	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.	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.	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. A 2016 update is unavailable.	Ongoing	1988 -
	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

2016 - Tulsa Area Ozone Advance Program Annual Update

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	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, Pelivan 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).	Ongoing	1997 -
	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 will help 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 will help 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" is 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. A copy of this document is in the Supplemental Documentation section of this update. 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, will be presented in Tulsa in December 2015. The grant was completed 12/2015.	Complete	2012 - 2015
	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 Apendix D for additional information.	New	2016 -

2016 - Tulsa Area Ozone Advance Program Annual Update

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	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. 2016 Update: The City of Tulsa and the consultant team held a series of community workshops and walkshops over the past year to gain public input. This high-profile project is continuing to gain momentum. Also, a new project website has been established to engage key stakeholders and the public through the Peoria Avenue BRT project process: https://peoriabrt.wordpress.com/	Ongoing	2021
	Tulsa Region Bicycle/Pedestrian Master Plan	INCOG	INCOG is working to prepare a Bicycle and Pedestrian Master Plan for the Tulsa Region. INCOG proposes the development of a transportation assessment process that will 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 will include 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 is 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. 2016 Update: Over the past year, numerous sections and components of the GO Plan (Tulsa Regional Bicycle and Pedestrian Master Plan) have been 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 has 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 are 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
	Tulsa Bike Share System	INCOG/Tulsa Tough/Tulsa Bike Share	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 has been hired and the new system with roughly 120 bikes and 12 stations in the Tulsa Downtown area is expected to launch Spring of 2017. Additional information about Tulsa Bike Share is provided in Appendix E.	New	2016 -

2016 - Tulsa Area Ozone Advance Program Annual Update

Path Forward Action Plan Category	Emission Reduction Project	Administrative Entity	Description	Status	Implementation Schedule and - /or Completion Date
	OKC – Tulsa Commuter Rail Program Initiative	ODOT	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.tulsaokcrailcorridor.com/, no additional information is currently available.	Ongoing	2013-
	Transportation Management System Considerations	INCOG	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	Ongoing	2013 - 2018
	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. 2016 Update: The fleet currently includes 23 bi-fuel trucks and one dedicated CNG vehicle.	Ongoing	2013 -
Department of Environmental Quality Programs and Rulemakings	Open Burning Rule	Department of Environmental Quality	This rule will reduce 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 Gas permit by rule (O&NG PBR). The main purpose of this rule is 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 1868 facilities previously unpermitted that were permitted under the O&NG PBR.	Complete	Sep-13
Major Tulsa Area Facility Industrial Retrofits	Low NOx Burner Install	American Electric Power (AEP) - Public Service Company of Oklahoma (PSO)	AEP-PSO Northeastern Power Station - Low NOx burner installations. 2016 update: Unit retirement, and air pollution control projects: The coal-fired 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 Low-NOx Concentric Firing System (LNCFS) has resulted in the Unit 3 boiler meeting the NOx limit of 0.15 lb/MMBtu as of June 2015 (that completion date was originally scheduled for April 2016). Additionally, the Activated Carbon Injection, Dry Sorbent Injection, and Fabric Filter (ACI/DSI/FF) systems were installed on Unit 3 by April 2016, to lower 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.	Ongoing	2015-

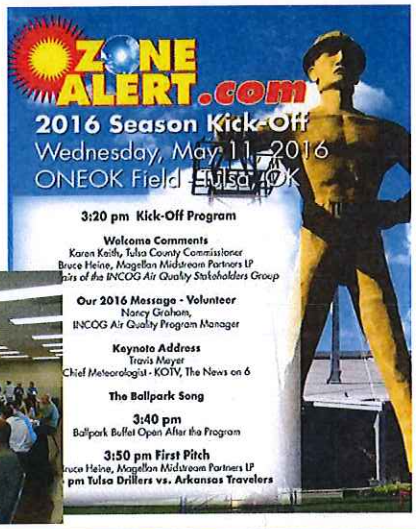
2016 - Tulsa Area Ozone Advance Program Annual Update

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	OG&E Muskogee Power Plant – Low NOx burner installation. Low NOx burners are required on units 4 & 5 to be installed for compliance with the Regional Haze SIP in Jan 2017. OG&E anticipates installation before then. 2016 Update: As of the fall 2015, all Low NOx burner systems have been installed on Units 4 and 5 at the Muskogee Power Plant. This equipment reduces average lb/mmBtu NOx rates by over 50%.	Complete	2016
	Low NOx Burner Install	Grand River Dam Authority	GRDA Chouteau Power Plant – Low NOx burner installation on two units.	Complete	2012 - 2013
	Reduced Coal Generation NOx Reduction	Grand River Dam Authority	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.	Ongoing	2017
Green Infrastructure and Sustainable Development	Tulsa Urban Forest Master Plan	Up with Trees	A 2-year process beginning in early 2015, the project will engage 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. 2016 Update: The second draft of the Urban Forest Master Plan is currently in final review with a hopeful Plan Roll-Out of December 2016. Ozone Advance areas enjoyed a webinar overview of the development of Tulsa Urban Forest Master Plan in October. Tulsa's own 'Up with Trees' Executive Director, Steve Grantham, provided a useful and informative Green Infrastructure and Air Quality presentation of insight and lessons learned throughout the development of Tulsa's Master Plan. The recorded Webinar and presentation materials can be viewed at: https://www.epa.gov/advance/green-infrastructure-and-air-quality-webinar	Ongoing	2015-2017

APPENDIX A

The 2016 Ozone Alert! Program
OzoneAlert.Com

The Season Kick-Off Event - May 11, 2016

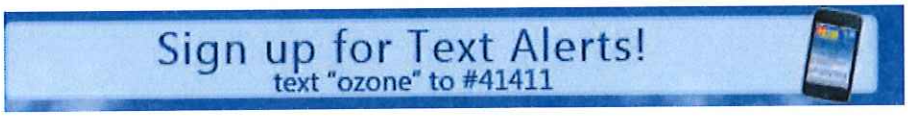


Several hundred local businesses, governments, citizens and the media turned out to Kick-Off the Ozone Alert! Program's 26th season

2016 Program Season VOLUNTEER! Campaign

There were 4 Ozone Alert! Days Issued in the 2016 Season: June 20th, June 28th, July 28th, and August 10th

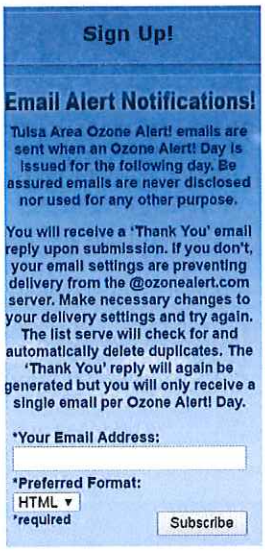
Text and Email Notifications – Growth in Subscriber Numbers



There were 2 Exceedance Days during the 2016 Season: June 7th and August 5th

480 Text Alert! Subscribers

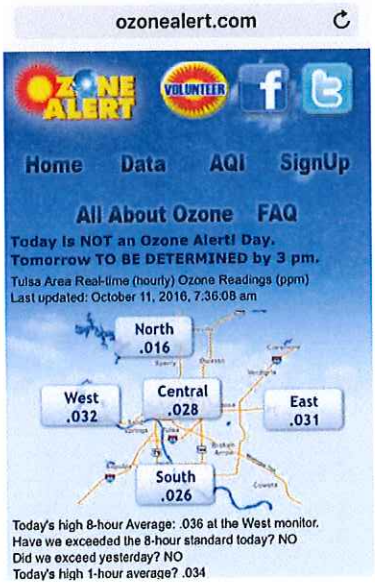
2,656 Email Alert! Subscribers

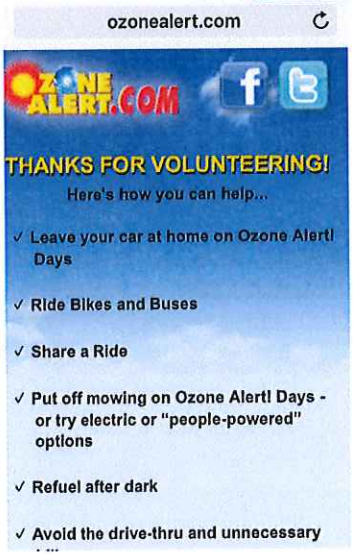


New 15 Second Ozone Alert! Program Commercial Spots:

- ✓ *VOLUNTEER For Our Air!*
- ✓ *Share for Our Air!*
- ✓ *OzoneAlert.Com*
- ✓ *Postpone Mowing*
- ✓ *Refuel at Night*
- ✓ *Carpool*
- ✓ *Ride a Bike or Walk on Ozone Alert! Days*
- ✓ *Take the Bus*
- ✓ *Use Alternative Fuels*

MOBILE





Facebook and Twitter

Traditional and Digital Advertising Placed throughout Ozone Season

2016 Ozone Alert! Paid Media - Contracts and Scheduling

		June			July				August					September
		16	20	27	4	11	18	25	1	8	15	22	29	5
TV														
Cox Media - Cable stations	7,000.00													
KOTV 6 (CBS)	8,000.00													
KTUL 8 (ABC)	4,000.00													
KJRH 2 (NBC)	5,000.00													
Fox23 (FOX)	6,500.00													
RSU-TV (Public TV)	1,000.00													
RADIO														
CoxMedia - KRMG	4,000.00													
CoxMedia - KRAV														
CoxMedia - KJSR														
CoxMedia - KWEN														
Total Traffic & Weather	2,250.00													
Iheart The Twister	1,250.00													
RSU-Radio	500.00													
National Public Radio	1,000.00													
PRINT														
The Tulsa Voice	1,105.00													
TulsaKids	742.25													
DIGITAL														
Targeted Digital	8,000.00													
OzoneAlert DAY Digital	7,500.00													
Facebook/Twitter Ad&PostBo	1,000.00													
	58,847.25													
Ad/Promo Items	*1152.75*													
	60,000.00													

APPENDIX **B**

Tulsa's Central Library – SMART ENERGY

Building Efficiency

"Quite literally, everything has been renovated - from top to bottom. What we have is an extremely energy efficient Downtown Library."

Michael Leitch, Capital Projects Manager, Tulsa City-County Library System

The Tulsa City-County Downtown Central Library has reopened its doors after three years, and the results of the $55 million renovations to the 50-year-old building are stunning.

Electrical Consumption

The former Library building consumed approximately 2,472,690 kWhs annually.

The newly renovated building is projected to use 1,454,660 kWhs. This is 41% less energy and equal to the yearly electrical usage of 56 Oklahoma homes.

The new main system uses Active Chilled Beam Technology.

State of the Art Lighting

- LED Lighting
- Lutron Lighting Controls
- Daylight Sensor Dimmable Light Harvesting
- Motion Sensors
- Book Ranges have lighting built in shelving racks for light efficiency

The Tulsa City-County Downtown Central Library has newly installed solar panels capable of producing 90 MW and white reflective roof covering material.

Gas Consumption

The former library building consumed approximately 32,553 therms annually.

The newly renovated building is projected to use 16,122 therms. This is 50% less and equal to the yearly gas usage of 80 Oklahoma homes.

More Efficiency

Theater Green Space

Rainwater Capture, storage & reuse for Green Space

Energy Recovery Ventilation to Green Space providing cool in summer & heat in winter

And cool stuff to brag about:

Flight Simulators

Recording Studio

And A Starbucks!

As a first-in-the-nation business model for public library revenue, this Starbucks public-private business partnership franchise is INSIDE the new Tulsa Central Library. It is 100% operated by the library, with library staff, and ALL profit goes back into the library system. How cool is that!

APPENDIX C

Energy Efficiencies at the 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. The airport also consumes large amounts of energy for its daily operations from lighting, heating and air conditioning, and ventilation systems to providing energy for passenger boarding bridges which also power the airplane while it's sitting at the gate.

Tulsa Airport Improvement Trust

Tulsa Airport Improvement Trust (TAIT) has been on the cutting edge of energy efficiency technologies since the late 1980s. Energy efficiency is in the DNA, so in 2012, with the planning for major building renovations, the TAIT naturally 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 Airport Improvement Trust's Clean Successes since 2012:

- Complete renovation of airport Concourses A and B which includes
  - New HVAC systems,
  - New open natural light ceilings,
  - New LED lighting with daylight harvesting photo-sensors;
- Replacement of fourteen passenger boarding bridges with new efficient electric bridges allowing aircraft to turn off engines while at gate, receiving power, and cooling and heating from the bridge. This enterprise also eliminated the need for 14 diesel auxiliary power units;

- Replacement of all Taxiway Edge Lights with new LED lighting;
- Initiated program to replace all building and office fluorescent lighting with high efficiency LED fixtures with motion automation sensors as renovations occur;
- Projected to replace aging escalators;
- Purchased 3 efficient Tier II compliant emergency generators in anticipation of a catastrophic power outage;
- All large Natural Gas boilers were rehabilitated to restore efficiencies;
- Replacement of two 12,500 ton 1980 vintage chillers with two new and efficient 675 ton units;

LED Taxiway Edge Lights

Compressed Natural Gas and Electric

- Replacement of 80% of the shuttle bus fleet with new clean diesel and 20% with new CNG;
- Installation of CNG fueling infrastructure providing for current and future fleet CNG vehicles;
- Parking garage renovations including LED lighting and electric wiring infrastructure upgrades to position for future Electric Vehicle charging infrastructure;
- Reroofed previously black rooftop surface to reflective white (all renovated building areas); and
- 80% of all Southwest Airlines TUL ground equipment is electric.

F16 Fighter Jets

In conjunction with a newly constructed runway, the lights lining the runway have also been upgraded to high efficiency - but not to LED technology. The 138th Fighter Wing of the Air National Guard is based at the co-located Tulsa Air National Guard Base. LED lights lack the heat signature necessary for the runway-sharing F16 Fighter Jets' computerized landing sensors to recognize the landing strip.

Near-LEED Certification - With the exception of a single limiting factor, Tulsa International Airport's new building renovations qualify for LEED certification. Certain terminal glass window/wall sections in place prior to the renovations (fully meeting commercial building standards and structurally sound) did not require replacing. Therefore, the windows remained in place after the renovations even though they do not meet the new efficiency level LEED certification requires. The TAIT's economically mindful decision to sustain the existing windows undeniably demonstrates an accurate balance between economic and environmental stewardship.

Existing windows

AVOIDED EMISSIONS FROM RUNWAY RECONSTRUCTION

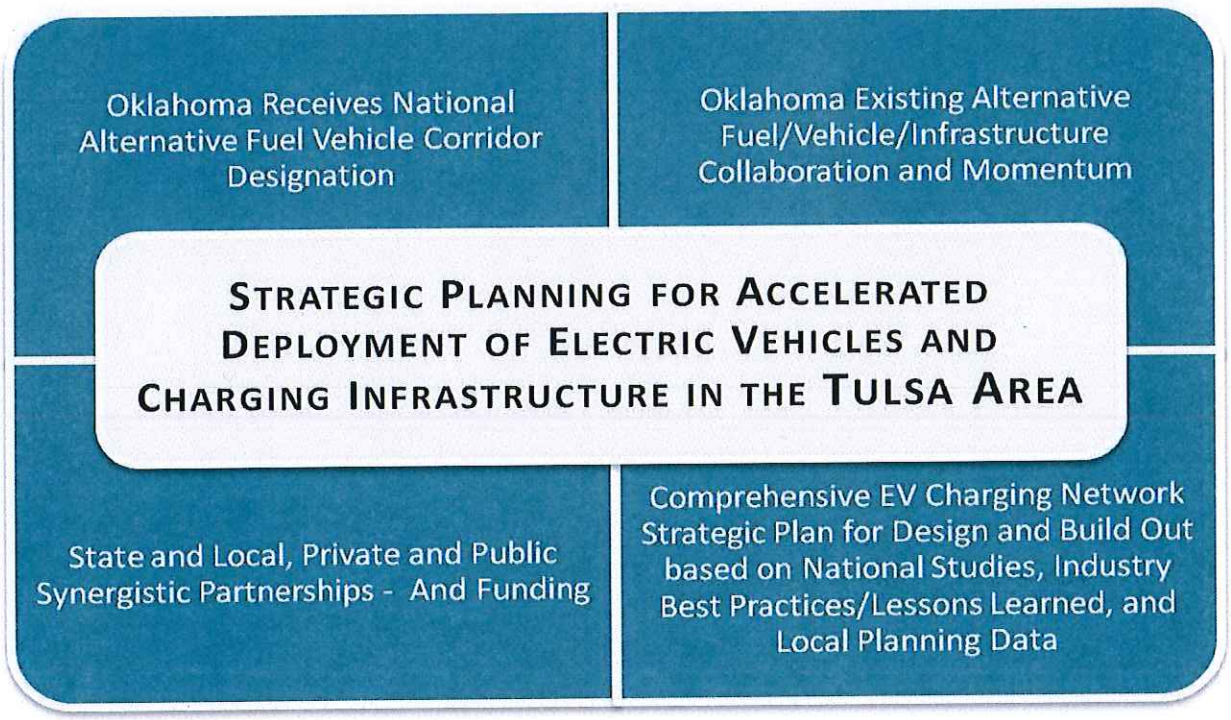
In 2014, TAIT completely rebuilt their runway. Rebuilding required the breaking up and disposing of the old concrete - 340,000,000 pounds of old concrete. Hauling the old concrete to the landfill was considered. The landfill location is an eight-mile roundtrip of mostly high-trafficked state highway. They calculated that a single dump truck could carry approximately 25 tons of concrete per trip - requiring 6,800 trips traveling a total of 54,400 miles to haul off the entire old runway debris. Subsequently, the TAIT wisely determined to alternatively dispose of the old concrete to an on-site area, providing needed back-fill material for a formerly unusable area and avoiding significant dump truck emissions. Using Argonne National Laboratory's AFLEET emissions tool, this avoided a combined 4,023 pounds of air pollution from spewing into Tulsa's air!

AVOIDED EMISSIONS FROM RUNWAY RECONSTRUCTION (AFLEET)

Total Miles Saved	Pollutants	Emissions Factors G/Mile	Grams	Lbs.	Tons
54,000 miles					
	CO	6.326	341,604.00	753.11	0.38
	NO_x	24.826	1,340,604.00	2,955.53	1.48
	PM_{10}	0.783	42,282.00	93.22	0.05
	$PM_{2.5}$	0.72	38,880.00	85.72	0.04
	VOC + VOC Evap	1.138	61,452	135.48	0.06
Total Criteria Pollutants Avoided				**4,023.04 lbs.**	**2.01 tons**

APPENDIX D

Tulsa Area Electric Vehicle Charging & Infrastructure Strategic Build Out



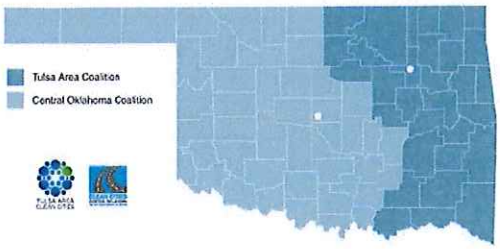
I. Oklahoma Receives National Alternative Fuel Vehicle Corridor Designation

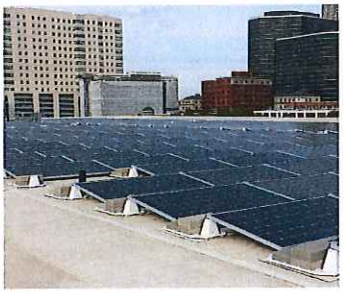
On November 3rd, 2016, the White House Office of the Press Secretary announced the Designation of 48 National Alternative Fuel Vehicle Corridors on U.S. Highways – three of them through Oklahoma with I-44 running directly through Tulsa. Oklahoma was the only state to have all of its interstates designated as "signage ready" for CNG, meaning all infrastructure is in place to enable state wide CNG travel. Building on this CNG success, Oklahoma intends to soon be ready to implement state wide EV signage as well.

Earlier this summer, the Federal Highway Administration (FHWA) issued notice of solicitation for nominations of the first Alternative Fuel Corridor designations consistent with the goals of Fixing America's Surface Transportation Act (FAST Act). FHWA's goals were to ensure adequate and appropriate build out of a national network of alternative fueling and charging infrastructure along national highway system corridors, to develop national signage, branding and public synergy for advancing alternative fuels, and to encourage cooperation and collaboration between multi-state, regional and local stakeholders to increase alternative fueling and charging infrastructure.

II. Oklahoma Existing Alternative Fuel/Vehicle/Infrastructure Collaboration and Momentum

Oklahoma's Two Clean Cities Coalitions





Tulsa's newly renovated downtown library will have a number of public charging stations. The chargers will be partially powered by a solar array on the library's roof.

Tulsa and Oklahoma City's metropolitan areas have much in common. The Association of Central Oklahoma Governments (ACOG) in Oklahoma City and the Indian Nations Council of Governments (INCOG) in Tulsa are both exceptionally committed to improving regional air quality and thereby to maintaining compliance with the Environmental Protection Agency's (EPA) National Ambient Air Quality Standards (NAAQS). Each COG houses the Metropolitan Planning Organization for their regions and one of the two U.S. Department of Energy (DOE) Clean Cities Coalitions covering the state.

The two Clean Cities Coalitions, with their stakeholders, have been foundational to Oklahoma's advancement of alternative fuels and infrastructure. Their successful partnerships with state agencies, public and private local collaboration, and united momentum laid the perfect groundwork to advance electric vehicle and charging infrastructure. Together, the Coalitions have formed the Oklahoma EV Coalition to strategically prepare for this emerging transportation option.

EV batteries are dramatically increasing in range while concurrently dropping in production costs. By the end of 2016, the Chevy Bolt will be in production and for sale in select markets, with plans for nation-wide availability soon thereafter. This car has a range of 238 miles per charge and costs around $30,000, after a $7,500 federal tax credit. In 2017, Tesla will begin production and delivery of its Model 3, which will have a similar range and price. Tesla is taking pre-orders for this car and globally just fewer than 400,000 people have "reserved" a Model 3 at a cost of $1,000 per reservation. Third party data suggests that once these cars are delivered to the Oklahomans who have already pre-ordered them, Oklahoma will see a 70% increase over today's number of EVs registered in the state, just from Model 3 pre-

Oklahoma currently ranks 34th for electric vehicle (EV) adoption in the United States with a total of 1,103 EVs deployed state wide as of June 2016. There are 48 charging stations, known as Electric Vehicle Supply Equipment (EVSE), across the state. The Tulsa area currently has eight public chargers; two level 2 chargers at local grocery stores, five level 2s at car dealerships, and a Tesla Supercharger (Tesla's branded network of DC Fast Chargers, accessible only by Tesla owners) on the eastern edge of the metro area.

Although Oklahoma's EVSE is limited, the state leads the nation in CNG station deployment, with one or more Compressed Natural Gas (CNG) stations every 100 miles along Interstate highways. These existing CNG stations are likely to be prime locations for ESVE because of similarities in the electrical upgrades necessary to install a DC Fast charger are similar to those needed to operate CNG compressors, and both technologies are eligible for the same state tax credit.

Electric Vehicle Charger Types

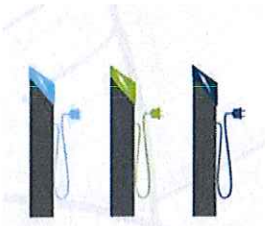
	Voltage	Charging Time	Equipment Cost
Level 1 (slow)	120V	2 to 5 miles of range per hour	$0 - $1,500
Level 2 (medium)	240V	10 to 20 miles of range per hour	$400 - $7000
DC Fast (fast)	480V	60 to 80 miles of range per 20 minutes	$10,000 - $40,000

III. Comprehensive EV Charging Network Strategic Plan for Design and Build Out Based on National Studies, Industry Best Practices, Lessons Learned, and Local Planning Data

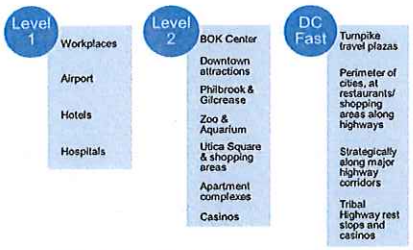
In partnership with INCOG's Tulsa Area Clean Cities Coalition and ACOG's Central Oklahoma Clean Cities Coalition, the US Department of Energy's National Renewable Energy Lab (NREL) is assisting with the development of an Oklahoma Electric Vehicle Supply Equipment (EVSE) Network Strategic Plan.

Oklahoma's EVSE (also known as charging stations) Network Strategic Plan will leverage the abundant EV driving and charging data generated through numerous studies over the last several years. Data resources will include: The EV Project, 2-years of amassing the largest database of EV driver charging behavior representing 125 million miles of driving and 4 million charging events; Tesla's research and framework for its Supercharging network; and local data sets on traffic patterns, urban density, commuting trends, and other available resources.

The Plan will provide each metropolitan area with an EV build out strategy by phases for the location, size and placement of charging systems, for uniting the two regions, and finally to cover the state. By coordinating efforts to strategically build out an EV network of convenient accessible charging infrastructure, the Tulsa area and all of Oklahoma intends to meet the future EV demand with an optimized, successful and growing network of charging stations.



There are generally three venues or levels of electric vehicle charging – categorized by the rate at which the station charges a vehicle battery: Levels 1, 2 and DC Fast.



Tulsa area locations for consideration of different levels of charging equipment

IV. State and Local, Private and Public Synergistic Partnerships - And Funding

Once developed, the Strategic Plan for EV Charging will be used as a guide to identify locations and plan for equipment to place Level 1, 2, and DC Fast Chargers throughout the Tulsa area. The Plan will also provide an EV network build guide to identify and secure funding as it becomes available.

Oklahoma has tax incentives covering 75% of the cost of installing AFV infrastructure. Although it has almost exclusively been used for CNG infrastructure projects in the past, we see this as a valuable incentive to grow EVSE infrastructure.

In commitment to increase the availability of EVSE in the Tulsa Area, INCOG has allocated $175,000 in Congestion Mitigation and Air Quality program (CMAQ) funding toward a DC Fast Charging network.

Additionally, INCOG has awarded $50,000 to the City of Tulsa and $50,000 to the Tulsa City-County Library for Level 2 charging stations. The City and Library have committed $23,590 in matching funds.

Entity	CMAQ	Match	Total	Anticipated Equipment
INCOG	$175,000	$35,000	$210,000	DC Fast
City of Tulsa	$50,000	$13,590	$63,590	Level 2
Tulsa Library	$50,000	$10,000	$60,000	Level 2
Total Project Funding	**$300,000**	**$63,590**	**$333,590**	

APPENDIX E

Tulsa Bike Share

TulsaBikeShare.Com

Tulsa Bike Share, now in partnership with Tulsa Tough, is a 501(c)3. The Board of Directors has hired an Executive Director and the system is expected to launch in spring 2017 with roughly 120 bikes and 12 stations centralized Downtown, within the Inner Dispersal Loop. After initial launch, 12 more stations will be added, reaching outward towards the University of Tulsa, Cherry Street and the Brookside area.

MISSION STATEMENT: "The mission of Tulsa Bike Share is to transform our community by providing a high quality, convenient and affordable bicycle transit system that will connect people to more places where they live, work, and play in the region."