



SCOTT A. THOMPSON  
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT  
Governor

July 29, 2019

Laura Bunte, Mail Code C539-01  
U.S. EPA, OAQPS  
109 TW Alexander Drive  
Research Triangle Park, NC 27711

Re: 2019 Ozone Advance Update—Oklahoma City Metropolitan Area

Dear Ms. Bunte:

The Oklahoma Department of Environmental Quality (DEQ), Air Quality Division, in collaboration with the Association of Central Oklahoma Governments (ACOG) hereby submits the Oklahoma City (OKC) Metropolitan Area 2019 update to our Ozone Advance program. This is a “living” document and will continue to be updated as programs are added or evolve. The OKC Metro Area has participated in EPA’s Ozone Advance program since May 30, 2012. The enclosed list of Ozone Advance initiatives and ongoing programs provides status updates to many of the voluntary and mandatory programs listed in the 2018 submittal, along with several new programs.

We look forward to continued participation in the Ozone Advance program. Should you have any questions, please feel free to contact Nancy Pearce or Melanie Foster of my staff at 405-702-4100.

Sincerely,

A handwritten signature in black ink, appearing to read 'Eddie Terrill', is written over a large, faint, circular watermark of the Oklahoma State Seal.

Eddie Terrill  
Division Director  
Air Quality Division

ec: Carrie Paige, EPA Region 6  
Mark W. Sweeney, ACOG  
Eric Pollard, ACOG

Enclosures



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<b>Ozone Advance Emission Reduction Projects - Oklahoma City MSA</b>				
Progress Report 6-1-18 through 5-31-19				
Emission Reduction Projects	Entity	Status	Description	Schedule/Completion Dates
<b>Bike Month Activities</b>	ACOG	Ongoing	Bike Month is established each May to promote cycling activities. Bike to Work Day is an annual event designed to encourage people to use their bikes as a means of transportation. Since its inception, numerous communities have participated in the various bicycle group rides and events, including Bike to School, Bike to Work, and Bike to Church. <b>2019 Update: The cities of Edmond, Guthrie, Moore, Norman, Oklahoma City, The Village, and Yukon all planned Bike to Work Day group rides in May 2019. Edmond scheduled 8 separate activities promoting bicycle use in 2019.</b>	2005 - Continuous
<b>Congestion Mitigation and Air Quality (CMAQ) Small Grant Program</b>	ACOG	Ongoing	<b>City, county and tribal governments along with public schools, public school districts, public universities, and transit agencies are eligible to receive CMAQ funds for small infrastructure projects and congestion relief efforts that assist in the reduction of single-occupancy trips and/or ozone-forming emissions. Two small infrastructure projects are currently in progress by the City of Oklahoma City Planning Department and the Central Oklahoma Transportation and Parking Authority. Projects include bus stop and crosswalk improvements as a way to enhance transit ridership and expansion of the Spokies bike share fleet with new dockless bicycles. 2019 Update: ACOG is preparing to issue a new funding RFP in Late Summer / Early Fall 2019.</b>	2018 - Continuous
<b>Central Oklahoma Urban Tree Canopy Project</b>	ACOG, OFS, OCCF	Ongoing	health of park trees on Oklahoma City parkland. During a four-month time span, more than 19,000 trees were surveyed in 134 city parks. The result is an expansive inventory of each individual tree that will help park forestry crews prevent disease and ensure the viability of the city's urban tree canopy. Almost 20,000 trees were inventoried and found to remove approximately 8.1 tons of pollutants annually including ozone, nitrogen dioxide, VOCs, carbon dioxide, and particulate matter. This Inventory serves as a primary management plan for the City's parkland canopy.  <b>2019 update: ACOG is partnering with Oklahoma Forestry, Oklahoma City Community Foundation, and Davey Resource Group to conduct a regional tree canopy assessment. The project aims to collect and inventory vital tree canopy data in the Oklahoma City metropolitan area. Resulting end data will include percent tree canopy coverage and land cover summary, prioritized tree planting plan, and ecosystem service benefits analysis which will include an analysis of the benefits of trees on air quality. Data collected during the urban tree canopy study will be integrated into the metropolitan planning process, including advanced regional air quality analysis and planning.</b>	Continuous

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<b>Ozone Alert Day Notifications</b>	<b>ACOG</b>	Ongoing	Email notifications of Ozone Alert Day declarations in Central Oklahoma are serviced to elected officials, policymakers, and members of the public via email. Linked content includes information on public transit throughout Central Oklahoma, information on the health impacts of ground-level ozone, and a link to the Oklahoma Department of Transportation online camera-based traffic monitoring system. <b>2019 Update: In 2018, ten Ozone Alert Days were declared; notifications were sent to a total of 634 recipients with an average open rate of 22.2% and an average click-through rate of 8.8%.</b>	Continuous
<b>Public Alternative Fuel Stations</b>	<b>ACOG</b>	Ongoing	<b>Within the state, there are currently 101 compressed natural gas (CNG) stations, 9 propane fueling stations, 70 electric vehicle (EV) charging stations, and 47 ethanol (E85) stations.</b>	Continuous
<b>Social Media Public Outreach</b>	<b>ACOG</b>	Ongoing	Central Oklahoma's MPO utilizes Facebook and Twitter to keep members of the public updated on air quality and air quality-related issues throughout the region, state, country, and world.	2009 - Continuous

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Transportation Systems Management (TSM) Projects	ACOG	Ongoing	Emission reduction strategies that may include: intersection improvement projects, signal improvements, signal coordination efforts, Intelligent Transportation System (ITS) enhancements, and bicycle and pedestrian facilities. These projects reduce transportation-related emissions by improving traffic flow and reducing congestion throughout the region. <b>2019 Update: ACOG is adding an activity based component to the model in FY 2019. This will help model trips by pedestrian and cyclists.</b>	Continuous
Open Streets OKC	ACOG, Oklahoma City-County Health Department	Ongoing	The Open Streets event promotes active transportation and the relationship between transportation mode choice and public health and has drawn around 65,000 total attendees from across the region. Businesses and organizations participate all along the route with fun and active activities for families. The event earned significant media coverage and calls for more walkable development, biking infrastructure and accessible, quality transit through Oklahoma City. The event is planned to now occur twice a year beginning in 2015. <b>2019 Update: The 7th and 8th Open Streets OKC events were held in 2018 and 2019 with 20,000 to 25,000 participants and over 80 community activity vendors.</b>	Ongoing
Oklahoma Electric Vehicle Coalition (OEVCC)	ACOG, Utilities, Local Governments, Vehicle Manufacturers, Charging Station Providers	Ongoing	OEVCC meetings are held every other month throughout the year. The coalition has worked to identify objectives, goals, and strategies around increasing the amount of electric vehicles and electric vehicle charging stations in Oklahoma. The coalition worked to be included in the Federal Highway Administration's (FHWA) Alternative Fuel Corridor designations as well as Volkswagen Settlement electric vehicle charging station investments.	2016-Ongoing
Clean Fuel use	Central Oklahoma Clean Cities	Ongoing	The Central Oklahoma Clean Cities 2014 annual survey of stakeholder fleets showed a reduction of 6,651,144 gallons of gas equivalent (GGEs) of petroleum fuel used. The survey indicated that 97% of the recorded petroleum reduction can be attributed to alternative fuel vehicles. The majority of the remaining reduction can be attributed to idle reduction fleet policies and technologies. Central Oklahoma stakeholder fleets accounted for 4,479 on-road vehicles operating on alternative fuels. Deployment of compressed natural gas (CNG) vehicles and fueling stations resulted in 86% of petroleum fuel reduction, followed by E85 ethanol-blend (8.8%), and LNG, liquefied natural gas (4.1%). <b>2019 Update: The preliminary results of the Central Oklahoma Clean Cities 2016 annual survey of stakeholder fleets showed a reduction of over 13.6 million GGEs of petroleum fuel used. Central Oklahoma stakeholder fleets accounted for over 3,076 on-road vehicles operating on alternative fuels. Deployment of compressed natural gas (CNG) vehicles and fueling stations resulted in 94% of petroleum fuel reduction, followed by propane (3.7%), and E85 ethanol-blend (2.2%).</b>	1996 - Continuous



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Bicycle Promotion Events	City of Edmond	Ongoing	<p>On November 3rd, 2013, the City of Edmond held Oklahoma's first Open Streets event, closing off a stretch of University Drive near the University of Central Oklahoma campus to celebrate the opening of Edmond's first bike lane. From 2PM to 4PM University Drive was closed to vehicular traffic to allow for pedestrians and bicyclists to participate along with a series of activities and local vendors. This is an event that the City hopes to host in coming years, which helps to promote bicycling as an alternate and recreational form of transportation. In addition the Edmond Bicycle Committee promotes bicycling through different venues, such as Citizen Bank's 'Heard on Hurd', where information is distributed about places to ride. <b>The Bicycle Committee for the City of Edmond is involved in hosting multiple bicycle events. May events in 2019 included the Edmond Family Bike Ride, the Flat Tire Repair Clinic, a City Council Proclamation for Bike Month, The Oklahoma Bicycle Society Casual Ride, the Ride of Silence, Bicycle-Pedestrian Counting Days, Bike to Work Day Celebration, and Bike to Church Day; all of these events give important recognition for this mode of transportation.</b></p>	Continuous
Bicycle Master Plan	City of Edmond	Ongoing	<p><b>The Bicycle Master Plan (2012) was updated in 2018 to include more on-street wayfinding routes and refinements to the proposed trail components. The updated plan also consolidates some facility types, removes corridors that are infeasible, and presents new opportunities. In 2019-2020 the primary focus will still be the north side of the lake along Rt 66, and the west side of I-35. The Fox Lake Trail linkages on the west side of I-35 will connect the trail with the Mercy Health Clinic to the south, and it will connect the trail to the Spring Creek Trail, which goes all the way to Spring Creek Park at Arcadia Lake. The Fox Lake linkages will be complete in Fall 2019. These extensions will eventually connect important employment and shopping areas with the Hafer Park area and Spring Creek Park at Arcadia Lake. Rt 66 Trail: The first phase of this trail has been designed and funded and the expected completion date will be in the Fall of 2020. This leg of the Arcadia Lake Loop will travel from the Edmond Regional Park on Hwy 66 to the Arcadia Lake Project Office. The next phase of this trail has been designed, which will carry it from the Project Office to the 66 Park on Post Rd. Spring Creek Trail: This trail is complete. The ribbon cutting ceremony took place on April 28th, 2018, but was open to the public months in advance. It extends from the East side of I-35, under the highway, and along Spring Creek to Spring Creek Park at Arcadia Lake. It totals approximately 3.1 miles. In 2019 this trail has been extended on both ends to parking areas. The west parking area is part of a partnership with Integris Hospital, and the east parking area is adjacent to 15th St and the Spring Creek Park "gatehouse." Fox Lake Trail: The Fox Lake Trail was completed in 2015, which is behind the Wal-Mart and Sam's at 15th and I-35. It currently extends from 15th St to Fox Lake Ln. When the north and south extensions to this trail are completed, it will total approximately 1.3 miles. It will connect with Spring Creek Trail on the north, and Mercy Hospital on the south.</b></p>	2020

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Alternative Transportation - Transit	City of Edmond	Ongoing	<p><b>Citylink Transit:</b> The City of Edmond has had the Citylink Transit System in place since 2009. It offers citizens an alternative form of transportation to and from work, shopping, medical visits and the University of Central Oklahoma (UCO). There are four fixed routes within Edmond city limits and one commuter route to the OKC bus terminal and the OKC Social Security Office. The City also has the paratransit service, which is for persons with a disability or seniors who cannot drive, within Edmond city limits. All Citylink regular route buses are equipped with wheelchair lifts and bike racks. In 2016 the City received 3 new buses, which can all run on alternative fuels, propane or unleaded. In 2017 there were 2 replacement buses and 2 new mini-vans. The mini-vans run mostly on the paratransit so it will be more efficient with cost, maintenance and fuel. The two expresslink buses seat 30 passengers and are fueled with clean diesel. The local route buses can carry 19 passengers. 8 can be fueled with dual fuel propane and unleaded gasoline. Since the transit systems' inception, there have been more than 1.5 million riders. Also in 2017, the City installed 106 accessible bus stops, whereas before the stops have been unstructured. The bus stops ensure better passenger safety and timing on the bus routes. Traffic congestion is alleviated by keeping the buses on structured stops; this is also a mitigation measure for better air quality. McDonald Transit manages the Citylink transit system for the City of Edmond, while Edmond city staff maintains the vehicles and assists with planning functions.</p> <p><b>2019 Update: Beginning in 2018-2019 the City began promoting all forms of alternative transportation through an initiative called "Edmond Shift." Edmond Shift will be a policy that encourages, promotes, plans, and creates active transportation alternatives to improve how people can conveniently and safely walk, bike, ride the bus, share a car, and drive throughout Edmond. The Edmond Shift logo will begin to appear on a variety of projects that make it easier for people to use all the transportation options available in the City.</b></p>	Continuous

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Alternative Transportation - Electric Vehicles	City of Edmond	Ongoing	<p><b>EV Vehicles:</b> In 2018 Edmond Electric bought an EV for the City (Electric/Public Works) use. <b>In 2019 Water Resources purchased two new EV vehicles for their fleet. This department also installed three EV charging stations at the new Water Resource and Recovery Facility. At the new Water Treatment Plant there are also plans to install two (2) dual chargers, and it will easily be expandable to two (2) more EV spaces in the future. In 2019 the City Council Strategic Plan outlines current and future goals for the City. The seventh item under Current Goals states: "Develop policies and plans to take advantage of the growing market for electric vehicles, including a program to promote home charging and adding vehicles to the city fleet." For the private sector, three charging stations have been installed at the new hotel/conference center at I-35 and Covell Rd through a partnership with Edmond Electric. The City is hoping to achieve similar arrangements with other private partners as we move forward. In 2019 the City of Edmond partnered with the University of Central Oklahoma (UCO), to receive \$50,550 to install ten (10) public and workplace charging stations for electric vehicles. These types of stations are capable of charging two electric vehicles simultaneously and will initially be free to the public. These stations will also be powered by 100% wind energy. Two grants were received in coordination with the Association of Central Oklahoma Governments (ACOG) Clean Air Public Fleet Grant (\$25,138.60), and the Oklahoma Department of Environmental Quality 2019 Charge OK Grant Program (\$25,367.00). The grants will also pay for the bollard concrete mounting kits, a one-year prepaid commercial cloud plan to remotely monitor the stations (including avoided emissions), an on-site validation per the vendor's requirements, and a five-year prepaid Assurance Plan, which provides high-quality maintenance and a warranty period by the vendor.</b></p>	2020

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<p><b>City Facility Rehabilitation Facility Maintenance</b></p>	<p><b>City of Edmond</b></p>	<p>Ongoing</p>	<p>Among improvements that have been made are white roofs, LED lighting, and more energy efficient HVACs. In 2014, three buildings received white roofs. They are Mobile Meals, the Downtown Community Center, and the Historical Museum. Four buildings received LED lighting. They are Mobile Meals, the Historical Museum, Kickingbird Golf Club, and one Zone at the Crosstimbers Municipal Complex. The new Edmond Downtown Health Clinic also has LED lighting. In 2014 four buildings received more energy efficient HVACs. They are Fire Stations 1, 2, and 3, and the Downtown Community Center. In 2015 six out of seven HVAC units were replaced on the Mobile Meals facility with higher SEER ratings. The new Water Distribution Station on Danforth Rd has LED lighting and geothermal heat pumps. Also, the Water Treatment Plant has changed out some large wattage lights (1000 watts each) in the filtering room to LED lights. In 2016 the Downtown Community Center received a total of 8 new Package HVAC units, and the Planning and Public Works Building received a new 35 ton chiller. In 2017 lights at the Crosstimbers Municipal Complex were replaced with LEDs, as well as the interior lights for the garage at Vehicle Maintenance. In 2018 LED lights were installed at the Historical Museum and HVAC upgrades are planned after July 1, 2018. In 2018 the City also installed a white TPO roof on the front of the DCC and on the flat roof on Mobile Meals. As thermoplastic polyolefin (TPO) roofs are among the fastest growing commercial roofing products, for their performance and installation advantages. These are heat-reflective and energy efficient roofing systems and the single-ply membrane provides resistance to ultraviolet, ozone and chemical exposure. <b>2019 Update: In 2019 exterior lights and parking lot lights are scheduled to be changed from Halide to LED. Office and remaining lights at Vehicle Maintenance will be changed, and Mobile Meals is also scheduled to receive more energy efficient windows next year. A new 20 ton heat pump and cooling tower is currently in the process of being installed for Council Chambers.</b></p>	<p>Continuous</p>
<p><b>Energy Efficiency</b></p>	<p><b>City of Edmond</b></p>	<p>Ongoing</p>	<p>In 2014 City staff created an internal committee that currently meets intermittently, or as needed. The role of the committee is to discuss such topics as operational efficiencies for vehicle fleet, city facilities, and city programs that promote other sustainable practices. Water resources, solid waste, energy efficiency, renewable energy and fuel efficiency are among the topics discussed. In 2018 the new Water Resources Administration Building was built and it contains several features that not only save energy, but also provide a learning experience for the many tours that they offer. The 2015 International Energy Conservation Code (IECC) is used as the standard for their new facilities, although this code has yet to be adopted by the State. A small solar project for the building, LED lighting, white roofs and/or green roofs, and geothermal wells have been incorporated into the design, as well as an area for small groups to be taught. In future years new facilities for water and wastewater treatment, as well as 2 new lift stations will be constructed. As a standard part of these designs, variable frequency drives and soft starts are now a standard practice. <b>In addition, in 2019 the Central Edmond Urban District Board is contracting for a design solution for more efficient downtown decorative lighting.</b></p>	<p>Continuous</p>



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Energy Benchmarking Planning	City of Edmond	In Progress	Benchmarking and Analysis of energy use in City facilities. In 2015 the City switched to new customer billing software for the utility database (CIS Infinity). Reports are run inside the software where usage data can be obtained. As the City becomes more invested in future expansions of the utility software, there are expected to be even better options for energy analysis. <b>2019 Update: For Energy Benchmark Planning the City is live with Advanced Infinity Version 4. The Sustainability/Planning office compiles and disseminates energy usage reports to the various departments, as needed.</b>	2019
Energy Management Systems	City of Edmond	Ongoing	Energy Management Systems are a combination of building management and advanced software solutions to assist managing building functions in a more energy efficient way, and to provide demand response controls when situations within the power grid demand it. In 2005 these systems were installed for the Crosstimbers Municipal Complex, Animal Welfare, and Fire Station V. In 2008 this system was installed for the Edmond Historical Museum. In 2011, through the EECBG, eleven additional facilities were upgraded for HVAC and lighting controls. On the newer installations the average savings have been around 23%. Delta Energy Management Systems were upgraded at the Crosstimbers Municipal Complex, Animal Welfare, the Historical Museum and Fire Station V to include lighting management and the use of 2 hour overrides when the buildings are being used in off hours. In addition to these four areas, Fire Stations 1, 2, 3, and 4, the Downtown Community Center, the Planning and Public Works building, the Municipal Court, the Council Chambers, the City First Building, and the Mitch Park Activity Center have all received the new version of Delta for controlling lights and HVAC. In 2016 the new Public Safety Center had an energy management system installed that is controlling the 140 ground source HVAC units throughout the 70,000 square foot building. Hot water is provided by a centralized boiler in the basement. Delta Systems were also installed in the Mobile Meals facility and the new IT building (includes 4 variable speed ground source heat pumps).	Continuous
Green Power Community Designation	City of Edmond	Ongoing	The City of Edmond became the first municipality in Oklahoma to receive Green Power Community designation from the Environmental Protection Agency through their use of renewable energy. In 2018, with overall use of more than 97 million kilowatt-hours of green power per year, close to 74% of the City of Edmond's facilities were powered by wind energy technology and 11% of residents and businesses in Edmond opted to use green power as a portion of their electricity via the Oklahoma Municipal Power Authority. Geothermal energy is also utilized to save energy on the YMCA facility, the new Water Resource and Recovery Facility, the Crosstimbers Municipal Complex, as well as the 70,000 square foot Public Safety Center. These forms of energy reduce the use of power generated from point sources of emissions. <b>2019 Update: The City kept this Green Power Community designation for the seventh year. In December 2018 the City began using 100% Wind Energy in all city facilities.</b>	Continuous

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ITS Engineering	City of Edmond	In Progress	Intelligent Transportation Systems (ITS) have been installed at signalized intersections. ITS should facilitate the management of traffic during congested periods, allowing better mobility and resulting in less idle time. Phase I of Edmond ITS is complete. It includes 21 intersections along Edmond Rd/2nd St from Santa Fe to Saints Blvd. Intersections are hard wired via fiber optics. There is also a wireless component that connects four water towers, which will also be hard wired with fiber optics. The intersection controllers are using the latest NTCIP communications protocol and are connected to the Traffic Management Center. The intersections have a battery backup system, emergency pre-emption system, CCTVs, redundant vehicle detection systems, LED signal indications, flashing yellow left turn arrows, and audible pedestrian systems. <b>Phase II of Edmond ITS includes 22 intersections and is currently being implemented.</b>	2019
Renewable Energy - Edmond Electric	City of Edmond	Ongoing	<p>Renewable Energy and Efficiency Programs: Sale of the available wind power to Edmond Electric customers. Free residential and commercial energy audits for Edmond Electric customers. Approximately 25% of the energy supplied by the OMPA to its Members is renewable, coming from wind, hydro, and landfill gas. Edmond Electric also has LED light giveaways.</p> <p>Customer Rebates and Financing: Edmond Electric offers rebates to customers for the purchase of energy efficient HVAC and ceiling insulation improvements. Commercial rebates for energy efficiency and demand reduction improvements are also available, as well as financing incentives for residential and commercial geothermal loop installations.</p> <p>Equipment and operations: Investigation of the cost and impact of converting electric and water use meters to electronic read and data capture systems. (AMR/AMI)</p>	Continuous
Urban Forestry	City of Edmond	Ongoing	<p>Urban Forestry, a division of Community Image, administers multiple programs that support and enhance Urban Tree Canopy in Edmond. Trees remove pollutants such as ozone from the air, reduce energy consumption and emissions, and provide many other environmental services. New trees are planted each year on public property around City facilities, along right-of-ways, and on park land and detention areas through special Urban Forestry projects, Arbor Week, and the volunteer program. In addition, Urban Forestry plants trees along right-of-ways in residential areas through the Foster-A-Tree program. Urban Forestry hosts periodic tree distributions and works with Edmond Electric in facilitating their 'Energy Saving Trees' program, also partnering with the Arbor Day Foundation. Through this program, customers use an online module to determine the most appropriate species available and the best location to plant the tree in order to maximize energy savings. Recent updates to the landscape requirements within Edmond's Title 22 Zoning Ordinance include requirements for the planting of trees and new incentives toward preserving trees. These revisions were drafted by the Edmond Urban Forestry Commission and are now enforced by the Urban Forestry Department. Urban Forestry also actively fosters public engagement and education through programs such as the Edmond Tree Awards, Arbor Week, the volunteer program, Edmond Tree Mail, and social media.</p>	Continuous

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Ozone Alert Day Mowing Deferral	City of Mustang	Ongoing	The City of Mustang has an internal policy for City mowing crews to not mow on Ozone Alert Days.	Continuous
New Home Energy Efficiency Pilot	City of Norman	New	Waives a percentage of city's building permit fee based on the nationally recognized Home Energy Rating System (HERS)/Energy Rating Index (ERI) for energy efficiency. The lower the HERS score, the more energy efficient the house and the bigger the discount on the permit. Newly constructed single-family homes built to code in Norman average a HERS rating of 100. A home that meets the minimum threshold (HERS rating of 65) to cash in on the incentive would be 35 percent more efficient. Under the pilot program, which began on July 1, 2019, homes that achieve a HERS rating of 55 could be exempt from the city's building permit fee altogether.	Continuous
CNG and Alternative fuel use	City of Norman	Ongoing	The City of Norman operates 96 light-duty CNG pickups and sedans, and 26 heavy duty CNG refuse haulers and trucks. In 2012, the city installed both fast-fill and time-fill fueling facilities to serve its growing fleet of natural gas-powered vehicles. Norman also has an idle reduction policy currently applied to approximately 90 of its heavy duty vehicles that reduces engine idling by up to 90 minutes per day per vehicle and saves up to 0.75 gallons of fuel per day per vehicle. They also programmed into vehicles' onboard computers to limit idle time to 5 minutes in 56 refuse haulers.	Continuous
CNG and Alternative Fuel Fleet	City of Oklahoma City	Ongoing	The City of Oklahoma City (transit, utilities, airport vehicles) operates a fleet of 205 light and heavy duty CNG vehicles, 4 electric cars, 17 hybrid vehicles and 184 heavy duty diesel trucks using B20 currently in the City-wide fleet. The City is set to purchase an two CNG-powered replacement buses for \$1.1 million as well as install additional fast-fuel CNG infrastructure for about \$300,000.	2009 - 2018, Service Ongoing
Oklahoma City Streetcar	City of Oklahoma City	Ongoing	Approved by voters in December 2009, the modern streetcar is a \$131 million project as part of a \$777 million debt-free capital improvement package. The streetcar includes seven cars, each holding 100 people, that travel a 4.6 mile on-street rail system with 22 stops throughout downtown Oklahoma City. Service launched in December 2018 and has already seen total ridership of more than 171,000.	2016 -Ongoing
adaptokc	City of Oklahoma City	Planned	The City has been developing a community-wide sustainability plan that focuses on several specific areas: Energy Productivity, Air Quality, Natural and Built Environment, Food Access, and Waste Reduction. Recommendations and proposed actions, policies, and programs serve as implementation of portions of the City's comprehensive plan in addition to subject matter expert engagement and research and data-driven conclusions. Expected adoption is mid-to-late 2019.	2018 - Ongoing



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2017 Temporary Sales Tax Extension	City of Oklahoma City	Ongoing	In September 2017, Oklahoma City voters approved a 27-month one penny sales tax extension projected to generate \$240 million for transportation projects. This proposal was specifically a response to the City's needs for improved street conditions based on resident feedback. The debt-free projects to be funded through this extension include \$168 million for street resurfacing, \$24 million for streetscapes, \$24 million for sidewalks, \$12 million for trails, and \$12 million for bicycle infrastructure.	2018 - Ongoing
Residential Curbside Recycling Expansion	City of Oklahoma City	Ongoing	Beginning in FY19, the City's curbside recycling program expanded service to 6,000 new customers and shifted fully to 195,000 96-gallon polycarts from 18-gallon containers. Recyclable goods drop-off centers were added in rural areas without curbside service. This significantly increased set-out rate and waste diversion, thereby reducing landfill emissions. Both the public and private fleets of waste haulers are CNG-fueled.	2012 - Ongoing
Spokies Bikeshare Program Expansion	EMBARK	Ongoing	Launched in 2012, the Spokies bikeshare provides a transportation alternative around downtown Oklahoma City through bikeshare stations placed strategically throughout the Central Business Districts and abutting downtown commercial and residential districts. In June 2019, Spokies will introduce Spokies Dash, a new dockless bikeshare feature.	2019 - Ongoing
City of Oklahoma City Bicycle and Pedestrian TIP Projects, FFY20 - FFY23	City of Oklahoma City	Planned	The City of Oklahoma City is routing a greater share of transportation dollars towards alternate modes of transportation. In FFY2020, Oklahoma City will spend approximately \$10.2 million in combined STBG-UZA funds and local match dollars to design and construct bicycle and pedestrian facilities. In FFY2021, Oklahoma City will spend approximately \$3.5 million in combined STBG-UZA funds and local match dollars on a major bicycle-pedestrian project. In FFY2022, Oklahoma City will spend a minimum of \$2.7 million in combined STBG-UZA funds and local match dollars on bicycle-pedestrian projects.	2019 - Ongoing
City of Oklahoma City Transportation Alternatives Program (TAP) Projects, FFY20	City of Oklahoma City	Planned	In FFY2020, Oklahoma City will spend approximately \$8.3 million in combined TAP funds and local match on a range of bicycle and pedestrian projects including a recreational trail along a segment of the Deep Fork River, new sidewalks, amenities along two existing recreational trails, a road diet on a major downtown avenue, and a bicycle-pedestrian safety awareness campaign.	2017 - Ongoing
MAPS 3 Scissortail Park	City of Oklahoma City	Ongoing	With funding from the third iteration of the Metropolitan Area Projects (MAPS) program generated by a voter-approved temporary one cent sales tax, 70 acres of downtown property was acquired to serve as a two-section downtown park: a 36-acre northern section and, connected by a bicycle-pedestrian bridge across Interstate 40, a southern segment of 34-acres that abuts the Oklahoma River and connects with the Oklahoma River Trails that span 13 total miles along both banks. With a budget of approximately \$132 million, Scissortail Park includes nearly 1,000 trees at a cost of about \$608,000. The northern section of the park will open later in 2019 and the southern section will open in 2021.	2015 - Ongoing



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Northwest Multimodal Transportation Corridor	City of Oklahoma City, EMBARK	Planned	Funding sources include a \$14.3 million BUILD grant from the U.S. Department of Transportation as well as \$10.8 million from general obligation bonds and \$2.2 million from sales tax revenue. Planning for the project began in 2015 and was supported through grants from Smart Growth America, a Federal Highway Administration beta test for health in transportation corridor planning, and local stakeholders including the City of Oklahoma City, the Oklahoma City-County Health Department, the Greater Oklahoma City Chamber of Commerce, and the local chapter of the Urban Land Institute. The corridor plan includes the addition of 9 to 10 miles of bus rapid transit (BRT) connecting downtown Oklahoma City with the northwestern suburban areas of the city along with significant bicycle and pedestrian infrastructure additions along the corridor. Full service for the corridor BRT is anticipated to begin in 2023.	Ongoing
Ozone Alert Day Action Promotion	City of Yukon	Ongoing	The City of Yukon includes emissions reductions actions for Ozone Alert Days in promotional materials. Actions include: delaying driving errands, avoiding filling up vehicles until after sundown, and not mowing.	Continuous
CNG Fleet Addition	DEQ	Ongoing	DEQ has long-term plans to replace a number of gasoline fueled vehicles with CNG fueled vehicles on a rolling basis. These will be distributed around the state, in Oklahoma City as well as in Tulsa and local offices. The fleet currently includes 15 bi-fuel trucks and two dedicated CNG vehicles, one of which is in the OKC area.	Continuous
Air Quality Public Outreach	DEQ	Ongoing	The Department 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 Oklahoma City 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. <b>2019 Update: DEQ continues to utilize social media sites, including Facebook, Instagram, and Twitter to issue Ozone Health Advisories and Ozone Alerts. In addition, the Department continues to expand its list of subscribers for emails and text messaging.</b>	2012-2020
Energy Conservation Program	DEQ	Ongoing	The Oklahoma Department of Environmental Quality received an award from Governor Fallin on November 10, 2015 for being the first state agency to hit the 20% energy savings goal. The award for 20% reduction was based on a month to month normalized electric savings, using 2012 as the baseline year. Currently, DEQ averages an annual normalized electric reduction of 19.9% since the program's inception in 2012. Some of these savings result from behavior change, but many of DEQ's energy savings derive from mechanical building improvements. The annual normalized average of 19.9% savings equates to 1,135,705 kWh. DEQ has volunteered to set a new goal to achieve 30% electric reduction by 2020.	<b>2018 Ozone Season - Present</b>

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Green Commuter BINGO	DEQ	Ongoing	The DEQ Green Team and the Air Quality Division sponsored Green Commuter BINGO in the month of May 2018 to help reinforce the efforts of Air Quality Awareness week in early May. BINGO activities included raising awareness of the agency's health advisories shared on social media, and ways to reduce motor vehicle emissions by changing travel habits and trying alternative methods of commuting. Prizes, provided for by the Green Team, were awarded to employees who successfully completed their BINGO cards. <b>2019 update: Green Commuter BINGO was renamed to Beat Ozone BINGO for the 2019 Ozone season contest. The intent is to increase awareness among employees while also sharing the information via social media to expand awareness to more citizens.</b>	Ongoing
Village Green Park Benches	DEQ	Existing/Planned	The DEQ and EPA installed a Village Green Bench (funded by an EPA grant) at the Children's Garden of the Myriad Botanical Gardens in Downtown Oklahoma City in 2015 as part of a national pilot study. The bench was officially opened at a November 10, 2015 ribbon-cutting ceremony which included EPA Region 6 Administrator Ron Curry, DEQ Executive Director Scott Thompson, state and city officials, and students from nearby John Rex Elementary School. The bench is equipped with portable instruments to measure ozone, fine particulate matter, and critical weather data, all powered by solar panels installed at the top. Monitoring data is collected in real time and sent to DEQ, the Village Green website, and an LCD display sign next to the bench. Visitors can use QR codes on the sign to see the mobile website data with graphs and look at what other benches around the country are measuring. Also, DEQ has added an Air Quality Flag that shows the Air Quality Index (AQI) forecast of the day through colored flags. Flags are changed daily after DEQ staff review the current and near-term air quality data, and often visiting children and their parents assist in the flag change. The Village Green project goal is to increase air pollution awareness by providing the public direct information about the	2015-Present
National Drive Electric Week OKC	National Drive Electric Week OKC	Ongoing	<b>2019 Update: In September of 2018, the fourth National Drive Electric Week event was held in Oklahoma City. Over 30 electric vehicles were displayed by dealerships as well as EV drivers. Ride and drives were provided. There are plans to hold another event in September 2019.</b>	Ongoing
Weather Festival	National Weather Center-Norman	Ongoing	The annual weather festival showcases the many weather related organizations and activities in central Oklahoma. This event features weather balloon launches, storm research vehicle displays, children's activities, amateur radio demonstrations and weather related information and products. The Air Quality Division is responsible for presentation space showcasing the division's programs and the air quality themed children's activity room.	Continuous
Electric Vehicle Fleet	OGE Energy Corp.	Ongoing	OG&E encourages the adoption of electric vehicles (EVs) has 25 electric vehicles in their fleet. In addition, the company is installing charging stations in several of its facilities in the metro OKC area so employees can conveniently charge their vehicles.	Continuous

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Electric Vehicle Promotion, Education, and Outreach	OGE Energy Corp.	Ongoing	OG&E has increased the amount of events, marketing, and other outreach conducted around the promotion of electric vehicles for their customers and employees.	Ongoing
NOx Emission Reduction	OGE Energy Corp.	New	<p>As OG&amp;E began 2019, in fulfillment of the ongoing commitment to emissions reduction, nitrogen oxides (NO<sub>x</sub>) are expected to be lower by nearly 75 percent below 2005 levels. OG&amp;E has taken a number of actions to achieve this, including:</p> <ul style="list-style-type: none"> <li>• Added more than 1,000 MW highly efficient combined-cycle natural gas units. These units employ NO<sub>x</sub> emission reduction technologies, including low-NO<sub>x</sub> combustion systems and, for the majority, post-combustion Selective Catalytic Reduction (SCR) systems.</li> <li>• Retired 630 MW of older, inefficient gas generation.</li> <li>• Added 460 MW of high-efficiency, quick start turbines which provide critical reliability support for Oklahoma's rapidly growing wind supply as well as help displace higher-emitting generation in the Southwest Power Pool. These natural gas-fired turbines employ state-of-the-art low-NO<sub>x</sub> combustion systems.</li> <li>• Added 450 MW of OG&amp;E-owned wind generation and 12.5 MW of pioneering solar generation, with Purchase Power Agreements for up to 400 MW of wind.</li> <li>• Increased investment in energy efficiency and conservation.</li> <li>• Implemented 100% deployment of Smart Meters which has enabled and empowered customers to manage their usage, reducing annual demand on the grid by approximately 150 MW.</li> <li>• Created and implemented the Smart Hours program which incentivizes customer electricity use at "off-peak" times and delays the need for new peaking generation.</li> </ul>	Ongoing
Oklahoma State Facilities Energy Conservation Program	State of Oklahoma	Ongoing	During the 2012 legislative session, Oklahoma lawmakers passed SB 1096, which created a conservation program. The law includes a provision that sets forth a goal to target a cumulative energy savings of not less than 20% by the year 2020, when compared with 2012 utility expenditures (27A O.S., §3-4-106.1) As of the last update in 2017, expenditures were down 27 percent from April 2016 to April 2017.	2009 - Present
Oklahoma State Mandated Energy Efficiency Requirements	State of Oklahoma	Ongoing	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.	1990-Present



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Emission Reduction Projects	Entity	Status	Description	Schedule/Completion Dates
Private Alternative Fuel Vehicle (AFV) Loans	State of Oklahoma	Ongoing	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 period is six-years.	Present - 2025
The Oklahoma Energy Security Act	State of Oklahoma	Ongoing	Established state wide goals (O.S. 17, Section 801.1 et seq.) 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.	2015- Present
Emergency and Transportation Revolving Fund	State of Oklahoma	Ongoing	SB 656 (2015) allows counties to apply for no-interest loans, for a maximum of 5 years, for the purchase of CNG vehicles or the conversion of existing fleet vehicles to CNG.	Ongoing
Energy Efficiency	Tinker Air Force Base	Ongoing	Currently implementing third Energy Saving Performance Contract (ESPC) task order 3 with investment of \$243 million toward Energy Conservation Measures (ECM). Energy reductions will be achieved through boiler plant improvements, building automation systems, building envelope and lighting improvements. Target energy reduction goal is 23%.	Ongoing
Water Reduction Measures	Tinker Air Force Base	Ongoing	Tinker AFB will realize water savings through the following ECMs including decentralizing large boiler plants, replacing or discontinuing the use of aging steam lines, use of flow restrictors on valves/faucets and installing low flow fixtures. Target base wide water reduction is 2% annually.	Ongoing
Natural Gas Reductions	Tinker Air Force Base	Ongoing	The Tinker AFB ESPC task order 3 is decentralizing steam consumption by shutting down large steam boilers and replacing them with high efficient hot water heating or high efficiently natural gas fired heating units. This project is projected to result in an annual energy savings of 600,000 MMBtu/yr.	Continuous
Fleet Electrification	Tinker Air Force Base	Ongoing	Tinker has developed a multi-year plan to convert a portion of our government owned fleet vehicles to electric (EV) and plug-in hybrid vehicles (PHEV). In 2018 Tinker completed the construction of twenty-six Level 2 charging stations for their government vehicle fleet vehicles. Currently two base organizations utilize this charging station infrastructure.	Continuous
Bike Share	Tinker Air Force Base	Ongoing	Tinker AFB installed their first bike sharing hub of eight (8) bikes in partnership with Gotcha Bike. These bikes are primarily provided to Airmen (living on base) as an alternative to car ownership, but are open to the base populous as a whole. Tinker anticipates installing additional hubs in the future to support one-way travel.	Ongoing
Vanpooling	Tinker Air Force Base	New	Partnering with EMBARK to provide the civilian employees and military members a way to commute to Tinker in multi-passenger vehicles. This program will use Air Force's Mass Transportation Benefit to supplement the cost of commuting. No cost to the commuter based on current commodity prices.	Continuous
Glass recycling	Tinker Air Force Base	New	Installation of our first glass bottle crusher to process glass into a sand substitute to be used at our facility. Project goal is to process 5 tons of glass in the first year. Reduces landfill waste and partially replaces the purchase of sand.	Continuous



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Emission Reduction Projects	Entity	Status	Description	Schedule/Completion Dates
Vehicle Idle reduction policy	Tinker Air Force Base	Ongoing	An idle reduction policy memo was signed by the Installation Commander in May 2016. Limits the idle to 5 minutes for non-emergency fleet vehicles. The goal is a 50% reduction in idling on the base.	Continuous
CNG and Alternative fuel use	University of Oklahoma, Cleveland Area Rapid Transit (CART)	Ongoing	<b>2019 update: The University of Oklahoma currently has 251 on-road vehicles fueled by alternative energy sources including: 92 CNG vehicles, 24 Cleveland Area Rapid Transit buses fueled with B20, and 145 E85 vehicles.</b>	Ongoing
Recycling	University of Oklahoma	Ongoing	In fiscal year 2018, the University recycled 660 tons of material. Diverting 660 tons from the landfill reduces the equivalent of 2,600 metric tons of carbon dioxide equivalents (source: EPA WARM tool). In terms of more comprehensible values, this would be the equivalent of removing 460 passenger vehicles driven for one year (source: EPA Greenhouse Gas Equivalencies Calculator).	Ongoing
Metering	University of Oklahoma	Ongoing	Metering data is collected, recorded and analyzed to form the basis of energy efficiency improvements. A Metering Infrastructure Capital Improvement Plan was initiated to ensure the campus was metered with smart meters at the building-level for utilities: electric (2013), steam and chilled water (2018-2019), and natural gas (2020). To further leverage the capabilities of the smart meters, the University is investing in an Automated Metering Infrastructure. WebCTRL is a platform that will collect real time utility consumption data and provide greater insight to utility demand.	Ongoing
Building Automation	University of Oklahoma	Ongoing	The campus implemented a building automation system (BAS) to provide higher levels of comfort and productivity, while reducing energy consumption, emissions, and operating expenses. Of the approximate 10.6 million square footage of the Norman campus, 83.98% is operated by the building automation system. The BAS establishes temperature and time parameters for HVAC systems. During occupied hours, temperature settings are established to maintain energy management goals. Additionally, buildings are scheduled to follow default heating and cooling settings during unoccupied time periods. During unoccupied time periods, temperatures are allowed to cool to 55 degrees in the winter, and allowed to rise to 80 degrees in the summer.	Ongoing

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Emission Reduction Projects	Entity	Description	Completion Dates
Air Quality Awareness Grants	ACOG	City, county and tribal governments along with public schools, public school districts and public universities are eligible to receive CMAQ funds for small infrastructure projects and public education programs that assist in the reduction of single-occupancy trips and/or ozone-forming emissions. Four Air Quality Awareness grant projects have been completed by: Cleveland Area Rapid Transit (CART), City of Oklahoma City, City of Norman, and City of Yukon. Projects included bicycle racks, bicycle repair equipment, vehicle wraps, and educational materials.	2014
Central Oklahoma Commuter Corridors Study (CentralOK!go)	ACOG	Following up on recommendations from the 2005 Regional Fixed Guideway Study, CentralOK!go is the next step in the federal planning process for evaluating the feasibility of a regional transit system. This study will provide more in-depth analysis and information concerning an alignment, technology, ridership forecasts, estimated costs, and potential funding sources for each corridor.	2013 - 2014
GetAroundOK.com	ACOG	Encourages the use of alternative transit by providing information on carpooling, public transit and other means of green transportation. Users can log their green transportation use and search for carpools in their area. <b>2019 Update: To date, 16,764 commutes have been logged throughout the region, resulting in the reduction of 7,195 trips and reducing fuel use by 14.1K gallons. The software program was discontinued in 2017, but ACOG is updating a regional ride sharing strategy and is planning to launch a replacement in the next 12 months.</b>	2012 - 2017
Transportation Alternatives Program	ACOG	In 2014, approximately \$2.8 million was administered to bicycle and pedestrian infrastructure projects throughout the Central Oklahoma region as part of MAP-21 through TAP. In 2018, approximately \$8.4 million was administered to bicycle and pedestrian infrastructure projects throughout the Central Oklahoma region as part of the STBG-UZA (TAP) set aside through the FAST Act. Eligible projects included on-road and off-road trails, safe routes for non-drivers, rails-to-trails conversions and Safe Routes to Schools projects. <b>2019 Update: Projects are in the process of completion.</b>	April 2014 - Continuous

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Emission Reduction Projects	Entity	Description	Completion Dates
Decrease Idling Time	City of Edmond	In 2015 the Fleet Maintenance Manager addressed excessive idling with City staff. In 2016 a Fleet Idle Reduction Departmental Directive was created and distributed to City Staff, approved and supported by City management. All department heads have been made aware of this new policy directive. <b>2019 Update: This program is ongoing and will continue to be monitored.</b>	2016
Geothermal Installation	City of Edmond	The Mitch Park YMCA and Edmond Public Schools Competitive Pool installed 300 geothermal wells, and the expectations are that it saves an estimated 50% on energy operating costs. The new Public Safety Center, which now houses the Edmond Police Department, Public Safety Communications, and Emergency Management functions, received 140 geothermal wells, which is expected to save \$12K - \$15K per year in heating and cooling. In 2016 Geothermal wells were installed for the new Public Safety Center and the facility is now open. In 2017 geothermal wells were also used in the design, along with solar, for the Water Resources facility.	2017
Solar Installation	City of Edmond	Solar is not expected to play a large role in the City's energy portfolio, but the Water Resources Department incorporated it into the design of the new Water Treatment Plant in 2017.	2017
Sunday Bus Service	EMBARK	In FY19, Oklahoma City's transit service expanded to Sunday and establishing seven day a week service. Sunday service was added commensurate with Saturday service, seeing 16 routes with one-hour frequency between 6:30 a.m. and 6:30 p.m. Overall, EMBARK logged about 2.8 million bus service miles in FY18.	Ongoing/Complete
Sheridan-Walker Municipal Parking Garage Improvement	City of Oklahoma City, EMBARK	With approximately 1,300 parking spaces, the Sheridan-Walker garage is the primary location for thousands of City of Oklahoma City employees located near the City's downtown campus. Renovations to the garage, itself built in 19XX, began in 2017 and included remodeling 20,780 square feet at the ground floor to house a division of the City's Utilities Department and the replacement of existing lighting with more efficient LED fixtures and LED-illuminated signage to reduce electricity use. Between changes to lighting and controls, the project has saved a total of 363,877 kilowatt hours.	2018 Complete
Lincoln Park Golf Course Clubhouse	City of Oklahoma City	Funded through a combination of \$2.25 million in general obligation bond funds and \$7 million in revenue generated by the pay-to-play golf course, the Lincoln Park Clubhouse is a 32,000 square foot facility outfitted with efficient LED lighting and a geothermal HVAC system to reduce lifecycle energy costs.	Complete

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### Completed Projects

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Emission Reduction Projects	Entity	Description	Completion Dates
Southwest Oklahoma City Public Library	City of Oklahoma City, Pioneer Library System	The \$3.9 million, 20,000-square foot public library was constructed with sustainable materials obtained within a 500-mile radius of Oklahoma City and included geothermal heating and cooling systems to reduce the facility's energy use.	2012 - Ongoing
Lawnmower Exchange Program	DEQ	Citizens of the Oklahoma City MSA can exchange their old gas-powered lawn mower for a cash waiver toward the purchase of a new electric lawn mower. In 2015, 95 gas-powered mowers were traded in for recycling, and 71 new electric mowers were purchased with vouchers. Emissions reductions were estimated to be approximately 63 lbs of NOx, 47 lbs of PM, 17,121 lbs of CO and 2,561 lbs of HC. Three exchange events were held in the spring of 2015. Oklahoma County had the most exchanges (72), followed by Cleveland (15), Canadian (5), and one each for Garvin, Logan, and Lincoln counties.	Completed
Open Burning Rule	DEQ	This rule is expected to reduce PM, VOC, and NOx emissions within the Oklahoma City and Tulsa Metropolitan Statistical Areas (MSAs) by requiring the use of an air curtain incinerator 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 will prohibit open burning of waste in areas for which an ozone or PM Alert is in effect. In 2014, DEQ performed outreach to 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.	Completed
Solar Powered Monitoring Station	DEQ	In 2015, the Air Quality Division installed a 10.5 kW solar array at the Oklahoma City North monitoring site. The array consists of 35 LG 300 watt solar panels that generate approximately 16.280 MWh per year. This solar array has lowered the electric bill at the OKC North monitoring site by reducing the amount of electricity pulled from the power grid. The array was designed to produce approximately 75% of the power the site requires. There are no batteries to store power at the site, and excess power is fed directly into the grid. As of 2018, lifetime revenue saved at the site was over \$4,500. The site has saved over 72,000 pounds of CO2 emissions and represents the equivalent of 1,818 trees planted.	Completed



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Emission Reduction Projects	Entity	Description	Completion Dates
Solar Energy Pilot Projects	OGE Energy Corp.	In 2014, Oklahoma Gas and Electric (OG&E) launched a solar energy pilot project to test the deployment and operation of solar power on grid safety, maintenance, and reliability. Rooftop solar panels and battery storage facilities have been installed at several OG&E locations, and two community solar farms were developed at OG&E's Mustang Power Plant in 2015. The solar farms have a generating capacity of 2.5 MW which is roughly the equivalent of powering 500 homes. <b>During 2015, OG&amp;E installed Oklahoma's first universal solar power plant, the 2.5 MW Mustang Solar Project at the Mustang Energy Center, and during 2017, sited a second 10 MW solar power plant in Covington, Oklahoma. OG&amp;E offers customers, on a voluntary basis, an opportunity to purchase energy from the solar and wind renewable energy generators, and is consistently listed in the National Renewable Energy Lab's (NREL) Top Ten Utility Green Pricing Programs.</b>	Ongoing/Complete
OEC Solar Garden	Oklahoma Electric Cooperative	OEC's 250 KW solar facility, located in Norman between I-35 and N. Flood Avenue, generates solar powered electricity and can be viewed by drivers travelling down the very busy I-35 corridor. The project provides opportunities for potential marketing and promotion of solar energy.	Complete
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 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)	Complete
Environmental Protection Agency College and University Green Power Challenge	University of Central Oklahoma	For six consecutive years, the Environmental Protection Agency ranked the University of Central Oklahoma (UCO) first among schools in the Mid-American Intercollegiate Athletics Association and 23rd among 33 collegiate conferences and 78 schools overall. UCO uses 26 million kilowatt-hours of wind power annually and has on-site biodiesel productions.	2010 - 2016 / Complete
CNG station modernization	Tinker Air Force Base	Upgraded existing Compressed Natural Gas (CNG) fueling station to allow for utilization of current generation of CNG vehicles. Project allows expansion of newer model CNG vehicles to our fleet.	Complete

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Emission Reduction Projects	Entity	Description	Completion Dates
<b>Energy Management: Energy Upgrades &amp; Retrofits</b>	<b>University of Oklahoma</b>	<ul style="list-style-type: none"> <li>• LED Lighting - Existing lighting has been retrofitted to LEDs at the Union Parking Facility, the lower level of the Elm Street Parking Facility, Jones Art Center, Carpenter Hall, Sam Noble Museum, and Printing Services. Recently, LED fixtures were chosen for 35 newly installed street lights along Asp Avenue. Moving forward, new street lights will be LED fixtures.</li> <li>• HVAC Improvements - Recently, heating and cooling systems have been replaced at McCarter Hall, Kraettli Apartments, Telecomm Maintenance Facility, Fine Arts Center, Union, Buchanan Hall, and others.</li> <li>• Exterior Lighting Replacements - Without affecting overall light level or lamppost design, the installation of new light bulbs reduces total wattage by 50 percent.</li> <li>• Interior Lighting Retrofits -- By installing more efficient ballast, lower wattage light bulb and occupancy sensors, major campus energy reductions will result.</li> <li>• Vending Machine Mizers - Motion detectors on vending machines will eliminate constant product lighting, instead of using electricity 24 hours a day.</li> <li>• HVAC Improvements - Recently, heating and cooling systems have been replaced at McCarter Hall, Kraettli Apartments, Telecomm Maintenance Facility, Fine Arts Center, Union, Buchanan Hall, and others.</li> </ul>	<p style="text-align: center;">Complete</p>

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Emission Reduction Projects	Entity	Description	Completion Dates
OU Spirit Wind Farm	University of Oklahoma	<p>In 2008, the University signed a historic agreement with Oklahoma Gas &amp; Electric Company (OG&amp;E) to acquire 100% of our purchased electricity from renewable energy sources by 2013. This project was instrumental in enabling OG&amp;E to build the OU Spirit Wind Farm – along with the required transmission lines to the grid – in northwestern Oklahoma. The 101 megawatt "OU Spirit" wind farm features 44 2.3 MW turbines.</p> <p>2019 Update: Since entering into a power purchase program with OG&amp;E, the university has purchased over 1 billion kilo-watt hours of renewable energy. Doing so has helped to reduce our emissions by more than 50%, compared to 2008 baseline emissions, and abated more than 700,000 metric tons of carbon dioxide equivalent emissions from entering into the atmosphere and is equivalent to:</p> <ul style="list-style-type: none"> <li>•Taking 150,000 passenger vehicles off the road for one year.</li> <li>•Foregoing the burning 770,000,000 pounds of coal.</li> <li>•Planting 11,000,00 seedlings (grown for a period of ten years).</li> <li>•OR, preserving 830,000 acres of forest for 1 year.</li> </ul>	Complete
Electricity Generation: Utility Plant #4 (UP4)	University of Oklahoma	<p>In June of 2012, OU substantially completed and commissioned Utility Plant Number Four (UP4), a state of the art cogeneration plant. The plant generates steam and electricity and operates at a 75% plant efficiency. UP4 was designed to more fully utilize the heat it generates, reducing emissions by 15%. It does this by capturing what would normally be waste heat and reinjecting it into the utility making process to generate steam. Today, the plant is able to generate an additional 197k MMBTUs of utilities annually for the same volume of natural gas that would have been required in 2010.</p>	Complete