ASSOCIATION OF CENTRAL OKLAHOMA GOVERNMENTS

Red Dirt Resiliency:

A Plan for Stronger Infrastructure & Risk Reduction

A Comprehensive Climate Action Plan For Central Oklahoma

Stantec

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Canadian County

- City of Yukon
- City of Piedmont
- City of El Reno
- City of Mustang
- Canadian County Emergency Management

Grady County

- City of Blanchard
- Town of Goldsby

Cleveland County

- Cleveland County District 3
- City of Moore
- City of Blanchard
- City of Norman
- Town of Slaughterville
- Oklahoma State Department of Health

Pottawatomie County

- City of Shawnee

Lincoln County

- City of Midwest City
- City of Del City

Logan County

- City of Guthrie

Oklahoma County

- City of Edmond
- City of Oklahoma City
- City of The Village
- City of Bethany
- City of Harrah
- City of Choctaw
- Town of Luther
- Oklahoma County Emergency Management
- Oklahoma County District 1
- Oklahoma County District 3

Stakeholders

- Oklahoma Climate Fund
- Oklahoma City Community Foundation
- Oklahoma City Chamber of Commerce
- Oklahoma Department of Environmental Quality
- Oklahoma Natural Gas
- Oklahoma Gas & Electric
- One Gas
- EightTwenty Solar
- Urban Land Institute of Oklahoma
- Neighborhood Alliance of Central Oklahoma
- Environmental Federation of Oklahoma
- OKC Beautiful
- Oklahoma Electric Cooperative
- Oklahoma Indian Legal Services
- Oklahoma Insurance Department
- The University of Oklahoma

Executive Summary

Central Oklahoma stands at a pivotal moment. With nearly 1.5 million residents across eight counties, the Oklahoma City Metropolitan Statistical Area (MSA) faces mounting challenges from extreme weather, aging infrastructure, and rapid population growth. The "Red Dirt Resiliency" Comprehensive Climate Action Plan (CCAP), led by the Association of Central Oklahoma Governments (ACOG), provides a coordinated, actionable roadmap to reduce climate risks, strengthen resilience, and promote prosperity for all communities in the region.

Why This Plan?

Authorized under the federal Climate Pollution Reduction Grants (CPRG) Program, this plan responds to increasing risks from natural hazards (tornadoes and strong winds, droughts, floods, ice storms, deep freezes, extreme heat, wildfires, and more) that threaten public safety, economic stability, and quality of life. Local governments are stretched thin, facing rising costs and limited resources, while certain populations bear the brunt of these impacts. The CCAP brings together municipalities, counties, tribal nations, technical experts, and community stakeholders to address these challenges through shared vision and collective action.

Planning Process

The CCAP was developed through a deliberate, inclusive, and data-driven process. It began with a review of existing plans and policies, followed by extensive stakeholder engagement (workshops, interviews, and public surveys) to identify regional challenges and opportunities. Data analysis assessed climate hazards, emissions, and evolving risks. The result is a set of prioritized strategies tailored to Central Oklahoma's unique needs.

Key Findings

Emissions

Buildings and transportation are the largest sources, accounting for over 80% of regional emissions. Without action, emissions will remain high, worsening climate impacts and contributing to air quality issues.

Natural Hazards

Extreme weather events are increasing in frequency and severity, with disproportionate effects on low-income and disadvantaged communities.

Infrastructure & Land Use

The region's combination of densely populated urban centers and expansive rural areas requires flexible, scalable solutions. Aging infrastructure and fragmented planning slow progress.

Funding & Capacity

Limited local revenue and competition for grants hinder long-term investments. Regional coordination, pooled resources, and forward-thinking policies are essential.

Strategic Actions

The Plan prioritizes actions that build institutional capacity, foster collaboration, and remove barriers to implementation. High-impact strategies include:

- Coordinating regional planning, funding, and emergency response.
- Updating codes and development procedures for consistent, regional standards.
- Investing in clean transportation, energy efficiency, and resilient infrastructure.
- Expanding tree canopy, green space, and nature-based solutions.
- Supporting workforce development and economic diversification.

Benefits & Equity

The CCAP emphasizes a distribution of benefits that targets investments in underserved communities to improve health, safety, and economic opportunity. Climate action is framed not as a limit on growth, but as a pathway to prosperity, cleaner air and water, and stronger communities.

Implementation & Monitoring

ACOG will lead regional coordination, technical support, and progress tracking. Municipalities, counties, and partners will implement projects, with ongoing evaluation to ensure transparency and effectiveness. Annual reporting will document emissions reductions, community benefits, and lessons learned. Importantly, achieving lasting and impactful emissions reductions will require leadership and coordinated action from federal and state government, as well as market incentives and broad policy shifts that extend beyond the capacity of ACOG and its regional partners.

Conclusion

By aligning policies, resources, and partnerships, Central Oklahoma can proactively address climate risks, safeguard public health, and build a resilient future. The "Red Dirt Resiliency" plan is a call to collective action - ensuring that every community has the tools, knowledge, and support needed to thrive in the face of change.

Transportation & Mobility

Transportation generates a total of 38% of Central Oklahoma's greenhouse gas emissions. As a national freight hub, the Oklahoma City MSA has seen rapid growth in transportation warehousing jobs posting the most growth over the last decade. Finding ways to prepare this sector for climate change hazards and prioritizing bold and comprehensive strategies for emissions reduction is critical for the region's future resilience.

Emission Generation & Reduction

Emissions from transportation and land-use are generated from:

- On-road vehicles (e.g., emissions from semi-trucks and passenger cars)
- Off-road vehicles (e.g., forklifts and construction equipment)
- Water, air, and rail travel (e.g., passenger planes)

Emissions can be reduced by switching to alternative fuels like CNG, electrifying off-road equipment, and engaging in behavior changes that reduce trips.

Barriers & Opportunities

Identified barriers to climate action in this sector include unsafe or incomplete pedestrian and bike infrastructure and long driving distances between places of interest.

Opportunities include fleet transition plans building out EV charging infrastructure, improving multimodal access, and tying transportation projects to public health, safety, and emergency response co-benefits.

Where to Focus

Most existing transportation systems were not designed to withstand the rising temperatures and increasing severity of precipitation associated with climate change. It is important that decision-makers begin to consider climate risks and vulnerabilities during routine transportation planning. Spatial mapping can be used to prioritize specific infrastructure or communities at heightened risk.

Priority Actions

	Action	Type
1	Reduce fuel consumption by an average of 10% through the integration of cost-effective, engineered traffic solutions.	GHG
2	Pilot the transition of 45 heavy-duty fleet vehicles to alternative fuel vehicles by 2030.	GHG
3	Implement smart growth and multimodal infrastructure strategies to achieve a 10% reduction in on-road transportation ghg emissions by 2050.	GHG
4	Collaborate with ODOT to integrate local government input during project initiation for context-sensitive planning.	

GHG Emissions Avoided

If all priority actions are implemented, the transportation and mobility sector is projected to achieve the following reductions in emissions.

Year	GHG Emissions Avoided (Metric Tonnes)
2030	818,007
2050	1,762,238

Action #1: Transportation & Mobility

Reduce fuel consumption by an average of 10% through the integration of cost effective, engineered traffic solutions.

This action will enhance traffic efficiency and reduce vehicle fuel consumption across the Central Oklahoma region through the use of engineered, cost effective traffic management solutions. The goal is to achieve an average 10% reduction in fuel use by 2030 by improving signal coordination, implementing time-of-day signal plans, actuated signal control, adaptive traffic signal technologies, intersection design, and corridor operations to reduce idling and improve traffic flow.

These improvements will help lower GHG and air pollutant emissions, while also providing measurable economic benefits such as reduced fuel costs and improved travel reliability. By addressing congestion and inefficient traffic movement, the initiative supports regional objectives for cleaner air, sustainable mobility, and energy efficiency.

The ACOG will lead coordination among local jurisdictions, transportation agencies, and state partners including the Oklahoma Department of Transportation. ACOG will assist member governments through data analysis, regional modeling, funding support, and integration of this effort into existing programs such as the Congestion Management Process, the Unified Planning Work Program, and the Long Range Transportation Plan.

Progress will be evaluated using regional performance data such as fuel use trends, corridor travel times, and vehicle idling rates. Results will be tracked through traffic sensor systems, fleet telematics, and transportation modeling updates to measure the cumulative impact on fuel consumption and emissions over time.

Estimated Costs

The estimated regional cost to implement this action is between $8 and $12 million. This conservative range reflects a combination of signal optimization, intersection upgrades, adaptive control technology deployment, and supporting data and coordination activities.

Estimated Benefits & Outcomes

Metric	2030	2050	Cumulative (2030–2050)
Metric Tons of CO_2e Avoided	848,126	954,630	18,549,055
Total Fuel Saved (Mega Gallons)	92.9	104.6	2,302.5
NO_x Reduction (Metric Tons)	669	752	14,621
$PM_{2.5}$ Reduction (Metric Tons)	31	35	671
CO Reduction (Metric Tons)	6,651	7,486	145,455
Potential Cost Savings	$241,619,970	$271,961,604	$5,284,382,809

Implementation Steps

- Conduct a regional traffic and fuel use assessment to identify high idle zones, congestion hotspots, and corridors with the greatest potential for fuel savings.
- Evaluate cost benefit scenarios for engineered solutions including signal timing improvements, intersection redesigns, and lane configuration changes.
- Engage traffic engineers, public works departments, and local jurisdictions to prioritize feasible projects that deliver measurable reductions in congestion and idling.
- Develop a phased implementation plan focused on low cost, high impact improvements that can be deployed efficiently and evaluated using existing performance data systems.
- Monitor fuel consumption and traffic performance through telematics, traffic sensors, and GPS based datasets to measure results and inform future project phases.

Tracking Progress

- Average regional fuel consumption reduced by ten percent by 2030
- Reduction in greenhouse gas and criteria air pollutant emissions from decreased idling and improved traffic flow
- Measurable reductions in vehicle delay time and corridor travel time variability
- Improved public and private sector cost savings through reduced fuel expenditure
- Enhanced travel reliability and system efficiency for all users

Implementation Milestones & Schedule

Milestone	Timeframe
Complete baseline fuel and traffic efficiency assessment	**2026**
Identify and prioritize target corridors and intersections	**2026–27**
Develop regional traffic optimization plan with cost benefit analysis	**2027**
Launch pilot implementation projects in selected municipalities	**2028–29**
Evaluate pilot performance and expand successful measures region wide	**2029–30**
Publish regional progress report and update metrics	**2031**

Authority To Implement

Local governments and the Oklahoma Department of Transportation will oversee implementation through transportation planning and capital improvement processes. ACOG will coordinate regional efforts, provide modeling and technical support, and assist with funding and data tracking to ensure measurable regional progress toward emission reduction and fuel efficiency goals.