

MUSCOGEE (CREEK) NATION PRIORITY CLIMATE ACTION PLAN



Prepared for:

Muscogee (Creek) Nation

Okmulgee, Oklahoma

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Executive Summary

The U.S. Environmental Protection Agency (EPA) provided grant funding to the Muscogee (Creek) Nation (MCN) to develop a Priority Climate Action Plan (PCAP) and a Comprehensive Climate Action Plan (CCAP). The PCAP is to include proposed priority carbon reduction measures for submittal to EPA by April 1, 2024. The PCAP provides the basis for eligible entities to pursue Climate Pollution Reduction Grant (CPRG) implementation funding from the EPA, up to \$25 million. In other words, applications for CPRG implementation grants must seek funding to implement measures that are included in a PCAP developed with funding from the CPRG planning grant. Implementation grant applications are due to the EPA by May 1, 2024.

The MCN hired Olsson to provide support in the development of the PCAP. As part of the PCAP development, Olsson and MCN: reviewed regional documents and plans related to decarbonization; conducted a greenhouse gas (GHG) inventory; developed a community engagement plan; conducted stakeholder and public engagement; and evaluated measures for inclusion in the PCAP. Based upon these activities, the MCN has developed the following measures for inclusion in the PCAP. Each measure includes a rationale, GHG reduction, benefits analysis, authority to implement, funding analysis, and workforce planning analysis. Supporting information is included for the GHG regional inventory, and stakeholder and public engagement. The order in which these measures are listed is based on the largest GHG contributors:

1. Energy Sector – (1) Install renewable energy and energy storage systems on government-owned facilities; and (2) Develop distributed and community-scale renewable energy generation, microgrids, and vehicle-to-grid infrastructure in disadvantaged communities, including remote and rural regions.
2. Transportation Sector – (1) Upgrade government vehicle fleets, including public transit fleets, by replacing internal combustion engines with low/no emission vehicles and expand electric vehicle charging infrastructure to support battery electric vehicles; and (2) Incentivize eligible agencies and individual automobile owners to purchase low/no emission vehicles and associated electric vehicle charging infrastructure.
3. Industry Sector – Implement orphan well program to properly close oil and gas orphan well sites, including remediation and restoration activities, as needed.
4. Agricultural Sector – Implement policies and promote improved land management practices to enhance carbon stocks.

1. Introduction

1.1 CPRG and PCAP Overview

The U.S. Environmental Protection Agency (EPA) provided grant funding to the Muscogee (Creek) Nation (MCN) to develop a Priority Climate Action Plan (PCAP) and a Comprehensive Climate Action Plan (CCAP). The PCAP is to include proposed priority carbon reduction measures for submittal to EPA by April 1, 2024. The PCAP provides the basis for eligible entities to pursue Climate Pollution Reduction Grant (CPRG) implementation funding from the EPA. Implementation grant applications are due to the EPA by May 1, 2024. In other words, applications for CPRG implementation grants must seek funding to implement measures that are included in a PCAP developed with funding from the CPRG planning grant.

The MCN hired Olsson to provide support in the development of the PCAP. Olsson's support included: project management; a review of regional documents and plans related to decarbonization; conducting a greenhouse gas (GHG) approximation; developing a community engagement plan; conducting stakeholder and public engagement; and evaluating measures for inclusion in the PCAP. Based upon these activities, the MCN has developed the following measures for inclusion in the PCAP. Supporting information is included for the GHG regional approximation, and stakeholder and public engagement. The order in which these measures are listed is based on the largest GHG contributors and MCN interest in implementing these measures.

1.2 Muscogee (Creek) Nation (MCN)

The MCN is one of the largest federally recognized Native American tribes in the United States. Pictured in **Figure 1**, the region of the MCN includes the entirety of three (3) counties including: Creek, Okfuskee, and Okmulgee. The MCN also includes portions of eight (8) counties including: Hughes, Mayes, McIntosh, Muskogee, Rogers, Seminole, Tulsa, and Wagoner.

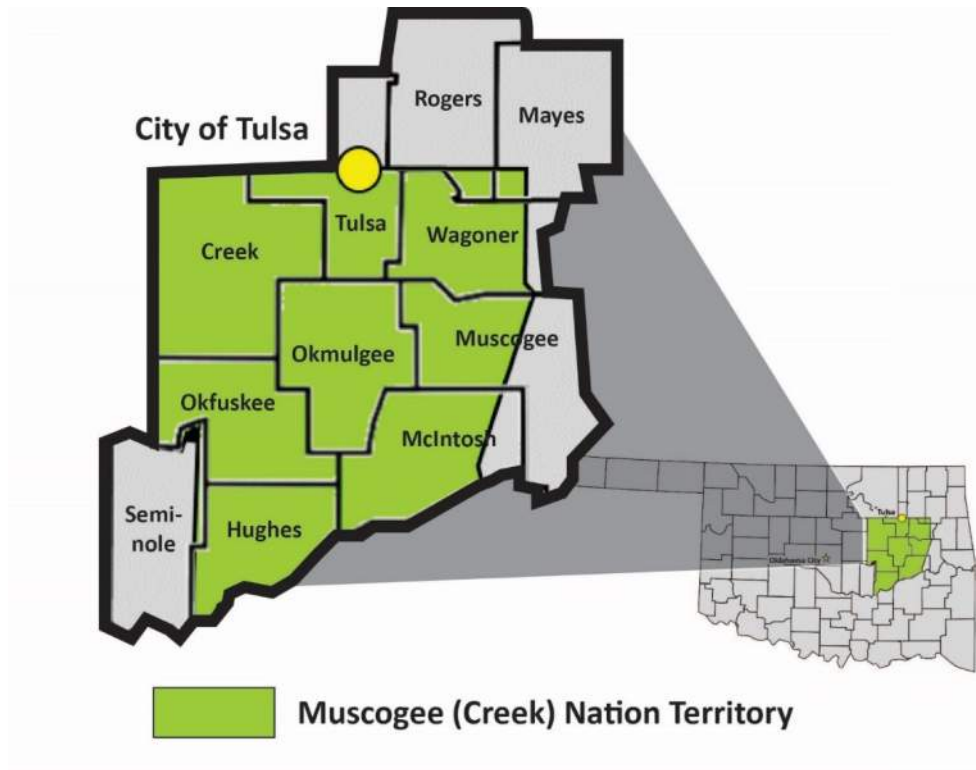


Figure 1. Muscogee (Creek) Nation (MCN) Territory boundaries within Oklahoma.

Like other Native American tribes, the MCN is recognized as a sovereign nation with the inherent right to self-governance. With that, they have their own government, which consists of elected officials and tribal councils responsible for making decisions about tribal affairs. The MCN engages in various economic activities, including gaming, agriculture, tourism, and energy development. They operate businesses and enterprises to generate revenue for the tribe and provide services to tribal members. The MCN provides a range of services to its citizens, including healthcare, education, housing assistance, recreation, cultural preservation programs, and more. Overall, the MCN is a vibrant and resilient Indigenous community with a rich cultural heritage and a commitment to preserving their sovereignty, culture, and way of life. Like many other Indigenous communities, the MCN is vulnerable to the impacts of climate change, including extreme weather events, shifting ecosystems, and changes in natural resource availability. The MCN's engagement and pursuit in environmental efforts reflect their commitment to sustainability, cultural preservation, and the well-being of their people and lands (MCN 2024).

1.3 Benefits to Low-Income and Disadvantaged Communities

Historically, the MCN signed several treaties with the United States government, often ceding large portions of their traditional lands in exchange for various promises and guarantees. However, like many other tribes, they have faced significant challenges related to land loss, forced relocation, and attempts at assimilation.

Lands of Federally Recognized Tribes are often considered low-income and disadvantaged communities (LIDACs) due to a variety of historical and contemporary factors. These factors include:

1. **Historical Displacement and Dispossession:** Indigenous peoples in the United States have faced centuries of displacement, forced removal, and loss of their traditional lands due to colonization and settler expansion.
2. **Economic Marginalization:** Many tribal communities have historically faced economic marginalization, with limited access to resources and opportunities for economic development. This has resulted in higher rates of poverty, unemployment, and limited infrastructure in many tribal areas.
3. **Limited Access to Services:** Tribal communities often have limited access to essential services such as healthcare, education, and infrastructure compared to non-tribal communities. This lack of access can further perpetuate economic and social disparities.
4. **Legal and Regulatory Challenges:** Tribes face unique legal and regulatory challenges related to land ownership, sovereignty, and jurisdiction. These challenges can create barriers to economic development and investment in tribal lands.
5. **Environmental Justice Concerns:** Many tribal communities are disproportionately impacted by environmental issues such as pollution, resource extraction, and climate change. These environmental injustices can further exacerbate existing economic and social challenges.
6. **Cultural and Social Challenges:** Tribal communities also face cultural and social challenges related to preserving their languages, traditions, and identities in the face of ongoing pressures from mainstream society.

Due to these factors, lands of Federally Recognized Tribes are often characterized as disadvantaged, and efforts to address these disparities typically involve a combination of policy interventions, economic development initiatives, and partnerships between tribal governments, the federal government, and other stakeholders (GAO n.d.).

2. GHG Emissions Inventory

2.1 Overview

GHG emissions data is often collected and reported at various administrative levels, including national, regional, state, county, and/or city levels. The MCN region includes three (3) counties: Creek, Okfuskee, and Okmulgee. The MCN also includes portions of eight (8) counties including: Hughes, Mayes, McIntosh, Muskogee, Rogers, Seminole, Tulsa, and Wagoner.







The GHG emissions include carbon dioxide (CO₂), nitrous oxide (NO₂), methane (CH₄), and other various fluorinated gases (EPA n.d.a). Carbon dioxide equivalent (CO₂e) is a term for describing different GHGs in a common unit. While some datasets supplied emissions data in a CO₂e, others needed to be converted to reflect their global warming potential (GWP) based on the International Panel on Climate Change (IPCC; 2021) Sixth Assessment Report. The 100-year GWP values from this report are the most recent values to date (EPA n.d.e) and were used to calculate the fMCN emission approximations in varying sectors.

It is understood that there are inevitable uncertainties within the estimation process, but it is also recognized that these MCN inventory approximations have been reinforced and compared with data from multiple reliable data sources.

2.2 Data Sources and Methodology

Data sources used for the MCN GHG inventory include U.S. Environmental Protection Agency's (EPA) National Emissions Inventory (NEI), the EPA's eGRID Data Explorer, and the U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) State and Local Planning for Energy (SLOPE) Platform. Approximations were also based on the comparisons of Oklahoma statewide data from the EPA's GHG Inventory Data Explorer.

In total, six (6) sectors were chosen to represent overall GHG emissions inventory based on the EPA's recommendations (EPA n.d.c). For each sector, GHG emissions data was pulled from the following sources:

SECTOR	SOURCES
<p>Transportation</p> 	<p>2017 NEI transportation GHG emissions data</p> <ul style="list-style-type: none"> • Mobile on road and non-road
<p>Electric Power</p> 	<p>2017 DOE NREL SLOPE GHG emissions data</p> <ul style="list-style-type: none"> • Industrial, commercial, and residential electricity use
<p>Industry</p> 	<p>2017 DOE NREL SLOPE GHG emissions data</p> <ul style="list-style-type: none"> • Industrial natural gas use <p>2017 NEI transportation GHG emissions data</p> <ul style="list-style-type: none"> • Industrial equipment
<p>Agriculture</p> 	<p>2017 NEI transportation GHG emissions data</p> <ul style="list-style-type: none"> • Agricultural equipment
<p>Commercial</p> 	<p>2017 DOE NREL SLOPE GHG emissions data</p> <ul style="list-style-type: none"> • Commercial natural gas use
<p>Residential</p> 	<p>2017 DOE NREL SLOPE GHG emissions data</p> <ul style="list-style-type: none"> • Residential natural gas use

GHG emissions data from the years 1990 through 2022 were utilized in data collection, but the years 2017 and 2020 were prioritized. Initially, the project team had hoped to utilize 2019 data, but found that 2019 data was not readily available for all sectors desired for consideration in the

overall MCN GHG inventory. From there, when comparing data from 2017 and 2020 it became clear that 2020 data was notably lower when compared to other years, especially within the transportation sector, due to the COVID pandemic and its effects. The data from 2017 stands out as the most readily available and relevant among recent years, which is why it was chosen to represent the MCN GHG inventory baseline year for comparison purposes, among others. 2017 is also the baseline year used by INCOG for its PCAP, and it is beneficial to have alignment for comparative purposes.

Population data from the U.S. Census Bureau's (2020) Quick Facts is available every 10 years, with 2010 and 2020 giving the most recent data sets. The year 2020 was chosen to represent the MCN's population estimates. This is considered an estimate because MCN is comprised of 11 counties, but only three (3) of these counties lie within the MCN as a whole. The other eight (8) counties are partial to the boundaries of the MCN. Percentages of these counties within the MCN were estimated based on both land area within the MCN and urban and rural population areas. Counties with partial areas located within the MCN encompassed urban areas with generally higher populations. This was accounted for with higher percentages in population estimates than from the land area population estimates.

For further information on the process for the MCN's GHG Inventory evaluation and approximation, please see **Appendix A, GHG Emissions Inventory**.

2.2.1 State Level Data

2.2.1.1 EPA's GHG Inventory

The EPA (2017a) is responsible for producing the United States' official Greenhouse Gas Inventory, which is a comprehensive report detailing the country's emissions of GHGs. This data, available for 1990 through 2021, can be broken down into statewide reports, which was done for Oklahoma. Each year's inventory is an essential tool for understanding the sources and trends of GHG emissions in the United States. The dataset for each state includes emissions from economic sectors, including electric power, transportation, industry, agriculture, commercial, and residential. State-level data from this source was used from the year 2017 to compare and approximate regional emissions. Refer below to **Figure 2**.

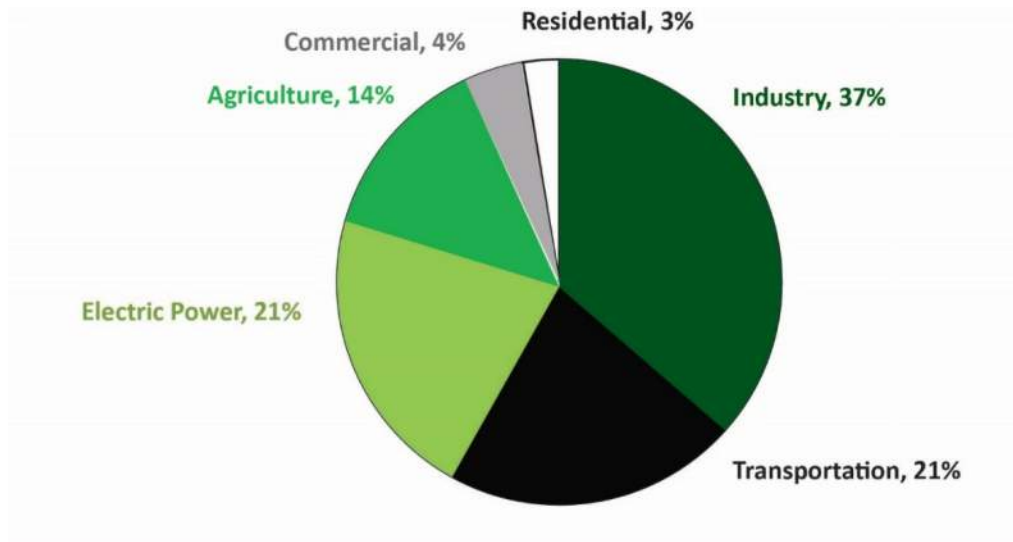


Figure 2. 2017 GHG emissions in Oklahoma by economic sector.

2.2.1.2 EPA’s eGRID Data Explorer

The EPA’s (2022) eGRID Data Explorer conversions for the state of Oklahoma were used to calculate carbon dioxide equivalent GHG emissions for the electric power sector’s electricity use. The output emission rate provided by the eGRID Data Explorer calculates this by dividing the total annual adjusted emissions by annual net generation to obtain pounds of carbon dioxide (CO₂) per megawatt hour (MWh).

2.2.2 County Level Data

2.2.2.1 EPA’s National Emission Inventory

The National Emission Inventory (NEI) is a comprehensive database maintained by the EPA (2017b) that can be extracted down to the county-level. The NEI compiles information on the emissions of air pollutants from various sources, including industrial facilities, power plants, transportation, and other activities contributing to air pollution. The data is collected from a variety of sources, including emissions inventories submitted by industries, fuel usage data, and other relevant information. The NEI provides data on the types and amounts of pollutants released into the air and serves as a critical tool for air quality management and regulatory decision-making. For this analysis, 2017 county-level transportation data was used for the transportation sector and agricultural equipment data was used for the agricultural sector to approximate the MCN GHG

inventory. **Figure 3** gives a comparison of the transportation GHG emissions data collected through NEI versus the estimated overall GHG emissions per person in the MCN.

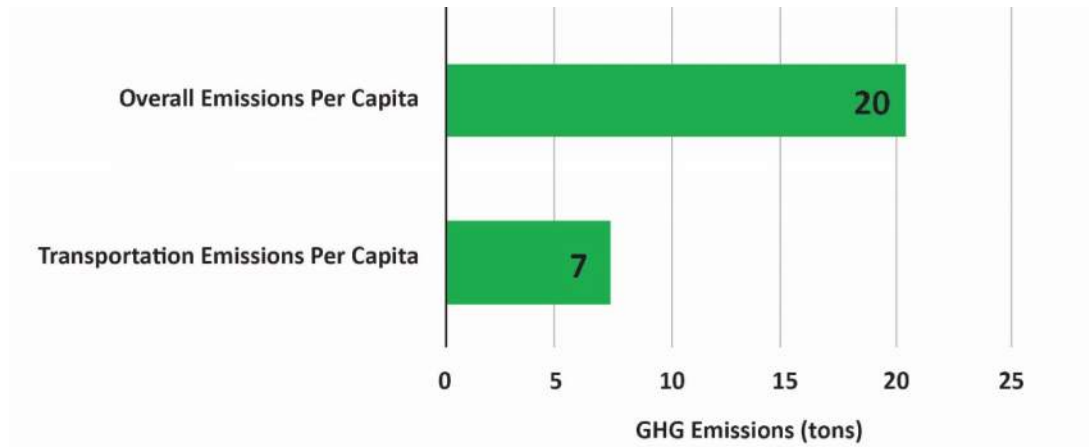








Figure 3. GHG emissions per capita in the Muscogee (Creek) Nation (MCN) for all economic sectors and for the transportation sector only.

2.2.2.2 DOE’s NREL State and Local Planning for Energy Platform

The State and Local Planning for Energy (SLOPE) Platform is a tool developed by the National Renewable Energy Laboratory (NREL), which falls under the purview of the United States Department of Energy (DOE; 2017). This platform was used to collect net electricity and natural gas energy consumption data available by state, county, and city levels. County data was gathered for all eleven counties and approximated for eight of these counties. This data is modeled by NREL based on projected, business-as-usual electricity and natural gas consumption and expenditures for residential, commercial, and industrial sectors using baseline 2016 estimates. The years 2017 and 2020 were available for the collection of this information. Following other data extractions for this GHG inventory for the MCN, 2017 proved most applicable.

2.3 Results

SECTOR	GHG EMISSIONS (TONS)
Transportation 	5,508,774
Electric Power 	4,366,408
Industry 	3,354,796
Agriculture 	786,968
Commercial 	684,440
Residential 	678,925

The MCN GHG inventory emissions data was obtained from reliable sources, such as government agencies or research institutions in cooperation with government agencies. Gathered data was converted where necessary to create a baseline dataset of streamlined metrics for the year 2017. This dataset was further adjusted to accurately depict the partial areas that the MCN encompasses within eight (8) of the eleven (11) counties.

Approximately 15,380,311 tons of GHG emissions were estimated for the MCN. This approximate amount was grouped by transportation, electric power, industry, agricultural, commercial, and residential sectors. For a visual breakdown of GHG emissions percentages per economic sector, see **Figure 4**.

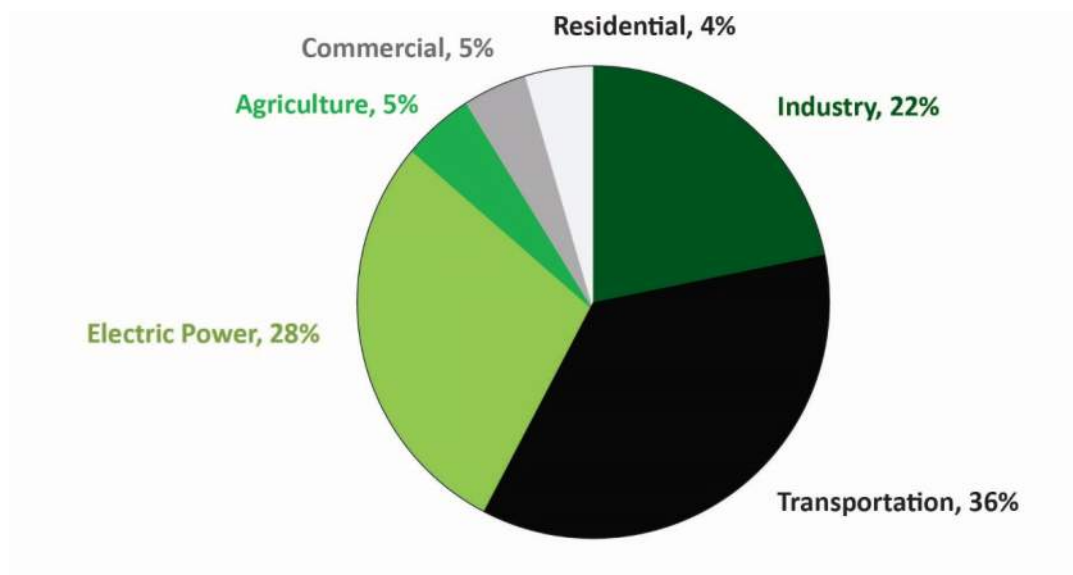


Figure 4. Estimated GHG emissions in the Muscogee (Creek) Nation (MCN) by economic sector.

The *transportation* sector accounts for approximately 36 percent or 5,508,774 tons of the region's GHG emissions. Emissions from transportation are mainly derived from burning fossil fuels for cars, trucks, and trains (EPA n.d.c). Over 94 percent of the fuel used for transportation is petroleum-based, including mainly gasoline and diesel (IPCC 2021). This sector was slightly adjusted based on GWP conversions and population data.

The *electric power* sector accounts for approximately 28 percent or 4,336,408 tons of the region's GHG emissions. This includes emissions from electricity production used by other end use sectors. In 2021, 60 percent of the country's electricity came from burning fossil fuels, mostly natural gas and coal (EIA 2022). This sector was slightly adjusted based on eGRID conversions and population data.

The *industrial* sector accounts for approximately 22 percent or 3,354,796 tons of the region's GHG emissions. Emissions from industry primarily come from burning fossil fuels for energy, as well as GHG emissions from certain chemical reactions necessary to produce goods from raw materials (EPA n.d.c). This sector was slightly adjusted based on GWP conversions and population data.

The *agricultural* sector accounts for approximately five percent or 786,968 tons of GHG emissions. Agricultural emissions are accumulated from livestock, agricultural soils, and crop production (EPA n.d.c). Data for this sector only includes emissions from agricultural equipment found within transportation datasets. This sector was slightly adjusted based on GWP conversions and population data.

The *commercial* sector accounts for about four percent or 684,440 tons of the region's GHG emissions, while the *residential* sector accounts for about four percent or 678,925 tons. Emissions from the commercial and residential sector include fossil fuels burned for heat, the use of gases for refrigeration and cooling in buildings, and non-building specific emissions such as the handling of waste (EPA n.d.c). These sectors were also slightly adjusted based on population data.

3. GHG Reduction Priority Measures

3.1 Measure #1: Electric Power Sector

The proposed measures for inclusion in the MCN PCAP are as follows:



- Install renewable energy and energy storage systems on government-owned facilities.
- Develop distributed and community-scale renewable energy generation, microgrids, and vehicle-to-grid infrastructure in disadvantaged communities, including remote and rural regions.

3.1.1 Rationale for Measure

Approximately 28 percent of GHG emissions in the MCN come from the electric power sector. While decarbonation at all local utilities may not be feasible, the MCN has its own tribal utility and there are public and private entities pursuing, or that are interested in pursuing, the installation of renewable energy and energy storage systems. During stakeholder engagement for the PCAP planning process, the MCN described ongoing, planned, or potential activities that could gain a critical path forward with grant funding, such as CPRG. The MCN is currently preparing to initiate a systemwide utility Master Plan that will include infrastructure assessments, recommendations,

and conceptual plans in renewable generation, distribution lines, and substation facilities. Utility portfolios in the MCN consist primarily of fossil fuels and as such there is an opportunity for government entities to drive decarbonization efforts in the energy sector. A detailed documentation of public and stakeholder engagement activities and input is provided in **Appendix B, Stakeholder and Public Engagement Summary**.

Both the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA) provide substantial funding for green energy project deployment (The White House 2023). Programs such as the EPA's Solar for All (EPA n.d.b) and the Department of Energy's Grid Innovation Program (DOE n.d.a) provide grant support for developing and advancing clean energy generation and storage projects on both public facilities and homes in LIDAC communities. Stakeholders identified these programs and project deployment as opportunities to include workforce development efforts like skills training and educational partnerships that will benefit LIDAC populations, support the long-term maintenance of infrastructure investments, encourage the local management of such resources, and system resilience. In addition, the IRA's direct pay provisions provide tribal governments with the ability to benefit from some clean energy tax credits. Tribal governments that elect to use the direct pay provisions essentially are reimbursed part of the cost of building a clean energy project or purchasing new clean energy vehicles for non-personal use. Grant programs, coupled with the IRA's direct pay provisions, allow green and renewable energy projects more feasibility without pursuing traditional debt financing mechanisms (EPA n.d.d).

3.1.2 Quantified GHG Reduction

Given that approximately 28 percent of the regional inventory is from the electric power sector, there is the potential for implementation of a regional energy innovation program to have a significant impact in reducing GHG emissions. Distributed power generation could significantly reduce the region's GHG emissions. As an example, Google's Project Solar tool estimates that Tulsa's solar rooftop potential could reduce annual CO₂ emissions by 2.9 million tons per year (Google 2019). While it may not be feasible or cost-effective to cover all rooftops with solar, and only about half of Tulsa is within the MCN boundary, such an analysis demonstrates the large potential upside with the comprehensive implementation of a program such as the one envisioned by this measure.

If 33 percent of current energy use could be replaced by zero carbon energy sources, the impact would be an overall reduction of regional GHG emissions of almost 10 percent. The GHG emissions reduction is largely dependent upon the amount of funding that is available for implementation of the components contained within this measure. While a 33 percent reduction in GHG emissions in the energy sector cannot be realized solely with CPRG funding, implementation of specific projects to provide solar generation at government facilities, develop some solar generation on the MCN lands, and develop distributed solar on commercial/residential properties will significantly reduce GHG emissions and can be a catalyst for implementing other such projects both by the MCN and by other government entities and individuals.

3.1.3 Benefits Analysis

The renewable energy industry requires a diverse range of skills and expertise to design, develop, and operate these clean energy systems. Professionals with backgrounds in engineering, project management, environmental science, and technical expertise are in high demand. Organizations that oversee program implementation will also have procurement and oversight responsibilities. In addition, field services will be needed to construct and install, operate, and maintain these systems.

Overall, implementation of this measure is anticipated to result in an increased demand for workers, and associated need for workforce development and training, which should have a positive impact on the MCN's economy. There are 54 programs across the IIJA and IRA that provide for green workforce development that include recruiting, training, and hiring workers. Further, the IRA includes tax credits and other rebate programs to support energy-related workforce development activities. Through the IRA's direct pay provision, the Department of the Treasury can provide tiered tax credits to public entities that include workforce development activities in their renewable energy projects such as registered apprenticeships and meeting prevailing wage requirements.

In addition to GHG reductions, other co-pollutant emission reductions would be realized for criteria and hazardous air pollutants, including a resultant positive impact from reduced ozone and PM2.5 emissions, and the associated health impacts of those emissions.

3.1.4 Review of Authority to Implement

The MCN has a tribal utility that has the authority to implement renewable energy, energy storage systems, and electric utility infrastructure (localized generation, transmission, substations, and distribution) on government-owned facilities. In addition, an energy innovation program could extend incentives to a number of different entities and individual property owners or users, and the MCN has the authority to receive federal funds and distribute those funds in accordance with the associated federal government grant program requirements.

3.1.5 Identification of Other Funding Mechanisms

The Biden-Harris Administration has facilitated substantial investments that are pivotal in supporting businesses and local authorities in the transition to clean energy economies. This allocation of funds, unprecedented in recent history, is accessible through various programs tailored for Tribal communities and Native populations as part of President Biden's "Investing In America" Agenda. Notably, these include \$13 billion from the Bipartisan Infrastructure Law (BIL) and an additional \$700 million from the IRA. Tribes and Tribal entities are also eligible to apply for other discretionary funding programs through both BIL and IRA.

MCN has identified the following opportunities to support Measure #1:

- Department of Energy Clean Energy Technology Deployment on Tribal Lands
- Department of Energy Grid Resilience State and Tribal Formula Grant
- Department of Energy Improvement in Rural or Remote Areas
- Environmental Protection Agency Community Change Grants
- Department of Energy Tribal Energy Financing
- Department of Agriculture Rural Energy for America Program Renewable Energy Systems & Energy Efficiency Improvement Guaranteed Loans & Grants

3.1.6 Workforce Planning Analysis

A targeted clean energy workforce development strategy for the MCN, particularly leveraging the College of the Muscogee Nation, would center around enhancing Career and Technical Education (CTE) programs. This approach would involve establishing specialized curricula focused on clean energy and microgrid technologies. The College of the Muscogee Nation, serving as a hub, could

develop certificate and degree programs in fields like renewable energy engineering, environmental science, and installation and maintenance technicians.

Collaboration with clean energy companies to provide hands-on training and internships would be a key component. These partnerships could offer students real-world experience and ensure that the skills taught are directly applicable to current industry needs. The strategy should also include developing apprenticeship programs, allowing students to learn on the job while earning credentials. To further strengthen the workforce pipeline, outreach, and educational programs at the high school level, focusing on clean energy career paths, would be vital. These initiatives could include summer camps, workshops, and guest lectures from professionals in the field, aimed at sparking early interest in clean energy careers.

3.2 Measure #2: Transportation Sector

The proposed measures for inclusion in the MCN PCAP are as follows:



- Upgrade government vehicle fleets, including public transit fleets, by replacing internal combustion engines with low/no emission vehicles and expand electric vehicle charging infrastructure to support battery electric vehicles.
- Incentivize eligible agencies and individual automobile owners to purchase low/no emission vehicles and associated electric vehicle charging infrastructure.

3.2.1 Rationale for Measure

Approximately 36 percent of GHG emissions in the MCN come from the transportation sector. Expanding opportunities for alternate transportation mode choices and promoting the electrification of tribal vehicles provides greater options for the MCN as a government and for individual citizens, many of whom will choose a cleaner mode for travel. Stakeholder engagement included discussion about the estimated 50,000 unlinked passenger trips per year that provide a demand for alternative transportation, as well as the perceived emissions impact of the local

Park’N’Ride facility (for which emissions reductions are not quantified). The MCN stakeholders have expressed an interest in pursuing the federally supported funding to transition government fleet vehicles to electric vehicles (EVs) and provide the necessary infrastructure and maintenance training. There were concerns voiced about the feasibility of implementation, long-term maintenance, and support, as well as vehicle limitations vs. tribal needs—regarding the size and distance needed to traverse the territory and surrounding areas. Ultimately, stakeholders established consensus for transportation measures—as these measures are the most directly controlled and implementable, at various scales, by the MCN.

Investments in equitable transportation infrastructure is a key pillar of both the IIJA as well as the IRA. Multiple grant programs through the Department of Transportation, such as the Reconnecting Communities Pilot (RCP) Program (DOT n.d.b) and Neighborhood Access and Equity (NAE) Grant Program (DOT n.d.a), provide funding to support equitable access to community facilities and anchor institutions and safer roads and streets that can incentivize the use of alternative modes of transportation. Further, federal grant and tax credit programs can aid in the transition of commercial vehicles, heavy-duty trucks, and school bus fleets to low or no emission vehicles. These, coupled with the Federal Highway Administration’s EV charging infrastructure programs, can aid in the adoption and transition to low or no emission vehicles. There are also opportunities for the development of a ridesharing and e-bike rebate program targeted at LIDAC communities.

3.2.2 Quantified GHG Reduction

There is substantial opportunity to reduce overall emissions given that approximately 36 percent of the MCN’s regional GHG emissions come from the transportation sector. Even a 10 percent shift to no-emission vehicles could result in a 3.6 percent reduction in the regions GHG emissions. While the MCN understands that EVs would not currently be considered no-emission vehicles because utilities are not completely decarbonized, renewable generation is increasing significantly, and the trend is expected to continue in Oklahoma. For example, EVs purchased in the next five or so more years will trend towards becoming no-emission vehicles in the future. The MCN currently has a fleet of over 700 vehicles, which creates a significant opportunity for the MCN to decarbonize its fleet, setting an example for others, while also setting an example for citizens of the community to purchase low or no-emission vehicles.

3.2.3 Benefits Analysis

Leading by example by prioritizing the purchase of EVs not only demonstrates a personal commitment to sustainability but also serves as a powerful catalyst for inspiring broader societal change. By opting for EVs, individuals display their dedication to reducing greenhouse gas emissions, improving air quality, and mitigating climate change. These actions not only contribute to environmental preservation but also provide tangible success stories that resonate with the general public. Furthermore, prioritizing EV purchases stimulates market demand, encourages innovation in the automotive industry, and fosters the development of advanced technologies and infrastructure to support electric mobility. The growth of charging infrastructure at tribal facilities plays a vital role in promoting community charging access, supporting sustainable transportation options, fostering economic development, preserving cultural values, and demonstrating leadership in environmental stewardship. By investing in EV infrastructure, tribal communities contribute to a more sustainable future for their members and surrounding populations.

Implementation of these transportation measures requires a skilled workforce that has expertise in planning, engineering, design, and development. Workers skilled in project management will be essential for successful deployment of transportation programs that may come out of CPRG funding opportunities. Additionally, experts in program and policy fields will play a significant role in strategies regarding incentive programs or other promotional efforts for the adoption of EVs. Field services will be required for construction and installation of many of these systems, including electricians that may be required to have specific certifications, such as the Electric Vehicle Infrastructure Training Program (EVITP), to meet federal requirements for components like charging stations (Electrification Coalition 2023). Finally, the workforce will need to include workers to fulfill any compliance or regulation protocols for implemented components. Discretionary grant programs established through the IIJA and the IRA dedicate merit review criteria to workforce development activities connected with the proposed scope of work. Local and state agencies should consider formalizing relationships with local and regional institutions of higher education, as well the secondary education system, to expand youth and registered apprenticeships in the construction trades to meet the merit scoring criteria and advance regional workforce development targets.

A reduction in GHG emissions can lead to co-benefits in terms of reducing other criteria air pollutants (CAPs) and hazardous air pollutants (HAPs), which can subsequently contribute to improved air quality and health outcomes. Common CAPs include particulate matter (PM),

nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), and ground-level ozone (O₃). Many sources of GHG emissions, such as fossil fuel combustion, also emit CAPs. Therefore, efforts to reduce GHG emissions can result in decreased emissions of these pollutants, leading to improvements in air quality. HAPs, also known as air toxics, are pollutants known or suspected to cause cancer or other serious health effects. Examples of HAPs include benzene, formaldehyde, mercury, and dioxins. Similar to CAPs, many sources of GHG emissions also emit HAPs. Therefore, reducing GHG emissions can help to mitigate the release of these hazardous pollutants into the atmosphere, reducing the associated health risks. Ground-level ozone is a harmful air pollutant formed through complex chemical reactions involving precursor pollutants such as nitrogen oxides (NO_x) and volatile organic compounds (VOCs), which are also emitted alongside GHGs from various sources. By reducing GHG emissions, particularly NO_x and VOCs, which are key precursors to ozone formation, efforts to mitigate climate change can help reduce ground-level ozone concentrations, thereby improving air quality and public health.

Improvements in air quality resulting from reductions in CAPs, HAPs, and ozone can have significant health co-benefits, including reduced respiratory and cardiovascular illnesses, decreased premature mortality, and improved quality of life. Lower levels of air pollutants can decrease the incidence of respiratory diseases such as asthma, chronic obstructive pulmonary disease (COPD), and bronchitis, as well as cardiovascular diseases including heart attacks and strokes. Improved air quality can lead to a reduction in premature deaths associated with exposure to air pollution, particularly among vulnerable populations such as children, the elderly, and individuals with pre-existing health conditions. Additionally, cleaner air can contribute to overall improvements in quality of life by reducing symptoms such as coughing, wheezing, and shortness of breath, and by enhancing outdoor recreational opportunities and productivity (West et al. 2013). Therefore, policies and initiatives aimed at reducing GHG emissions not only address climate change but also yield significant public health benefits through improvements in air quality and reductions in associated health risks.

In addition to GHG reductions, other co-pollutant emission reductions would be realized for criteria and hazardous air pollutants, including a resultant positive impact from reduced ozone and PM_{2.5} emissions, and the associated health impacts of those emissions.

3.2.4 Review of Authority to Implement

The MCN has the authority to purchase/ lease alternatively fueled government fleet vehicles (such as EVs) and install supporting charging infrastructure on government-owned facilities. These actions by extension can provide subsequent community benefits by providing access to public vehicle charging at many of the government-owned facilities which are located throughout the tribal region. Access to public charging at tribal facilities would be fully defined by tribal authorities and could be developed in a way which supports both fleet operations and encourages community EV adoption by addressing public gaps in charging access. The MCN has the authority to receive federal funds and distribute those funds in accordance with the associated federal government grant program requirements.

3.2.5 Identification of Other Funding Mechanisms

The BIL and IRA collectively represent a significant federal commitment to advancing the development and adoption of alternative energy vehicles in the United States. The BIL allocates substantial funds for the expansion of EV charging infrastructure, which is critical in addressing range anxiety and promoting EV adoption. It also includes provisions for upgrading public transportation systems to incorporate cleaner, more sustainable vehicle technologies.

Complementarily, the IRA introduces various incentives aimed at both manufacturers and consumers. These include tax credits for businesses involved in the production of clean vehicles and subsidies for consumers purchasing electric or hybrid vehicles. The act also focuses on enhancing domestic manufacturing capabilities for key components of alternative energy vehicles, such as batteries, thereby reducing dependency on foreign supply chains and creating jobs within the U.S. Both laws, through their funding and incentives, demonstrate a strong federal initiative towards reducing greenhouse gas emissions and fostering a transition to a more sustainable and resilient transportation sector powered by clean energy.

The MCN has identified the following opportunities to support Measure #2:

- Department of Transportation Low or No Emissions (Bus) Program

3.2.6 Workforce Planning Analysis

To advance the transition to low/no emission government vehicle fleets and enhance EV charging infrastructure, a focused strategy leveraging the College of the Muscogee Nation's

career and technical education resources is essential. This strategy should encompass the development of specialized training programs at the college, dedicated to the maintenance and repair of electric and hybrid vehicles, such as EVITP, and the installation and maintenance of EV charging stations. These programs would be designed in close collaboration with industry experts, ensuring they align with the latest technological standards. Certifications in EV technology, offered through the college, will provide students with recognized qualifications, ensuring their skills meet industry needs.

The college can foster partnerships with private companies to facilitate real-world training opportunities, such as internships and apprenticeships, providing students with hands-on experience. Incentives and support from government initiatives would be critical in bolstering these educational programs and infrastructural developments. The college's role in shaping career pathways in EV technologies and infrastructure maintenance within the public sector is pivotal, offering students clear routes for long-term career development. Active recruitment and awareness initiatives aimed at both high school graduates and the existing workforce, would emphasize the environmental impact and technological importance of these roles.



3.3 Measure #3: Industry Sector

The proposed measure for inclusion in the MCN PCAP is as follows:

- Implement orphan well program to properly close oil and gas orphan well sites, including remediation and restoration activities, as needed.

3.3.1 Rationale for Measure

Approximately 22 percent of GHG emissions in the MCN come from the industrial sector (which exclude emissions from electricity generation). These emissions are primarily generated from the use and extraction of natural gas and the use of industrial equipment.

Stakeholders identified opportunities to consider and capture the lifecycle opportunities of orphan wells, including the maintenance and technical skill demand that will incur over time. Partnerships for workforce development efforts were a priority throughout all measures, especially the industrial

sector to reduce emissions and foster local resilience. Workforce training is exciting and economically beneficial, and several stakeholders represented education partners for future career-tech programs. Additional documentation of comments from the public and stakeholder engagement activities is summarized in **Appendix B**.

In 2023, the MCN received a grant award from the U.S. Department of Interior (DOI) for planning development of an Orphaned Well Program. Though, in its early stages, the program has already yielded substantive results by identifying, assessing, and prioritizing orphaned oil and gas wells on tribal lands for plugging and remediation. Implementing an orphan well plugging and remediation program to properly close oil and gas orphan well sites offers several benefits. Orphan wells can pose environmental hazards such as groundwater contamination, methane emissions, and habitat disruption. Properly closing these wells mitigates these risks, protecting ecosystems and public health. This supports responsible resource management and minimizes waste associated with abandoned infrastructure. Orphan wells may also present safety hazards to nearby communities, such as potential leaks, blowouts, or subsurface migration of fluids or gases. Closing these wells reduces the risk of accidents and associated harm to people and property. Additionally, orphan wells can create financial liabilities for governments, landowners, and taxpayers if responsible operators cannot be identified or are unable to cover the costs of well closure. Implementing an orphan well program helps reduce these liabilities by allocating resources to address abandoned wells and prevent future orphaning. Furthermore, orphan well programs often involve collaboration with affected communities, Indigenous groups, landowners, and other stakeholders. Engaging these stakeholders in the planning and implementation process can build trust, foster transparency, and ensure that local concerns are addressed effectively.

3.3.2 Quantified GHG Reduction

As noted previously, approximately 22 percent of GHG emissions in the MCN come from the industrial sector. These emissions are primarily generated from the use and extraction of natural gas and the use of industrial equipment. While it is difficult at this time to quantify the potential GHG reduction until an inventory of wells is completed (a process in which the MCN is beginning to undertake), the U.S. Department of Interior estimates that 8.2 million tons per year of CO₂ are emitted from abandoned wells in the United States (DOI 2023). The State of Oklahoma has an estimated 7 percent of these abandoned wells, many of which are on the MCN territory (EDF n.d). Therefore, it is plausible that 100,000 to 200,000 tons per year of CO₂ could be reduced by the MCN with the implementation of a comprehensive orphan well program.

3.3.3 Benefits Analysis

The building energy efficiency industry requires a diverse range of skills and expertise to assess, design, develop, construct, and operate energy efficiency buildings. Professionals with backgrounds in engineering, building design and construction, project management, HVAC, and technical expertise are in high demand. Organizations that oversee program implementation will also have procurement and oversight responsibilities. In addition, qualified construction/renovation professionals and technicians will be utilized to make these changes. Overall, implementation of this measure is anticipated to result in an increase demand for workers, and associated need for workforce development and training, which should have a positive impact on the economy in the MCN. The tribe should evaluate existing career and technical college building trade programs (e.g., HVAC, plumbing, electrical, construction technology) for coursework and training on energy efficient construction methods and materials. These institutions should be encouraged to adopt industry-recognized certificates or credentials in energy efficient technologies and methods.

In addition to GHG reductions, other co-pollutant emission reductions would be realized for criteria and hazardous air pollutants, including a resultant positive impact from reduced ozone and particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}) emissions, and the associated health impacts of those emissions.

The closure of orphan wells can create jobs and stimulate economic activity in regions affected by oil and gas production downturns. Activities such as well plugging, site remediation, and restoration provide employment opportunities for skilled workers and support local businesses.

3.3.4 Review of Authority to Implement

The MCN is a sovereign nation and has the authority to monitor, remediate, and close orphan wells on tribal lands within its reservation.

3.3.5 Identification of Other Funding Mechanisms

The Bipartisan Infrastructure Law allocates \$150 million for the purpose of well plugging, remediation, and restoration within Tribal territories. Tribal entities have the option to apply for grant funding to conduct well plugging activities themselves, or they may alternatively request that

the Secretary oversee the well plugging on their behalf, a process referred to as “In Lieu of Grant” assistance.

The MCN has identified the following funding opportunity to support Measure #3:

- DOI Tribal Orphaned Wells Phase 2 Implementation Grant Program

3.3.6 Workforce Planning Analysis

A strategic approach to developing a skilled workforce for closing orphan oil and gas well sites, including remediation and restoration activities, is essential. This strategy should include specialized training programs that focus on technical skills such as safe drilling practices, handling hazardous materials, and environmental restoration techniques. In tandem, the development of a certification or licensing system is vital to ensure that individuals and companies meet industry standards and adhere to safety regulations. Apprenticeship and on-the-job training programs will be pivotal, allowing trainees to acquire practical skills under expert supervision. It's important to outline clear career pathways in this sector, with a focus on long-term career growth and skill development.

Emphasizing safety and environmental training in all aspects of the program ensures that workers are well-prepared to handle occupational hazards and comply with environmental regulations. Providing job placement assistance and support services, such as resume workshops and interview preparation, will help newly trained workers transition into employment. Lastly, the strategy should also incorporate continuous education and skill upgrading opportunities to keep pace with evolving industry technologies and methods.



3.4 Measure #4: Agriculture Sector

The proposed measure for inclusion in the MCN PCAP is as follows:

- Implement policies and promote improved land management practices to enhance carbon stocks.

3.4.1 Rationale for Measure

Approximately five percent of the GHG emissions in the MCN are from the agricultural sector.

Stakeholder engagement activities identified carbon capture from agribusiness as a key priority for the PCAP. Several policies can be implemented to promote improved agricultural management practices aimed at enhancing carbon stocks in soils and vegetation. Such policies can focus on incentivizing sustainable land management practices, reducing emissions from agriculture, and enhancing carbon sequestration. Examples of this include financial incentives, such as subsidies, tax credits, or Payments for Ecosystem Services (PES) programs, investing in research and/or extension services, and implementing regulations.

The MCN can offer financial incentives such as subsidies, tax credits, or PES to farmers who adopt practices that enhance carbon stocks. These practices may include conservation tillage, cover cropping, agroforestry, and reforestation. Stakeholders referred to several examples of profitable agribusinesses, from hemp crops to smaller scale efforts like pollinator farms, which are both profitable and contribute to sequestering carbon. By incentivizing these practices, the MCN can encourage the adoption of sustainable agriculture practices that not only enhance carbon stocks but also improve soil health, water quality, and biodiversity, leading to more resilient and productive agricultural systems.

The MCN can provide direct subsidies to farmers to offset the costs of adopting carbon-enhancing practices. These subsidies can cover expenses such as purchasing cover crop seeds, implementing conservation tillage equipment, or establishing agroforestry systems (USDA n.d.a). Tax credits can be offered to farmers who adopt carbon-sequestering practices, reducing their tax liabilities or providing direct financial benefits. Tax credits can incentivize long-term investments in sustainable land management practices (Dubov 2021). PES programs, which could potentially be funded by the MCN, compensate farmers for providing ecosystem services such as carbon sequestration. Farmers receive payments based on the amount of carbon they sequester or other environmental benefits they provide (Fripp 2014).

Furthermore, MCN can invest in research and extension services to provide farmers with information, training, and technical assistance on sustainable land management practices that enhance carbon stocks. This includes practices such as conservation tillage, cover cropping, crop rotation, agroforestry, integrated pest management (IPM), precision agriculture using GPS, grassland management, restoration ecology, watershed management, and soil conservation (Saliu, Luqman, and AlKhaza'leh 2023). During engagement activities, stakeholders confirmed that incorporating specialized equipment and technology directly aligns with the feasibility and

business initiatives currently in place. This can help increase adoption rates among farmers and improve the effectiveness of carbon sequestration initiatives.

In addition, MCN can implement regulations or standards that require farmers to adopt practices aimed at enhancing carbon stocks or reducing GHG emissions from agriculture. For example, regulations may set limits on fertilizer use, promote sustainable grazing practices, or require the implementation of soil carbon monitoring and reporting. In support of this, education and outreach campaigns would raise awareness about the importance of soil carbon sequestration and sustainable land management practices among farmers, landowners, and the general public. This can help build support for policy initiatives and encourage voluntary adoption of carbon-enhancing practices.

The MCN has expressed their interest in growing hemp as a crop and utilizing unused lands within their region. Stakeholders in attendance at Virtual Stakeholder Meeting #2 discussed the federal support for hemp and the opportunities available through its production. Stakeholders identified hemp cultivation as a promising opportunity for both carbon sequestration and land utilization, especially on marginal lands where traditional agricultural crops may not thrive. By incorporating hemp into sustainable land management practices, it is possible to enhance soil health, mitigate climate change, and promote the restoration of degraded ecosystems. It is essential to ensure that hemp cultivation is conducted responsibly, considering environmental factors, land-use planning, and sustainable agricultural practices to maximize its benefits for carbon sequestration and land utilization.

3.4.2 Quantified GHG Reduction

An estimated five percent of the GHG emissions in the MCN are from the agricultural sector. With that said, there was limited data to extract for agriculture in the region. Ultimately, only emissions from agricultural equipment were applied to the MCN GHG inventory for this sector. In Oklahoma, the GHG emissions in the agricultural sector represent 14 percent of the overall emissions, which makes it the fourth highest economic sector after industry, transportation, and electric power (see **Figure 2**). This is noted to explain that while the GHG emissions in the agricultural sector of the MCN are still the fourth highest, percentages are lower than on a statewide basis. This may be due to not all emissions being accounted for within this sector given the lack of available data for the region. It could be said that the quantified reduction in GHG emissions due to efforts within this sector may have a stronger impact than projected.

While the improvements of agricultural land management practices directly relate to the agricultural sector, quantified GHG reductions can be applied across all sectors. GHG emissions from all sectors have the potential to be reduced through carbon sequestration.

Based on numerical figures for GHG reductions on land converted to grassland from the Economic Research Service with the USDA (n.d.b), and the availability of around 1,000 acres of unutilized lands in MCN, the following can be said. It is estimated that the conversion of land to grasslands can reduce GHG emissions by about 0.28 – 0.56 tons per acre per year, which amounts to around 420 tons per year. When converting land to forests, this number is slightly increased, with the potential to reduce GHG emissions 0.87 – 1.9 tons per acre per year. This amounts to around 1,385 tons of GHG emissions reductions per year. Alternatively, converting land for hemp production has a significantly larger potential to reduce GHG emissions per year (Speicher 2023). Hemp cultivation implies a reduction of 7.34 – 11.01 tons per acre per year, which comes to a reduction of about 9,175 tons of GHG emissions per year.

3.4.3 Benefits Analysis

Carbon sequestration through improved agricultural management practices can indeed benefit the reduction of GHG emissions in all economic sectors, not limited to agriculture.

Promoting improved agricultural management practices to enhance carbon stocks can have indirect health benefits, primarily by improving air and water quality, reducing exposure to harmful chemicals, and enhancing nutrition. Overall improvements in agricultural management practices contribute to long-term health and well-being. Examples of this include reduced air pollution, improved water quality, reduced pesticide exposure, enhanced nutrition, and supported mental health and well-being.

Agricultural activities such as livestock farming and fertilizer use can release ammonia, methane, and nitrogen oxides, which contribute to air pollution. Implementing practices that enhance carbon stocks, such as cover cropping, reduced tillage, and agroforestry, can help reduce emissions of these pollutants, leading to improved air quality and decreased respiratory illnesses (Merrigan et al. 2022). Agricultural runoff containing excess nutrients, pesticides, and sediment can contaminate water bodies, leading to water pollution and harmful algal blooms. Practices like conservation tillage, riparian buffers, and nutrient management can help reduce runoff and improve water quality, reducing the risk of waterborne diseases and protecting aquatic ecosystems. Adopting agroecological practices, such as IPM and diversified cropping systems,

can reduce the reliance on synthetic pesticides (Saliu, Luqman, and AlKhaza'leh 2023). This can minimize exposure to harmful chemicals for farmers, farmworkers, and nearby communities, reducing the risk of pesticide-related health problems such as cancer, neurological disorders, and reproductive issues. Sustainable agricultural practices that prioritize soil health, biodiversity, and crop diversity can lead to nutrient-rich soils and more nutritious crops. By promoting diverse diets and access to healthy foods, improved agricultural management can contribute to better nutrition outcomes, reducing the risk of malnutrition, micronutrient deficiencies, and diet-related chronic diseases. Last but not least, connecting people to nature and promoting sustainable agricultural landscapes can have positive effects on mental health and well-being. Access to green spaces, engagement in outdoor activities, and community involvement in sustainable agriculture can reduce stress, anxiety, and depression while fostering social cohesion and a sense of belonging (Merrigan et al. 2022).

While the health benefits of promoting improved agricultural management for carbon sequestration may not be as direct or immediate as those from reducing air pollution, they contribute to a healthier environment and support long-term public health outcomes. Integrating health considerations into agricultural policies and initiatives can help maximize the co-benefits of sustainable land management practices for both environmental and human health.

Additionally, with regard to hemp cultivation, hemp is a fast-growing plant that can capture large amounts of CO₂ from the atmosphere through photosynthesis. As hemp grows, it accumulates carbon in its biomass, including leaves, stems, and roots. When hemp biomass is harvested and processed into various products such as fibers, textiles, or biofuels, the carbon remains stored in these products, effectively sequestering carbon from the atmosphere. Hemp cultivation can also enhance soil carbon sequestration. Hemp has deep roots that can penetrate soil layers, contributing organic matter to the soil as it decomposes. This organic matter improves soil structure, fertility, and water retention, while also sequestering carbon in the soil. Additionally, hemp cultivation practices such as minimal tillage and cover cropping can further enhance soil carbon storage by reducing soil disturbance and increasing organic matter inputs (Moore 2023). Lastly, hemp has been explored for its potential in phytoremediation, the process of using plants to remove contaminants from soil or water. Hemp has shown the ability to absorb heavy metals and other pollutants from contaminated soils, thereby detoxifying the land and making it suitable for cultivation or other land uses. Phytoremediation with hemp can help rehabilitate polluted sites, improve soil quality, and mitigate environmental pollution while sequestering carbon in plant

biomass (Singh et al. 2023). Overall, hemp cultivation offers promising opportunities for carbon sequestration and land utilization, particularly on marginal lands where traditional agricultural crops may not thrive. By incorporating hemp into sustainable land management practices, it is possible to enhance soil health, mitigate climate change, and promote the restoration of degraded ecosystems.

3.4.4 Review of Authority to Implement

The MCN is a sovereign nation and has the authority to implement policies and promote improved land management practices to enhance carbon stocks within their territory and on their land.

With the MCN's expressed interest in hemp cultivation, there are a few considerations to acknowledge. First, growing hemp in Oklahoma is legal under state law, following the passage of legislation that aligns with the federal legalization of hemp through the 2018 Farm Bill. In April 2019, Governor Kevin Stitt signed SB 868 into law, which decriminalized hemp at the state level. This legislation authorized the Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) to oversee the Oklahoma Hemp Program, which developed rules and regulations for the cultivation, processing, and sale of hemp in accordance with state and federal laws. Farmers interested in growing hemp must apply for a license from ODAFF and comply with the program's requirements, including background checks, crop testing, and adherence to tetrahydrocannabinol (THC) concentration limits. Hemp cultivation in Oklahoma must comply with federal regulations outlined in the 2018 Farm Bill, which removed hemp from the list of controlled substances and classified it as an agricultural commodity. To be considered hemp, cannabis plants must contain no more than 0.3 percent THC on a dry weight basis. Farmers seeking to grow hemp in Oklahoma must obtain a license from ODAFF and adhere to the program's rules and regulations. These regulations cover various aspects of hemp cultivation, including licensing requirements, testing protocols, transportation, and record-keeping. It is essential for farmers and stakeholders involved in hemp cultivation to stay informed about any updates or changes to hemp laws and regulations at both the state and federal levels. Legislative changes, regulatory updates, and shifts in market dynamics can impact the hemp industry and cultivation practices (ODAFF 2021).

3.4.5 Identification of Other Funding Mechanisms

MCN has identified the following funding opportunities to support Measure #4:

- Department of Agriculture Environmental Quality Incentives Program (EQIP)

- Department of Agriculture Conservation Stewardship Program (CSP)

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Appendix A
GHG Emissions Inventory

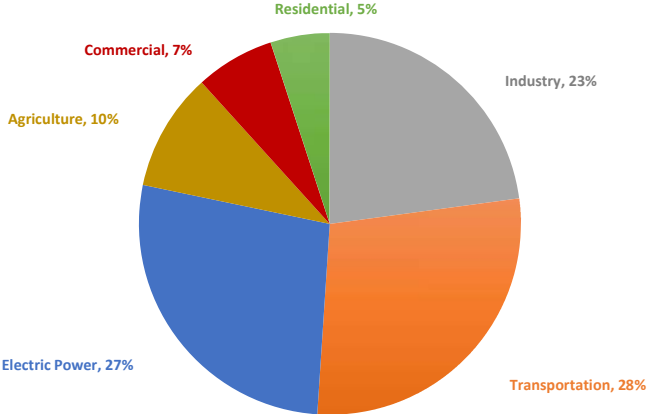
MCN CPRG PCAP GHG Inventory

Summary

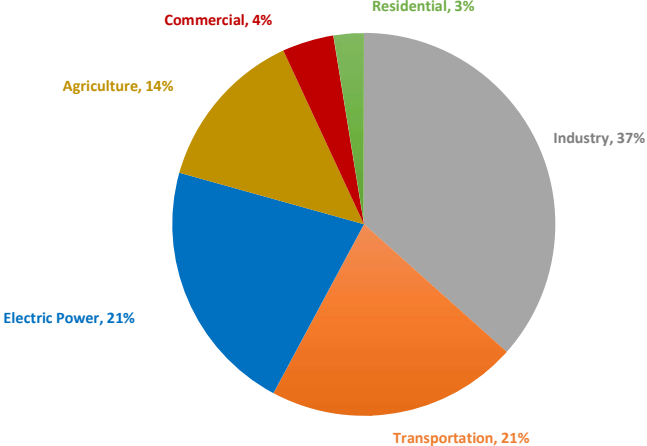
Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry Industrial Natural Gas 2017 NREL SLOPE <i>% of MCN based on Population</i> Industrial Equipment 2017 NEI <i>% of MCN based on Population</i> <i>w/ GWP conversions</i>	3,354,796	22%
Transportation 2017 NEI <i>% of MCN based on Population</i> <i>w/ GWP conversions</i> <i>Agricultural and Industrial equipment subtracted</i>	5,508,774	36%
Electric Power Industrial, Commercial, and Residential Electricity 2017 NREL SLOPE <i>% of MCN based on Population</i> eGRID conversions output emissions rate	4,366,408	28%
Agriculture Agricultural Equipment 2017 NEI <i>% of MCN based on Population</i> <i>w/ GWP conversions</i>	786,968	5%
Commercial Commercial Natural Gas 2017 NREL SLOPE <i>% of MCN based on Population</i>	684,440	4%
Residential Residential Natural Gas 2017 NREL SLOPE <i>% of MCN based on Population</i>	678,925	4%
Total	15,380,311	

Summary Visuals

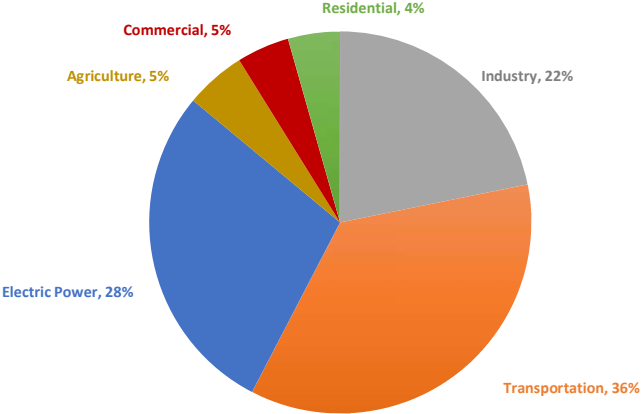
U.S. GHG EMISSIONS



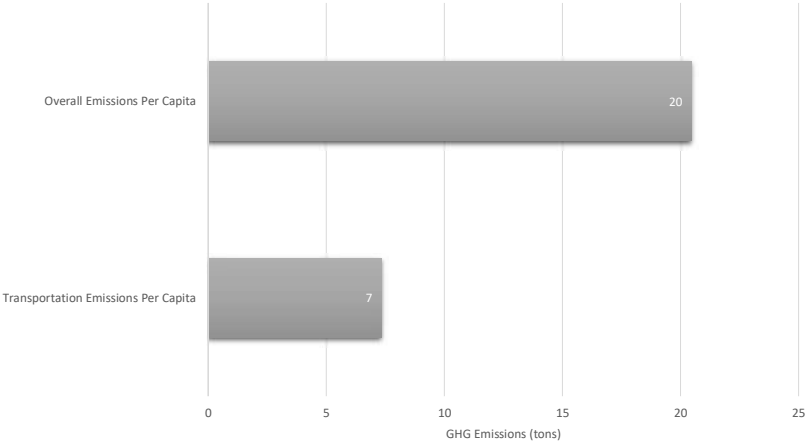
OKLAHOMA GHG EMISSIONS



MCN GHG EMISSIONS



MCN GHG Emissions Per Capita



GHG Evaluation

This sheet was used to evaluate various ways in which GHG emission data was compiled based on available datasets, boundary considerations (i.e. geography and population), global warming potential (GWP), and eGRID output emission conversion rates. Ultimately, Table 10 was chosen to represent GHG emissions for MCN.

Data Sources	Level(s)	Years available	Sector(s)
EPA GHG Inventory	State	1990-2021	ALL
EPA eGRID	State	2018-2022	Electric Power
EPA NEI	County	2017, 2020	Industry (2020 only; off-road equipment), Transportation, Agriculture (2020 only; off-road equipment)
NREL SLOPE	County, City	2017, 2020	Industry (Electric Power and Natural Gas), Electric Power, Commercial (Electric Power and Natural Gas), Residential (Electric Power and Natural Gas)

Oklahoma Emissions (2019)

EPA's GHG Inventory Data Explorer
EPA's eGRID

Economic Sector	GHG Emissions (tons)	Sector is x% of OK's emissions	Sector is x% of OK's emissions
Industry	51,994,293	36%	35%
Transportation	30,879,967	22%	21%
Electric Power	28,276,527	20%	
Electric Power	34,594,671		23%
Agriculture	20,260,846	14%	14%
Commercial	6,903,706	5%	5%
Residential	4,800,556	3%	3%
Total	143,115,895		
Total	149,434,039		

Oklahoma Emissions (2020)

EPA's GHG Inventory Data Explorer
EPA's eGRID

Economic Sector	GHG Emissions (tons)	Sector is x% of OK's emissions	Sector is x% of OK's emissions
Industry	46,328,619	35%	34%
Transportation	28,249,861	22%	21%
Electric Power	25,939,203	20%	
Electric Power	31,866,323		23%
Agriculture	19,509,618	15%	14%
Commercial	6,514,645	5%	5%
Residential	4,525,442	3%	3%
Total	131,067,387		
Total	136,994,507		

Oklahoma Emissions (2021)

EPA's GHG Inventory Data Explorer
EPA's eGRID

Economic Sector	GHG Emissions (tons)	Sector is x% of OK's emissions	Sector is x% of OK's emissions
Industry	45,267,012	34%	32%
Transportation	30,194,032	23%	21%
Electric Power	27,426,845	21%	
Electric Power	34,684,369		25%
Agriculture	19,379,890	15%	14%
Commercial	6,390,478	5%	5%
Residential	4,824,736	4%	3%
Total	133,482,992		
Total	140,740,517		

1. MCN Emissions

Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry Everything but Electricity Generation via Combustion 2020 NEI % of MCN based on Geography	2,585,375	29%
Transportation 2020 NEI % of MCN based on Geography w/out Agricultural and Industrial equipment subtracted	4,920,129	55%
Electric Power Electricity Generation via Combustion only 2020 NEI % of MCN based on Geography Scope 1 (within MCN) and Scope 2 (outside of, but near MCN) emissions	-	0%
Agriculture		0%
Commercial Commercial Natural Gas 2020 NREL SLOPE % of MCN based on Geography	608,700	7%
Residential Residential Natural Gas 2020 NREL SLOPE % of MCN based on Geography	756,432	9%
Total	8,870,636	
% of Oklahoma's 2019 emissions		7%
% of Oklahoma's 2020 emissions		6%
% of Oklahoma's 2021 emissions		6%

2. MCN Emissions

Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry Everything but Electricity Generation via Combustion 2020 NEI % of MCN based on Geography	2,585,375	20%
Transportation 2020 NEI % of MCN based on Geography w/out Agricultural and Industrial equipment subtracted	4,920,129	38%
Electric Power Electricity Generation via Combustion only 2020 NEI Data % of MCN based on Geography Scope 1 (within MCN) emissions	4,181,922	32%
Agriculture		0%
Commercial Commercial Natural Gas 2020 NREL SLOPE % of MCN based on Geography	608,700	5%
Residential Residential Natural Gas 2020 NREL SLOPE % of MCN based on Geography	756,432	6%
Total	13,052,559	
% of Oklahoma's 2019 emissions		10%
% of Oklahoma's 2020 emissions		10%
% of Oklahoma's 2021 emissions		9%

3. MCN Emissions

Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry Industrial Electricity and Natural Gas 2020 NREL SLOPE % of MCN based on Geography Industrial Equipment 2020 NEI % of MCN based on Geography	3,795,213	28%
Transportation 2020 NEI % of MCN based on Geography Agricultural and Industrial equipment subtracted	3,385,175	25%
Electric Power Commercial and Residential Electricity 2020 NREL SLOPE % of MCN based on Geography	4,033,663	30%
Agriculture Agricultural Equipment 2020 NEI % of MCN based on Geography	781,344	6%
Commercial Commercial Natural Gas 2020 NREL SLOPE % of MCN based on Geography	608,700	5%
Residential Residential Natural Gas 2020 NREL SLOPE % of MCN based on Geography	756,432	6%
Total	13,360,528	
% of Oklahoma's 2019 emissions		10%
% of Oklahoma's 2020 emissions		10%
% of Oklahoma's 2021 emissions		9%

Same information from the previous table
Information changed from the previous table

GHG Evaluation

4. MCN Emissions

Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry Industrial Natural Gas 2020 NREL SLOPE % of MCN based on Geography Industrial Equipment 2020 NEI % of MCN based on Geography	3,795,213	32%
Transportation 2020 NEI % of MCN based on Geography Agricultural and Industrial equipment subtracted	3,385,175	29%
Electric Power Industrial, Commercial, and Residential Electricity 2020 NREL SLOPE % of MCN based on Geography	2,358,185	20%
Agriculture Agricultural Equipment 2020 NEI % of MCN based on Geography	781,344	7%
Commercial Commercial Natural Gas 2020 NREL SLOPE % of MCN based on Geography	608,700	5%
Residential Residential Natural Gas 2020 NREL SLOPE % of MCN based on Geography	756,432	6%
Total	11,685,049	
% of Oklahoma's 2019 emissions	9%	
% of Oklahoma's 2020 emissions	9%	
% of Oklahoma's 2021 emissions	8%	

7. MCN Emissions

Economic Sector	GHG Emissions (tons) Estimation	Sector is x% of MCN's emissions
Industry Industrial Natural Gas 2017 NREL SLOPE % of MCN based on Population Industrial Equipment 2017 NEI % of MCN based on Population	3,344,858	19%
Transportation 2017 NEI % of MCN based on Population Agricultural and Industrial equipment subtracted	5,445,001	32%
Electric Power Industrial, Commercial, and Residential Electricity 2017 NREL SLOPE % of MCN based on Population	6,336,116	37%
Agriculture Agricultural Equipment 2017 NEI % of MCN based on Population	777,857	5%
Commercial Commercial Natural Gas 2017 NREL SLOPE % of MCN based on Population	684,440	4%
Residential Residential Natural Gas 2017 NREL SLOPE % of MCN based on Population	678,925	4%
Total	17,267,197	
% of Oklahoma's 2019 emissions	13%	
% of Oklahoma's 2020 emissions	13%	
% of Oklahoma's 2021 emissions	12%	

***Prior to this, % of MCN has been based on land area.

Same information from the previous table
Information changed from the previous table

5. MCN Emissions

Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry Industrial Natural Gas 2020 NREL SLOPE % of MCN based on Geography Industrial Equipment 2017 NEI % of MCN based on Geography	3,879,694	28%
Transportation 2017 NEI % of MCN based on Geography Agricultural and Industrial equipment subtracted	5,377,751	39%
Electric Power Industrial, Commercial, and Residential Electricity 2020 NREL SLOPE % of MCN based on Geography	2,358,185	17%
Agriculture Agricultural Equipment 2017 NEI % of MCN based on Geography	768,250	6%
Commercial Commercial Natural Gas 2020 NREL SLOPE % of MCN based on Geography	608,700	4%
Residential Residential Natural Gas 2020 NREL SLOPE % of MCN based on Geography	756,432	6%
Total	13,749,012	
% of Oklahoma's 2019 emissions	10%	
% of Oklahoma's 2020 emissions	10%	
% of Oklahoma's 2021 emissions	10%	

8. MCN Emissions (Approximations based solely on 2019 State data)

Economic Sector	GHG Emissions (tons) Estimation	Sector is x% of OK's emissions
Industry 2019 EPA GHG Inventory Data Explorer	4,491,076	35%
Transportation	2,694,646	21%
Electric Power 2019 EPA eGRID	2,951,279	23%
Agriculture	1,796,430	14%
Commercial	641,582	5%
Residential	384,949	3%
Total	12,831,646	
% of Oklahoma's 2019 emissions	9%	
% of Oklahoma's 2020 emissions	9%	
% of Oklahoma's 2021 emissions	9%	

***Averaged all of the previous totals to create new total here, then used percentages from

6. MCN Emissions

Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry Industrial Natural Gas 2017 NREL SLOPE % of MCN based on Geography Industrial Equipment 2017 NEI % of MCN based on Geography	3,132,616	19%
Transportation 2017 NEI % of MCN based on Geography Agricultural and Industrial equipment subtracted	5,377,751	33%
Electric Power Industrial, Commercial, and Residential Electricity 2017 NREL SLOPE % of MCN based on Geography	5,763,476	35%
Agriculture Agricultural Equipment 2017 NEI % of MCN based on Geography	768,250	5%
Commercial Commercial Natural Gas 2017 NREL SLOPE % of MCN based on Geography	617,792	4%
Residential Residential Natural Gas 2017 NREL SLOPE % of MCN based on Geography	612,206	4%
Total	16,272,091	
% of Oklahoma's 2019 emissions	12%	
% of Oklahoma's 2020 emissions	12%	
% of Oklahoma's 2021 emissions	12%	

9. MCN Emissions

Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry Industrial Natural Gas 2017 NREL SLOPE % of MCN based on Geography Industrial Equipment 2017 NEI % of MCN based on Geography	3,132,616	22%
Transportation 2017 NEI % of MCN based on Geography Agricultural and Industrial equipment subtracted	5,377,751	37%
Electric Power Industrial, Commercial, and Residential Electricity 2017 NREL SLOPE % of MCN based on Geography eGRID conversions output emissions rate	3,971,784	27%
Agriculture Agricultural Equipment 2017 NEI % of MCN based on Geography	768,250	5%
Commercial Commercial Natural Gas 2017 NREL SLOPE % of MCN based on Geography	617,792	4%
Residential Residential Natural Gas 2017 NREL SLOPE % of MCN based on Geography	612,206	4%
Total	14,480,400	
% of Oklahoma's 2019 emissions	10%	
% of Oklahoma's 2020 emissions	11%	
% of Oklahoma's 2021 emissions	10%	

GHG Evaluation

10. MCN Emissions

Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry		
Industrial Natural Gas		
2017 NREL SLOPE		
% of MCN based on <i>Population</i>		
Industrial Equipment		
2017 NEI		
% of MCN based on <i>Population</i>		
w/ <i>GWP conversions</i>	3,354,796	22%
Transportation		
2017 NEI		
% of MCN based on <i>Population</i>		
w/ <i>GWP conversions</i>		
<i>Agricultural and Industrial equipment subtracted</i>	5,508,774	36%
Electric Power		
Industrial, Commercial, and Residential Electricity		
2017 NREL SLOPE		
% of MCN based on <i>Population</i>		
eGRID conversions		
output emissions rate	4,366,408	28%
Agriculture		
Agricultural Equipment		
2017 NEI		
% of MCN based on <i>Population</i>		
w/ <i>GWP conversions</i>	786,968	5%
Commercial		
Commercial Natural Gas		
2017 NREL SLOPE		
% of MCN based on <i>Population</i>	684,440	4%
Residential		
Residential Natural Gas		
2017 NREL SLOPE		
% of MCN based on <i>Population</i>	678,925	4%
Total	15,380,311	
% of Oklahoma's 2019 emissions	10%	
% of Oklahoma's 2020 emissions	11%	
% of Oklahoma's 2021 emissions	11%	

Same information from the previous table
 Information changed from the previous table

11. MCN Emissions

Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry		
Industrial Natural Gas		
2020 NREL SLOPE		
% of MCN based on <i>Geography</i>		
Industrial Equipment		
2020 NEI		
% of MCN based on <i>Geography</i>	3,795,213	28%
Transportation		
2020 NEI		
% of MCN based on <i>Geography</i>		
<i>Agricultural and Industrial equipment subtracted</i>	3,385,175	25%
Electric Power		
Industrial, Commercial, and Residential Electricity		
2020 NREL SLOPE		
% of MCN based on <i>Geography</i>		
eGRID conversions		
output emissions rate	4,318,344	32%
Agriculture		
Agricultural Equipment		
2020 NEI		
% of MCN based on <i>Geography</i>	781,344	6%
Commercial		
Commercial Natural Gas		
2020 NREL SLOPE		
% of MCN based on <i>Geography</i>	608,700	4%
Residential		
Residential Natural Gas		
2020 NREL SLOPE		
% of MCN based on <i>Geography</i>	756,432	6%
Total	13,645,209	
% of Oklahoma's 2019 emissions	9%	
% of Oklahoma's 2020 emissions	10%	
% of Oklahoma's 2021 emissions	10%	

12. MCN Emissions

Economic Sector	GHG Emissions (tons)	Sector is x% of MCN's emissions
Industry		
Industrial Natural Gas		
2020 NREL SLOPE		
% of MCN based on <i>Population</i>		
Industrial Equipment		
2020 NEI		
% of MCN based on <i>Population</i>	4,081,530	27%
Transportation		
2020 NEI		
% of MCN based on <i>Population</i>		
<i>Agricultural and Industrial equipment subtracted</i>	3,688,571	25%
Electric Power		
Industrial, Commercial, and Residential Electricity		
2020 NREL SLOPE		
% of MCN based on <i>Population</i>		
eGRID conversions		
output emissions rate	4,743,303	32%
Agriculture		
Agricultural Equipment		
2020 NEI		
% of MCN based on <i>Population</i>	817,121	6%
Commercial		
Commercial Natural Gas		
2020 NREL SLOPE		
% of MCN based on <i>Population</i>	672,507	5%
Residential		
Residential Natural Gas		
2020 NREL SLOPE		
% of MCN based on <i>Population</i>	852,678	6%
Total	14,855,710	
% of Oklahoma's 2019 emissions	10%	
% of Oklahoma's 2020 emissions	11%	
% of Oklahoma's 2021 emissions	11%	

State Level Data - EPA GHG Inventory - All Sectors

U.S. EPA's GHG Inventory Data Explorer
[Greenhouse Gas Inventory Data Explorer | US EPA](#)
 Data for years 1990 through 2021 available

State Level Data- Industry, Transportation, Electric Power, Agriculture, Commercial, and Residential Sectors

	2017 GHG	2018 GHG	2019 GHG	2020 GHG	2021 GHG	2017 GHG		2019 GHG		2020 GHG		2021 GHG	
	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (tons)	Sector is x% of OK's emissions	Emissions (tons)	Sector is x% of OK's emissions	Emissions (tons)	Sector is x% of OK's emissions	Emissions (tons)	Sector is x% of OK's emissions
Oklahoma Emissions by Economic Sector													
Industry	53.619797	54.841456	51.994293	46.328619	45.2670116	53619797	37%	51994293	36%	46,328,619	35%	45,267,012	35%
Transportation	31.090716	31.766029	30.879967	28.249861	30.1940323	31090716	21%	30879967	22%	28,249,861	22%	30,194,032	22%
Electric Power	31.500153	34.253894	28.276527	25.939203	27.4268448	31500153	22%	28276527	20%	25,939,203	20%	27,426,845	20%
Agriculture	20.176432	20.088161	20.260846	19.509618	19.3798895	20176432	14%	20260846	14%	19,509,618	15%	19,379,890	15%
Commercial	6.3433512	6.6325943	6.9037058	6.5146447	6.39047781	6343351	4%	6903706	5%	6,514,645	5%	6,390,478	5%
Residential	3.7615087	4.756471	4.8005556	4.5254423	4.82473631	3761509	3%	4800556	3%	4,525,442	3%	4,824,736	3%
Total	146	152	143	131	133	146491959		143115895		131,067,387		133482992	

State Level Data- GHGs

	2017 GHG	2018 GHG	2019 GHG	2020 GHG	2021 GHG	2017 GHG		2019 GHG		2020 GHG		2021 GHG	
	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (tons)	Gas is x% of OK's emissions	Emissions (tons)	Gas is x% of OK's emissions	Emissions (tons)	Gas is x% of OK's emissions	Emissions (tons)	Gas is x% of OK's emissions
Oklahoma Emissions by Gas													
Carbon dioxide	96.210436	101.49357	94.115967	86.954082	89.6985108	96210436	66%	94115967	66%	86954082	66%	89698511	67%
Methane	37.395719	37.78832	36.321447	31.580922	31.7397568	37395719	26%	36321447	25%	31580922	24%	31739757	24%
Nitrous oxide	11.920804	12.085665	11.5946	11.106678	10.6741755	11920804	8%	11594600	8%	11106678	8%	10674175	8%
Fluorinated gases	2.5467983	2.5667043	2.5190103	2.8572172	2.98894599	2546798	2%	2519010	2%	2857217	2%	2988946	2%
Land use and forestry carbon stock change	-8.207745	-7.707397	-7.30838	-6.7459886	-6.43314941	-8207745		-7308380		-6745989		-6433149	
Net Total	139.86601	146.22686	137.24264	125.75291	128.66824	139866012		137242645		125752911		128668240	
Gross Total	146.49196	152.33861	143.1159	131.06739	133.482992	146491959		143115895		131067387		133482992	

National Level Data- Industry, Transportation, Electric Power, Agriculture, Commercial, and Residential Sectors

	2017 GHG	2018 GHG	2019 GHG	2020 GHG	2021 GHG	2017 GHG	
	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (mmt of CO2 eq.)	Emissions (tons)	Sector is x% of U.S.'s emissions
U.S. Emissions by Economic Sector							
Transportation	1841.552	1871.294	1874.2745	1624.9433	1804.3053	1841552042	28%
Electric Power	1779.2147	1799.1278	1650.4953	1481.8359	1584.08181	1779214668	27%
Industry	1494.5449	1558.0022	1568.2089	1465.4305	1487.26569	1494544914	23%
Agriculture	654.24186	670.62063	655.43913	637.18684	635.761357	654241863.7	10%
Commercial	437.63068	453.70598	461.95505	436.02525	439.15669	437630681.1	7%
Residential	328.36094	375.82142	382.39471	356.93957	365.554046	328360944.7	5%
U.S. territories	26.279326	26.259619	25.149264	23.612289	24.1033959	26279326.36	
Gross total	6561.8244	6754.8316	6617.9169	6025.9736	6340.22829	6561824440	

State Level Data - EPA eGRID Data Explorer - Electric Power Sector

U.S. EPA's eGRID Data Explorer

[Epa.gov/egrid/data-explorer](https://epa.gov/egrid/data-explorer)

Data for years 2018 through 2022 available

State Level Data- Electric Power Sector

Year	Emissions (lbs of CO ₂)	Emissions (lbs of N ₂ O)	Emissions (lbs of CH ₄)	Emissions (lbs of CO ₂ equiv.)	Total GHG emissions
2022	29,100,000	440,767	3,200,000	29,200,000	32,740,767
2021	30,400,000	524,369	3,760,000	30,600,000	34,684,369
2020	29,100,000	326,323	2,440,000	29,200,000	31,866,323
2019	31,200,000	404,671	2,990,000	31,300,000	34,594,671
2018	38,400,000	673,528	4,830,000	38,500,000	43,903,528

County Level Data - EPA NEI - Summary - Transportation, Industry, and Agricultural Sectors

2017 County Level Data- Transportation

County	GHG Emissions (tons)	% of MCN Geo	GHG Emissions from MCN	Calculated w/ GWP (see below)	% of MCN Pop	GHG Emissions from MCN	Calculated w/ GWP (see below)
Creek	4,732,483	100%	4,732,483		100%	4,732,483	
Hughes	1,277,965	~60%	766,779		~60%	766,779	
Mayes	822,730	~5%	41,137		~5%	41,137	
McIntosh	669,931	~80%	535,945		~80%	535,945	
Muskogee	425,417	~40%	170,167		~50%	212,709	
Okfuskee	206,676	100%	206,676		100%	206,676	
Okmulgee	108,737	100%	108,737		100%	108,737	
Rogers	115,704	~5%	5,785		~5%	5,785	
Seminole	63,092	~5%	3,155		~5%	3,155	
Tulsa	559,943	67%	375,162		~75%	419,957	
Wagoner	47,585	~80%	38,068		~95%	38,068	
TOTAL	9,030,263		6,984,093	7,052,451		7,071,430	7,154,252
<i>Agriculture</i>	903,026		768,250	775,770	<i>Estimated</i>	777,857	786,968
TOTAL							
<i>-Agriculture</i>	8,127,237		6,215,843		<i>Estimated</i>	6,293,573	
<i>Industrial</i>	993,329		838,091	846,294	<i>Estimated</i>	848,572	858,510
TOTAL							
<i>Industrial</i>	9,030,263		6,146,002		<i>Estimated</i>	6,222,858	
TOTAL							
<i>-Agriculture</i>							
<i>-Industrial</i>	7,133,908		5,377,751	5,430,387	<i>Estimated</i>	5,445,001	5,508,774

2020 County Level Data- Transportation

County	GHG Emissions (tons)	% of MCN Geo	GHG Emissions from MCN	Calculated w/ GWP (see below)	% of MCN Pop	GHG Emissions from MCN	Calculated w/ GWP (see below)
Creek	1,246,382	100%	1,246,382		100%	1,246,382	
Hughes	978,934	~60%	587,361		~60%	587,361	
Mayes	525,715	~5%	26,286		~5%	26,286	
McIntosh	1,999,906	~80%	1,599,925		~80%	1,599,925	
Muskogee	3,649,661	~40%	1,459,864		~50%	1,824,830	
Okfuskee	44	100%	44		100%	44	
Okmulgee	92	100%	92		100%	92	
Rogers	87	~5%	4		~5%	4	
Seminole	607	~5%	30		~5%	30	
Tulsa	38	67%	25		~75%	28	
Wagoner	146	~80%	117		~95%	117	
TOTAL	8,401,611		4,920,129	5,063,265		5,285,099	5,524,402
TOTAL							
<i>-Agriculture</i>	6,942,006		4,138,785	4,281,921		4,467,977	4,707,281
TOTAL							
<i>Industrial</i>	7,028,398		4,166,519	4,309,655		4,505,692	4,744,996
TOTAL							
<i>-Agriculture</i>							
<i>-Industrial</i>	5,568,793		3,385,175	3,528,311		3,688,571	3,927,875

2020 County Level Data- Facilities

County	GHG Emissions (tons)	% of MCN Geo	GHG Emissions from MCN	% of MCN Pop	GHG Emissions from MCN
Creek	26,433	100%	26,433	100%	26,433
Hughes	1,071,737	~60%	643,042	~60%	643,042
Mayes	3,679,815	~5%	183,991	~5%	183,991
McIntosh	92	~80%	74	~80%	74
Muskogee	2,168,510	~40%	867,404	~50%	1,084,255
Okfuskee	2,253	100%	2,253	100%	2,253
Okmulgee	-	100%	-	100%	-
Rogers	3,018,647	~5%	150,932	~5%	150,932
Seminole	2,318	~5%	116	~5%	116
Tulsa	1,060,701	67%	710,670	~75%	795,526
Wagoner	575,03175	~80%	460	~95%	460
TOTAL	11,031,082		2,585,375		460

2020 County Level Data- Agricultural Equipment

County	GHG Emissions (tons)	% of MCN Geo	GHG Emissions from MCN	% of MCN Pop	GHG Emissions from MCN
Creek	218,405	100%	218,405	100%	218,405
Hughes	239,031	~60%	143,418	~60%	143,418
Mayes	318,467	~5%	15,923	~5%	15,923
McIntosh	325,468	~80%	260,375	~80%	260,375
Muskogee	357,588	~40%	143,035	~50%	178,794
Okfuskee	26	100%	26	100%	26
Okmulgee	41	100%	41	100%	41
Rogers	51	~5%	3	~5%	3
Seminole	404	~5%	20	~5%	20
Tulsa	7	67%	5	~75%	6
Wagoner	117	~80%	93	~95%	111
TOTAL	1,459,605		781,344		817,121

2020 County Level Data- Industrial Equipment

County	GHG Emissions (tons)	% of MCN Geo	GHG Emissions from MCN	% of MCN Pop	GHG Emissions from MCN
Creek	234,137	100%	234,137	100%	234,137
Hughes	240,072	~60%	144,043	~60%	144,043
Mayes	320,292	~5%	16,015	~5%	16,015
McIntosh	320,055	~80%	256,044	~80%	256,044
Muskogee	257,954	~40%	103,182	~50%	128,977
Okfuskee	26	100%	26	100%	26
Okmulgee	40	100%	40	100%	40
Rogers	52	~5%	3	~5%	3
Seminole	460	~5%	23	~5%	23
Tulsa	10	67%	7	~75%	7
Wagoner	115	~80%	92	~95%	92
TOTAL	1,373,213		753,610		779,406

County Level Data - EPA NEI Summary - Transportation, Industry, and Agricultural Sector

2017 Emissions by Gas

County	Gas	Tons	GWP	Actual Tons	% of MCN Geo	GHG Emissions from MCN	% of MCN Pop	GHG Emissions from MCN
Creek	Carbon Dioxide	4732424	1	4,732,424	100%	4,732,424	100%	4,732,424
	Methane	46	29.8	1,371		1,371		
	Nitrous Oxide	13	273	3,549		3,549		
Hughes	Carbon Dioxide	1277957	1	1,277,957	~60%	766,774	~60%	766,774
	Methane	6	29.8	179		107		
	Nitrous Oxide	2	273	546		328		
Mayes	Carbon Dioxide	822695	1	822,695	~5%	41,135	~5%	41,135
	Methane	28	29.8	834		42		
	Nitrous Oxide	7	273	1,911		96		
McIntosh	Carbon Dioxide	669892	1	669,892	~80%	535,914	~80%	535,914
	Methane	35	29.8	1,043		834		
	Nitrous Oxide	4	273	1,092		874		
Muskogee	Carbon Dioxide	425368	1	425,368	~40%	170,147	~50%	212,684
	Methane	37	29.8	1,103		441		
	Nitrous Oxide	12	273	3,276		1,310		
Okfuskee	Carbon Dioxide	206665	1	206,665	100%	206,665	100%	206,665
	Methane	9	29.8	268		268		
	Nitrous Oxide	2	273	546		546		
Okmulgee	Carbon Dioxide	108712	1	108,712	100%	108,712	100%	108,712
	Methane	18	29.8	536		536		
	Nitrous Oxide	7	273	1,911		1,911		
Rogers	Carbon Dioxide	115640	1	115,640	~5%	5,782	~5%	5,782
	Methane	48	29.8	1,430		72		
	Nitrous Oxide	16	273	4,368		218		
Seminole	Carbon Dioxide	63073	1	63,073	~5%	3,154	~5%	3,154
	Methane	15	29.8	447		22		
	Nitrous Oxide	4	273	1,092		55		
Tulsa	Carbon Dioxide	559209	1	559,209	67%	374,670	~75%	419,407
	Methane	497	29.8	14,811		9,923		
	Nitrous Oxide	237	273	64,701		43,350		
Wagoner	Carbon Dioxide	47541	1	47,541	~80%	38,033	~95%	45,164
	Methane	33	29.8	983		787		
	Nitrous Oxide	11	273	3,003		2,402		
TOTAL		9030263		9,138,177		7,052,451		7,154,252

2020 Emissions by Gas

County	Gas	Tons	GWP	Actual Tons	% of MCN Geo	GHG Emissions from MCN	% of MCN Pop	GHG Emissions from MCN
Creek	Carbon Dioxide	713,098	1	713,098	100%	713,098	100%	713,098
	Methane	49	29.8	1,450		1,450		
	Nitrous Oxide	9	273	2,374		2,374		
Hughes	Carbon Dioxide	109,285	1	109,285	~60%	65,571	~60%	65,571
	Methane	9	29.8	258		155		
	Nitrous Oxide	2	273	469		281		
Mayes	Carbon Dioxide	481,744	1	481,744	~5%	24,087	~5%	24,087
	Methane	32	29.8	963		48		
	Nitrous Oxide	5	273	1,450		72		
McIntosh	Carbon Dioxide	406,586	1	406,586	~80%	325,269	~80%	325,269
	Methane	37	29.8	1,114		891		
	Nitrous Oxide	3	273	931		744		
Muskogee	Carbon Dioxide	558,458	1	558,458	~40%	223,383	~50%	279,229
	Methane	45	29.8	1,351		540		
	Nitrous Oxide	7	273	2,045		818		
Okfuskee	Carbon Dioxide	162,758	1	162,758	100%	162,758	100%	162,758
	Methane	8	29.8	237		237		
	Nitrous Oxide	1	273	381		381		
Okmulgee	Carbon Dioxide	330,998	1	330,998	100%	330,998	100%	330,998
	Methane	22	29.8	655		655		
	Nitrous Oxide	4	273	1,183		1,183		
Rogers	Carbon Dioxide	807,794	1	807,794	~5%	40,390	~5%	40,390
	Methane	62	29.8	1,847		92		
	Nitrous Oxide	11	273	2,992		150		
Seminole	Carbon Dioxide	274,963	1	274,963	~5%	13,748	~5%	13,748
	Methane	16	29.8	470		24		
	Nitrous Oxide	3	273	795		40		
Tulsa	Carbon Dioxide	4,037,327	1	4,037,327	67%	2,705,009	~75%	3,027,995
	Methane	582	29.8	17,347		11,623		
	Nitrous Oxide	112	273	30,613		20,511		
Wagoner	Carbon Dioxide	517,550	1	517,550	~80%	414,040	~95%	491,673
	Methane	43	29.8	1,268		1,014		
	Nitrous Oxide	7	273	2,040		1,632		
TOTAL		8,401,629		8,472,790		5,063,265		5,524,402

County Level Data - EPA NEI - Transportation Sector - 2017

U.S. EPA's National Emissions Inventory (NEI)

[2017 NEI Data Queries](#)

Industry (Options for Industrial Processes - Cement Manuf, Chemical Manuf, Ferrous Metals, Mining, NEC, Non-ferrous Metals, O&G Prod, Petroleum Refineries, Pulp & Paper, and Storage & Transfer) - Contains no data

Agriculture (Options for Crops & Livestock Dust, Fertilizer Application, Livestock Waste, and Agricultural Field Burning) - Contains no data

***Yes, this is different than 2020. Different platform with different options.

2017 County Level Data

STATE FIPS	SECTOR	POLLUTANT	POLLUTANT		EMISSIONS (TONS)
			TYPE		
Creek	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG		3060704
Creek	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG		763737
Creek	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG		466445
Creek	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG		404131
Creek	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG		17
Creek	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG		15
Creek	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG		1
Creek	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG		1
Creek	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG		13
Creek	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG		0
Creek	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG		0
Creek	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG		0
Creek	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG		22130
Creek	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG		10049
Creek	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG		5228
Creek	Mobile - Non-Road Equipment - Gasoline	Methane	GHG		9
Creek	Mobile - Non-Road Equipment - Other	Methane	GHG		3
Creek	Mobile - Non-Road Equipment - Diesel	Methane	GHG		0
Hughes	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG		368680
Hughes	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG		364568
Hughes	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG		281502
Hughes	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG		254559
Hughes	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG		3
Hughes	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG		1
Hughes	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG		0
Hughes	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG		0
Hughes	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG		2
Hughes	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG		0
Hughes	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG		0
Hughes	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG		0
Hughes	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG		6150
Hughes	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG		2377
Hughes	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG		121
Hughes	Mobile - Non-Road Equipment - Gasoline	Methane	GHG		2
Hughes	Mobile - Non-Road Equipment - Diesel	Methane	GHG		0
Hughes	Mobile - Non-Road Equipment - Other	Methane	GHG		0
Mayes	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG		224767
Mayes	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG		204985
Mayes	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG		177501
Mayes	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG		177225
Mayes	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG		10
Mayes	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG		6
Mayes	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG		1
Mayes	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG		1
Mayes	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG		7
Mayes	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG		0
Mayes	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG		0
Mayes	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG		0
Mayes	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG		26496
Mayes	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG		8426
Mayes	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG		3295
Mayes	Mobile - Non-Road Equipment - Gasoline	Methane	GHG		7
Mayes	Mobile - Non-Road Equipment - Other	Methane	GHG		2
Mayes	Mobile - Non-Road Equipment - Diesel	Methane	GHG		1
McIntosh	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG		171658
McIntosh	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG		168115
McIntosh	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG		153069
McIntosh	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG		147128
McIntosh	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG		7
McIntosh	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG		6
McIntosh	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG		1
McIntosh	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG		0
McIntosh	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG		4
McIntosh	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG		0
McIntosh	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG		0
McIntosh	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG		0
McIntosh	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG		20201
McIntosh	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG		9340
McIntosh	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG		381
McIntosh	Mobile - Non-Road Equipment - Gasoline	Methane	GHG		21
McIntosh	Mobile - Non-Road Equipment - Diesel	Methane	GHG		0
McIntosh	Mobile - Non-Road Equipment - Other	Methane	GHG		0
Muskogee	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG		114554
Muskogee	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG		113951
Muskogee	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG		85562
Muskogee	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG		75219
Muskogee	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG		14
Muskogee	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG		6
Muskogee	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG		1
Muskogee	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG		1
Muskogee	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG		12
Muskogee	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG		0
Muskogee	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG		0
Muskogee	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG		0
Muskogee	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG		18060
Muskogee	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG		12036
Muskogee	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG		5986
Muskogee	Mobile - Non-Road Equipment - Gasoline	Methane	GHG		11
Muskogee	Mobile - Non-Road Equipment - Other	Methane	GHG		4

Muskogee	Mobile - Non-Road Equipment - Diesel	Methane	GHG	0
Okfuskee	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	71267
Okfuskee	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG	54775
Okfuskee	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG	44340
Okfuskee	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	30174
Okfuskee	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG	5
Okfuskee	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG	3
Okfuskee	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG	0
Okfuskee	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG	0
Okfuskee	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG	2
Okfuskee	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG	0
Okfuskee	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	0
Okfuskee	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	0
Okfuskee	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG	4190
Okfuskee	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG	1616
Okfuskee	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG	303
Okfuskee	Mobile - Non-Road Equipment - Gasoline	Methane	GHG	1
Okfuskee	Mobile - Non-Road Equipment - Diesel	Methane	GHG	0
Okfuskee	Mobile - Non-Road Equipment - Other	Methane	GHG	0
Okmulgee	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG	28960
Okmulgee	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	27381
Okmulgee	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG	19795
Okmulgee	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	19458
Okmulgee	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG	8
Okmulgee	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG	4
Okmulgee	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG	1
Okmulgee	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG	0
Okmulgee	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG	7
Okmulgee	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG	0
Okmulgee	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	0
Okmulgee	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	0
Okmulgee	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG	7219
Okmulgee	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG	4267
Okmulgee	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG	1632
Okmulgee	Mobile - Non-Road Equipment - Gasoline	Methane	GHG	4
Okmulgee	Mobile - Non-Road Equipment - Other	Methane	GHG	1
Okmulgee	Mobile - Non-Road Equipment - Diesel	Methane	GHG	0
Rogers	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG	17846
Rogers	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	15705
Rogers	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG	14800
Rogers	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	14341
Rogers	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG	20
Rogers	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG	8
Rogers	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG	2
Rogers	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG	1
Rogers	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG	16
Rogers	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG	0
Rogers	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	0
Rogers	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	0
Rogers	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG	32401
Rogers	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG	14123
Rogers	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG	6424
Rogers	Mobile - Non-Road Equipment - Gasoline	Methane	GHG	12
Rogers	Mobile - Non-Road Equipment - Other	Methane	GHG	4
Rogers	Mobile - Non-Road Equipment - Diesel	Methane	GHG	1
Seminole	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG	13686
Seminole	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	13638
Seminole	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG	13132
Seminole	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	10499
Seminole	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG	6
Seminole	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG	5
Seminole	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG	0
Seminole	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG	0
Seminole	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG	4
Seminole	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG	0
Seminole	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	0
Seminole	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	0
Seminole	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG	7762
Seminole	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG	3114
Seminole	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG	1242
Seminole	Mobile - Non-Road Equipment - Gasoline	Methane	GHG	3
Seminole	Mobile - Non-Road Equipment - Other	Methane	GHG	1
Seminole	Mobile - Non-Road Equipment - Diesel	Methane	GHG	0
Tulsa	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG	10204
Tulsa	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	8079
Tulsa	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	7561
Tulsa	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG	7478
Tulsa	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG	242
Tulsa	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG	31
Tulsa	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG	6
Tulsa	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG	5
Tulsa	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG	233
Tulsa	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	3
Tulsa	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	1
Tulsa	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG	0
Tulsa	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG	256490
Tulsa	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG	218428
Tulsa	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG	50969
Tulsa	Mobile - Non-Road Equipment - Gasoline	Methane	GHG	165
Tulsa	Mobile - Non-Road Equipment - Other	Methane	GHG	42
Tulsa	Mobile - Non-Road Equipment - Diesel	Methane	GHG	6
Wagoner	Mobile - On-Road non-Diesel Light Duty Vehicles	Carbon Dioxide	GHG	5972
Wagoner	Mobile - On-Road Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	5434
Wagoner	Mobile - On-Road Diesel Light Duty Vehicles	Carbon Dioxide	GHG	3205
Wagoner	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Carbon Dioxide	GHG	2375
Wagoner	Mobile - On-Road non-Diesel Light Duty Vehicles	Methane	GHG	14
Wagoner	Mobile - On-Road Diesel Heavy Duty Vehicles	Methane	GHG	5
Wagoner	Mobile - On-Road Diesel Light Duty Vehicles	Methane	GHG	1
Wagoner	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Methane	GHG	1
Wagoner	Mobile - On-Road non-Diesel Light Duty Vehicles	Nitrous Oxide	GHG	11
Wagoner	Mobile - On-Road Diesel Light Duty Vehicles	Nitrous Oxide	GHG	0
Wagoner	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	0
Wagoner	Mobile - On-Road Diesel Heavy Duty Vehicles	Nitrous Oxide	GHG	0
Wagoner	Mobile - Non-Road Equipment - Diesel	Carbon Dioxide	GHG	17430
Wagoner	Mobile - Non-Road Equipment - Gasoline	Carbon Dioxide	GHG	11320
Wagoner	Mobile - Non-Road Equipment - Other	Carbon Dioxide	GHG	1805
Wagoner	Mobile - Non-Road Equipment - Gasoline	Methane	GHG	11
Wagoner	Mobile - Non-Road Equipment - Other	Methane	GHG	1
Wagoner	Mobile - Non-Road Equipment - Diesel	Methane	GHG	0

County Level Data - EPA NEI - Transportation, Industry, and Agricultural Sectors - 2020

U.S. EPA's National Emissions Inventory (NEI)

[2020 NEI Data Retrieval Tool \(epa.gov\)](#)

Currently, the NEI is compiled on 3-year cycles, with the 2020 NEI being the most recent release.

2020 County Level Data

State	State-County	Pollutant	Emissions (Tons)	Pollutant		Source Description	SCC LEVEL 1	SCC LEVEL 2	SCC LEVEL 3
				Type	EIS Sector				
Oklahoma	OK - Creek	Carbon Dioxide	523.81600	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Compressed Natural Gas (CNG)	Combination Short-haul Truck
Oklahoma	OK - Creek	Carbon Dioxide	48.34150	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Compressed Natural Gas (CNG)	Single Unit Long-haul Truck
Oklahoma	OK - Creek	Carbon Dioxide	32.61040	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Compressed Natural Gas (CNG)	Single Unit Short-haul Truck
Oklahoma	OK - Creek	Carbon Dioxide	119,400.40000	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Combination Long-haul Truck
Oklahoma	OK - Creek	Carbon Dioxide	131,804.60000	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Combination Short-haul Truck
Oklahoma	OK - Creek	Carbon Dioxide	2,407.94700	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Intercity Bus
Oklahoma	OK - Creek	Carbon Dioxide	2,692.33100	GHG	Mobile - On-Road Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Light Commercial Truck
Oklahoma	OK - Creek	Carbon Dioxide	364.00430	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Motor Home
Oklahoma	OK - Creek	Carbon Dioxide	591.70190	GHG	Mobile - On-Road Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Passenger Car
Oklahoma	OK - Creek	Carbon Dioxide	20,077.90000	GHG	Mobile - On-Road Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Passenger Truck
Oklahoma	OK - Creek	Carbon Dioxide	104.00370	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Refuse Truck
Oklahoma	OK - Creek	Carbon Dioxide	6,060.07300	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	School Bus
Oklahoma	OK - Creek	Carbon Dioxide	7,197.38600	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Single Unit Long-haul Truck
Oklahoma	OK - Creek	Carbon Dioxide	37,370.09000	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Single Unit Short-haul Truck
Oklahoma	OK - Creek	Carbon Dioxide	947.67760	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Transit Bus
Oklahoma	OK - Creek	Carbon Dioxide	51.60395	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Ethanol (E-85)	Light Commercial Truck
Oklahoma	OK - Creek	Carbon Dioxide	83.34842	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Ethanol (E-85)	Passenger Car
Oklahoma	OK - Creek	Carbon Dioxide	515.81830	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Ethanol (E-85)	Passenger Truck
Oklahoma	OK - Creek	Carbon Dioxide	755.46020	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Combination Short-haul Truck
Oklahoma	OK - Creek	Carbon Dioxide	19,834.55000	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Light Commercial Truck
Oklahoma	OK - Creek	Carbon Dioxide	574.30500	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Motor Home
Oklahoma	OK - Creek	Carbon Dioxide	2,956.28500	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Motorcycle
Oklahoma	OK - Creek	Carbon Dioxide	85,160.76000	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Passenger Car
Oklahoma	OK - Creek	Carbon Dioxide	203,987.40000	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Passenger Truck
Oklahoma	OK - Creek	Carbon Dioxide	529.59790	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	School Bus
Oklahoma	OK - Creek	Carbon Dioxide	3,168.16800	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Single Unit Long-haul Truck
Oklahoma	OK - Creek	Carbon Dioxide	13,545.09000	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Single Unit Short-haul Truck
Oklahoma	OK - Creek	Carbon Dioxide	1,640.79400	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Transit Bus
Oklahoma	OK - Creek	Carbon Dioxide	7,77865	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle CNG	Agricultural Equipment
Oklahoma	OK - Creek	Carbon Dioxide	95.65685	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle CNG	Commercial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	0.05680	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle CNG	Construction Equipment
Oklahoma	OK - Creek	Carbon Dioxide	6.55529	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle CNG	Industrial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	340.98710	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle CNG	Industrial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	3,497.64400	GHG	Mobile - Non-Road Equipment - Diesel	Nonroad	Mobile Sources	Off-highway Vehicle Diesel	Agricultural Equipment
Oklahoma	OK - Creek	Carbon Dioxide	1,604.00800	GHG	Mobile - Non-Road Equipment - Diesel	Nonroad	Mobile Sources	Off-highway Vehicle Diesel	Commercial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	13,005.45000	GHG	Mobile - Non-Road Equipment - Diesel	Nonroad	Mobile Sources	Off-highway Vehicle Diesel	Construction Equipment
Oklahoma	OK - Creek	Carbon Dioxide	1,437.68900	GHG	Mobile - Non-Road Equipment - Diesel	Nonroad	Mobile Sources	Off-highway Vehicle Diesel	Industrial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	3,472.25400	GHG	Mobile - Non-Road Equipment - Diesel	Nonroad	Mobile Sources	Off-highway Vehicle Diesel	Industrial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	174.40050	GHG	Mobile - Non-Road Equipment - Diesel	Nonroad	Mobile Sources	Off-highway Vehicle Diesel	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	27.06174	GHG	Mobile - Non-Road Equipment - Diesel	Nonroad	Mobile Sources	Off-highway Vehicle Diesel	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	63.63286	GHG	Mobile - Non-Road Equipment - Diesel	Nonroad	Mobile Sources	Off-highway Vehicle Diesel	Recreational Equipment
Oklahoma	OK - Creek	Carbon Dioxide	0.40562	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Agricultural Equipment
Oklahoma	OK - Creek	Carbon Dioxide	53.55536	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Agricultural Equipment
Oklahoma	OK - Creek	Carbon Dioxide	34.29969	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Commercial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	1,954.29500	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Commercial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	33.16996	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Construction Equipment
Oklahoma	OK - Creek	Carbon Dioxide	234.14540	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Construction Equipment
Oklahoma	OK - Creek	Carbon Dioxide	1,01175	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Industrial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	2,66303	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Industrial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	775.34380	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Industrial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	43.49712	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	33.67409	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	77.69067	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	79.38417	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	0.01750	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	349.50510	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	1,755.87600	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	765.28830	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	314.07780	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Recreational Equipment
Oklahoma	OK - Creek	Carbon Dioxide	61.40169	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Recreational Equipment
Oklahoma	OK - Creek	Carbon Dioxide	278.01710	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Recreational Equipment
Oklahoma	OK - Creek	Carbon Dioxide	1,034.92800	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Recreational Equipment
Oklahoma	OK - Creek	Carbon Dioxide	57.61717	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Off-highway Vehicle Gasoline	Recreational Equipment
Oklahoma	OK - Creek	Carbon Dioxide	0.08199	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle LPG	Agricultural Equipment
Oklahoma	OK - Creek	Carbon Dioxide	152.67040	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle LPG	Commercial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	27,99854	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle LPG	Construction Equipment
Oklahoma	OK - Creek	Carbon Dioxide	5,159.61200	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle LPG	Industrial Equipment
Oklahoma	OK - Creek	Carbon Dioxide	9.77921	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle LPG	Law and Garden Equipment
Oklahoma	OK - Creek	Carbon Dioxide	3.93515	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Off-highway Vehicle LPG	Recreational Equipment
Oklahoma	OK - Creek	Carbon Dioxide	621.04340	GHG	Mobile - Non-Road Equipment - Diesel	Nonroad	Mobile Sources	Pleasure Craft	Diesel
Oklahoma	OK - Creek	Carbon Dioxide	1,680.08300	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Pleasure Craft	Gasoline
Oklahoma	OK - Creek	Carbon Dioxide	842.10990	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Pleasure Craft	Gasoline 4-Stroke
Oklahoma	OK - Creek	Carbon Dioxide	87.57129	GHG	Mobile - Non-Road Equipment - Diesel	Nonroad	Mobile Sources	Railroad Equipment	Diesel
Oklahoma	OK - Creek	Carbon Dioxide	5.23699	GHG	Mobile - Non-Road Equipment - Gasoline	Nonroad	Mobile Sources	Railroad Equipment	Gasoline, 4-Stroke
Oklahoma	OK - Creek	Carbon Dioxide	0.14938	GHG	Mobile - Non-Road Equipment - Other	Nonroad	Mobile Sources	Railroad Equipment	LPG
Oklahoma	OK - Creek	Carbon Dioxide	8,818.68400	GHG	Mobile - Locomotives	Nonpoint	Mobile Sources	Railroad Equipment	Diesel
Oklahoma	OK - Creek	Carbon Dioxide	1,595.46300	GHG	Mobile - Locomotives	Nonpoint	Mobile Sources	Railroad Equipment	Diesel

Oklahoma	OK - Tulsa	Nitrous Oxide	0.04362	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Ethanol (E-85)	Passenger Truck
Oklahoma	OK - Tulsa	Nitrous Oxide	0.00900	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Combination Short-haul Truck
Oklahoma	OK - Tulsa	Nitrous Oxide	45.97081	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Light Commercial Truck
Oklahoma	OK - Tulsa	Nitrous Oxide	0.05219	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Motor Home
Oklahoma	OK - Tulsa	Nitrous Oxide	0.08105	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Motorcycle
Oklahoma	OK - Tulsa	Nitrous Oxide	30.51360	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Passenger Car
Oklahoma	OK - Tulsa	Nitrous Oxide	24.93879	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Passenger Truck
Oklahoma	OK - Tulsa	Nitrous Oxide	0.03715	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	School Bus
Oklahoma	OK - Tulsa	Nitrous Oxide	0.18806	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Single Unit Long-haul Truck
Oklahoma	OK - Tulsa	Nitrous Oxide	3.90574	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Single Unit Short-haul Truck
Oklahoma	OK - Tulsa	Nitrous Oxide	0.07157	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Transit Bus
Oklahoma	OK - Tulsa	Nitrous Oxide	0.52214	GHG	Mobile - Locomotives	Nonpoint	Mobile Sources	Railroad Equipment	Diesel
Oklahoma	OK - Tulsa	Nitrous Oxide	0.04745	GHG	Mobile - Locomotives	Nonpoint	Mobile Sources	Railroad Equipment	Diesel
Oklahoma	OK - Wagoner	Nitrous Oxide	0.02342	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Compressed Natural Gas (CNG)	Combination Short-haul Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00086	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Compressed Natural Gas (CNG)	School Bus
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00233	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Compressed Natural Gas (CNG)	Single Unit Long-haul Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.08529	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Compressed Natural Gas (CNG)	Single Unit Short-haul Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.05590	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Combination Long-haul Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.08380	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Combination Short-haul Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00151	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Intercity Bus
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00546	GHG	Mobile - On-Road Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Light Commercial Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00107	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Motor Home
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00070	GHG	Mobile - On-Road Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Passenger Car
Oklahoma	OK - Wagoner	Nitrous Oxide	0.03964	GHG	Mobile - On-Road Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Passenger Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00045	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Refuse Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00864	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	School Bus
Oklahoma	OK - Wagoner	Nitrous Oxide	0.01564	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Single Unit Long-haul Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.11659	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Single Unit Short-haul Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00179	GHG	Mobile - On-Road Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Diesel	Transit Bus
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00046	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Ethanol (E-85)	Light Commercial Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00090	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Ethanol (E-85)	Passenger Car
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00680	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Ethanol (E-85)	Passenger Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00256	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Combination Short-haul Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.27836	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Light Commercial Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.02357	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Motor Home
Oklahoma	OK - Wagoner	Nitrous Oxide	0.01442	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Motorcycle
Oklahoma	OK - Wagoner	Nitrous Oxide	1.39054	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Passenger Car
Oklahoma	OK - Wagoner	Nitrous Oxide	4.49856	GHG	Mobile - On-Road non-Diesel Light Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Passenger Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.00571	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	School Bus
Oklahoma	OK - Wagoner	Nitrous Oxide	0.02435	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Single Unit Long-haul Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.35516	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Single Unit Short-haul Truck
Oklahoma	OK - Wagoner	Nitrous Oxide	0.01040	GHG	Mobile - On-Road non-Diesel Heavy Duty Vehicles	Onroad	Mobile Sources	Highway Vehicles - Gasoline	Transit Bus
Oklahoma	OK - Wagoner	Nitrous Oxide	0.41795	GHG	Mobile - Locomotives	Nonpoint	Mobile Sources	Railroad Equipment	Diesel

County Level Data - EPA NEI - Transportation, Industry, and Agricultural Sectors - 2020

2020 County Level Data- Industrial Sector (Facilities - Point Emissions)

		Pollutant		Type		Facility Type NAICS		Latitude	Longitude
STATE	State-County	Pollutant	Emissions (Tons)	Type	SITE NAME	Facility Type	NAICS	Latitude	Longitude
Oklahoma	OK - Creek	Carbon Dioxide	261.087	GHG	Jones Meml	Airport	Airport Operations	35.80685	-96.42186
Oklahoma	OK - Creek	Nitrous Oxide	0.174165217	GHG	SARLUPA PLANT	Glass Plant	Glass Container Mf	36.00884	-96.09943
Oklahoma	OK - Hughes	Carbon Dioxide	26165.17715	GHG	WETUMKA GAS PROCESSING PLANT	Gas Plant	Natural Gas Extract	35.1402	-96.1698
Oklahoma	OK - Mayes	Carbon Dioxide	6.407034	GHG	Buzzards Roost	Airport	Airport Operations	36.14399	-95.41775
Oklahoma	OK - Mayes	Carbon Dioxide	2000.328	GHG	PRYOR	Rail Yard	Rail Transportation	36.241413	-95.337973
Oklahoma	OK - Mayes	Carbon Dioxide	100490.1335	GHG	PRYOR ACTIVATED CARBON PLANT	Carbon or Gr	All Other Miscellan	36.2363	-95.2864
Oklahoma	OK - Mayes	Carbon Dioxide	466639.7636	GHG	PRYOR CEMENT FACILITY	Portland Cen	Cement Manufact.	36.271838	-95.222539
Oklahoma	OK - Mayes	Carbon Dioxide	357433.2121	GHG	PRYOR CHEMICAL	Fertilizer Pla	Nitrogenous Fertil	36.241247	-95.278349
Oklahoma	OK - Mayes	Carbon Dioxide	145173.6529	GHG	SOY ISOLATE PROD PLT	Food Produc	Soybean and Other	36.2259	-95.2809
Oklahoma	OK - McIntosh	Carbon Dioxide	19.621576	GHG	Eufaula Muni	Airport	Airport Operations	35.29593	-95.62526
Oklahoma	OK - Muskogee	Carbon Dioxide	156.57212	GHG	HASKELL	Airport	Airport Operations	35.8329	-95.6674
Oklahoma	OK - Muskogee	Methane	0.4204302	GHG	MUSKOGEE	Rail Yard	Rail Transportation	35.760252	-95.358757
Oklahoma	OK - Muskogee	Methane	0.97003412	GHG	MUSKOGEE	Glass Plant	Glass Container Mf	35.76919	-95.33899
Oklahoma	OK - Muskogee	Carbon Dioxide	590814.4927	GHG	MUSKOGEE MILL	Pulp and Pap	Paper Mills	35.7321	-95.2949
Oklahoma	OK - Muskogee	Carbon Dioxide	66140.123	GHG	MUSKOGEE PORCELAIN FLOOR TILE PLANT	Brick, Struct	Clay Building Mate	35.70651	-95.38611
Oklahoma	OK - Okfuskee	Carbon Dioxide	91.30036	GHG	Okemah Flying Field	Airport	Airport Operations	35.405269	-96.305538
Oklahoma	OK - Okfuskee	Nitrous Oxide	0.08046874	GHG	WELTY COMPRESSOR STATION	Compressor	Pipeline Transport	35.62446	-96.58129
Oklahoma	OK - Okmulgee	Nitrous Oxide	0.130072757	GHG	1200 W 20TH ST OKMULGEE	Unspecified	All Other Miscellan	35.6096	-95.98504
Oklahoma	OK - Okmulgee	Methane	1.366886626	GHG	HENRYETTA FACILITY	Glass Plant	Glass Container Mf	35.4478	-95.9699
Oklahoma	OK - Okmulgee	Carbon Dioxide	1620.2612	GHG	Okmulgee Rgnl	Airport	Airport Operations	35.66814	-95.94869
Oklahoma	OK - Rogers	Carbon Dioxide	1566.522	GHG	GUNDYS	Airport	Airport Operations	36.2668	-95.7836
Oklahoma	OK - Rogers	Carbon Dioxide	511072.7276	GHG	TULSA ROGERS COUNTY LINE	Portland Cen	Cement Manufact.	36.1941	-95.8117
Oklahoma	OK - Rogers	Carbon Dioxide	2506008.192	GHG	VERDIGRIS PLANT	Fertilizer Pla	Nitrogenous Fertil	36.233516	-95.719098
Oklahoma	OK - Seminole	Carbon Dioxide	2318.34787	GHG	Seminole Muni	Airport	Airport Operations	35.27468	-96.67516
Oklahoma	OK - Tulsa	Nitrous Oxide	0.071650248	GHG	202 S FRISCO	Unspecified	Steam and Air-Con	36.15205	-95.99755
Oklahoma	OK - Tulsa	Nitrous Oxide	1.13888	GHG	CHEROKEE	Rail Yard	Support Activities f	36.121793	-96.011086
Oklahoma	OK - Tulsa	Methane	2.51327022	GHG	JENKS FACILITY	Pulp and Pap	Sanitary Paper Pro	35.9697	-95.9269
Oklahoma	OK - Tulsa	Methane	0.90389543	GHG	MAINTENANCE ENGINEERING CENTER	Aircraft, Aeri	Aircraft Manufacto	36.2071	-95.8732
Oklahoma	OK - Tulsa	Carbon Dioxide	91.4918545	GHG	QUARRY RECYCLING AND DSPL FACILITY UTILITY FLARE F	Landfill	Solid Waste Landfil	36.21057	-95.81651
Oklahoma	OK - Tulsa	Carbon Dioxide	2000.328	GHG	TULSA	Rail Yard	Rail Transportation	36.087183	-95.854251
Oklahoma	OK - Tulsa	Nitrous Oxide	0.05123993	GHG	TULSA	Rail Yard	Rail Transportation	36.087183	-95.854251
Oklahoma	OK - Tulsa	Carbon Dioxide	710283.5642	GHG	TULSA REFINERY EAST	Petroleum R.	Petroleum Refineri	36.1184	-96.0011
Oklahoma	OK - Tulsa	Nitrous Oxide	4.750962565	GHG	TULSA REFINERY EAST	Petroleum R.	Petroleum Refineri	36.1184	-96.0011
Oklahoma	OK - Tulsa	Methane	43.58539671	GHG	TULSA REFINERY WEST	Petroleum R.	Petroleum Refineri	36.1396	-96.0149
Oklahoma	OK - Tulsa	Carbon Dioxide	347681.7237	GHG	WALTER B HALL RESOURCE RECOVERY FACILITY	Municipal W	Solid Waste Combu	36.13221	-96.01738
Oklahoma	OK - Tulsa	Nitrous Oxide	15.987926	GHG	WALTER B HALL RESOURCE RECOVERY FACILITY	Municipal W	Solid Waste Combu	36.13221	-96.01738
Oklahoma	OK - Wagoner	Carbon Dioxide	575.03175	GHG	HEFNER-EASLEY	Airport	Airport Operations	35.9626	-95.3419

Most of which were just outside boundaries, and in another Tribe (i.e. Cherokee Nation)

*Pulled out Power Plants - Electricity Generation via Combustion (Facility Type)

Oklahoma	OK - Mayes	Methane	48.15998944	GHG	CHOUTEAU POWER PLANT	Electricity Ge	Fossil Fuel Electric	36.2221	-95.2761
Oklahoma	OK - Mayes	Carbon Dioxide	1107852.82	GHG	GRAND RIVER ENERGY CENTER	Electricity Ge	Fossil Fuel Electric	36.1889	-95.2882
Oklahoma	OK - Mayes	Nitrous Oxide	3.623297901	GHG	GRAND RIVER ENERGY CENTER	Electricity Ge	Fossil Fuel Electric	36.1889	-95.2882
Oklahoma	OK - Muskogee	Methane	212.3933798	GHG	MUSKOGEE GENERATING STATION	Electricity Ge	Fossil Fuel Electric	35.76054	-95.28731
Oklahoma	OK - Okfuskee	Carbon Dioxide	1854.418636	GHG	PSO WEELETKA POWER STATION	Electricity Ge	Fossil Fuel Electric	35.3243	-96.1356
Oklahoma	OK - Okfuskee	Nitrous Oxide	0.003306935	GHG	PSO WEELETKA POWER STATION	Electricity Ge	Fossil Fuel Electric	35.3243	-96.1356
Oklahoma	OK - Rogers	Methane	186.1142737	GHG	PSO NORTHEASTERN POWER STATION	Electricity Ge	Fossil Fuel Electric	36.4286	-95.7003
Oklahoma	OK - Seminole	Carbon Dioxide	1678068.638	GHG	SEMINOLE GENERATING STATION	Electricity Ge	Fossil Fuel Electric	34.96644	-96.72577
Oklahoma	OK - Seminole	Nitrous Oxide	3.112927676	GHG	SEMINOLE GENERATING STATION	Electricity Ge	Fossil Fuel Electric	34.96644	-96.72577
Oklahoma	OK - Tulsa	Methane	34.0944947	GHG	GREEN COUNTRY ENERGY PROJECT	Electricity Ge	Fossil Fuel Electric	35.98312	-95.93418
Oklahoma	OK - Tulsa	Carbon Dioxide	265566.0206	GHG	PSO RIVERSIDE JENKS POWER STATION	Electricity Ge	Fossil Fuel Electric	35.9983	-95.9577
Oklahoma	OK - Tulsa	Nitrous Oxide	0.493835552	GHG	PSO RIVERSIDE JENKS POWER STATION	Electricity Ge	Fossil Fuel Electric	35.9983	-95.9577
Oklahoma	OK - Tulsa	Methane	3.68172041	GHG	PSO TULSA POWER STATION	Electricity Ge	Fossil Fuel Electric	36.11608	-95.99095
Oklahoma	OK - Wagoner	Carbon Dioxide	2806342.881	GHG	ONETA POWER LLC	Electricity Ge	Fossil Fuel Electric	36.01179	-95.69701
Oklahoma	OK - Wagoner	Methane	52.06217215	GHG	ONETA POWER LLC	Electricity Ge	Fossil Fuel Electric	36.01179	-95.69701

County and City Level Data - DOE NREL SLOPE - Electric Power, Industry, Commercial, and Residential Sectors - 2017 & 2020

U.S. Department of Energy (DOE)
National Renewable Energy Laboratory (NREL)
State and Local Planning for Energy (SLOPE) Data Viewer
2017, 2020 data is most recent; next up are 2025-2050 estimates (every 5 years)
[Data Viewer \(Net Electricity and Natural Gas Consumption\) | State and Local Planning for Energy | NREL](#)
<https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>

Natural gas use in mmbtu can be converted to therms by multiplying mmbtu by 10, then multiplying them by 0.006 (technically it is 0.0058...) which is why I used the calculator at the link below and didn't do the math in excel
0.1 mmbtu = 1 therm
1 therm = 0.006 tons of CO2 equiv.
[To convert therms of natural gas to CO2 equiv. \(greenhouse gas emissions\)](#)

Electricity use in mmbtu can be converted to kWh by multiplying mmbtu by 293.07107, then multiplying kWh by 0.0005
1 mmbtu = 293.07107 kWh
1kWh = 0.0005 tons of CO2 equiv.
[To convert mmbtu to kWh](#)
[To convert kWh to CO2 equiv. \(greenhouse gas emissions\)](#)

[eGRID conversion rates](#)
Output Emissions Rate (lb/MWh) = The output emission rates are calculated as total annual adjusted emissions divided by annual net generation.
Oklahoma = 689.13 lbs./MWh -> 1 MWh = 1,000 kWh -> 689.13 lbs. = 1,000 kWh -> 1kWh = 0.68913 lbs. of CO2 equiv. -> 1kWh = 0.000344565 tons of CO2 equiv.

2020 County Level Data- Energy Consumption

County	Geo	% of MCN Pop	Residential Natural Gas in MCN (mmbtu)	Residential Natural Gas in MCN (mmbtu)	Residential Natural Gas in MCN (mmbtu)	Residential Natural Gas in MCN	
						(tons of GHG emissions)	(tons of GHG emissions)
Creek	100%	100%	1,024,000	1,024,000	1,024,000	59,723	59,723
Hughes	~60%	~60%	114,000	68,400	68,400	3,989	3,989
Mayes	~5%	~5%	387,000	19,350	19,350	1,129	1,129
McIntosh	~80%	~80%	182,000	145,600	145,600	8,492	8,492
Muskogee	~40%	~50%	972,000	388,800	486,000	2,268	28,345
Okfuskee	100%	100%	119,000	119,000	119,000	6,940	6,940
Okmulgee	100%	100%	574,000	574,000	574,000	33,478	33,478
Rogers	~5%	~5%	1,487,000	74,350	74,350	4,336	4,336
Seminole	~5%	~5%	278,000	1,390,000	1,390,000	81,069	81,069
Tulsa	67%	~75%	1,273,000	8,534,460	9,553,500	497,758	557,192
Wagoner	~80%	~95%	1,227,000	981,600	1,165,650	57,250	67,985
TOTAL			19102000	13319560	14619850	756,432	852,678

County	Geo	% of MCN Pop	Residential Electricity (mmbtu)	Residential Electricity in MCN (mmbtu)	Residential Electricity in MCN (mmbtu)	Residential Electricity in MCN (kWh)	Residential Electricity in MCN (kWh)	Residential Electricity in MCN (tons of GHG emissions)	Residential Electricity in MCN (tons of GHG emissions)	Residential Electricity in MCN (tons of GHG emissions)	Residential Electricity in MCN eGRID conversions	
											output emissions rate (tons of GHG emissions)	output emissions rate (tons of GHG emissions)
Creek	100%	100%	1,277,000	1,277,000	1,277,000	374251756	374251756	187,126	187,126	128,952	128,952	
Hughes	~60%	~60%	203,000	121,800	121,800	35696056	35696056	17,848	17,848	12,299	12,299	
Mayes	~5%	~5%	850,000	42,500	42,500	12455520	12455520	6,228	6,228	4,292	4,292	
McIntosh	~80%	~80%	391,000	312,800	312,800	91672631	91672631	45,836	45,836	31,587	31,587	
Muskogee	~40%	~50%	1,245,000	498,000	622,500	145949393	182436741	72,975	91,218	50,288	62,860	
Okfuskee	100%	100%	199,000	199,000	199,000	58321143	58321143	29,161	29,161	20,095	20,095	
Okmulgee	100%	100%	728,000	728,000	728,000	213355739	213355739	106,678	106,678	73,514	73,514	
Rogers	~5%	~5%	1,760,000	88,000	88,000	25790254	25790254	12,895	12,895	8,886	8,886	
Seminole	~5%	~5%	450,000	22,500	22,500	6594099	6594099	3,297	3,297	2,272	2,272	
Tulsa	67%	~75%	1,058,200	7,089,940	7,936,500	207856302	232958547	1,038,928	1,162,979	715,946	801,432	
Wagoner	~80%	~95%	1,318,000	1,054,400	1,252,100	309014136	366954287	154,507	183,477	106,474	126,438	
TOTAL			19003000	11433940	12602700	3350957030	3693486774	1,675,479	1,846,743	1,154,606	1,272,628	

County	Geo	% of MCN Pop	Commercial Natural Gas in MCN (mmbtu)	Commercial Natural Gas in MCN (mmbtu)	Commercial Natural Gas in MCN (mmbtu)	Commercial Natural Gas in MCN	
						(tons of GHG emissions)	(tons of GHG emissions)
Creek	100%	100%	758,000	758,000	758,000	44,209	44,209
Hughes	~60%	~60%	75,000	45,000	45,000	2,625	2,625
Mayes	~5%	~5%	208,000	10,400	10,400	607	607
McIntosh	~80%	~80%	139,000	111,200	111,200	6,486	6,486
Muskogee	~40%	~50%	579,000	231,600	289,500	13,508	16,885
Okfuskee	100%	100%	74,000	74,000	74,000	4,316	4,316
Okmulgee	100%	100%	295,000	295,000	295,000	17,205	17,205
Rogers	~5%	~5%	678,000	33,900	33,900	19,772	19,772
Seminole	~5%	~5%	198,000	9,900	9,900	577	577
Tulsa	67%	~75%	1,247,900	8,360,930	9,359,250	487,637	545,862
Wagoner	~80%	~95%	252,000	201,600	239,400	11,758	13,963
TOTAL			15735000	10,131,530	11,225,550	608,700	672,507

County	Geo	% of MCN Pop	Commercial Electricity (mmbtu)	Commercial Electricity in MCN (mmbtu)	Commercial Electricity in MCN (mmbtu)	Commercial Electricity in MCN (kWh)	Commercial Electricity in MCN (kWh)	Commercial Electricity in MCN (tons of GHG emissions)	Commercial Electricity in MCN (tons of GHG emissions)	Commercial Electricity in MCN (tons of GHG emissions)	Commercial Electricity in MCN eGRID conversions	
											output emissions rate (tons of GHG emissions)	output emissions rate (tons of GHG emissions)
Creek	100%	100%	993,000	993,000	993,000	291019573	291019573	145,510	145,510	100,274	100,274	
Hughes	~60%	~60%	125,000	75,000	75,000	21980330	21980330	10,990	10,990	7,574	7,574	
Mayes	~5%	~5%	863,000	43,150	43,150	12646017	12646017	6,323	6,323	4,357	4,357	
McIntosh	~80%	~80%	213,000	170,400	170,400	49939310	49939310	24,970	24,970	17,207	17,207	
Muskogee	~40%	~50%	1,376,000	550,400	688,000	161306317	201632896	80,653	100,816	55,580	69,475	
Okfuskee	100%	100%	110,000	110,000	110,000	32237818	32237818	16,119	16,119	11,108	11,108	
Okmulgee	100%	100%	473,000	473,000	473,000	138622616	138622616	69,311	69,311	47,764	47,764	
Rogers	~5%	~5%	1,235,000	61,750	61,750	18097139	18097139	9,049	9,049	6,236	6,236	
Seminole	~5%	~5%	328,000	16,400	16,400	4806366	4806366	2,403	2,403	1,656	1,656	
Tulsa	67%	~75%	1,954,600	13,095,820	14,659,900	3838005980	4296275351	1,919,003	2,148,138	1,322,423	1,480,325	
Wagoner	~80%	~95%	630,000	504,000	598,500	147707819	175403035	73,854	87,702	50,894	60,437	
TOTAL			25892000	16,092,920	17888700	4716369284	5242660450	2,358,185	2,621,330	1,625,072	1,806,411	

County and City Level Data - DOE NREL SLOPE - Electric Power, Industry, Commercial, and Residential Sectors - 2017 & 2020

2020 County Level Data- Energy Consumption

County	% of MCN Geo	% of MCN Pop	Industrial Natural Gas (mmbtu)	Industrial Natural Gas in MCN (mmbtu)	Industrial Natural Gas in MCN (mmbtu)	Industrial Natural Gas in MCN (tons of GHG emissions)	Industrial Natural Gas in MCN (tons of GHG emissions)
Creek	100%	100%	8,571,000	8,571,000	8,571,000	510,387	510,387
Hughes	~60%	~60%	3,578,000	2,146,800	2,146,800	125,208	125,208
Mayes	~5%	~5%	4,680,000	234,000	234,000	13,648	13,648
McIntosh	~80%	~80%	144,000	115,200	115,200	6,719	6,719
Muskogee	~40%	~50%	3,773,000	1,509,200	1,886,500	88,022	110,027
Okfuskee	100%	100%	379,000	379,000	379,000	2,210	2,210
Okmulgee	100%	100%	4,373,000	4,373,000	4,373,000	255,048	255,048
Rogers	~5%	~5%	13,965,000	698,250	698,250	40,724	40,724
Seminole	~5%	~5%	3,517,000	175,850	175,850	10,256	10,256
Tulsa	67%	~75%	50,542,000	33863140	37906500	1,975,010	2,210,832
Wagoner	~80%	~95%	308,000	246,400	292,600	14,371	17,065
TOTAL			93,830,000	52311840	56778700	3,041,603	3,302,124

County	% of MCN Geo	% of MCN Pop	Industrial Electricity (mmbtu)	Industrial Electricity in MCN (mmbtu)	Industrial Electricity in MCN (mmbtu)	Industrial Electricity in MCN (kWh)	Industrial Electricity in MCN (kWh)	Industrial Electricity in MCN (tons of GHG emissions)	Industrial Electricity in MCN (tons of GHG emissions)	Industrial Electricity in MCN conversions output (tons of GHG emissions)	Industrial Electricity in MCN conversions output (tons of GHG emissions)
Creek	100%	100%	3,749,000	3,749,000	3,749,000	1098723441	1098723441	549,362	549,362	378,576	378,576
Hughes	~60%	~60%	394,000	236,400	236,400	69282001	69282001	34,641	34,641	23,872	23,872
Mayes	~5%	~5%	2,442,000	122,100	122,100	35783978	35783978	17,892	17,892	12,330	12,330
McIntosh	~80%	~80%	82,000	65,600	65,600	19225462	19225462	9,613	9,613	6,624	6,624
Muskogee	~40%	~50%	797,000	318,800	398,500	93431057	116788821	46,716	58,394	32,193	40,241
Okfuskee	100%	100%	96,000	96,000	96,000	28134823	28134823	14,067	14,067	9,694	9,694
Okmulgee	100%	100%	959,000	959,000	959,000	281055156	281055156	140,528	140,528	96,840	96,840
Rogers	~5%	~5%	1,824,000	91,200	91,200	26728082	26728082	13,364	13,364	9,209	9,209
Seminole	~5%	~5%	921,000	46,050	46,050	13495923	13495923	6,748	6,748	4,650	4,650
Tulsa	67%	~75%	13,744,000	9,208,480	10308000	2,698,739,086.67	3020976590	1,349,370	1,510,488	929,878	1,040,908
Wagoner	~80%	~95%	430,000	344,000	408,500	100816448	119719532	50,408	59,860	34,737	41,251
TOTAL			25,438,000	15,236,630	16,480,350	4465415457	4465415457	2,232,708	2,414,957	1,538,604	1,664,195

4,489,000	2693400	2,693,400	195,301	195,301
9,430,000	471,500	471,500	45,827	45,827
1,151,000	920,800	920,800	102,116	102,116
8,742,000	3496800	4,371,000	304,141	405,686
977,000	977,000	977,000	72,813	72,813
7,402,000	7402000	7,402,000	622,248	622,248
20,949,000	1047450	1,047,450	100,140	100,140
5,692,000	1660700	1,660,700	104,350	104,350
119,631,000	80152770	89723250	7,267,706	8,135,491
3,735,000	2988000	3,548,250	311,740	370,192
182,198,000	103289790	112815353	8,440,398	114,777,843

Total Electricity in MCN (mmbtu)	Total Electricity in MCN (mmbtu)	Total Electricity in MCN (mmbtu)	Total Electricity in MCN (tons of GHG emissions)	Total Electricity in MCN (tons of GHG emissions)
44,895,000	27526860	30491400	4,033,663	4,468,074

Total Natural Gas in MCN (mmbtu)	Total Natural Gas in MCN (mmbtu)	Total Natural Gas in MCN (mmbtu)	Total Natural Gas in MCN (tons of GHG emissions)	Total Natural Gas in MCN (tons of GHG emissions)
128,667,000	75762930	82624100	4,406,735	4,827,309

County and City Level Data - DOE NREL SLOPE - Electric Power, Industry, Commercial, and Residential Sectors - 2017 & 2020

2020 City Level Data- Energy Consumption

City	County	% of MCN	Residential Natural Gas (mmbtu)	Residential Natural Gas in MCN (mmbtu)	Residential Natural Gas in MCN (tons of GHG emissions)
Tulsa	Tulsa	67%	8,165,000	5,470,550	319,060
Broken Arrow	Tulsa and Wagoner	100%	2,014,000	2,014,000	117,463
Muscogee	Muscogee	~80%	530,000	424,000	24,729
Okmulgee	Okmulgee	100%	104,000	104,000	6,066

City	County	% of MCN	Residential Electricity (mmbtu)	Residential Electricity in MCN (mmbtu)	Residential Electricity in MCN (kWh)	Residential Electricity in MCN (tons of GHG emissions)
Tulsa	Tulsa	67%	6,863,000	4,598,210	1347602325	673,801
Broken Arrow	Tulsa and Wagoner	100%	1,549,000	1,549,000	453967087	226,984
Muscogee	Muscogee	~80%	583,000	466,400	136688347	68,344
Okmulgee	Okmulgee	100%	97,000	97,000	28427894	14,214

City	County	% of MCN	Commercial Natural Gas (mmbtu)	Commercial Natural Gas in MCN (mmbtu)	Commercial Natural Gas in MCN (tons of GHG emissions)
Tulsa	Tulsa	67%	9,240,001	6,190,801	361,068
Broken Arrow	Tulsa and Wagoner	100%	1,491,000	1,491,000	86,960
Muscogee	Muscogee	~80%	346,000	276,800	16,144
Okmulgee	Okmulgee	100%	61,000	61,000	3,558

City	County	% of MCN	Commercial Electricity (mmbtu)	Commercial Electricity in MCN (mmbtu)	Commercial Electricity in MCN (kWh)	Commercial Electricity in MCN (tons of GHG emissions)
Tulsa	Tulsa	67%	15051000	10,084,170	2955378492	1,477,689
Broken Arrow	Tulsa and Wagoner	100%	1,966,000	1,966,000	576177724	288,089
Muscogee	Muscogee	~80%	953,000	762,400	223437384	111,719
Okmulgee	Okmulgee	100%	101,000	101,000	29600178	14,800

City	County	% of MCN	Industrial Natural Gas (mmbtu)	Industrial Natural Gas in MCN (mmbtu)	Industrial Natural Gas in MCN (tons of GHG emissions)
Tulsa	Tulsa	67%	8,707,001	5,833,691	340,240
Broken Arrow	Tulsa and Wagoner	100%	2,351,000	2,351,000	137,118
Muscogee	Muscogee	~80%	1,648,000	1,318,400	8,072
Okmulgee	Okmulgee	100%	83,000	83,000	4,841

City	County	% of MCN	Industrial Electricity (mmbtu)	Industrial Electricity in MCN (mmbtu)	Industrial Electricity in MCN (kWh)	Industrial Electricity in MCN (tons of GHG emissions)
Tulsa	Tulsa	67%	5,579,001	3,737,931	1095479341	547,740
Broken Arrow	Tulsa and Wagoner	100%	863,000	863,000	252920333	126,460
Muscogee	Muscogee	~80%	523,000	418,400	122620936	61,310
Okmulgee	Okmulgee	100%	76,000	76,000	22273401	11,137

Total Natural Gas from largest cities (mmbtu)	Total Natural Gas from largest cities in MCN (mmbtu)	Total Natural Gas from largest cities in MCN (tons of GHG emissions)
34740002	25,618,241	1,425,319

Total Electricity from largest cities (mmbtu)	Total Electricity from largest cities in MCN (mmbtu)	Total Electricity from largest cities in MCN (tons of GHG emissions)
34204001	24,719,511	3,622,287

Total from largest cities (mmbtu)	Total from largest cities in MCN (mmbtu)	Total from largest cities in MCN (tons of GHG emissions)
1373691947	35,915,352	3,719,598
10,234,000	10,234,000	983,074
4,583,000	3,666,400	290,318
522,000	522,000	54,616

County and City Level Data - DOE NREL SLOPE - Electric Power, Industry, Commercial, and Residential Sectors - 2017 & 2020

2017 County Level Data- Energy Consumption

County	% of MCN	% of MCN Pop	Residential Natural Gas (mmbtu)	Residential Natural Gas in MCN (mmbtu)	Residential Natural Gas in MCN (mmbtu)	Residential Natural Gas in MCN	Residential Natural Gas in MCN
						(tons of GHG emissions)	(tons of GHG emissions)
Creek	100%	100%	892,000	892,000	892,000	52,024	52,024
Hughes	~60%	~60%	103,000	61,800	61,800	3,604	3,604
Mayes	~5%	~5%	338,000	16,900	16,900	986	986
McIntosh	~80%	~80%	163,000	130,400	130,400	7,605	7,605
Muskogee	~40%	~50%	848,000	339,200	424,000	19,783	24,729
Okfuskee	100%	100%	105,000	105,000	105,000	6,124	6,124
Okmulgee	100%	100%	501,000	501,000	501,000	29,220	29,220
Rogers	~5%	~5%	1,307,000	65,350	65,350	3,811	3,811
Seminole	~5%	~5%	247,000	12,350	12,350	720	720
Tulsa	67%	~75%	11,194,000	7,499,980	8,395,500	437,424	489,653
Wagoner	~80%	~95%	1,091,000	872,800	1,036,450	50,905	60,449
TOTAL			16,789,000	10,496,780	11,640,750	612,206	678,925

County	% of MCN	% of MCN Pop	Residential Electricity (mmbtu)	Residential Electricity in MCN (mmbtu)	Residential Electricity in MCN (mmbtu)	Residential Electricity in MCN (kWh)	Residential Electricity in MCN (kWh)	Residential Electricity in MCN	Residential Electricity in MCN
								(tons of GHG emissions)	(tons of GHG emissions)
Creek	100%	100%	1,184,000	1,184,000	1,184,000	346996147	346996147	173,498	173,498
Hughes	~60%	~60%	196,000	117,600	117,600	34465158	34465158	17,233	17,233
Mayes	~5%	~5%	799,000	39,950	39,950	11708189	11708189	5,854	5,854
McIntosh	~80%	~80%	368,000	294,400	294,400	86280123	86280123	43,140	43,140
Muskogee	~40%	~50%	1,164,000	465,600	582,000	136453890	170567363	68,227	85,284
Okfuskee	100%	100%	189,000	189,000	189,000	55390432	55390432	27,695	27,695
Okmulgee	100%	100%	678,000	678,000	678,000	198702185	198702185	99,351	99,351
Rogers	~5%	~5%	1,645,000	82,250	82,250	24105096	24105096	12,053	12,053
Seminole	~5%	~5%	426,000	21,300	21,300	6242414	6242414	3,121	3,121
Tulsa	67%	~75%	9857000	6,604,190	7,392,750	193549700	2166601153	967,749	1,083,301
Wagoner	~80%	~95%	1,248,000	998,400	1,185,600	292602156	347465061	146,301	173,733
TOTAL			17754000	10,674,690	11,766,850	3128442820	3448523320	1,564,221	1,724,262

County	% of MCN	% of MCN Pop	Commercial Natural Gas (mmbtu)	Commercial Natural Gas in MCN (mmbtu)	Commercial Natural Gas in MCN (mmbtu)	Commercial Natural Gas in MCN	Commercial Natural Gas in MCN
						(tons of GHG emissions)	(tons of GHG emissions)
Creek	100%	100%	791,000	791,000	791,000	46,134	46,134
Hughes	~60%	~60%	81,000	48,600	48,600	2,835	2,835
Mayes	~5%	~5%	217,000	10,850	10,850	633	633
McIntosh	~80%	~80%	150,000	120,000	120,000	6,999	6,999
Muskogee	~40%	~50%	608,000	243,200	304,000	14,184	17,730
Okfuskee	100%	100%	80,000	80,000	80,000	4,666	4,666
Okmulgee	100%	100%	314,000	314,000	314,000	18,314	18,314
Rogers	~5%	~5%	705,000	35,250	35,250	1,881	1,881
Seminole	~5%	~5%	207,000	10,350	10,350	604	604
Tulsa	67%	~75%	13,035,000	8,733,450	9,776,250	509,364	570,183
Wagoner	~80%	~95%	261,000	208,800	247,950	12,178	14,461
TOTAL			16,449,000	10,595,500	11,738,250	617,792	684,440

County	% of MCN	% of MCN Pop	Commercial Electricity (mmbtu)	Commercial Electricity in MCN (mmbtu)	Commercial Electricity in MCN (mmbtu)	Commercial Electricity in MCN (kWh)	Commercial Electricity in MCN (kWh)	Commercial Electricity in MCN	Commercial Electricity in MCN
								(tons of GHG emissions)	(tons of GHG emissions)
Creek	100%	100%	984,000	984,000	984,000	288381933	288381933	144,191	144,191
Hughes	~60%	~60%	128,000	76,800	76,800	22507858	22507858	11,254	11,254
Mayes	~5%	~5%	855,000	42,750	42,750	12528788	12528788	6,264	6,264
McIntosh	~80%	~80%	220,000	176,000	176,000	51580508	51580508	25,790	25,790
Muskogee	~40%	~50%	1,372,000	548,800	686,000	160837403	201046754	80,419	100,523
Okfuskee	100%	100%	113,000	113,000	113,000	33117031	33117031	16,559	16,559
Okmulgee	100%	100%	479,000	479,000	479,000	140381043	140381043	70,191	70,191
Rogers	~5%	~5%	1,220,000	61,000	61,000	17877335	17877335	8,939	8,939
Seminole	~5%	~5%	327,000	16,350	16,350	4791712	4791712	2,396	2,396
Tulsa	67%	~75%	19,401,000	12,998,670	14,550,750	3809534125	424403872	1,904,767	2,132,202
Wagoner	~80%	~95%	621,000	496,800	589,950	145597708	172897278	72,799	86,449
TOTAL			25,720,000	15,993,170	17,775,600	4687135445	5209514112	2,343,568	2,604,757

County	% of MCN	% of MCN Pop	Industrial Natural Gas (mmbtu)	Industrial Natural Gas in MCN (mmbtu)	Industrial Natural Gas in MCN (mmbtu)	Industrial Natural Gas in MCN	Industrial Natural Gas in MCN
						(tons of GHG emissions)	(tons of GHG emissions)
Creek	100%	100%	5,976,000	5,976,000	5,976,000	348,540	348,540
Hughes	~60%	~60%	2,186,000	1,311,600	1,311,600	76,497	76,497
Mayes	~5%	~5%	4,549,000	227,450	227,450	13,266	13,266
McIntosh	~80%	~80%	89,000	71,200	71,200	4,153	4,153
Muskogee	~40%	~50%	3,473,000	1,389,200	1,736,500	81,023	101,278
Okfuskee	100%	100%	235,000	235,000	235,000	13,706	13,706
Okmulgee	100%	100%	3,391,000	3,391,000	3,391,000	197,774	197,774
Rogers	~5%	~5%	13,499,000	674,950	674,950	39,365	39,365
Seminole	~5%	~5%	2,302,000	115,100	115,100	6,713	6,713
Tulsa	67%	~75%	38,434,000	25,750,780	28,825,500	1,501,870	1,681,198
Wagoner	~80%	~95%	249,000	199,200	236,550	11,618	13,796
TOTAL			74,383,000	39,341,480	42,800,850	2,294,525	2,496,286

County	% of MCN	% of MCN Pop	Industrial Electricity (mmbtu)	Industrial Electricity in MCN (mmbtu)	Industrial Electricity in MCN (mmbtu)	Industrial Electricity in MCN (kWh)	Industrial Electricity in MCN (kWh)	Industrial Electricity in MCN	Industrial Electricity in MCN
								(tons of GHG emissions)	(tons of GHG emissions)
Creek	100%	100%	3,190,000	3,190,000	3,190,000	934896713	934896713	467,448	467,448
Hughes	~60%	~60%	283,000	169,800	169,800	49763468	49763468	24,882	24,882
Mayes	~5%	~5%	2,381,000	119,050	119,050	34890111	34890111	17,445	17,445
McIntosh	~80%	~80%	68,000	54,400	54,400	15943066	15943066	7,972	7,972
Muskogee	~40%	~50%	699,000	279,600	349,500	81942671	102428339	40,971	51,214
Okfuskee	100%	100%	81,000	81,000	81,000	23738757	23738757	11,869	11,869
Okmulgee	100%	100%	768,000	768,000	768,000	225078582	225078582	112,539	112,539
Rogers	~5%	~5%	1,696,000	84,800	84,800	24852427	24852427	12,426	12,426
Seminole	~5%	~5%	691,000	34,550	34,550	10125605	10125605	5,063	5,063
Tulsa	67%	~75%	11,279,000	7,556,930	8,459,250	2214717561	2479161449	1,107,359	1,239,581
Wagoner	~80%	~95%	407,000	325,600	386,650	95423940	113315929	47,712	56,658
TOTAL			21,543,000	12,663,730	13,697,000	3711372901	4014194446	1,855,686	2,007,097

County and City Level Data - DOE NREL SLOPE - Electric Power, Industry, Commercial, and Residential Sectors - 2017 & 2020

2017 County Level Data- Energy Consumption

	Total in MCN (mmbtu)	Total in MCN (mmbtu)	Total in MCN (tons of GHG emissions)	Total in MCN (tons of GHG emissions)	% change from 2020 Geo	% change from 2020 Pop
Total (mmbtu)	13,017,000	13,017,000	1,231,835	1,231,835	#DIV/0!	#DIV/0!
	2,977,000	1,786,200	136,304	136,304	-30	-30
	9,139,000	456,950	44,449	44,449	-3	-3
	1,058,000	846,400	95,659	95,659	-6	-6
	8,164,000	3,265,600	304,607	380,758	0	-6
	803,000	803,000	80,619	80,619	11	11
	6,131,000	6,131,000	527,389	527,389	-15	-15
	20,072,000	1,003,600	78,474	78,474	-22	-22
	4,200,000	210,000	18,617	18,617	-82	-82
	103,200,000	691,440,000	6,428,532	7,196,117	-12	-12
	3,877,000	310,160,000	3,683,150	341,513	10	10
	172,638,000	997,653,500	9,287,999	10,195,767	10	-91
Total Electricity (mmbtu)	65,017,000	39331590	43239450	5,763,476	43	42
Total Natural Gas (mmbtu)	107,621,000	60433760	66179850	3,524,523	-20	-20

Boundary Considerations

Considerations used to analyze and estimate the percentage of each county located within MCN boundaries.

<https://www.census.gov/quickfacts/fact/table/US/PST045223>

<https://oklahoma.gov/content/dam/ok/en/odmhsas/documents/a0002/demographic-and-economic-profile-of-oklahoma.pdf>

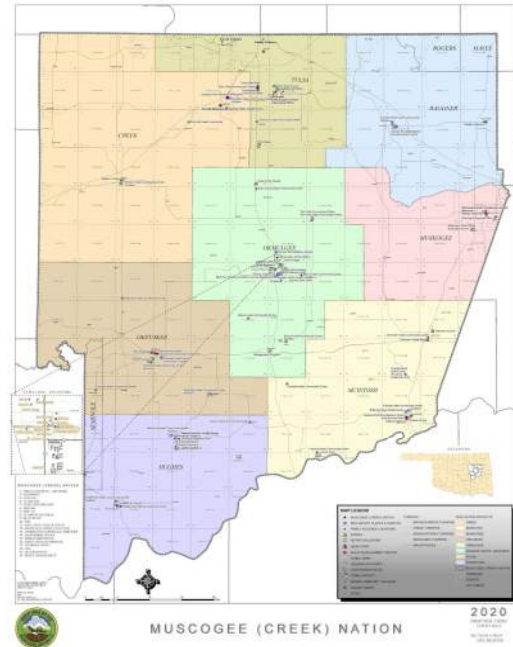
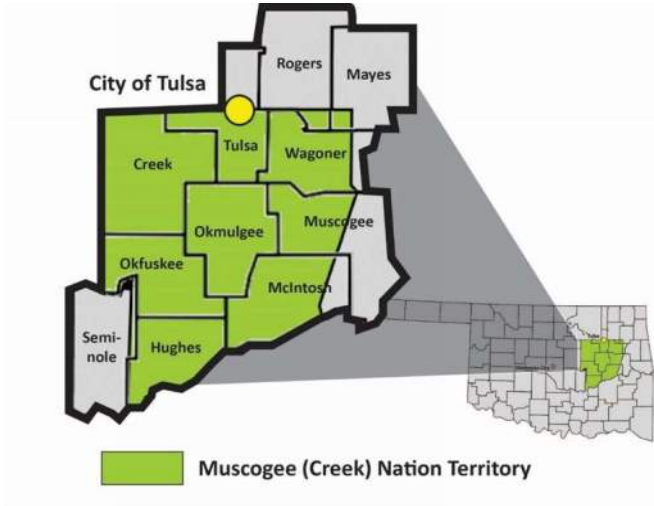
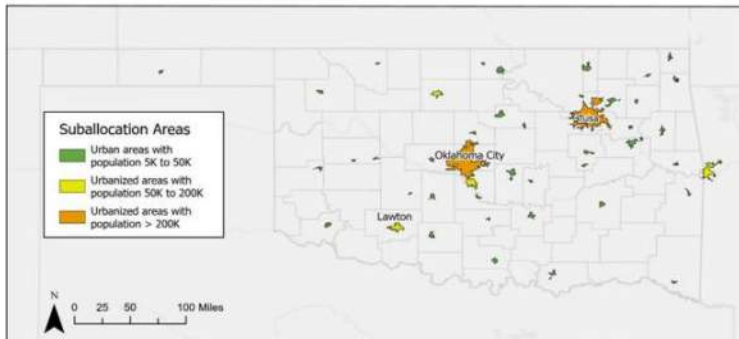
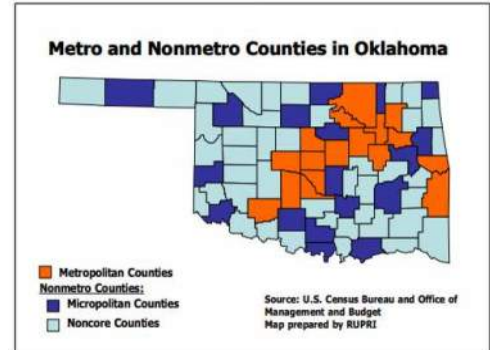


Figure 1: Oklahoma's Urban Areas



Source: U.S. Census, USDOT



County Populations

	Population (Oklahoma)	% of MCN Land Area	Population in MCN	County's % of Population Based on land use	% of MCN Population	Population in MCN	County's % of Population Based on urban/rural
Oklahoma	3,959,411						
Creek	71,754	100%	71,754	10%	100%	71,754	9%
Hughes	13,367	~60%	8,020	Estimated 1%	~60%	8,020	Estimated 1%
Mayes	39,046	~5%	1,952	Estimated 0%	~5%	1,952	Estimated 0%
McIntosh	18,941	~80%	15,153	Estimated 2%	~80%	15,153	Estimated 2%
Muskogee	66,339	~40%	26,536	Estimated 4%	~50%	26,536	Estimated 4%
Okfuskee	11,310	100%	11,310	2%	100%	11,310	1%
Okmulgee	36,706	100%	36,706	5%	100%	36,706	5%
Rogers	95,240	~5%	4,762	Estimated 1%	~5%	4,762	Estimated 1%
Seminole	23,556	~5%	1,178	Estimated 0%	~5%	1,178	Estimated 0%
Tulsa	669,279	67%	448,417	65%	~75%	501,959	66%
Wagoner	80,981	~80%	64,785	Estimated 9%	~95%	76,932	Estimated 10%
Total	1,126,519		690,572			756,262	

Notes

GWP

“Carbon dioxide equivalent” or “CO₂e” is a term for describing different greenhouse gases in a common unit.

Because CO₂ is considered the most important greenhouse gas some GHG assessments or reports only include CO₂, and don't consider the other greenhouse gases, and this can lead to an understatement of total global warming impact. Greenhouse gas inventories are more complete if they include all GHGs and not just CO₂.

100-year GWP values from the IPCC 6th Assessment Report report are the most recent values to date.

Greenhouse Gas	Global Warming Potential (GWP)
1. Carbon dioxide (CO ₂)	1
2. Methane (CH ₄)	29.8
3. Nitrous oxide (N ₂ O)	273
4. Hydrofluorocarbons (HFCs)	5 – 14,600
5. Perfluorocarbons (PFCs)	78 – 12,400
6. Sulfur hexafluoride (SF ₆)	25,200
7. Nitrogen trifluoride (NF ₃)	17,400

It's worth noting that different greenhouse gases last in the atmosphere for different lengths of time, and they also absorb different amounts of heat.

The “global warming potential” (or “GWP”) of a GHG indicates the amount of warming a gas causes over a given period of time (normally 100 years).

GWP is an index, with CO₂ having the index value of 1, and the GWP for all other GHGs is the number of times more warming they cause compared to CO₂.

For example, 1kg of methane causes 29.8 times more warming over a 100 year period compared to 1kg of CO₂, and so methane has a GWP of 29.8

A quantity of GHG can be expressed as CO₂e by multiplying the amount of the GHG by its GWP. E.g. if 1kg of methane is emitted, this can be expressed as 29.8kg of CO₂e (1kg CH₄ * 29.8 = 29.8kg CO₂e).

<https://ecometrica.com/assets/GHGs-CO2-CO2e-and-Carbon-What-Do-These-Mean-v2.1.pdf>

GHGs

GHGs include Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), and Fluorinated gases

<https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

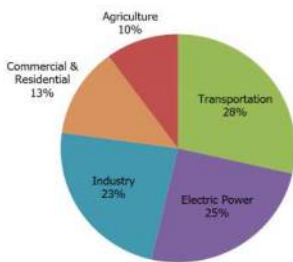
Economic Sectors

Sectors chosen (i.e. Industry, Transportation, Electric Power, Agriculture, Commercial, Residential) were based off of EPA's recommendations.

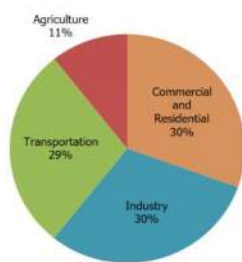
[Sources of Greenhouse Gas Emissions | US EPA](https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions-us)

<https://www.eia.gov/state/?sid=OK#tabs-2>

Total U.S. Greenhouse Gas Emissions by Economic Sector in 2021



Total U.S. Greenhouse Gas Emissions by Economic Sector



Total U.S. Greenhouse Gas Emissions by Economic Sector and Electricity End-Use

Appendix B
Stakeholder and Public Engagement Summary

INTRODUCTION

Stakeholder and public engagement are critical to public processes, and this project is no exception. As a requirement of the Climate Pollution Reduction Grants (CPRG) Program, engagement with low-income and disadvantaged communities (LIDACs) was a priority of this public participation process. Per the Environmental Protection Agency, planning grant recipients must conduct meaningful engagement with affected LIDACs in the development of the planning grant deliverables.

Per the *Climate Pollution Reduction Grants Program: Technical Reference Document for States, Municipalities, and Air Pollution Control Agencies*:

In the context of climate action planning, a meaningful engagement process ensures that the full range of the potential impacts (both benefits and disbenefits) of greenhouse gas emission reduction measures are understood and considered. Such engagement can help ensure that planning grant recipients:

- *Communicate with residents of LIDACs about greenhouse gas reduction measure opportunities in their areas;*
- *Minimize to the extent possible any anticipated disbenefits to residents of LIDACs;*
- *Identify and incorporate community-driven priorities into plan design and engage with residents of LIDACs throughout plan implementation; and,*
- *Continue engagement with residents, leaders, and representatives of LIDACs into the future.*

Engagement strategies can cover multiple communities and should be inclusive of linguistic, cultural, institutional, geographic, and other differences to assure meaningful participation. Meaningful engagement under the Climate Pollution Reduction Grant program should include early outreach, sharing information, and soliciting input on the Priority Action Plan and Comprehensive Action Plan development, especially in the LIDACs.

To ensure compliance with the above guidance, the Muscogee (Creek) Nation (MCN) actively engaged with tribal stakeholders and took a targeted approach to engagement with LIDACs after the LIDAC identification and analysis task was complete. This appendix summarizes those efforts. Note that this appendix only summarizes the engagement efforts undertaken for the **Priority Action Plan** phase of the project.

PUBLIC AND STAKEHOLDER ENGAGEMENT PLAN (PSEP)

As the first deliverable for the engagement process, a Public and Stakeholder Engagement Plan (PSEP) for the Priority Climate Action Plan (PCAP) process was developed by Olsson to guide virtual stakeholder participation efforts within the limited timeframe. The PSEP was updated throughout the PCAP process and will continue to be revised throughout the Comprehensive Climate Action Plan (CCAP) and Status Report phases of the larger project.

The PSEP included general guidelines for the engagement process and a detailed schedule of engagement tactics and coordination tasks.

The entire ***Public and Stakeholder Engagement Plan*** is included on the following pages.

Public and Stakeholder Engagement Plan

**MUSCOGEE CREEK NATION
PRIORITY CLIMATE ACTION PLAN (PCAP)**

Muscogee Creek Nation (MCN)

Last revised on February 16, 2024

olsson

“Public engagement is a process that brings people together to address issues of common importance, to solve shared problems, and to bring about positive social change. Effective public engagement invites average citizens to get involved in deliberation, dialogue, and action on public issues that they care about. And it helps leaders and decision makers better understand the perspectives, opinions, and concerns of citizens and stakeholders.”

- Unknown

The Public and Stakeholder Engagement Plan supports and reinforces the principles and goals of the MCN Public Participation Plan.

General Guidelines

Review and Quality Control. All public-facing material will be reviewed by the Muscogee Creek Nation (MCN) prior to publishing to ensure the material is consistent with the organization's preferred messaging, brand, and communication style.

Work Sharing and Coordination. Each item/task shown in this PSEP will be developed through coordination between Olsson and the MCN. Olsson will share marketing materials with the MCN's project manager and staff members for distribution.

Engagement Tactics vs. Coordination Tasks. Within the body of this PSEP, Engagement Tactics (ET) and Coordination Tasks (CT) are referenced. ETs refer to times when Olsson or MCN will actively be engaging with stakeholders and/or the public. CTs refer to times of coordination and planning for ETs to function successfully.

PSEP Snapshot

MCN PROJECT CONTACTS

James Williams
James Hayes
Judith Ausmus
Kristy Lawson

PUBLIC ENGAGEMENT SPECTRUM LEVELS

Inform, Consult, and Involve

Phase One: Priority Climate Action Plan (PCAP)

PUBLIC ENGAGEMENT SPECTRUM LEVEL(S)

Inform, Consult, and Involve

PHASE ONE SUMMARY

- The established Stakeholder Committee will serve in an advisory capacity to the Muscogee Creek Nation in the development of the Priority Climate Action Plan.
- Multiple engagement tactics will be used to complete the above-mentioned activities, including two virtual stakeholder meetings, and initial development of a project webpage.

GENERAL TIMEFRAME

February 2024 through March 2024

SCHEDULE OF ENGAGEMENT TACTICS (ET) AND COORDINATION TASKS (CT)

STATUS	TYPE	TASK + DESCRIPTION	LEAD PARTY	DATE
x	CT	Weekly Coordination Meetings. Olsson will schedule, host, and prepare for eight weekly virtual coordination meetings between February 01 and March 20, 2024.	Olsson	02/09/24
x	CT	Public & Stakeholder Engagement Plan.	Olsson	02/09/24
	CT	Stakeholder Identification. MCN will create the first draft of the stakeholder committee member list. Olsson will review and provide comments. MCN will finalize the member list and gather individual contact information for each stakeholder. MCN will be responsible for communicating with the Stakeholder Committee.	MCN	02/12/24 to 02/14/24
x	CT	Project Webpage Draft Content. Olsson will coordinate with MCN to prepare initial material for the project webpage to be posted by 02/16/24. Information will include project description and purpose, and opportunities for public input.	Olsson	02/14/24
x		Weekly Coordination Meeting.		02/16/24 @ 10 A.M.
x		Weekly Coordination Meeting.		02/23/24
x	CT	Prep Meeting for Virtual Stakeholder Workshop #1. Prior to Stakeholder Committee Meeting #1, Olsson will meet virtually with MCN and lead a meeting to discuss the draft plan for Virtual Stakeholder Workshop #1. The purpose of this prep meeting is to gather MCN feedback on the program for Virtual Stakeholder Workshop #1.	Olsson	02/23/24
x		Weekly Coordination Meeting.		03/01/24

STATUS	TYPE	TASK + DESCRIPTION	LEAD PARTY	DATE
x	ET	Virtual Stakeholder Workshop #1. Olsson will host a two-hour virtual Stakeholder Workshop #1, staffed with four Olsson team members. MCN will also be responsible for staffing the meeting. The meeting's purpose is to educate stakeholders on the project's purpose, the timeline, anticipated outcomes, and previous recommendations from existing regional plans. Olsson will organize and facilitate a prioritization/ranking exercise to being the prioritization process for the PCAP. This meeting will be recorded.	Olsson	03/01/24 11 A.M. to 1 P.M. via Teams
x	CT	Stakeholder Workshop #1 Summary Deliverable. Olsson will prepare a concise summary of the process and findings from Stakeholder Committee Meeting #1. This deliverable will be an appendix to the PCAP.	Olsson	03/08/24
x	CT	Prep Meeting for Virtual Stakeholder Workshop #2. Prior to Stakeholder Committee Meeting #2, Olsson will meet virtually with MCN and lead a meeting to discuss the draft plan for Virtual Stakeholder Workshop #2. The purpose of this prep meeting is to gather MCN feedback on the program for Virtual Stakeholder Workshop #2.	Olsson	03/08/24
x		Weekly Coordination Meeting.		03/08/24
x		Weekly Coordination Meeting.		03/15/24
x	ET	Virtual Stakeholder Workshop #2. Olsson will host a two-hour virtual Stakeholder Workshop #2, staffed with four Olsson team members. MCN will also be responsible for staffing the meeting. The purpose of the meeting is to share a draft of the prioritized PCAP supplement measures and will include commenting exercises to gather feedback on the draft measures. Olsson will prepare the program for the meeting and feedback exercise(s). This meeting will be recorded.	Olsson	03/15/24 11 A.M. to 1 P.M. via Teams
x	CT	Engagement Summary (Complete for Phase 100 - PCAP). Olsson will finalize the complete engagement summary for the PCAP phase, including a summary of Virtual Stakeholder Workshops #1 & #2.	Olsson	03/20/24

STATUS	TYPE	TASK + DESCRIPTION	LEAD PARTY	DATE
x	CT	Prep Meeting for MCN National Council Presentation. Before the Public MCN National Council meeting, Olsson will meet virtually with MCN and lead a meeting to discuss presenting the draft plan to the MCN National Council. The purpose is to gather MCN feedback on the presentation for MCN National Council Presentation.	Olsson	03/20/24
x		Weekly Coordination Meeting.		03/22/24
x		Weekly Coordination Meeting.		03/29/24
	ET	MCN National Council Presentation. Following the stakeholder workshops and development of the draft PCAP, a presentation of the draft PCAP will be made to the National Council at a regular Council meeting by MCN Environmental Services staff. One Olsson staff member will be available virtually to present and answer any questions on the PCAP in support of MCN Environmental Services representatives.	MCN Olsson	03/30/24 10:00 A.M.

DEADLINE: MARCH 27, 2024

Phase Two: Comprehensive Action Plan (CCAP)

GENERAL TIMEFRAME

To be prepared upon notice-to-proceed for phase two.

STAKEHOLDER COMMITTEE

In coordination with the consultant team, the Muscogee (Creek) Nation (MCN) identified potential members for the stakeholder committee. These members were identified, in part, because of their eligibility to participate in the CPRG implementation grant process and associated Notice of Funding Opportunity, and/or their ability to implement the identified priority action items. The MCN worked to ensure representation from a variety of sectors. Email invitations were extended to the identified stakeholders to join the committee. The table below and the following pages detail the makeup of the stakeholder committee.

CATEGORY	ORGANIZATION	CONTACT	TITLE
PROJECT PARTNERS			
Executive Office	MCN	David Hill	Principal Chief
Executive Office	MCN	Del Beaver	Second Chief
Secretary of the Nation	MCN	Dylan Harding	Planning Manager
Secretary of the Nation	MCN	Zechariah Harjo	Policy Analyst
Office of the Principal Chief	MCN	Jason Salsman	Press Secretary
Executive Office	MCN	Jeff Fife	Chief of Staff
Interior Affairs	MCN	Jesse Allen	Secretary of the Interior
Environmental Services	MCN	James Williams	Director of Environmental Services
Environmental Services	MCN	James Hayes	Project Manager/Environmental Specialist II
Environmental Services	MCN	Judith Ausmus	Environmental Specialist II
Environmental Services	MCN	Kristy Lawson	Environmental Specialist I
Environmental Services	MCN	Trent Luellen	Environmental Specialist II
Environmental Services	MCN	Barry Barnett	Environmental Specialist I
Environmental Services	MCN	Eli Barnett	Environmental Specialist I
Environmental Services	MCN	Susumu Daniels	Environmental Specialist II
Environmental Services	MCN	Dianna Price	Administrative Assistant II
Environmental Services	MCN	Denise Stanley	Environmental Specialist II
Environmental Services	MCN	Sonny Hill	Environmental Specialist II
Environmental Services	MCN	Autumn Dearman	Environmental Specialist I
Environmental Services	MCN	Michael Fish	Environmental Specialist I
Environmental Services	MCN	Curry Blankenship	Environmental Specialist I
Environmental Services	MCN	Joe Hooper	Environmental Specialist I

CATEGORY (Continued)	ORGANIZATION	CONTACT	TITLE
CITY / COUNTY REPRESENTATIVES			
National Council	MCN	Randall Hicks	Speaker / Okfuskee District - Seat A
National Council	MCN	Thomasene Yahola Osborn	Second Speaker / Tukvptce District - Seat B
National Council	MCN	Darrel Proctor	Sergeant-At-Arms/McIntosh District - Seat A
National Council	MCN	Dode Barnett	Council Member / Creek District - Seat A
National Council	MCN	Galen Cloud	Council Member / McIntosh District - Seat B
National Council	MCN	Mary Crawford	Council Member / Muskogee District - Seat A
National Council	MCN	Joyce C. Deere	Council Member / Muskogee District - Seat B
National Council	MCN	Patrick Freeman Jr.	Council Member / Creek District - Seat B
National Council	MCN	Sandra Golden	Council Member / Okfuskee District - Seat B
National Council	MCN	Leonard Gouge	Council Member / Tulsa District - Seat B
National Council	MCN	Nelson Harjo, Sr.	Council Member / Okmulgee District - Seat B
National Council	MCN	Robert Hufft	Council Member / Tulsa District - Seat A
National Council	MCN	Anna Marshall	Council Member / Tukvptce District - Seat A
National Council	MCN	Charles McHenry	Council Member / Wagoner-Rogers-Mayes District - Seat A
National Council	MCN	Mark Randolph	Council Member / Wagoner-Rogers-Mayes District - Seat B
National Council	MCN	Robyn Whitecloud	Council Member / Okmulgee District - Seat A
TRANSPORTATION			
Transportation	MCN	Amy Hill	Transit Acting Manager
MCN Transit	MCN	Tami Humphrey	Assistant
Federal Roads	MCN	David Ford	Federal Roads Manager
Tribal Driveways	MCN	Jimmy Basquez	Tribal Driveways Manager
Transit	MCN	Kogee Spaniard	Transportation Manager
EDUCATION / HEALTH			
MCN College	College of the Muskogee Nation	Christopher Azbell	Extension Coordinator
MCN College	College of the Muskogee Nation	Dana Deere	Extension Educator
Education and Training	MCN	Courtney Josie	Education & Training Manager
Education and Training	MCN	Brittany Kesler	Education & Training Manager
Education and Training	MCN	Judy Montiel	Education & Training Manager
Higher Education	MCN	Marcia Taylor	Higher Education Manager
Higher Education	MCN	Pete Coser Jr	Higher Education Director
Secretary of Health	MCN	Shawn Terry	
Human Development	MCN	Kailia Harjo	Secretary of Education & Training
OU College	The University of Oklahoma	Tim Filley	Director & Professor
OU College	The University of Oklahoma	Li Song	

CATEGORY (Continued)	ORGANIZATION	CONTACT	TITLE
COMMUNITY PARTNERS			
Senior Services	MCN	Angella Fish	Elder Services Director
Citizens At Large	MCN	Anne Townsend-Edwards	Tribal Liaison
Elderly Housing	MCN	Betty Rose	Elderly Housing Manager
Senior Services	MCN	Angella Fish	Senior Services Director
Elder Services	MCN	Rena Tiger	Elder Services Manager
Reintegration	MCN	Tony Fish	Reintegration Manager
Vocational Rehabilitation	MCN	Anita Selvidge	Vocational Rehab. Manager
Elderly Housing	MCN	Andrea Goree	Site Manager
Elderly Housing	MCN	Allen Toppah	Site Manager
Housing Development	MCN	Alvin Bucktrot	Housing Development Manager
Social Services	MCN	Erin Saltsman	Social Services Director
Youth Services	MCN	James Bender	Youth Services Director
Youth Services	MCN	Shaina Bender	Youth Services Director
Children & Family Services	MCN	Michelle Bender	CFS Director
CR&D	MCN	Amber Rideout	Community Specialist
Office of Veterans Affairs	MCN	Grover Wind	Services Administrator
Community & Human Services	MCN	Carmin Tecumseh-Williams	Secretary of Community & Human Services
Executive Office	MCN	Shane Holeby	Tribal Administrator
Cultural Preservation	MCN	Raelynn Butler	Secretary of Culture and Humanities / Tribal Historic Preservation Manager
		Shawn Partridge	
INDUSTRY-ENERGY			
Facilities	MCN	Silas Baker	Facilities Manager
Force Account	MCN	Stan McIntosh	Force Account Manager
Interior Affairs	MCN	Kendra Bennett	Oil & Gas Manager
Tribal Utility Authority	MCN	Denise Gutman	Office Administrator
OG&E			
East Central Electric Co		Katherine Russell	
PSO		Lyle Stogner	
Sustainable Infrastructure	Johnson Controls	Caleb Kamarunas	
EMPLOYERS			
GSA	MCN	Justin Beebe	GSA Manager
Food Distribution	MCN	Anna Sterner	Food Distribution Manager
Human Resources	MCN	Myrna Paakkonen	HR Director

CATEGORY (Continued)	ORGANIZATION	CONTACT	TITLE
SCHOOL DISTRICT(S)			
Child Development Center	MCN	Angela Vance	Supervisor
Child Care	MCN	Yolanda Lewis	Director
Head Start	MCN	Cora Camren	Head Start Manager
BUILDING / CONSTRUCTION			
Housing Development	MCN	Alvin Bucktrot	Housing Development Manager
Housing Management	MCN	Jerry Olansen	Housing Management Manager
Risk Management	MCN	Phil Booker	Risk Management Manager
Tribal Construction	MCN	Brad Fox	Tribal Construction Manager
Tribal Construction	MCN	Scott Smith	Project Manager III
Planning	MCN	Will Brummett	Urban Planner
Contracting & Employment Support Office	MCN	Warren Harjo	CESO Manager
Housing Management	MCN	Jamie Moore	Housing Management Manager
Realty	MCN	Sonya McIntosh	Realty Manager
Secretary of Housing	MCN	Little Snow Fields	
NATURAL RESOURCES			
Natural Resources	MCN	Jacob Daniels	Wildlife Biologist
Natural Resources	MCN	Jacob Rippy	Wildlife Program Manager
Natural Resources	MCN	Trenton Kisse	Natural Resources Director
MCN Conservation Commission	MCN	Julie Norem	Office Manager
MCN Conservation Commission	MCN	Derrick Vanwinkle	Field Technician
Euchee Butterfly Farm	Euchee Butterfly Farm / TAP	Jane Breckenridge	Manager
Euchee Butterfly Farm	Euchee Butterfly Farm / TAP	Collin Spriggs	
MEDIA			
Marketing and Tourism	MCN	Monnie Underwood	Office Manager
Tourism	MCN	Ryan Logan	Tourism Director
Mvskoke Media	MCN		
GRANTS			
Planning and Grants	MCN	Kristy Ross	Grant Writer

CATEGORY <i>(Continued)</i>	ORGANIZATION	CONTACT	TITLE
GIS DEPARTMENT			
GIS	MCN	Frank Harjo	GIS Coordinator
GIS	MCN	Kathryn Sunny	GIS Technician
GIS	MCN	Edward Mouss	GIS Technician
GIS	MCN	Audrey Southwick	GIS Technician
GIS	MCN	Jennifer Reyher	Database Analyst/Programmer
GIS	MCN	Lauren LeMasters	Application Developer
GIS	MCN	Josh Castleman	GIS Analyst
ADDITIONAL STAKEHOLDERS			
Council Office	MCN	Alicia Stroble	Legal Research Specialist
Secretary of Tax Commission	MCN	Mary Mashunkashey	
Finance		Patricia Kilian	Controller & Secretary of the Treasury

MARKETING AND OUTREACH EFFORTS

Multiple marketing and outreach tools were developed and utilized in the engagement process, including email blasts and a project webpage. Events were also attended by the project team to further spread the word about the project.

Project Webpage

MCN hosted and updated a project webpage (40.77.28.231.nip.io/mcn/priority-climate-action-plan/) on their website, where project-related materials and resources were provided.



Email Outreach

The following emails were sent to MCN contact lists:

- **February 2024** - Priority Climate Action Plan - Request for Stakeholder Committee
[Recipient: Stakeholder Committee]
- **March 2024** - Stakeholder Committee Meeting #1 Agenda
[Recipient: Stakeholder Committee]
- **March 2024** – Stakeholder Committee Meeting #2
[Recipient: Stakeholder Committee]
- **March 2024** – National Council Meeting (*Planned)
[Recipient: Stakeholder Committee]

STAKEHOLDER COMMITTEE MEETING #1 SUMMARY

To assist in the creation of the Priority Climate Action Plan (PCAP) portion of the MCN Comprehensive Climate Action Plan, a virtual stakeholder committee meeting was held on March 1, 2024, from 11:00 A.M. to 1:00 P.M. via Microsoft Teams to educate and connect stakeholders with specific interests and influence on the project and to gather input on topics and measures.

Stakeholders were identified by the MCN, as previously described in ***Stakeholder Committee***, and invited via email to attend. Attendees included representatives from multiple sectors, including public, non-profit, and private. A complete list of meeting attendees is included in the following section (***Stakeholder Committee Meeting #1 Attendees***). Representatives from the MCN and the consultant team facilitated the meeting. The meeting format included a welcome and brief introduction of the project team, and a presentation of the project, including an overview of the:

- Environmental Protection Agency's Climate Pollution Reduction Grants (EPA CPRG),
- Award of an EPA CPRG to MCN,
- Agreement to develop a Priority Climate Action Plan (PCAP) and Comprehensive Action Plan (CCAP) for MCN,
- Planned stakeholder and public engagement process,
- Notice of Funding Opportunity for implementation grants,
- Example greenhouse gas reduction measures, and
- Next steps.

Stakeholder Committee Meeting #1 Attendees

- Amy Hill, *Transportation*
- Brian Marshall, *Olsson*
- Daniel Bauerkemper, *Olsson*
- David Ford, *Federal Roads*
- Diana Baker
- Dylan Harding, *Secretary of the Nation*
- Edward Mouss, *GIS*
- Emma McFarland, *Environmental Services*
- James Bender, *Youth Services*
- James Hayes, *Environmental Services*
- James Williams, *Director of Environmental Services*
- Jesse Allen, *Interior Affairs*
- Judith Ausmus, *Environmental Services*
- Julie Norem, *Conservation District*
- Katrina Wille, *Olsson*
- Kendra Bennett, *Interior Affairs*
- Kristy Lawson, *Environmental Services*
- Micah White
- Michelle Queen, *Olsson*
- Nick Steinke, *Olsson*
- Stacey Roach, *Olsson*
- Tiger Carman, *Environmental Services*
- Trenton Luellen, *Environmental Services*
- Turner Hunt
- William Brummett, *Planning and Grants*

Stakeholder discussion question exercises were interspersed throughout the presentation. The following is a summary of the questions asked and the respective dialogue.

Stakeholder Committee Meeting #1 Discussion

Question #1

If you are aware of any other local or regional projects/plans related to energy and emission reduction, please tell us.

- See Question #2.

Question #2

Has your agency/community implemented any projects/plans targeting reduction of energy consumption or greenhouse gas emissions? If so, what?

- Park'N'Ride to reduce carbon emissions: there are 50K unlinked passenger trips per year, there is interest in quantifying those emissions and how to expand programming for an even greater impact
- 2018 Farm Bill – implementation results are not yet quantified for agriculture sector
- Hempcrete as an alternative low-embodied carbon material

Question #3

Which sector(s) should be prioritized for a successful implementation grant application?

- Agriculture / Agribusiness should be examined further in CCAP
- MCN expects multiple projects across multiple sectors
- Emphasize solar production on tribal buildings and expand to residential
- Purchase high-efficiency appliances to reduce burden on disadvantaged communities
- How much does land restoration or conservation affect emissions? Examine the cost effectiveness of the carbon reduction, reduction per dollar spent sometimes does not score well in this type of system

Question #4

What is the most feasible or most implementable Priority Action for your organization?

- Electric vehicles and hemp farming are measures that could benefit multiple buckets
- Would like to see a solar component added to EV charging stations that could impact industry emissions.
- Concern for how CPRG-funded programs/infrastructure are maintained long-term
- Transportation is a big component of emissions, should focus on availability and accessibility of EV stations and transit, especially serving the tribal community
- Microgrid development or smart grid deployment; a microgrid is ideal to allow for organic shift to renewable energy in the long term, use localized generation to add to renewable energy contribution to the larger network;
- Battery storage can help support the shift to renewable energy
- Currently looking at the reliability/resiliency of the system, then will investigate the design and implementation of renewable solutions, and ultimately towards implementation of microgrid/smart grid
- Resiliency
- Compliance
- MCN currently has 23 transit vehicles and three charter buses in use and one retired trolley. Consider replacing some existing vehicles with electric vehicles on the routes; generate a transition percentage estimate for feasibility
- Workforce training for fleet maintenance and other workers to work on electric vehicles, as well as to use/implement other measures
- Reintegration Center and the College have geothermal installed; this is a partnership opportunity for skills training and additional workforce development

At the end of the meeting, stakeholders were asked to complete the following ***Next Steps***:

- Save-the-date for Stakeholder Meeting #2 on March 15, 2024, 11:00 A.M. to 1:00 P.M.
- Visit the Project Website
- Attend and share information about the planned National Council Meeting

To view the entire PowerPoint from the meeting, see ***Stakeholder Committee Meeting #1 Presentation Slides*** as follows.

Stakeholder Committee Meeting #1 Presentation Slides



MUSCOGEE (CREEK) NATION

PRIORITY CLIMATE ACTION PLAN (PCAP)

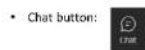


STAKEHOLDER MEETING #1
MARCH 1, 2024 | 11AM-1PM
VIRTUAL [MICROSOFT TEAMS]



HOUSEKEEPING

- Please keep yourself muted throughout the meeting
- This meeting is recorded
- If you have technical difficulties during the meeting, email **Michelle** at mqueen@olsson.com
- The meeting presentation slides will be provided in a follow-up email



PRESENTERS



James Williams
Director
The Muscogee (Creek)
Nation



James Hayes
*Environmental Specialist /
CPRG Program Manager*
The Muscogee
(Creek) Nation



Nick Steinke, PE, CPEA, SFP
Industry Expert
Olsson



Katrina Wille
Associate Scientist
Olsson



PRIORITY CLIMATE ACTION PLAN (PCAP)

PURPOSE, COORDINATION, & ACTIVITIES



Stakeholder Committee Meeting #1 Presentation Slides (Continued)

CPRG PLANNING GRANTS

- ✓ EPA awarded \$250 million in formula grants to states, tribes, and local governments under its Climate Pollution Reduction Grants (CPRG) Program.
- ✓ Grant recipients will use funds to develop plans for reduction of greenhouse gas (GHG) and other pollutant emissions within their covered jurisdiction.

CPRG IMPLEMENTATION GRANTS

- ✓ EPA will award \$300 million in competitive grants to tribal communities for measures developed under the CPRG planning grant.
- ✓ EPA anticipates awarding individual grants between \$1 million and \$25 million, with funding tiers allowing comparably sized projects to compete against one another.
- ✓ Implementation grant guidance issued September 2023 with applications due **May 1, 2024**. Submission of CPRG priority plan is prerequisite to application for implementation grants.

PRIORITY & COMPREHENSIVE CLIMATE ACTION PLANS

The Muscogee (Creek) Nation (MCN) received a planning grant through the EPA's Carbon Pollution Reduction Grant (CPRG)

STEP 1: Create Priority Climate Action Plan (PCAP) to identify key carbon reduction/sequestration strategies across various sectors in the MCN jurisdiction

- The PCAP (due **April 1, 2024**) will make the tribe eligible for CPRG implementation grants, which will be due on **May 1, 2024 (AWARD ALL FUNDING IN FIRST YEAR)**
- The EPA CPRG program will award a total of \$300 million for implementation grants exclusively for tribes and territories.

STEP 2: Create a Comprehensive Climate Action Plan (CCAP) to identify additional carbon reduction/sequestration strategies.

- The CCAP (due at the end of the grant period) will position the tribe for future funding opportunities for implementation as they arise.

MCN CPRG GRANT ACTIVITY

- Received grant funding from EPA
- Hired Olsson as a consultant in February
- Identified previous climate, greenhouse gas reduction and other related plans for review
- Initiated public engagement and stakeholder planning activities
- Initiated greenhouse gas inventory study



QUESTIONS?
SEND THEM IN THE CHAT



Stakeholder Committee Meeting #1 Presentation Slides (Continued)



Let's Discuss



If you are aware of *any other local or regional projects/plans* related to energy and emission reduction, please tell us.



Let's Discuss



Has your agency/community implemented any *projects/plans targeting reduction of energy consumption or greenhouse gas emissions?*

If so, what?



NOTICE OF FUNDING OPPORTUNITY (NOFO)



IMPLEMENTATION GRANTS

- EPA to award ~\$300 million for implementation grants exclusively for tribes and territories.
- Applications for grants must seek funding to implement one or more measures that are included in the PCAP developed with funding from a CPRG planning grant.
- There are funding tiers based upon grant ranges, and applications will be evaluated against other applications within the same tier.
- A group of eligible applications applying as a coalition may not submit multiple applications for the same set of GHG reduction measures using different lead applicants.
- An eligible application may submit one application as the individual applicant and one application as the lead applicant for a coalition.
- Grants are intended to support measures for which dedicated funding or financing from other sources (e.g., BIL, IRA) is unavailable, or that leverage other sources of public and private funding to the fullest extent possible, prior to seeking CPRG funding.

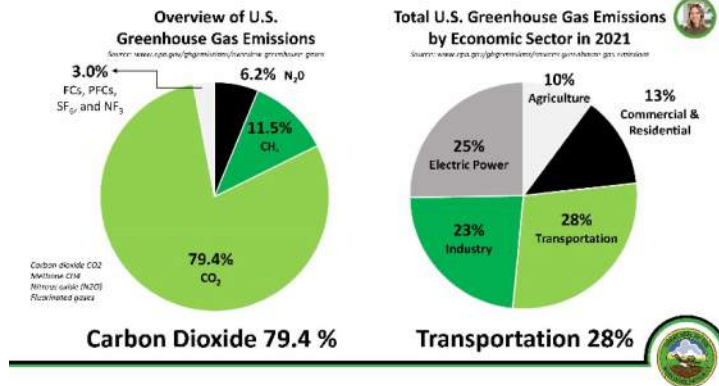


Stakeholder Committee Meeting #1 Presentation Slides (Continued)

SCORING OVERVIEW (100 POINTS TOTAL)

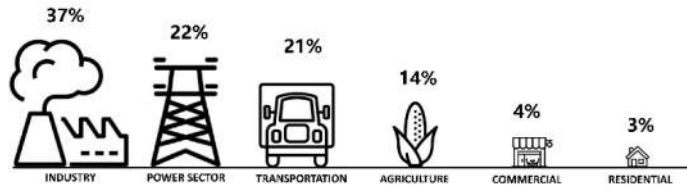


- ✓ SUMMARY/APPROACH - 20 POINTS (20%)
- ✓ GHG REDUCTION - 20 POINTS (20%)
- ✓ OUTPUTS/OUTCOMES - 15 POINTS (15%)
- ✓ BENEFITS AND COMMUNITY ENGAGEMENT - 15 POINTS (15%)
- ✓ CAPABILITY/PAST PERFORMANCE - 15 POINTS (15%)
- ✓ BUDGET - 15 POINTS (15%)



OKLAHOMA GREENHOUSE GAS EMISSIONS

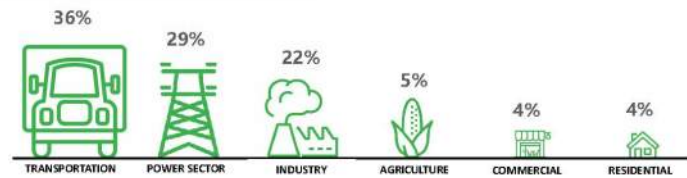
- ✓ The industrial sector is currently the largest contributor to GHG Emissions in Oklahoma
- ✓ Carbon dioxide makes up 66% of Oklahoma GHG emissions followed by methane (26%), nitrous oxides (8%), and fluorinated gases (2%)



Oklahoma Greenhouse Gas Emissions (CO₂e), 2017 obtained from U.S. EPA's Greenhouse Gas Inventory Data Center

MUSCOGEE (CREEK) NATION (MCN) GREENHOUSE GAS EMISSIONS

- ✓ The transportation sector is currently the largest contributor to GHG Emissions in MCN
- ✓ Carbon dioxide makes up the majority of MCN GHG emissions followed by methane, nitrous oxides, and fluorinated gases



MCN Greenhouse Gas Emissions (CO₂e), 2017 obtained from U.S. EPA's Regional Greenhouse Gas Inventory (RGI), and National Renewable Energy Laboratory's (NREL) State and Local Planning for Energy (SLPFE) Data Viewer

Stakeholder Committee Meeting #1 Presentation Slides (Continued)



EXAMPLE GHG REDUCTION MEASURES

✓ TRANSPORTATION SECTOR

- Programs to increase the share of electric light-, medium-, and heavy-duty vehicles, and to expand electric vehicle charging infrastructure;
- Transportation pricing programs that reduce vehicle miles traveled (VMT), such as parking pricing and congestion and road pricing;
- New or expanded transportation infrastructure projects to facilitate public transit, micro-mobility, car sharing, bicycle, and pedestrian modes;

36%



EXAMPLE GHG REDUCTION MEASURES

✓ ELECTRIC POWER SECTOR

- Renewable portfolio standards and/or clean electricity standards;
- Energy efficiency portfolio standards;
- Emission trading systems (e.g., cap-and-trade programs) and carbon pricing measures;
- GHG performance standards for electric generating units;

29%



Stakeholder Committee Meeting #1 Presentation Slides (Continued)

EXAMPLE GHG REDUCTION MEASURES

✓ TRANSPORTATION SECTOR

- Policies to support transportation management incentive programs to reduce vehicle trips or travel and expand transit use, such as van-pool programs, ridesharing, transit fare subsidies, and bicycle facilities;
- Incentive programs to purchase zero-emission vehicles and equipment to replace older heavy-duty diesel vehicles and equipment;
- Electrification requirements for municipal vehicle, transit, or equipment fleets;

36%



EXAMPLE GHG REDUCTION MEASURES

✓ TRANSPORTATION SECTOR

- Update building and zoning codes to encourage walkable, bikeable, and transit-oriented development;
- Encourage mode shift from private vehicles to walking, biking, and public transportation (e.g., complete streets, bike share programs, bike storage facilities, low-speed electric bicycle subsidies, public transit subsidies).

36%



EXAMPLE GHG REDUCTION MEASURES

✓ ELECTRIC POWER SECTOR

- Installation of renewable energy and energy storage systems on municipal facilities;
- Programs to support smart-grid and/or behind-the-meter technologies to reduce power losses, reduce peak demand, and enable consumer participation in distributed generation;
- Policies and measures to streamline permitting for renewable energy projects;

29%



EXAMPLE GHG REDUCTION MEASURES

✓ ELECTRIC POWER SECTOR

- Targeted incentives for installation of renewable energy and energy storage systems on commercial and residential buildings, such as net metering, tax credits, rebates, and streamlined interconnection standards;
- Development of distributed or community-scale renewable energy generation, microgrids, or vehicle-to-grid infrastructure in disadvantaged communities, including remote and rural regions.

29%



Stakeholder Committee Meeting #1 Presentation Slides (Continued)

EXAMPLE GHG REDUCTION MEASURES

✓ INDUSTRIAL SECTOR

- Standards addressing GHG emissions from industrial facilities and from energy production sectors, including emissions from industrial process heat and industrial processes;
- Programs to support or incentivize implementation of energy efficiency measures in industry, including energy audits, strategic energy management, equipment upgrades, and waste heat utilization;

22%



EXAMPLE GHG REDUCTION MEASURES

✓ INDUSTRIAL SECTOR

- Programs to support or incentivize GHG reductions in industrial energy use and industrial processes, including use of low/no carbon fuels, electrification, renewable energy, and process improvements;
- Programs to develop, expand, and support markets for low-embodied carbon materials and products, such as cement and steel.

22%



EXAMPLE GHG REDUCTION MEASURES

✓ AGRICULTURAL SECTOR

- Incentive programs to fund electric agricultural equipment technologies;
- Incentives for technologies and techniques that reduce nitrous oxide emissions from fertilizer application;
- Incentives to promote anaerobic digesters to capture methane and generate renewable energy or produce renewable fuel.

5%



EXAMPLE GHG REDUCTION MEASURES

✓ BUILDINGS

- Adoption and implementation of the most up-to-date building energy codes or stretch codes for new commercial and residential buildings;
- Implementation of a clean heat standard;
- Incentive programs for implementation of end-use energy efficiency measures in existing government-owned, commercial, and residential buildings;

4%



4%



Stakeholder Committee Meeting #1 Presentation Slides (Continued)

EXAMPLE GHG REDUCTION MEASURES

✓ BUILDINGS

- Incentive programs for the purchase of certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products;
- Programs and policies to promote electrification of government-owned, commercial, and residential buildings;
- Programs and policies to accelerate the incorporation of efficient electric technologies and electric vehicle charging at new single-family, multi-unit, or affordable residential buildings and commercial buildings, including building codes related to electric vehicle charging;

4%



4%



EXAMPLE GHG REDUCTION MEASURES

✓ BUILDINGS

- Implementation of a building energy performance management program for government-owned buildings;
- Implementation of a new benchmarking and building performance standards;
- Programs to promote recovery and destruction of high-global warming potential (GWP) hydrofluorocarbons (HFCs) used in existing appliances, air conditioning systems, and commercial chillers.

4%



4%



EXAMPLE GHG REDUCTION MEASURES

✓ WASTE, WATER, AND SUSTAINABLE MATERIALS MANAGEMENT

- Standards and incentives to reduce methane emissions from landfills and wastewater treatment facilities, including through collection for use or destruction;
- Programs and incentives to reduce or divert waste (including food and/or yard waste) through improved production practices, improved collection services, and increased reuse or recycling rates;
- Programs and incentives to reduce GHG emissions associated with plastics production, use, and waste management;

22%



4%



4%



EXAMPLE GHG REDUCTION MEASURES

✓ WASTE, WATER, AND SUSTAINABLE MATERIALS MANAGEMENT

- Programs to expand composting and bio-digestion infrastructure to reduce GHG emissions and increase beneficial use of organic waste;
- Policies and programs to reduce construction and demolition waste through building reuse, deconstruction, and material diversion and reuse;
- Installation of renewable energy and energy efficiency measures at wastewater treatment facilities.

22%



4%



4%



Stakeholder Committee Meeting #1 Presentation Slides (Continued)

EXAMPLE GHG REDUCTION MEASURES

✔ CARBON REMOVAL MEASURES

- Policies to promote improved forest management to enhance carbon stocks on forested land;
- Urban afforestation and green infrastructure programs and projects;
- Restoration of degraded lands (e.g., brownfields, mine reclamation) and forested lands to enhance carbon sequestration.



Let's Discuss

Which sector(s) should be *prioritized* for a successful implementation grant application?



Let's Discuss

What is the *most feasible* or *most implementable* Priority Action for your organization?

NEXT STEPS

EVENT / DELIVERABLE	DATE / DEADLINE
Stakeholder Meeting #1	March 1, 2024
Stakeholder Meeting #2	March 15, 2024
MCN National Council Public Meeting/Presentation	March 30, 2024
MCN Priority Climate Action Plan to EPA	April 1, 2024
CPRG Implementation Grant Applications	May 1, 2024
Comprehensive Climate Action Plan	January 31, 2025

Stakeholder Committee Meeting #1 Presentation Slides (Continued)

QUESTIONS?

THANK YOU!

- Save-the-Date:*
Stakeholder Meeting #2
March 15, 2024
11 AM - 1 PM
- Visit the Project Website:*
40.77.28.231.nip.io/mcn/priority-climate-action-plan/
- Please Share:*
MCN National Council Meeting
March 30, 2024
10 AM

STAKEHOLDER COMMITTEE MEETING #2 SUMMARY

To continue the development of the Priority Action Plan, a second virtual stakeholder committee meeting was held on March 15, 2024, from 11:00 am to 1:00 p.m. via Zoom to share information with the stakeholders and gather their input.

Stakeholders were identified by the MCN, as previously described in ***Stakeholder Committee***, and invited via email to attend. Attendees again included representatives from many public, non-profit, and private sectors. For a complete list of meeting attendees, see the ***Stakeholder Committee Meeting #2 Attendees***. Representatives from the MCN and the consultant team facilitated the meeting. The meeting format included a welcome and brief introduction of the project team, and a presentation of the project and proposed measures, including:

- A recap of the previous stakeholder meeting,
- Greenhouse gas emissions for the United States and Oklahoma, and an approximation of greenhouse gas emissions in MCN,
- The path to proposed measures to reduce greenhouse gas emissions in MCN including a review of existing plans, feedback from stakeholder engagement activities,
- Proposed Priority Action Plan measures, and
- Next steps.

Stakeholder Committee Meeting #2 Attendees

- Amy Hill, *Transportation*
- Angella Fish, *Senior Services*
- BJ Wagnor, *Techsico Solar*
- Brooks Booker
- Caleb Kamarunas, *Johnson Controls*
- Chebon Smith
- Craig Parrish, *Olsson*
- Dana Wells
- David Ford, *Federal Roads*
- Derrick Dan
- Dode Barnett, *National Council*
- Dylan Harding, *Secretary of the Nation*
- Emma McFarland, *Environmental Services*
- Frank Harjo, *GIS*
- James Hayes, *Environmental Services*
- Jerome
- John S. Greene

- Jordan Squire
- Julianne Whitaker, *Olsson*
- Judith Ausmus, *Environmental Services*
- Katherine Russell
- Kathryn Sunny, *GIS*
- Katrina Wille, *Olsson*
- Kristy Lawson, *Environmental Services*
- Li Song, *The University of Oklahoma*
- Michelle Queen, *Olsson*
- Nick Steinke, *Olsson*
- Stacey Roach, *Olsson*
- Ted Monhollon, *Techsico Solar*
- Tim Filley, *The University of Oklahoma*
- Tiger Carman, *Environmental Services*
- Trenton Luellen, *Environmental Services*
- Zechariah Harjo, *Secretary of the Nation*
- 918-758-52...(External)

During the presentation of proposed PCAP measures, the project team welcomed discussion from the stakeholder committee to understand the measures their agency or organization would likely be able to support through implementation. The stakeholders suggested specific language refinement to clarify the intent of the measure(s); and discussed the possibility of combining measures to create a more compelling implementation grant application.

Stakeholder Committee Meeting #2 Discussion

The following bullets are documentation of the discussion points and comments made during Stakeholder Committee Meeting #2.

Energy Sector

- Implementation Partnerships – welcome all partners in this effort
- Sector focus on renewable energy resources at government-owned facilities over geothermal, hydrogen boilers, etc.
- Supply-side management with renewable energy integration – different land uses have different loads. Is there a community-scale level of management?
- Grid Resilience – is the efficacy of storage being funded?

Transportation Sector

- The Head Start program has made progress using electric buses, but electric buses on rural routes with no charging stations will be an issue
- Community centers will likely need a charging station
- There is perceived low feasibility (quantitatively) of the government switching to electric vehicles and this measure should not be considered a significant priority on all fronts, as it is difficult to do.
- 10% of fleet vehicles are currently EV – follow up
- The new infrastructure law is providing additional funding for EV infrastructure, there is push to do that. MCN needs to be smart about investing in infrastructure and proactive to meet the needs of future people.
- Concern about EV trip capacity – 150 miles is low in transit miles, in reference to the reservation and surrounding lands. Removing 10 to 15 vehicles from the roadway.
- Workforce Component needs to be considered in this measure
- Oklahoma has experience designing and installing fast and slow chargers in the State – utilize partnership for design and implementation
- Is there ongoing support for infrastructure maintenance? It can be expensive to maintain and once federal funds expire there is little/few options available to continue operations/maintenance long-term.
- Part of a bigger service network – if free to install, is there ongoing support meant for the outcomes and deliverables of this program? How will executive office changes impact this? See if there is funding available and consider for the implementation grant.

Industrial Sector

- Orphan wells evolve, considering the integrity of well and monitoring them long-term – opportunity to use them on-site for future legacy issues that are likely to develop.
- Engage with tribal partners on similar programs that include workforce development
- Multi-generational perspective of wells - future utilization for other types of opportunities, including sequestration
- Workforce is exciting and profitable, engaging with career-tech programs in the state

Agriculture

- Consider carbon capture for agribusiness and its eligibility for the NOFO
- Carbon capture should be part of the plan
- Carbon capture can capture intent of this program. None of the assets discussed are carbon negative, they require output to get them into that participation. The application is far from carbon negative and we should be capturing reduction and negatives as part of the process and program.
- Specialized equipment, technology, etc. aligns with feasibility and business initiatives currently in place.
- The strategies are not as effective without negative technologies. 2023 Department of Energy book – Roads to Removal. State PCAP addresses this.
- Carbon sequestration via plants. Native butterfly farm in Leonard, Oklahoma, is successful and active w green team movement. Another option to consider in the long run because native grasses are great for sequestering carbon.
- Concern about the federal versus state government regulations regarding hemp production.
- There is a lot of federal investment in hemp, concern is minimal; the Kiowa Tribe is looking to grow or is currently growing hemp.
- Hemp production is eligible for USDA funding. No hemp-specific funding available – help with this plan and other renewable energy products
- Tribal citizen incentives (for solar, EV's, etc.) should be expended within the grant period
- Smaller scale options will cultivate buy-in when/where infrastructure is not available
- Composting is a way of capturing carbon

To view the entire PowerPoint from the meeting, see **Stakeholder Committee Meeting #2 Presentation Slides** as follows.

Stakeholder Committee Meeting #2 Presentation Slides



MUSCOGEE (CREEK) NATION

PRIORITY CLIMATE ACTION PLAN (PCAP)



STAKEHOLDER MEETING #2
MARCH 15, 2024 | 11AM-1PM
VIRTUAL [MICROSOFT TEAMS]



HOUSEKEEPING

- Please keep yourself muted throughout the meeting
- This meeting is recorded
- Technical difficulties during the meeting? Email **Michelle Queen** at mqueen@olsson.com
- Meeting presentation slides will be provided to attendees in a follow-up email
- If you have questions during the meeting, please utilize the chat function and/or raise your hand in Teams



PRESENTERS



James Williams
Director
The Muscogee (Creek)
Nation



James Hayes
Environmental Specialist /
CPRG Program Manager
The Muscogee
(Creek) Nation



Nick Steinke, PE, CPEA, SFP
Industry Expert
Olsson



Katrina Wille
Associate Scientist
Olsson



PRIORITY CLIMATE ACTION PLAN (PCAP)

PURPOSE, COORDINATION,
& ACTIVITIES



Stakeholder Committee Meeting #2 Presentation Slides (Continued)

CPRG PLANNING GRANTS



- ✓ EPA awarded \$250 million in formula grants to states, tribes, and local governments under its Climate Pollution Reduction Grants (CPRG) Program.
- ✓ Grant recipients will use funds to develop plans for reduction of greenhouse gas (GHG) and other pollutant emissions within their covered jurisdiction.

CPRG IMPLEMENTATION GRANTS

- ✓ EPA will award \$300 million in competitive grants to tribal communities for measures developed under the CPRG planning grant.
- ✓ EPA anticipates awarding individual grants between \$1 million and \$25 million, with funding tiers allowing comparably sized projects to compete against one another.
- ✓ Implementation grant guidance issued September 2023 with applications due **May 1, 2024**. Submission of CPRG priority plan is prerequisite to application for implementation grants.



PRIORITY & COMPREHENSIVE CLIMATE ACTION PLANS



The Muscogee (Creek) Nation (MCN) received a planning grant through the EPA's Carbon Pollution Reduction Grant (CPRG)

STEP 1: Create Priority Climate Action Plan (PCAP) to identify key carbon reduction/sequestration strategies across various sectors in the MCN jurisdiction

- The PCAP (due **April 1, 2024**) will make the tribe eligible for CPRG implementation grants, which will be due on **May 1, 2024 (AWARD ALL FUNDING IN FIRST YEAR)**
- The EPA CPRG program will award a total of \$300 million for implementation grants exclusively for tribes and territories.

STEP 2: Create a Comprehensive Climate Action Plan (CCAP) to identify additional carbon reduction/sequestration strategies.

- The CCAP (due at the end of the grant period) will position the tribe for future funding opportunities for implementation as they arise.



MCN CPRG GRANT ACTIVITY

- Received grant funding from EPA
- Hired Olsson as a consultant in February
- Identified previous climate, greenhouse gas reduction and other related plans for review
- Initiated public engagement and stakeholder planning activities
- Initiated greenhouse gas inventory study



STAKEHOLDER ENGAGEMENT

Virtual Stakeholder Meeting #1

March 1, 2024

Technical Advisory Committee Meetings

Weekly

Virtual Stakeholder Meeting #2

March 15, 2024

National Council Meeting

March 30, 2024



Stakeholder Committee Meeting #2 Presentation Slides (Continued)



NOTICE OF FUNDING OPPORTUNITY (NOFO)

IMPLEMENTATION GRANTS

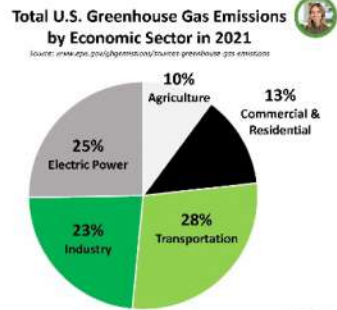
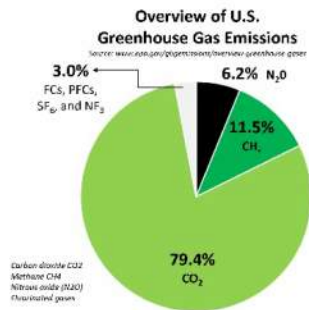
- EPA to award ~\$300 million for implementation grants exclusively for tribes and territories.
- Applications for grants must seek funding to implement one or more measures that are included in the PCAP developed with funding from a CPRG planning grant.
- There are funding tiers based upon grant ranges, and applications will be evaluated against other applications within the same tier.
- A group of eligible applications applying as a coalition may not submit multiple applications for the same set of GHG reduction measures using different lead applicants.
- An eligible applicant may submit one application as the individual applicant and one application as the lead applicant for a coalition.
- Grants are intended to support measures for which dedicated funding or financing from other sources (e.g., BIL, IRA) is unavailable, or that leverage other sources of public and private funding to the fullest extent possible, prior to seeking CPRG funding.

SCORING OVERVIEW (100 POINTS TOTAL)

- ✓ SUMMARY/APPROACH - 20 POINTS (20%)
- ✓ GHG REDUCTION - 20 POINTS (20%)
- ✓ OUTPUTS/OUTCOMES - 15 POINTS (15%)
- ✓ BENEFITS AND COMMUNITY ENGAGEMENT - 15 POINTS (15%)
- ✓ CAPABILITY/PAST PERFORMANCE - 15 POINTS (15%)
- ✓ BUDGET - 15 POINTS (15%)



Stakeholder Committee Meeting #2 Presentation Slides (Continued)

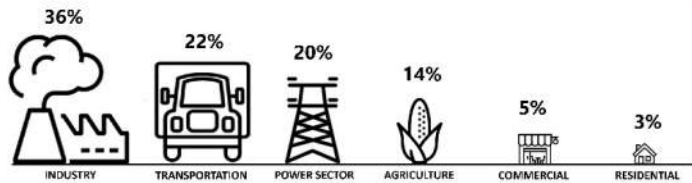


Carbon Dioxide 79.4 %

Transportation 28%

OKLAHOMA GREENHOUSE GAS EMISSIONS

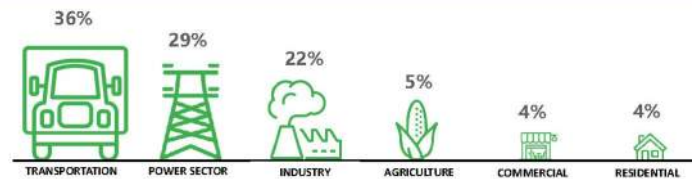
- ✓ The industrial sector is currently the largest contributor to GHG Emissions in Oklahoma
- ✓ Carbon dioxide makes up 66% of Oklahoma GHG emissions followed by methane (26%), nitrous oxides (8%), and fluorinated gases (2%)



Oklahoma Greenhouse Gas Emissions (CO₂e), 2017 obtained from U.S. EPA's Greenhouse Gas Inventory Data Explorer.

MUSCOGEE (CREEK) NATION (MCN) GREENHOUSE GAS EMISSIONS

- ✓ The transportation sector is currently the largest contributor to GHG Emissions in MCN
- ✓ Carbon dioxide makes up the majority of MCN GHG emissions followed by methane, nitrous oxides, and fluorinated gases



MCN Greenhouse Gas Emissions (CO₂e), 2017 obtained from U.S. EPA's National Emission Inventory (NEI), and National Renewable Energy Laboratory's (NREL) State and Local Planning for Energy (SLP) Data Viewer.

Stakeholder Committee Meeting #2 Presentation Slides (Continued)



GROUP PRIORITIES

- Electric Power Sector (29%)
- Transportation Sector (36%)
- Industrial Sector (22%)



PCAP REQUIREMENTS

- Rationale
- Greenhouse Gas Reduction
- Benefits Analysis
- Review of Authority to Implement
- Workforce
- Other Funding Sources

PRIORITY ACTION PLAN MEASURES:

29%

ELECTRIC POWER SECTOR

Install renewable energy and energy storage systems on government-owned facilities.

PCAP REQUIREMENTS

- Rationale
- Greenhouse Gas Reduction
- Benefits Analysis
- Review of Authority to implement
- Workforce
- Other Funding Sources

PRIORITY ACTION PLAN MEASURES:

29%

ELECTRIC POWER SECTOR

Develop distributed and community-scale renewable energy generation, microgrids, and vehicle-to-grid infrastructure in disadvantaged communities, including remote and rural regions.

PCAP REQUIREMENTS

- Rationale
- Greenhouse Gas Reduction
- Benefits Analysis
- Review of Authority to Implement
- Workforce
- Other Funding Sources

Stakeholder Committee Meeting #2 Presentation Slides (Continued)

PRIORITY ACTION PLAN MEASURES:

36% 

TRANSPORTATION SECTOR

Upgrade government vehicle fleets, including public transit fleets, by replacing internal combustion engines with low/no emission vehicles and expand electric vehicle charging infrastructure.

PCAP REQUIREMENTS

- Rationale
- Greenhouse Gas Reduction
- Benefits Analysis
- Review of Authority to Implement
- Workforce
- Other Funding Sources



PRIORITY ACTION PLAN MEASURES:

36% 

TRANSPORTATION SECTOR

Incentivize eligible agencies and individual automobile owners to purchase low/no emission vehicles and associated electric vehicle charging infrastructure.

PCAP REQUIREMENTS

- Rationale
- Greenhouse Gas Reduction
- Benefits Analysis
- Review of Authority to Implement
- Workforce
- Other Funding Sources



PRIORITY ACTION PLAN MEASURES:

22% 

INDUSTRIAL SECTOR

Implement orphan well program to properly close oil and gas orphan well sites, including remediation and restoration activities, as needed.

PCAP REQUIREMENTS

- Rationale
- Greenhouse Gas Reduction
- Benefits Analysis
- Review of Authority to Implement
- Workforce
- Other Funding Sources



Stakeholder Committee Meeting #2 Presentation Slides (Continued)

NEXT STEPS



EVENT / DELIVERABLE	DATE / DEADLINE
Stakeholder Meeting #1	March 1, 2024
Stakeholder Meeting #2	March 15, 2024
MCN National Council Public Meeting/Presentation	March 30, 2024
MCN Priority Climate Action Plan to EPA	April 1, 2024
CPRG Implementation Grant Applications	May 1, 2024
Comprehensive Climate Action Plan	January 31, 2025



THANK YOU!

1

Save-the-Date:

MCN National Council Meeting
March 30, 2024
10 AM

2

Visit the Project Website:

40.77.28.231.njip.io/mcn/priority-climate-action-plan/

3

Stay involved:

Comprehensive Climate Action Plan (CCAP)
Fall 2024

MCN NATIONAL COUNCIL PRESENTATION

Following the stakeholder meetings and development of the draft PCAP, the draft PCAP will be presented by MCN Environmental Services staff and the planning team to the Muscogee (Creek) National Council. The presentation is planned to take place during a regular Council meeting. The National Council meetings are open to the public, and public comments will be invited and documented. National Council meetings are live-streamed and recorded. Recordings and agendas are available to the public on the Council's Facebook page and website.

MCN PRIORITY CLIMATE ACTION PLAN

Muscogee (Creek) Nation

March 2024

Olsson Project No. 023-08112