Dallas-Fort Worth Air Quality Improvement Plan

Priority Climate Action Plan Executive Summary

Overview

This Executive Summary provides a concise overview of the key elements of the Dallas Fort Worth Air Quality Improvement Plan - the Priority Climate Action Plan (DFW-AQIP-PCAP). The North Central Texas Council of Governments (NCTCOG) has developed this plan as the first deliverable under a grant to the region from the United States Environmental Protection Agency's (EPA) Climate Pollution Reduction Grants Program (CPRG). To construct the DFW AQIP-PCAP, the NCTCOG collaborated with local governments, private entities, non-profits, and members of the public. The DFW AQIP-PCAP contains 44 priority measures. The DFW AQIP-PCAP was developed as the initial step towards developing a more Comprehensive Climate Action Plan (CCAP) to effectively address both priority pollutants and greenhouse gases (GHG) as part of a longer-term effort towards a cleaner North Texas. The complete DFW AQIP-PCAP can be found at www.publicinput.com/dfwAQIP.

Who We Are:

The NCTCOG is a voluntary association of, by, and for local governments, established to assist in regional planning for 16 counties in North Texas, members include cities, counties, and special districts. The counties served by NCTCOG include Collin, Dallas, Denton, Ellis, Erath, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, and Wise. This service area incorporates all the 11-county Dallas-Fort Worth (DFW)-Arlington Metropolitan Statistical Area (MSA). NCTCOG consists of 11 departments, including the Environment and Development and the Transportation departments. Staff from these two departments led the development of this document and will lead the implementation of proposed priority measures. The NCTCOG Workforce Solutions for North Central Texas department will join in efforts to develop a CCAP over the next year.

Air Quality in North Texas

Approximately 4.9 million residents will be living in areas designated as nonattainment for two different air pollutants–ozone and $PM_{2.5}$–both of which can cause respiratory issues and put this population at greater risk of health issues. The DFW AQIP-PCAP is focused on reducing criteria air pollutants (CAP) of local concern and GHG. The increase of GHG emissions drive higher temperature and more frequent extreme weather events, such as wildfires, droughts, and storms, posting serious risk to North Texas. Many measures-which are a policy, program, or project- that reduce CAP also reduce GHG, thus improving air quality comprehensively in the region. Some measures provide "unspecified" reductions, which means at the time of the plan being completed NCTCOG was unable to quantify benefits of a measure. Several measures do not provide quantifiable CAP or GHG benefits-such as workforce development-but these measures can contribute towards local adaptation and are foundational to the successful

implementation of the DFW AQIP-PCAP measures by 2030. Of the 44 total measures in the DFW AQIP-PCAP, 13 will provide no quantifiable CAP or GHG, 7 will provide only GHG reductions, and 24 will provide quantifiable CAP reductions and GHG reductions.

Criteria Air Pollutants

The Clean Air Act requires the EPA to set National Ambient Air Quality Standards (NAAQS) for six commonly found CAP which are known to be harmful to human health.[1] Areas where concentrations of a given pollutant are higher than safe for human health are designated as "nonattainment" for that CAP. Currently, 10 counties in the North Central Texas region are in nonattainment for the CAP ground-level ozone. It is expected that two counties will be designated nonattainment for another CAP, fine particulate matter ($PM_{2.5}$), based on lowered EPA standards for $PM_{2.5}$.

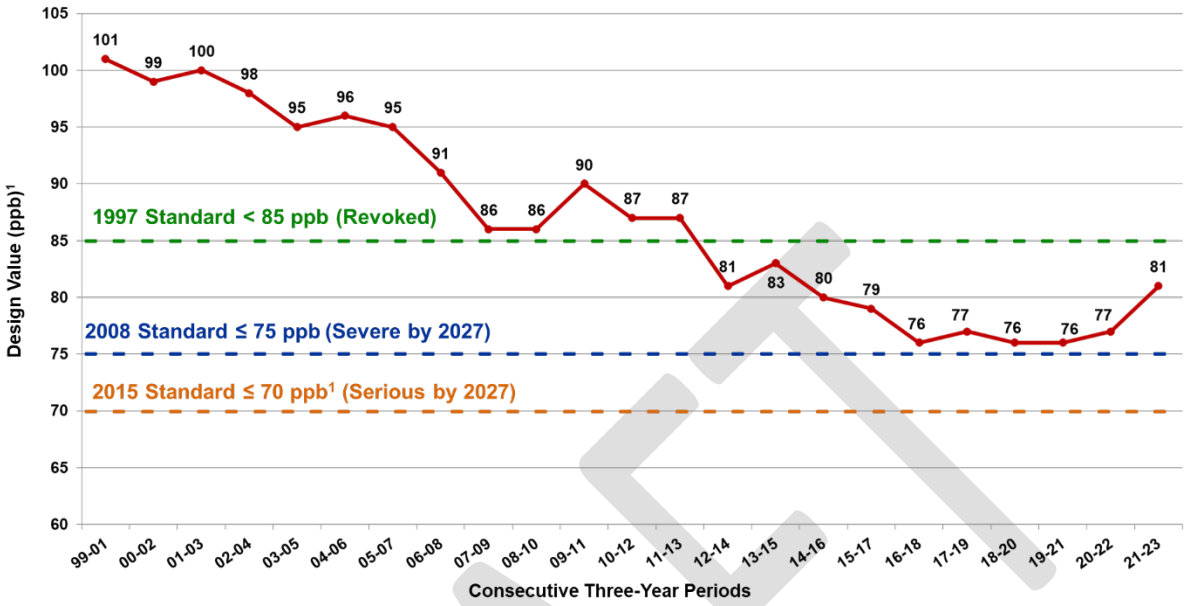
Ozone

Ground-level ozone has been a concern for the North Central Texas region since 1979, when four counties in the region were designated as nonattainment. Depending on the level of exposure, ozone can cause a multitude of health concerns, primarily causing and worsening existing respiratory issues. Ozone can be traced back to emissions from transportation, industrial, and commercial operations, as well as from natural sources, such as vegetation. Measures in the DFW AQIP are focused on reducing precursor elements, specifically nitrogen oxides (NO_X) and volatile organic compounds (VOCs), which create ozone when exposed to sunlight and heat.

As shown in **Exhibit 1: Ozone Design Value Trendline 1999 to 2023**, overall, the air quality in North Central Texas has improved. However, as the region's pollution levels have fallen, the EPA has simultaneously lowered the ozone NAAQS to ensure public health. Consequently, the region has yet to reach the federal ozone standard. As of 2024, 10 of the 16 counties within the NCTCOG territory have been designated as "severe" nonattainment, with the goal of attaining the federal ozone standard of 75 parts per billion by the end of the 2026 ozone season. Failure to reach this standard could result in penalty fees against stationary emissions sources in counties not meeting attainment as early as 2028. For more information on penalties associated with nonattainment status, please see section 3 (page 51) of the DFW AQIP.

[1] https://www.epa.gov/criteria-air-pollutants

Exhibit 1*:* Ozone Design Value Trendline 1999-2023



[1]Attainment Goal-According to the US Environmental Protection Agency National Ambient Air Quality Standards, attainment is reached when, at each monitor, the *Design Value* (three-year average of the annual fourth-highest daily maximum eight-hour average ozone concentration) is equal to or less than 70 parts per billion (ppb).

Particulate Matter

EPA revised the NAAQS for $PM_{2.5}$ from 12 micrograms per cubic meter (µg/m3) to 9 µg/m3, which, based on preliminary data, may trigger new nonattainment designations for the two most populous counties in the NCTCOG region—Dallas and Tarrant—for this CAP. Exposure to particulate matter can affect the lungs and heart. It has been associated with premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms.[2] Besides people with heart or lung diseases, children and older adults will most likely be affected by exposure to particle pollution.[3] Environmental and material damage can also occur from particulate matter. When particulate matter settles, depending on the chemical composition it can make lakes and streams acidic, change the nutrient composition in river basins, lead to damage to forests and farm crops, contribute to acid rain, and affect the diversity of ecosystems. For more information on $PM_{2.5}$ see Section 3 (pg. 51-52) of the DFW AQIP-PCAP.

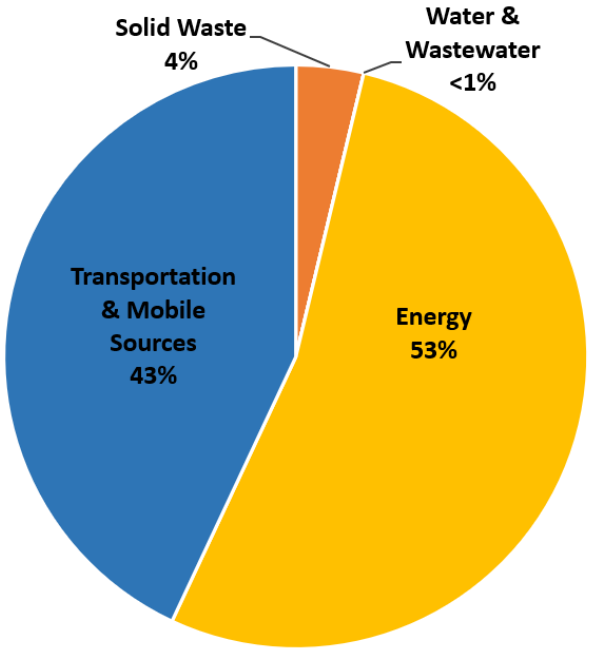
Greenhouse Gases

Greenhouse Gases (GHG) are not a criteria air pollutant but instead a pollutant that traps heat in the atmosphere. There are four different types of GHG: carbon dioxide, methane, nitrous oxide, and fluorinated gases. The impact each of these GHG has on the atmosphere and our climate depends on how much of that GHG is produced, how long the GHG stays in the

[2] Health and Environmental Effects of Particulate Matter (PM) | US EPA
[3] Health and Environmental Effects of Particulate Matter (PM) | US EPA

atmosphere, and how strongly the GHG impacts the atmosphere. To enable comparison of the different impacts of the different GHGs, each GHG has been given a Global Warming Potential (GWP).[4] To develop a GHG Emissions Inventory (EI), entities first measure how much of each GHG is produced, then multiply that GHG by its respective GWP. The resulting number is expressed in carbon-dioxide equivalent, or CO_2e. The NCTCOG region is estimated to have produced 105,435,559 metric tons of CO_2e in 2019. The over 105 million CO2e produced in the North Texas region is equivalent to 116 billion pounds of coal burned, 6.96 trillion smartphones charged, or 27 coal-fired power plants in a year.[5] **Exhibit 2: Communitywide NCTCOG Area 16-County 2019 Annual CO_2e Emissions by Sector** shows the portion of the different sectors that contributed to the 2019 NCTCOG GHG EI. For more information on the GHG EI see Section 3 (pg. 29-50) of the DFW AQIP-PCAP.

Exhibit 2: Communitywide NCTCOG Area 16-County 2019 Annual CO_2e Emissions by Sector



Note:

Emissions from the water supply sector have been included in the Energy sector (comprised of residential, commercial, and industrial subsectors) as water pumping is energy intensive.

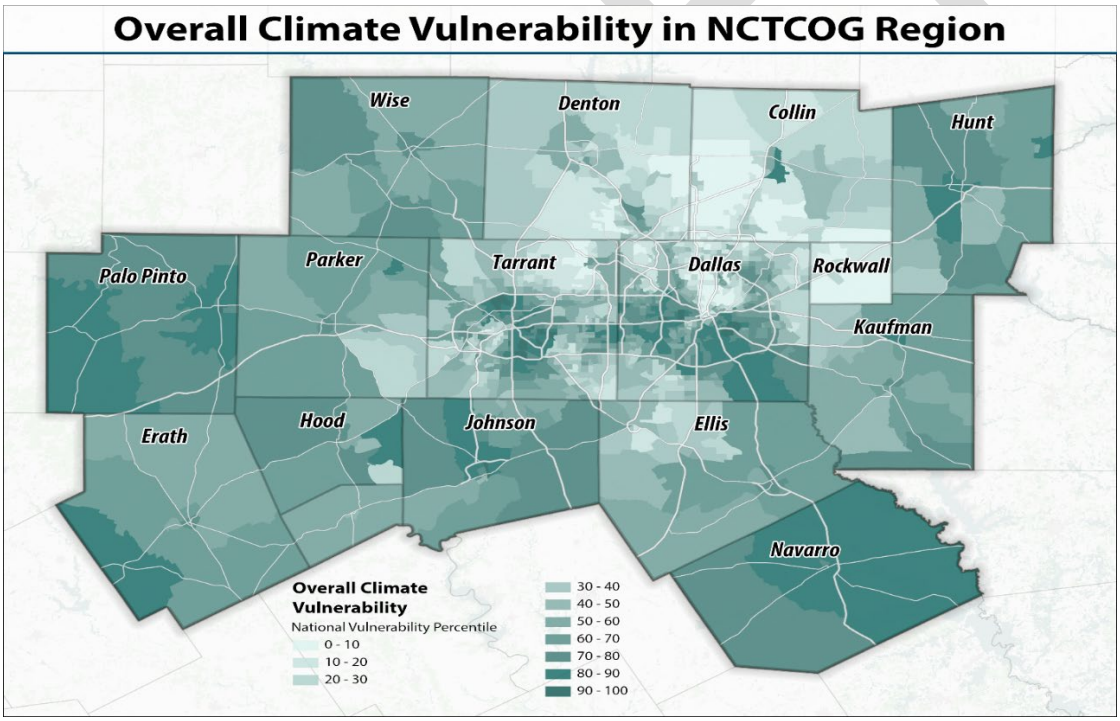
The GHG EI developed for the DFW-AQIP does not include agricultural emissions, process and fugitive emissions, or carbon sinks.

[4] https://www.epa.gov/ghgemissions/understanding-global-warming-potentials
[5] https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Impacts of Increased Greenhouse Gases

The impacts of increased greenhouse gases in our atmosphere are expected to lead to a rise in the frequency, severity, and costs of extreme weather events as the planet warms. Texas leads the nation in both the most frequent and expensive severe weather events and the most expensive, accounting for 15% of all U.S. billion-dollar disasters. From 1980-2024, Texas experienced **171 billion-dollar weather and climate disaster events**. Compared to Louisiana, Texas had 77% more billion-dollar weather events.[6] The region's overall climate vulnerability can be seen in **Exhibit 3: U.S. Dallas and Fort Worth: Overall Climate Vulnerability.** This climate vulnerability is scored by combining the expected impact on environmental, social, economic, and infrastructure effects on neighborhood-level stability. Eight counties (Wise, Palo Pinto, Hood, Erath, Johnson, Navarro, Kaufman, and Hunt) score in the top 50th percentile of Climate Vulnerability. Furthermore, several Census tracts within Dallas and Tarrant counties are ranked in the top 90 percent in Overall Climate Vulnerability.

Exhibit 3: U.S. Dallas and Fort Worth: Overall Climate Vulnerability[7]



Other risks that may impact the North Texas region include, but are not limited to, extreme heat events, urban heat islands, extreme drought, and wildfires. It is expected that low-income and disadvantaged communities (LIDAC) will disproportionally feel the impact of climate changes

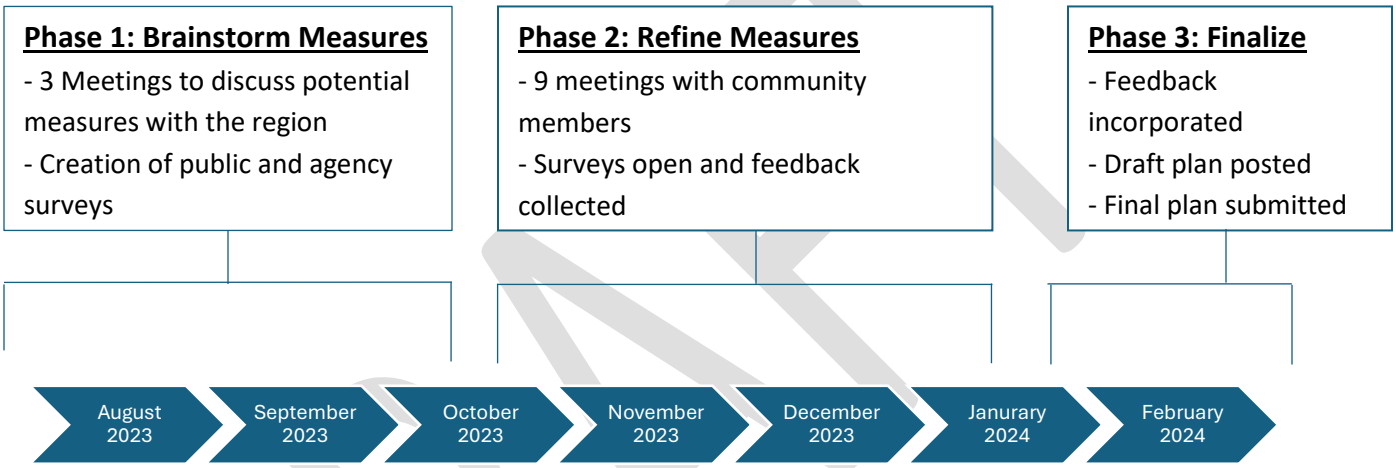
[6] https://nca2023.globalchange.gov/chapter/26

[7] https://map.climatevulnerabilityindex.org/map/cvi_overall/usa?mapBoundaries=Tract&mapFilter=0&reportBoundaries=Tract&geoContext=State

due to limited resources and proximity to high-risk areas.[8] For more information on the Identification of Potential Climate Risks see Section 5 (pg. 139-144) of the DFW AQIP-PCAP.

How the DFW AQIP-PCAP Was Developed

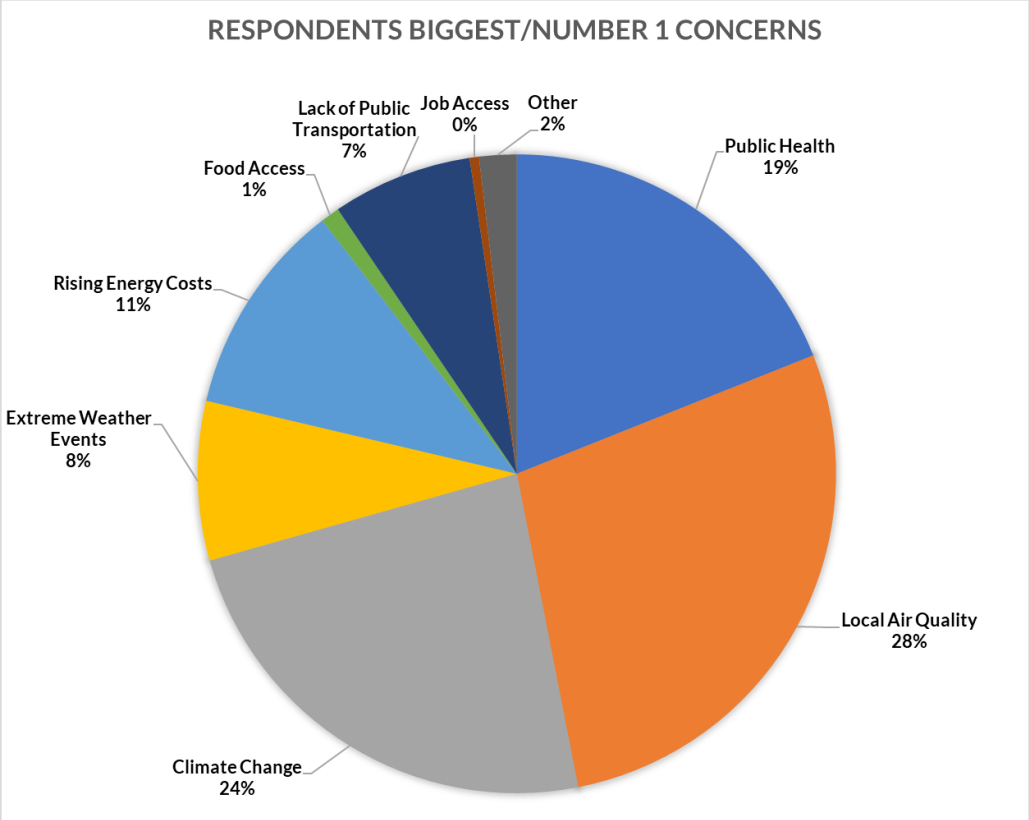
Extensive engagement was conducted for the DFW AQIP-PCAP and consisted of meetings with members of the public, local governments, NCTCOG committees, and other stakeholders in various formats (in person, virtual, and hybrid). An online survey was created to collect input from stakeholders and the public (www.publicinput.com/dfwAQIP-survey) to identify measures for the DFW AQIP.



The survey for the public received over 280 responses, with 12 out of 16 of NCTCOG's counties represented. Over 400 comments were provided in the open text fields of the survey. As shown in **Exhibit 4**, most respondents' top biggest concerns are Local Air Quality, followed by Climate Change, and Public Health. These concerns helped drive the prioritization of the DFW AQIP measures that reduced GHGs and CAP, therefore improving local air quality and reducing risk to public health, and reducing the impact of extreme weather events through GHG reduction.

[8] https://nca2023.globalchange.gov/chapter/15/#key-message-2

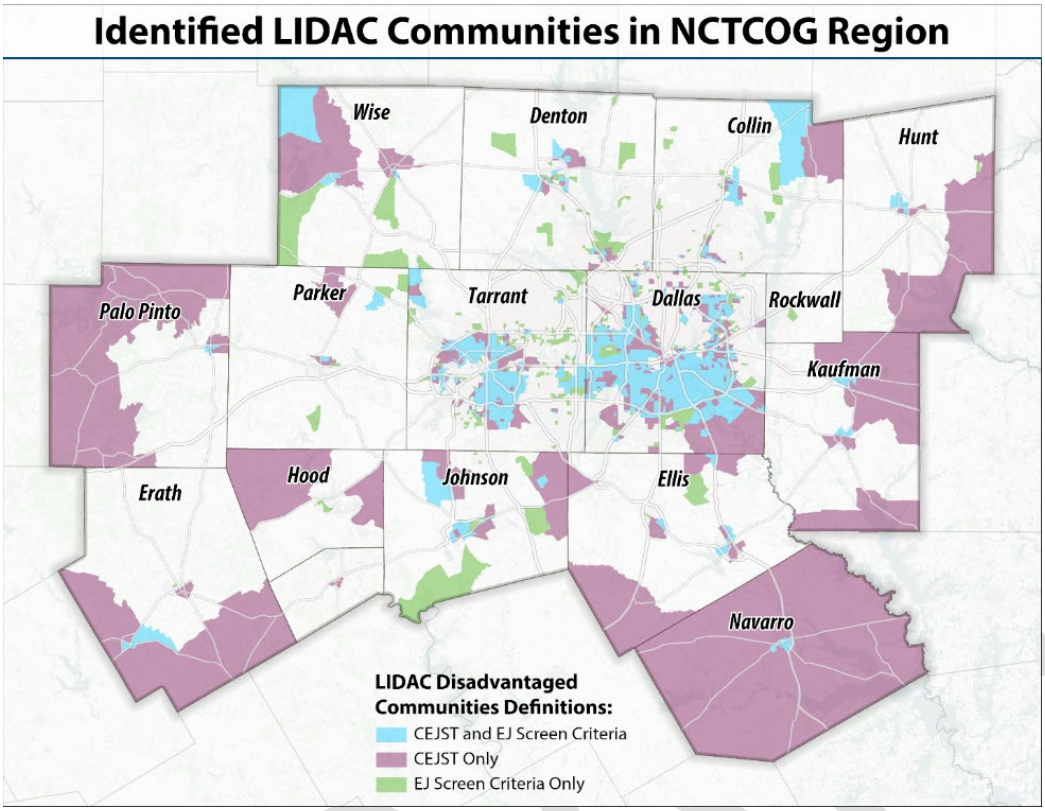
Exhibit 4: Public Survey–Biggest Concerns



Engagement with LIDAC in the Planning Process

Per EPA guidance, NCTCOG utilized the Climate and Economic Justice Screening Tool (www.screeningtool.geoplatform.gov) and the Environmental Justice Screening and Mapping Tool (www.epa.gov/ejscreen) to identify LIDAC. These tools assess populations for the following key parameters that characterize burden: air quality, climate change, energy, environmental hazards, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. Overall, 1,669 out of the 4,496 Census blocks (~37 percent) in the NCTCOG region are identified as LIDAC. **Exhibit 5** illustrates LIDAC communities based on a combination of both tools per EPA guidance.

Exhibit 5: Low-Income and Disadvantaged Communities in NCTCOG Region



LIDAC engagement was essential in the development of the DFW AQIP-PCAP, as LIDAC are expected to disproportionally bear the impact of the warming climate. In total, 45% of the survey respondents for the public survey represented a low-income or disadvantaged community. For more information on LIDAC and how they were engaged, see Section 5 (pg. 135-137) of the DFW AQIP-PCAP. **If you have suggestions on how NCTCOG can better engage with LIDAC, please email dfwaqip@publicinput.com**

DFW AQIP-PCAP Measures

The DFW AQIP-PCAP emphasizes measures that not only achieve GHG reductions, but also achieve reductions in ozone precursors (NO_X and VOCs), as well as $PM_{2.5}$. This list is not intended to be inclusive of all efforts to improve air quality in the region, but rather is focused on the near-term (i.e. within next 5 years), high-priority, implementation-ready measures, as required by the EPA. Below is a brief description of the type of GHG measures included within each sector. For more information on individual measures, please see the table included at the end of this document.

Transportation (13 measures):

Transportation measures included in the DFW AQIP-PCAP will promote more efficient use of the transportation system and a shift toward vehicles with lower emissions. Measures include

improving and expanding alternative transportation options (e.g., public transit, bike paths, and pedestrian walkways), mitigating congestion and idling through traffic signal retiming, improving railroads, and incentivizing carpooling, promoting greener materials and equipment used in construction, and incentivizing the usage of alternative fuel vehicles and other fuel saving strategies (e.g., idle reduction).

Energy (6 measures):

Energy measures included in the DFW AQIP-PCAP will improve efficiency and resilience, offsetting the need for traditional power generation and reducing emissions from power plants. Measures include updating building codes, improving energy usage of public facilities (e.g., adding energy storage, solar, upgrading lighting, HVACs), and providing incentives for residential energy efficiency improvements and solar installation. Assisting with the creation of energy plans and audits is another essential part of Energy Sector improvements in DFW.

Water, Wastewater, and Watershed Management (9 measures):

Water, wastewater, and watershed measures included in the DFW AQIP-PCAP will promote more efficient use of water, enhance existing water conservation measures, reduce local pollutant sources, and promote more sustainable drainage infrastructure with an emphasis on solutions that provide multiple local benefits. Measures include water and wastewater system upgrades, related system energy efficiency updates, increasing local stormwater storage capacities and implementing nature-based solutions such as vegetative swales, constructed wetlands and bioswales. NCTCOG staff will work to protect important watershed land, explore aquifer water storage capabilities, and encourage best practices for municipal water usage.

Materials Management (Solid Waste) (6 measures):

Materials management measures included in the DFW AQIP-PCAP address several identified resource conservation and waste management challenges such as existing resource management facility capacity, facility locations with respective to local economic growth, organic and construction waste materials handling, and reducing emissions associated with waste trucks driving to existing waste management facilities. Measures include supporting the establishment of centers for recycling and composting and equipping landfill facilities to capture landfill gas.

Agriculture, Forestry, and Land Use (Green Space) (5 measures):

Agriculture, forestry, and land use measures included in the DFW AQIP-PCAP primarily address an overwhelming public response to the need for more and better-quality green space, as a means of reducing heat island impacts and urban flood response, as well as improving local air quality, and enhancing overall community quality of life. Measures include broadening existing municipal greening efforts through the development of comprehensive, regional green space initiatives, and supporting existing vegetation in riparian zones and wetlands. Promotion of agricultural best practices, opportunities for urban agriculture and funding for park improvements are also included in this sector. NCTCOG plans to advocate for updated codes,

to incorporate air quality reviews, and promote green space expansion through related zoning and code requirements.

Cross Sector (5 measures):

Some measures do not fit neatly into a single category and impact emissions in multiple sectors. Measures included in the Cross-Sector section will provide education and outreach about energy efficiency, sustainable practices, and clean energy across multiple sectors. One focus area is incentivizing individuals to make cleaner behaviors, through the use of phone or tablet apps which encourage sustainable behaviors like carpooling and utilizing public transit. NCTCOG will work with cities to utilize ordinances and guidelines for effective tire recycling and disposal to address tire waste. Workforce development programs and investments will occur to support the growing infrastructure and clean energy projects being implemented in the region. Additionally, NCTCOG is investigating need for an increase in air quality monitoring of criteria pollutants in the DFW region, especially near industrial and oil and gas sites and also in and/or near LIDAC communities, to better identify future reduction opportunities.

Community Benefits:

The proposed measures in the DFW AQIP are expected to help improve air quality, but other benefits to the community are expected to occur as well. Expected community benefits include:

Community Benefit	Total Measures Providing this Benefit
Improved Health and Well-Being - *Improve residents' health through the reduction of CAP, which can reduce respiratory and cardiovascular health issues. Also includes providing more walkable, dense communities and greenspace and parks, which can result in improved physical and mental health.*	19
Increased Access to Service and Amenities - *Add new transportation options to access new areas and/or reach services/amenities.*	5
Increased Safety – *Reduce risk to pedestrians and car operators, decrease flooding, improve housing quality, etc.*	3
Reduced Cost – *Reduce costs for residents.*	8
Increased Resiliency and Adaptability – *Decrease risk of extreme weather events and other climate risks through the reduction of GHG or through the addition of resiliency measures, such as microgrids.*	All measures
Reduced Noise Pollution – *Reduce noise to improve physical and mental health.*	3
Green Spaces and Community Beautification- *Additional greenspace to improve mental and physical health, absorb GHG, aid in absorbing stormwater, and reduce flooding.*	5
Increased Awareness/Engagement – *Increase resident engagement and awareness of measures and efforts being made in their community*	7
Job Creation and Economic Development – *Add additional jobs through the addition of new infrastructure.*	16
Water Conservation - *Conserve water to prevent water shortages/reduce costs.*	1

Next Steps

The Dallas-Fort Worth Air Quality Improvement Plan has been submitted to EPA to fulfill the PCAP deliverable as required by the CPRG: Planning Grants award. The DFW AQIP has been posted on www.publicinput.com/dfwaqip for review. NCTCOG is turning attention toward the development of a Comprehensive Climate Action Plan (CCAP) to be submitted in summer 2025. According to the EPA, the CCAP must "touch on all significant GHG sources/sinks and sectors present in a state or metropolitan area, establish[s] near-term and long-term GHG emission reduction goals, and provide[s] strategies and identifies measures to achieve those goals."[9] The public survey and implementer survey are still open for responses and additional measures will be added to the CCAP. For review. NCTCOG is turning attention toward the development of a Comprehensive Climate Action Plan (CCAP) to be submitted in summer 2025. According to the EPA, the CCAP must "touch on all significant GHG sources/sinks and sectors present in a state or metropolitan area, establish[s] near-term and long-term GHG emission reduction goals, and provide strategies and identify measures to achieve those goals."[10] The public survey and implementer survey are still open for responses and additional measures will be added to the CCAP.

[10] EPA CPRG Planning Grants Program Guidance for States-Municipalities-Air Agencies 03-01-2023.pdf