Air Quality is a critical issue facing North Central Texas. Three broad areas will be emphasized in this publication: an introduction to the air quality problem and its far-reaching impacts, a look at several types of transportation-related control strategies and solutions currently being implemented, and what the future holds in terms of federal mandates, economic stability, and possible growth restrictions.

The Environmental Protection Agency (EPA) has determined that the air in North Central Texas is unhealthy. The Dallas-Fort Worth region violates the National Ambient Air Quality Standards for ozone set by the EPA. In fact, clinical studies have indicated that elevated levels of ozone, the primary pollutant in our air, may actually reduce the lung's ability to move air in and out, may increase the frequency of asthma episodes, and may reduce the body’s ability to resist respiratory infections. Ozone in the upper atmosphere is beneficial, as it serves as a protective layer blocking damaging ultraviolet rays from the sun. However, at ground levels, it is potentially harmful. Ground-level ozone, a component of what is commonly known as “smog,” is caused by emissions and chemicals from sources such as factories, small businesses, transportation and recreational sources. Emissions from these sources combine with sunlight to form ozone in the air we breathe.
Sources of Pollution

Ozone is not emitted directly into the atmosphere, but rather is formed in the lower atmosphere through the reaction of sunlight with volatile organic compounds, oxides of nitrogen, and oxygen.

Volatile organic compounds and nitrogen oxide are the building blocks of ground-level ozone and are typically released into the atmosphere directly from cars, trucks, airplanes, lawn mowers, motor boats, industrial processes, or through the evaporation of chemicals, solvents, and other petroleum products. Because high levels of sunlight and temperatures and low wind are critical factors in the creation of ozone, the ozone season in North Central Texas typically runs from May through October.

In the Dallas-Fort Worth region, roughly 41 percent of the emissions that cause ozone are produced by on-road mobile sources which include cars, trucks, buses, motorcycles and other registered motor vehicles. Off-road mobile sources such as boats, lawn mowers, aircraft, and construction equipment constitute 19 percent of the emissions. Stationary sources, like factories and commercial or industrial facilities, account for 12 percent, while emissions from area sources such as gas stations, dry cleaners, bakeries, and paint and body shops account for 28 percent.

Federal Air Quality Standards

The Dallas-Fort Worth region is currently classified as a “moderate” nonattainment area for ground-level ozone, one of 96 regions identified by the federal government as areas below clean air standards for ozone in 1990.

Specifically, the nonattainment area is comprised of four counties: Dallas, Denton, Collin, and Tarrant. The Clean Air Act identifies six major pollutants for which federal standards have been established: carbon monoxide, lead, nitrogen oxide, ozone, particulates, and sulfur oxides. Of these six pollutants, the Dallas-Fort Worth region is in violation of only one, ozone.

The Clean Air Act serves as the basis for the nation’s air pollution control efforts. This important legislation permits the U.S. Environmental Protection Agency (EPA) the authority to establish National Ambient Air Quality Standards for ozone and other important air pollutants. These primary standards are established in such a way that an adequate margin of safety is built into them in order to protect the public from known or anticipated health effects. This level is a threshold to establish when the quality of the air becomes a threat to human health. A ranking system containing varying levels of ozone classification was developed by the EPA and applied to all cities in the United States. Several Texas regions have been designated as ozone nonattainment for violating this standard. Each nonattainment area is given anywhere from three to seventeen years to come into compliance, depending on the severity of its air quality problem. The table to the right summarizes this information.

Texas Cities Impacted by Federal Clean Air Act Ozone Classifications

<table>
<thead>
<tr>
<th>Area</th>
<th>Classification</th>
<th>Attainment Date from 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dallas-Fort Worth</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Beaumont/Port Arthur</td>
<td>Moderate</td>
<td>6 Years</td>
</tr>
<tr>
<td>El Paso</td>
<td>Serious</td>
<td>9 Years</td>
</tr>
<tr>
<td>Houston/Galveston-Brazoria</td>
<td>Severe</td>
<td>15-17 Years</td>
</tr>
</tbody>
</table>

Volatile Organic Compounds Emission Sources

Dallas/Fort Worth Nonattainment Area

Stationary Sources 12%
Off-Road Mobile 41%
Area Sources 28%
On-Road Mobile 19%

Area Sources

Dallas-Fort Worth Nonattainment Area
As an ozone nonattainment area, the Dallas-Fort Worth region must fulfill several Clean Air Act requirements in the battle for cleaner air. The first of these is that the region must limit the number of ozone exceedances to no more than three violations in a three-year period. Secondly, the region must commit to implementing a wide variety of control measures aimed at reducing the formation of ozone. These control measures are identified in the State Implementation Plan and must be implemented by the November 1996 deadline.

Ozone, as well as other airborne pollutants, are measured hourly at eight monitoring sites throughout the region. The location map illustrates the region’s monitoring sites. It is important to note that in the Dallas-Fort Worth region, volatile organic compound emissions have been reduced by more than 50 percent over the last two decades - through stricter permits, better vehicle designs and inspections, reduced gasoline evaporative characteristics, and a variety of other initiatives. The summer ozone season of 1995 yielded 15 days that exceeded federal air quality standards, as shown in the table below. That is the most the North Texas region has experienced since 1985 when there were 18 exceedance days.

According to current federal law, a “moderate” nonattainment area, such as the Dallas-Fort Worth region, has until November of 1996 to demonstrate compliance with air quality standards and to come into attainment. As it currently stands, the region can have no more than one exceedance at any single monitoring station throughout the summer of 1996. If the region cannot meet this goal, reclassification to a “serious” nonattainment area may result in more stringent restrictions for North Central Texas.
Emission Reduction Plan

Another Clean Air Act requirement this region must comply with is the development of a State Implementation Plan. The Texas Natural Resource Conservation Commission, the state’s air quality regulatory agency, is responsible for developing the emission reduction plan for the region. The State Implementation Plan defines how emissions will be reduced and contains numerous strategies to bring the region into attainment by the federal deadline of November 1996.

The emission reduction plan must identify how the region is going to reduce volatile organic compound emissions to 15 percent below 1990 levels as required by the Clean Air Act. The Plan contains such programs as: stage II vapor recovery systems installed on the gas pumps at gas stations; reformulated gasoline; transportation-related control measures such as high occupancy vehicle lanes and signal and intersection improvements; and the vehicle emission inspection and maintenance program.

If air quality problems are not solved or plans not implemented, the region may lose relocations and expansions of manufacturing based companies. Next could come the loss of federal highway funds and the implementation of federal mandates related to travel restrictions and other transportation issues. In business terms, nonattainment means that there are federally mandated restrictions on the growth of the Metroplex. Working with federal and state environmental regulatory agencies, the region’s leadership develops policy for the implementation of specific controls to reduce pollution and meet air quality goals.

To address this threatening air quality situation, four North Texas economic development and planning organizations - the Fort Worth Chamber of Commerce, the Greater Dallas Chamber of Commerce, the North Central Texas Council of Governments, and the North Texas Commission - joined forces in March of 1993 to form the “North Texas Clean Air Coalition.” This group is helping to implement a series of voluntary measures to help the region reach its air quality goals. The “Ozone Action Day” program is one of these voluntary measures which targets the days that are most likely to be high ozone days for the Metroplex.

Transportation Air Quality Improvement Strategies

There are several strategies being employed in the Dallas-Fort Worth region to combat pollution from mobile sources. Cars, trucks, and buses on the region’s roadways account for 41 percent of the ozone producing emissions in the region. These strategies focus on making the transportation system more efficient; reducing the demand on the system; and making advances in infrastructured technology to develop cleaner burning transportation modes, fuels, and vehicles.

Transportation System Management Strategies

One of the most cost-effective strategies being used in the Dallas-Fort Worth region to combat pollution from automobiles is to increase the efficiency of the transportation system. These strategies reduce the amount of time people spend in traffic. Because cars, trucks, and buses pollute at elevated levels when idling or in stop-and-go traffic, eliminating some of the wait time experienced at traffic lights or on congested freeways can reduce pollution. Not only do these strategies reduce pollution but they also reduce traffic congestion which saves time and money.
High Occupancy Vehicle (HOV) Lanes

The first HOV lane in the Dallas-Fort Worth region opened in September 1991 on I.H. 30 (East R.L. Thornton Freeway) from Central Expressway to Dolphin Road. It serves an average of 4,600 vehicles and over 13,300 persons each day. The concept of HOV lanes is to increase the person-carrying capacity of freeways by providing dedicated lanes for vehicles carrying more than one person. By doing so, one HOV lane can serve the travel needs of more people than one freeway lane, thereby increasing the efficiency of the entire system. Commuters are attracted to HOV lanes because of the travel time savings they offer during rush hour. Because HOV lanes remove vehicles that would ordinarily be in the traditional “mixed flow” lanes, these freeway lanes also experience travel time savings. HOV lanes help reduce pollution created by removing single-occupant vehicles from the roadways and improving traffic flow. In 1996, HOV lanes will open on two of the areas’ most congested freeways – I.H. 35 (Stemmons) and I.H. 635 (LBJ Freeway).

Signal and Intersection Improvements

Between 1990 and 1996, through federal, state, and local government funding, over 3,000 signalized intersections in the Dallas-Fort Worth region will have been upgraded and/or coordinated with surrounding traffic lights. During the same period, over 380 intersections were targeted for improvements such as dedicated left and right turn lanes. As a result of making these relatively low-cost adjustments to the transportation system, drivers spend less time delayed at traffic lights, thereby reducing the amount of pollution emitted into the air.

Advanced Transportation Management

Incident detection, traveler information systems and traffic management strategies are underway in the region. These programs are designed to help improve traffic flow and reduce traffic congestion.
Travel Demand Management Strategies

Travel Demand Management strategies aim to reduce the demand or the number of vehicles operating on the transportation system. In urban areas such as Dallas-Fort Worth, development over a large geographic area creates a dependence on the automobile for a means of travel. Travel Demand Management strategies focus on encouraging travelers to carpool, vanpool, telecommute, and/or use transit, all of which help reduce the number of vehicles on the roadways. Fewer vehicles on the roadways mean less pollution.

Vanpools

The Dallas Area Rapid Transit and the Fort Worth Transportation Authority operate approximately 150 vanpools in the Dallas-Fort Worth region. A single vanpool can remove 12 to 15 automobiles from congested roadways. By targeting high-density employment centers, vanpools can have a significant impact on traffic flow in these corridors with a corresponding reduction in pollution.

Telecommuting

Telecommuting consists of working from home or another off-site location. Telecommuting is not an all or nothing activity. It can be practiced fulltime or one or two days a week. Participants may include managers, administrators, and customer service representatives involved in programming or other forms of database management.
Improvements in Infrastructure

Light Rail and Commuter Rail Service

In June of 1996, the Dallas Area Rapid Transit (DART) opened the first phase of its 20-mile light rail starter system. The starter system provides light rail service to South and West Oak Cliff as well as through the central business district and along North Central Expressway up to Park Lane. The initial phase of RAILTRAN, the commuter rail service linking Dallas and Fort Worth, from the South Irving Transit Center to Union Station is scheduled to begin at the end of 1996 with service to Fort Worth in 1999.

Bikeways

The Intermodal Surface Transportation Efficiency Act of 1991 emphasizes the importance of bicycling and walking as alternatives for reducing congestion and improving air quality. Through ongoing planning activities which include efforts of the NCTCOG’s Bicycling and Pedestrian Task Force, NCTCOG is striving to identify opportunities for funding and implementation of these improvements. Numerous bikeways have been funded through ISTEA for approximately $10 million.

Improvements in Technology

The science of vehicle emissions has led to technological improvements in vehicles as well as the fuels used to power them. Due to the latest emissions control technology, today’s automobiles pollute less than ever before and will continue to pollute less in the future. Advancements in fuel technology have led to cleaner burning gasoline as well as viable alternative fuels. These technological improvements have a significant impact on reducing pollution in the Dallas-Fort Worth region.

Vehicle Emissions Inspection and Maintenance Program

A major component on the technology side of controlling pollution is the vehicle emissions Inspection and Maintenance Program. This Program requires light duty cars and trucks in Dallas and Tarrant Counties to be inspected for emissions once a year similar to the safety inspection. The majority of vehicles that do not pass the emissions test will only require a tune-up. Vehicles must be properly maintained for the emissions control system to work as intended. Surprisingly, emissions from one poorly maintained vehicle can equal those from 25 properly maintained vehicles. Statistics indicate that 10 percent of the vehicles create more than 50 percent of the emissions.
Improvements in Technology (continued)

Alternative Fuels

The Dallas-Fort Worth region has an $8 million program to convert public sector vehicles to alternative fuels. Most vehicles will be converted to use compressed natural gas (CNG) or propane. Alternative fuel vehicles can be a dedicated fuel vehicle or a bi-fuel vehicle. A dedicated fuel vehicle can only be powered by one fuel, whereas a bi-fuel vehicle can be powered by either an alternative fuel or gasoline. Alternative fuels can reduce the region’s dependence on gasoline and improve air quality at the same time.

Traditional Fuels

Not only have improvements been made to vehicle emissions control systems and alternative fuel technology, but to gasoline as well. In January 1995, gas stations in the Dallas-Fort Worth region began selling “reformulated” gasoline. This gasoline is specially formulated to burn cleaner thereby creating less pollution. Also, gas stations that sell 10,000 gallons or more per month are required to install vapor recovery systems at gas pumps. Gasoline vapors which escape during the refueling process contain volatile organic compounds which lead to the formation of ozone. Capturing these vapors before they escape can lead to a significant reduction in pollution.
Future Implications

Sanctions

NCTCOG works with local governments, transportation providers, and state and federal regulatory agencies to implement specific controls to reduce pollution and meet air quality goals. A delay in implementation of these controls could prevent the disbursement of federal transportation funds to the Dallas-Fort Worth region. These transportation funds are used for highway construction and other transportation improvements in the Dallas-Fort Worth region. While sanctions of federal transportation funds are possible, many agencies, municipalities, and service providers are working hard to ensure this does not happen.

WHAT TRIGGERS SANCTIONS?

State and local officials work diligently with the Environmental Protection Agency to submit all air quality plans before designated deadlines. Sanctions, while unlikely, can be imposed under the following circumstances:

- The failure to submit all elements of a required emission reduction plan or revision.
- The failure of a submission to meet one or more of the required elements of the Clean Air Act.
- The failure to submit an emission reduction plan meeting the minimum criteria in the Clean Air Act.
- The failure to implement any requirements of the approved emission reduction plan.

Serious Nonattainment Designation

To fulfill the requirements of the federal Clean Air Act, three consecutive years of monitoring data showing no more than three exceedances is required. Unfortunately, this requirement has not been met. Four violation days occurred in 1993, nine were recorded in 1994, and fifteen violation days occurred in 1995.

Legislative efforts may extend the November deadline for an additional two years, otherwise the region may ask for an extension of the November 1996 deadline. Failure to show improved air quality monitoring data may result in the Dallas-Fort Worth area being reclassified as a “serious” nonattainment area. The serious designation will require additional controls on business and could potentially expand the nonattainment boundary to include not only Dallas, Tarrant, Collin and Denton Counties but also Ellis, Henderson, Hood, Hunt, Johnson, Kaufman, Parker, and Rockwall Counties. Areas classified as nonattainment must fulfill the mandated requirements of the Clean Air Act by implementing strategies to control air emissions.
Voluntary Efforts – Ozone Action Season

Since 1993, government and business leaders have implemented a voluntary ozone advisory program to reduce emissions on potential high ozone days. In the Dallas-Fort Worth region, the ozone season typically runs from May through October.

The Texas Natural Resource Conservation Commission forecasts weather conditions every day. Generally, if the weather is hot and cloudless, with little or no wind, an Ozone Action Day is announced. When this happens, the North Central Texas Council of Governments sends a fax to more than 1,500 businesses and municipalities notifying them of an impending alert. In turn, companies and governmental agencies put their Ozone Action Day programs into effect. Residents, businesses and governmental agencies are encouraged to take one or more of the Ten Steps to Cleaner Air.

Ten Steps to Cleaner Air

1) Limit driving. Try not to drive at all, especially before 10:00 a.m. Consider walking or riding your bike when making short trips. Carpool or ride the bus to work — reduced transit fares exist!

2) Minimize cold starts by combining trips. Most vehicle emissions occur when an automobile’s engine is cold.

3) Avoid Jack Rabbit Acceleration. Fast starts use more gasoline than slow ones.

4) Avoid excessive idling. Drive during off-peak hours to avoid traffic. Avoid highway construction and drive-through windows.

5) Drive the lowest emission vehicle. Usually the newest or most fuel efficient car.

6) Refuel carefully and in the evening when it’s cooler. Avoid spilling gasoline, and check to make sure the gas cap seals properly.

7) Maintain your vehicle. Get a tune-up.

8) Keep the car in the garage when it’s not in use. Garages reduce the day/night temperature swings that can cause gasoline vapors to escape from the gas tank into the atmosphere.

9) Don’t mow the lawn or use gas powered equipment during the mornings of Ozone Action Days. Lawn care machines produce a significant amount of pollution — one hour of operation equals about 50 miles of car driving. Use electric or hand powered models.

10) Limit chores on Ozone Action Days. Try not to use oil-based paints, varnishes, degreasers, or lighter fluids.

To assist companies with year-round alternative commute option programs, a regionwide travel demand management program has been developed. Assistance is available to employers to implement bicycling, carpool, vanpool, transit pass, or telecommuting programs.

The North Texas Clean Air Coalition has begun a public awareness campaign with the theme “Do Your Share For Cleaner Air.” The goal of the program is to educate the public concerning regional air quality issues and highlights individual actions that can make a difference toward improved air quality.

The goal of the Regional Transportation Plan is to promote new cost-effective and more environmentally sensitive modes of transportation, including bicycle and pedestrian activities. Bicycling can combine exercise time with commute time, providing efficient short distance, nonpolluting transportation.
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What Is NCTCOG?

The North Central Texas Council of Governments (NCTCOG) is a voluntary association of local governments within the 16-county North Central Texas region. The agency was established in 1966 to assist local governments in planning for common need, cooperating for mutual benefit, and coordinating for sound regional development. North Central Texas is a 16-county region with a population of 4.2 million and an area of approximately 12,800 square miles. NCTCOG has 224 member governments, including all 16 counties, 158 cities, 26 independent school districts, and 24 special districts.

Since 1974, NCTCOG has served as the Metropolitan Planning Organization (MPO) for transportation in the Dallas-Fort Worth Metropolitan Area. The Regional Transportation Council is the policy body for the Metropolitan Planning Organization. The Regional Transportation Council consists of 35 members, predominantly local elected officials, overseeing the regional transportation planning process. NCTCOG’s Department of Transportation is responsible for support and staff assistance to the Regional Transportation Council and its technical committees, which comprise the MPO policy-making structure.

We would like your comments . . .

If you have questions or comments regarding the transportation and air quality programs of the North Central Texas Council of Governments and the Regional Transportation Council or need additional information, please contact the NCTCOG Transportation Department at (817) 695-9240, by FAX (817) 640-3028 or via e-mail: mmorris@nctcog.dst.tx.us