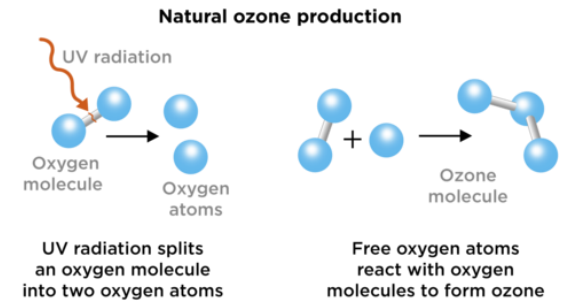
KTMPO
KILLEEN-TEMPLE
metropolitan planning organization

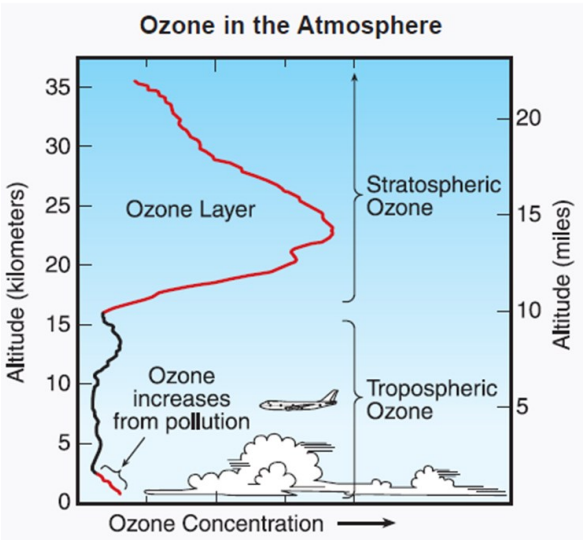
CENTRAL TEXAS ON THE MOVE

2180 N. Main Street Belton, TX 76513 Summer 2016

Ozone—Good Up High, Bad Nearby

Ozone is gas that occurs naturally in the stratosphere creating the ozone layer. The ozone layer helps protect the Earth by filtering harmful ultra-violet radiation from the sun and also acts as an insulator to keep the Earth warm during the nighttime. Ozone located in the stratosphere forms when one oxygen molecule (O_2) breaks up due to the presence of ultraviolet radiation. The separated atoms combine with an oxygen molecule to produce an ozone molecule (O_3) which will eventually form the ozone layer.





Why is Ozone Bad Nearby?

Ozone is bad when ozone is less than five kilometers from the ground. Ozone that forms near the ground can cause air quality to decrease making it difficult for people to breathe. Ground-level ozone is especially dangerous for children, the elderly, and people who suffer from lung diseases.

Ground-level ozone forms when Nitrogen Oxide (NOx) and Volatile Organic Compounds (VOCs) react in the presence of sunlight and heat.

In Texas, ozone levels are generally high when the weather conditions are:

- Clear to partly cloudy skies;
- Temperatures above 82°F;
- Winds less than 12 mph;
- Winds from a north or southwesterly direction.

Can Ground Level Ozone and the Ozone Layer Mix?

Ground-level ozone and ozone created in the ozone layer are not able to mix. Ozone located in the ozone layer forms when oxygen reacts in the presence of ultraviolet radiation. As altitude decreases, less ultraviolet radiation is being transmitted through the atmosphere causing ozone molecules to break up before it reaches ground-level ozone.

Two factors prevent ground level ozone from rising to the upper ozone layer. The first factor is that the layer closest to earth called the troposphere contains water vapor and wind which create very unstable conditions. This unstable region is capped by a thin layer of stable temperatures known as the tropopause. This stable region prevents the ground-level ozone from rising out of the unstable region.

The second factor preventing ozone from rising to a safer level away from us is that ozone likes to bind with other substances. When ozone is created in the unstable troposphere, it does not remain free long enough to get transported away. Instead, it binds to other molecules that hold it closer to earth.

Contact Us

Contact us for more information about our services.

Killeen-Temple MPO

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Visit us on the web at:

www.ktmpo.org

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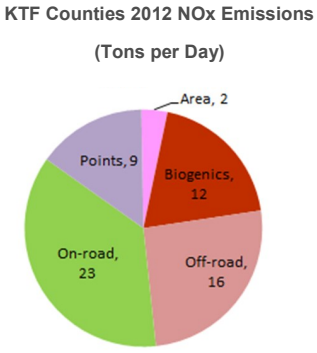
Combating Ground-Level Ozone During Summer

As summer approaches, ground-level ozone is a concern for KTMPO. Summer months usually have the highest amount of ground-level ozone due to the high heat and low precipitation that occur during this time.

Ground-level ozone can have negative effects on transportation planning if the KTMPO region is determined to be "non-attainment." To be designated as "non-attainment," the design value for 2014-2016 would have to exceed 70 parts per billion (ppb), which is the National Ambient Air Quality Standard (NAAQS). If KTMPO is designated as "non-attainment," federally supported highway and transit projects may not progress unless we can demonstrate that these projects will not cause an increase in applicable emissions.

To help keep us "in-attainment", KTMPO is targeting NOx emissions to prevent ozone from forming. By removing either VOCs, NOx, sunlight, or heat, ground-level ozone cannot form. Since VOCs are produced largely from vegetation, the only element we have some control over is the amount of NOx being emitted.

NOx Emissions in the KTMPO Planning Area



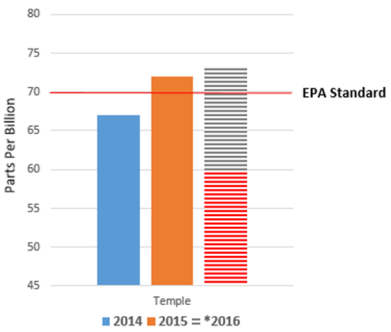
A majority of NOx emissions come from surface sources, better known as non-point sources. An example of a surface source may be cars emitting pollution along a highway. Point sources of pollution are sources that can be easily identified such as a smoke stack. The chart to the left shows where NOx emissions originate in the KTMPO region.

Thirty seven percent (37%) of our NOx emissions come from on-road mobile sources. By targeting these sources, ground-level ozone may be decreased.

Current Status

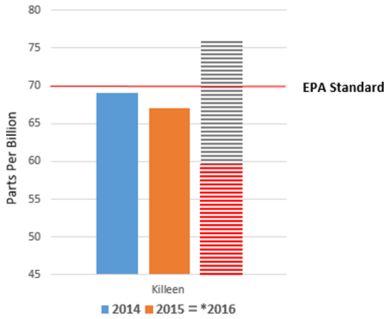
KTMPO is currently "in-attainment" with the ozone standard because the design value for 2014—2016 is below the 70 ppb NAAQS ozone standard.

Temple Georgia Ozone Monitor
Annual Values



*Highest annual ozone value to remain in compliance. Red shading represents 2016 to date.

Killeen Skylark Ozone Monitor
Annual Values



*Highest annual ozone value to remain in compliance. Red shading represents 2016 to date.

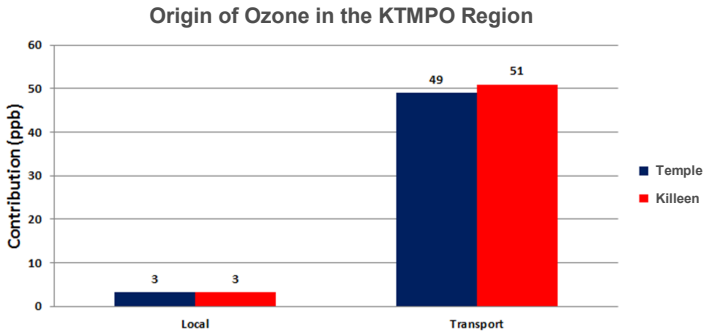
Design Value for 2014—2016 (as of June 1, 2016)
Temple: 66 ppb Killeen: 65 ppb

Steps for Calculating the Design Value

1. Ozone readings are taken every hour
2. Daily Value calculation = Highest 8-hour average for that day
3. Annual Value calculation = 4th highest daily value for the year
4. Design Value calculation = 3 year average of annual values

Where is ozone coming from?

Based on the computer model simulation, it appears that far more ozone is transported into the KTMPO region than what is locally produced.



The chart above depicts the average contribution to daily maximum 8-hour average ozone for the Temple and Killeen monitoring stations based on the results of the computer model simulation of ozone during June 2012.

How can I reduce ground-level ozone?

Even though a majority of ozone is being transported into the KTMPO region, if we do our share and reduce our local emissions this may enable us to remain "in-attainment." As we enter the summer months, it is up to you to help KTMPO remain in compliance. For ideas on how to decrease ground-level ozone, see the table below.

Do Your Share for Cleaner Air!

On Days when High Ozone Levels are Expected, Take these Extra Steps to Reduce Pollution:

- Choose a cleaner commute—share a ride to work or use public transportation.
- Combine errands and reduce trips—walk to errands when possible.
- Avoid excessive idling of your automobile—park your car and go inside instead of using the drive-thru window.
- Refuel your car in the evening when temperatures are cooling down.
- Conserve electricity and set air conditioners no lower than 78 degrees.
- Defer lawn and gardening chores that use gasoline-powered equipment, or wait until evening.

KILLEEN IS CONNECTING THE D·O·T·S

Killeen's growth is undeniable. With more people come more neighborhoods, schools, businesses and services. Connecting all of these people to all of these places has a major impact on infrastructure demands and is a high priority in creating a desirable quality of life.

Transportation infrastructure and function is consistently ranked a top resident priority. While residents don't always know how they work, they are keenly aware of when roads and traffic do and don't work. Road quality and traffic congestion have a large impact on overall community satisfaction.

Today, it is hard to find an area of Killeen that is not experiencing some phase of road construction. From highways to local roads, motorists are feeling the effects of more than $100 million in transportation projects. This is the result of a deliberate plan to connect the transportation DOTS.

D **Design a plan.** Connecting Killeen's present with its future requires detailed projections and thoughtful planning. Since 1984, the city has had a thoroughfare plan to serve as a guide map for our roadway system. The plan, which is a living document that grows and changes along with the city, incorporates all modes of travel including roads, sidewalks and bike paths. The latest update to the plan was completed in 2015 incorporating current projects and potential projects over the next 25 years. The plan addresses congestion, safety, improvements and connectivity. It establishes goals, growth projections, road classifications and priority projects. All of this information helps leaders continue on the road to the city's future.

O **Optimize resources.** The saying "together everyone achieves more" rings true in Killeen. With a detailed plan in place, the City is able to look at the big picture and strategically connect resources to projects. By combining bond funding with state and federal funding and private investment, the city is able to stretch local taxpayer dollars to complete more projects.

T **Think outside the box.** Gone are the days when a city could just borrow and build. Issuing bonds is still a primary funding source for major capital improvement projects, but Killeen increasingly utilizes alternative means. Two recent highway projects did just this by utilizing what is called "pass through financing." The new TxDOT program allowed the city to move forward on projects by advancing funding that the state repays over time. This new funding mechanism was used to raise SH 195 over Stagecoach Road and US 190 over Rosewood Drive. And because of thoughtful planning, the city was able to coordinate construction and realize cost savings by completing the highway and local projects simultaneously.

S **Spur economic growth.** Projects throughout Killeen have created new connections and opened new economic corridors. Downtown revitalization efforts brought road, sidewalk, lighting and landscaping improvements to the Historic District creating increased private business investment. Elms Road finally connects through SH 195 opening a major commercial intersection and making the east-west thoroughfare more accessible and thus more desirable for development. The construction of Bunny Trail has exploded residential and commercial growth in the southwest quadrant of town.

An exciting move towards future economic development is the designation of US Highway 190 as an interstate. Soon to be known as I-14, the Killeen stretch is currently under review to confirm that it is constructed to interstate standards and will be the first section with the new name. While the highway itself won't change, its potential will. Designation as an interstate opens the way to commercial businesses that require interstate access and creates eligibility for federal funding sources.

Transportation infrastructure is at the forefront of planning for Killeen's future. Whether constructing new roads or improving existing ones, we can all agree that a well-planned transportation network is paramount to getting where we want to go. Killeen is connecting the DOTS and getting great results.

KILLEEN IS CONNECTING THE D-O-T-S

THOROUGHFARE PLAN

The initial plan was adopted in 1984 and has been updated regularly since. The most recent update was completed in 2015 and assesses current infrastructure, growth projections, safety and connectivity. It incorporates the large number of projects completed since 2010 and proposes a prioritized list of future projects. The plan is available at www.KilleenTexas.gov/Transportation.

2010 LOCAL ROAD BOND PROJECTS

Stagecoach Road - widened to five lanes from SH 195 to Harker Heights	**nearing completion**
Bunny Trail - reconstructed and widened from Stan Schlueter Loop to SH 201	**complete**
Elms Road - connected from SH 195 to Carpet Lane	**complete**
Cunningham Road - reconstructed from Stan Schlueter Loop to Stagecoach Road	**complete**

PASS THROUGH PROJECTS

SH 195 - raised over Stagecoach Road, new grade separation and safety	**complete**
US 190 - raised over Rosewood, constructed Rosewood Drive from US 190 to FM 2410, widened FM 2410 to five lanes from Scott & White Drive to Harker Heights	**complete**

TRIMMIER ROAD PROJECT

Trimmier Road - widening to five lanes from Jasper Drive to Elms Road, reconfiguring access points, adding continuous sidewalks	**under construction**
Lowes Boulevard - extending west to Florence Road	**under construction**
WS Young Drive - created center turn lane and straightened road between Lowes Boulevard and Elms Road	**complete**

US HIGHWAY 190 PROJECTS

US 190 - widened to six lanes from Fort Hood Main Gate to WS Young Drive	**substantially complete**
US 190 – widening to six lanes from WS Young Drive to Harker Heights	**nearing completion**

INTERSTATE 14 DESIGNATION

US Highway 190 will receive official designation as Interstate 14 in the coming months adding it to the federal highway system. The designation will not only open the stretch through Killeen to federal funding sources, but it will also enhance economic development efforts when recruiting companies that require interstate access.

Congestion Management Process Update

What is a CMP?

A Congestion Management Process (CMP) is a method whereby the MPO evaluates the transportation network to identify congested areas and develop strategies to improve the network and reduce congestion. The CMP is intended to move these congestion management strategies into the funding and implementation stages. The CMP is a "living" document, continually evolving to address the results of performance measures, concerns of the community, new objectives and goals of the MPO, and up-to-date information on congestion issues.

Why do we need a CMP?

A CMP is required in Transportation Management Areas (TMA) which are metropolitan areas with a population greater than 200,000. KTMPO became a TMA in 2012 based on the 2010 census. The CMP will help us identify congested areas and develop a plan for improving these areas.

CMP Update

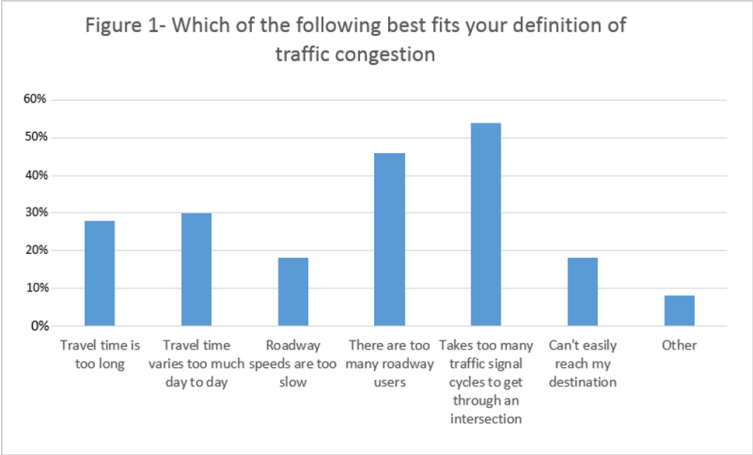
KTMPO is currently updating the CMP. A survey was conducted to gather feedback on how travelers define congestion and the location of perceived congestion hotspots in the KTMPO region. The survey was open for the month of March and 222 responses were received.

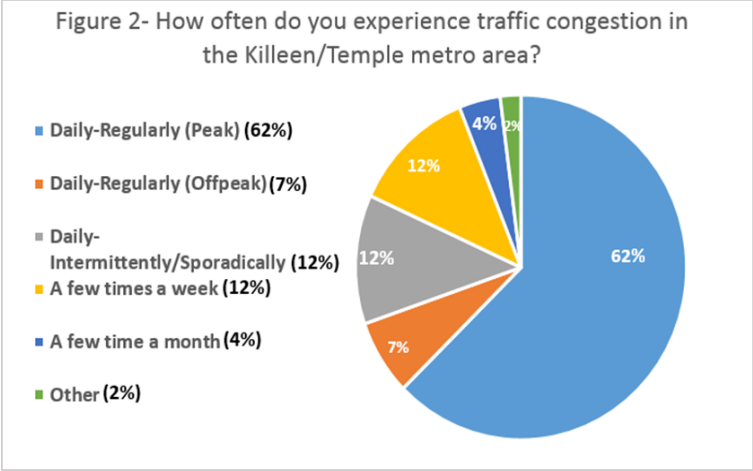
Survey Results:

In regard to overall congestion, 90% of the respondents who answered the survey agreed that traffic congestion was a significant problem in KTMPO. Figure 1 reflects how the public defines congestion. Frequency of congestion is reflected in Figure 2. 62% of the respondents experience traffic congestion in the KTMPO region daily during peak hours.

98% of the respondents reported that they most often travel in a personal car. Only one person of the 218 who answered the question reported taking an alternative mode of transportation (i.e. carpool). The biggest culprit for traffic congestion in the area, as pointed out by 54% of the respondents, was roadway construction—with inadequate roadway capacity (47%) and ineffective/poorly timed traffic signals(43%) being the next most identified causes of congestion.

The tables below state where survey respondents experience the most congestion.





Intersection	Mentions
WS Young @ US 190	19
FM 2410 @ US 190	15
Trimmier Rd @ US 190	11

Segment	Mentions
W. Adams Ave. (Temple)	19
WS Young Dr. (Killeen)	10
Trimmier Rd. (Killeen)	9

Overall, survey respondents typically experience around 15 minutes of delay when traveling during peak travel times which most often is a result of bad traffic signal timing or roadway construction. Congestion was reported to be concentrated at roads connecting to US 190 or I-35. In order to avoid congestion and reach their destination on time, survey results show that most respondents will leave earlier or later than they normally would or search for alternate routes.

What are the Next Steps?

Results collected from the survey and traffic data will be used to determine which corridors within the KTMPO region are heavily congested. Possible strategies and projects to decrease congestion in the designated corridors will be identified. KTMPO is anticipating the updated CMP to be completed in August. The survey is still open and feedback is greatly appreciated. To take the survey, please visit http://www.ktmpo.org/new-congestion-survey-available/.

US 190 FLYOVER is NOW OPEN!

In April, the new US 190 flyover opened. The flyover now provides a direct connection from northbound I-35 to westbound US 190.

Your Input is Valuable!

Do you know of an area that has bicycle/pedestrian, freight, or safety issues? We are in the process of developing web maps that will allow users to identify different transportation issues in the KTMPO Region. Your input can then be used to help determine projects that address these issues.

The bicycle/pedestrian map is currently up and running. Please visit http://www.ktmpo.org/planning/bike-and-pedestrian/ to view the map. Stay tuned for our freight and safety map.

2040 MTP Project Reprioritization

KTMPO is reprioritizing the project listing in the 2040 Metropolitan Transportation Plan (MTP). Each project in the project listing will be scored and ranked resulting in a prioritized list of projects to be constructed when funds do become available. KTMPO anticipates the final project listing to be completed in the fall.

Did You Participate in National Bike Month Events?

May was National Bike Month with May 4th as Bike to School Day, May 16th to May 20th as Bike to Work Week, and May 20th as Bike to Work Day. This initiative is to raise awareness of the benefits of biking. KTMPO encourages all to go out and bike throughout the year.

Ride of Silence: A worldwide event to honor cyclists who have been killed or injured while cycling on public roadways, held every year on May 18th. Photo above taken at Temple's Ride of Silence.

How You Can Get Involved

KTMPO MEETINGS: The public is encouraged to attend various KTMPO meetings including the Technical Advisory Committee (TAC) and Transportation Planning Policy Board (TPPB). The public is given an opportunity to speak at these meetings and have their voices heard. Please visit http://www.ktmpo.org/meetings/ for meeting dates.

ADVISORY COMMITTEES: We currently have a Bicycle/Pedestrian Advisory Committee and are creating a Freight Advisory Committee. If you wish to attend these meetings or serve on one of these committees, contact KTMPO staff for more details.

PUBLIC HEARINGS: Public hearings are held to receive comments on changes to KTMPO documents to include the Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP). Members of the public are encouraged to fill out a public comment form during public involvement periods. A general contact/comment form is also available at http://www.ktmpo.org/contact/.

KTMPO VOTING REPS: To contact your TAC and TPPB voting representatives please visit http://www.ktmpo.org/about/members/

CITY STAFF: The MPO recommends you work closely with your respective city planning staff and inform them of areas in their city needing improvement. City planners can then use the public input to design transportation projects that may moveforward when funding becomes available.

Meeting Dates:

Technical Advisory Committee (TAC):
- First Wednesday of every month

Transportation Planning Policy Board (TPPB):
- Third Wednesday of every month

For all KTMPO meeting dates, please visit:
http://www.ktmpo.org/meetings/

KTMPO Staff:

Cheryl Maxwell: KTMPO Planning Director
Christina Demirs: Senior Regional Planner
Jason Deckman: Regional Planner/GIS Technician
Jim Martin: Regional Planner
John Weber: Regional Planner

Have you Checked These Out?

Temple! RIDE BIKE
Bike Share Program
https://www.tcfound.org/bike-share/

the HOP™
http://www.takethehop.com/