

The FAN

Fresh Air News

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Rack and Roll and Ride

Did you know that one of the very best weapons for fighting air pollution, particularly ozone, is probably already in your garage? It's true! The humble bicycle is none other than a powerful pollution prosecutor. Bet you didn't know you had a super hero in your midst, did you? Each time you ride your bicycle instead of taking your car, you reduce carbon monoxide emissions, particulate matter, hydrocarbons, and nitrogen oxides, not to mention conserving oil and fuel.



In spite of all these benefits, many people are discouraged from biking because there are simply no appropriate places to safely and securely park a bicycle. Luckily, CTAIR can help you with that.



In order to encourage people to ride more, the CTAIR Advisory Committee dedicated funding for convenient and safe bicycle parking throughout the Central Texas region. A total of 250 customized bike racks were ordered and offered, free of charge, to the cities and counties within the CTCOG region. In return for the bicycle racks, participating entities agreed to install and maintain them. This was certainly a popular program, and on the following chart, the number of participants and the number of bicycle racks that were requested and received can be seen.

Rack and Roll and Ride continued

Participating Entity	Inverted U Racks	Bike Docks	Total Requested	Number of Bikes Accommodated
City of Salado	0	8	8	16
City of Nolanville	4	8	12	24
City of Cameron	6	5	11	22
City of Gatesville	6	5	11	22
City of Belton	20	5	25	50
Milam County	20	20	40	80
City of Killeen	12	13	25	50
City of Copperas Cove	10	0	10	20
City of Harker Heights	10	10	20	40
City of Lampasas	12	0	12	24
City of Temple	8	8	16	32
The HOP	14	0	14	28
Belton ISD	0	20	20	40
Coryell County	0	5	5	10
Total	122	107	229	458

Dock U Very Much

Two styles of racks were chosen for this program: the inverted U-rack and the bike dock. Both styles meet the bike rack criteria of the Association of Pedestrian and Bicycle Professionals (APBP):

- ◆ Supports the bike upright without putting stress on wheels—rack should provide two points of contact with the bike frame
- ◆ Accommodates a variety of bicycles and attachments
- ◆ Allows for locking of frame and at least one wheel with a U-lock
- ◆ Provides security—not easy to cut or bend
- ◆ Intuitive—people know what it is and how to use it¹

Did You Know....Ground-level ozone affects plants by damaging the leaves of trees and other plants, reducing forest growth, lowering crop yields and making plants more susceptible to diseases.

Source: <http://www.mnn.com/health/fitness-well-being/stories/ozone-health-and-environmental-effects>

Dock U Very Much continued

Both styles were also able to be customized with CTAIR's website and logo. This is where the similarities end, however. The inverted U-rack, also known as a staple rack, is fairly common. It looks like, you guessed it, an upside down U. One rack accommodates two bicycles, with each bike placed parallel to the rack and facing opposite each other. A helpful illustration is printed on each U-rack reminding you to "Lock up Smart." The best way to "Lock Up Smart?" Use a U lock (or two) to secure a wheel and the frame to the bike rack.

The Park and Facilities Catalog, the business from which CTAIR purchased the U-racks, was so impressed with this program, that they featured the story in their blog. You can read it at this link: <https://www.theparkcatalog.com/blog/custom-bike-racks-reduce-ozone/>.

Our second style of bike rack will definitely catch your eye, the main reason being is that it is quite eccentric looking. The Varsity Bike Dock features an angled pole set upon two wheel troughs. It is neither straight nor flush to the ground—giving the appearance that it has been installed in a haphazard manner. Don't worry, you'll get used to its drunken stance. The wheel troughs are elevated to make debris removal easy and to prevent rust and corrosion. They also cradle the wheel of the bike—keeping it from falling over. The angled design allows two bikes to be locked up side by side without handlebar entanglement.² Scan the QR code on top of the dock, and you will be treated to an informative video about the use and design of the dock. **Continued on back page.**



U Racks at South Park Pool in Copperas Cove



U Racks at City Hall in Nolanville

Did You Know....According to the American Lung Association's Annual Report, Cheyenne, Wyoming (pop 88,854) has the cleanest air in the United States. On the flip side, residents of Bakersfield, California (pop 874,589) breathe some of the most polluted air in the country.

Source: <http://www.health.com/health/gallery/0,,20496048,00.html>

Technically Speaking Untechnically



Don't skip this section. Please don't let the term "technical" scare you into thinking that this article is going to be extremely boring and filled with evil math that resembles laundry care symbols. Rest assured that this will be the most non-technical article about technical studies that you will ever read. So, please, continue reading. Your knowledge about air quality will only be expanded—no math required.

CTAIR receives funding from the Texas Legislature's Rider 7 State and Local Air Quality Planning Program. This funding allows CTAIR to establish outreach and education programs/projects for the general public and enables CTAIR to conduct studies that identify, inventory, and monitor pollution levels; model pollution levels; and identify, quantify, and implement appropriate pollution controls. CTAIR contracted with Ramboll Environ, an international environmental, safety, and health sciences consulting firm, to conduct these technical studies.

Photochemical Modeling

Once you start hearing about ground level ozone pollution, you will invariably hear the term "photochemical modeling" thrown about in the conversation. Don't panic. It sounds fancy, but it is really just a tool that estimates levels of air pollution like ozone. The first thing to keep in mind is that these models aren't tangible—they are computer models or simulations. Photochemical is referring to a photochemical reaction or a molecular reaction triggered by sunlight. Simply stated, photochemical modeling is nothing more than a simulation of a chemical reaction--illustrating where and when air pollution forms, accumulates, and dissipates.³ Models accomplish this by simulating the processes that are most important in generating pollution.

How Does it Work?

It's complicated. Very complicated. It involves highly technical mathematical equations characterizing the chemical and physical processes in the atmosphere, a grid system that divides the atmosphere into thousands of boxes, meteorological data, and an incantation by Lord Voldemort. O.K. This last one may not be true, just keep in mind that understanding all of these technical details is not as important as understanding the end result or what the models can demonstrate.

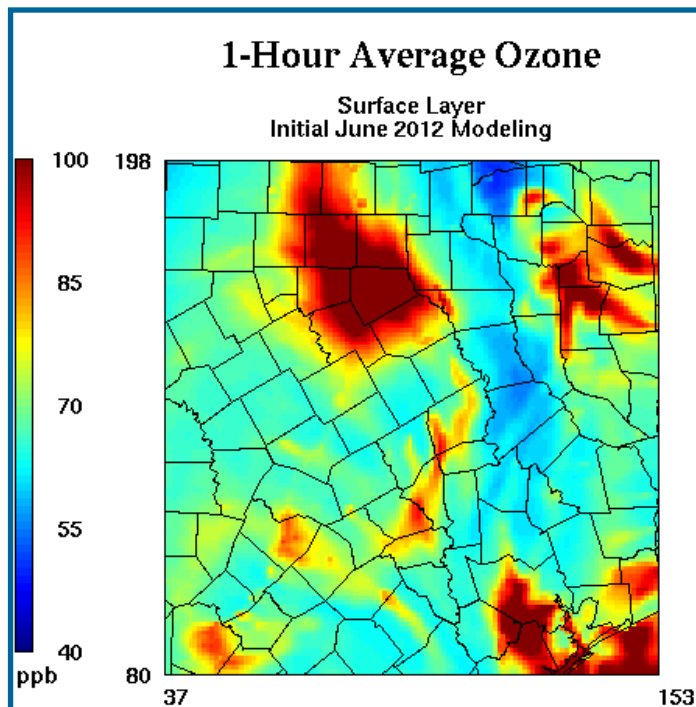
Someone who does understand all of the technical details enters all of the parameters the model will need: region of interest, sources of emissions (industrial sources, cars, trucks, locomotives, point source, nonpoint source, etc.), photochemical reactions or the chemical process that results in the formation of ozone, and data from meteorological models (similar to those relied upon by weather forecasters) so that winds that carry pollutants to and from an area are accurately characterized.

Did You Know....A new study published in Environmental Chemistry Letters finds that certain essential oils (anise, fennel, basil, clove bud, and ylang-ylang) may help counteract air pollution in bronchial and liver cells.

Source: Prevention Magazine, December 2016

Technically Speaking Untechnically continued

The model can then calculate the changes of pollutant concentrations, such as ozone, by using all of those parameters that were just discussed—now turned into a complicated set of mathematical equations.^{4,5}



Now you can ask the model to simulate a particular scenario for you. For example, if a new power plant were to be built in your city, how would its emissions affect the region? What if the new power plant was clean burning, and the old power plant shut down? You can see how useful this model would be for predicting not only increases in air pollution, but also demonstrating how effective (or not) pollution abatement measures might be.

The picture to the left is a still shot of ozone photochemical modeling around the Central Texas area. The colors correspond to the levels (ppb) of ozone. In reality, this shot would be part of an animation which would demonstrate the movement and concentrations of ozone over time.

Photochemical Modeling in the CTAIR Region

The photochemical modeling that will be performed in the CTAIR region is outlined in the Photochemical Modeling Protocol and can be found on the CTAIR website. This document simply summarizes all the work to be done. It outlines the models, methods, schedule, and organizational structure to be used to conduct photochemical modeling activities for the CTAIR region.

Our region is heavily influenced by transported ozone or ozone that is formed outside of the CTAIR region and carried here by winds. It is important to know how much ozone is formed both inside the region and how much is transported here. In order to determine this, photochemical modeling will be used to examine representative ozone monitors in Texas.

Photochemical modeling will further be used for air quality planning studies. Ozone impacts from the new Panda Temple Generating Station will be estimated, as well as impacts of emissions control measures.

These studies will not be completed until August 2017. Once they are available, all findings will be posted on the CTAIR website. Until then, use the time to impress your friends with your newfound photochemical modeling knowledge.

Did You Know....According to an American Lung Association report, air quality may have improved in recent years, but more than half of people in the United States still breathe air dirty enough to cause health problems.

Source: <http://www.health.com/health/gallery/0,,20490855,00.html>

DO YOUR SHARE FOR CLEANER AIR!

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Be sure to visit
our website
and take our
brief survey!



Rack and Roll and Ride continued

Future of the Program

Our goal is to make this a continuing project, placing more and more bicycle racks throughout the region as demand increases. If you know of an area that would benefit from a bicycle rack, please let us know. Go to the Killeen-Temple Metropolitan Planning Organization (KTMPO) website and enter your suggestion on their interactive bicycle and pedestrian map: <http://www.ktmpo.org/roadway/maps-and-data/>. You can also view current bicycle parking and keep abreast of new installations.

Bicycling is easy, fun, good for you, and good for the planet. We hope you are inspired to consider this mode of transportation the next time you have a few errands to run. Hopefully, with your help, Central Texas will be well on its way to establishing a bicycle culture—a culture that recognizes that clean air is vital to all, and that everyone is responsible for ensuring that air pollution is gone with the Schwinn. (sorry)



Bike Docks at the Community Center Park in Nolanville



CTAIR Bike Dock

Resources:

¹Essentials of Bike Parking: Selecting and Installing Bike Parking that Works (2015)

²<http://www.groundcontrolsystems.com/products/varsity-bike-dock/>

³https://www.tceq.texas.gov/airquality/airmod/overview/am_pm.html

⁴<https://www3.epa.gov/scram001/photochemicalindex.htm>