



TEXAS EMERGENCY MANAGEMENT ONLINE

2016 Vol. 63 No. 4

The Texas Division of Emergency Management is accepting article submissions for The Texas Emergency Management Online (TEMO) newsletter. If you have an idea for a topic or would like to submit an article, contact [Mike Jones](#) at 512-424-7050.

MESSAGE FROM THE CHIEF – April 2016

Back in the mid 1800s, Indianola, Texas was a flourishing metropolitan area on the edge of the alluring Matagorda Bay. The developing commercial center was well on its way to becoming a port rival to Galveston and New Orleans. But, after the one-two punch from a couple of powerful hurricanes, anyone who was left packed up and—in some cases, house and all—moved inland.

Those enterprising Europeans who had opened up shop in Indianola perhaps were not aware of or just ignored the potential fury the Gulf of Mexico can bring to bear. Perhaps they had no choice but to stay.



[Just about all that remains of Indianola, Texas](#)

Like Indianola, most of Texas is blue skies and vast horizons.

But, as long as people have lived anywhere in Texas, they have lived in areas that, at times, can be dangerous, destructive and deadly. Many may not have had the choice to move or were too stubborn to give up on their homes, so they stayed. And now, even though they may be aware of what the weather can be like here, people are moving here in droves.



Today, large communities are rapidly expanding in many regions around Texas that have up to now been wild or rural. Urban sprawl is creating major cities out of former farm and ranch towns. The effects of a wildfire, a flood, a storm surge or a tornado is now compounded by rapidly growing, dense population and commerce centers. In 1970, when the population of Hays County, for example, was around 28,000, a flash flood certainly had the potential to be a serious event. Last year, two flash floods affected the lives of almost 200,000 people. And, although Hays County is one of the fastest growing in Texas, it is nowhere near the largest. The once sleepy, little Collin County is

projected to have a population of around 1.4 million people by 2020.

It was one thing to pack up the remnants of Indianola and run to higher ground. It is unthinkable, of course, to consider permanently moving entire coastal communities that exist in Texas. As long as we're going to be here, we will have to get better at predicting and understanding severe weather; better at designing and building our homes, our schools and our work places; better at planning our disaster preparedness and our response; and better at educating the Texans, with and without draws, who are determined to live here.

Arranging the Texas Emergency Management Conference Exhibit Hall

For the last five years, Scott Sutherland has been in charge of organizing all of the companies, local and state agencies as well as nonprofit and voluntary organizations that exhibit at the Texas Emergency Management Conference. This year, the 183,712 square foot, brand new Exhibit Hall No. 2 at the Henry B. Gonzalez Convention Center in San Antonio will be full of staff, displays, equipment and vehicles large and small.

For Scott, arranging the exhibit hall for the Texas Emergency Management Conference is fairly straight forward. At times, though, it can get a little tricky.



Private sector exhibitors naturally want to have the best locations on the exhibit floor. And they are charged accordingly for them. These locations tend to be high-traffic areas near the conference registration desk and around the Texas Division Emergency Management lounge. Many of the nonprofit organizations that showcase some of their emergency response assets have an entirely different perception as to what constitutes a good location.



For agencies with emergency response assets, a good exhibit floor location will be one that allows for quick egress from the exhibit hall should any of their response assets be deployed if an emergency occurs while the conference is underway. These displays must be located on the floor in a way that ensures safe, easy access to at least one exit with minimal disruption to other displays, while at the same time making them appear to be a cohesive, integrated part of the overall floor display. That's the tricky part.

Many possible floor layouts have to be considered when there is a limited supply of doors and a maximum number of exhibitors who require quick access at all times to those doors. Exhibit Hall No. 2 has two entry/egress doors. For an emergency management conference this can easily be more than half of the exhibits. It is not uncommon to have to release an asset or two from the exhibit hall during daylight hours. On occasion, multiple assets from large floor exhibits have had to be disassembled, packed up and released in middle of the night. Either way, coordination with the convention center and local police is a key factor to ensuring a safe, efficient egress from the exhibit hall.

It can sometimes be difficult to explain to a prospective exhibitor why they cannot choose their placement on the exhibit floor. Fortunately the majority understand, since very often they too are displaying emergency response equipment and vehicles that may be called into action on short notice.

Scott ensures that all exhibitors learn and follow conference center rules and fire department regulations. Every year a move-in, set-up and move-out schedule is developed, and the San Antonio Fire Department fire regulations and assembly occupancies for the conference center is distributed. Some rules mandate what materials may be used to construct displays, smoke detector use, access to entryways and exits as well as fire and safety considerations that vehicle exhibitors must follow.

Attendees at the conference can see antique as well as cutting edge fire engines and ambulances. Large, mobile kitchens, mobile communication centers and mobile medical facilities are set up. The latest technology developed for emergency communications, lighting, first response and the like is displayed and demonstrated. And TDEM sets up and operates a remote State Operating Center, "SOC in a Box." Each year the exhibit hall is indeed an interesting and fascinating place to visit.

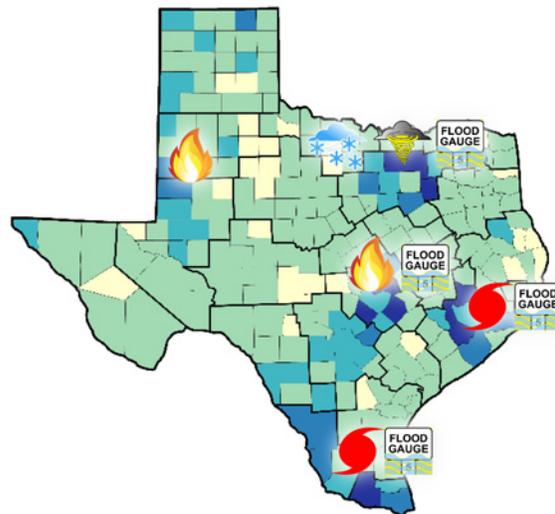


Rapid Population Growth and Emergency Management

The Texas population is exploding. The state demographer's office predicts that the population of Texas could double by 2050. Many of the counties around the large metropolitan areas of Dallas, Tarrant, Harris, Bexar and Travis counties are some of the fastest growing areas in the country and are quickly becoming some of the largest population centers in the state. What were once sleepy farm and ranch towns are now becoming large, progressive cities, and more and more people are living in areas that have long been prone to severe and dangerous weather events.

Population growth brings with it opportunities for positive change. Increased revenues from new business and industry along with increased tourism give cities the funds for municipal improvements and a higher standard of living along with a better infrastructure, better parks and better schools. But all that comes with a price.

Very often the infrastructure just can't keep up. Millions of Texans suffer daily in some of the worst traffic in the country. Students attend overcrowded schools while districts struggle to build new facilities quickly enough. Emergency managers in these high-growth areas also are facing challenges never before seen at this scale.



Where the population is growing and some of the weather hazards typical to the area. Darker areas denote counties with higher population growth.

During rapid growth, the changing demographics of the population may be difficult to track. At first, this may not seem important, but a very large proportion of people moving to Texas are not just from other states; they're from other countries. These new Texans may underestimate just how severe the weather can get in Texas. They may have never experienced a Central Texas flash flood, a North Texas ice storm, a Gulf Coast hurricane or a Goliath blizzard. They also may be used to different emergency alert procedures and warnings, and chances are their first language is not English.

As populations grow, some jurisdictions that have historically performed emergency management requirements as a collateral duty now must recruit and hire full-time emergency management coordinators or entire emergency management departments.

Hays County is one of the fastest growing counties in the United States. In 1970 its population was 27,642. In 2010 it grew to 157,127 and is still growing. San Marcos is the fastest growing city in the country.

	1990	2010
Buda	498	7,295
Kyle	1,629	28,016
San Marcos	18,860	44,894

Suburban counties in Texas are growing at record paces. For example, by 2020 the projected population for Williamson County is predicted to be as high as 640,000. Fort Bend County should have around 750,000 by the same time and the once sleepy, little Collin County will be packed with 1.4 million people.

Those communities that have full time emergency management may need to look at hiring regional coordinators to coordinate responses for neighboring jurisdictions. A regional emergency management operations coordinator can focus on plan review and development, training staff on the National Incident Management System (NIMS), the Incident Command System (ICS), and the roles and responsibilities in an emergency operations center (EOC). Exercise planning and development will need to incorporate a larger

scope and even consider scenarios for threats to the community that may not have existed before. Mutual aid agreements and contracts with other rapidly growing neighboring communities will probably present more challenges.

Complexity of Population Growth

Harris County is the nation's third largest county with more than 4.4 million residents. It is also one of the fastest growing counties. The county is comprised of 34 cities, 56 fire departments, 125 law-enforcement agencies, 22 major watersheds and more than 1,200 municipal and public utility districts.

Emergency planners in rapidly growing areas must consider a rapidly expanding infrastructure and how it will affect emergency preparedness. Emergency plans must consider how new road and highway construction along with improvement to existing roads will affect an isolated or communitywide evacuation order out of and into their community. New fire stations and other emergency response facilities spring up in new developments. Even the structure of the city government itself will change with growth, and planners

must account for these changes.

A community's sheltering plan may require constant scrutiny. The inability to evacuate, whether because of limited roads or little to no notice, may create the need for mass sheltering. The shelters must not only accommodate the increase in demand, but may also need to consider changes in policy or procedure. For example, security at shelters may become necessary where none was required in the past. Communities must also consider the complex requirements of a growing special needs population as well as an increase in pets and other animals that will require sheltering.

During population growth, communities may see an increase in Voluntary Organizations Active in Disaster (VOAD). These organizations have the best interest of their communities at heart. However, a lack of coordination between volunteer organizations and community officials can create confusion for responders and the general population.

Communicating with citizens and warning them of pending emergencies during rapid population growth creates additional concerns. For example, sections of the community still under development may not have warning systems in place or the new population may not be aware of how the warning systems are used for sharing information. A community's homeless population may change, both in number and location. Communities must create avenues in which to communicate under these circumstances. Sometimes rapid expansion of cities and towns require consideration of whether or not to update warning systems communitywide.

As Texas population centers continue to grow at the current rate, planning and responding to disasters that are creating ever-increasing threats to areas that are not only densely populated but also cover very large areas, coordination among numerous large communities is critical, and sharing resources and allocating personnel is becoming even more vital. According to Doug Bass, Chief of Emergency Services in Dallas County, the North Central Texas Council of Governments (COG) has become a key role player in that coordination. It was clear how important the COG's role is in this coordination when record flooding inundated the Metroplex in 2015 and deadly tornadoes struck in December.

Finally, a rapidly increasing population will bring a rapidly increasing demand for natural resources, such as water resources and electricity, and the restoration of these resources as quickly as possible following an emergency or disaster. The effects of a drought on a community and its water resources will become more extreme and of course affect many more people during rapid population growth, and emergency planners will need to consider these issues as they prepare and review their emergency preparedness plans.

WILLIAMSON COUNTY has experienced several years of sustained growth both in residential construction and new business. There are a number of issues facing emergency managers in Williamson County related to growth, but the top two in my opinion are the increases in impervious ground cover and urban sprawl into the Wildland Urban Interface (WUI). Williamson County has a long history of flash flood events and the continued introduction of construction along fragile watersheds will only exacerbate the flooding issues. Equally as concerning is the continued construction into areas of the county that are at an elevated risk of exposure to wildfire. These two issues are rapidly evolving and will certainly increase the population at risk and the risk to public safety professionals charged with protecting life and property. The best way to manage this growth is through responsive planning and effective public outreach programs. Williamson County maintains an active presence through social media and other outreach venues. The difficulty is validation of the effectiveness of the outreach programs. Finding ways to engage the population in a manner that leads to action prior to an event is challenging, as everyone is busy with day-to-day life.

Jarred Thomas, CEM®, TEM®
Emergency Management Coordinator
Williamson County Office of Emergency Management

Top Ten Deadliest Tornadoes in Texas (since 1900)

Nothing embodies severe weather quite like a tornado, and no other state has recorded more tornadoes than Texas. On average 132 tornadoes touchdown in Texas every year. Although tornadoes are most common between April and June, they can occur at any time of the year. There have been off-season tornado outbreak of tornadoes, particularly in December 2006 and as recently as 2015. The highest number of tornadoes in Texas in a single year is 232, which occurred in 1967, the same year Hurricane Beulah made landfall. The storm spawned 115 tornadoes in a five-day period. Here is the list of the ten deadliest tornadoes in Texas history as compiled by the National Weather Service.

NUMBER ONE - THE WACO TORNADO - MAY 11, 1953

The deadliest tornado in Texas history struck shortly after 4 p.m. on the day after Mother's Day in 1953. It touched down north of the town of Lorena and began moving north-northeast toward Waco. On a radar screen at Texas A&M University, the tornadic storm developed a hook shaped echo. Nearly a third of a mile wide, the massive F5 tornado crossed Waco on a path that ran almost south to north, killing 114 people and injuring 597. It destroyed around 600 homes and other buildings and damaged over 1,000, including 2,000 vehicles. Some of the survivors had to wait up to 14 hours for rescue.

As a result of the deadly Waco twister, Texas A&M University and the United States Weather Bureau (now the National Weather Service) organized the [Texas Tornado Warning Conference](#) in June 1953 to discuss tornado warning procedures and weather radar. The purpose of the conference was to use all available resources from the federal government, academic communities and the private sector to devise an efficient tornado warning system for severe weather. The future goal was to prevent death tolls like that of the Waco tornado.

The conference led to improved communications between numerous agencies, an early development of the [SKYWARN](#) storm spotter program and a national radar network.

NUMBER TWO - THE GOLIAD TORNADO - MAY 18, 1902

The second deadliest tornado in Texas killed 114 people and injured 250. It is believed to have touched down just before 4 p.m. near Berclair, about 15 miles southwest of Goliad, and moved on a track toward the northeast. About an eighth of a mile wide, the F4 tornado crossed the San Antonio River southwest of Goliad and moved into the town. Most of the deaths occurred in the west part of Goliad, where hundreds of buildings were destroyed.



Built as a showcase building in 1910, the ALICO building was about the only building in downtown Waco that survived the storm. The steel-framed building reportedly swayed several feet in the tornadic winds, but otherwise suffered only minimal damage. It is still a Waco icon.

NUMBER THREE - THE ROCKSPRINGS TORNADO - APRIL 12, 1927

The third deadliest tornado in Texas history, like the first and second, occurred well south of what is generally considered Tornado Alley. This F5 tornado touched down three miles to the northwest of Rocksprings, in Edwards County, and moved toward the southeast. Nearly one mile wide as it crossed Rocksprings, it destroyed 235 of the 247 buildings in the town. It killed 74 people and injured 205, almost a third of the population. Clearing Rocksprings, it continued southeastward at least 35 miles and perhaps as far as 65 miles.

NUMBER FOUR - THE GLAZIER-HIGGINS-WOODWARD TORNADOES - APRIL 09, 1947

The fourth deadliest tornado in Texas history also moved through western Oklahoma and dissipated near St. Leo, Kansas. Part of a family of deadly twisters, it touched down five miles northwest of Pampa and crossed just northwest of Canadian, nearly parallel to U.S. Highway 60. Its funnel was reported at times to be between one and two miles wide. Just before crossing into Oklahoma, it destroyed the town of Glazier and most of the town of Higgins. It killed 17 and injured 40 in Glazier; 51 were killed and 232 injured in Higgins. Final totals across three states were 181 killed and 970 injured.

NUMBER FIVE - THE WICHITA FALLS TORNADO - APRIL 10, 1979

One of the most infamous of Texas Tornadoes, this huge F4 first touched down about three miles northeast of Holliday, a town lying southwest of Wichita Falls, where it damaged homes and businesses. Crossing into Wichita Falls, it severely damaged Memorial Stadium, followed by McNeil Junior High and then entered the residential part of the city. It damaged a shopping center and numerous vehicles, then proceeded across U.S. Highway 287 where it destroyed additional vehicles. At times it was a mile



1979 Wichita Falls tornado. Courtesy of NOAA

and a half wide. It continued northeast from Wichita Falls, past the Red River and into Oklahoma where it dissipated north of Waurika. It killed 42 people in Wichita Falls, 25 of those deaths were vehicle related. It caused over 1,700 injuries, destroyed over 3,000 homes and left 20,000 homeless.

NUMBER SIX - THE FROST TORNADO - MAY 06, 1930

This F4 tornado touched down near Bynum in Hill County, crossed into Navarro County east of Mertens, struck the town of Frost, where it killed at least 25 people. Continuing toward the northeast, it caused additional deaths south of Rankin and south of Bardwell. It then crossed into Ellis County and killed citizens of Ennis. Its total death toll was 41, with over 200 persons injured.

NUMBER SEVEN - THE KARNES-DEWITT TORNADO - MAY 06, 1930

Tornado number seven occurred on the same day as the Frost tornado. It touched down three miles northwest of Kenedy in Karnes County. Moving to the east-northeast, it crossed three miles south of Runge and dissipated three miles south of Nordheim. Along its path, this F4 tornado encountered numerous weakly constructed homes and shelters that provided little safety. This is the reason the death toll was high, with 36 and 60 injuries.

NUMBER EIGHT - THE ZEPHYR TORNADO - MAY 30, 1909

Tornado number eight formed somewhere close to the town of Zephyr in Brown County near midnight and destroyed large parts of the town during the early morning hours, leaving little to view except vacant lots. Not much is known of the tornado path, except that most deaths occurred in the residential areas on the south and east sides of the town. Rated an F4, the

tornado damaged nearly 50 homes, six businesses, two churches and a high school. It killed 34 and injured 70.

NUMBER NINE - THE SARAGOSA TORNADO - MAY 22, 1987

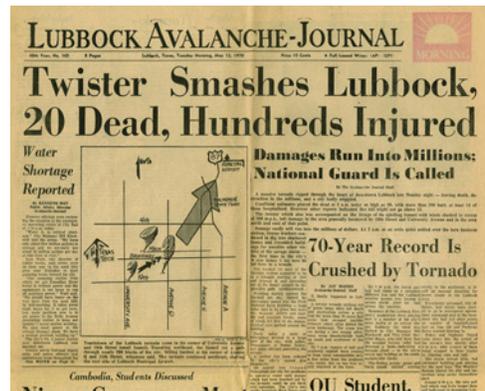
Tornado number nine touched down two miles southwest of Saragosa in Reeves County, and moved northeastward for three miles. A half-mile wide as it crossed over Saragosa, the F4 tornado destroyed more than 80 percent of the town, killed 30 residents and injured 121. Twenty-two of the deaths occurred at the Guadalupe Hall, where a group had gathered for a children's graduation ceremony. Most of these deaths were among the parents and grandparents who shielded children from the debris with their bodies.

TORNADO NUMBER TEN - THE JARRELL TORNADO - MAY 27, 1997

The Jarrell tornado is the last confirmed F5 tornado in the state of Texas. This tornado followed an unusual path, moving to the south-southwest and has revived studies on the role of gravity waves on thunderstorm initiation. This storm killed 27 people, injured 12 more and and killed hundreds of cattle. More than 40 homes were completely destroyed, some of which were completely removed from their foundations.

HONORABLE MENTION - THE LUBBOCK TORNADO - MAY 11, 1970

The Lubbock tornado formed over the southwest corner of the city and touched down just south of the downtown area. It tracked toward the northeast near U.S. Highway 87, just east of the Texas Tech University campus and continued for eight miles before lifting. It destroyed over 1,000 homes and apartment units, 10,000 vehicles and over 100 aircraft. It killed 26 people and injured 500. This tornado was studied and mapped in detail by Professor Fujita, and was an important key in the development of his Fujita Scale. It was rated F5 on this scale.



1970 Lubbock Avalanche-Journal.
Courtesy Texas Tech University.

APRIL NEWS BRIEFS

2016 Texas Demography Conference

May 17 & 18, 2016 in Austin, Texas



Please plan to join us in Austin where the program will focus on significant demographic trends and drivers of demographic change. The [Texas Demography Conference](#) provides opportunities to learn about and discuss demographic current issues, how and where to access and use demographic data, renew acquaintances and meet others who share your interests. Planners, policy and research analysts, consultants, academics, geographers and anyone who works with Texas demographic data will find participation informative and useful.

This annual conference is sponsored by the Texas State Data Center (SDC) and Business and Industry Data Center (BIDC) Programs.

Wildfire Season

It may be strange to think about wildfires after all the severe weather and flooding we've experienced recently in vast areas of Texas. But some parts of Texas are in some level of drought status, and summer is right around the corner. This should have everyone on alert and stepping up preparedness for the threat for potential wildfires.

Wildfire awareness and safety is for all Texans. According to the Texas A&M Forest Service, people start 95 percent of all wildfires in Texas, and over 80 percent of those wildfires occur within two miles of a community. With our population growth, urban area wildfires are becoming more and more common and dangerous. When the conditions are right, it doesn't take much for a tossed cigarette, a hot exhaust, an unwatched campfire or a number of other things to ignite a major wildfire.

Take time now to make or update your Wildfire Action Plan and to make sure that you, your family and your community are ready to act in the event of a wildfire.

[Ready, Set, Go!](#)

[Be Ready! Be Firewise!](#)

[Texas A&M Forest Service - Wildfire Danger](#)

[TDEM Wildfire Awareness](#)

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