



SECTION 4. RISK ASSESSMENT

4.3 Hazard Profiles

4.3.10 Wildfire

The following section provides the hazard profile and vulnerability assessment for the wildfire hazard in Fort Bend County.

Hazard Profile

Hazard Description

Wildfire is defined as any fire burning wildland vegetation fuels; it includes prescribed fire, wildland fire use, and wildfire. Prescribed fires are planned fires started by land managers to accomplish specific natural resource objectives. Fires that occur from natural causes, such as lightning, that are then used to achieve management purposes under carefully controlled conditions with minimal suppression costs are known as wildland fire use (WFU) (National Park Service n.d.).

Wildfires are unwanted and unplanned fires that result from natural ignition, unauthorized human-caused fire, escaped WFU, or escaped prescribed fire (National Park Service n.d.).

A wildland-urban interface (WUI) fire is a wildfire occurring in the wildland-urban interface. The WUI is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk from wildfire.

Prescribed burning, also known as controlled burning, is the deliberate use of fire under specified and controlled conditions. Prescribed burning is used by forest management professionals and individual landowners to accomplish one or more of the following tasks:

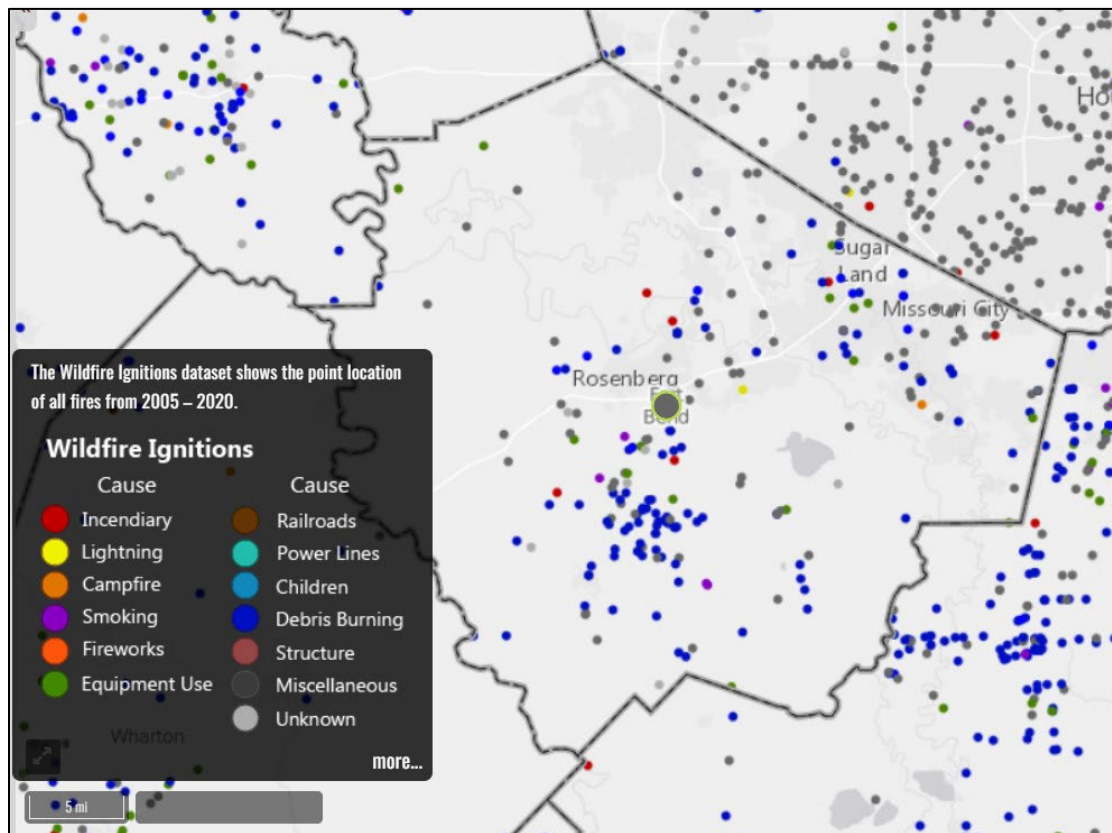
- Fuel Reduction – The reduction of accumulated grass, weeds, pine needles, and hardwood leaves. This type of vegetation can encourage wildfires in young stands and hinder regeneration of older stands.
- Hardwood Control – Prevents hardwood trees from competing with pines for nutrients and moisture; impeding visibility and access through the stands; and interfering with natural regeneration in areas better suited for growing pines (National Park Service n.d.).

Location

While they are not confined to any specific geographic location and can vary greatly in terms of size, location, intensity, and duration, wildfires are most likely to occur in open grasslands. The threat to people and property is greater in the fringe areas where developed areas meet open grasslands (U.S. Forest Service 2020). See Figure 4.3.10-1 for wildfire ignition locations in Fort Bend County. According to Texas A&M Forest Service, none of those wildfires were considered “large”, which means none of them reached 500 acres (TAMU 2021). Figure 4.3.10-2 shows the location of the low and moderate threat levels for the wildfire hazard in Fort Bend County. To view the wildfire hazard area for individual jurisdictions, refer to Section 9, Jurisdictional Annexes.



Figure 4.3.10-1. Wildfire Ignition Locations in Fort Bend County, 2005–2020



Source: Texas A&M Forest Service 2022

Wildfire Threat is used to determine the likelihood of a wildfire occurring or burning in an area. Threat is derived by combining a number of landscape characteristics including surface fuels and canopy fuels, resultant fire behavior, historical fire occurrence, percentile weather derived from historical weather observations, and terrain conditions. Wildfire Threat is categorized into seven class (1 through 7). Figure 4.3.10-2 shows the wildfire threat hazard areas, as defined by Texas A&M Forest Service, in Fort Bend County. A majority of the County is considered as having low threat or non-burnable areas, with small areas of low to moderate.

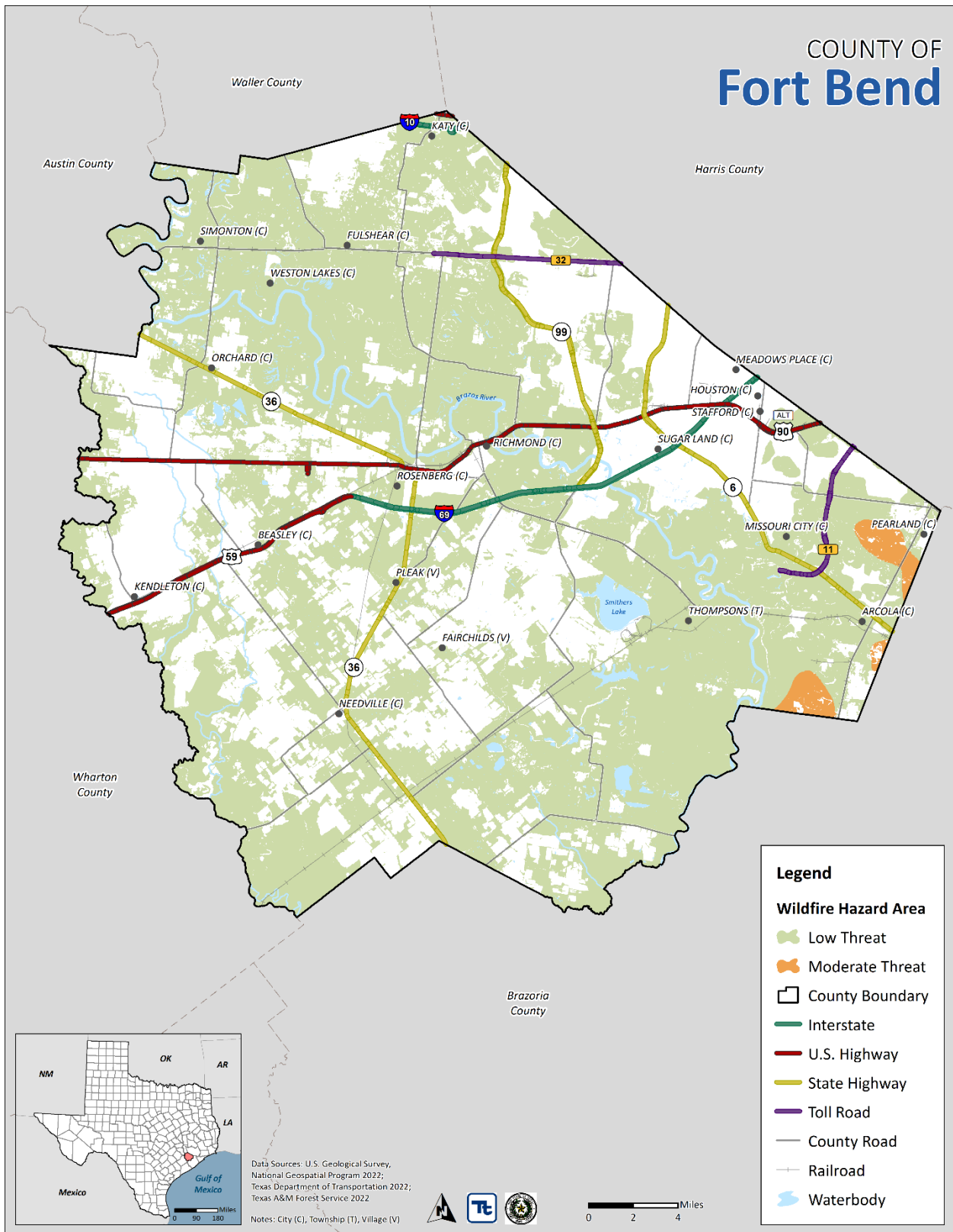
Table 4.3.10-1. Total Wildfire Threat Areas in the Planning Area

Wildfire Threat Class	Total Acres in the Wildfire Threat Area	% of Total Land Area
1 (Low)	335,785	59.2 %
2 (Low to Moderate)	4,950	0.9 %
3 (Moderate)	0	0.0 %
4 (Moderate to High)	0	0.0 %
5 (High)	0	0.0 %
6 (High to Very High)	0	0.0 %
7 (Very High)	0	0.0 %
Non-Burnable	226,094	39.9 %
Total	566,829	100.0 %

Source: Texas A&M 2023



Figure 4.3.10-2. Location of the Low and Moderate Threat to Wildfires in Fort Bend County





Extent

The Characteristic Fire Intensity Scale is the reported scale on the Texas A&M Forest Service Texas Wildfire Risk Application portal. This scale specifically identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on weighted average of four percentile weather categories. Similar to the Richter scale for earthquakes, FIS provides a standard scale to measure potential wildfire intensity. FIS consist of 5 classes where the order of magnitude between classes is ten-fold. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very high wildfire intensities. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very high wildfire intensities (Texas A&M Forest Service 2022). Fort Bend County is identified as being in low to moderate areas and can expect to see short-range, small fires with minimal damages.

Table 4.3.10-2. Characteristic Fire Intensity Scale

FIS Class	Description
Class 1 Very Low	Very small, discontinuous flames, usually less than one foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.
Class 2 Low	Small flames, usually less than two feet long; small amount of very short-range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.
Class 3 Moderate	Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.
Class 4 High	Large flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.
Class 5 Very High	Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Source: Texas A&M Forest Service 2022

Since 2017, 48 wildfires have been reported in the County, burning over 400 acres. Based on the number of reported wildfires, the County can expect at least nine wildfires of any magnitude, each year. A majority of those wildfires will be small scale, burning less than 50 acres.

Worst-Case Scenario

A worst-case scenario would involve a wildfire during a high wind event, preceded by prolonged elevated temperatures and drought; however, because historical records are insufficient, it is not possible to use previous records to project-specific damages for a worst-case scenario in the future. Nevertheless, this type of event would have both short- and long-term effects on the planning area. The fire could burn structures and infrastructure, causing power and communication outages. Parts of the planning area could experience limited ingress and egress as transportation corridors are blocked by fire. Air quality would be affected and could pose serious risks for the elderly and those with compromised respiratory systems.

Previous Occurrences and Losses

FEMA Disaster Declarations

Between 1988 and 2022, Texas had 250 FEMA disaster (DR), emergency (EM), and fire management (FM) declarations for wildfire. Fort Bend County was included in three declarations for wildfire-related events (FEMA





2022). Detailed information about the declared DR and EM disasters since 1954 is provided in Section 3 (County Profile).

Table 4.3.10-3. FEMA Disaster Declarations for Wildfire in Fort Bend County (1954–2022)

Date(s) of Event	Declaration Date	FEMA Declaration Number	Description
August 1, 1999 – December 10, 1999	September 01, 1999	EM-3142-TX	Texas Extreme Fire Hazards
November 27, 2005 – May 14, 2006	January 11, 2006	DR-1624-TX	Texas Extreme Wildfire Threat
May 26, 2006	May 26, 2006	FM-2639-TX	Texas Lake Olympia Fire

Source: FEMA 2022

USDA Disaster Declarations

The Secretary of Agriculture from the U.S. Department of Agriculture (USDA) is authorized to designate counties as disaster areas to make emergency loans to producers suffering losses in those counties and in counties that are contiguous to a designated county. Between 2012 and 2022, Fort Bend County was not included in any wildfire-related agricultural disaster declarations.

Previous Events

For the 2023 HMP update, the number of wildfire events that impacted Fort Bend County between 2017 and 2021 are listed in Table 4.3.10-4; there is currently no available data for 2022. For this HMP update, there was limited information regarding these wildfire events in the planning area.

Table 4.3.10-4. Wildfire Events in Fort Bend County (2017–2021)

Year	Number of Wildfires	Acres Burned
2017	12	305
2018	4	50
2019	12	31
2020	15	28
2021	5	2
TOTAL	48	416

Sources: Texas A&M Fire Service 2017; Texas A&M Forest Service 2018; Texas A&M Forest Service 2019; Texas A&M Forest Service 2020; Texas A&M Forest Service 2021

Probability of Future Occurrences

For the 2023 HMP update, the most up-to-date data was collected to calculate the probability of future occurrence of wildfire events for the project area. Information from FEMA, USDA, the NOAA-NCEI storm events database, the 2018 State of Texas HMP, the 2018 Fort Bend County HMP, and information from Texas A&M Fire Service were used to identify the number of wildfire events that occurred between 2017 and 2022 (the most reliable dataset available). Table 4.3.10-5 presents the probability of future wildfires in Fort Bend County.

Table 4.3.10-5. Probability of Future Wildfire Events, Fort Bend County

Hazard Type	Number of Occurrences Between 2017 and 2021	% Chance of Occurring in Any Given Year
Wildfire	48	100

Sources: NOAA NCEI 2022; State of Texas 2018; Fort Bend County 2018; Texas A&M Fire Service 2017; Texas A&M Forest Service 2018; Texas A&M Forest Service 2019; Texas A&M Forest Service 2020; Texas A&M Forest Service 2021



Note: Disaster occurrences include federally declared disasters since the 1950 Federal Disaster Relief Act and selected events since 1968. Due to limitations in data, not all wildfires occurring between 1954 and 2022 are accounted for in the tally of occurrences. As a result, the number of hazard occurrences is underestimated.

In Section 4.4, the identified hazards of concern for Fort Bend County were ranked (Table 4.4-2). The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Partnership, the probability of occurrence for wildfire in the County is considered “occasional”.

Vulnerability Assessment

To understand risk, a community must evaluate assets exposed to and vulnerable to the identified hazard. The entirety of Fort Bend County is exposed and vulnerable to the wildfire hazard; therefore, all assets within the County (population, structures, critical facilities, and lifelines), as described in Section 3 (County Profile), are potentially vulnerable to a wildfire event. The following text evaluates and estimates the potential impact of the wildfire hazard in the County.

Impact on Life, Health, and Safety

Wildfires have the potential to impact human health and life of residents and responders, structures, infrastructure, and natural resources. The most vulnerable populations include emergency responders and those within a short distance of the interface between the built environment and the wildland environment. First responders are exposed to the dangers from the initial incident and after-effects from smoke inhalation and heat stroke. Table 4.3.10-6 summarizes the estimated population exposed to the wildfire hazard by municipality.

Based on the analysis, an estimated 351,163 residents, or 43.5 percent of the County’s population, are located in the low wildfire hazard areas. An estimated 8,284, or 1 percent of the County’s population, reside in the moderate wildfire hazard area. Overall, the Unincorporated Areas of Fort Bend have the greatest number of individuals located in the low wildfire area (170,978); the City of Pearland has the greatest number of individuals located in the moderate wildfire hazard area (6,856).



Table 4.3.10-6. Estimated Population Located Within Wildfire Threat Areas

Jurisdiction	Total Population (American Community Survey 2021)	Estimated Population Located Within the Low and Moderate Wildfire Hazard Areas			
		Number of People in the Low Wildfire Hazard Area	Percent of Total	Number of People in the Moderate Wildfire Hazard Area	Percent of Total
Arcola (C)	2,593	1,922	74.1%	0	0.0%
Beasley (C)	957	309	32.3%	0	0.0%
Fairchilds (V)	755	534	70.7%	0	0.0%
Fulshear (C)	17,259	15,769	91.4%	0	0.0%
Houston (C)	41,279	11,690	28.3%	0	0.0%
Katy (C)	21,926	12,149	55.4%	0	0.0%
Kendleton (C)	341	5	1.4%	0	0.0%
Meadows Place (C)	4,755	0	0.0%	0	0.0%
Missouri City (C)	73,682	32,094	43.6%	0	0.0%
Needville (C)	3,059	2,038	66.6%	0	0.0%
Orchard (C)	219	115	52.4%	0	0.0%
Pearland (C)	122,609	55,809	45.5%	6,856	5.6%
Pleak (V)	1,756	1,724	98.2%	0	0.0%
Richmond (C)	11,768	5,783	49.1%	0	0.0%
Rosenberg (C)	37,871	17,022	44.9%	0	0.0%
Simonton (C)	838	812	96.9%	0	0.0%
Stafford (C)	17,170	1,378	8.0%	0	0.0%
Sugarland (C)	110,272	17,708	16.1%	0	0.0%
Thompsons (T)	265	265	100.0%	0	0.0%
Weston Lakes (C)	3,763	3,057	81.2%	0	0.0%
Unincorporated Area	333,360	170,978	51.3%	1,428	0.4%
Fort Bend County (Total)	806,497	351,163	43.5%	8,284	1.0%

Source: U.S. Census Bureau 2021; Texas A&M Forest Service 2022

Socially Vulnerable Populations

Social vulnerability is defined as the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. Social vulnerability considers the social, economic, demographic, and housing characteristics of a community that influence its ability to prepare for, respond to, cope with, recover from, and adapt to environmental hazards.

According to FEMA’s National Risk Index, socially vulnerable populations in Fort Bend County have a relatively moderate susceptibility to the adverse impacts of wildfire, when compared to the rest of the United States (FEMA n.d.).

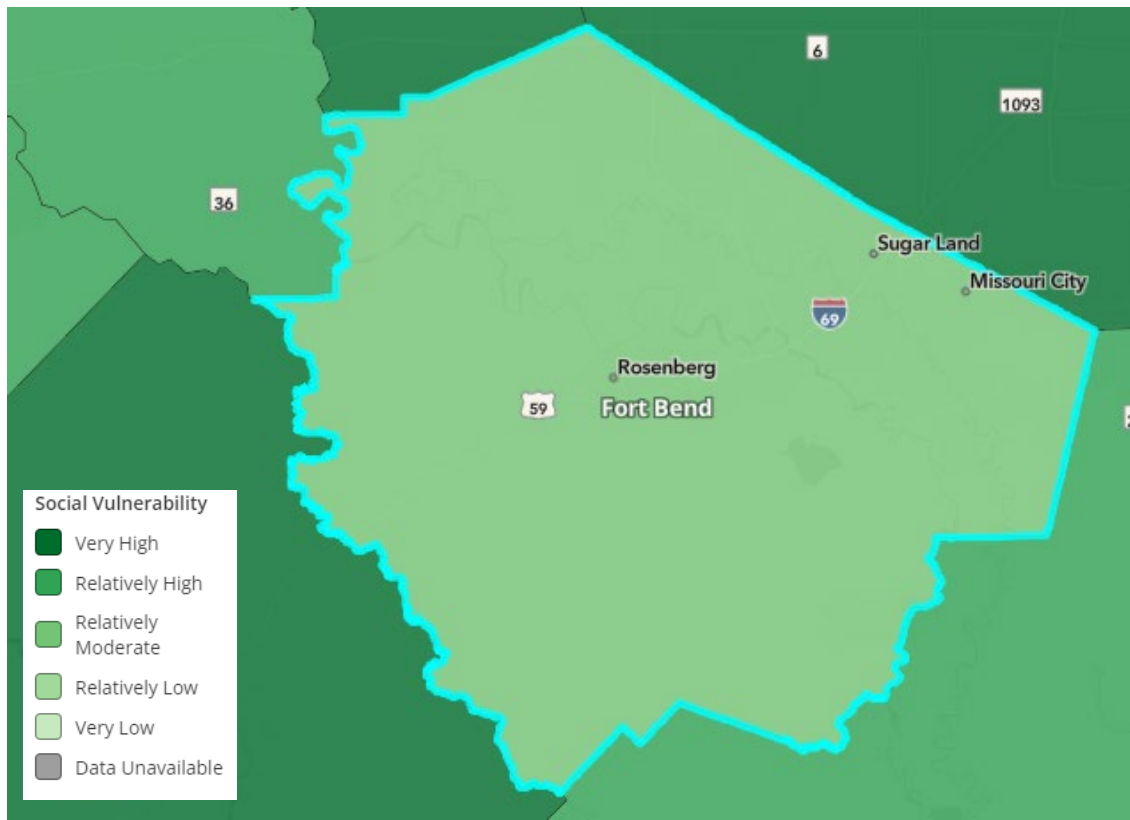
All persons exposed to the wildfire hazard are potentially vulnerable to wildfire impacts. Smoke and air pollution from wildfires can be a severe health hazard, especially for sensitive populations, including children, the elderly, and those with respiratory and cardiovascular diseases. In addition, wildfire may threaten the health and safety of those fighting the fires. First responders are exposed to dangers from the initial incident and after-effects from smoke inhalation and heat stroke.

Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions to evacuate based on net economic impacts on their families. The population over age 65 is also more vulnerable because they are more likely to seek or need medical attention that may not be available due to isolation during a wildfire event, and they may have more difficulty evacuating. Refer to the figure below for the social vulnerability index for wildfire.





Figure 4.3.10-3. FEMA Social Vulnerability Index for Wildfire



Source: FEMA NRI

Impact on General Building Stock

All property exposed to the wildfire hazard is vulnerable. Structures that were not constructed to standards designed to protect a building from a wildfire may be especially vulnerable. As of 2008, the International Building Code requires minimum standards be met for new buildings in fire hazard severity zones. It is unknown how many buildings in the County were built to these standards.

Buildings constructed of wood or vinyl siding are generally more likely to be impacted by the fire hazard than buildings constructed of brick or concrete. Table 4.3.10-7 summarizes the estimated building stock inventory located in the low wildfire hazard area by municipality. Approximately 43.4 percent (\$98.3 billion) of the County’s building replacement cost value is located in the low wildfire hazard area. The Unincorporated Areas of Fort Bend have the greatest number of buildings located in the low wildfire hazard area (127,325 structures – 51.6 percent of its total) and has the greatest replacement cost value located in the hazard area (approximately \$57.3 billion – 55.4 percent of its total). Table 4.3.10-8 summarizes the estimated building stock inventory located in the moderate wildfire hazard area by municipality. Approximately 0.2 percent (\$540 million) of the County’s building replacement cost value is located in the moderate wildfire hazard area. The Unincorporated Areas of Fort Bend have the greatest number of buildings located in the moderate wildfire hazard area (722 structures – 0.4 percent of its total) and the greatest replacement cost value located in the hazard area (approximately \$491 million – 0.5 percent of its total).



Table 4.3.10-7. Building Stock Located within the Low Wildfire Hazard Area

Jurisdiction	Total Number of Buildings	Total Replacement Cost Value (RCV)	Estimated Building Stock Located Within the Low Wildfire Hazard Areas			
			Number of Buildings in the Hazard Area	Percent of Total	Total RCV of Buildings	Percent of Total
Arcola (C)	676	\$1,374,107,673	518	76.6%	\$1,244,478,981	90.6%
Beasley (C)	367	\$467,087,536	121	33.0%	\$202,057,551	43.3%
Fairchilds (V)	190	\$58,400,161	134	70.5%	\$44,859,463	76.8%
Fulshear (C)	7,869	\$6,124,915,172	7,193	91.4%	\$5,525,141,244	90.2%
Houston (C)	11,589	\$5,814,576,859	3,276	28.3%	\$1,715,142,656	29.5%
Katy (C)	2,206	\$4,980,024,025	1,308	59.3%	\$4,104,723,486	82.4%
Kendleton (C)	329	\$241,970,568	4	1.2%	\$798,843	0.3%
Meadows Place (C)	1,676	\$1,270,821,734	0	0.0%	\$0	0.0%
Missouri City (C)	27,170	\$23,213,328,025	11,800	43.4%	\$10,865,697,217	46.8%
Needville (C)	1,346	\$1,362,324,702	874	64.9%	\$759,826,705	55.8%
Orchard (C)	180	\$170,795,761	98	54.4%	\$130,448,721	76.4%
Pearland (C)	2,171	\$1,063,851,539	987	45.5%	\$436,470,466	41.0%
Pleak (V)	436	\$672,927,271	427	97.9%	\$666,909,180	99.1%
Richmond (C)	3,296	\$4,128,822,403	1,648	50.0%	\$2,538,321,463	61.5%
Rosenberg (C)	11,894	\$22,921,973,230	5,293	44.5%	\$6,935,493,022	30.3%
Simonton (C)	395	\$372,092,732	383	97.0%	\$354,422,794	95.3%
Stafford (C)	4,222	\$10,638,345,589	357	8.5%	\$1,068,838,729	10.0%
Sugar Land (C)	37,506	\$36,732,455,899	5,852	15.6%	\$3,075,448,799	8.4%
Thompsons (T)	143	\$404,590,514	143	100.0%	\$404,590,514	100.0%
Weston Lakes (C)	1,589	\$1,145,826,270	1,291	81.2%	\$914,910,842	79.8%
Unincorporated Area	166,035	\$103,633,654,804	85,618	51.6%	\$57,373,041,129	55.4%
Fort Bend County (Total)	281,285	\$226,792,892,466	127,325	45.3%	\$98,361,621,804	43.4%

Source: Fort Bend County 2016, 2022; RS Means 2022; Texas A&M Forest Service 2022

Table 4.3.10-8. Building Stock Located within the Moderate Wildfire Hazard Area

Jurisdiction	Total Number of Buildings	Total Replacement Cost Value (RCV)	Estimated Building Stock Located Within the Moderate Wildfire Hazard Areas			
			Number of Buildings in the Hazard Area	Percent of Total	Total RCV of Buildings Located in the Hazard Area	Percent of Total
Arcola (C)	676	\$1,374,107,673	0	0.0%	\$0	0.0%
Beasley (C)	367	\$467,087,536	0	0.0%	\$0	0.0%
Fairchilds (V)	190	\$58,400,161	0	0.0%	\$0	0.0%
Fulshear (C)	7,869	\$6,124,915,172	0	0.0%	\$0	0.0%
Houston (C)	11,589	\$5,814,576,859	0	0.0%	\$0	0.0%
Katy (C)	2,206	\$4,980,024,025	0	0.0%	\$0	0.0%
Kendleton (C)	329	\$241,970,568	0	0.0%	\$0	0.0%
Meadows Place (C)	1,676	\$1,270,821,734	0	0.0%	\$0	0.0%
Missouri City (C)	27,170	\$23,213,328,025	0	0.0%	\$0	0.0%
Needville (C)	1,346	\$1,362,324,702	0	0.0%	\$0	0.0%
Orchard (C)	180	\$170,795,761	0	0.0%	\$0	0.0%
Pearland (C)	2,171	\$1,063,851,539	121	5.6%	\$48,688,822	4.6%
Pleak (V)	436	\$672,927,271	0	0.0%	\$0	0.0%
Richmond (C)	3,296	\$4,128,822,403	0	0.0%	\$0	0.0%
Rosenberg (C)	11,894	\$22,921,973,230	0	0.0%	\$0	0.0%
Simonton (C)	395	\$372,092,732	0	0.0%	\$0	0.0%
Stafford (C)	4,222	\$10,638,345,589	0	0.0%	\$0	0.0%



Jurisdiction	Total Number of Buildings	Total Replacement Cost Value (RCV)	Estimated Building Stock Located Within the Moderate Wildfire Hazard Areas			
			Number of Buildings in the Hazard Area	Percent of Total	Total RCV of Buildings Located in the Hazard Area	Percent of Total
Sugar Land (C)	37,506	\$36,732,455,899	0	0.0%	\$0	0.0%
Thompsons (T)	143	\$404,590,514	0	0.0%	\$0	0.0%
Weston Lakes (C)	1,589	\$1,145,826,270	0	0.0%	\$0	0.0%
Unincorporated Area	166,035	\$103,633,654,804	722	0.4%	\$491,621,034	0.5%
Fort Bend County (Total)	281,285	\$226,792,892,466	843	0.3%	\$540,309,856	0.2%

Source: Fort Bend County 2016, 2022; RS Means 2022; Texas A&M Forest Service 2022

Impact on Critical Facilities

Critical facilities not built to fire protection standards. Utility poles and lines and facilities containing hazardous materials are most vulnerable to the wildfire hazard. Most roads and railroads would not sustain damage except in the worst scenarios, although roads and bridges can be blocked by debris or other wildfire-related conditions and become impassable. If a wildfire reached the following critical facilities, their vulnerability could complicate response and recovery efforts during and following an event:

- **Hazardous Materials and Fuel Storage**—During a wildfire event, these materials could rupture due to excessive heat and act as fuel for the fire, causing rapid spreading and escalating the fire to unmanageable levels. In addition, they could leak into surrounding areas, saturating soils, and seeping into surface waters, and have a disastrous effect on the environment.
- **Communication Facilities**—If these facilities are damaged and become inoperable, it would exacerbate already difficult communication in the planning area.
- **Fire Stations**—If fire stations were compromised during a wildfire event, it would make fire suppression and support services even more challenging.

Table 4.3.10-9 lists the lifelines and number of critical facilities within the low and moderate wildfire hazard areas. Of the 1,652 critical facilities located in the low wildfire hazard area, the greatest number are food, water, and shelter facilities (794). Additionally, there are 14 critical facilities located in the moderate wildfire hazard areas, 8 of which are food, water, and shelter facilities.

Table 4.3.10-9. Critical Facilities and Lifelines Located in the Low and Moderate Wildfire Hazard Areas

FEMA Lifeline Category	Number of Lifelines	Number of Lifelines Located in the Low Wildfire Hazard Area	Number of Lifelines Located in the Moderate Wildfire Hazard Area
Communications	44	39	0
Energy	584	239	0
Food, Water, Shelter	1,480	794	8
Hazardous Materials	13	7	0
Health and Medical	335	107	1
Safety and Security	282	112	0
Transportation	660	354	5
Fort Bend County (Total)	3,398	1,652	14

Source: Fort Bend County 2022; Texas A&M Forest Service 2022



As shown in Table 4.3.10-10, the majority of the critical facilities located in the low wildfire hazard area are the Unincorporated Areas of Fort Bend County (1,070) and the City of Rosenberg (186). In the moderate wildfire hazard area, all critical facilities are located in the Unincorporated Areas of Fort Bend County (14).



Table 4.3.10-10. Critical Facilities and Lifelines Located in the Low and Moderate Wildfire Hazard Areas by Jurisdiction

Jurisdiction	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Critical Facilities and Lifeline Facilities Located in the Low to Moderate							
			Low Risk				Moderate Risk			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines	Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Arcola (C)	22	21	19	86.4%	18	85.7%	0	0.0%	0	0.0%
Beasley (C)	18	14	10	55.6%	8	57.1%	0	0.0%	0	0.0%
Fairchilds (V)	3	3	2	66.7%	2	66.7%	0	0.0%	0	0.0%
Fulshear (C)	43	40	42	97.7%	39	97.5%	0	0.0%	0	0.0%
Houston (C)	105	84	34	32.4%	32	38.1%	0	0.0%	0	0.0%
Katy (C)	53	51	48	90.6%	46	90.2%	0	0.0%	0	0.0%
Kendleton (C)	21	19	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Meadows Place (C)	17	16	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Missouri City (C)	339	297	113	33.3%	101	34.0%	0	0.0%	0	0.0%
Needville (C)	42	33	26	61.9%	21	63.6%	0	0.0%	0	0.0%
Orchard (C)	7	7	4	57.1%	4	57.1%	0	0.0%	0	0.0%
Pearland (C)	1	1	1	100.0%	1	100.0%	0	0.0%	0	0.0%
Pleak (V)	15	15	13	86.7%	13	86.7%	0	0.0%	0	0.0%
Richmond (C)	123	103	77	62.6%	68	66.0%	0	0.0%	0	0.0%
Rosenberg (C)	340	295	186	54.7%	170	57.6%	0	0.0%	0	0.0%
Simonton (C)	17	17	17	100.0%	17	100.0%	0	0.0%	0	0.0%
Stafford (C)	164	137	22	13.4%	22	16.1%	0	0.0%	0	0.0%
Sugarland (C)	631	575	72	11.4%	70	12.2%	0	0.0%	0	0.0%
Thompsons (T)	10	9	10	100.0%	9	100.0%	0	0.0%	0	0.0%
Weston Lakes (C)	7	7	7	100.0%	7	100.0%	0	0.0%	0	0.0%
Unincorporated Fort Bend County	1,756	1,654	1,070	60.9%	1,004	60.7%	14	0.8%	14	0.8%
Fort Bend County (Total)	3,734	3,398	1,773	47.5%	1,652	48.6%	14	0.4%	14	0.4%

Source: Fort Bend County 2022; Texas A&M Forest Service 2022





Impact on Economy

Wildfire events can have major economic impacts on a community from the initial loss of structures and the subsequent loss of revenue from destroyed business and decrease in tourism. Wildfires can cost thousands of taxpayer dollars to suppress and control and can involve hundreds of operating hours on fire apparatus and thousands of volunteer man hours from the volunteer firefighters. There are also many direct and indirect costs to local businesses that excuse volunteers from working to fight these fires.

Impact on Environment

Fire is a natural and critical ecosystem process in most terrestrial ecosystems, affecting the types, structure, and spatial extent of native vegetation. However, it also can cause severe environmental impacts:

- **Damaged Fisheries**—Critical fisheries can suffer from increased water temperatures, sedimentation, and changes in water quality.
- **Soil Erosion**—The protective covering provided by foliage and dead organic matter is removed, leaving the soil fully exposed to wind and water erosion. Accelerated soil erosion occurs, causing landslides and threatening aquatic habitats.
- **Spread of Invasive Plant Species**—Non-native woody plant species frequently invade burned areas. When weeds become established, they can dominate the plant cover over broad landscapes and become difficult and costly to control.
- **Disease and Insect Infestations**—Unless diseased or insect-infested trees are swiftly removed, infestations and disease can spread to healthy forests and private lands. Timely active management actions are needed to remove diseased or infested trees.
- **Destroyed Endangered Species Habitat**—Fire can have negative consequences for endangered species.
- **Soil Sterilization**—Some fires burn so hot that they can sterilize the soil. Topsoil exposed to extreme heat can become water-repellant, and soil nutrients may be lost.
- **Reduced Timber Harvesting**—Timber can be destroyed and lead to smaller available timber harvests.
- **Reduced Agricultural Resources**—Wildfire can have disastrous consequences on agricultural resources, removing them from production and necessitating lengthy restoration programs.
- **Damaged Cultural Resources**—Scenic vistas can be damaged, access to recreational areas can be reduced, and destruction of cultural resources may occur (USFS 1994).

Table 4.3.10-11 lists the number of acres exposed to the low and moderate wildfire hazard areas.

Table 4.3.10-11. Land Acreage in Fort Bend County Located in the Low and Moderate Wildfire Hazard Areas

Jurisdiction	Total Acres of Land Area	Total Acres of Land Area (Excluding Waterbodies) Located in the Low and Moderate Wildfire Hazard Areas			
		Total Acres Located in the Low Wildfire Hazard Areas	Percent of Total	Total Acres Located in the Moderate Wildfire Hazard Areas	Percent of Total
Arcola (C)	1,664	1,439	86.5%	2	0.1%
Beasley (C)	673	255	37.8%	0	0.0%
Fairchilds (V)	831	383	46.2%	0	0.0%
Fulshear (C)	7,962	7,477	93.9%	0	0.0%
Houston (C)	7,440	4,242	57.0%	0	0.0%



Jurisdiction	Total Acres of Land Area	Total Acres of Land Area (Excluding Waterbodies) Located in the Low and Moderate Wildfire Hazard Areas			
		Total Acres Located in the Low Wildfire Hazard Areas	Percent of Total	Total Acres Located in the Moderate Wildfire Hazard Areas	Percent of Total
Katy (C)	2,843	2,311	81.3%	0	0.0%
Kendleton (C)	850	10	1.2%	0	0.0%
Meadows Place (C)	586	0	0.0%	0	0.0%
Missouri City (C)	20,841	12,730	61.1%	212	1.0%
Needville (C)	1,264	810	64.1%	0	0.0%
Orchard (C)	250	145	57.8%	0	0.0%
Pearland (C)	839	412	49.2%	32	3.8%
Pleak (V)	1,193	1,093	91.6%	0	0.0%
Richmond (C)	2,752	1,721	62.5%	0	0.0%
Rosenberg (C)	23,442	13,875	59.2%	0	0.0%
Simonton (C)	1,487	1,455	97.8%	0	0.0%
Stafford (C)	4,467	534	11.9%	0	0.0%
Sugarland (C)	27,073	5,927	21.9%	0	0.0%
Thompsons (T)	995	993	99.8%	0	0.0%
Weston Lakes (C)	1,623	1,350	83.2%	0	0.0%
Unincorporated Area	449,862	275,964	61.3%	4,673	1.0%
Fort Bend County (Total)	558,937	333,126	59.6%	4,919	0.9%

Source: Fort Bend County 2022; Texas A&M Forest Service 2022

Future Changes That May Impact Vulnerability

Understanding future changes that affect vulnerability in Fort Bend County can assist in planning for future development and ensure the establishment of appropriate mitigation, planning, and preparedness measures. The County considered the following factors to examine potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate, including the impacts of climate change

Projected Development

As a highly urbanized planning area, wildfire risk exposure is low. Urbanization tends to alter the natural fire regime and can create the potential for the expansion of urbanized areas into wildland areas. The expansion of development toward wildfire hazard areas can be managed with strong land use and building codes. The International Building Code includes minimum standards related to the design and construction of buildings in fire hazard zones. The planning area is well equipped with these tools, and this planning process has assessed capabilities with regard to the tools. As the planning area experiences future growth, it is anticipated that the exposure to this hazard will remain as assessed or even decrease over time due to these capabilities.

Projected Changes in Population

The County experienced an increase in population between the 2010 Census (585,375) and the estimated 2016–2020 American Community Survey estimated population of 790,892. The population of the County is



expected to increase over the next few years. The increase in population will expose more people to the wildfire hazard.

Climate Change

Climate change has the potential to affect multiple elements of the wildfire system: fire behavior, ignitions, fire management, and vegetation fuels. Hot dry spells create the highest fire risk. Increased temperatures may intensify wildfire danger by warming and drying out vegetation. Changes in climate patterns may impact the distribution and perseverance of insect outbreaks that create dead trees (increase fuel). When climate alters fuel loads and fuel moisture, forest susceptibility to wildfires changes. Climate change also may increase winds that spread fires. Faster fires are harder to contain and are more likely to expand into residential neighborhoods.

Change in Vulnerability Since 2018 HMP

For the 2023 Hazard Mitigation Plan (HMP) update, the Wildfire Threat Hazard Area from the Texas A&M Forest Service 2022 was referenced to determine areas within Fort Bend County that are vulnerable to wildfires. Population statistics have also been updated using the 2021 United States Census Population Estimates. Overall, this vulnerability assessment uses a more accurate and updated building inventory, which provides more accurate estimated exposure and potential losses for the County.