Kenedy County Hazard Mitigation Action Plan

2025

"Under the Federal Disaster Mitigation Act of 2000 (DMA 2000 or "the Act"), Kenedy County (County) is required to have a Federal Emergency Management Agency ("FEMA") - approved Local Hazard Mitigation Plan ("the Plan") in order to be eligible for certain pre- and post-disaster mitigation funds. Adoption of this Plan by the County and approval by FEMA will serve the dual objectives of providing direction and guidance on implementing hazard mitigation in the County, and qualify the County to obtain federal assistance for hazard mitigation. Solely to help achieve these objectives, the Plan attempts to systematically identify and address hazards that can affect the County. Nothing in this Plan is intended to be an admission, either expressed or implied, by or on behalf of the County, of any County obligation, responsibility, duty, fault or liability for any particular hazard or hazardous condition, and no such County obligation, responsibility, duty, fault or liability should be inferred or implied from the Plan, except where expressly stated."

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1. Introduction and Background

1) Participating Jurisdictions

The 2025 Kenedy County Hazard Mitigation Action Plan (HMAP) is an update of the County's most recent plan that expired in March 2023. The 2025 Plan update is a single-jurisdiction plan with Kenedy County as the sole participant.

2) Hazards to be Addressed

The mitigation planning regulation of the Disaster Mitigation Act[1] requires that mitigation plans be reviewed and updated every five years to maintain eligibility for mitigation grant funding. As part of this plan, Kenedy County will develop a schedule to ensure that its hazard mitigation plan is regularly updated.

The 2025 Kenedy County Hazard Mitigation Action Plan update will address the following natural hazards listed below in Table 1.

[1] 44 CFR §201.6(d)(3)

Table 1: List of Hazards Addressed

Hazard	Jurisdiction
	Kenedy County
Hurricane/ Tropical Storms	X
Flood	X
Wildfire	X
Tornados	X
Drought	X
Extreme Cold	X
Extreme Heat	X
Hailstorm	X
Winter Storms	X
Windstorms	X
Lightning	X
Additional Optional Hazards	
Coastal Erosion	X
Riverine Erosion	
Land Subsidence/ Sinkhole	
Earthquakes	
Expansive Soils	
Dam Failure	

A) Omission Statements

Kenedy County will not be addressing the following hazards: Land Subsidence, earthquakes, expansive soils, riverine erosion. The history of impacts for all the omitted hazards have been negligible (or non-existent), therefore the County and participating jurisdictions expect that future impacts will be negligible as well, nor do the County and participating jurisdictions anticipate applying for grant funding to address any of them.

Kenedy County will not be profiling dam failure as there are no high hazard dams or dams of concern in or near their boundaries that could threaten inundation.

2. Planning Process

The Kenedy County Hazard Mitigation Action Plan (HMAP) is a single-jurisdiction plan. Planning team members represented the following offices and departments:

Table 2: Local Planning Team Representatives

Title	Jurisdiction
County Judge	Kenedy County
Judge's Assistant	

Once the planning team was established, members developed a schedule with specific goals and proposed meeting dates over the planning period.

Hazard mitigation planning team (HMPT) members contributed to the following activities throughout the planning process:

1. Providing technical assistance and necessary data to the HMPT.
2. Scheduling, coordinating, and facilitating community meetings.
3. Providing necessary materials for public planning meetings.
4. Collecting and analyzing data.
5. Developing mitigation goals and implementation strategies.
6. Preparing the first draft of the plan and providing technical writing assistance for review, editing, and formatting.

Each member of the HMPT participated in the following activities associated with development of the plan:

1. Identifying, contacting, coordinating, and implementing input from stakeholders.
2. Attending, conferencing in, or providing meeting support and information for regular HMPT meetings.
3. Identifying hazards and estimating potential losses from future hazard events.
4. Developing and prioritizing mitigation actions to address identified risks.
5. Coordinating public meetings to develop the plan.
6. Identifying community resources available to support planning effort.
7. Submitting proposed plan to all appropriate departments for review and comment and working with the County to incorporate the resulting comments into the proposed plan.

Table 3: Plan Schedule

TIMELINE												
Planning Tasks	2024 - 2025											Completed
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Organize Resources and Identify Planning Team												
Create Outreach Strategy												
Review Community Capabilities												
Conduct Risk Assessment												
Identify Mitigation Goals and Actions												
Develop Action Plan for Implementation												
Identify Plan Maintenance Procedures												
Review Plan Draft												
Submit Plan to State and FEMA												
Adopt Plan												TBD
MEETINGS / OUTREACH												
Planning Team Meetings	12/11/24		2/12/25									
Public Outreach			●			●						
Stakeholder Outreach			●									

1) Existing Plans, Reports, Ordinances, and Technical Information Sources

Each planning team member worked to collect and provide the input and information necessary to develop the hazard mitigation strategy. Research was coordinated and conducted by local planning team members. The local planning team reviewed the following documents during the planning process:

Table 4: Planning Team Data Sources

Data Source	Data Incorporation	Purpose
National Centers for Environmental Information (NCEI)	Hazard occurrences	Previous event occurrences, damage dollars, and mapping for all hazards
National Oceanic and Atmospheric Administration (NOAA)	Historic Weather Data	Previous event occurrences, damage dollars, and mapping for all hazards
Texas A&M Forest Service	Historical Fire Data	Previous even occurrences
Kleberg & Kenedy County Hazard Mitigation Plan, 2018-2023	Previous planning approach, hazards addressed, and mitigation actions	Previous planning team representatives, plan maintenance, hazard histories, and mitigation actions
State of Texas Hazard Mitigation Plan 2023 Update	Hazard Descriptions	Official descriptions of hazards and their potential impacts
Estimated Base Flood Elevation – Federal Emergency Management (FEMA)	Flood Zones maps	GIS mapping of flood zones and potential flooding risk areas

Additional information sources included: USDA Census of Agriculture, United States Geological Survey, Vaisala, and specific details about previous natural hazard events from planning team participants. Sources are noted throughout the document. Report titles and links to the most recently accessed websites hosting the related information are also noted, where appropriate.

Area stakeholders contacted to participate in the planning process included the following offices and departments within the participating jurisdictions and neighboring jurisdictions. In many cases of non-participation, the title listed is reflective of the office the planning team tried to contact.

Table 5: Local Stakeholders Contacted

Stakeholder	Title	Participated
Kleberg County	Emergency Management Coordinator	N
Brooks County	Emergency Management Coordinator	N
Kenedy County	Emergency Management Coordinator	N
Hidalgo County	Emergency Management Coordinator	N
Texas A&M AgriLife	County Extension Agent – Agriculture and Natural Resources	N
Texas A&M AgriLife	County Extension Agent – Family and Community Health	N
Raymondville Chamber of Commerce	Executive Director	N
American Red Cross – Coastal Bend Chapter	Disaster Program Manager	N

Area stakeholders were contacted by phone and email. In an effort to increase participation, each stakeholder was contacted at least twice. Local academia, businesses, community based- and/or non-profit organizations were contacted in order to reach a diverse group of stakeholders. These organizations focus on multiple community needs such as education, food, health and safety. Kenedy County does not have a Chamber of Commerce or many businesses with a stake in mitigation. It is one of the least populated and developed Counties in the State and the majority of land is occupied by a private ranch. As such, the nearest major Chamber of Commerce was contacted in an effort to gain insight from businesses with a stake in the County's mitigation efforts. No stakeholders contacted chose to participate in the survey.

2) Project Meetings

The planning team met on two separate occasions. Additional communication was regularly carried out via email and over the phone.

The first planning team meeting was held virtually on December 11, 2024. During this meeting, the planning team decided which hazards needed to be addressed in the mitigation plan and which were not relevant. To make these decisions, a hazard handout was produced to show previous occurrences of each hazard, associated deaths and injuries, and total dollar damages. The team agreed to use the collected hazard data, as the foundation for its hazard risk assessment and ongoing research into hazard extent, impact, and vulnerability. At the end of the meeting, planning team members were tasked with compiling relevant data, including city

ordinances; identifying critical facilities; identifying stakeholders; and completing a capability assessment.

The second planning team meeting was held virtually on February 12, 2025. To stay on schedule, the planning team needed to meet the following objectives: review and refine the critical facilities list, provide a status update on past mitigation actions, and review possible new mitigation actions and projects for each participant. The planning team discussed and identified new mitigation actions, discussed changes to the plan drafts, and agreed to work on completing all deliverables for the plan. Additional work was done over email in preparation for submitting the plan for official review in June 2025.

3) Public Input

Members of the public were invited to participate in two public comment periods to provide input and feedback during the planning process. The public comment periods were held virtually. The first public comment period took place in March 2025. A Microsoft Form survey was posted to the County website and Facebook page for a period of two weeks for members of the public to fill out. A newspaper ad was placed to announce to the public for the opportunity to provide input via online survey. In an effort to reach the widest audience possible, especially socially vulnerable populations, the County and participating jurisdictions actively announced the online survey through newspaper ads, on their own websites, social media, and through the County text message notification system. Stakeholders who support vulnerable populations were also provided with a link to the survey and encouraged to share it with their community. Unfortunately, the survey received no responses.

The second public comment period took place in June 2025. A copy of the in-progress plan draft was posted to the County website for two weeks for the public to review and comment or provide suggestions. This public comment period was advertised in the newspaper and shared on social media.

4) Plan Maintenance

The hazard mitigation plan is not a static document. As conditions change and mitigation actions are implemented, the plan will need to be updated to reflect new and changing conditions in each jurisdiction.

The planning team has identified specific departments to oversee action implementation in each jurisdiction. The planning team has also identified potential funding sources and an implementation timeframe for each mitigation action. The expected timeframes will be an important component in determining whether actions are implemented efficiently. The departments or persons identified for each jurisdiction include but are not limited to:

Table 6: Maintenance Responsibility

Title	Jurisdiction
County Judge	Kenedy County
Judge's Assistant	

Within one year of adoption of this plan, each department or agency will review and, as appropriate, integrate implementation of their respective mitigation actions with their existing internal plans and policies relating to capital improvements, land use, design and construction, and emergency management.

On a biannual basis, representatives serving as the planning team will evaluate progress on implementing the plan's mitigation actions. The planning team will review departmental / agency findings, public input, and future development plans to evaluate the effectiveness and appropriateness of the plan.

Considering changing funding sources, hazard vulnerability, and local mitigation priorities, the planning team will identify changes to plan goals and priorities for their respective jurisdictions, and they will report their findings to the rest of the planning team. It will be the planning team's responsibility to identify relevant reasons for delays or obstacles to completing the plan's mitigation actions, along with recommended strategies to overcome any deficiencies.

Any significant change to the plan will require the County to provide opportunities for the public to make its views and concerns known. Kenedy County will provide notice to the public through announcements in the local paper, fliers posted at County offices, and on the County's website and/or social media accounts.

5) Plan Monitoring

The Kenedy County Judge will be responsible for the overall continued coordination and monitoring of the mitigation plan in its entirety, including but not limited to the planning process, risk assessment, strategy, and the actions assigned for each hazard.

At a minimum, the mitigation plan will be reviewed by the Judge and planning team quarterly, during budget workshops, and as other plans are being developed or revised including comprehensive plans, capital improvement project plans, and emergency plans.

Regularly monitoring the plan implementation process will ensure that every component of the plan gets reviewed for potential amendments.

After adoption of this plan, it will be posted to the County website or Facebook page, and a printed copy will be available for review in the Office of Emergency Management. The goal is to

create the opportunity for constant and continued feedback from local officials, stakeholders, and the public.

6) Plan Evaluation

Proper evaluation will measure the progress and effectiveness of the mitigation actions identified in the plan. On a bi-annual basis the Judge along with the planning team representatives will use the following criteria, along with additional metrics as necessary, to assess the effectiveness of the plan in its entirety, including but not limited to the planning process, risk assessment, strategy, and the actions:

- Do the specified goals and objectives still address current and expected conditions?
- Has the nature, magnitude, and/or risk of any hazard changed?
- Have there been changes in land development that the plan needs to address?
- Are available resources suitable for implementing the plan?
- Is funding budgeted or available to successfully implement prioritized mitigation actions?
- Are there opportunities in the local budgeting process or local, state, and national grant funding cycles to increase funding to implement mitigation actions?

Other steps will include site visits to completed mitigation projects to measure and ensure their success. The planning team will evaluate the causes of the shortcoming in the event that a mitigation project fails to meet its goal. The planning team will use their assessment to amend the project and related projects in other jurisdictions, allocate additional resources to achieve the desired outcome for the project and related projects in other jurisdictions, or replace the project and similar projects in other jurisdictions with better projects.

The Judge and planning team members will also work to implement any additional revisions required to ensure that the plan and their respective jurisdiction is in full compliance with federal regulations and state statutes.

The approved plan will be hosted on the County website to allow the public to view and provide feedback during the 5-year lifespan of the plan.

7) Plan Update

The plan is designed to address a five-year period. In accordance with 44CFR Section 201.6, it will be updated every five years to maintain compliance with State and Federal regulations. However, at least every two years from the date of approval, and quarterly on the fifth and final year of the plan, the Judge and planning team representatives will thoroughly review any significant changes in their respective jurisdictions that might impact the plan update.

During the update process, planning team representatives will do the following: collect data on recent occurrences of each natural hazard identified in the plan, record how each natural

hazard impacted their jurisdiction during the preceding years, determine whether or not implemented mitigation actions produced the desired outcomes in their jurisdiction, and determine whether or not to modify their jurisdiction's list of hazards to be addressed in the update.

Additional considerations to address on a jurisdictional level include but are not limited to changes in local development, changes in exposure to natural hazards, the development of new mitigation capabilities or techniques, and revisions to state or federal legislation.

The update process will provide continued opportunity for the public and elected officials to determine which actions succeeded, failed, or are no longer relevant. It is also an opportunity for each jurisdiction to identify recent losses due to natural hazards and to consider whether any of those losses could have been avoided.

3. Determining Risk

1) Risk Assessment

Throughout the plan, each hazard addressed will be considered in light of its history, likelihood of future events, extent, jurisdictional vulnerability, location and impact.

Likelihood of Future Events is measured based on a hazard's expected frequency of occurrence in terms of previous frequency. Each hazard's likelihood of future events will be considered using the following standardized parameters:

- **Highly likely** – event probable in the next year
- **Likely** – event probable in the next three years
- **Occasional** – event possible in the next five years
- **Unlikely** – event possible in the next 10 years

Given this plan's five-year duration, hazards likely to occur during that period will be given priority when selecting and prioritizing mitigation actions.

Kenedy County's population has stayed relatively the same since the 2018 plan, and there has been minimal development since. As such the County's vulnerability to hazards has neither increased nor decreased since the 2018 plan.

A) Major Disaster Declarations

The following table outlines all major disaster declarations that have occurred in Kenedy County since the 2018 HMAP.

Table 7: Major Disaster Declarations Since 2018

Kenedy County Major Disaster Declarations		
Disaster	**Incident Period**	**Declaration Date**
DR-4798 Texas Hurricane Beryl	July 5, 2024 – July 9, 2024	July 9, 2024
DR-4586 Texas Severe Winter Storms	February 11, 2021 – February 21, 2021	February 19, 2021
DR-4485 Texas Covid-19 Pandemic	January 20, 2020 - Present	March 25, 2020

2) Distribution of Property by Housing Density and Potential Damage Values

Table 8: Estimated Values by Location[2]

Category	Kenedy County
Total Housing Units[3]	69
Housing Unit Density (per square mile)	< 1 units/sq. mi
Median Housing Value	Data Unavailable
Estimated Value of Housing Units	N/A

3) Distribution of Vulnerable Populations

The planning team identified a set of indicators it could use to identify each jurisdiction's vulnerable population. The indicators include demographic data like age and income, as well as geographic data including the location of low income or subsidized housing units, concentrations of manufactured and mobile homes, and concentrations of homes in substandard condition.

A) Age, Disability, and Income

The populations of each jurisdiction were broken down into four categories: young residents, elderly residents, disabled residents, and low-income residents. Residents falling into these categories were deemed most likely to suffer disproportionate losses due to natural hazards because of their potentially limited means to prepare for and recover from a hazard event.

Table 9: Age, Disability, and Poverty Level Percentages by Jurisdiction[4]

Demographic Category	Kenedy County	Texas	U.S.
Population Under Age 5[5]	0%	6.5%	5.7%

[2] Source: U.S. Census 2021 American Community Survey 5-Year Estimates.
[3] Table B25001 2023 ACS Housing unit information for Kenedy County includes totals for cities and unincorporated areas.
[4] Source: U.S. Census 2023 American Community Survey 5-Year Estimates
[5] Table S0101, Age and Sex, 2023 ACS 5-Year Estimates

Population Over Age 65	50%	12.9%	16.8%
Disability Status[6]	51.9%	12%	13%
Individuals Below Poverty Level[7]	0%	10.5%	8.7%

B) Distribution of Vulnerable Populations

The following vulnerable populations map is based on a social vulnerability index created specifically for the planning area. The index considers six relevant Census Block Group-level factors: poverty rate, population of residents 65 years old and older, population of residents younger than 18, the population of residents without a high school diploma or GED, the population of residents with a low English proficiency, and the number of homes constructed before 1980.

To create the index, each factor is re-scaled by assigning the largest population in each category a score of 1. The remaining population counts for each category are then given a score based on the ratio of the relevant population to the largest population. Once each factor has a re-scaled score, the scores for each factor are totaled to create an overall index number for each Census Block Group. The vulnerable populations map is representative of each Census Block Group's overall vulnerability, based on the six factors outlined above, relative to the other Census Block Groups in the planning area.

[6] Table S1810, Disability Characteristics. The U.S. Census defines a person as having a work disability if one or more of the following conditions are met:

1. Persons with a health problem or disability which prevents them from working or which limits the kind or amount of work they can do
2. Persons who have retired or left a job for health reasons
3. Persons currently not in the labor force because of a disability.
4. Persons who did not work at all in the previous year because of illness or disability
5. Under 65 years old and covered by Medicare in previous year.
6. Under 65 years old and received Supplemental Security Income (SSI) in previous year.
7. Received VA disability income in previous year.

[7] Table DP03, Selected Economic Characteristics, 2023 5-Year Estimates

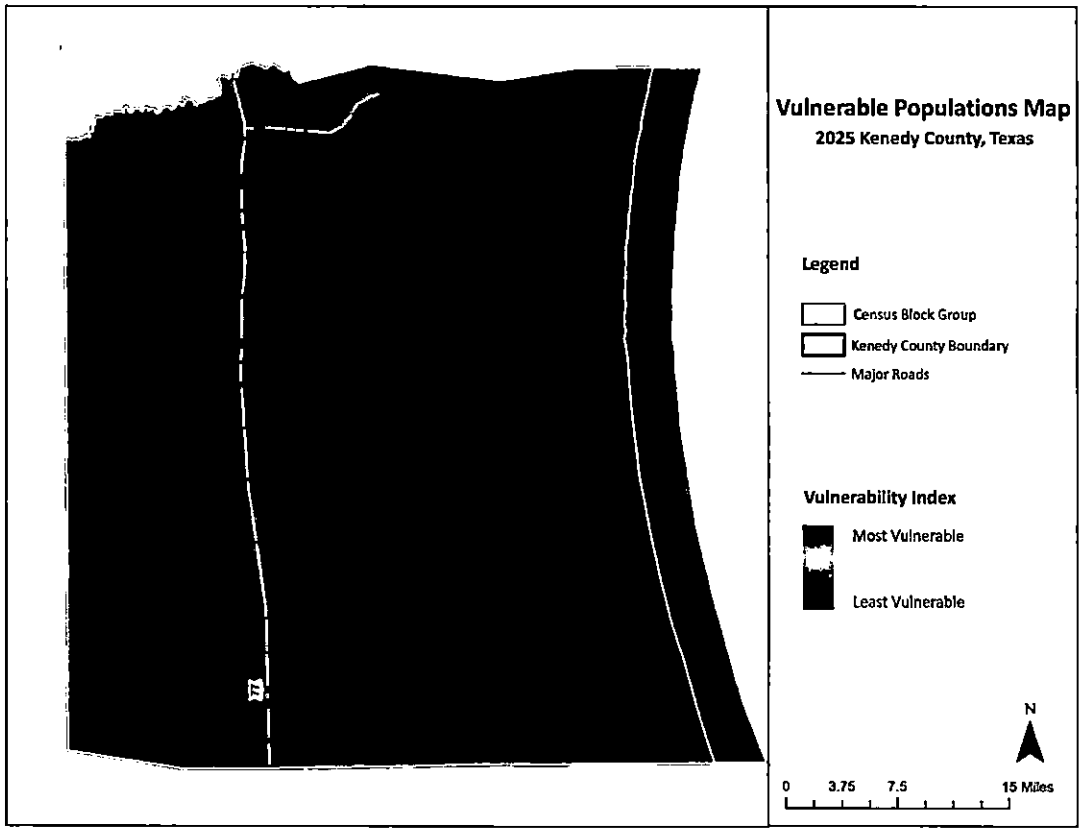

Figure 1: Kenedy County Social Vulnerability Index

C) Housing Type and Condition

The participating jurisdictions have used housing types and housing conditions to identify additional vulnerable areas and concentrations of vulnerable residents.

I. Manufactured / Mobile Homes

In particular, mobile/manufactured housing are disproportionately vulnerable to certain hazards including but not limited to floods, tornados, winter storms, and windstorms.

II. Homes in Substandard Condition

The jurisdictions have determined that homes in sub-standard condition, regardless of structure type, may indicate that residents are low-income or otherwise means-limited and thus more vulnerable to certain hazards.

To be considered standard condition, a home must show few or no minor visible exterior defects such as:

- cracked, peeling, or missing paint
- cracked, sagging, rotting, or missing siding, steps, porch planks, or other wooden surfaces
- cracked or broken windowpanes
- cracked masonry, brick, or mortar surfaces
- missing or damaged roof shingles
- small rust spots on mobile homes

Structures in sub-standard condition may provide less protection to residents during certain hazard events like tropical storms, tornados, or hurricanes. Furthermore, because they're already in a state of disrepair, additional damage due to hazard events may compound existing ones and potentially make these homes uninhabitable.

4. Hurricane / Tropical Storms

Once a tropical depression has intensified to the point where its maximum sustained winds are between 35-64 knots (39 – 73 mph), it becomes a tropical storm. At these wind speeds the storm becomes more organized and begins to become more circular in shape – resembling a hurricane. The rotation of a tropical storm is more recognizable than for a tropical depression. Tropical storms can cause many problems without becoming a hurricane. However, most of the problems a tropical storm causes stem from heavy rainfall and high winds.

According to National Oceanic and Atmospheric Administration (NOAA)[8], a hurricane is an intense tropical weather system of strong thunderstorms with a well-defined surface circulation and maximum sustained winds of 74 mph or higher. Hurricanes are categorized according to the strength of their winds using the Saffir-Simpson Hurricane Scale. A Category 1 storm has the lowest wind speeds, while a Category 5 hurricane has the highest.

1) Hurricanes / Tropical Storms History

The 2018 Kenedy County HMAP recorded 11 hurricane / tropical storm events between 1961 – 2010. Tropical storms and hurricane data isn't broken down beyond the county level. However, given the County's location on the Texas Gulf Coast and its Tier I Status, hurricanes and tropical storms affect the entire County.

Using data from NOAA's National Centers for Environmental Information, local news reports, and data from the National Climatic Data Center, the planning team created the following table to illustrate Kenedy County hurricane and tropical storm history between 2018 - 2025. There have been no recorded events since Hurricane Hanna in 2020.

[8] https://www.noaa.gov/education/resource-collections/weather-atmosphere/hurricanes

Table 10: Historical Hurricanes & Tropical Storms that affected Kenedy County and the Participating Jurisdictions

Hurricane & Tropical Storm Events	Date	Hurricane Category	Maximum Wind Speed	Local Fatalities	Local Injuries	Local Property Damage $2025	Local Crop Damage $2025
1	7/25/2020	Hurricane - Category 1	100	0	0	$0	$121,967

2) Likelihood of Future Occurrence

Hurricanes occur in seasonal patterns between June 1 and November 30. Based on the historical frequency of hurricane events in Kenedy County outlined above, the likelihood of a future event affecting any of the participating jurisdictions is occasional, that is a hurricane is possible in the next five years.

3) Extent

The Saffir-Simpson Scale categorizes hurricane intensity linearly based upon maximum sustained winds, barometric pressure, and storm surge potential. Wind, pressure, and surge are combined to estimate potential damage. Categories 3, 4 and 5 are classified as "major" hurricanes. Major hurricanes comprise only 20 percent of total tropical cyclone landfalls, but they account for over 70 percent of the damage in the United States. Damage from hurricanes can result from spawned tornados, coastal flooding from storm surge, and inland flooding from heavy rainfall.

Table 11: Saffir-Simpson Scale

Category	Maximum Sustained Wind Speed (MPH)	Minimum Surface Pressure (Millibars)	Storm Surge (Feet)
1	74-95	Greater than 980	3-5
2	96-110	979-965	6-8
3	111-130	964-945	9-12
4	131-155	944-920	13-18
5	155+	Less than 920	19+

The worst hurricanes known to have affected Kenedy County and the participating jurisdictions have been as intense as Category 1 with sustained wind gusts exceeding 100 MPH. Future hurricanes affecting the participating jurisdictions may meet or exceed previous worst-case Category 1 events in terms of storm strength, storm surge, damage inflicted, flooding, injuries, and even death.

4) Location and Impact

A) Location

Location is often referred to in terms of Tier I, II, and III counties, designated by the Texas State Office of Risk Management[9] for property insurance purposes, to represent differing levels of loss exposure to coastal counties and adjacent counties. Tier I counties are those adjacent to the Gulf of Mexico and Tier II counties are those typically adjacent to Tier I counties. Tier III counties are typically those adjacent to Tier II counties. Kenedy County is a Tier I county.

As a Tier 1 county, all of Kenedy County is in direct threat of tropical storms and hurricanes, including associated flooding and high winds. The effects of tropical storms and hurricanes begin to diminish as they move inland. However, the winds alone from Hurricane Ike reached as far as 120 miles from the eye of the storm. Tropical storms and hurricanes vary tremendously in terms of size, location, intensity, and duration.

B) Impact

Impacts from a tropical Storm or hurricane in Kenedy County and the participating jurisdictions may include but are not limited to: loss of power due to downed lines caused by flying debris or fallen trees, flooding, flooding due to damaged or destroyed roofs, damaged or broken windows, damage due to flying debris, wind damage, escaped livestock and pets, injured or killed livestock and pets, crop damage or destruction. In the worst storms, residents may be injured or even killed.

5) Vulnerability

A) Population

As described in Section 3 of Chapter 3 above, Kenedy County is home to vulnerable residents. Increased vulnerability may be due to many factors including but not limited to: age, physical ability, financial means, housing type, and housing condition. Many of these vulnerabilities often overlap.

The County recognizes that vulnerable populations may need additional help preparing for and recovering from a hurricane or tropical storm.

[9] https://www.sorm.state.tx.us/insurance-services/statewide-property-insurance-program

Residents of mobile / manufactured housing are of particular concern. These structures are never considered safe during a hurricane, and depending on tie-down methods, may also be unsafe during strong tropical storms.

Residents of sub-standard structures are also of particular concern. Structures in sub-standard condition ahead of a tropical storm or hurricane, whether due to structural damage, missing windows or doors, holes in exterior walls or the roof, may be less safe during a hurricane or tropical storm than structures in standard condition. Existing structural weaknesses may mean increased damage, injuries, or loss of life.

B) Critical Facilities

The planning team identified 18 critical facilities spread across Kenedy County. Because of Kenedy County's status as a Tier 1 County, all critical facilities, no matter their jurisdictional location, are equally vulnerable to a hurricane / tropical storm event. The following critical facilities and infrastructure in each jurisdiction are expected to play particularly important roles in a hurricane or tropical storm recovery process.

Table 12: Kenedy County Critical Facilities Vulnerable to Hurricanes and Tropical Storms

Jurisdiction	Critical Facilities	Potential Hurricane Impacts								
		Loss of Power	Flying Debris	Uprooted Trees	Flooding Due to Physical Damages	Damaged or Destroyed Roofs	Damaged or Broken Windows	Wind Damage	Injuries	Death
Kenedy County	Kenedy County Courthouse	X	X	X	X	X	X	X	X	X
	Justice of the Peace Building / Hurricane Shelter	X	X	X	X	X	X	X	X	X
	Kenedy County Sheriff's Office	X	X	X	X	X	X	X	X	X
	Water Collection Treatment – Tower & Distribution	X	X	X	X	X	X	X	X	X
	Wastewater Collection & Treatment	X	X	X	X	X	X	X	X	X
	Emergency Services District #1	X	X	X	X	X	X	X	X	X
	Texas Gulf Wind Substation	X	X	X	X	X	X	X		
	Penascal Substation	X	X	X	X	X	X	X		
	Baffin Wind Substation	X	X	X	X	X	X	X		
	Stella Wind Electrical Substation	X	X	X	X	X	X	X		
	Kenedy County Tax Office	X	X	X	X	X	X	X	X	X
	Kenedy County Appraisal District / GWD	X	X	X	X	X	X	X	X	X
	Kenedy County Elections Office	X	X	X	X	X	X	X	X	X
	Kenedy County AG Building	X	X	X	X	X	X	X	X	X
	Maintenance "Ed Lopez" Facility	X	X	X	X	X	X	X	X	X
	Maintenance Barn Facility	X	X	X	X	X	X	X	X	X
	Sheriff's Office Substation	X	X	X	X	X	X	X		
	Garcia Street Pump House	X	X	X	X	X	X	X		

C) Vulnerable Parcels

Central Appraisal District data was used to estimate potential damage values.

Table 13: Estimated Potential Damage Values by Jurisdiction

Jurisdiction	Parcel Count	Estimated Potential Damage Value
Kenedy County	539	$1,069,932,450

5. Floods

According to the National Oceanic and Atmospheric Administration, floods are defined as an overflow of water onto normally dry land. The inundation of a normally dray area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of the water at or near the point where the rain fell. Flooding is a longer-term event than flash flooding: it may last days or weeks.

Flash flood is defined as a flood caused by heavy or excessive rainfall in a short period of time, generally less than 6 hours. Flash floods are usually characterized by raging torrents after heavy rains that rip through riverbeds, urban streets, or mountain canyons sweeping everything before them. They can occur within minutes or a few hours of excessive rainfall. They can also occur even if no rain has fallen, for instance after a levee or dam has failed, or after a sudden release of water by a debris or ice jam.[10]

1) Flood History

The 2018 Kenedy County HMAP reported no flood occurrences throughout the county from 1999 – 2018, and there have been no recorded events since the 2018 plan.

A) National Flood Insurance Program

The National Flood Insurance Program (NFIP) is administered by FEMA to provide flood insurance coverage to the nation. Kenedy County is a participating NFIP community in the FEMA Community Status Book Report.

Kenedy County does not currently have a flood damage prevention ordinance in place. The flood mitigation actions outlined in Chapter 16 below were developed with flood mitigation and NFIP compliance in mind and a mitigation action has been added for Kenedy County to adopt a Flood Damage Prevention Ordinance.

A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling ten-year period, since 1978. According to the best information available, there are no RL properties in Kenedy County.

A severe repetitive loss (SRL) property is: a single family property (consisting of 1 to 4 residences) that is covered under flood insurance by the NFIP and has incurred flood-related damage for which 4 or more separate claims payments have been paid under flood insurance coverage, with the amount of each claim payment exceeding $5,000 and with cumulative amount of such claims payments exceeding $20,000; or for which at least 2 separate claims payments have been made with the cumulative amount of such claims exceeding the reported

[10] https://www.weather.gov/mrx/flood_and_flash

value of the property. According to the best information available, there are no SRL properties in Kenedy County.

2) Likelihood of Future Events

In the case of the FEMA 100-year floodplain there is a 1% annual chance, while in the 500-year floodplain there is a 0.02% annual chance. Thus, the likelihood of a 100-year flood event is occasional and the likelihood of a 500-year flood event is unlikely.

The local planning team determined it is unlikely that Kenedy County will experience a flood event in the next year, meaning an event is probable in the next ten years.

3) Extent

Flood magnitude is generally measured by depth of flood waters in feet or inches. There have been no recorded events for Kenedy County in last 25 years. However, future worst-case flood events may exceed 1" flood depths.

4) Location and Impact

Currently, FEMA Special Hazard Flood Area mapping is not available; however, the map below was developed to demonstrate potential risk areas (Zone A and Zone X) by utilizing the Base Level Engineering (BLE) and Estimated Base Flood Elevation analysis developed by FEMA[11].

Roughly 6% (69,680 acres out of 1,058,714) of Kenedy County is in the FEMA 100-Year floodplain. In contrast, only about 2% (20,608 acres out of 1,058,714) of Kenedy County is in the 500-Year floodplain.

[11] https://webapps.usgs.gov/infrm/estbfe/

A) Location

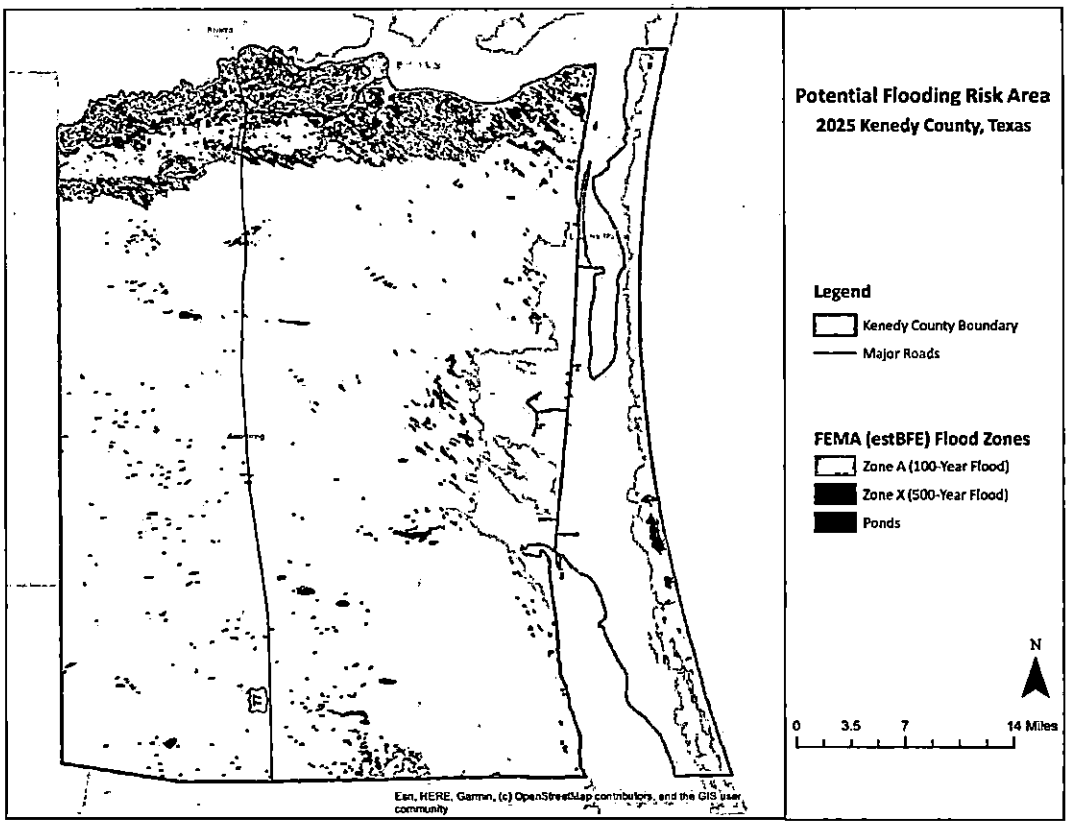

Figure 2: Kenedy County FEMA (estBFE) Potential Flooding Risk

B) Impact

Residents in the participating jurisdictions may temporarily lose power due to downed power lines. Motorists and residents may be left stranded and needing rescue. Affected structures may be flooded, damaged by foodborne contaminants, damaged by debris flow, or even completely washed away. Crops may be damaged or destroyed.

Despite the unlikely probability of a so-called 500-year flood, 0.02% in any given year, the danger is not negligible. Similar to 100-year flood events, parts of the County may temporarily lose power due to downed power lines; motorists and residents may be left stranded and needing rescue; affected structures may be flooded, damaged by flood borne contaminants, damaged by debris flow, or even completely washed away; crops may be damaged or destroyed.

In addition to flooding's direct effects, the County may be subject to indirect effects. These may include but aren't limited to loss of power, limited travel due to flooded and/or washed-out roads, and limited access to nearby emergency care centers.

5) Vulnerability

A) Population

As described in Section 3 of Chapter 3 above, Kenedy County is home to vulnerable residents. Increased vulnerability may be due to many factors including but not limited to age, physical ability, financial means, housing type, and housing condition. Many of these vulnerabilities often overlap.

The County recognizes that vulnerable populations may need additional help preparing for and recovering from a flood.

Residents of mobile / manufactured housing are of particular concern. These structures are never considered safe during a flood, and depending on tie-down methods, may threaten surrounding structures.

Residents of sub-standard structures are also of particular concern. Structures in sub-standard condition ahead of a flood, whether due to structural damage, missing windows or doors, holes in exterior walls or the roof, may be less safe during a flood than structures in standard condition. Existing structural weaknesses may mean increased damage, injuries, or loss of life.

B) Critical Facilities

The planning team identified 18 critical facilities spread across the County. 17 critical facilities are located in some variation of special flood zone.

Table 14: Kenedy County Critical Facilities Vulnerable to Flooding

Kenedy County Critical Facilities
Kenedy County Courthouse
Justice of the Peace Building / Hurricane Shelter
Kenedy County Sheriff's Office
Water Collection Treatment – Tower & Distribution
Wastewater Collection & Treatment
Emergency Services District #1
Penascal Substation
Baffin Wind Substation
Stella Wind Electrical Substation
Kenedy County Tax Office
Kenedy County Appraisal District / GWD
Kenedy County Elections Office
Kenedy County AG Building
Maintenance "Ed Lopez" Facility
Maintenance Barn Facility
Sheriff's Office Substation
Garcia Street Pump House

C) Vulnerable Parcels

Central Appraisal District data was used to estimate potential damage values.

Table 15: Estimated Potential Damage Values by Jurisdiction

Jurisdiction	Flood Zone	Parcel Count	Estimated Potential Damage Value
Kenedy County	A	225	$90,240,360
	X	59	$27,598,970

6. Wildfire

Wildfire is defined as an unplanned wildland fire, including unauthorized human-caused fires, escaped wildland fire use events, and escaped prescribed fire projects. A wildfire event can rapidly spread out of control and occur most often in the summer, when the brush is dry, and flames can move unchecked through a highly vegetative area. Wildfires can start as a slow burning fire along the forest floor, killing and damaging trees. The fires often spread more rapidly as they reach the tops of trees, with wind carrying the flames from tree to tree. Usually, dense smoke is the first sign of a wildfire. A wildfire often begins unnoticed and spreads quickly, lighting brush, trees and homes on fire. For example, a wildfire may be started by a campfire that was not doused properly, tossed cigarette, burning debris, or arson.[12]

1) Wildfire History

The Texas A&M Forest Service Wildfire Risk Assessment Portal provides wildfire data on fires that occurred as recently as 2021. Additional data came from local planning team members and the National Centers for Environmental Information (NCEI).

The 2018 Kenedy County HMAP reported 114 wildfire ignitions 2006 - 2015.

The following table represents all events recorded in the National Centers for Environmental Information (NCEI) and Texas A&M Forest Service databases between 2018 – 2024. There have been no recorded events past May of 2024.

Table 16: Kenedy County Wildfire History

Location	Date Range	Wildfire Events	Acres Burned
Countywide	1/1/2018 – 5/2/2024	44	11,093

2) Likelihood of Future Events

Based on the frequency of recorded events in Kenedy County, the probability of a future event is considered highly likely, meaning an event is probable in the next year.

3) Extent

The Texas A&M Forest Service's Characteristic Fire Intensity Scale (FIS) specifically identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist. The FIS is a fire behavior output, which is influenced by three environmental factors - fuels,

[12] 2023 State of Texas Hazard Mitigation Plan

weather, and topography. According to Texas A&M Forest Service data, Kenedy County and the participating jurisdictions are rated between Class 1 and Class 5.

Table 17: Characteristic Fire Intensity Scale[13]

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 find 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.

Future fire events in Kenedy County and the participating jurisdictions may meet previous worst-case Class 5 (FIS) wildfires in terms of intensity, acreage burned, and inflicted damage.

4) Location and Impact

A) Location

Wildland Urban Interface data was not available for Kenedy County. Fire location history was obtained from the Texas A&M Forest Service Wildfire Risk Assessment Portal and may include "other" fires – defined as including "rubbish, trees, brush, and grass fire."

[13] https://www.texaswildfirerisk.com

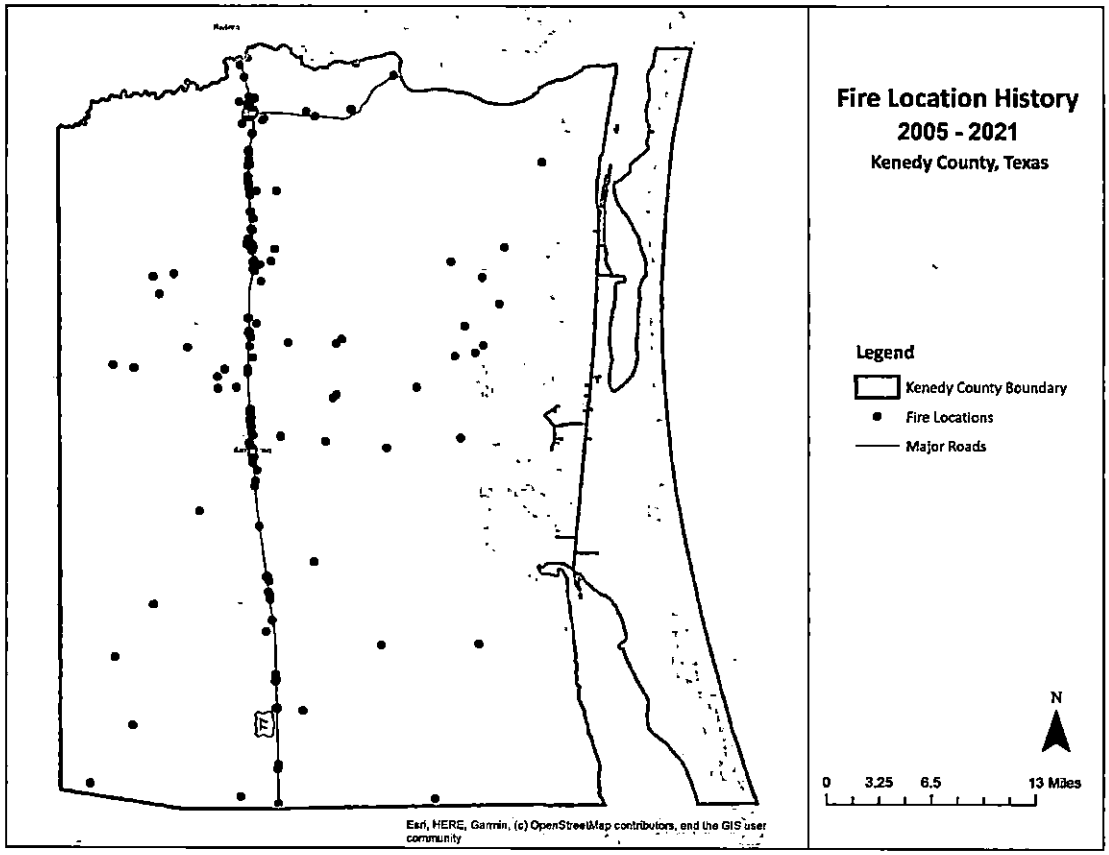

Figure 3: Kenedy County Fire Location History

B) Impact

Impacts from a wildfire in Kenedy County may include but are not limited to crop damage or destruction; damaged or destroyed agricultural, residential, commercial, and industrial buildings; escaped, lost, injured, or killed livestock and pets. In the worst cases, residents may be injured or killed.

5) Vulnerability

A) Population

As described in Section 3 of Chapter 3 above, Kenedy County is home to vulnerable residents. Increased vulnerability may be due to many factors including but not limited to age, physical ability, financial means, housing type, and housing condition. Many of these vulnerabilities often overlap.

The County recognizes that vulnerable populations may need additional help preparing for and recovering from wildfire.

Residents of mobile homes, specifically those built before HUD's Manufactured Housing and Standards requirements were introduced in 1976, are of particular concern[14]. These structures are more prone to fire and have a higher incidence of occupant death than modern manufactured homes.

Residents of sub-standard structures are also of particular concern. Structures in sub-standard condition ahead of a wildfire, whether due to structural damage, missing windows or doors, holes in exterior walls or the roof, may be less safe during a wildfire than structures in standard condition. Exterior damage may make the homes more prone to fire by more readily exposing flammable materials to flames. Missing windows and other exterior gaps may leave residents and structures prone to smoke inhalation and smoke damage.

All of these issues may increase damage and lead to injuries or loss of life.

B) Critical Facilities

Wildland Urban Interface data was not available for Kenedy County. Fire location history was obtained from the Texas A&M Forest Service Wildfire Risk Assessment Portal and may include "other" fires – defined as including "rubbish, trees, brush, and grass fire."

For the purposes of this plan, because WUI data is not available, we are to assume that all critical facilities are vulnerable to some form of fire or wildfire.

[14] https://www.usfa.fema.gov/downloads/pdf/statistics/rural.pdf

Table 18: Critical Facilities Vulnerable to Wildfire

Kenedy County Critical Facilities
Kenedy County Courthouse
Justice of the Peace Building / Hurricane Shelter
Kenedy County Sheriff's Office
Water Collection Treatment – Tower & Distribution
Wastewater Collection & Treatment
Emergency Services District #1
Texas Gulf Wind Substation
Penascal Substation
Baffin Wind Substation
Stella Wind Electrical Substation
Kenedy County Tax Office
Kenedy County Appraisal District / GWD
Kenedy County Elections Office
Kenedy County AG Building
Maintenance "Ed Lopez" Facility
Maintenance Barn Facility
Sheriff's Office Substation
Garcia Street Pump House

C) Vulnerable Parcels

Central Appraisal District data was used to estimate potential damage values. For the purposes of this plan, because WUI data is not available, we are to assume that all parcels are vulnerable to some form of fire or wildfire.

Table 19: Estimated Potential Damage Values by Jurisdiction

Jurisdiction	Parcel Count	Estimated Potential Damage Value
Kenedy County	539	$1,069,932,450

7. Tornado

A tornado is defined as a violently rotating column of air touching the ground, usually attached to the base of a thunderstorm.[15] Most of the time, vortices remain suspended in the atmosphere and are visible as a funnel cloud. However, when the lower tip of a vortex touches the ground, the tornado becomes a force of destruction. Tornado strength is currently measured using the Enhanced Fujita (EF) Scale. Like the previously used Fujita scale, the EF Scale uses damage to estimate tornado wind speeds and assigns a number between 0 and 5. A rating of EF0 represents minor to no damage whereas a rating of EF5 represents destruction of buildings.

1) Tornado History

The 2018 Kenedy County HMAP reported 6 tornado occurrences throughout the county from 1950-2018. There have been no recorded events of Tornado since the 2018 HMAP.

2) Likelihood of Future Events

Tornado events in Kenedy County are considered an unlikely hazard given the frequency of previous tornados in the County, meaning one is possible in the next ten years.

3) Extent

Before 2007, the Fujita Scale was used for rating tornado strength. The Fujita Scale is based on damage intensity instead of wind speed, with estimated wind speed ranges based on the extent of observed damage.

Table 20: Fujita Scale

Fujita Scale			
Fujita Category	Wind Speed (MPH)	Character	Potential Damage
F0	40-72	Weak	Light Damage. Some damage to chimneys; branches broken off trees, shallow-rooted trees uprooted, sign boards damaged.
F1	73-112	Weak	Moderate damage. Roof surfaces peeled off; mobile homes pushed foundations or overturned; moving autos pushed off road.
F2	113-157	Strong	Considerable damage. Roofs torn from frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light objects become projectiles.
F3	158-206	Strong	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping

[15] https://www.weather.gov/phi/TornadoDefinition

			malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
F4	207-260	Violent	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
F5	260-318	Violent	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yds.); high-rise buildings have significant structural deformation; incredible phenomena will occur.

Adopted after 2007, the Enhanced Fujita Scale, or EF Scale, is the scale for rating the strength of tornados via the damage they cause. Six categories from zero to five represent increasing degrees of damage. The scale considers how most structures are designed and is thought to be an accurate representation of the surface wind speeds in the most violent tornados.

Table 21: Enhanced Fujita Scale[16]

Enhanced Fujita (EF) Scale		
Enhanced Fujita Category	**Wind Speed (MPH)**	**Potential Damage**
EF0	65-85	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	200+	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yds.); high-rise buildings have significant structural deformation; incredible phenomena will occur.

[16] 2023 State of Texas Hazard Mitigation Plan

The most recent tornados in Kenedy County and the participating jurisdictions have been classified as an F3 on the Fujita Scale. Kenedy County sits within Zone III (200 mph winds) of the IBC's wind speed map[17]. Future tornados in Kenedy County and the participating jurisdictions may meet up to EF5 on the Enhanced Fujita Category.

4) Location and Impact

A) Location

Tornados are not constrained by any distinct geographic boundary. Tornados can occur across the entire County.

B) Impact

Impacts from a tornado may include but are not limited to damaged or destroyed personal property including vehicles, damaged or destroyed agricultural, residential, commercial, and industrial buildings, and loss of power. Crops may be damaged or destroyed. Pets and livestock may be injured or killed by tornados or flying debris. Pets and livestock may escape due to damaged or destroyed structures and fences.

In the worst cases, tornados may cause injuries and/or be deadly.

5) Vulnerability

Tornadoes have the potential to impact the entire planning area. All existing and future buildings, critical facilities, critical infrastructure, improved property, and the population of the participating jurisdictions are considered vulnerable to this hazard.

A) Population

As described in Section 3 of Chapter 3 above, Kenedy County is home to vulnerable residents. Increased vulnerability may be due to many factors including but not limited to age, physical ability, financial means, housing type, and housing condition. Many of these vulnerabilities often overlap.

The County recognizes that vulnerable populations may need additional help preparing for and recovering from a tornado. Residents of mobile / manufactured homes are of particular concern. These structures are never considered safe during a tornado.

Residents of sub-standard structures are also of particular concern. Structures in sub-standard condition ahead of a tornado, whether due to structural damage, missing windows or doors, holes in exterior walls or the roof, may be less safe during a tornado than structures in standard

[17] https://iibec.org/giving-tornadoes-their-due/

condition. Existing structural weaknesses, due to housing type or existing damages, may lead to compounded damage, injuries, or loss of life.

B) Critical Facilities

Certain critical facilities and infrastructure in the County may be particularly vulnerable to tornados. These facilities have been identified for reasons including: the number of people who use the facility or infrastructure, the facility's role in providing basic services to begin the cleanup process and get the jurisdictions running again, and the facility's ability to offer goods and materials residents will need to resume normalcy as quickly as possible. The selected critical facilities are built from a variety of materials with varying levels of resistance to tornadic damage. Additionally, their varying ages mean they weren't constructed to uniform building standards. Given tornados' violent nature, these facilities may experience increased levels of vulnerability to the hazards. Damage to any of these facilities may have a disproportionately negative impact on each jurisdiction's recovery from a tornado if that damage affects the facility's ability to reopen and resume normal business right away.