Agenda Report

2725 Judge Fran Jamieson Way
Viera, FL 32940

Consent

F.4. 10/28/2025

Subject:
Adoption of the 2025 Brevard County Hazard Mitigation Plan (HMP)

Fiscal Impact:
None, however, an approved and adopted Hazard Mitigation Plan is required for local governments to receive Hazard Mitigation Grant Program funding

Dept/Office:
Public Safety Group: Emergency Management

Requested Action:
It is requested that the Board approve a resolution adopting the 2025 Brevard County Hazard Mitigation Plan.

Summary Explanation and Background:
The Hazard Mitigation Plan (HMP) is required to be updated and submitted to the Federal Emergency Management Agency (FEMA) every five (5) years, for review and approval. That review and approval process was delegated from FEMA to the Florida Division of Emergency Management (FDEM).

- Once submitted and reviewed, FDEM provides an Adopted Pending Approval letter.
- The HMP must then be adopted by the Board to receive full approval.
    - **FDEM has determined that the Brevard County HMP is compliant with all state and federal standards and is ready for formal adoption.**
- An approved and adopted Hazard Mitigation Plan is required for local governments to receive Hazard Mitigation Grant Program funding following a Presidential Disaster Declaration, per the Robert T. Stafford Disaster Relief Act and the Code of Federal Regulations.

The 2025 update focused on transitioning from a Local Mitigation Strategy to a comprehensive Hazard Mitigation Plan that unifies all facets of mitigation and affirms the Local Mitigation Strategy as the mechanism for action. Key updates include reassessed and refined the Threat and Hazard Identification and Risk Assessment (THIRA), updated the County's Demographics, Asset Inventory, Maps, and Critical Infrastructure List, removed redundant information to improve the readability of the plan, and revised/modernized the Mitigation Project Proposal, Scoring/Prioritization.

A Hazard Mitigation Plan is a multi-jurisdictional, long-term strategy that identifies potential hazards, assesses a community's vulnerability to them, and outlines actions to reduce future damage to life and property.

Clerk to the Board Instructions:
Please provide the Clerk Memorandum and the Resolution, signed by the Chair, to Emergency Management.

BREVARD County
BOARD OF COUNTY COMMISSIONERS

FLORIDA'S SPACE COAST

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October 29, 2025

M E M O R A N D U M

TO: John Scott, Emergency Management Director

RE: Item F.4., Adoption of the 2025 Brevard County Hazard Mitigation Plan (HMP)

The Board of County Commissioners, in regular session on October 28, 2025, approved and adopted Resolution No. 25-135, adopting 2025 update of the Brevard County Hazard Mitigation Plan. Enclosed is a fully-executed Resolution.

Your continued cooperation is always appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS
RACHEL M. SADOFF, CLERK

Kimberly Powell, Clerk to the Board

Encl. (1)

/tr

cc: Public Safety Director

RESOLUTION 25-135

A RESOLUTION OF THE BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS FOR UNINCORPORATED BREVARD COUNTY, FLORIDA, ADOPTING THE 2025 UPDATE OF THE BREVARD COUNTY HAZARD MITIGATION PLAN.

WHEREAS, the unincorporated areas of Brevard County are vulnerable to the human and economic costs of natural, technological, and societal disasters, and

WHEREAS, Brevard County recognizes the importance of reducing or eliminating these vulnerabilities for the overall good and welfare of the community, and

WHEREAS, Brevard County has been an active participant in the Brevard County Local Mitigation Strategy (LMS) Steering Committee, which has established a comprehensive, coordinated planning process to eliminate or decrease these vulnerabilities, and

WHEREAS, Brevard County's representatives and staff have identified and justified a number of proposed projects and programs needed to mitigate the vulnerabilities of the unincorporated areas of Brevard to the impacts of future disasters, and

WHEREAS, these proposed projects and programs have been incorporated into the updated 2025 edition of the Brevard County Hazard Mitigation Plan (HMP) that has been prepared and issued for consideration and implementation by the communities of Brevard County; and

WHEREAS, the Brevard County 2025 HMP is in compliance with the local hazard mitigation requirements of Section 322 of the Disaster Mitigation Act of 2000 (DMA2K) as implemented in 44 C.F.R., Part 201; and

WHEREAS, approval and adoption of the HMP is necessary in order to maintain eligibility for future hazard mitigation project grant funding.

NOW, THEREFORE, BE IT RESOLVED that the Board of County Commissioners accepts and adopts the Brevard County 2025 Hazard Mitigation Plan (HMP), superseding the Brevard County 2020 Local Mitigation Strategy.

DONE ORDERED AND ADOPTED, in regular session this 28th day of October, 2025.

ATTEST:

RACHEL M. SADOFF, CLERK

ROB FELTNER, CHAIRMAN
BOARD OF COUNTY COMMISSIONERS
BREVARD COUNTY, FL

As approved by the Board 10/28/2025.

Brevard County Hazard Mitigation Plan

2025

Table of Contents

Record of Changes iii
What is Hazard Mitigation? 1
Purpose 1
Background 2
Hazard Mitigation Plan Resources 2
Threat and Hazard Identification and Risk Assessment 4
Disasters and Brevard County 4
Initial Threat and Hazard Identification 4
Risk Assessment Methodology 5
Brevard County Profile 5
Hazard Profiles 8
Coastal Erosion 9
Disease Outbreak 11
Drought 12
Extreme Heat 14
Flooding 16
Sea Level Rise 26
Severe Thunderstorms 27
Severe Winter Storms 28
Space Weather and Geomagnetic Storms 29
Tornado 30
Tropical Cyclones 34
Tsunami 38
Wildfire 39
Bulk Fuel / Oil Spill Incident 42
Civil Unrest 44
Communications Failure 45
Cyber Attacks 46
Dam/Levee Failure 47
Hazardous Materials Release 48
Radiological Release 49
Space Launch Anomalies 50
Terrorism 52
Transportation Incidents 53

The Local Mitigation Strategy 54
Mitigation Capabilities 54
The Steering Committee 54
Goals 55
Projects 55
Public Participation 58
Plan Maintenance 58
Hazard Mitigation Plan Integration 58
Post-Disaster Assessment 58
Plan Update 59
Appendix A: The 2025 5-Year Update Process 60
Appendix B: Participating Jurisdictions and Organizations 63
Appendix C: Prioritized Project List 65
Appendix D: Steering Committee Bylaws 77
Appendix E: Meeting Documentation 83
Appendix F: Mitigation Capabilities and Mechanisms 102
Appendix G: Critical Facilities 234

Record of Changes

Date	Comments	Completed by
March 2025	5-Year Update - Draft	BC
April 2025	FDEM Feedback Revision	BC

What is Hazard Mitigation?

Hazard mitigation is any action that minimizes the risk of a hazard by reducing vulnerability and exposure. Risk is the relationship between probability, exposure, vulnerability and impacts. There are two types of hazard mitigation. Each type has a different approach to reducing risk. The table below describes the types of mitigation.

Types of Hazard Mitigation		
Type	**Description**	**Examples**
Structural	Physical modifications to infrastructure, buildings, or the environment to lessen hazard risk	Building seawalls Retrofitting buildings to resist damage from airborne objects Converting developed areas to greenspace
Non-structural	Methods other than construction that reduce the risk from hazards	Upgrading building codes Changing land use regulations Public education

Purpose

All of Brevard County completes hazard mitigation projects with the idea that spending money now will save money later. According to a 2019 National Institute of Building Sciences report, every dollar spent mitigating a hazard can save up to thirteen dollars in the recovery phase. These savings benefit the entire community. Households benefit by saving money on their insurance premiums and rebuilding costs. Local governments benefit from smaller shocks to their budget from the lower cost of recovery, and a faster return of services. The return of services helps the community benefit with a shorter time to a new normal.

The purpose of the Hazard Mitigation Plan is to be the framework through which mitigation activities are conducted in Brevard County. It establishes a structured, methodical approach to assessing risks, setting goals, and identifying solutions. Having the plan in place ensures that the County and its jurisdictions are prepared to act quickly when funding or resources become available. The data gathered about hazards, demographics, and vulnerability is shared with the community. The entire process provides an avenue for multijurisdictional coordination, allowing data to be shared, projects to be aligned, and capabilities to be strengthened across the entire County.

The Brevard County Local Mitigation Strategy has guided mitigation activities for the County and its jurisdictions for almost 30 years. It has long been the broad brush used to encourage communities reduce their risk through mitigation. The Local Mitigation Strategy has been renamed to the Brevard County Hazard Mitigation Plan to better encapsulate the whole mitigation concept in Brevard County. It captures the planning process, risk analysis, and strategy formulation that guide mitigation efforts in the county. The change also represents a return to Brevard's roots, as the original version of this document was a Hazard Mitigation Plan. By restoring that title, the County aligns with national terminology for the same planning mechanism, ensuring consistency with federal partners while clearly communicating the purpose of the plan.

Background

The Hazard Mitigation Plan spans more than two decades and reflects lessons learned from disasters. Each version of the plan represents the changing landscape of Brevard County and how it conducts mitigation. The plan was first written in 1998 and was influenced by the Florida Division of Emergency Management's Local Mitigation Strategy initiative. The Local Mitigation Strategy initiative led to the formation of Brevard Prepares, the first coordinated effort to formalize hazard mitigation planning. National initiatives and a growing recognition that proactive hazard mitigation was critical to reducing disaster losses continued to shape the plan.

In 2000, the Disaster Mitigation Act amended the Stafford Act, requiring jurisdictions seeking Federal Emergency Management Agency funding to adopt a Hazard Mitigation Plan. This legislation also established Hazard Mitigation Assistance (HMA) programs such as the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance (FMA) program, and the Pre-Disaster Mitigation (PDM) program. In 2002, Brevard County adopted its first formal revision of the Hazard Mitigation Plan, which introduced the overarching goal of creating a "Disaster Resistant Community."

The 2004 hurricane season brought four storms to the State of Florida and a renewed interest in hazard mitigation in Brevard County. In this period, the County invested in Mitigation 20/20 software, which offered a templated approach but caused the plan to expand to almost 2,000 pages. The flooding brought by Tropical Storm Fay in 2008 galvanized a stronger commitment to flood mitigation across the county.

The modern plan period began in 2015, when the plan was updated and shortened to approximately 500 pages. This shorter version of the plan still maintained the intent of the original document but condensed and removed sections where possible. Hurricane Matthew in 2016 caused multiple Hazard Mitigation Grant Program applications from organizations throughout the county. Hurricane Irma impacted Brevard County in 2017 and resulted in an allocation of over $13 million for the Hazard Mitigation Grant Program. There were over 20 projects submitted to the Steering Committee for support to apply for the grant funding. In 2020, the COVID-19 pandemic complicated the plan update and forced flexibility for holding planning meetings. The 2025 update has continued the modernization of the Hazard Mitigation Plan by removing redundancies and increasing flexibility for a changing environment.

Hazard Mitigation Plan Resources

The Brevard County Hazard Mitigation Plan is supported by a wide range of plans, strategies, statutes, and technical resources. These materials provide the legal framework, policy guidance, and scientific data needed to ensure that mitigation planning is comprehensive, evidence-based, and aligned with state and federal standards.

Key statutory and regulatory references for the entire plan include:

- County and Municipal Codes of Ordinances
- Emergency Management Plans
- Florida State Statutes
- Land Development Regulations
- Local Comprehensive Plans
- The State of Florida Hazard Mitigation Plan

In addition to the above sources, the threat and hazard identification and risk assessment incorporates a variety of technical resources, datasets, and historical documents including:

- Brevard County Emergency Management Comprehensive Emergency Management Plan
- Brevard County Geographic Information Systems databases
- Previous versions of Brevard County's Local Mitigation Strategy
- Federal Emergency Management Agency's National Risk Index
- Florida Forestry Service wildfire risk data
- Jurisdictional planning documents such as Comprehensive Plans, Future Land Use Plans, and Capital Improvement Plans
- National Climatic Data Center archives
- National Oceanic and Atmospheric Administration datasets
- National Weather Service records and forecasting tools
- Sea Level Rise studies conducted by the City of Cape Canaveral and Brevard County

Threat and Hazard Identification and Risk Assessment

The risk assessment uses available data to provide a data-based approach for mitigation in Brevard County. The information in this assessment assists stakeholders to make their case for mitigation proposals. It is the central resource for the hazards and how their effects impact Brevard County.

Disasters and Brevard County

Since 1972, Brevard County has been designated in 45 Presidentially Declared Disasters. Since 2020, Brevard County has seen impacts from multiple hazards. Five incidents resulted in Presidentially Declared Disasters including one pandemic and four hurricanes.

For a full listing of historical weather events to hit Brevard County, including economic, agricultural and human impacts, view the National Climatic Data Center data at the following website: http://www.ncdc.noaa.gov/stormevents/

For a full listing of Presidential Disaster Declarations, visit the following website: http://www.fema.gov/presidential-disaster-declarations

Initial Threat and Hazard Identification

Brevard County is vulnerable to a wide range of threats and hazards. The Federal Emergency Management Agency requires an evaluation of a full range of hazards. This risk assessment evaluates natural, technological, and human-caused hazards that are reasonably likely to occur in Brevard County.

The following hazards have been evaluated and profiled:

Natural – hazards caused by weather, geologic, or environmental processes

- Tropical cyclones, including high winds and storm surge
- Flooding, including coastal and inland flooding
- Tornado
- Severe Thunderstorms
- Coastal Erosion
- Sea Level Rise
- Severe Winter Storms
- Extreme Heat
- Drought
- Wildfire
- Tsunami
- Space Weather and Geomagnetic Storms
- Disease Outbreak

Technological and Human-Caused – hazards caused accidentally, deliberately, or by the presence of human technologies

- Dam/Levee Failure
- HazMat Incident
- Radiological Release
- Communications Failure
- Terrorism
- Cyber Attack
- Transportation Accident
- Civil Disorder

Not Profiled

- Earthquakes – there is no fault near Brevard County
- Sinkholes – the topography and composition of the ground in the county is not conducive to sinkhole formation

Risk Assessment Methodology

To conduct the assessment, hazards were identified based on the county's overall risk to those hazards and previous versions of the plan. Then, the county's assets, including populations, property, and infrastructure, were accounted. The hazard's impacts were then assessed based on the vulnerabilities of those assets within the county. This resulted in the Hazard Profiles as outlined below.

Brevard County Profile

Brevard County runs approximately 72 miles in length from north to south and 22 miles wide east to west. The total land area is 1,556 sq. miles, with 1,015 sq. miles of land and 541 sq. miles of water. The County is bordered by Volusia County to the north, Seminole and Orange County to the northwest, Osceola County to the west, Indian River County to the south, and the Atlantic Ocean to the east. Brevard has a humid subtropical climate and only two primary seasons. The wet season that runs from May to late October, with the dry season from running from December to May. Brevard's large bodies of water have a tempering influence on the climate, reducing the temperature range, and contributing to high humidity. Hurricanes are defined within their own season, running from June through November. Brevard County has been significantly impacted by hurricanes in the past and bring their own unique risks due to the county's topography.

Brevard County's topography is dominated by four primary features; the St. John's River Valley, Indian River Lagoon, the barrier islands and the Atlantic Coastal Ridge. Approximately 60% of Brevard County lies within three primary flood-prone areas: the riverine floodplain of the St. Johns River and freshwater tributaries of the Indian River Lagoon system, the Indian River Lagoon, and the isolated areas which flood because of soil or hydrological conditions. These flood-prone areas provide much storage of flooding rainfall due to hurricanes and severe storms.

The St. Johns River Valley lies west of Interstate 95, is the longest river in Florida at 310 miles and one of the few rivers in North America that flows north. The St. Johns River basin is a critical resource as it supplies drinking water to surrounding areas through Lake Washington. To accommodate flooding rain, the St. Johns River Water Management District has constructed a semi-structural system of four water management areas, four marsh conservation areas and two marsh restoration areas covering approximately 166,500 acres in Indian River and Brevard counties. Under maximum storm conditions, the project is designed to hold 500,000 acre-feet of water — enough water to cover the 200,000-acre project with an average of 2.5 feet of water.

The Indian River is not simply a river, but an estuary and a lagoon. The 156-mile-long estuary is composed of three main bodies of water: the Banana River, the Indian River, and the Mosquito Lagoon. Saltwater and freshwater meet in the Lagoon and provide a habitat for the various species that require brackish water to thrive. The Indian River Lagoon is considered one of the most biologically diverse estuaries in North America. The United States Environmental Protection Agency designated the Indian River Lagoon an Estuary of National Significance. The Indian River is not tidal but is driven by the direction of the wind, and may flow north, south or remain stagnant. The Indian River is vulnerable to storm surge from hurricanes, as storms arriving from the east push surge up through the rivers and lagoons.

Brevard's barrier islands may be thought of as a river of sand, as the islands are continually shifting in response to variations in erosion rates, deposition, winds, ocean, and tidal currents. The islands perform an important function as their beaches and dunes protect the inland areas from the powerful forces of the Atlantic Ocean. Elevations range from sea level along the shore to 20 feet above sea level at the crest of the dune line; a few isolated spots on Merritt Island are as high as 33 feet above sea level. The Archie Carr National Wildlife Refuge on southern barrier islands is the most important sea turtle refuge

in North America. More Loggerhead turtles nest along the beaches of Brevard and Indian River Counties than anywhere else in the world. In addition, the Merritt Island National Wildlife Refuge is known internationally for its wildlife diversity.

The Atlantic Coastal Ridge is a geological feature of the entire length of inland Brevard County. It primarily centers on United States Highway 1 along the Indian River Lagoon. The outer perimeter of the Ridge helped form the Barrier Islands along the eastern coast of Brevard. The Atlantic Coastal Ridge has elevation ranges from 5 to 20 feet in its southernmost parts and varies from 1½ to 3 miles wide. It consists of parallel, elongated ridges and swales that run north to south over the length of the Brevard. The Atlantic Coastal Ridge provides shelter for animals living special habitats such as the scrub and hammock ecosystems. It also brings a large recreation benefit to Brevard County and its residents and visitors.

The Atlantic Continental Shelf sits immediately off of Brevard County's Atlantic Coast. Near Cape Canaveral, the shelf narrows and steepens as the Gulf Stream passes close to shore. Unlike Florida's wide and shallow Gulf Coast, the Atlantic Continental Shelf helps protect coastal areas from storm surge. This topography limits the overall inland reach of storm surge but allows larger waves to hit the coastline that contributes to recurring issues. These larger waves increase the potential for dune overwash and beach erosion during tropical cyclones and nor'easters.

Demographics

The 2023 US Census Community Survey estimates the population of Brevard County at 643,979 and is projected to continue to grow. As a coastal county, Brevard has a higher cost of living for residents. The cost of living continues to increase, as an example of residents who rent their homes, 54% are paying more than 30% of their income on housing and 1 in 4 residents paying over 50%. Brevard County's per capita income is $42,738. Over 76% of residents own their own homes with a median home value estimated at $355,455. In 2023, Brevard County had an estimated 303,990 total housing units. Most housing units are single family homes, 61,000 apartment units and 21,800 mobile/manufactured homes.

Special Populations

Brevard County has a variety of special populations that require additional considerations.

- **Access and Functional Needs**
  Brevard County boasts a healthy retirement population, with 25% of the residents being 65 years or older and of those, about a quarter of Brevard's senior residents live alone. Just over 16% of residents have disabilities, with 10.8% of total residents using specialized medical equipment
- **Low-Income Populations**
  An estimated 10.1% of Brevard County residents live below the poverty line. Of those 63,000 residents, 26% are under the age of 18, 53% are between 18 and 64, and the remaining 20% are over 65 years
- **"Snowbirds"**
  Each year, an unknown number of non-residents migrate to Brevard County for the winter months. Known as snowbirds, these temporary residents tend to be retired or remote workers from other states. While official numbers are difficult to pin down, thousands of seasonal travelers arrive in Brevard County each winter, providing a boost to the local economy

- **Non-English-Speaking Populations**
  English is spoken in approximately 88% of Brevard County's homes. Spanish is the second most used language at 8% of the population and the remaining 4% of the population speak English less than "very well"
- **Agriculture Populations**
  According to the 2022 United States Department of Agriculture Census, Brevard County has 584 farms accounting for 145,000 acres. Pastureland accounts for 88,404 acres and croplands account for 19,059, with the remaining acres mostly woodland. Top crops include sod, hay, and nursey stock crops. Brevard livestock consists of 23,000 cattle, over 3,000 chickens for eggs and over 1,000 goats, with smaller populations of chickens for meat, pigs, horses, sheep and turkeys
- **Incarcerated Populations**
  The Brevard County Jail Complex opened in 1986 with beds for 386 inmates. The Jail Complex consists of a Booking area, Housing areas, Infirmary, Kitchen, Laundry facility, Courtrooms, Visiting areas, Recreation areas, and office/support locations. In addition to the maximum and medium security main jail, there are four tent housing structures, an annex facility and a mental health/medical unit bringing the total rated capacity to 1,849 beds. Today, the Jail Complex routinely houses over 1,600 inmates
- **Persons Experiencing Homelessness**
  Each year, the Brevard Homeless Coalition conducts a Point-in-Time count to identify residents struggling with homelessness. The 2024 count found that residents experiencing homelessness increased to 1,071. Residents considered unsheltered homeless, individuals living on the streets, cars and outside, increased significantly to 779. Of the those identified as chronically homeless, 81% have lived in Brevard County for more than three years
- **Mass Migration**
  Due to Brevard County's location on Florida's central east coast, the county has a lower risk for large groups of migrants compared to the southern counties. Mass migration occurs infrequently in Brevard County

Critical Infrastructure

Brevard County's buildings, infrastructure, and critical facilities provide services for the entire population of the community. Critical facilities, such as hospitals, schools, and other infrastructure, are specific assets of the built environment that provide services that are essential for life, safety, and economic viability. They serve the public and maintain community lifelines that residents use every day. Critical infrastructure is vulnerable to the many hazards that occur within the county. Any interruption of those services would cause significant harm to the entire county and would pose a challenge to restore if impacted by a catastrophic incident.

Brevard County has identified over 2,000 critical facilities inside and outside of its borders that provide residents with critical services before, during, and after a disaster. These assets along with the residents, businesses, spaceport, and its environmental resources make Brevard unique. As required by Florida Administrative Rule 27P-22, the Hazard Mitigation Plan maintains a critical infrastructure list in the appendices. Due to the identification of vulnerabilities and exact locations of the infrastructure, the list is not publicly releasable, per Florida Statute §119.0725 (2024).

Hazard Profiles

Each profiled hazard will have the following information:

- **Description** – General information about the hazard
- **Extent** – How bad can the hazard get
- **Location** – Where it occurs and how impacts change through the planning area
- **Previous Occurrence** – How many times this has occurred in the county in the past five years and any significant occurrences
- **Probability** – How likely is this hazard to occur in the planning area in any given year. The probability is determined using past occurrences and how many times a year they occur. Climate change also affects the probability of natural hazards and is considered in the analysis
- **Impacts** – What are the impacts the county and its jurisdictions likely to see because of this hazard. Impacts can vary across the planning area for different hazards due to location, geography, and demographics
- **Vulnerability** – How susceptible is the planning area to the impacts from this hazard. Can or will this change due to development

Coastal Erosion

Coastal erosion is the gradual loss or displacement of land along coastlines due to natural forces such as waves, tides, currents, and wind, as well as human activities. It results in the retreat of shorelines, loss of beaches, and damage to coastal ecosystems and infrastructure. Factors like rising sea levels, frequent tropical cyclones, and human interventions (e.g., construction and dredging) can accelerate the process. Nor'easters during the fall and winter months can also increase coastal erosion rates as they impact wave height and frequency. The more intense wave action leads to increased sand loss and erosion of the beach.

Brevard County, with its long coastline, is susceptible to coastal erosion. Localized erosion can also occur away from the coastline along river and stream banks, canals and drainage ditches.

Extent

There is no single universal scale for rating the severity of coastal erosion, but various classification systems and methodologies are used to assess erosion intensity. Some commonly used approaches include:

- **Coastal Erosion Hazard Index** – Assesses erosion risk based on factors like shoreline change rates, wave action, storm impacts, and sea level rise
- **Shoreline Change Rate** – Measures how fast the coastline is retreating or advancing, often expressed in meters per year
- **Bruun Rule** – A theoretical model predicting shoreline retreat due to sea level rise
- United States Geological Survey Coastal Vulnerability Index – Rates the vulnerability of coastlines to erosion based on geological and physical factors such as wave height, slope, and tidal range
- **Florida Department of Environmental Protection** – Rates beaches as either Critically Eroded Beach or Non-Critically Eroded Beach. Critical erosion areas are segments of the shoreline where natural processes or human activity have caused or contributed to erosion and recession of the beach or dune system

The Florida Department of Environmental Protection has classified most of Brevard's beaches as critically eroded. This includes approximately 36.5 miles of coastline from Cape Canaveral to south of Melbourne Beach.

Location

In Brevard County, erosion events can occur on all coastal areas of the county, year-round. Jurisdictions susceptible to coastal erosion include beachfront areas like: Cape Canaveral, Cocoa Beach, Satellite Beach, Melbourne Beach, Indian Harbour Beach, Indialantic, and unincorporated Brevard (South Patrick Shores, Patrick Space Force Base, Canaveral National Seashore and the South Beaches); and Lagoon-front jurisdictions like: Titusville, Cocoa, Rockledge, Palm Shores, Melbourne, Malabar, Grant-Valkaria, and unincorporated Brevard (i.e. Scottsmoor, Mims, Merritt Island, Micco).

Previous Occurrence

The 2004 hurricane season caused significant beach erosion in Brevard County, prompting mitigation efforts to protect vulnerable coastal areas. In response, two dune maintenance projects were conducted in 2006 and 2007 in the Mid-Reach (Satellite Beach, Indian Harbour Beach, northern Indialantic) and South Beaches (South Melbourne Beach and southward) to repair damage from Hurricane Wilma and restore native vegetation. The 2005 Brevard County Shore Protection Project restored beaches from Cape Canaveral through Cocoa Beach and from Indialantic through Melbourne Beach using offshore

dredged sand. Additionally, the 2005 Emergency Dune Stabilization Project repaired dunes along the Mid-Reach and South Beaches.

Erosion Rates & Mitigation		
Area	**Pre-Mitigation Erosion Rate**	**Protection Efforts**
North Reach (Cape Canaveral–Cocoa Beach, 9.8 mi)	2.6 ft/year	Federal Shore Protection Project with Army Corps of Engineers
Mid-Reach (Satellite Beach–Indian Harbour Beach, 7.8 mi)	0.6 ft/year	Emergency Dune Stabilization Project
South Reach (Indialantic–Melbourne Beach, 3.8 mi)	1 ft/year	Federal Shore Protection Project
South Beaches (Spessard Holland Park–Sebastian Inlet, 13 mi)	1 ft/year (1972–2005)	Emergency Dune Stabilization Project

More recently, Hurricane Nicole in 2022 caused significant beach erosion as they impacted the county. Nicole was a subtropical area of low pressure expected to primarily threaten the beaches before intensifying into a hurricane. Nicole caused a lot of damage to barrier island communities from Sebastian Inlet up to Cape Canaveral. The county lost several feet of beach and many homes on the beachside of A1A were undermined to the point of being unsafe to occupy.

Every hurricane that impacted Brevard County between 2020 and the end of 2024 caused shoreline erosion for properties and infrastructure along the Indian River Lagoon. Historically, each of Brevard's maintained parks that have a shoreline on the lagoon suffer significant damage each time a storm impacts the area.

Probability

Due to natural coastal conditions, Brevard County's beaches are expected to continue eroding at similar rates, highlighting the ongoing need for shoreline protection and maintenance. Accounting for climate change, future erosion along the Brevard County coastline is highly likely, with events expected to occur every year.

Vulnerability and Impacts

A worst-case beach erosion event would result from impacts of storm surge from a hurricane or from nor'easters. Substantial loss of sand would undermine the foundations of beachfront buildings, including single family residences, condominiums, apartments, hotels, and commercial structures.

A 2025 property appraiser database search showed there are 10,014 parcels on the Atlantic Ocean in Brevard. Direct and indirect property losses could easily reach hundreds of millions of dollars. The beach front damage would also have prolonged economic impacts on the county's vital tourist industry. Infrastructure damage to roadways over the entirety of the barrier islands, the causeways, and Mather's Bridge would do considerable harm to the county and its residents. Utilities along the river and beaches including sewer, water, stormwater, and electric would also be damaged affecting recovery.

Natural processes move and shift the barrier island. Reports continue to show that coastal erosion will only increase as time progresses and will only worsen with climate change. Increasing development on the barrier islands, especially east of Highway A1A, is unlikely.

Disease Outbreak

A disease outbreak occurs when a contagious illness spreads rapidly within a population, exceeding normal levels of infection. Outbreaks can result from viruses, bacteria, or other pathogens and may be transmitted through person-to-person contact, contaminated food or water, vectors (such as mosquitoes), or airborne particles. Common examples include influenza, norovirus, COVID-19, and vector-borne diseases like West Nile virus.

Extent

The severity of a disease outbreak varies based on the pathogen, transmission rate, available medical response, and public health measures. Outbreaks can range from localized epidemics, where a disease spreads within a community or region, to global pandemics, where a disease spreads across multiple countries or continents, affecting large populations.

Location

Disease outbreaks can occur anywhere in the county, but densely populated urban areas, schools, nursing homes, and healthcare facilities are at higher risk due to close human contact. Rural areas may also be affected, particularly if access to healthcare is limited. Areas with standing water or poor sanitation are more vulnerable to vector-borne and waterborne illnesses. Impacts may vary based on population density, socioeconomic factors, and healthcare accessibility.

Previous Occurrence

In the past five years, the county has experienced multiple disease outbreaks, including seasonal flu surges, norovirus outbreaks in schools and nursing homes, and a rise in mosquito-borne illnesses such as West Nile virus. The COVID-19 pandemic was a significant occurrence, affecting all sectors of the county with high infection rates, hospitalizations, and prolonged disruptions to businesses and education.

Probability

The likelihood of a disease outbreak such as influenza and gastrointestinal viruses are an annual occurrence. A pandemic, such as COVID-19, has a one in a hundred-year probability.

Emerging diseases and new variants of existing pathogens increase the probability of future outbreaks. Climate change may contribute to higher risks by expanding the range of vector-borne diseases and altering transmission patterns. Public health measures, vaccination rates, and global travel patterns also influence the probability of outbreaks.

Vulnerability and Impacts

Disease outbreaks can have widespread health, economic, and social consequences. Epidemics, such as seasonal flu surges or foodborne illness outbreaks, typically have a more contained impact. Whereas pandemics, such as COVID-19, can lead to widespread illness, hospitalizations, and deaths. The county is likely to experience increased healthcare demand, workforce disruptions, school and business closures, and economic losses. Vulnerable populations, such as the elderly, immunocompromised individuals, and low-income communities, may face more severe health outcomes due to limited access to healthcare, chronic conditions, or crowded living conditions.

Future conditions could further influence the severity and frequency of disease outbreaks. Climate change may expand the range of vector-borne diseases by creating warmer, wetter conditions favorable to mosquitoes. Population growth could increase disease transmission rates due to higher density. Antibiotic resistance and vaccine hesitancy could also contribute to prolonged outbreaks and more severe impacts. The worst-case scenario includes overwhelmed healthcare facilities, labor shortages, school and business closures, and high mortality rates.

Drought

A drought is a prolonged period of dry weather that causes significant problems, such as crop damage and water shortages. The severity of a drought depends on how much moisture is lacking, how long it lasts, and how large the affected area is. There are four types of droughts:

- Meteorological drought – A lack of precipitation compared to normal levels
- Agricultural drought – When soil moisture is insufficient for crops
- Hydrological drought – When surface and groundwater supplies are below normal
- Socioeconomic drought – When water shortages impact people's daily lives

Brevard County has distinct dry and wet seasons. The dry season lasts from December through May, while the wet season runs from June through November. Droughts are more likely during the dry season and can increase the risk of wildfires.

Extent

Drought severity is measured using the US Drought Monitor Classification Scheme below:

U.S. Drought Monitor Classification Scheme		
Category	**Description**	**Possible Impacts**
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies

The Keetch-Byram Drought Index is also used to measure the intensity of a drought. It measures soil dryness on a scale ranging from 0, being maximum moisture, to 800, being the maximum drought that can be experienced in an area.

Location

All of Brevard County and its jurisdictions can be affected by drought conditions.

Previous Occurrence

The US Drought Monitor tracks and provides data about drought in the United States. The dry seasons from 2020 through 2025 saw Brevard County in at least D0 conditions for 72 weeks. Conditions peaked at D2 during the dry seasons of 2023 and 2024 with eight weeks of observed D2 conditions. Going back to 2000 Brevard County has experienced 314 weeks of at least D1 conditions. Brevard County last experienced D3 conditions in May 2017 and D4 conditions in 2001.

Probability

While climate change will increase the probability of a drought occurring in Brevard County, a level D3 drought is expected to occur at least once every 25 years.

Vulnerability and Impacts

Structures in Brevard County may not directly suffer from drought, but they are vulnerable to the consequences of drought, particularly through the increased risk of wildfires. As drought conditions worsen, the likelihood of fire outbreaks increases, posing a significant threat to property, infrastructure, and livelihoods.

Droughts affecting Brevard County can have serious consequences on agriculture, livestock, and water supplies. With 22% of Brevard County's land being used for agriculture, including cattle and horse farming, droughts that disrupt both the surficial and Floridan aquifers will also disrupt water access for these sectors. Additionally, droughts that impact other areas contributing to the Floridan Aquifer system can have cascading effects on water availability throughout the state, including Brevard County. The ongoing trend of urban sprawl and land use changes means more impervious surfaces, which can limit groundwater recharge and exacerbate water shortages.

Climate change can drive more frequent and intense droughts. This reduces available water supplies across the county. As the population grows, more people will rely on the same limited water resources, which will increase competition and strain. Higher demand combined with lower supply leads to rising water costs, making it harder for many households to afford basic needs. Low-income families, elderly residents, and those without reliable cooling face the greatest risks during water shortages.

Extreme Heat

Extreme heat is defined as temperatures that are approximately 10 degrees or more above the average high temperature for a region lasting for a prolonged period. Extreme heat occurs when a layer of high atmospheric pressure descends over an area and causes the air normally located high in our atmosphere to descend, compress, and increase in temperature leading to hazy and muggy air. These high-pressure systems can reside in an area for weeks as they are resistant to being moved by other weather systems and can inhibit wind and clouds, which normally mitigate the effect of the sun.

Methods of Measuring Extreme Heat		
Measurement	**Factors Considered**	**Purpose / Use**
Heat Index	Actual temperature and relative humidity	Estimates the "feels like" temperature; commonly used for public weather reporting
Wet Bulb Globe Temperature (WBGT)	Temperature, humidity, sun angle, cloud cover, wind	Provides a more detailed assessment of heat risk, especially for outdoor workers, athletes, and active populations

More information can be retrieved from the NWS Melbourne Weather Field Office.

Extent

The National Weather Service in Melbourne issues:

- A Heat Advisory
  - The heat index reaches 108° – 112°Fahrenheit
  - Temperatures are forecast to reach 98°Fahrenheit or above for two consecutive days
- An Extreme Heat Watch
  - During the first 48 hours when Heat Index values could reach 113°Fahrenheit or higher
- An Extreme Heat Warning (formerly an Excessive Heat Warning) if
  - Temperatures are expected to reach a heat index value of 113°Fahrenheit or higher

Location

All of Brevard County and its jurisdictions can experience this hazard.

Previous Occurrence

There was one Excessive Heat Warning in June of 2022 where the heat index reached 115° Fahrenheit in the Merritt Island National Wildlife Refuge.

Probability

Annually, Brevard County experiences hot weather that can cause harm. Extreme heat is likely to occur at least once in 25 years. As climate change progresses, this hazard will occur more often. Especially as global temperatures increase in the summer months. The accelerating frequency of heat advisories issued for Brevard County supports extreme heat as a growing threat.

Vulnerability and Impacts

Extreme heat has devastating impacts on vulnerable populations, including the elderly, children, those with medical conditions, and people experiencing homelessness. Heat waves, which can occur in summer as well as in late spring or early fall, may last for days or weeks. Extreme heat is a recurring issue in Brevard County, particularly in areas with large, paved surfaces. These heat islands absorb heat during the day and release it at night, keeping temperatures elevated. As the county continues to

develop, heat islands are likely to expand in areas experiencing the fastest growth, a trend that will be further exacerbated by rising temperatures due to climate change.

An increasing demand for electricity, particularly from air conditioning, will put additional stress on the power grid during extreme heat events. Higher energy use can lead to elevated electricity costs and power shortages or outages. These consequences will disproportionately affect vulnerable populations who may be unable to afford higher bills or lack access to reliable cooling, heightening health risks such as heat exhaustion, heat stroke, and other heat-related illnesses.

Flooding

Flooding is the covering or submerging of normally dry land with a large amount of water. Inland flooding is caused by heavy rainfall which can overwhelm rivers, canals, and drainage systems. Coastal flooding is primarily driven by storm surge, high tides, and wind action, affecting barrier islands and intercoastal shorelines.

Extent

Flooding is measured by inches or feet of inundation of water over a certain area for an extended amount of time. The best way to show how bad a flood could impact an area is by using its Federal Emergency Management Agency-designated flood zone. Brevard County has the following flood zones as designated by Federal Emergency Management Agency:

Special Flood Hazard Areas:

These areas have a 1% annual chance of flooding (100-year floodplain) and are subject to Federal Emergency Management Agency's floodplain management regulations.

- **Zone A** – High-risk areas where no detailed flood elevation studies have been conducted
- **Zone AE** – Areas with detailed flood studies that include Base Flood Elevations (BFE)
- **Zone AE Floodway –** The channel of a river or other watercourse
- **Zone AH** – Areas prone to shallow flooding (ponding) with depths between 1–3 feet
- **Zone AO** – Areas subject to sheet flow or shallow flooding (usually near sloping land)

Coastal High-Risk Zones:

These zones have additional risks due to storm surges and wave action.

- **Zone VE** – Coastal areas with a 1% annual chance of flooding, subject to wave action and storm surges with detailed flood studies and established Base Flood Elevations

Non-Special Flood Hazard Areas:

These areas are outside the 100-year floodplain but still have some flood risk.

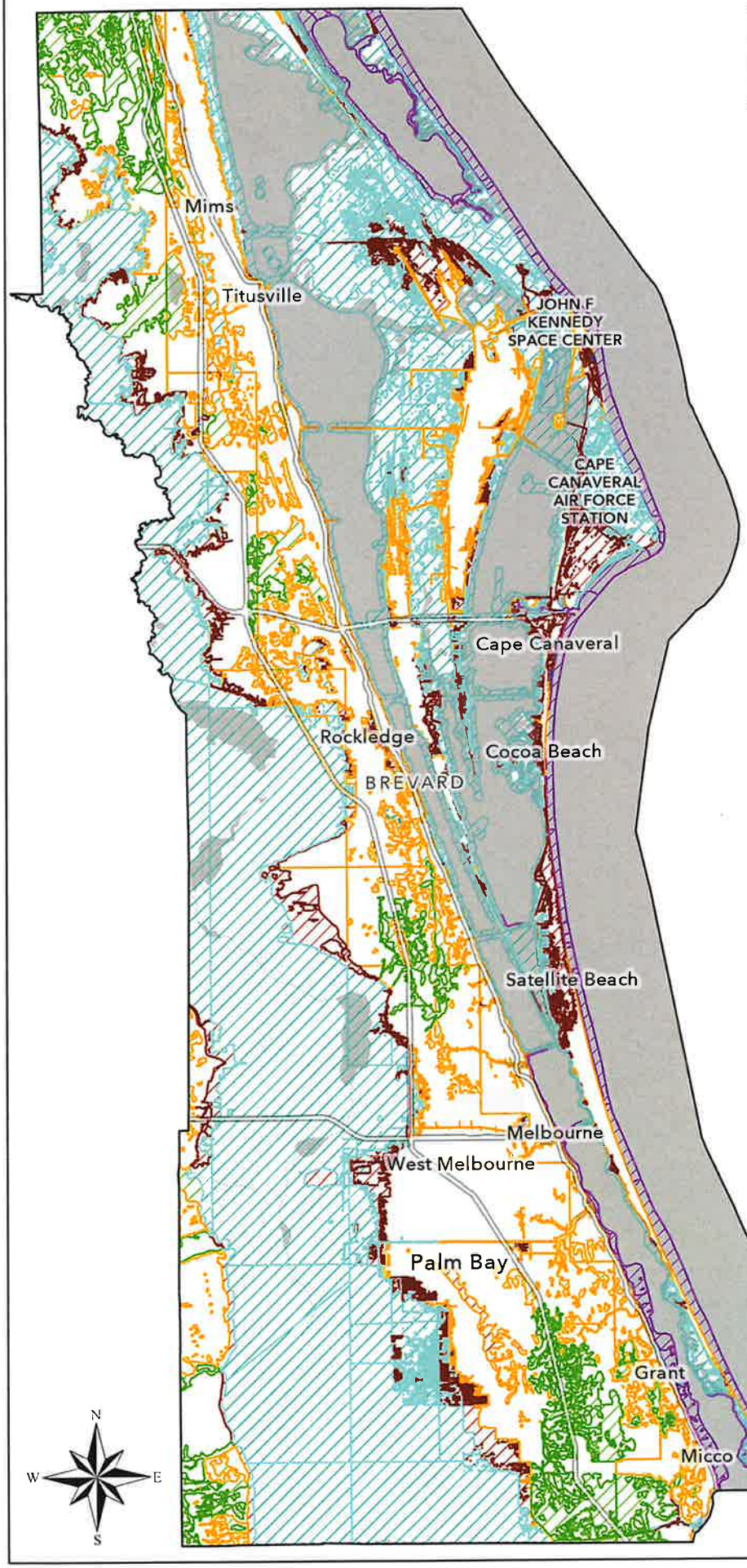
- **Zone X (Shaded)** – Moderate risk areas with a 0.2% annual chance of flooding (500-year floodplain)
- **Zone X (Unshaded)** – Low-risk areas with minimal flood hazard

Location

Flooding can impact the entire county due to its topography. The barrier island and east of US Highway 1 can flood due to tidal and storm effects on the Atlantic Ocean, Indian River, Banana River, Mosquito Lagoon, Sykes Creek, and Newfound Harbor. Most of the land west of Interstate 95 makes up part of the St. John's River Valley floodplain and is susceptible to flooding.

Brevard County Public Works maintains a web-hosted flood zone map. The below map shows the areas vulnerable to flooding and their designated flood zone.

Brevard County



Flood Zones

Category

- A
- AE
- AE Floodway
- AH
- AO
- VE
- X
- X Shaded

BREVARD COUNTY EMERGENCY MANAGEMENT

N
W
E
S

Miles
0 1 2 4 6 8

Previous Occurrence

The county has experienced several severe weather events that have caused significant coastal and inland flooding.

Recent Flooding Incidents Since 2020			
Year	**Event**	**Rainfall**	**Impact**
2024	**Hurricane Milton**	6-8 in	Street and yard flooding, some water in buildings in south Brevard
2023	**November Heavy Rain**	10-14 in	Flooding, flash flooding, impassable roads, stalled vehicles in south Brevard
2023	**June Heavy Rain**	6-8 in	Flooding, flash flooding, impassable roads, stalled vehicles in south Brevard
2022	**Hurricane Ian**	10-15 in	Flooding, flash flooding, impassable roads, water entering homes in northern Brevard
2022	**September Storms**	4-6 in	Flooding, flash flooding, in northern Brevard
2021	**November Coastal Flooding**	N/A	Coastal flooding, minor to moderate beach erosion, water approaching roads
2020	**September Coastal Flooding**	N/A	Coastal flooding, minor to moderate beach erosion on the north beaches, moderate to severe beach erosion on the south beaches, several county-owned dune crossovers damaged

Historic Significant Flooding Incidents			
Year	**Event**	**Rainfall (in)**	**Impact**
2017	**Hurricane Irma**	10-14 in	Widespread flooding; water in at least 200 homes, a majority in Cocoa; St. Johns River reached Major Flood Stage at Astor.
2017	**Surface Boundary Storm**	6-11 in	Flooding, flash flooding, impassable roads, stalled vehicles, water entering homes in several areas
2016	**Tropical Storm Colin**	4-6 in	Roadway flooding, roadway closures, stranded vehicles in Palm Bay and Malabar
2012	**Hurricane Sandy**	N/A	Coastal flooding, beach erosion, damage to homes and crossovers on the barrier islands
2008	**Tropical Storm Fay**	20-36 in	Widespread flooding; water in homes especially in Lamplighter Village and west Cocoa
2005	**Hurricane Wilma**	10-13 in	200 homes flooded in Cocoa
1999	**Thunderstorms**	3-8 in	Flooded roadways, 49 homes received minor flooding

Probability

Brevard County can expect to see a flooding incident where water is in streets and yards annually. Flooding incidents where water enters homes have a probability of occurrence of once every two years.

Vulnerability and Impacts

Due to improvements in stormwater systems and other various mitigation actions, many of the recent flooding events have resulted in light to moderate impacts on infrastructure. Stormwater systems now move water more efficiently. New residential development and transportation designs ensure that most water remains on the roads or in yards. This has affected impacts on most structures in the county, especially homes and businesses. However, at a certain point, no stormwater system can handle the volume of rain that it needs to move. This will cause the system to be overrun until the rain stops and the drains can catchup with the runoff.

Climate change is expected to significantly affect inland flooding in Brevard County. More frequent and intense rainfall from extreme weather events will increase the likelihood of flash flooding and overwhelm stormwater systems. At the same time, if climate change drives longer periods of drought, soils will become drier and less capable of absorbing water when heavy rains occur. This reduced absorption leads to higher runoff volumes, placing additional strain on drainage infrastructure and increasing the potential for localized street flooding, property damage, and impacts to critical facilities. These combined factors mean that, regardless of whether the region experiences wetter or drier conditions, the overall risk of inland flooding will continue to rise.

Coastal flooding will also become a growing concern as sea levels rise due to climate change. Higher sea levels increase the likelihood of both tidal and storm-driven flooding, allowing the ocean to encroach farther inland. Structures immediately across the dune line face heightened risks. The west side of the barrier island has limited protection from sand dune protections and coastal flooding impacts could be even larger. Over time, rising seas will also increase the frequency of nuisance flooding during high tides and storm events, threatening homes, infrastructure, roadways, and utilities in low-lying coastal areas.

A worst-case flooding situation would probably result from prolonged, heavy rainfall that would cause river and stream flooding, as well as localized flooding where storm drainage capacities were inadequate for the storm event. Vulnerable populations are those in flood zones including isolated low-lying areas, flow ways for streams and creeks, seepage hill bases, wetlands, and coastal areas. Land development in the areas most susceptible to flooding, without corresponding mitigation actions, will increase the risks for the people who live there. Any structure located within a floodplain and/or in areas subject to poor drainage would be vulnerable to damage or disruption from flooding.

Some of these areas include:

- North Merritt Island between the Kennedy Space Center to the north and east, State Road 3 to the west, and Hall Road to the south
- Space Coast Gardens
- Melrose Manor and Shakespeare Park in the Cocoa area
- Silver Pines in the Rockledge area
- Lamplighter Village in south central Brevard
- Eau Gallie Road west of Interstate 95
- Harlock Road adjacent to and to the east of Interstate 95
- The upper basin of Turkey Creek
- Sebastian Creek
- Fellsmere Grade Road

- Little Hollywood and Deer Run in south Brevard

National Flood Insurance Program Participation

The National Flood Insurance Program allows property owners in the 100-year flood zone to acquire federal flood insurance policies. All 16 municipalities and the Canaveral Port Authority participate in the National Flood Insurance Program.

The table below describes the current jurisdictional participation in the National Flood Insurance Program.

Brevard County National Flood Insurance Program Statistics				
Community Name	Policies in Force	Total Coverage	Total Written Premium plus Federal Policy Fee	Total Annual Payment
Brevard County	20,492	$ 6,058,210,200	$ 13,546,913	$ 16,744,918
Cape Canaveral	3,002	$ 663,836,000	$ 1,480,559	$ 1,844,887
Canaveral Port Authority	33	$ 19,254,000	$ 135,080	$ 167,369
Cocoa Beach	6,376	$ 1,474,227,000	$ 3,504,948	$ 4,307,494
Cocoa	504	$ 141,551,000	$ 276,233	$ 347,216
Grant-Valkaria	612	$ 196,375,000	$ 425,221	$ 523,356
Indialantic	597	$ 180,271,000	$ 478,461	$ 591,278
Indian Harbour Beach	1,397	$ 413,683,000	$ 969,992	$ 1,200,479
Malabar	207	$ 68,691,000	$ 126,507	$ 158,333
Melbourne Beach	588	$ 181,908,000	$ 482,580	$ 593,657
Melbourne	3,153	$ 993,787,200	$ 2,153,886	$ 2,695,022
Melbourne Village	38	$ 12,416,000	$ 27,468	$ 34,165
Palm Bay	2,838	$ 885,594,000	$ 1,443,735	$ 1,810,773
Palm Shores	40	$ 13,104,000	$ 21,722	$ 26,970
Rockledge	883	$ 280,750,000	$ 552,958	$ 684,257
Satellite Beach	1,934	$ 578,111,000	$ 1,339,054	$ 1,638,791
Titusville	1,134	$ 343,021,000	$ 661,426	$ 823,724
West Melbourne	1,059	$ 352,918,000	$ 561,292	$ 696,960

Each jurisdiction participating in the National Flood Insurance Program complies with all current regulations including:

- Adopting the National Flood Insurance Program minimum floodplain management criteria via local regulation
- Adopting the latest effective Flood Insurance Rate Map, if applicable
- Implementing and enforcing the local floodplain management regulations to regulate and permit development in Special Flood Hazard Areas
- Appointing a designee or agency to implement the addressed commitments and requirements of the National Flood Insurance Program

The participating jurisdictions also have policies regarding the monitoring and implementation of substantial damage and substantial improvements. After an event, the county and other participating jurisdictions would follow their specific substantial damage policies. These policies can be found in Appendix F for Brevard County and the jurisdictions.

The following table shows what each jurisdiction has appointed as their floodplain administrator per ordinance.

Participating Jurisdiction	Designated Floodplain Administrator Title
Brevard County	Floodplain Administrator
Cape Canaveral	Building Official
Canaveral Port Authority	Chief Building Official
Cocoa	Floodplain Administrator
Cocoa Beach	Building Official / Development Services Director
Grant-Valkaria	Town Administrator
Indian Harbour Beach	Building Official / Public Works Director
Indialantic	Building Official
Malabar	Town Administrator or Designee
Melbourne	Building Official
Melbourne Beach	Town Building Official
Melbourne Village	Town Superintendent
Palm Bay	Floodplain Administrator
Palm Shores	Building Official
Rockledge	Building Official
Satellite Beach	Chief Building Official
Titusville	Community Development Engineer
West Melbourne	Building Official

Brevard County and many of its jurisdictions participate in the National Flood Insurance Program and the Community Rating System to assist homeowners and businesses with decisions about property vulnerability and flood insurance. Participation in the Community Rating System qualifies residents for reduced rates on flood insurance which vary depending on the activities the jurisdiction performs to reduce its flood risk. The below table summarizes Brevard County and jurisdictional participation in the Community Rating Season.

Brevard County Community Rating System Participation					
Community Name	Participant	Original Effective Date	Current Effective Date	CRS Class	Discount
Brevard County	Yes	10/01/1991	10/01/2024	8	10%
Cape Canaveral	Yes	10/01/1993	10/01/2019	8	10%
Cocoa Beach	Yes	05/01/2018	04/01/2025	9	5%
Cocoa	Yes	04/01/2023	04/01/2023	9	5%
Grant-Valkaria	No	N/A	N/A	N/A	N/A
Indialantic	No	N/A	N/A	N/A	N/A
Indian Harbour Beach	No	N/A	N/A	N/A	N/A
Malabar	No	N/A	N/A	N/A	N/A
Melbourne Beach	Yes	05/01/2016	05/01/2016	8	10%
Melbourne	Yes	10/01/1993	05/01/2019	8	10%
Melbourne Village	No	N/A	N/A	N/A	N/A
Palm Bay	Yes	10/01/1993	05/01/2019	7	15%
Palm Shores	No	N/A	N/A	N/A	N/A
Rockledge	Yes	10/01/1991	10/01/2021	9	5%
Satellite Beach	No	10/01/1992	10/01/2017	10	0%
Titusville	Yes	10/01/1992	05/01/2011	7	15%
West Melbourne	No	N/A	N/A	N/A	N/A

Brevard and each of its municipalities have adopted and continue to enforce floodplain management requirements in accordance with current National Flood Insurance Program standards including regulating new construction in Special Flood Hazard Areas by:

- Enforcing floodplain management ordinances which regulate new development and substantial improvements in the special flood hazard areas.
- Informing the community by news releases and open public meetings
- Providing community outreach
- Providing information via county public TV
- Maintaining elevation certificates on file for all new construction in the Special Flood Hazard Area or for substantial improvements to properties in the Special Flood Hazard Area
- Using best available flood map data for issuing construction permits
- Providing public education seminars
- Providing updated mapping to each municipality
- Maintaining public records and make them available for review.
- Engaging in community outreach
- Utilizing and retain news releases and county public TV broadcasts
- Maintaining records pertaining to Letters of Map Amendments and Letters of Map Revisions
- Providing information related to flood hazards, flood maps, and National Flood Insurance Program information to the public upon request.
- Continuing community outreach efforts for compliance with the Community Rating System
- Integrating new National Flood Insurance Program information and mapping into already existing strong community presentations.

- Continuing to promote flood insurance to property owners.
- Increasing and continue outreach presentations to community and homeowners' associations
- Continuing to update the public via
  - Community outreach
  - Internet
  - Social media
  - News releases
  - County public TV
- Continuing to identify/acquire land in the Special Flood Hazard Area open space/preservation.
- Promoting hazard flood mitigation to the public.
- Providing copies of the Hazard Mitigation Plan upon written request
- Integrating new flood awareness and mitigation information into outreach presentations
- Continuing drainage maintenance and drainage system improvement projects.
- Encouraging more drainage projects through-out the county in all Hazard Mitigation Plan meetings, especially nature-based solutions
- Continuing floodplain management activities and explore opportunities for possible Community Rating System class enhancement
- Adopting and enforcing floodplain management plans
- Providing continued education and best practices to all municipalities
- Providing a robust community assistance program
- Providing continued outreach, best practices to municipalities that are not part of the Community Rating System
- Documenting each municipality not a participant in the Community Rating System and continue providing them with best practices
- Ensuring that municipalities not participating in the Community Rating System are members of the Hazard Mitigation Plan working group, allowing them still to receive mitigation information
- Maintaining flood hazard publications in the libraries

Repetitive Loss and Severe Repetitive Loss Properties

A Repetitive Loss Property is defined by the National Flood Insurance Program as a property that is covered under a National Flood Insurance Program flood insurance policy and that has had two or more flood insurance claims of more than $1,000 paid within any 10-year period since 1978.

A Severe Repetitive Loss Property is defined as a residential property that is covered under a National Flood Insurance Program flood insurance policy and that:

- Has at least four National Flood Insurance Program claim payments (including building and contents) over $5,000 each and the cumulative amount of such claims payments exceeds $20,000

  or

- For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building. At least two of the above referenced claims must have occurred within any 10-year period and must be greater than 10 days apart

The following tables show the number and type of repetitive loss and severe repetitive loss structures for all jurisdictions participating the National Flood Insurance Program.

Repetitive Loss Properties by Jurisdiction and Building Use					
Jurisdiction	Single Family	Multi-Family, 2-4 units	Other Residential	Business, Non-Residential	Other Non-Residential
Brevard County	65	2	2	1	1
Cape Canaveral	3	1	1	0	1
Cocoa Beach	6	0	0	0	2
Cocoa	8	0	0	0	0
Grant-Valkaria	6	2	0	0	0
Indialantic	17	0	0	0	0
Indian Harbour Beach	3	0	0	0	0
Malabar	5	0	0	0	0
Melbourne	17	0	0	0	1
Melbourne Beach	12	2	0	0	0
Melbourne	60	0	4	0	1
Palm Bay	16	0	0	0	0
Rockledge	3	0	0	0	0
Satellite Beach	12	0	1	0	0
Titusville	10	0	0	0	0
West Melbourne	12	0	0	0	0
Totals	**255**	**7**	**8**	**1**	**6**

Severe Repetitive Loss Properties by Jurisdiction and Building Use					
Jurisdiction	Single Family	Multi-Family, 2-4 units	Other Residential	Business, Non-Residential	Other Non-Residential
Brevard County	3	0	0	0	0
Cape Canaveral	0	0	0	0	0
Cocoa Beach	1	0	0	0	1
Cocoa	0	0	0	0	0
Grant-Valkaria	1	0	0	0	0
Indialantic	1	0	0	0	0
Indian Harbour Beach	0	0	0	0	0
Malabar	0	0	0	0	0
Melbourne	1	0	0	0	0
Melbourne Beach	0	0	0	0	0
Melbourne	4	0	1	0	1
Palm Bay	3	0	0	0	0
Rockledge	0	0	0	0	0
Satellite Beach	0	0	0	0	0
Titusville	0	0	0	0	0
West Melbourne	0	0	0	0	0
Totals	**14**	**0**	**1**	**0**	**2**

Sea Level Rise

Sea level rise is the long-term increase in the average level of the world's oceans due to factors such as melting glaciers and ice sheets, thermal expansion of seawater as it warms, and changes in land water storage. It is primarily driven by climate change and poses risks such as coastal erosion, flooding, and habitat loss for coastal communities and ecosystems. The evidence is clear that a trend is occurring, and sea levels have been rising for the better part of the 20th century and into the 21st century.

Extent

There is no universal scale for measuring sea level rise, but the Global Mean Sea Level (GMSL) is commonly used. It measures the average global sea level relative to a reference point over time, often reported in millimeters or centimeters. This metric combines data from tide gauges and satellite altimetry. Due to the nature of the hazard, the onset of Sea Level Rise is slow, about .23 inches per year.

Location

Brevard County and all its jurisdictions will see effects from sea level rise. Areas closest to the lagoon and Atlantic Ocean would be the most vulnerable to sea level rise. The City of Satellite Beach's 2019 study identified the west side of the barrier island, including the Banana River, Grand Canal, and its finger canals, as particularly at risk, with future impacts expected to reach areas around South Patrick Drive. Similarly, the City of Cape Canaveral's Sea Level Rise study, conducted in 2017, also highlighted vulnerable areas, particularly around the Port and beachfront properties. This study indicated that by 2100, certain regions of Cape Canaveral could experience inundation, significantly affecting infrastructure and local ecosystems.

Previous Occurrence

Due to the nature of the hazard, the onset of Sea Level Rise is slow. It is difficult to pinpoint exact occurrences of this hazard.

Probability

Future sea level rise in Brevard County is considered likely, with an occurrence estimated at a 500-year or less interval. However, the slow pace and long timeframe make it challenging to predict an exact probability.

Vulnerability and Impacts

The greatest impacts of sea level rise include storm surge and coastal flooding. Additionally, changes in sea level rise and climate patterns can affect atmospheric and hydrological conditions, influencing other hazards like inland flooding, drought, and wildfires. Approximately 18,998 properties along the Indian River Lagoon and 10,014 oceanfront parcels are vulnerable to these changes, especially those within 100-200 feet of the high-water mark.

In 2018, the Brevard County Transportation Planning Organization received a Sea Level Rise Vulnerability Assessment from the East Central Florida Regional Planning Council. This assessment analyzed the impact of sea level rise on transportation infrastructure such as roads, railroads, and airports. By 2100, up to 12.2% of the county may be impacted, with a 318% increase in inundated areas expected between 2040 and 2070. Vulnerable areas include the Merritt Island National Wildlife Refuge, NASA/Kennedy Space Center, and Port Canaveral.

The worst-case scenario for Brevard County would involve sea level rise reaching the higher end of projections, causing damage like coastal erosion, saltwater intrusion, and widespread flooding. The hardest-hit areas would include both sides of the barrier islands including low-lying parts of Merritt Island and properties closest to the lagoon or the ocean.

Severe Thunderstorms

Severe thunderstorms are meteorological phenomena that develop when warm, moist air rises rapidly into cooler atmospheric layers, creating instability. These storms are characterized by strong winds, heavy rainfall, lightning, and sometimes hail or tornados. They play a crucial role in Earth's climate system by redistributing heat and moisture, though they can produce localized impacts such as flooding and wind damage.

Extent

Thunderstorms are classified as severe if they cause any one or more of the following:

- Hail 1-inch or greater
- Winds gusting more than 58 mph
- A tornado

Location

The entire county and its jurisdictions are at risk from severe thunderstorms and their effects.

Previous Occurrence

The National Climactic Data Center has data for many significant storms between 2020 and the end of 2024.

During the planning period there were:

- 39 thunderstorms with winds greater than 58 mph
- 19 that caused hail 1-inch or larger
- 7 that caused a tornado

This does not represent every thunderstorm the county and its jurisdictions experienced in that period. The National Climactic Data Center data is based on reports sent to the National Weather Service by trained spotters, emergency managers, other meteorologists, and the public.

Probability

In Brevard County, where thunderstorms are frequent, an average of 70-80 thunderstorm days occur each year. Severe thunderstorms have a greater than once annually probability of occurrence. In the last five years, almost 40 storms were classified as severe. As climate change progresses, the frequency and severity of these storms will also increase.

Vulnerability and Impacts

Severe thunderstorms can cause damage to structures, disruption of utilities (mainly electrical), and surface/air transportation problems. While all populations can be impacted by thunderstorms, individuals at outdoor recreational events, living in mobile and manufactured homes, and experiencing homelessness are at the highest risk. Changes in land use, development, and population could affect vulnerability throughout the county.

The worst-case scenario for a severe thunderstorm in Brevard County involves a large frontal system that produces numerous storms as it moves across the area. Outdoor lightning strikes could cause injuries or fatalities, though not on a large scale. Structures without lightning protection are vulnerable, especially tall buildings, communication towers, and exposed locations near water. Structures hit by lightning could experience varying degrees of damage, from minor impacts to total loss if fires occur. Strikes to vegetated areas could also trigger wildfires, potentially damaging property and prompting evacuations. Hail, high winds, and possible tornados would cause further structural damage where the strongest cells set up, especially where the front meets the sea breeze.

Severe Winter Storms

A severe winter storm is defined as a hazardous weather event involving extreme cold temperatures, freezing rain, sleet, and/or strong winds that pose significant threats to public safety, infrastructure, transportation systems, and local economies. These storms can result in hazardous travel conditions, utility disruptions, increased risk of accidents, damage to buildings and critical infrastructure, agricultural losses, and heightened health risks, particularly for vulnerable populations.

Extent

Winter storms are often assessed based on various factors, including temperature, snow accumulation, wind speeds, and the impact on infrastructure, transportation, and public safety.

National Weather Service Cold Weather Products	
Product	**Description**
Extreme Cold Watch	Issued when extremely dangerous cold conditions or wind chill values are expected or occurring
Extreme Cold Warning	issued when extremely dangerous cold conditions or wind chill values are possible, but the occurrence, location, and/or timing is still uncertain

Location

All of Brevard County and its jurisdictions could experience impacts from a severe winter storm.

Previous Occurrence

There have been no instances of a severe winter storm since 2010. December 25, 2022, did have observed sleet in a couple locations, but no damages were recorded.

Probability

The probability of a severe winter storm in Brevard County is less than once in a 500-year period. The probability of this hazard will likely continue to decrease as climate change progresses. While severe winter storms are rare in Brevard County due to its subtropical climate, historical events have demonstrated that even brief periods of freezing temperatures and ice accumulation can cause substantial impacts.

Vulnerability and Impacts

The locations most vulnerable to severe winter weather in Brevard County would be agricultural lands. According to the United States Department of Agriculture, Brevard County is home to over 145,000 acres of farmland. Of that, over 19,000 acres are cropland. Most of the agricultural land in on the mainland west of Interstate 95. If temperatures reach freezing levels for extended periods of time, crop or landscape damage may occur. Business closures and significant damages to the county's agricultural industries would result in substantial economic damages.

Additionally, consumer demand of electricity during periods of extreme cold weather may require the electric utility to take actions to prevent damage to power infrastructure. This scenario occurred in Texas in 2021 when an extended bout of cold forced the power utility to enact rolling black outs and brown outs to preserve its infrastructure. People experiencing homelessness are particularly vulnerable to severe winter weather. As the county grows, these effects could impact more people and developed areas.

Space Weather and Geomagnetic Storms

Space weather refers to the conditions in space driven by solar activity, which can influence technologies, infrastructure, and communications on Earth. Coronal mass ejections are massive eruptions of plasma, radiation, and other particles from the Sun's atmosphere that travel through space. The ejection's speed, composition, and trajectory all impact the potential severity of space weather. While the Earth's magnetic field provides significant protection from most solar events, strong coronal mass ejections can still disrupt the magnetosphere. This disturbance can cause geomagnetic storms. These storms cause auroras, in the most severe cases, impacts to communications, navigation, and power infrastructure.

Extent

Space Weather Intensity Scales			
Level	**G-Scale Rating**	**Kp Index Range**	**Effects on Earth**
Minor	G1	Kp = 5	Weak power grid fluctuations, minor impact on satellite operations, auroras visible at high latitudes (e.g., northern U.S.)
Moderate	G2	Kp = 6	Possible power grid voltage alarms, some satellite orientation issues, auroras visible at mid-latitudes (e.g., northern U.S. states)
Strong	G3	Kp = 7	Some power grid irregularities, intermittent satellite navigation and radio issues, auroras visible in lower latitudes (e.g., central U.S.)
Severe	G4	Kp = 8	Widespread voltage control issues in power systems, satellite disruptions, GPS degradation, auroras visible in southern U.S. states
Extreme	G5	Kp = 9	Power grid failures, major satellite and communication blackouts, auroras visible near the equator

Location

Brevard County and its jurisdictions would observe similar impacts and are at equal risk of space weather.

Previous Occurrence

Space weather occurs frequently but the impacts are seldom felt on Earth. This hazard has not impacted Brevard County between 2020 and 2024.

Probability

This hazard has a probability of occurrence of greater than once in 500 years.

Vulnerability and Impacts

Any system dependent electromagnetism would see impacts from a geomagnetic storm. Impacts include malfunction or permanent damage to power distribution grids, navigation systems, and telecommunication systems. Populations and critical infrastructure largely at risk for this hazard. A severe geomagnetic storm could take years to recover.

For more information on space weather, visit the Florida Division of Emergency Management's website: http://www.floridadisaster.org/EMTOOLS/spacewx/index.htm

Tornado

A tornado is a violently rotating column of air, descending from a cumuliform cloud or underneath a cumuliform cloud, and often, but not always, is visible as a funnel cloud. Tornados also form on the leading edge of hurricanes and have the potential to cause more destruction.

Extent

Tornado intensity is measured by how much it damages or destroys while on the ground. Due to the characteristics of tornados, measuring their strength in real time is near impossible. After a tornado impacts an area, the local National Weather Service office must survey and categorize the damage. The levels of damage help meteorologists estimate windspeeds. After the storm survey, meteorologists rate the tornado on the Enhanced Fujita Scale, found below:

EF-Scale:	Typical Damage:
EF-5 (>200 mph winds)	Incredible. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly more than 100 m; trees debarked; incredible phenomena will occur.
EF-4 (166-200 mph winds)	Devastating. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.
EF-3 (136-165 mph winds)	Severe. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
EF-2 (111-135 mph winds)	Strong. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF-1 (86-110 mph winds)	Weak. Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
EF-0 (65-85 mph winds)	Gale. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
Source: National Weather Service, Fujita Tornado Damage Scale	

Location

All of Brevard County and its jurisdictions can see impacts from tornados. Unincorporated Brevard County has a statistically larger risk of occurrence due to the amount of land area.

Previous Occurrence

Brevard County and Florida have a lot of experience with tornados. Florida consistently has a similar or greater number of tornados than any of the Tornado Alley states out west. Brevard County is in the top five counties in the state for number of tornado occurrences. The worst tornado experienced to date within the boundaries of Brevard County was an F-4 tornado in 1966. The following tables summarize the previous occurrences of tornados in Brevard County.

Recent Tornado Incidents Since 2020			
Date	**Rating**	**Location**	**Details**
2024	EF-1	Cocoa Beach – Merritt Island	Caused by Hurricane Milton; damaged roofs of homes and businesses including a bank
2024	EF-0	Melbourne	Light home damage; downed power poles; uprooted trees; damaged hangars at Melbourne Airport
2023	EF-1	South Patrick Shores	35 homes with minor to major damage; trees uprooted; downed power poles
2023	EF-0	Micco	25 to 30 homes with at least minor damage; roof and carport damage; tree damage; damaged boats in a marina
2022	EF-0	East Brevard, along United States Highway 192	Caused by Hurricane Ian; no structure damage; damaged trees
2021	EF-0	North Merritt Island	No structure damage due to tornado; damaged trees
2020	EF-0	Central Merritt Island	Short track tornado; damaged a porch and moved it to the front yard; minor shingle damage

Historic Significant Tornado Incidents			
Year	**Rating**	**Location**	**Details**
2017	EF-0 to EF-2	Brevard County, FL	8 of 10 tornados in the East Central Florida National Weather Service Forecast Office's area during Hurricane Irma; damage varied.
2014	EF-0	Titusville, FL	Roof damage to 3 homes, tree and fence damage.
2013	EF-0	Cocoa, FL	Minor roof, power line, and tree damage; became waterspout in Indian River.
2013	EF-0	Viera/Rockledge, FL	Roof, window, and pool screen damage in Charolais Estates & Colfax Landing.
2012	Unrated	North Okeechobee to Brevard County	Associated with Tropical Storm Debby; observed but little damage.
2010	EF-0	Brevard County, FL	Minor damage, power lines severed.
2010	EF-0	Brevard County, FL	Minor damage to commercial/residential areas.
2008	EF-1	Brevard County, FL	Related to Tropical Storm Fay; 2 injuries, 52 homes damaged.
1966	F-4	Largo to Merritt Island, FL	One of only two F-4 tornados in Florida; 11 deaths, extensive damage.
1966	F-3	Near Sunshine Skyway Bridge, FL to Cocoa Beach, FL	Paralleled F-4 path; $50–100K in damages; 140 injuries, mostly in Brevard.

Probability

Tornados have a once per year probability of occurrence. Due to the many conditions that determine the strength and track of a tornado, it is impossible to predict areas that may receive more tornados or the intensity of any tornado that touches down.

Vulnerability and Impacts

Tornado impacts are usually confined to the tornado's track, but damage within that area can vary greatly depending on multiple factors. People living in older homes, mobile or manufactured housing, or experiencing homelessness face greater risks because these structures often lack modern wind protections. Climate change may increase the frequency and intensity of severe weather, including tornados. As the county's population grows and development expands, the population's exposure will increase. The mitigating factors are newer homes built to better standards and the limited area impacted by a tornado.

A worst-case scenario for Brevard County would involve multiple tornados moving across areas with high concentrations of mobile and manufactured homes. Barefoot Bay, which contains one of the county's largest clusters of these homes and a significant population over age 55, would be particularly vulnerable. Older and mobile/manufactured homes are especially susceptible to severe damage or destruction from tornado-strength winds. Widespread structural losses in Barefoot Bay could displace a large portion of its residents, strain shelters, and overwhelm emergency response resources. Power outages, blocked roadways, and disruptions to critical services such as medical care and communications would further complicate recovery efforts, particularly for older adults and individuals with mobility or health challenges.

Tropical Cyclones

National Oceanic and Atmospheric Administration defines tropical cyclones as warm-core low pressure systems, without any front attached, that develop over the tropical or subtropical waters and have an organized circulation. Tropical cyclones bring multiple hazards that can stretch over 100 miles from the center of the storm. A direct hit is not necessary to feel the effects from a storm. Multiple hurricanes have impacted the county during the 2020 – 2025 planning period.

Tropical cyclones describe a wide variety of weather phenomena in the tropical and sub-tropical waters of the Atlantic and the Pacific Oceans. The following are some types of tropical cyclones that form:

- **Subtropical Cyclone** – A non-frontal low-pressure system that has characteristics of both tropical and extratropical cyclones. Subtropical cyclones originate over tropical or subtropical waters and have a closed circulation about a well-defined center. In comparison to tropical cyclones, the maximum winds occur relatively far from the center (greater than 60 nautical miles) and have a less symmetric wind field and distribution of convection
- **Potential Tropical Cyclone** – A term used in National Weather Service advisory products to describe a disturbance that is not yet a tropical cyclone, but which poses the threat of bringing tropical storm or hurricane conditions to land areas within 72 hours
- **Tropical Depression** – A tropical cyclone that has maximum sustained surface winds (one-minute average) of 38 mph (33 knots) or less
- **Tropical Storm** – A tropical cyclone that has maximum sustained surface winds ranging from 39-73 mph (34 to 63 knots)
- **Hurricane** – A hurricane is a tropical cyclone that has maximum sustained surface winds of 74 mph or greater (64 knots or greater)
- **Major Hurricane** – A hurricane that is classified as at least a Category 3; sustained winds of at least 111 mph (at least 96 knots)

Tropical cyclones have been recorded in every month of the year and can develop any time if the conditions are right. The Atlantic Hurricane Season occurs annually between June 1 to November 30 and represents the statistical high when tropical cyclones develop in the Atlantic Basin. Development does not necessarily mean landfall. A tropical cyclone's track and intensity mainly depend on steering currents, wind shear, and water temperature.

The intensity and track of the storm determine the hazards and impacts Brevard County can expect to experience including:

- High winds
- Storm surge
- Coastal and inland flooding
- Heavy rainfall
- Tornados
- Coastal erosion

This hazard profile includes high winds and storm surge as accompanying hazards of a tropical cyclone.

High winds occur when there are significant differences in air pressure, causing air to move rapidly from high-pressure areas to low-pressure areas. In hurricanes, extremely low pressure at the storm's center creates a strong pressure gradient, drawing air inward. The Coriolis effect then curves these winds, forming the storm's spin and concentrating the highest winds around the eyewall. Warm ocean water and released heat provides more fuel for the system. Outside of tropical systems, strong winds are typically caused by cold fronts, low-pressure systems, and jet stream activity, where steep pressure differences drive gusty conditions.

By their nature, tropical cyclones impact the water beneath them. Storm surge is one of the results of those impacts. Many factors impact the maximum amount of storm surge including tropical cyclone

intensity, forward speed, the radius of maximum winds, angle of approach, and characteristics of the coastline. Storm surge and related terms are defined below.

- **Storm Surge** – the abnormal rise of water level over and above the normal astronomical tide, expressed as the height above predicted or expected tide levels. It is measured as a deviation from normal levels, and not attached to a tidal datum
- **Storm Tide** – the water level due to the normal tide and storm surge and is related to a tidal datum
- **Wave Action** – Wind-driven waves on top of storm surge
- **Inundation** – the height of water above normally dry ground as established by the Mean Higher-High Water line
- **Depth** – the height of water over ground level established by a vertical datum, such as the North American Vertical Datum (NAVD88)

More information about Storm Surge and its impacts are available from the National Hurricane Center.

Extent

A tropical cyclone's intensity is categorized by its windspeed on the Saffir-Simpson Hurricane Wind Scale. Meteorologists can also use the Dvorak Technique to estimate tropical cyclone intensity using infrared and visible satellite imagery in the absence of aircraft-gathered data. It has shown a relationship between pressure, measured in millibars, and cyclone intensity.

Category	Wind Speed and Pressure	Type of Damage
Five (Major Hurricane)	≥157 mph ≥137 knots <921 mb	Catastrophic Damage: Most framed homes destroyed, complete roof and wall collapse, widespread tree and power pole failures, area uninhabitable for weeks or months
Four (Major Hurricane)	130–156 mph 113-136 knots <948 mb	Catastrophic Damage: Severe structural damage to framed homes, widespread tree and power pole failures, prolonged power outages, area uninhabitable for weeks or months
Three (Major Hurricane)	111–129 mph 96-112 knots <960mb	Devastating Damage: Major roof damage to homes, many trees uprooted, blocked roads, electricity and water outages for days to weeks
Two (Hurricane)	96–110 mph 83-95 knots <970mb	Extensive Damage: Major roof and siding damage, trees uprooted, widespread power outages for days to weeks
One (Hurricane)	74–95 mph 62-82 knots <987mb	Moderate Damage: Roof, shingle, and siding damage, tree branches snap, power outages lasting several days
Tropical Storm	39–73 mph 35–63 knots <1005mb	Light Damage: Strong winds may cause damage but less severe than a Category 1 hurricane
Tropical Depression	<38 mph <34 knots <1009mb	Minimal Damage: Though strong winds and gusts are still possible
Source: National Hurricane Center, National Oceanic and Atmospheric Administration		

Location

Brevard County and its jurisdictions are particularly susceptible to tropical cyclones. Tropical cyclones affect large areas outside of their forecast track. These storms can span hundreds of miles across and can impact entire states for days. When and where the cyclone makes landfall will change the impacts to Brevard County.

Previous Occurrence

Almost 200 tropical cyclones have passed within 100 miles of Brevard County since records began in the 19th century.

Brevard County Impacting Tropical Cyclones Since 2020				
Year	Storm	Peak Sustained Winds (mph)	Rainfall (in)	Storm Surge (ft)*
2024	Milton	43	8	3-5
2024	Helene	36	1.5	1-2
2024	Debby	35	2.5	N/A
2023	Idalia	32	2	1-2
2022	Ian	46	15	2-3
2022	Nicole	53	3.7	3-4

**Storm Surge is measured in feet above the Mean High High Water (MHHW) point*

Historically Significant Tropical Cyclones		
Year	Storm	Impacts
2019	Dorian	Coastal Erosion
2017	Irma	Flooding, High Winds
2016	Matthew	High Winds, Coastal Erosion, Storm Surge
2012	Sandy	Coastal Erosion, Storm Surge
2008	Fay	Record Setting Flooding Rain
2004	Jeanne	Flooding, High Winds, Storm Surge
2004	Frances	Flooding, High Winds, Storm Surge

A record of every storm that has passed within 100 miles of Brevard County is available from National Oceanic and Atmospheric Administration's Office of Coastal Management's Digital Coast.

Probability

Brevard County can expect to experience impacts from tropical cyclones annually. Climate change has increased tropical cyclone frequency as ocean surface temperatures climb. Climate change will likely cause more frequent and stronger storms.

Vulnerability and Impacts

A tropical cyclone will impact all the homes, businesses, and infrastructure throughout the county. High winds would cause debris, widespread damage to buildings and infrastructure, and injuries or death to people. Coastal and inland flooding would inundate structures, severely damaging critical infrastructure and buildings.

Climate change and population growth have caused the county's vulnerability to increase. The additional people and accompanying development have taxed local infrastructure as it attempts to keep

up with the demand. Vulnerable communities include the populations noted in the asset inventory as they have less resources to cope with the pre, during, and post storm impacts.

Homes, businesses, and critical infrastructure closest to the ocean or the river will see more impacts from more frequent and stronger tropical cyclones. The amount of relatively low-risk land has also steadily decreased as more single-family and other low-density zoning has developed on the mainland side of the county. While newer structures are less vulnerable to the high winds, they can still sustain damage and remain susceptible to flooding. Mobile homes and many structures erected prior to building code changes face higher vulnerability to the strong winds associated with a tropical cyclone.

Tsunami

A tsunami is a series of large ocean waves caused by sudden and powerful disturbances in or near large bodies of water, such as earthquakes, volcanic eruptions, or underwater landslides. When these waves approach shallow coastal areas, they can increase in height and cause significant flooding, property damage, and loss of life. The North American, South American, and the Caribbean tectonic plates converge in the Puerto Rico Trench. A seismic event there could cause a tsunami to impact Brevard County. As well, an undersea landslide from the Azores/Gibraltar Fracture Zone near Portugal, could also cause a tsunami that can impact Brevard.

Extent

Tsunami inundation zones show the areas at risk of flooding based on predicted wave heights and local coastal conditions. Factors such as elevation, shoreline shape, and distance from the coast influence how far tsunami waters may reach. The National Oceanic and Atmospheric Administration has inundation models and maps that can help forecast where the impacts would be the worst.

Location

Jurisdictions within the tsunami danger zone include Cape Canaveral, Cocoa Beach, Satellite Beach, Melbourne Beach, Indian Harbour Beach, Indialantic, and Unincorporated Brevard. Port Canaveral would observe the most severe impacts due to the currents associated with a tsunami and the layout of the Port.

Previous Occurrence

There has not been a tsunami that has impacted Brevard County.

Probability

Because of the rarity of this type of event, it is not expected to occur more than once in 500 years.

Vulnerability and Impacts

Due to its location, Brevard County is vulnerable to tsunami activity. Brevard County has 72 miles of susceptible shoreline. The Tsunami Hazard Zone in Brevard County extends up to 300 feet inland. According to the National Weather Service, an estimated 24,741 businesses and residences within the Tsunami Hazard Zone. Approximately 12,000 residents live in this area along with a daily average of 10,000 beach visitors. Those visitors typically concentrate around crossovers and well-known parks, such as Jetty Park in Cape Canaveral, the Cocoa Beach Pier and Lori Wilson Park in Cocoa Beach. No change in risk is expected as the county grows.

Should a tsunami affect Brevard County, Port Canaveral would see outsized impacts from the currents pushing into the channel and harbor. These currents could push anchored cruise ships and damage the Port including the piers. Residents and tourists would have to evacuate the beach to just west of Highway A1A. If that evacuation is not possible, residents and visitors would need to move to the second floor of a well-constructed building.

Wildfire

A wildland fire originating from an unplanned ignition or unauthorized and accidental human caused fires. Late winter and spring are prime periods for wildfires, fueled by strong winds and a lack of rainfall. The major causes of wildfires are lightning and human negligence.

While wildfires are destructive, they are a part of the natural cycle of renewal. Fires cleanse the land of old trees and brush to make room for new growth to emerge. The ash left behind by the fire helps to fertilize the land offering more encouragement for new growth. Brevard County's natural habitats, including the scrub and the hammock, depend on this cycle to recharge.

Extent

Fires are mostly classified by how much land they burn, in acres, and how intense they burn. Below is a scale showing the different intensities of wildfires.

- **Low-Intensity Fires** – Burn at lower temperatures, mainly clearing underbrush without damaging mature trees.
- **Moderate-Intensity Fires** – More intense, causing some tree mortality but leaving patches of unburned areas.
- **High-Intensity Fires** – Consume large areas quickly, destroying vegetation and structures, often leading to post-fire hazards like erosion and landslides.

Location

All of the county and its jurisdictions are susceptible from the impacts from wildfire. The most at-risk areas are closest to existing scrub and hammock habitats. These areas include developments in or around:

- West of Interstate 95
- Lake Washington
- Newly developed sections of the Town of Malabar and Town of Grant Valkaria
- Micco
- North Merritt Island
- North and west Cocoa
- Lake Poinsett
- Canaveral Groves

Previous Occurrence

Recent Wildfire Incidents Since 2020		
Year	**Fire Name/Event**	**Acres Burned**
2024	Duda	270
2024	Buffer	60
2024	Annex	176
2023	Laughing Gull	140
2023	5 Block	150
2023	Plantation	150
2023	Providence Rd	400
2023	Centerlane	130
2022	Iris	138
2022	Micco Road	65
2021	Otter Slide	1451
2021	Moccasin	580
2021	Deer Run	75
2020	Three Forks	75
2020	Three Forks Marsh Fire	570

Historic Significant Wildfire Incidents		
Year	**Fire Name/Event**	**Acres Burned**
2018	Micco Scrub Fire (Palm Bay)	600
2017	Three Forks #8 Fire	6,282
2017	Tucker Fire	4,500
2017	Midway 1 Fire (Titusville)	325
2016	Fleming Grant Fire	95
2016	Quincy Fire (Palm Bay)	45
2016	Twin Fire (Titusville)	1,300
2016	Smoke House Fire (Mims)	301
2016	Silver Gate Fire (Titusville)	275
2016	Tram Fire (Mims)	222
2011	Iron Horse Fire	17,500
2008	Mother's Day Fires	10,000+
1998	Summer Wildfires	150,000

Probability

Low-intensity wildfires are expected to occur annually in Brevard County. Fires causing widespread property damage and necessitating evacuations occur less frequently. These moderate-intensity and high-intensity fires can occur with a once in 25-year frequency.

Vulnerability and Impacts

The highest risk areas are those where new development borders natural habitats like the scrub and hammocks. These fires burn as a part of the natural cycle and may consume those structures closest to

the wildland-urban interface. Fires in those habitats can spread rapidly and will encounter structures quicker as development expands in the county. Depending on the scale of the fire, impacts may include the loss of homes and businesses where the fire was the most intense.

Climate change will continue to make more extreme impacts more likely. The dry periods are extending in length as average temperatures increase. More frequent and more intense tropical cyclones leave a growing amount debris behind. As that debris dries out, it becomes a critical fuel source and will strengthen a fire. Intense fires will be harder to control and extinguish. More intense fires, in addition to the development of natural habitats, will put wider populations and structures at risk.

Bulk Fuel / Oil Spill Incident

A bulk fuel or oil spill incident occurs when a large quantity of petroleum-based products, such as gasoline, diesel, jet fuel, or crude oil, is accidentally released into the environment. These spills can occur due to transportation accidents involving tanker trucks, railcars, or ships, pipeline ruptures, storage tank failures, or industrial mishandling. Port Canaveral serves as a primary fuel intake and transportation hub which impacts the risk of a fuel or oil spill.

Extent

The severity of a bulk fuel or oil spill depends on the type and volume of the release, the location of the incident, and the environmental sensitivity of surrounding areas.

Bulk Fuel / Oil Groups and Their Characteristics			
Group	**Examples**	**Volatility & Residue**	**Environmental & Cleanup Impacts**
1 – Non-Persistent Light Oils	Gasoline, Condensate	Highly volatile; evaporates within 1–2 days; leaves little to no residue.	Highly toxic soluble compounds; localized but severe impacts; cleanup can be dangerous due to flammability and fumes.
2 – Persistent Light Oils	Diesel, No. 2 Fuel Oil, Light Crudes	Moderately volatile; up to 1/3 residue remains after a few days.	Moderately toxic; can cause long-term contamination in intertidal areas; cleanup is generally effective.
3 – Medium Oils	Most Crude Oils, IFO 180	About 1/3 evaporates within 24 hours.	Can heavily contaminate intertidal zones; strong impacts on birds and mammals; quick cleanup is necessary for best results.
4 – Heavy Oils	Heavy Crude Oils, No. 6 Fuel Oil, Bunker C	Little to no evaporation or dissolution.	Severe and long-lasting contamination; heavy impacts on wildlife; sediments remain polluted; cleanup is very difficult.
5 – Sinking Oils	Slurry Oils, Residual Oils	Does not evaporate or dissolve; can sink below the surface.	Behaves like heavy oils on shorelines but sinks offshore; damages bottom-dwelling organisms; removal often requires dredging.

Location

The highest-risk locations in Brevard County are in and around high-volume transportation routes such as Port Canaveral, the Florida East Coast Railway, pipeline corridors, and roadways such as Interstate 95, U.S. Highway 1, and State Road 528. Storage and transfer facilities are also primary points of concern for spills.

Previous Occurrences

In the past five years, Brevard County has experienced minor fuel spills related to transportation and storage, primarily at Port Canaveral and along roadway corridors. These incidents were contained quickly and resulted in minimal environmental damage.

Probability

The probability of a major bulk fuel or oil spill in Brevard County is considered unlikely with a one in 100-year probability of occurrence. This is due to the controls placed on the movement of petroleum products.

Impacts and Vulnerability

A bulk fuel or oil spill in Brevard County would have severe environmental, economic, and public health impacts. Smaller spills may be quickly contained with limited long-term consequences, while larger incidents can result in fires, explosions, and significant environmental contamination. A large-scale oil spill into the Indian River Lagoon, Banana River, or the Atlantic Ocean could lead to extensive ecological damage, affecting wildlife, marine habitats, and local fisheries. Any spill could impact tourism, cruise ship operations, and fuel distribution, causing economic losses. At Port Canaveral, a major incident could significantly disrupt operations. This disruption could create widespread economic losses across the region. As Brevard County continues to experience growth in both population and industrial activity, its vulnerability to large-scale spills could increase. The United States Coast Guard Sector Jacksonville maintains an Area Contingency Plan for the Northeast and East Central Florida regions. The Area Contingency Plan guides the response to an oil spill in any of the region's waters. The full plan can be accessed at the Sector Jacksonville website.

Civil Unrest

Civil unrest consists of demonstrations, protests, or riots that disrupt public order and may involve property damage or violence. Triggers include political polarization, social justice events, or contentious incidents.

Extent

Severity ranges from minimal disruption to extended disturbances requiring mutual aid and protective actions for nearby facilities.

Location

Civil unrest is likely to occur in high-visibility venues or transportation corridors where the involved people can get the most visibility.

Previous Occurrences

There have been no significant incidents of civil unrest in Brevard County in the last 50 years.

Probability

A large-scale civil unrest incident, that results in property damage or injuries, is unlikely with a one in 25-year probability of occurrence. This can vary with national and regional events, election cycles, and social media mobilization.

Impacts and Vulnerability

Impacts can include injuries, property damage, traffic disruption, and business closures. Vulnerability concentrates in high-traffic areas that host large events and will primarily affect those attending the events.

Communications Failure

Communications failure refers to the partial or complete disruption of critical communication systems, including landlines, cellular networks, internet services, and radio systems. These failures can result from infrastructure damage, equipment malfunctions, severe weather, or cascading power outages.

Extent

The extent of a communications failure depends on the type, cause, and duration of the outage. Localized failures may affect individual cell towers or small areas, while countywide disruptions can occur when major network infrastructures fail.

Location

Communications failures can affect anywhere in Brevard County.

Previous Occurrences

Brevard has mainly experienced hurricane-related outages or intermittent cellular disruptions.

Probability

Widespread communications failures have a one in 25-year probability of occurrence.

Impacts and Vulnerability

Communications failures can delay 911 calls, hinder coordination among first responders, and block residents from basic communications. Vulnerable populations face disproportionate risks during prolonged outages. Critical infrastructure is especially reliant on uninterrupted communications. Many agencies maintain redundant systems like satellite phones and public safety radios.

Cyber Attacks

A cyber attack is a deliberate and malicious attempt to breach, disrupt, damage, or gain unauthorized access to computer systems, networks, or data. Cyber attacks can target individuals, organizations, or government institutions. They are typically carried out using malware, ransomware, phishing, or denial-of-service attacks.

Extent

The severity of a cyber attack depends on the type of attack, targeted system, and duration of disruption. Impacts can range from localized system failures and data breaches to widespread operational disruption. Minor attacks may only affect a single department or facility. Sophisticated attacks could compromise multiple systems simultaneously, affecting residents, businesses, and critical infrastructure throughout Brevard County.

Location

Cyber attacks are not geographically constrained but primarily affect locations with networked digital systems. Any facility that relies on digital connectivity is potentially vulnerable.

Previous Occurrences

While Brevard County has not experienced any publicly reported major cyber attacks on critical infrastructure in the past five years, ransomware and other attacks have affected local governments elsewhere in Florida.

Probability

Given persistent threat activity and growing digital dependence, cyber attacks have a one in 25-year probability of occurrence. The probability of a large-scale cyber attack is smaller with a one in 100-year probability of occurrence.

Impacts and Vulnerability

A successful cyber attack in Brevard County could have significant operational, economic, and social consequences. Interruptions in utility and energy systems could affect power delivery, water management, and other essential services, with cascading impacts on homes, businesses, and public facilities. Economic impacts could include financial losses from system downtime, ransomware payments, recovery efforts, and operational delays. Vulnerability is increased by a growing reliance on networked systems, interdependencies between public and private Information Technology infrastructure, and limited Information Technology staffing or resources. While proactive cybersecurity measures reduce risk, constantly evolving threats keep Brevard County vulnerable to cyber attacks.

Dam/Levee Failure

A dam or levee failure occurs when a structure intended to impound or control water is overtopped, breached, or otherwise compromised. While Brevard County has no large federal dams, it has approximately 30 miles of levees in the upper basin of the St. Johns River that protect agricultural lands, residential parcels in west Palm Bay, a high school, and a subdivision in southern unincorporated Brevard. There is also a St Johns River Water Management District maintained weir on Lake Washington that is critical to managing lake levels for the City of Melbourne's water supply.

Extent

Severity ranges from minor erosion and localized overtopping to rapid, uncontrolled releases causing downstream inundation. Consequences can include swift, deep flooding, transportation disruption, damage to utilities, and secondary environmental impacts depending on release volume and velocity.

Location

Risk is concentrated along the St. Johns River upper basin levee system and downstream low-lying communities, as well as areas relying on the Lake Washington weir. Impacts vary by elevation, proximity to levees, and distance from controlled water bodies across the planning area.

Previous Occurrences

No catastrophic failures have occurred. In 2023, a breach caused by boats crossing over the bordering marsh on the Lake Washington Weir was repaired by the St Johns River Water Management District. Inspections by the St. Johns River Water Management District and the U.S. Army Corps of Engineers have ensured the federal and Water Management District structures in good working order.

Probability

Given regular inspection, maintenance, and operational controls, the probability of a damaging levee or weir failure is very unlikely in any given year; a one in 500 years probability of occurrence.

Impacts and Vulnerability

A failure could produce sudden flooding, damage public and private property, and interrupt transportation and utilities. The City of Melbourne's potable water supply could be affected if the Lake Washington weir failed. Vulnerability increases where development approaches closest to the water control structures. The effects of climate change, such as more frequent and intense rainfall events, could exacerbate riverine flooding risks and heighten the chances of a structural failure.

Hazardous Materials Release

A hazardous materials release occurs when dangerous substances, such as chemicals, fuels, or gases, are accidentally or intentionally discharged into the environment. Hazardous materials are stored, used, and transported throughout Brevard County, with bulk storage sites, industrial facilities, transportation networks, and pipelines contributing to potential risks. In addition to storage facilities, rail, highway, and maritime transport routes increase the potential for incidents, particularly near densely populated areas.

Extent

The severity of a hazardous materials release depends on several factors, including the type of substance released, location of the incident, weather conditions, and population density. Minor spills may be quickly contained, while large-scale releases could require mass evacuations, extended shelter-in-place orders, and long-term remediation. A pipeline explosion could have multiple impacts and possible cascading effects on infrastructure and energy supply.

Location

Hazardous materials are present throughout Brevard County in both fixed facilities and along major transportation routes. Storage facilities exist in industrial areas, including those supporting the space industry. Major roadways such as Interstate 95, U.S. Highway 1, and State Road 528, as well as Florida East Coast Railway corridors and Port Canaveral, are significant transport routes where releases could occur. Brevard County also has over 170 miles of natural gas pipelines that traverse populated regions, including Palm Bay, Melbourne, Titusville, and unincorporated areas which carry natural gas primarily for energy providers like Florida Gas.

Previous Occurrences

In the past five years, Brevard has experienced minor spills and transport-related incidents contained by facility or carrier response with limited off-site impacts. No countywide catastrophic release has been recorded. However, rail traffic and industrial activity contribute to a steady background risk.

Probability

Probability of a significant, uncontrolled release is unlikely with a one in 100-year occurrence. Minor releases are a greater than annual occurrence due to HAZMAT transport, fixed facilities, and pipeline mileage.

Impacts and Vulnerability

Significant releases could overwhelm local response and healthcare capacity, necessitate regional mutual aid, and cause long-term contamination of soil and waterways. Populations near industrial sites, rail crossings, and pipelines are more exposed, as are critical facilities along transport routes. Impacts are influenced by the characteristics of the released material and the surrounding area.

Radiological Release

A radiological release occurs when radioactive materials are accidentally or intentionally released into the environment, posing risks to human health, property, and the ecosystem. These materials may originate from nuclear power facilities, military operations, transportation incidents, or aerospace launches. In Brevard County, potential sources of radiological hazards include:

1 - The St. Lucie Nuclear Power Plant in St. Lucie County
   - Brevard's southern part of the county falls within the 50-mile Plume Ingestion Pathway, where contaminated foodstuffs could be restricted

2 - A Space Launch with a Radiological Source
   - A space vehicle with a radiological source for power launches from Kennedy Space Center or Cape Canaveral Space Force Station
   - Launches with radiological sources are rare and follow extensive multi-year planning and safety review processes
   - The effects of an anomaly on Brevard County depend on many factors including the source, the weather, and the time into flight of the anomaly

3 - Port Canaveral Trident Pier
   - Port Canaveral occasionally hosts a United States Navy nuclear submarine

Extent

The severity of a radiological release depends on the type of radioactive material, quantity released, duration of exposure, and proximity to populated areas or sensitive environments. The most severe damage to Brevard would be economic due to losses of residents, businesses, agriculture, and tourism.

Location

Southern Brevard is within the ingestion pathway for St. Lucie. Areas closest to Kennedy Space Center and Cape Canaveral Space Force Base launch facilities are also vulnerable from launches with radiological payloads. However, the entire county would feel the economic impacts from such a release.

Previous Occurrences

No radiological releases have affected Brevard County.

Probability

Overall, this hazard is very unlikely with a one in 500-year probability of occurrence. This is due to stringent federal regulations and engineering controls.

Impacts and Vulnerability

Any impacts would be determined by unique circumstances surrounding a release. A radiological release from any source could require individuals within the plume to shelter-in-place. Residents with gardens or in agriculture may also need to safely dispose of their current crops to avoid food contamination. Environmental impacts could include contamination of soil and wetlands. Populations living near Port Canaveral, Kennedy Space Center, and major transportation corridors face elevated exposure risks, especially those who are elderly, medically vulnerable, or without personal transportation in the event of an evacuation. Brevard's growing population may increase overall vulnerability in the future.

Space Launch Anomalies

A space launch anomaly occurs when a launch vehicle deviates from its intended trajectory or experiences a failure during ascent or landing. This often results in the partial or complete loss of the launch vehicle. Anomalies may be caused by mechanical failure, software errors, weather conditions, or fuel system malfunctions. Launch vehicle anomalies can cause debris fields because of the speed and altitude at which the anomaly occurs. The size of individual pieces of debris can range from a couple inches to several feet. The fuel used by the launch vehicles can also pose a toxic risk depending on the amount and type of fuel. Hypergolic fuels such as hydrazine are highly potent oxidizers that can cause severe harm to humans if exposed to a small amount for any period. The use of hypergolic fuels has decreased over time, but they are still used in some launch vehicles. Distance focusing overpressure (DFO) is a specific type of shockwave from the explosion of a launch vehicle that only occurs under certain meteorological conditions. This phenomenon can cause broken windows far from the initial location of the anomaly.

Brevard County is home to Kennedy Space Center and Cape Canaveral Space Force Station. These launch facilities support increasingly frequent commercial, military, and government space launches. While launch vehicles can carry large amounts of rocket fuel, including hazardous propellants, improved safety protocols have limited any off-site impacts.

Extent

The severity of a space launch anomaly depends on vehicle size, fuel type, trajectory, and location of failure. Consequences can range from minor equipment loss and limited debris to widespread debris fields and potential impacts to facilities immediately surrounding Kennedy Space Center or Cape Canaveral Space Force Station.

Location

Space launch anomalies can affect launch pads, adjacent facilities, or waterways within the path of the launch vehicle. Virtually all debris from an anomaly will remain within the perimeter of Kennedy Space Center and Cape Canaveral Space Force Station or in the Atlantic Ocean. The exact debris field depends on the altitude and trajectory at the time of failure.

Previous Occurrences

On January 27, 1967, a launch pad anomaly caused Astronauts Virgil Grissom, Edward White and Roger Chaffee to lose their lives during a pre-flight check. On January 28, 1986, Space Shuttle Challenger experienced a catastrophic anomaly 86 seconds into flight that resulted in the death of all astronauts aboard. On February 1, 2003, Space Shuttle Columbia experienced a catastrophic anomaly on reentry also resulting in the death of all astronauts aboard. Though Columbia broke apart over the continental United States, no injuries on the ground were reported. Recent anomalies caused by the SpaceX Falcon 9 and Falcon Heavy testing, only resulted in vehicle loss and debris but no injuries.

Probability

Launch anomalies remain unlikely with a one in 25-year probability of occurrence. Anomalies that affect the county outside of the perimeter of Kennedy Space Center or Cape Canaveral Space Force Station are even more unlikely with a one in 100-year probability of occurrence. Larger launch platforms such as Artemis, Starship, and New Glenn could cause the probability of offsite impacts to increase as their programs grow.

Impacts and Vulnerability

Depending on the launch vehicle and other factors, the impacts of an anomaly could be severe but are very unlikely to reach outside the perimeter of Kennedy Space Center or Cape Canaveral Space Force Station. As the launch vehicles grow and active launch pads move south on Cape Canaveral Space Force Station, Port Canaveral and its various customers could potentially be impacted by an anomaly occurring. Burgeoning cruise traffic and greater launch frequencies are increasing the chance of a maritime impact from an anomaly.

The most severe impacts that would be felt in Brevard are economic. If an anomaly causes a program cancellation, Brevard could experience economic impacts similar to the aftermath of the Challenger Disaster in 1986. Following the Challenger explosion, people working for and around the Space Shuttle Program were out of work and migrated out of the area. A lot of high-paying jobs were lost and led to a large migration out of the area. A similar impact occurred when the Space Shuttle Program was ended in 2011. As launch providers expand, the economic impacts would affect the entire county as employees become more dispersed and reinforce the need for a diverse, countywide economic base.

Terrorism

Terrorism is the use of violence, intimidation, or threats to achieve political, religious, or ideological objectives. Biological attacks could involve the release of viruses, bacteria, or toxins such as anthrax, smallpox, or ricin, while chemical attacks could involve nerve agents, mustard gas, or chlorine. Attacks can be carried out by domestic groups, international organizations, or lone actors. Potential targets may include people, facilities, infrastructure, transportation systems, or information networks.

Extent

The severity of a terrorist incident depends on the attack method, scale, and target. Consequences can range from localized injuries or fatalities to widespread disruption and environmental contamination. An attack could damage infrastructure and result in mass casualties. Biological or chemical releases could cause immediate health effects or long-term illness.

Location

High-risk areas in Brevard County include Port Canaveral, Kennedy Space Center, Patrick Space Force Base, Cape Canaveral Space Force Station, tourism districts, and transportation infrastructure. Rural areas of Brevard are generally less likely targets.

Previous Occurrences

Brevard County has not experienced a confirmed terrorist attack.

Probability

An organized and wide impacting terrorist attack is very unlikely with a one in 500-year probability of occurrence. However, the probability could change due to shifting political, religious, and ideological landscapes.

Impacts and Vulnerability

A terrorist incident in Brevard County, including biological or chemical attacks, could result in significant impacts. Residents and visitors in affected areas would be at greatest risk. Exposure to biological or chemical agents could result in serious injuries and long-term health effects. Critical infrastructure could be damaged or disrupted. Psychological impacts could also be widespread. The tourism industry would also see impacts with less individuals wanting to travel to Brevard. Environmental contamination could harm ecosystems, wildlife, and natural resources.

Transportation Incidents

Transportation incidents occur when failures or accidents within a transportation system result in injuries, fatalities, property damage, or environmental impacts. These incidents can involve roadways, railways, airports, seaports, or other transit infrastructure, and may be caused by operator error, equipment malfunction, natural hazards, hazardous cargo, or intentional acts. In Brevard County, critical transportation infrastructure includes Interstate 95, major rail lines such as Florida East Coast Railway, Port Canaveral, Patrick Space Force Base, and multiple airports, including Melbourne International Airport.

Extent

The severity of a transportation incident varies widely, from minor collisions with limited injuries to large-scale accidents. Highway accidents can involve multiple vehicles and produce fatalities or serious injuries. Rail incidents, especially those involving hazardous cargo, can cause fires, explosions, or toxic releases affecting surrounding populations. Aircraft accidents can lead to loss of life, property damage, and debris contamination over wide areas. Port incidents may involve hazardous material spills, fuel leaks, or ship collisions, causing environmental degradation and economic disruption.

Location

With major roadways, railroad tracks with 146 at-grade crossings, Port Canaveral, and airports, all of Brevard County is susceptible to impacts from a transportation incident. Rail incidents often occur at grade crossings or along freight corridors. Port Canaveral is a hub for cruise and cargo operations, fuel intake, and military shipping, making it sensitive to large-scale incidents. Airports present risks both on the ground and in the airspace surrounding the facility, particularly during takeoff and landing operations.

Previous Occurrences

In the past five years, Brevard has seen hundreds of vehicle crashes on Interstate 95 and increased grade-crossing incidents linked to higher rail traffic. There have been a handful of incidents at the airports and Port Canaveral with highly localized impacts.

Probability

Less complex, smaller incidents occur multiple times per year and are practically guaranteed to occur. The complex, higher impact events have a one in 25-year probability of occurrence.

Impacts and Vulnerability

Impacts include fatalities, injuries, hazardous materials exposure, delays to evacuation traffic, and economic loss from disrupted logistics and tourism. Vulnerability is higher along busier routes, dense tourist zones, and near fuel and cargo facilities.

The Local Mitigation Strategy

The Local Mitigation Strategy represents the operational portion the Hazard Mitigation Plan. The Steering Committee is the mechanism through which Brevard identifies and completes mitigation projects.

Mitigation Capabilities

Capabilities to complete mitigation activities include funding, regulatory tools, and public outreach. Each jurisdiction updates information about its current capabilities to the Steering Committee during meetings as needed. Brevard County and its jurisdictions are responsible for reviewing their capabilities to identify and address capability gaps. Then, they will identify mitigation projects to close the capability gaps. These new projects can include construction, finding a new funding source, or updating regulations. A current list of capabilities by jurisdiction can be found in Appendix F.

Funding Sources for Hazard Mitigation

Funding Level	Sources
Federal	Hazard Mitigation Grant Program (HMGP)
	Hazard Mitigation Grant Program (HMGP) Post-Fire
	Flood Mitigation Assistance (FMA) Grant Program
	Community Development Block Grant – Disaster Recovery (CDBG-DR)
	Community Development Block Grant – Mitigation (CDBG-MIT)
State	Florida Hurricane Catastrophe Fund
	Hurricane Loss Mitigation Program (HLMP)
	Resilient Florida Grant Program
	Rebuild Florida Program
	Elevate Florida Program
Local	Local Budget/Capital Improvement Plans
	Stormwater Tax Assessment
	In-Kind Services

The Steering Committee

The Steering Committee is the representative structure that coordinates mitigation activities in Brevard County. The Steering Committee handles business according to the Bylaws. Special committees like the Initiative Scoring Sub-Committee focus on reviewing and prioritizing projects. The Steering Committee has representation from the Brevard County Board of County Commissioners, Brevard Public Schools, Brevard County Sheriff's Office, each of Brevard County's 16 municipalities, the Canaveral Port Authority, the St. Johns River Water Management District, local hospital systems, and private industry partners. A list of the members of the Steering Committee is in Appendix B.

Bylaws

The Steering Committee follows a set of bylaws that guide how the group operates. These bylaws lay out the structure of the Committee, how members are chosen, and how decisions are made. The Bylaws make sure every participating municipality, organization, and community partner knows their role, how

to stay involved, and how to bring projects forward for consideration. The Bylaws provide a clear set of rules so the Steering Committee can operate fairly and efficiently. A copy of the bylaws is in Appendix E.

Meetings

The Steering Committee meets quarterly to discuss current mitigation issues. Meetings can be held in-person or virtually and serve as an opportunity for Steering Committee members to get together and provide updates on their progress implementing mitigation projects. Mitigation projects can be proposed and incorporated into the plan at any regular meeting. Special meetings can be held to go over single topics such as hazard reviews, development updates, or the project list.

Goals

The Steering Committee defined a new system to clarify the differences between goals and projects.

- **Goals** – Overarching long-term targets; provide direction for the strategy
- **Projects** – Any mitigation actions taken or planned to reduce risk and work toward one or more of the goals

The Steering Committee sets the goals of the Local Mitigation Strategy to reflect changes in Brevard County and its jurisdictions. The following goals reflect lessons learned and provide a flexible framework for the future.

1. Implement measures to reduce the vulnerability of critical infrastructure to all types of hazards
2. Encourage updates to local building codes and zoning regulations to reduce risk
3. Increase power redundancy for critical infrastructure by installing backup power systems
4. Increase awareness of federal and non-federal programs and funding sources to enhance mitigation efforts
5. Use public education, outreach campaigns, and innovative tools to improve community understanding of hazard risks and mitigation strategies

Projects

A structured and transparent process for identifying, prioritizing, and implementing mitigation projects is essential for Brevard's mitigation strategy. Each project incorporated into the Hazard Mitigation Plan has the goal of reducing risk of at least one of the identified hazards with at least one jurisdiction seeing the benefits of the project. Members can update the Steering Committee on their progress of project implementation at every meeting of the Steering Committee.

Project Proposal, Scoring, and Prioritization Procedure

The Applicant

1. Requests and complete a Project Proposal Form
2. Returns the completed Project Proposal Form to Brevard County Emergency Management staff at least 72 hours prior to the next Steering Committee Meeting to be added to the agenda
3. Brevard County Emergency Management Staff will review the proposal for similarity to any previously approved projects and advise the applicant
4. Presents the proposed project to the Steering Committee for approval

The Steering Committee

1. Review any Project Proposals ahead of the next Steering Committee meeting
2. Consider the proposal form and applicant presentation of the project
3. Provide applicable feedback to the applicant about their proposal
4. Hold a vote to add the proposed project to the Project List

The Project Scoring Committee

1. A meeting of the Project Scoring Committee will be held in accordance with the By-Laws
2. The Committee will score the project proposals using the first five scoring criteria on the Hazard Mitigation Plan Project Scoring and Prioritization Sheet as shown in Figure 1
3. The projects will be prioritized in descending order based on their score
4. The scoring sheets and prioritized project list will be sent to the Steering Committee and project applicants for review

Special Procedures

Per Florida Administrative Code Rule 27P-22, some funding opportunities require interested applicants to seek approval from their Local Mitigation Strategy Working Group to apply for funding. Any approved applications must be prioritized by the Steering Committee. An approval and priority of funding letter will be signed by the Chair or Vice-Chair and sent to the Florida Division of Emergency Management and each of the applicants. The following procedure will be used to score and prioritize new and previously approved projects to seek funding from these funding opportunities.

1. Brevard County Emergency Management Staff will send information regarding the funding opportunity to the Steering Committee
2. The Chair or Vice-Chair may request a special meeting of the Steering Committee to approve and prioritize projects for funding
3. Entities must submit their new or previously approved projects to Brevard County Emergency Management Staff at least 72 hours before the special meeting for inclusion on the agenda
4. The applicants will present their project proposals to the Steering Committee for approval
5. The Steering Committee will vote to approve new projects to the project list first
6. A separate vote will be held to approve the applicants to seek funding
7. After the special meeting, the Project Scoring Committee will meet to score new projects and prioritize all approved projects
8. All projects will be scored and prioritized using all seven scoring criteria on the Project Scoring and Prioritization Worksheet
9. The final scoring and prioritization will be sent to the applicants as well as the Chair and Vice-Chair
10. The Chair or Vice-Chair, in the absence of the Chair, will sign and send a letter of approval to all approved applicants and attach the final prioritization order to the letter

The applicants may then submit their application for funding to the funding agency as outlined in the funding opportunity.

The Prioritized Project List

The Steering Committee uses a prioritized project list to organize and stage projects ready for implementation. This is also how the Steering Committee and Brevard County Emergency Management tracks the progress of mitigation projects being conducted within the county. The Project List categorizes projects as follows:

- **New**: The project was proposed and accepted in the current year
- **In-progress**: Funding has been secured, and the project is moving forward
- **Updated**: The project's scope or cost changed and was updated with committee approval
- **Complete**: The agency has finished the project, showing progress
- **Deferred**: The project remains valid but is postponed due to current priorities or funding constraints
- **Cancelled**: The project is cancelled and no longer being pursued by the jurisdiction

PROJECT TITLE						
Scoring Criteria	**10**	**8**	**5**	**3**	**0**	**Score**
Consistency with LMS Goals	Consistent with multiple goals or objectives		Consistent with one goal or objective		Not consistent with any goals or objectives	
Environmental Impacts	Largely benefits the surrounding ecosystems, natural resources, air quality, or water quality long-term (over 50 years)	Benefits the surrounding ecosystems, natural resources, air quality, or water quality short-term (10-49 years)	No environmental impact is made	Minimal, low-impact damage to ecosystems, natural resources, air quality, or water quality	Causes damage to surrounding ecosystems, natural resources, air quality, or water quality	
Social Equity	Has multiple positive effects on people or positively affects an area of Low SVI or a CDRZ	Positively impacts some people or areas	Does not displace or negatively affect any people	Negatively impacts very few people	Negatively impacts many people	
Population Impacted	At least 90% of Brevard County's population will see a benefit	At least 65% of Brevard County's population will see a benefit	At least 35% of Brevard County's population will see a benefit	At least 5% of Brevard County's population will see a benefit	Less than 5% of Brevard County's population will see a benefit	
Hazard Probability	Once a year or more	Once every 25 years	Once every 50 years	Once every 100 years	Once every 500 years	
Meeting Attendance	Attended four meetings in the past calendar year		Attended two meetings in the past calendar year		Attended no meetings in the past calendar year	
Past Initiative	Present on the current LMS Initiatives List				Not present on the current LMS Initiatives List	
					Total:	**0**

Figure 1: Project Scoring Sheet

Public Participation

The Steering Committee and Brevard County Emergency Management invite public participation annually through the planning cycle. Any contributions from the public are recorded and considered for incorporation into the plan by the Steering Committee. The last Steering Committee meeting of each year is publicly noticed through the Brevard County noticed meeting process.

Plan Maintenance

The Hazard Mitigation Plan is a living document that requires regular monitoring and evaluation to remain effective and relevant. Brevard County Emergency Management, working in partnership with the Steering Committee, oversees the plan's maintenance, including conducting an annual evaluation. The department maintains the master copy, ensuring all updates and revisions are properly documented. It also coordinates and facilitates Steering Committee meetings while providing the administrative support needed to guide plan maintenance activities. As part of this process, annual updates from participating jurisdictions are collected, reviewed for accuracy, and incorporated into the plan. In addition, strong relationships with external agencies and stakeholders are fostered to enhance coordination and ensure the plan remains comprehensive and effective.

Hazard Mitigation Plan Integration

The Hazard Mitigation Plan is integrated through the proposal and completion of mitigation projects and actions incorporated into the plan and each jurisdiction's policies and regulations. For the Hazard Mitigation Plan to be effective, it must be integrated into the everyday operations of Brevard County and its municipalities. At the jurisdictional level, this integration often takes the form of implementing mitigation projects identified in the plan. These projects address specific hazards or capability gaps. Additional projects are identified through jurisdictional after-action reports and updated hazard assessments.

Post-Disaster Assessment

Following any significant incident that impacts Brevard County, the Steering Committee, in coordination with Brevard County Emergency Management, undertakes a review to evaluate both the successes of existing mitigation efforts and the opportunities for further risk reduction. This process begins with an assessment, including the type of hazard, the scale of its impact, and the affected assets. Attention is given to understanding how the event compared with the County's hazard profiles, whether the impacts were anticipated, and any emerging vulnerabilities.

Mitigation projects within the impacted areas are examined for performance. This evaluation determines whether projects functioned as intended, the degree to which they reduced damage, and where they may have fallen short. Projects that demonstrate measurable success are highlighted as best practices and shared broadly with the Steering Committee, participating jurisdictions, and the community at large. Conversely, projects that did not achieve their goals are analyzed to identify the reasons for underperformance, such as design limitations, insufficient scale, or unanticipated hazard conditions. Successful strategies are considered for replication in other parts of the County, while lessons from less effective efforts inform the development of new projects or the modification of existing approaches.

Plan Update

The Hazard Mitigation Plan is updated regularly to remain compliant with federal and state requirements and to ensure it reflects the evolving needs of Brevard County. The update process has been adapted to the current needs of and capabilities of the entire county. Updates occur on both an annual and five-year basis, each serving a distinct purpose.

- Annual Update – The annual updates provide the Florida Division of Emergency Management with information on plan changes such as revisions to hazard profiles, project implementation status, jurisdictional participation, and Steering Committee representation. Annual reporting helps the Plan incorporate new data and emerging risks more frequently. Annual updates are required by Florida Administrative Code Rule 27P-22.

- Five-Year Update – Emergency Management leads the comprehensive update of the Hazard Mitigation Plan, working in close collaboration with local jurisdictions and the Steering Committee. This update allows the County to reexamine its risk analysis, review goals, and incorporate changes in policy, law, and funding programs. Special topic meetings are held to address hazard identification, track development, and discuss the goals. Unique to the five-year update, kick-off and check-in meetings are conducted to give as broad of an opportunity as possible for increased accessibility and participation.

Details about this most recent update can be found in Appendix A.