RESOLUTION NO. 2024-16

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF NEW PORT RICHEY, FLORIDA, SUPPORTING, ADOPTING, AND IMPLEMENTING THE PASCO COUNTY 2024 5-YEAR UPDATE OF THE LOCAL MITIGATION STRATEGY.

WHEREAS, Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5165, as amended by the Disaster Mitigation Act of 2000 (DMA2K) (P.L. 106-390) requires local governments to undertake a hazard identification risk assessment approach to reduce the impacts of identified natural hazards and man-made hazards for New Port Richey in the Local Mitigation Strategy (LMS);

WHEREAS, 44 Code of Federal Regulations (CFR) Part 201.6 requires local governments to have a Federal Emergency Management Agency (FEMA) approved LMS, and requires the review and revision of the LMS to reflect any changes in City development, success in local mitigation efforts, changes in the City's mitigation priorities, and submit the Strategy for FEMA approval every five (5) years in order to apply for and receive funding through the different Hazard Mitigation Assistance Grants;

WHEREAS, Florida Administrative Code (FAC) 27P-22 requires local jurisdictions to organize, maintain, and submit annual reports to the Florida Division of Emergency Management (FDEM) through the County Chair of the LMS Working Group in order to remain eligible for current and future Hazard Mitigation Grant Program funding projects;

WHEREAS, the Pasco County LMS (which includes New Port Richey) was most recently updated by the Pasco County LMS Working Group, which submitted to FDEM and received the official Approved Pending Adoption letter by the FDEM on or about July 30, 2024;

WHEREAS, the Pasco County LMS serves as the Floodplain Management Plan and adds value to the Community Rating System in offsetting financial costs through public outreach and flood mitigation projects;

WHEREAS, The Pasco County LMS serves as the Community Wildfire Protection Plan further enhancing the City's partnership with Florida Forest Service and wildfire mitigation activities; and

WHEREAS, FEMA requires adoption of the revised LMS by each of the jurisdiction's local governing bodies, identified in the plan, in order to continue participating jurisdictions to continue to remain eligible for Hazard Mitigation Assistance Grants.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of New Port Richey, Florida, that the City Council, that:

1. The Pasco County Local Mitigation Strategy, 2024 5-Year Update, is hereby adopted and authorized for implementation, a copy of which is attached hereto.

2. The Pasco County LMS Working Group is hereby authorized to continue New Port Richey LMS maintenance for the next five (5) years.

3. This resolution shall be in effect immediately upon its adoption.

4. This resolution shall be forwarded immediately to FDEM and FEMA for approval.

DONE AND RESOLVED on the 3rd day of September, 2024.

ATTEST:

_____ _____

Judy Meyers, CMC, City Clerk Alfred C. Davis, Mayor

Approved as to form:

_____

Timothy P. Driscoll, City Attorney

2024

PASCO COUNTY LOCAL MITIGATION STRATEGY

PASCO COUNTY DEPARTMENT OF EMERGENCY MANAGEMENT

I. EXECUTIVE SUMMARY

The Disaster Mitigation Act of 2000[1] (DMA 2000), passed by the U.S. Congress, amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act[2], requiring local governments to have a mitigation plan. This congressional act was created to encourage innovative mitigation techniques and disaster resiliency throughout communities. DMA 2000 implemented the requirement of all local, tribal, and state communities to develop and adopt a Local Mitigation Strategy (LMS), making the plan essential for eligibility of federal funding for mitigation projects and non-emergency disaster assistance.

Pasco County presents the following LMS, a plan that promotes mitigation initiatives by identifying natural, technological, and human-caused hazards. By establishing a coordinated, whole community, planning framework, the LMS can be used to limit the impact of those hazards in the future. The Pasco County LMS shall be used as a tool for emergency managers and local decision makers to establish a more disaster-resilient community. To remain eligible for Federal mitigation funds, it is the Local Mitigation Strategy Working Group (LMSWG) and Emergency Management's responsibility to review, revise, and re-submit an updated LMS every five years.

In compliance with the requirements within the Disaster Mitigation Act of 2000 as required by the Federal Emergency Management Agency (FEMA), this LMS includes "actions to mitigate hazards, risk, and vulnerabilities identified under the plan; and a strategy to implement those actions" (42 U.S.C § 5165).

The following municipalities, as well as unincorporated Pasco County, are included in this plan:

- The City of Dade City
- The City of New Port Richey
- The City of Port Richey
- The City of San Antonio
- The City of Zephyrhills
- The Town of St. Leo

Given the diverse geographic layout of Pasco County, certain emergencies and disasters may impact some jurisdictions and more than others. However, all jurisdictions are vulnerable to the effects of one or more hazards including wind from tropical cyclones, extreme temperatures and drought, wildfires, severe storms, flooding, geological subsidence, winter storms, extreme cold, and hazardous material releases. Historically, coastal storm surge, flooding, high winds, and oil spill events have impacted the cities of New Port Richey and Port Richey as well as the unincorporated coastal areas of the County, from Hudson to Holiday. Wildfires have most frequently occurred near wildland areas such as Starkey Park, around the Suncoast Parkway and I-75 areas, and communities with urban wildland interface such as Cypress Creek and Land O' Lakes. Hazardous material spills present a higher vulnerability along major transportation corridors and

[1] "Disaster Mitigation Act of 2000" https://www.congress.gov/106/plaws/publ390/PLAW-106publ390.pdf

[2] "Stafford Act"https://www.fema.gov/sites/default/files/documents/fema_stafford_act_2021_vol1.pdf

in industrial settings. Dade City, New Port Richey, Port Richey, and the western portions of unincorporated Pasco County have the highest probability of an industrial chemical incident. Other hazards have non-static location profiles and can happen anywhere in the county under specific conditions.

The State of Florida experienced 177 Major Disaster Declarations between 1953 and 2023. Pasco County was included in 38 of those disasters (Appendix E). Between 2018 and 2023, 12 disaster declarations have included Pasco County including hurricane, biological incident, tropical storm and severe storm.

The Hazard Analysis section of the LMS discusses in detail the various types of hazards, their reported events and potential impacts. This section assigns each jurisdiction with a very low/low/moderate/high probability of occurrence and level of vulnerability for each hazard. This section within the LMS identifies Pasco County as a whole as being highly vulnerable to certain natural, technological, and human-caused hazards. This section also analyzes the topography, historical development, land use patterns, as well as growth and development trends that affect the county's vulnerability.

Hazard mitigation is the practice of reducing risks to people, property, and critical infrastructure from disasters. When developing new areas of a community, it is easier to avoid hazardous areas if they are identified in advance. Because few communities are created from scratch, it is necessary to ensure existing communities are resistant to future damage by creating plans and initiatives to reduce vulnerability. By considering hazard mitigation through all phases of emergency management, areas of concern will be accounted for and the recovery period would likely decrease. Shortening the recovery period allows businesses to open faster and often require less repairs to public infrastructure; allowing the community to be restored to normalcy at a quicker rate. Hazard mitigation promotes a more resilient community that helps protect life and property from future disasters.

Local government, citizens, businesses, industry, educational institutions, and community organizations must work together to meet mitigation objectives. This LMS is a compilation of stakeholder efforts to identify mitigation goals and objectives and allow participants to develop mitigation initiatives based on the county's hazard and vulnerability analysis. Implementation of mitigation objectives is accomplished through personal awareness and responsibility, government regulation and enforcement, and public awareness and support. The goal of the Pasco County LMS is to create a safer, more resilient, and disaster-resistant community.

DOCUMENTATION OF HAZARD MITIGATION PLANNING PROCESS

Appendix A indicates and identifies the Pasco County LMS Planning Process and documentation process for current and future projects. The LMS serves as a guide for hazard mitigation activities on a county wide basis. The Appendix is intended to be a dynamic Appendix that will be regularly updated.

The LMS Coordinator will be responsible for: scheduling meetings, collaborating on the agendas, maintenance of meeting minutes, monitoring the plan, maintaining the list of completed projects, documenting new approved projects, collecting comments, and answering questions related to the LMS, maintaining an official copy of the LMS, having the annual update approved, and forwarding the annual update to the State.

Representatives from stakeholder departments within Pasco County Government and from each of the adopting agencies are required to attend LMS Working Group meetings as often as possible, at a

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minimum of twice per year. Attendance is encouraged for all stakeholder agencies and departments, and every contributor to a mitigation initiative.

Appendix A includes the following:

1. LMSWG Roster
2. Meeting Agendas
3. Meeting Notes
4. Meeting Sign-In Sheets
5. Meeting Notices

All LMS Working Group meetings open to the public and are announced via the Pasco County calendar at the following location: **https://pascocountyfl.net/government/public_notices.php**

The information from the meetings is available by contacting the Pasco County Hazard Mitigation staff at 727-847-8137:

Pasco County Emergency Management 8744 Government Dr. New Port Richey, FL 34654

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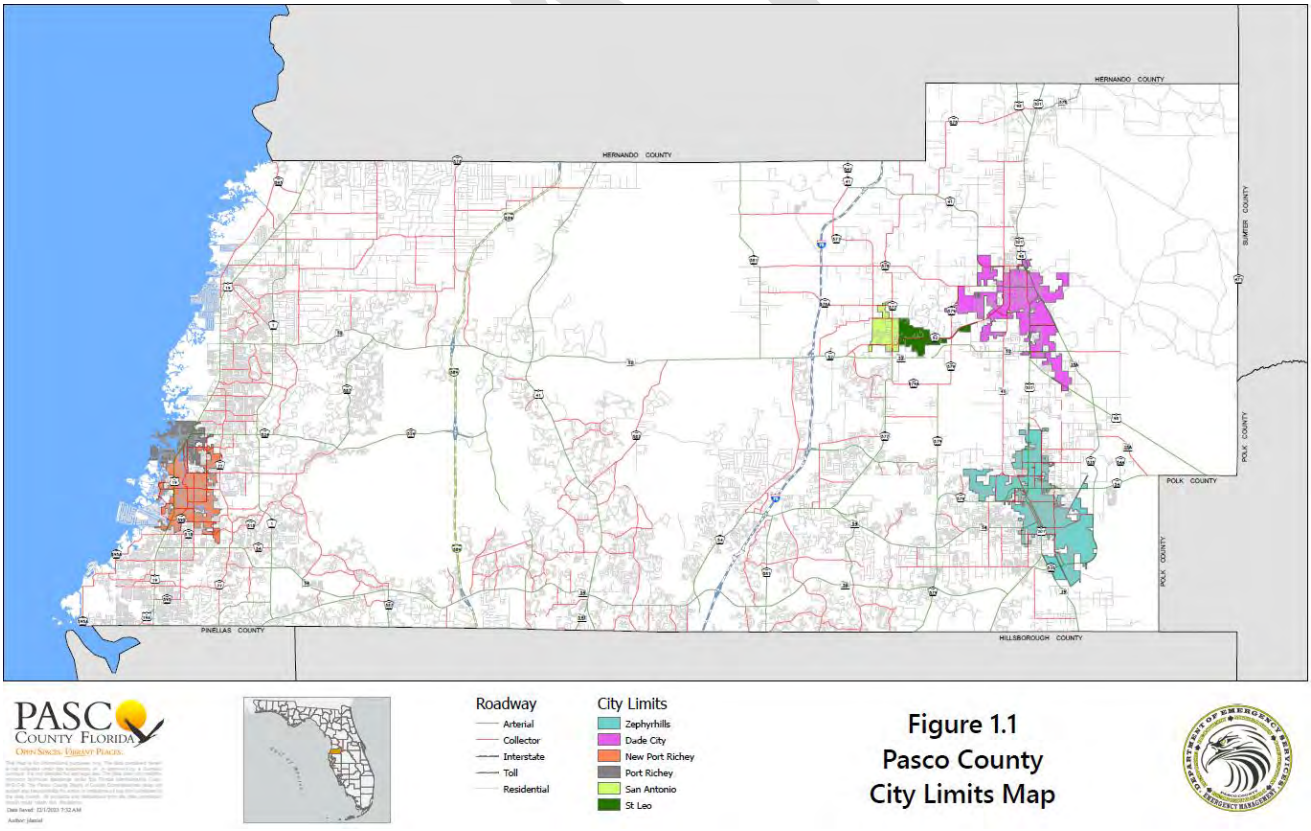
III. COMMUNITY PROFILE

Pasco County, located in west central Florida, is the eleventh most populous county in the State of Florida. The county is bound by the Gulf Coast and shares its borders to the north by Hernando County, on the east by Polk and Sumter Counties, and to the south by Hillsborough and Pinellas Counties. The county in size is large compared to others, the total political area for Pasco County is 868 square miles, with approximately 745 square miles comprised of land area and 123 square miles comprised of water (inland, coastal, territorial, new reservoirs and other man-made lakes). The region is characterized by discontinuous highlands in the form of ridges separated by valleys. The ridges are above the static level of the water in the aquifer, and the valleys are below it. Broad shallow lakes are common on the valley floors, while smaller, deeper lakes formed on the ridges. Based on physiography, the county can be divided into five areas: the Coastal Swamps, the Gulf Coastal Lowlands, the Brooksville Ridge, the Tsala Apopka Plain, and the Western Valley. In addition to the physiography, the County is considered multi-jurisdictional. This includes six municipalities: the City of Dade City, the City of New Port Richey, the City of Port Richey, the City of San Antonio, the City of Zephyrhills, and the Town of St. Leo. Figure 3.1 provides a visual on the county's location within the State of Florida and its political boundaries.

Figure 3.1 Pasco County City Limits



The population of Pasco County continues to grow at a rapid pace. From 2010 to 2020 the population of Pasco County increased by over 17 percent and an estimated additional 8 percent between 2020 and 2022. The continued change in population has also continued the overall change in the county's demographic profile. Pasco County's population of Hispanic, African-American, and Asian continued to grow between 2010 and 2020. Pasco County's median age remained consistent at 44, but the population of people over 65 increased from 20% to 22%.

POPULATION DENSITY

In 2020, Pasco County had a population of 561,897 according to the U.S. Census. The current estimated population is 608,794. A majority of this population (92%) lives in unincorporated areas of Pasco County (see Figure 3.2). The areas of highest concentrations of in West Pasco between US-19 and Little Road and in Zephyrhills. (see Figure 3.3). Areas of the county have shown significant growth are along State Road 54 in Land O' Lakes and Wesley Chapel, and in Zephyrhills. The area along US 19 from Holiday to Port Richey continues to grow at a steady pace as well. Pasco County is expected to maintain these same growth patterns into 2050, with most of the population still residing along the coastal and inland western areas of the county and notable growth along the State Road 54 and State Road 56 corridor, particularly near the Suncoast Parkway and I-75. Because of its geographical location, many Pasco County residents commute to surrounding counties for employment opportunities.

Figure 3.2 Pasco County Population

Jurisdiction	Population 2010	Population 2020	Percent Change 2010-2020	Population Estimates 2023
City of New Port Richey	14,911	16,695	10.7%	17,332
City of Port Richey	2,671	3,052	12.5%	3,027
City of Zephyrhills	13,288	17,182	22.7%	19,285
Dade City	6,437	7,108	9.4%	7,670
City of San Antonio	1,138	1,297	12.3%	1,235
Town of St. Leo	1,340	2,362	43.3%	1,277
Total Incorporated	39,785	47,696	16.6%	49,826
County Unincorporated	464,697	561,897	17.3%	608,794

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Figure 3.3 Population Density

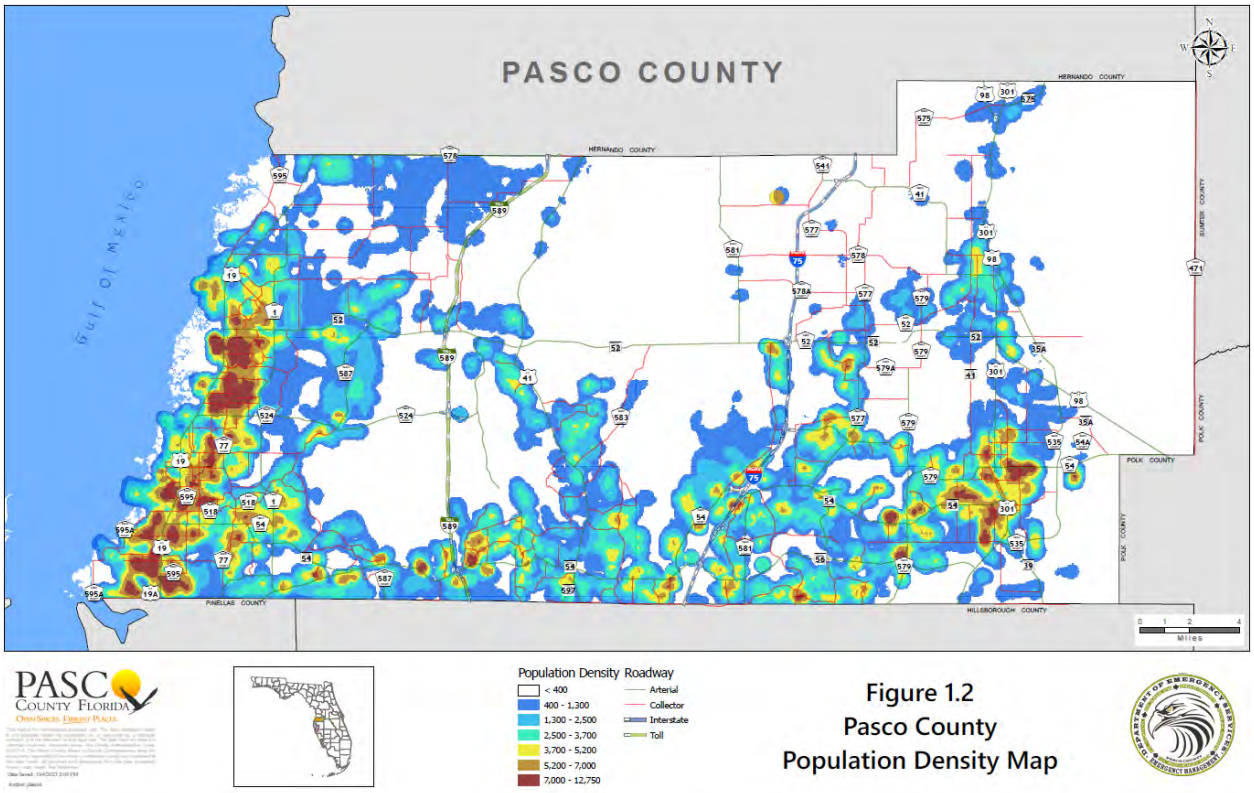

Figure 1.2
Pasco County
Population Density Map

As Pasco County continues to experience growth year after year, it becomes extremely critical to effectively direct the new growth in a manner that considers hazard mitigation and efficiently utilizes and enhances its resources to protect life, property, and the environment from the impacts of disasters to the greatest extent possible.

MAJOR EMPLOYERS

In 2021, according to the U.S. Census Bureau's County Business Patterns (CBP) survey, 11,121 establishments in Pasco County employed 109,637 people. It is important to note that the CBP excludes government, self-employed, and public administration categories. The top categories of employer according to the CBP in 2021 were retail, construction, professional and healthcare. See Figure 3.4 for the full breakdown of CBP categories. The 2020 Census identified that nearly 49,000 businesses in Pasco County were owner-operated.

Figure 3.4 Business Establishments

Business Type	Number of Establishments	Number of Employees
Construction	1,302	9,227
Retail Trade	1,566	25,030
Professional, Scientific and Technical Services	1,295	5,236
Healthcare and Social Assistance	1,486	23,633

Pasco County's Economic Development Council annually provides a list of the top employers in the county. The 2022 results can be viewed in Figure 3.5, most notable are the additions of government firms to the list of top employers.

Figure 3.5 Top Employers

Employer	Employee Count
Pasco County Schools	12,490
Pasco County Government	3,305
HCA Healthcare	3,084
State of Florida	1,649
AdventHealth Wesley Chapel	1.562
Florida Medical Clinic	1,319
Pasco County Sheriff	1,144
Federal Government	940
Saint Leo University	805
Santander Consumer USA	434

The complete picture of the county's employer base is varied. Every type of business from large retail corporations to hospitals, utility companies, distribution centers, schools and manufacturing plants contributes to Pasco County's economy.

Although all types of businesses are vital to the county's overall health, several businesses are more at risk than others because of the locations of their physical establishments. As of 2023, 2,308 establishments were in the SFHA.

HOUSING

Members of the community are impacted differently depending on whether they own or rent the home they live in. Renters are more mobile and more likely to permanently leave after a disaster and homeowners are more likely to return after a disaster to rebuild. The ACS estimates that of the 272,025 housing units, 26.3% are occupied by renters. A steady trend exists that shows that the percentage of rental units is increasing over time.

In 2023, an estimated 29,979 mobile homes were in Pasco County. This estimation is derived from addressing and zoning data. Mobile homes are unique because they represent a potential intersection

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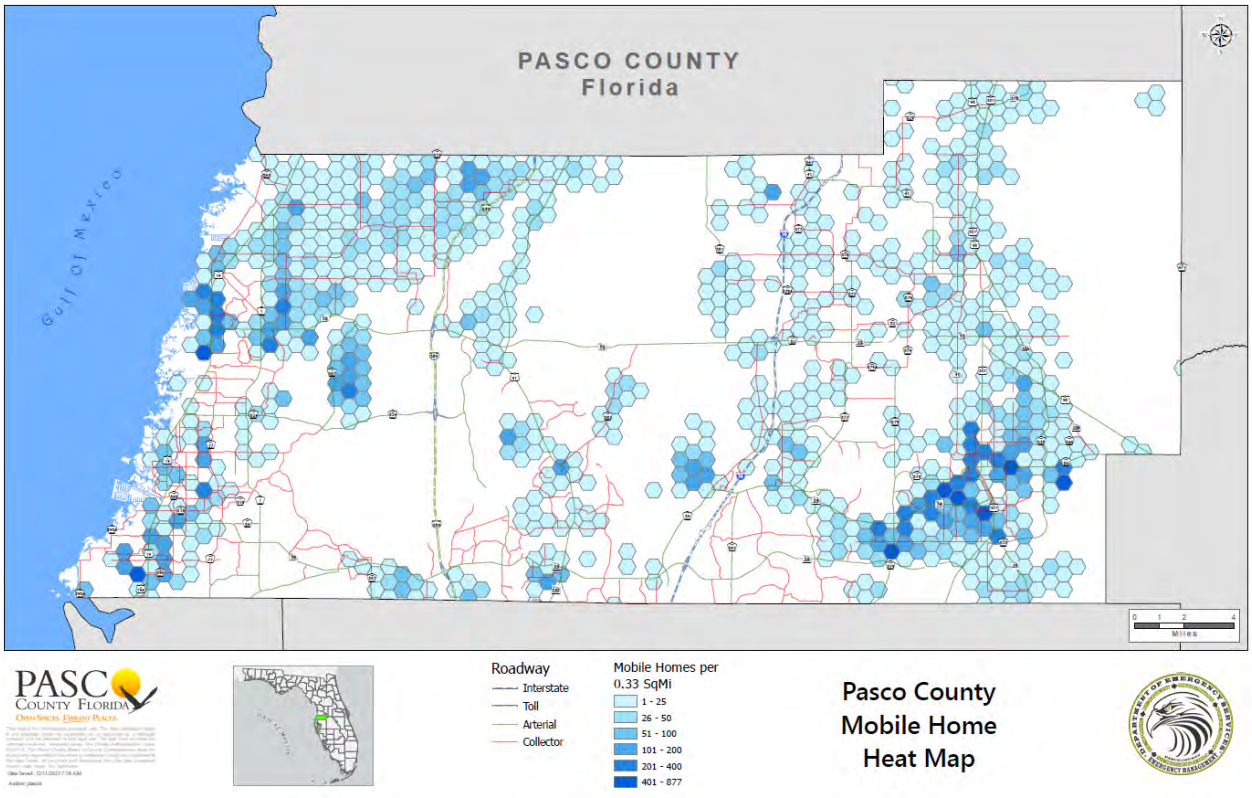
of multiple vulnerabilities. Because mobile homes are highly vulnerable to both wind and rain, all mobile homes in Pasco County are included in evacuation orders, regardless of their physical location. Additionally, residents in mobile home tend to be more financially constrained and may be impacted disproportionately by disaster. Figure 3.6 shows locations of the county that have a high density of mobile homes.

Figure 3.6 Mobile Home Density

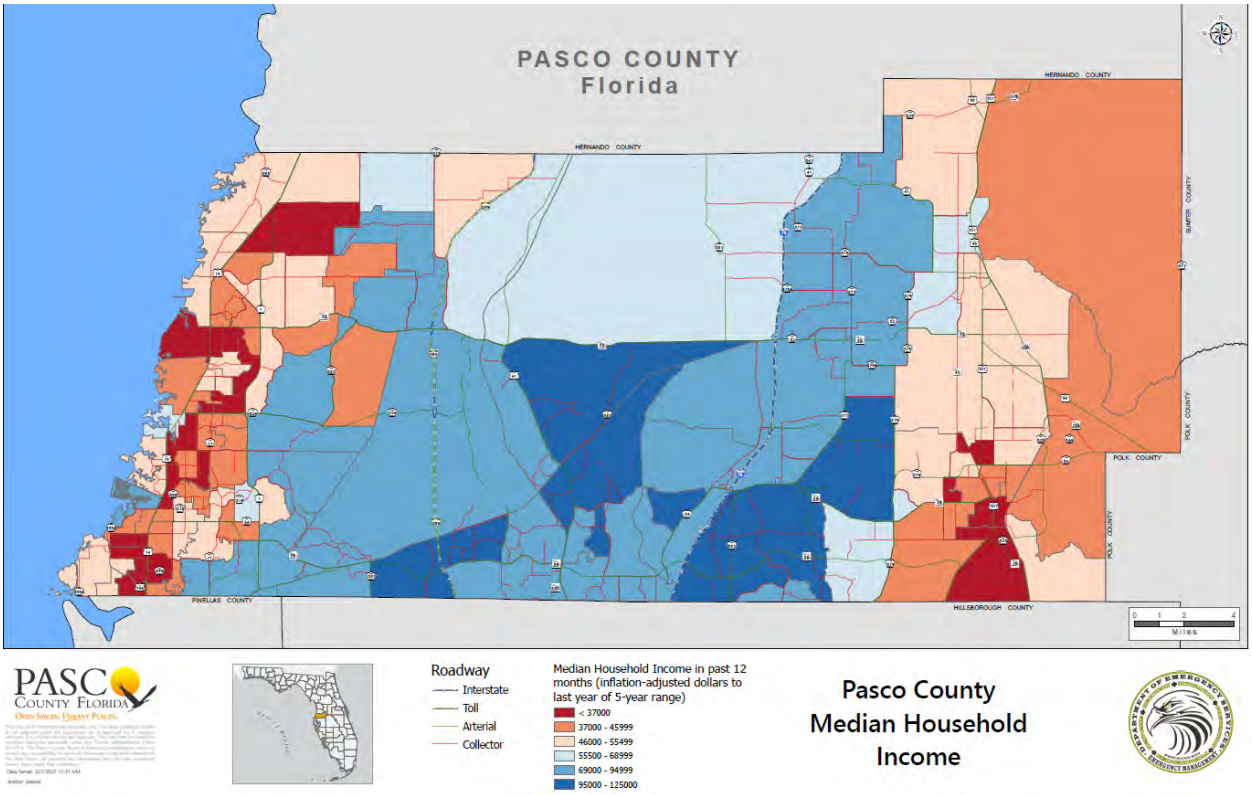


VULNERABLE POPULATIONS

Low Income

Economic factors are particularly important when evaluating a community's ability to respond to and recovery quickly from disasters. Although hazard mitigation is always beneficial, areas with weaker economies mitigation activities are essential to avoid the community becoming crippled by disaster. In 2021, the Median household income for the county was $58,084 and the poverty rate was just over 12 percent. 4.7 percent of households in Pasco County reported an annual income of less than $10,000. Figure 3.7 shows the geographic breakdown of median household income throughout the county. The densely populated west coast and eastern edges of the county have high concentrations of populations under the median household income.

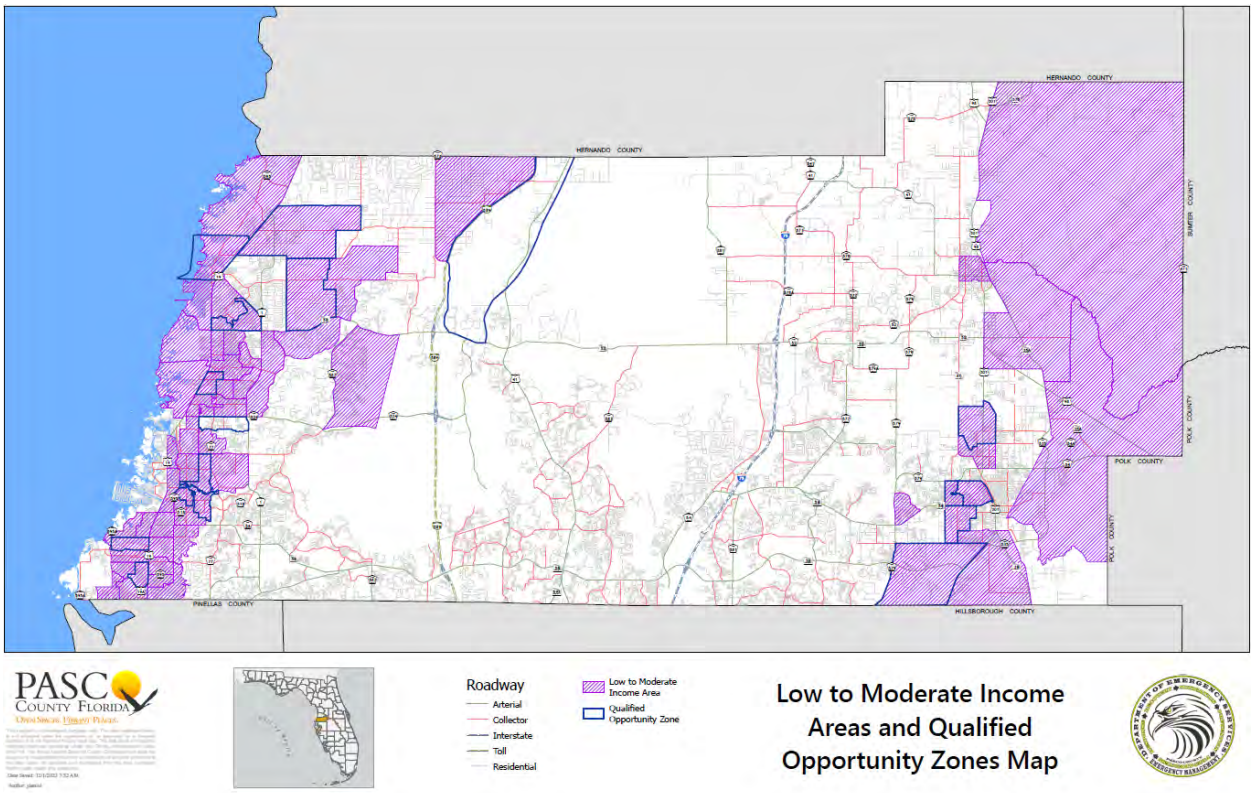
Figure 3.7 Median Household Income



The Economic Distress Criteria reported by the U.S. Bureaus of Census, Labor Statistics, and Economic Analysis shows that Pasco County remains under national averages. The per capita income from all sources falls 19.7% below the national average. Additionally, cost of living increases has had impacts in Pasco County. The United Way developed a system for evaluating economic conditions to determine if a household is above the poverty line, but still may be struggling. Those households are identified as Asset Limited, Income Constrained, Employed (ALICE) households. In 2021, an additional 35% of households are impacted as ALICE and are impacted by high costs of living and stagnant wages. The census areas of South Zephyrhills, Lacoochee, Moon Lake, City of New Port Richey, Holiday and Jasmine Estates all have more than 70% of households under the ALICE threshold.

In order to assist communities evaluate the range of income-constrained, United States Department of Housing and Urban Development has provided the framework to identify areas of Low to Moderate Income (LMI). Under this framework, LMI households earn less than 80% of the median income for the county. LMI areas in Pasco County can be seen in Figure 3.8.

Figure 3.8 LMI Areas and QO Zones



Low-income households are most likely to suffer great losses and face increased difficulty during and after disaster. Repair costs, alternative housing, short-term sheltering, and lack of insurance all play a major role in the overall ability of these communities to recover from unforeseen events. Many of these low-income areas discussed above overlap with known areas of concern, such as Special Flood Hazard Areas, evacuation areas, historically flood prone areas, and repetitive loss areas.

Elderly

Just over 20% of the County's population is over the age of 65 which constitutes a continual 2% increase from the 2019 LMS. Portions of Pasco County's coastal residential areas and southeastern areas are heavily populated by elderly individuals.

Disasters have a disproportionate impact on the elderly. According to the Center for Disease Control 85% of people over the age of 65 have at least one chronic illness. During a disaster, the combination of stress can add to existing conditions, making the elderly more vulnerable that younger, healthier adults.

Children

Children are also vulnerable after disasters due to their physiological sensitivities, their susceptibility to disease or illness, and their growth status. FEMA reports that children are easily influenced by their caregivers' thoughts, behaviors, and feelings. Children have not matured and remain easily impressionable and sensitive to major events that occur in their early years. Children are particularly vulnerable to post-disaster stress and anxiety and will require special and prolonged care to treat the lasting effects of the trauma they have experienced during a disaster. Dependent children will cause

additional delays in recovery as parents may need to care for their children and not be able to return to work immediately. Approximately 20% of Pasco County's estimated 2023 population is of age 18 years or younger and 4.8% is below 5 years of age.

Disabled Persons

An estimated 11% of people under the age of 65 have some sort of disability. The United States Census Bureau defines disability as "a long-lasting sensory, physical, mental, or emotional condition or conditions that make it difficult for a person to do functional or participatory activities such as seeing, hearing, walking, climbing stairs, learning, remembering, concentrating, dressing, bathing, going outside the home, or working at a job."

Recognizing that there are a large number of disadvantaged and disabled persons living in the County, Pasco County Emergency Management prepared a unique outreach packet for those who may require special assistance during a time of disaster, including finding a place to shelter and transportation during an evacuation. Appendix B includes a Special Needs Disaster Preparedness Packet that includes a registration form, Special Needs Shelter Fact Sheet, and information the resident would need if they were driving themselves to the shelter. The database of registered citizens includes roughly, 1,800 people, who have advised the County of their need for disaster support.

As of January 2024, 1,798 people were registered with the Pasco County Special Needs Program for evacuation transportation and shelter assistance. Approximately 25% of the registrants (446) are oxygen dependent for 24 hours a day,), 24% are visually impaired (431), and 53% (944) require transportation to a shelter. Regarding more likely evacuations, roughly 66% of the people registered (1185) reside in predetermined hurricane evacuation areas, Levels A through F.

Homelessness

Individuals and families experiencing homelessness are at increased risk of harm caused by natural disasters. In general, this section of the population is less able to prepare for disasters before they arrive and more likely to suffer physical harm because of disaster events.

The Coalition for the Homeless of Pasco County conducts Point-in-Time (PIT) reports to capture data on how many people are experiencing homelessness at any time. A PIT conducted in January of 2023 concluded that a total of 680 individuals were experiencing homeless at that time, an increase from the previous year's report of 516. Figure X shows a timeline graph of data from 2009 to 2022.

Repetitive Loss Areas

Pasco County receives repetitive loss property information from FEMA through its administration of the National Flood Insurance Program (NFIP). The NFIP identifies all parcels covered through their program that have repetitive claims and defines them as either Repetitive Loss (RL) or Severe Repetitive Loss (SRL). Pasco County Emergency Management reviewed the list and removed any mitigated, anomalous, or errant data and Pasco County GIS identified 111 Repetitive Loss Areas (RLA). These areas were determined by locating RL and SRL properties on parcel maps and identifying areas where several properties existed close together. This information was compared to current FEMA Flood Insurance Rate Map (FIRM) maps and areas that are known to be flood prone to produce the RLA maps included in APPENDIX D.

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Evacuation Zones

Pasco County has identified five evacuation zones. Evacuation Zone A covers the western coast of the county inland to US-19, areas along tidally influenced rivers, and low-lying areas Between US-19 and Rowan Road and near Fivay Road in Hudson. Zones B-E proceed, in order west to east in order from most likely to flood to least likely to flood. Figure 3.9 shows the evacuation zones for the county. 6,600 businesses and 99,962 residential buildings are in one of these evacuations zones Figure 3.10 shows the breakdown of structures in each zone.

Figure 3.9 Evacuation Zones

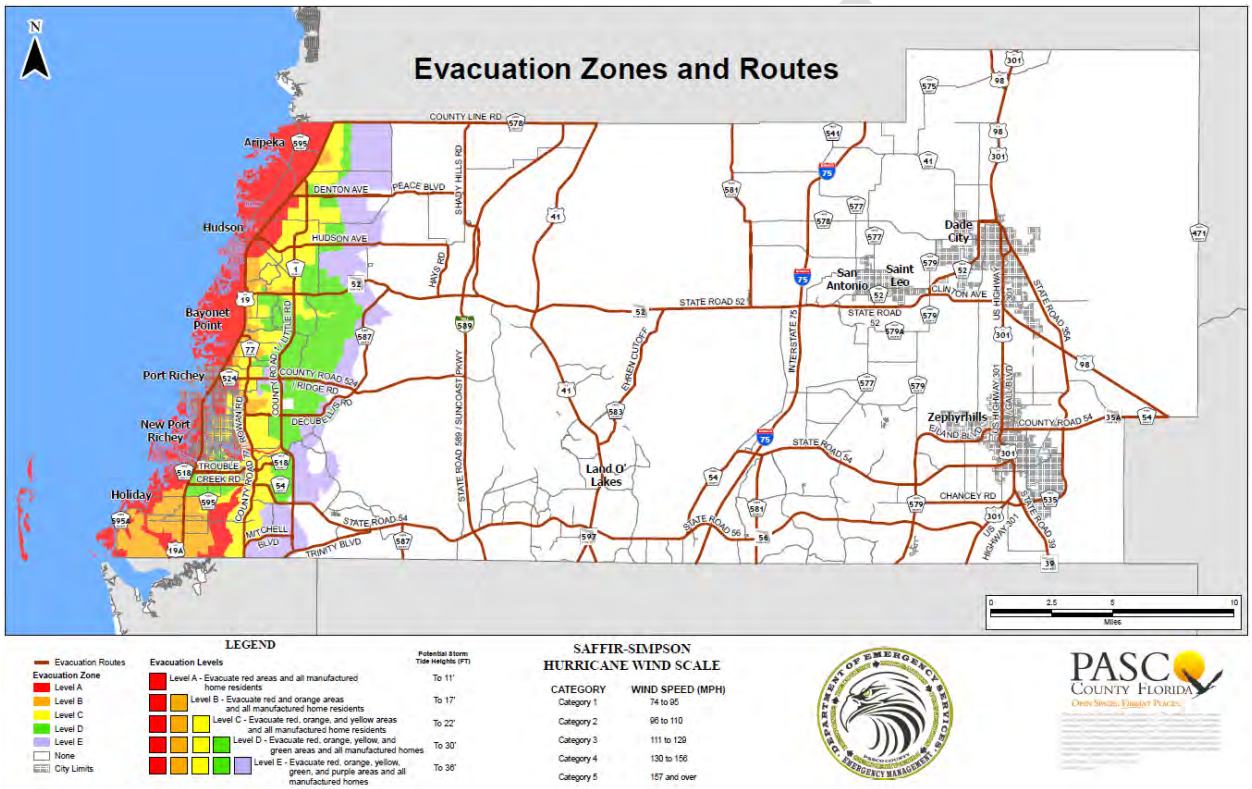

Figure 3.10 Structures in Evacuation Zones

Evacuation Zone	Residential	Business	Total
A	21,081	2,000	23,081
B	20,103	1,446	21,549
C	29,045	1,320	30,365
D	18,901	1,218	20,119
E	10,832	616	11,448

According to the Statewide Regional Evacuation Study Program report completed by the Tampa Bay Regional Planning Council (TBRPC), clearance times are defined as the time necessary to safely evacuate vulnerable residents and visitors to a place of safety and are determined through modeling data. The model incorporates the data from major road networks and recent roadway capacity and takes into account upgrades between 2018 through 2021 and planned upgrades from 2021 through

2025. In addition, the report uses resident and visitor population data with behavioral assumptions. Behavioral assumptions are decisions made based upon category strength versus evacuation zones as determine by County officials. The behavior assumption simulates the realistic response that occurs during major storm events. The results of the study show that a maximum out-of-county clearance time for zones A-E is 53.5 hours and expected to increase to an estimated 57.5 hours in 2025.

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IV. THE PLANNING PROCESS

Purpose

FEMA defines *mitigation* as the effort to reduce loss of life and property by lessening the impact of disasters. The Local Mitigation Strategy (LMS) is a guiding document that allows the community to identify hazards, understand risks, set goals and objectives, and establish mitigation initiatives to reduce the effects of hazards and eliminate risks. The LMS utilizes the "whole community" approach in order to present solutions through projects and identified funding sources which ultimately enhances collaboration between the local governments, private sector, and engaged citizens in order to protect businesses, nonprofit organizations, faith-based organizations, property owners, and critical government facilities. Mitigation has become an essential mission area for emergency management. Mitigation activities may be implemented prior to, during, or after an incident. However, hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs. As disasters continue to pose an on-going threat to Pasco County, the LMS provides and conceptual framework to reduce the losses caused by future disasters.

The purpose of the LMS is to establish an ongoing process that will make hazard mitigation part of the daily function of the entire community. The LMS planning process assesses the vulnerability of the community with an "All Hazards, Whole Community" approach. It identifies a comprehensive list of plans, programs, and projects that have been developed to reduce the severity of impacts from hazards and prioritize the implementation of these activities.

Pasco County and its municipalities first developed a unified LMS in the late 20th century, and the plan was first updated in 2014 to better align with guidelines set forth in the Disaster Mitigation Act of 2000 (DMA 2000) and its most recent FEMA required review. This 2024 update represents unincorporated Pasco County; the five cities of Dade City, New Port Richey, Port Richey, San Antonio, and Zephyrhills; and the Town of St. Leo, in their combined commitment to mutual aid and mitigation planning. By incorporating all municipalities together, Pasco County is more resilient to the disruptions and impacts of disasters, and positions itself to reduce the financial and emotional cost of disaster. The burden of recovery and the price of rebuilding post-devastation is greater than the cost of planning and preparing before disaster strikes.

The DMA 2000 mandated further expansion of the planning process by requiring the LMS to include a description of the planning process. In this section, the description includes the sequence of events for the planning process. This includes who was involved in the process, how the proposed development was actually accomplished, and how the public was involved.

The first step in the planning process for the LMS update involves an evaluation of the current goals and objectives in relation to changes in the county's profile and recent impacts caused by disasters. This step also includes a review of other plans and programs that have impacts on hazard mitigation and post-disaster redevelopment. These plans and programs include the Comprehensive Emergency Management Plan, Floodplain Management Plan, Local Comprehensive Plans, Local Land Development Regulations, National Flood Insurance Program, Stormwater Management Plan, Building Codes, Zoning Ordinances, establishment of the Environmental Lands Acquisition & Management

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Program, and the Hurricane Mitigation Ordinance. The existing programs and resources support a foundation necessary to identify additional planning and regulatory requirements. The review of existing programs and resources has provided a foundation necessary to identify additional planning and regulatory requirements for this update and will continually be used moving forward. The Local Mitigation Strategy Working Group identified a need to distinguish between short-term and long-term objectives to better track progress over time. This change was implemented during this planning cycle and future updates will be able to track the progress and changes of short-term objectives.

The second step of the planning process is evaluating the hazards that can possibly impact Pasco County, assess the potential impacts on people, property, and public infrastructure. A comprehensive review is conducted of the hazard itself, previous occurrences, and potential damages. This information is then weighed against the overall likelihood of the county experiencing the hazard at any extent to determine overall vulnerability. Although the primary focus for the LMS is naturally occurring hazards, consideration is given to man-made hazards as well. Over the life cycle of this plan, these hazards will be more fully integrated into the hazard profile. Special consideration is given to the potential impacts to vulnerable populations under both current and future conditions.

The final step is to identify and update a list of viable mitigation initiatives. Mitigation initiatives are various actions (programs, projects, or plans) that support the Goals and Objectives and result in the reduction of impacts from identified hazards and increased resiliency for the community. The proposing, adopting, and evaluating of initiatives takes place during quarterly meetings of the LMS Working Group as discussed later in this section.

Mitigation initiatives fall into three broad categories: design and construction of structural projects, environmental interventions, and non-structural interventions. Structural mitigation projects identified through the LMS include the strengthening of vulnerable structures, public facilities, and other critical infrastructure. These projects are designed to ensure these structures withstand wind, flooding, fire, and other hazards. A few examples of structural mitigation are elevation of facilities or homeowner properties, hardening of critical facilities, and upgrades of stormwater infrastructure. Environmental intervention are actions that reduce the vulnerability of communities hardening them against the elements. This category commonly includes engineered nature-based solutions as well as the purchase and/or the protection of environmentally sensitive lands, wildlife habitats, beach restoration and planting vegetation. Non-structural mitigation initiatives are policies and programs for avoiding hazard impacts. These policies may include zoning restrictions, acquiring land in the floodplain, promoting citizen awareness of hazard risks, and assessment of shelter mitigation initiatives. The LMS includes educational programs and the development of a Post-Disaster Recovery Ordinance. The implementation of a mitigation program is a key component in the achievement of a “sustainable community” one in which citizens, businesses and institutions are protected from the disruptions and impacts of emergencies, hazards, and disasters.

Implementation of mitigation initiatives will continue to decrease human and economic costs of disasters. Addressing public and private vulnerabilities within our community remains essential before a disaster strikes. Initiatives are created to find solutions to vulnerabilities and create a more effective plan for hazard mitigation, which is then shared and adopted during public LMS meetings to provide transparency to the whole community. In addition, the sharing of information reduces the duplication of effort and increases collaboration between government entities, private partners, property owners, and municipalities on project identification and execution. The increase in collaboration provides new avenues for offsetting costs for projects. The LMS provides eligibility for Pasco County to receive

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federal funding. Without an LMS that has been approved by the community, specific grant funding is not attainable and without funding, projects and programs cannot be implemented.

The majority of the LMS incorporates pre-disaster assessments and solutions; however, post-disaster initiatives must be in place to make Pasco County a more resilient community. A long-term plan for reconstruction of impacted areas after a disaster occurs is instrumental in assuring the community does not continue to suffer repetitive losses. Continuous updates to policies for building codes, wetland protection, and local ordinances located in other plans throughout the County were taken into consideration in the development of the LMS.

Members will continue to recognize the importance of the "whole community" approach to this plan and encourage more proactive approaches to prevent and enhance the resilience throughout Pasco County. As such, all government entities will formally adopt the LMS update by resolution after FEMA has conditionally approved the plan.

Local Mitigation Strategy Working Group (LMSWG)

The Local Mitigation Strategy Working Group includes participants and interested parties from various sections of the community. The LMSWG develops the LMS by establishing the planning process, setting goals and objectives, identifying changes to hazards, determining vulnerability to identified hazards, proposing new mitigation initiatives, analyzing existing initiatives and reviewing the existing LMS throughout the cycle of the plan. The LMSWG will continue to have quarterly meetings for updates, project inclusion, and any other relevant topics.

For the five-year updates of the LMS, the Working Group will have a voting panel to ensure that all municipalities are included in the update. This panel will be comprised of at least one voting representative from each of the local jurisdictions within Pasco County to ensure the entire involvement of the community, consistent with the "whole community" approach. One representative must be present to vote on major items from the cities of New Port Richey, Port Richey, Zephyrhills, Dade City, St. Leo, and San Antonio. The panel will include two individuals who will represent unincorporated Pasco County. The LMSWG will have the authority to make minor changes to the LMS at the quarterly meetings and annual update meetings on behalf of the voting panel.

Members of the LMSWG coordinated the development of the LMS with neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, businesses, academia, and other private and non-profit institutions. These agencies and groups are invited and encouraged to actively participate in the planning process by attending LMSWG meetings. The representatives' acceptance of the invitation, formal or verbal, and actual attendance demonstrates their commitment to the effort. Formal invitations to the LMSWG are conducted through email correspondence and an announcement on Pasco County's website. A copy of the formal invitation can be referenced in Appendix A for each meeting. The representatives have committed their time and available resources to develop a mitigation strategy that would protect life, property, and the environment as well as contribute to the economic well-being of the County.

Each participating agency and group present its programs and critical inventory, identifies mitigation opportunities, and subsequently has an opportunity to comment on preliminary and draft versions of the LMS. The Working Group reviews each agency's function and identifies more opportunities for mitigation, including some applicable to agencies not present. The LMSWG incorporates appropriate

comments and distributes a final copy of the LMS to all participants. At the conclusion of the 2024 update to the LMS and after approval is provided by FEMA, the LMS will, within the next twelve months, be formally executed and adopted by the legislative bodies of Pasco County and its municipalities.

Multi-Jurisdictional Participation

In addition to Pasco County Emergency Management and other representatives for Pasco County, the cities of New Port Richey, Port Richey, Zephyrhills, Dade City, San Antonio, St. Leo and existing members of the Local Mitigation Strategy Working Group (LMSWG) formed the core of the planning effort. No jurisdictions opted out of the planning process during this revision cycle. Each of these groups assisted in the maintenance and participation in the LMSWG. The LMSWG's multi-jurisdictional participation allows for more effective communication to the community and business organizations that help drive the LMS. In addition, each of the participating members was charged with:

1. Assisting with the development and update of the plan.
2. Reviewing the initial drafts for accuracy relative to their jurisdictions.
3. Identifying potential mitigation initiatives in their jurisdictions.
4. Providing updates to existing mitigation initiatives.
5. Reporting successful or unsuccessful completion of mitigation initiatives.
6. Providing assistance with project prioritization.
7. Reviewing and providing concurrence with the proposed risk analysis.
8. Adoption of the plan for their jurisdiction.

Participants

Participants are defined by the LMSWG as those entities that would be eligible applicants for federal assistance in the case of a disaster. This includes public agencies and private non-profits assigned responsibilities under the Comprehensive Emergency Management Plan (CEMP). Participants also include Emergency Management staff, and support staff from county and city departments such as Community Development, Development Review Services, Facilities Management, Geographic Information Services, Zoning, Planning and Development, Parks, Recreation, and Natural Resources, Public Safety, Public Works, Utilities Services, and Stormwater Management.

Interested Parties

In order to ensure a cross section of the community is involved in the development of the LMS a designation of "Interested Parties" was established. Interested Parties are citizens, businesses, contiguous counties, regional entities, etc. who may be affected by provisions in the plan. Interested Parties do not have any requirements for participation and are provided the opportunity to review the

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work products developed by the Participants and providing comment to the LMSWG. All interested parties were encouraged to review and comment on the plan and submit appropriate projects. Some of the agencies, organizations, associations, and businesses represented as Interested Parties are the American Red Cross, Greater Dade City Chamber of Commerce, Emergency Management representatives from surrounding counties, the Pasco County Economic Development Council, and Tampa Bay Regional Planning Council, Florida Forest Service, Florida Division of Emergency Management, and FEMA Region IV representatives.

Public Involvement

Public involvement throughout the planning process is essential to the development of an effective mitigation plan. The open nature of the LMSWG meetings and ability for the public to attend update sessions is a priority during the update of the LMS. Additionally, it is imperative that the citizens of Pasco County were informed and educated about the LMS at various outreach functions. All LMS meetings are advertised on the County website. The plan, prepared by the Pasco County Emergency Management, was created with a whole community approach which considers input of all interested individuals and agencies, with the public being given many opportunities to participate and contribute to its finalization before, during, and after LMSWG meetings. Also, all members of the LMSWG may contact Pasco County Emergency Management during non-emergency and normal business hours to comment on the plan, projects incorporated in the plan, and anything discussed at LMSWG meetings. The LMSWG has representation from homeowners and homeowner associations who actively participate, vote on project inclusions, and other items involved in the LMS plan and updates to the plan.

Public notices will be published prior to each LMSWG meeting to encourage the "whole community" approach, increase community awareness and further encourage public involvement. Each LMSWG meeting will be an open forum where anyone may comment, question, and expression concerns or opinions about the LMS.

Pasco County Emergency Management has provided information about the LMS and mitigation initiatives at outreach events since 2014, including:

- The Annual Pasco County Disaster Expo
- Homeowner consultations conducted regarding Hazard Mitigation Assistance grants
- Pre-hurricane preparedness events and speaking engagements hosted at assisted living facilities, homeowner associations, schools and nursing homes
- Citizen Corps and Community Emergency Response Team classes
- Meetings with private business and nonprofit organizations on mitigation initiatives

Upon approval of the plan by FEMA, copies of the LMS Update will be catalogued and made available at County Public Libraries, as well as the New Port Richey Library and published on the Pasco Emergency Management website. The existence and location of these copies will be publicized in public notices. The copies in libraries will have a first page in the binder containing the address and phone number of the County Emergency Management Staff Member(s) responsible for keeping track

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of public comments on the plan. A notice will also be posted on the County website regarding the public availability of the LMS Update copies at the libraries. The most recent FEMA and Board of County Commissioner approved LMS will remain on the new Pasco County Emergency Website. In addition, the website will incorporate LMSWG meeting minutes and any LMS updates to the LMS. The website also includes contact information for members of the public to use to register comments.

The Planning Process

In February 2023, the LMSWG was notified that the LMS was to be resubmitted to FEMA before August 2024 for renewal. The group worked to meet the new mitigation criteria established in the 2023 Florida State Hazard Mitigation Plan. The LMSWG voted to maintain the existing goals and objectives from the plan for the new cycle. Throughout the year, Pasco County Emergency Management worked on updating the plan to meet current conditions of the county and presented changes to the LMSWG for comment and approval. Concurrently, Emergency Management staff worked with other county departments on reviewing the hazard analysis section of the plan and presented findings to the LMSWG for input. In 2024 Pasco County Emergency Management conducted a final review of the LMS plan using current guidance and requirements provided by FEMA and FDEM as well as the Mitigation Plan Review Checklist. Pasco County Emergency Management believes that the Pasco County LMS remains compliant with Federal criteria and has submitted the plan to the Florida Division of Emergency Management for review.

During the February annual update meeting of 2023, Pasco County Emergency Management initiated the process of the updating the plan by explaining to the LMSWG the purpose of the LMS and why it is essential that there is involvement throughout the remainder of the update. Representatives from each jurisdiction were in attendance. All attendees of this initial meeting were encouraged to participate in the plan update and encouraged to increase community participation through their contacts.

Early in the review and update process, the LMSWG reviewed the existing list of hazards and their assigned levels of risk. Each hazard was reviewed for current and future conditions. Each hazard in this plan received an update to better reflect current conditions, anticipated changes, and past occurrences. Overall, the Working Group decided to make the following 3 substantial changes to the county's hazard profile:

1. Add Infectious Disease as a hazard
2. Expand the Cyber Security hazard section to better reflect the county's risk
3. Incorporate findings from the Resilient Pasco initiative as needed

These changes were incorporated into this version of the LMS and updates will continue throughout the five-year cycle of this plan.

As mentioned above, each hazard section was reviewed and updated to account for the changes in the community over the last five years, anticipated future conditions (both environmental and demographic) and recent incidents for that type of hazard. Hurricane Ian, Hurricane Idalia, and COVID-19 all prompted discussion and updates in their respective hazard profiles in this plan.

As a major aspect of this LMS review cycle, participants and interested parties were asked to review the list of critical assets and infrastructure in their operating areas. Critical assets are defined as any

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physical asset that is essential to the operating mission of the department, municipality, or business. Critical Infrastructure is defined as any physical asset that is essential to providing community lifelines to the community. The LMSWG utilized FEMA's list of critical lifelines as a template for this undertaking.

FEMA Community Lifelines

1. Safety and Security
2. Food, Hydration, Shelter
3. Health and Medical
4. Energy
5. Communications
6. Transportation
7. Hazardous Materials

Assets and infrastructure were categorized according to this list, catalogued and then each participant and interested party was instructed to review each asset in their operation against the list of hazards to determine possible impacts. Working Group participants were not required to supply their lists to Pasco County or the working group but were encouraged to use the results as a basis for mitigation initiatives and project scoping.

To better understand vulnerabilities in Pasco County, special attention was paid to determining community risk for each hazard. Pasco County Emergency Management incorporated discussions of vulnerable populations into each hazard profile. The LMSWG was instructed to consider vulnerable populations in mitigation initiatives. For planning purposes vulnerable populations include the elderly, children, economically disadvantaged, ethnic minorities, persons with disabilities and those experiencing homelessness. Low-moderate income (LMI) and the Social Vulnerability Index (SVI) were used to determine areas of greater economic need.

In addition to the groups listed above, Pasco County identified areas of concern for each hazard. Areas of concern can be identified as geographic locations where natural factors lead to a higher likelihood of experiencing loss from a hazard. As an example, during this cycle special consideration was made to review Repetitive Loss lists provided by FEMA to identify Repetitive Loss Areas. Special outreach mailers were sent to all structures on the Repetitive Loss list that included information on flood risk, flood insurance, contact information for county staff for individual consultations and mitigation grant information. During the update cycle for this plan, these outreach efforts will be increased to include the entire RL area.

Throughout the update process for this LMS a list of projects was maintained and updated. Beginning from the project list from the previous update, projects were removed, marked complete, updated, and added throughout the cycle. During this time, 35 new projects were added to the project list, 7 were completed and removed, and 11 were updated to show an 'in progress' status. The LMS coordinator allows for new submissions at each meeting of the LMSWG, new initiatives are reviewed by the working group and the group votes on whether to add the initiative to the project list.

Each initiative on the project list includes the project name, a description, location, hazards mitigated by the initiative, potential funding sources, goal and objective alignment, contributor, timeline, status

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and estimated cost. Any participant, interested party, or municipality and propose initiatives at LMS Working Group meetings by filling out the project submission form. The initiative then receives input and a vote for submission to the project list. Contributors on the project list that are not jurisdictions that have adopted the Local Mitigation Strategy will receive planning and grant management support from Pasco County should they seek funding under Hazard Mitigation Assistance or other federal or state programs.

The project list is a living document that represents mitigation initiatives for the entire community of Pasco County. The project list is updated as needed by Emergency Management staff and all changes are presented to the LMSWG at meetings. The project list is used to support grant applications by relating the initiative to the LMS goals and objectives.

Mitigation initiatives on the project list are ranked by the LMSWG for grant application cycles. Each initiative is presented to the working group and given scores based on a 12-question scoring rubric. Ranked results are presented to the awarding agency along with letters of support from the LMSWG.

Pasco County Emergency Management then reviewed existing County and municipal policies, programs, ordinances, and plans. Pasco County currently has several existing programs and plans related to hazard mitigation and post-disaster redevelopment. These programs and plans include the Comprehensive Emergency Management Plan, the Floodplain Management Plan, Local Comprehensive Plans, Local Land Development Codes and Regulations, Community Rating System Program for Public Information (CRSPPI), National Flood Insurance Program, Stormwater Management Plan, Building Codes, Zoning Ordinances, and the Environmental Sensitive Lands Program. Each of the aforementioned plans contains information that is both detailed and relevant to the mitigation efforts that further support the mission of the Local Mitigation Strategy.

In summary, the planning process was inclusive in that all participants in the LMSWG were provided the opportunity to review, comment and otherwise contribute to all aspects of the plan. At the core of the mitigation planning process was the coordination and partnership among the governmental units involved in the planning process as well as the input from private citizens and businesses.

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V. HAZARD IDENTIFICATION RISK ASSESSMENT

Introduction

The Hazard Identification Risk Assessment (HIRA) is a comprehensive assessment of the natural and man-made hazards that could potentially affect any of the widely dispersed communities in Pasco County. The communities include the six municipalities (New Port Richey, Port Richey, San Antonio, Saint Leo, Dade City and Zephyrhills), and unincorporated Pasco County. Local Mitigation Strategy Working Group identified specific communities and populations affected by each hazard. The hazard analysis and vulnerability assessment process includes, among other facets, identifying the hazards with the highest probability of affecting the county; and which populations or communities are most vulnerable to each hazard. This information forms the basis on how the mitigation strategy is developed.

During the 2024 revision to this plan, the LMSWG reviewed all of the hazards included in the previous plan and their ranking in order to maintain consistency with The Enhanced State of Florida Hazard Mitigation Plan and how specific hazards impacted the county during the life cycle of the plan. From 2019-2023 Pasco County's Emergency Operations Center was activated for multiple natural hazards, which allows the working group access to data from recent events to fully review the hazard profile of the county. The following data sources were used to determine which hazards possess the greatest threat to Pasco County:

- Local documentation and data from past events
- FEMA declaration information from disasters that included Pasco County
- Conversations with subject matter experts, such as the Florida Forest Service, the National Oceanic and Atmospheric Administration (NOAA), the National Weather Service (NES), and other similar agencies
- Local strategic plans, emergency operations plans, comprehensive plans, transportation and stormwater management documents and workshops with agencies or departments impacted by these plans
- Conversations with local emergency management agencies
- Geographic Information Systems (GIS) information and data collection
- The Enhanced State of Florida Hazard Mitigation Plan
- FEMA's Hazus tool and Hazus Library
- Resilient Pasco Project Deliverables and meetings

Pasco County reviewed the hazards included in the Risk Assessment of the Florida State Hazard Mitigation Plan for inclusion in this plan. A number of hazards are unlikely to occur in Pasco County given its geographical and populous features, therefore no mitigation initiatives have been introduced by the working group for these hazards. These hazards are included in brief in the Low Probability section. Hazards that were determined to pose a significant risk to the county are included in detail with discussion on the history, location, vulnerability (including vulnerable populations), extent and probability.

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An evaluation for each hazard is in the section for that hazard. To determine the overall hazard ranking, each hazard's location, impacts and probability were evaluated. Descriptions of the criteria for each are below:

- Location-
    - The geographic location that could be impacted by a single occurrence of the hazard at its most severe. The location of each hazard was categorized as either:
        - Negligible- Less than 10 percent of the community
        - Limited- 10-25 percent of the community
        - Significant- 25-75 percent of the community
        - Extensive- 75-100 percent of the community
- Impacts-
    - How much damage across all community lifelines a single occurrence of the hazard could cause at its most severe. The impact of each hazard was categorized as either:
        - Weak- Resulting to little or no damage
        - Moderate- Resulting in some damage and loss of services for days
        - Severe- Resulting in devastating damage and loss of services for weeks or months
        - Extreme- Resulting in catastrophic damage and uninhabitable conditions
- Probability-
    - How likely the area is to experience the hazard based on previous occurrences and current conditions. The probability of each hazard was categorized as either:
        - Unlikely– Less than 1 percent probability in the next 100 years.
        - Low– 1 to 10 percent probability in the next 10 to 100 years
        - Moderate- 10 to 90 percent probability in the next 10 years
        - High- 90 to 100 percent probability in the next 2 years.

As an example, a hazard with a high probability (at least once a year) that can impact a large geographic area to a significant extent is considered a be a high risk. Each hazard's profile is taken individually to determine the overall risk rating.

Low Probability Hazards

The following hazards were determined to be low probability and are not expected to impact Pasco County in any significant way. As such, they are briefly discussed here but excluded from the Hazard Assessment and no mitigation initiatives have been considered.

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Earthquake

According to the USGS and FEMA, Florida is far enough from known earthquake risk areas that experiencing noticeable impacts from earthquakes is highly unlikely. Figure X shows the risk areas map for the Eastern United States. The Enhanced State Hazard Plan indicates that at under current conditions and expected future conditions impacts from earthquakes are very limited in scope. Because of these indicators, Pasco County has not introduced any mitigation initiatives aimed at reducing impacts from earthquakes.

Dam/Levee Failure

Dams are man-made structures that retain or store liquids for various reasons that assist with energy generation, livestock, irrigation, or pollution control. There are several dams in the state of Florida, and two man-made reservoirs exist in Pasco County. During the cycle of this plan, the reservoirs were the subject of exercise and emergency planning. Current conditions of the structures and possible impacts of failure reveal a limited potential impact and no current mitigation initiatives have been proposed for reservoir failure. It is important to note, however that future conditions may change this outlook and additional planning for failure will take place during this LMS cycle.

Landslide

The United States Geological Survey (USGS) defines a landslide as a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. In addition, the USGS identifies the most likely areas in the Appalachian Mountains, Rocky Mountains, the Pacific Coastal Ranges, Hawaii, and Alaska. The 2023 Enhanced State Hazard Mitigation Plan excludes landslides due to the state's relatively flat topography. Pasco County has no historical data on landslide impacts and no mitigation initiatives have been proposed to mitigate impacts from this hazard.

Tsunamis

The National Oceanic Atmospheric Administration (NOAA) defines tsunamis as giant waves caused by earthquakes or volcanic eruptions under the sea[3]. The likelihood that a tsunami will impact the Gulf coast is extremely unlikely despite seismic activity in the Caribbean. The Enhance State Hazard Mitigation Plan of 2023 explains that the occurrence of a tsunami affecting the Gulf coast is minimal due to seismic stability. Pasco County has no historical evidence of a tsunami incident and does not have any active mitigation efforts devoted to tsunami mitigation.

[3] https://oceanservice.noaa.gov/facts/tsunami.html

TROPICAL CYCLEONES AND HURRICANES

Hurricane Ian over the state of Florida

Source: Colorado State University

Description

According to the National Hurricane Center (NHC) a tropical cyclone is a rotating, organized system of clouds and thunderstorms that originates over tropical or subtropical waters and has a closed low-level circulation. Tropical cyclones mainly develop over tropical waters and are seasonally dependent which provides better lead time for preparation. For Florida, tropical cyclones typically form over the Atlantic Ocean, Caribbean Sea, or the Gulf of Mexico and move towards the State.

Location

All jurisdictions in Pasco County are at risk from the impacts of tropical cyclones. Inland jurisdictions of St. Leo, San Antonio, Dade City and Zephyrhills are at risk from heavy rains, inland flooding, riverine flooding, and high winds. Coastal jurisdictions of New Port Richey and Port Richey are at risk from heavy rains, coastal flooding, storm surge, riverine (tidal and non-tidal) flooding, inland flooding, and high winds. Overall, unincorporated areas of Pasco County follow the same risk profile, with coastal communities at higher risk than inland communities.

Extent

Tropical storms will continue to develop and intensify as they move through warm water, areas of favorable wind conditions, and areas of decreasing pressure. If one or more of these components are not present, the tropical cyclone may lose intensity, or not develop at all. Tropical cyclones are commonly referred to by their wind strength category, such as tropical depressions, tropical storms, hurricanes, or major hurricanes. The following define when the appropriate classification/category is used:

Tropical Depression- Tropical Cyclone with sustained wind speeds of 38 mph or less.

Tropical Storm- Tropical Cyclone with sustained wind speeds between 39mph and 73mph.

Hurricane- Tropical Cyclone with sustained wind speeds of 74mph and higher. Further categorized based on the Saffir-Simpson Hurricane Wind Scale in Figure 5.1.

Figure 5.1 Saffir-Simpson Hurricane Wind Scale

Category	Wind Speed (mph)	Damage
1	74 – 95	Very dangerous winds will produce some damage
2	96 – 110	Extremely dangerous winds will cause extensive damage
3	111 – 129	Devastating damage will occur
4	130 – 156	Catastrophic Damage will occur
5	156 +	

Source: National Hurricane Center Glossary

Hurricanes are often discussed in terms of their strength at landfall but may impact the community in different ways depending on track, speed and intensity. For example, a Category 5 hurricane that makes landfall in south Florida and travels north through the center of the state could impact inland communities such as Dade City and Zephyrhills as a category 1 hurricane or strong tropical storm. This could bring inland flooding and wind damage to these communities. The same storm making landfall directly on Pasco County's coastline would have devastating category 5 hurricane impacts (including storm surge, wind and compound flooding) to the coastal communities including New Port Richey and Port Richey and bring category 2 or 3 impacts such as inland flooding and heavy winds to the inland communities.

Hurricanes and Tropical Cyclones pose a significant threat to Pasco County's growing population. In order to provide the most accurate and timely information, Pasco County Emergency Management follows official NHC advisories and forecasts. NHC advisories include watches, warnings and include details on the cyclone's movement and intensity. Advisories enable local officials to make proper decisions before weather conditions become too dangerous for workers and residents of Pasco County. Figure 5.2 outlines the most common advisories that may be issued for a tropical cyclone. These advisories can only be used once a tropical system has fully formed into a cyclone. Potential Tropical Cyclone Warnings will be issued when areas of tropical disturbance are expected to develop into a tropical storm or hurricane and impact land within 48 hours.

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Figure 5.2 National Hurricane Center Advisories

	Watch	Warning
Tropical Storm	Issued when sustained winds, as a result of a tropical cyclone, are possible between 39 – 73 mph for a specified area. Tropical Storm Watches are issued 48 hours in advance of the forecasted onset of winds.	Issued when sustained winds, as a result of a tropical cyclone, are possible 39 to 73 mph for a specified area. Tropical Storm Warnings are issued 36 hours in advance of the forecast onset of winds.
Hurricane	Issued when sustained winds, as a result of a tropical cyclone, are possible to reach 74 mph or higher for a specified area. Hurricane Watches are issued 48 hours in advance of the forecasted onset of winds.	Issued when sustained winds, as a result of a tropical cyclone, are possible to reach 74 mph or higher for a specified area. Hurricane Warnings are issued 36 hours in advance of the forecasted onset of winds.

Source: National Hurricane Center Issuance Criteria

Historical Occurrence

According to NOAA's Coastal Service Center website, 34 tropical cyclones of various intensities have crossed directly through Pasco County since 1872 and 15 of those have been reported since 1950. Only one tropical cyclone has made landfall in Pasco County and only at tropical depression intensity.

More recently, tropical cyclones that travel within, or are expected to travel within, 50 miles of Pasco County require an activation of the Emergency Operations Center (EOC). Since 2017, the following tropical cyclones have required an activation of the Pasco County EOC: Hurricane Michael, Hurricane Dorian, Hurricane Elsa, Hurricane Ian, Hurricane Nicole and Hurricane Idalia.

Figure 5.3 Tropical Cyclones with Impacts to Pasco County

Storm Start Date			Storm Name	Storm Peak Wind Speed (knots)	Storm Peak Category	Pasco Impacted Wind Speed	Pasco Impacted Category
Year	Month	Day					
1950	10	14	King	115		65	H1
1950	9	1	Easy	105	H3	100	H3
1959	6	18	Not Named	75	H1	30	TD
1960	8	31	Donna	125	H4	105	H3
1960	7	28	Brenda	60	TS	30	TD

1960	9	23	Florence	50	TS	25	TD
1964	6	2	Not Named	50	TS	30	TD
1968	10	15	Gladys	75	H1	70	H1
1969	10	2	Jenny	40	TS	25	TD
1970	5	20	Alma	70	H1	25	TD
1974	6	25	Subtrop 1	55	SS	45	SS
1976	9	13	Subtrop 3	40	TS	15	SD
1982	6	18	Subtrop 1	60	TS	30	SD
1984	9	26	Isidore	50	TS	45	TS
1988	11	20	Keith	60	TS	55	TS
1990	10	10	Marco	55	TS	40	TS
1991	7	1	Ana	45	TS	20	L
1995	8	2	Erin	85	H2	50	TS
1995	8	23	Jerry	35	TS	35	TS
2000	9	16	Gordon	70	H1	65	H1
2001	9	15	Gabrielle	70	H1	45	TS
2002	9	2	Edouard	55	TS	20	TD
2003	9	6	Henri	50	TS	30	TD
2004	8	10	Charley	130	H4	75	H1
2004	8	25	Frances	125	H4	55	TS
2004	9	14	Jeanne	105	H3	55	TS
2005	10	24	Dennis	130	H4	34	TS
2006	6	11	Alberto	60	TS	37	TS
2007	6	1	Barry	50	TS	40	TS
2008	8	15	Fay	60	TS	36	TS
2012	6	23	Debby	55	TS	35	TS
2016	6	6	Colin	50	TS	44	TS
2016	8	31	Hermine	46	TS	70	H1
2016	9	13	Julia	45	TS	-	-
2016	9	28	Matthew	145	H5	34	TS
2017	7	31	Emily	50	TS	Less than 34	-
2017	8	30	Irma	155	H5	65	H1
2018	10	6	Michael	140	H5	34	TS
2019	8	24	Dorian	160	H5	Less than 34	-
2021	6	30	Elsa	75	H1	43	H1
2022	9	21	Ian	140	H5	45	TS
2022	11	6	Nicole	65	H1	55	H1
2023	8	26	Idalia	130	H4	60	H3

Probability

The Florida State Hazard Mitigation Plan includes data obtained from the Department of Atmospheric Science at Colorado State University. The data shows the probabilities for both tropical storms and hurricanes impacting the State of Florida. This information was taken from 33 years' worth of data and the outputs are located in Figure 5.4 and Figure 5.5. Pasco County is likely to experience .47-.50 tropical storms in any given year, with the far north-west corner of the county with a higher average of .52-.55. For Hurricanes, Pasco County is expected to experience an average of .07 hurricanes per year.

Figure 5.4 Florida Tropical Storm Wind Risk

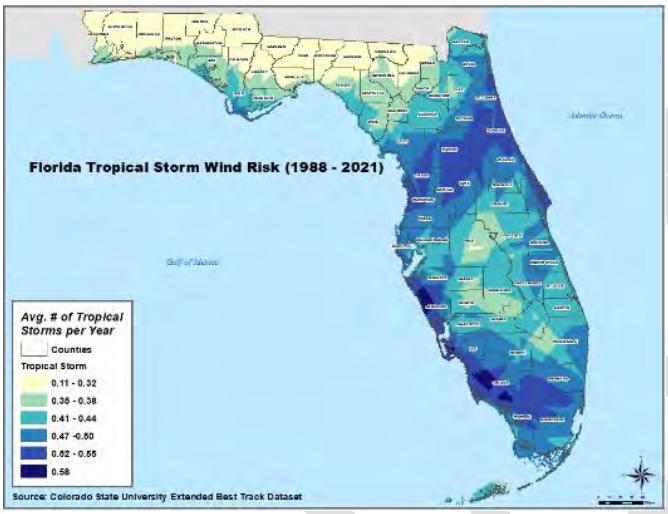
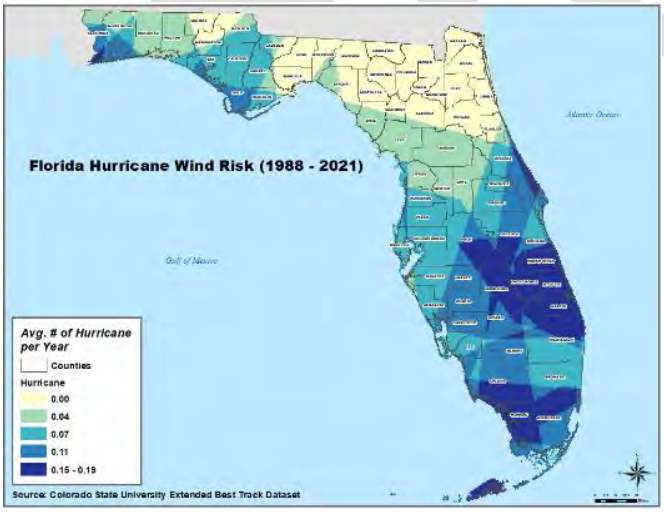


Figure 5.5 Florida Hurricane Wind Risk



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The SHMP also includes information gathered through HAZUS that specifies the highest intensity of tropical cyclone impacts expected during a given period. The 500-year probability data shows that during that recurrence interval west Pasco is expected to experience category 4 hurricane strength winds. It is important to note that recurrence probability does not mean that these hazards can only actualize once in the period. For instance, the 500-year probability is more accurately portrayed as a .02% chance each year.

Figure 5.6 Recurrence Intervals for Winds

Recurrence Interval	Highest Likelihood of Wind Strength
Every 10 Years	Tropical Storm Force Winds
Every 20 Years	Category 1 Hurricane Winds
Every 50 Years	Category 2 Hurricane Winds
Every 100 Years	Category 3 Hurricane Winds
Every 500 Years	Category 4 Hurricane Winds

Source: 2023 State Hazard Mitigation Plan

Colorado State University further explored probabilities by utilizing NOAA data of hurricane impacts between 1880-2020 to estimate the likelihood of tropical systems impacting Pasco County. The data collected places Pasco County at a 36% chance of experiencing a named tropical cyclone, a 17% percent chance for experiencing a hurricane and a 5% chance of experiencing a major hurricane.

Based upon the high probability for tropical cyclones and the recent activity in the past five years, Pasco County can expect tropical cyclone activity to activate the County's Emergency Operations Center at least once a year. Recent history indicates that we can expect a storm to affect our county every two to three years, and the most likely event will be a Category 3 or less storm. However, the threat of a hurricane impacting Pasco County occurs annually and landfalling tropical cyclones are trending higher in intensity over time.

Impacts

Despite advancements in tropical weather monitoring and forecasting, tropical cyclones remain unstable and be unpredictable. In 2022, Hurricane Ian's expected landfall location shifted 100 roughly miles to the south and intensified from a category 4 hurricane to a category 5 in the two days before it made landfall. The Hurricane Warning area for Hurricane Ian did not expand south of Ft. Meyers until landfall was just over 24 hours away from landfall. The uncertainty in the storms track and ultimate landfall location caused county officials in the state to operate under increased pressure and ultimately caused delays in notifications and evacuation orders. Because the Gulf of Mexico often presents conditions conducive for tropical cyclone development, coastal communities like Pasco County are especially vulnerable to impacts from tropical cyclones with limited warning.

Severe weather should be expected from tropical cyclones. Tornadoes, which are explained later in the Risk Assessment, may also be possible during a tropical cyclone. The Central Pacific Hurricane Center explains that tornadoes are strongly favored in the right-front quadrant (northeast side) of a tropical cyclone and occur mainly in the outer rain bands between 50-200 miles from the tropical cyclone center. However, some instances document tornadic activity in the inner core or eyewall of the tropical

cyclone[4]. Other severe storm hazards such as flooding, lightning, and heavy rains should be expected as a result of a tropical cyclone and they will be discussed later in the Risk Assessment. The primary hazards associated with tropical cyclones are high winds, heavy rains, and storm surge.

As winds increase, pressure against objects is added at a disproportionate rate. Tall structures, like radio towers, can be destroyed by gusty hurricane force winds and some structures, such as mobile homes are particularly at risk. High winds, if sustained long enough, can damage most structures enough to render them unsafe to inhabit and can cause significant health and safety risks to occupants during tropical cyclones.

According to ASCE 7-22 data mapped by the University of Florida[5], Pasco County the west coast of Pasco County is in the 140 mph wind bourn debris zone for a category 2 hurricane and in the 150-mph zone for category 3 hurricanes. Therefore, wind gusts of those speeds are expected to impact buildings in the zone under tropical cyclonic activity. Figure 5.7 and Figure 5.8 show the extent of these zones in Pasco County. Wind speeds should be expected to exceed these categories depending on track and intensity of each storm.

Figure 5.7 Wind-Bourn Debris Category 2 Map

[4] http://www.prh.noaa.gov/cphc/pages/FAQ/Hurricanes_vs_tornadoes.php

[5] https://www.geoplan.ufl.edu/portfolio/wind-speed/

Figure 5.8 Wind-Bourne Debris Category 3 Map

According to the NHC, wind gusts higher than 110 mph can cause catastrophic damage to man-made and natural structures and that even well-constructed homes will have substantial damage to their roofs and walls. Winds at these speeds can also cause hazardous debris to become projectiles, further damaging building and posing a significant safety hazard to any person that is unsheltered.

The amount of rain that tropical cyclones can bring is highly variable. Depending on the intensity of the cyclone and the speed at which the center of the cyclone is moving, these systems can cause long periods of consistent heavy rain. Hurricane strength systems can bring six to twelve inches of rain with more rain in larger, slower moving systems. Rainfall will not normally require the emergency evacuation of large numbers of residents during the passage of a tropical cyclone as does storm surge and flooding. The ensuing rain, however, has the potential to slow traffic, overtax the stormwater drainage system, and hamper evacuation routes that could severely reduce the number of hours available for the overall evacuation. Flooding is a major threat to areas well inland of a tropical cyclone that may require the evacuation of coastal residents and mobile home residents.

Tropical cyclones often bring enough rain to the region that riverine flooding can impact Pasco County well after a storm has passed. Areas along the Withlacoochee and Hillsborough Rivers are susceptible to cascading flooding post storm as rain waters drain regionally.

Tropical cyclones of all categories are also able to produce significant storm surge. Storm surge is the abnormal rise in sea level as a result of a tropical cyclone or severe storm pushing winds onshore. Storm surge is mainly located along tidal shorelines and tidal rivers in Pasco County. Storm surge can be even more destructive as it combines with high tides and high breaking waves. Generally, the more intense and closer a perpendicular track is to the coastline, the higher storm surge will be. Storm surge intensifies or abates based on the width and slop of the continental shelf[6]. For most cases, with few exceptions, shallow continental shelf slopes produce more intense surges compared to a steeper shelf. Pasco County has a high shoaling factor (shallow water and gradual slope of the Gulf bottom) off the Central West

[6] https://www.nhc.noaa.gov/surge/

Coast of Florida, and therefore modeling data indicated higher surges compared to other coastal counties in Florida.

According to the NHC, 49% of deaths reported over a 50-year period were the direct result of storm surge. Six out of ten of the deadliest hurricanes reviewed in this study were only Category 1 intensity at landfall. The storm surge percentage supersedes all other lethal hazards associated with tropical cyclones or severe storms.[7] As previously explained in the Community Profile of this LMS, the area along the coast is heavily populated which leaves segments of Pasco County vulnerable to a passing tropical cyclone.

During Hurricane Idalia in 2023, northwest Pasco County experienced 4-6 feet of storm surge which caused extensive damage to residential structures in Hudson, Port Richey, and New Port Richey. Despite the storm center's distance from the coast, water levels of 2-4 feet above ground were reported throughout the area, with significant road flooding up to US-19 between Hudson Avenue and Sea Ranch Drive.

The National Hurricane Center utilizes Sea, Lake, and Overland Surges from Hurricanes (SLOSH) modeling to understand how vulnerable a coastline is during a storm surge event.[8]. The model incorporates physics of the storm, (track, intensity, size, forward speed, and landfall location) and continental shelf geography to determine surge inundation. Because tropical cyclones undergo constant change in physics and landfall, the SLOSH model has been further refined. The SLOSH model was refined by being run several thousand times with hypothetical hurricanes of different landfalls and intensities to provide what is called the Maximum Envelopes of Water (MEOWs)[9] and Maximum of MEOWs (MOMs)[10]. The MEOWs determine the worst-case scenario for the Tampa Bay Basin for specific storm intensities, forward speeds, trajectories, and tide level with uncertainty with forecasted landfall location. The MOMs determine the worst-case scenario for the Tampa Bay Basin for intensity, forward speed, trajectory, and tide for the "perfect" forecast. The combination with the MEOWs and MOMs of the SLOSH model account for forecast uncertainty. This refined version of SLOSH and other appropriate modeling data from the Tampa Bay Regional Planning Council are part of the development for Pasco County evacuation zones. Figure 5.9 shows the current evacuation zones for Pasco County and will be used as a planning tool for public officials during tropical cyclone events, or severe weather that causes possible surge inundation.

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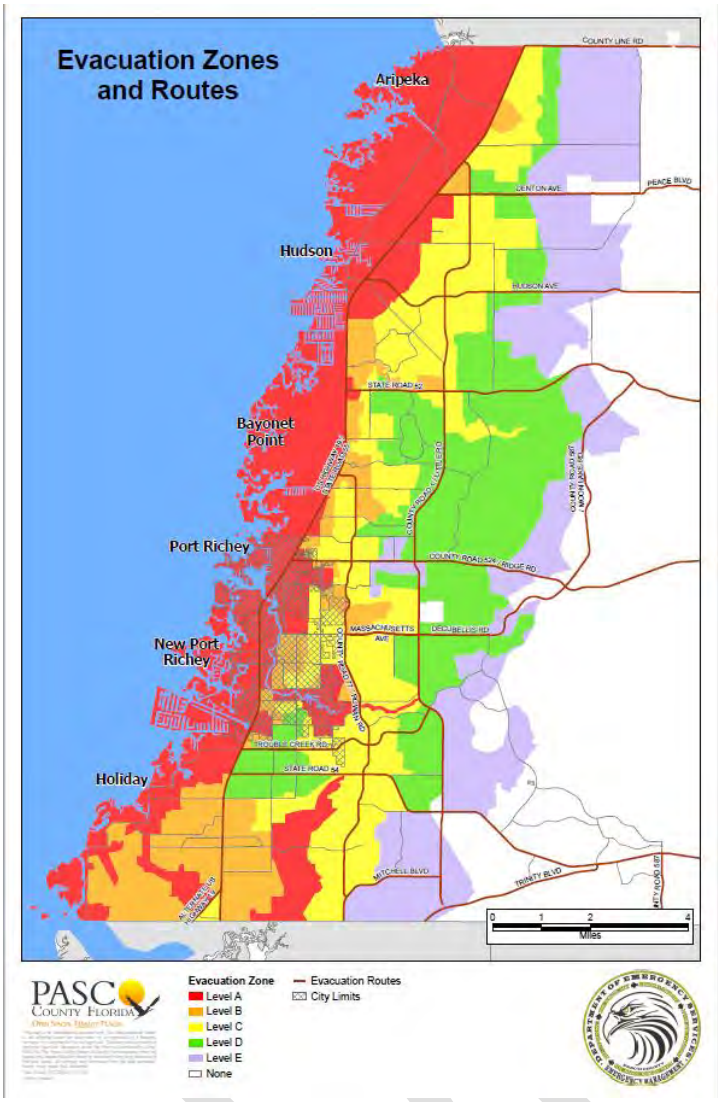
[7] https://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-12-00074.1

[8] https://www.nhc.noaa.gov/surge/slosh.php

[9] https://www.nhc.noaa.gov/surge/meowOverview.php

[10] https://www.nhc.noaa.gov/surge/momOverview.php

Figure 5.9 Evacuation Zones and Routes



Following the direct impact of a hurricane many residents will be unable to return to their homes. Many mobile/manufactured homes will be destroyed and repairs to other homes that are uninhabitable may take weeks or months to complete. Some may choose to never return to their homes as seen in Hurricane Andrew and Hurricane Katrina. The economic impact will vary greatly. Many small businesses will close forever while others will prosper. Home repair, carpet and appliance businesses will experience short-term increases in business. Other businesses, particularly those associated with tourism or real estate sales, will see significant declines, potentially for the long term.

The Florida SHMP acknowledges that several factors may be changing the development and intensity of tropical cyclones now and in the future. Higher water temperatures in the Gulf of Mexico increase both surface energy and atmospheric moisture, both of which are key elements in creating a strong tropical cyclone. Similarly, an increase in atmospheric moisture is likely to yield more heavy rain in tropical systems. Although weakened oceanic currents may decrease the number of tropical cyclones

that impact Pasco County in the future, increased warmth and moisture make it likely that those that do impact the county have high intensities.

Vulnerability

Pasco County is considered highly vulnerable to tropical cyclones given the climatology for tropical storm development, coastal population, the population age, and the history of events. Tropical cyclones can affect large geographical areas to an extreme extent. Tropical cyclones are likely to impact Pasco County in the future therefore the overall vulnerability is high.

Pasco County has approximately 29,979 mobile homes according to GIS data. Because of the high risk of damage to these homes caused by high winds, mobile homes are included in every evacuation order, regardless of their location.

A large portion of Pasco County's non-mobile home housing stock consists of older and less substantially constructed homes built before the Florida Building Code enacted in 1994. These structures are vulnerable to wind events and are far more likely to suffer damage during a disaster.

New construction is required to be built to withstand the impact of wind-borne debris and to include appropriate window protection (shutters or shatter-resistant glass). Both as a result of changes in Florida are building codes, the County's participation in the NFIP, and the Community Rating System. It is generally anticipated that, with strict application of building codes, future development will have less susceptibility to damages from the effects of tropical cyclones.

Regardless of their age, structures close to the coast are highly vulnerable to storm surge. As mentioned earlier, storm surge probabilities were used to determine Pasco County's evacuation zones and priority. Figure 5.10 illustrates the population density in these vulnerable areas. The most significant density is within the first three evacuation zones.

For all coastal communities in Pasco County, including the jurisdictions of New Port Richey and Port Richey, tropical cyclones have been assessed as follows:

- Location – Extensive
- Impacts – Extreme
- Probability – High
- Overall Vulnerability – High

For inland communities in Pasco County, including the jurisdictions of St. Leo, San Antonio, Dade City, and Zephyrhills, tropical cyclones have been assessed as follows:

- Location – Extensive
- Impacts – Severe
- Probability – High
- Overall Vulnerability – High

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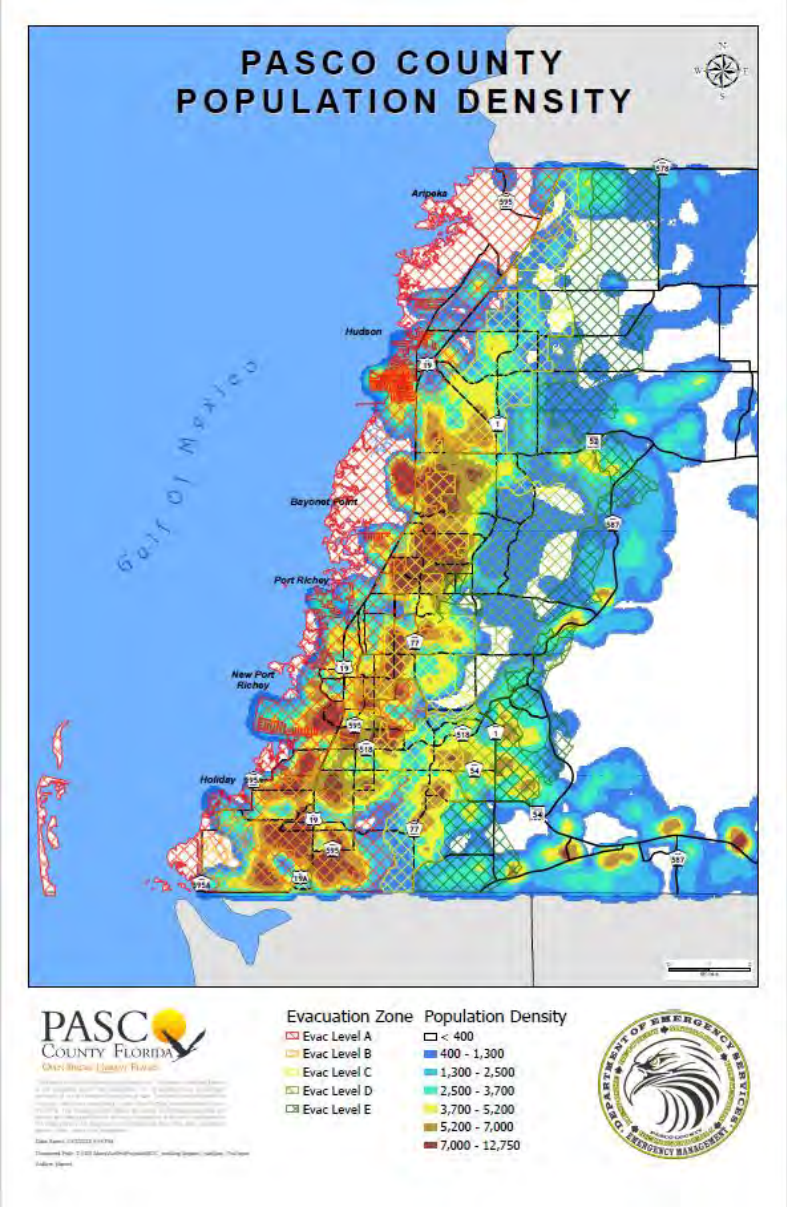
Figure 5.10 Population Density- West



According to data received from the Property Appraiser, just over 70,000 residential structures and almost 5,000 businesses exist in evacuation area A, B or C. In all zones together almost 100,000 residential structures and 6,600 businesses are vulnerable to extreme storm surge.

Vulnerable Populations

Tropical cyclones pose a threat to all populations depending on the track and intensity of the storm. Populations already vulnerable, such as the elderly, children, people with disabilities and those that are socioeconomically disadvantaged have an increased vulnerability to the impacts of tropical cyclones and may be impacted disproportionately when compared to other populations.

Elderly individuals have increased health and mobility concerns that may affect their ability to evacuate before a storm or seek help after a storm. As discussed in the Community Profile, 20% of the county's population are over the age of 65 and people in this age category are highly likely to have at least one chronic illness.

People with physical or mental disabilities or impairment are disproportionately impacted in several ways. Many may require more assistance to reach shelters in time while others may be economically constrained and unable to recover or do repairs to damaged homes. Those with cognitive impairment may not be able to respond to evacuation orders or weather warnings without assistance.

Any resident, regardless of their age who requires sheltering assistance due to physical impairment, mental impairment, cognitive impairment, or sensory disability that requires care at a higher level than what is provided at a general population shelter, but does not require the level of care provided at a skilled medical facility is able to register for the Special Needs Registry. Residents on the registry are contacted prior to landfall of tropical cyclones in order to ensure they are evacuated to the proper level.

Economically disadvantaged populations, including people experiencing homelessness, may have more difficulty preparing for and recovering from the impacts of tropical cyclones. Financial constraints are often a key factor when people are deciding whether to evacuate during a storm. Economically disadvantaged communities are also more likely to be in hazardous areas and live in houses built before the enhanced building codes came into effect.

Eleven of the seventeen Qualified Opportunity Zones in Pasco County are in evacuation zones. Additionally, all areas west of US-19 from County Line Road to Ridge Road are considered Low Moderate Income (LMI) areas. Because of their location, this population is highly vulnerable to storm surge, high winds, heavy rain and localized flooding. Homeless individuals and those living in mobile homes are at increased risk from injury from high winds. Communities impacted in these areas may be unable to quickly repair damage and fully recover from disasters, they may be uninsured or underinsured which could lead to a longer recovery period after a tropical cyclone has passed.

Because a large portion of the county is likely to be impacted to an extreme extent, the Pasco County LMS Working Group has assigned tropical cyclones a high vulnerability rating.

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FLOODS

Source: Pasco County Sheriff's Office

Description

Flooding is the most frequent of all natural disasters. A flood, as defined by the National Flood Insurance Program (NFIP) is "A general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area or of 2 or more properties from: overflow of inland or tidal waters, unusual and rapid accumulation or runoff of surface waters from land source, or a mudflow[11]." Floods can be slow or fast rising, but generally develop over a period of days. Locally, the Pasco County Department of Emergency Management considers floods to be inundation of normally dry land for more than 1 hour.

Flooding typically involves the overflowing of normal flood channels, rivers, or streams because of prolonged rainfall. The lateral spread of floodwater is largely a function of the terrain, becoming greater in wide, flat areas, which generally affects narrower areas in steep terrain. Variations in circumstances affect the duration of the inundation of the floodplain with rapid water movement draining floodplains faster. The duration of storm patterns also affects the length of the period of inundation. Many storms unleash considerable amounts of rain within just hours, producing very short-term, but damaging floods in localized areas. The key contributing factors in identifying the scope of the local flood hazard are, the size of the watershed; development within the watershed affecting stormwater runoff; soil characteristics; topographic characteristics affecting the direction and flow of flood waters; and

[11] https://www.fema.gov/national-flood-insurance-program

regional climate. Increasing impervious surface, building obstructions to the flow of water along the riverbank, or allowing sedimentation through stream bank erosion all exacerbate the probability of flooding, and thus, may change a100- year floodplain into 80-year or 50-year floodplains. FEMA defines flood zones by the probability of occurrence. In Pasco the primary flood zones are A, AE, V and X. Combined, flood zones are referred to and the Special Flood Hazard Area (SFHA). The primary types of flooding that impact Pasco County are Inland Riverine Flooding and Coastal Flooding.

Inland and Riverine Flooding is when rain fall accumulation is greater than the capacity of the natural runoff drainage systems. As stated above, topographical factors such as elevation and slope greatly influence where inland flooding will occur. Low-lying areas and areas with poor drainage will flood quicker and for longer than more elevated areas. Inland flooding can be caused by heavy rain in the flooded area and/or by heavy rain in the upstream area. Riverine flooding is when the drainage causes a river to expand past its banks and flood normally dry land.

Coastal flooding is the presence of tidally influenced waters on normally dry land. In Pasco County, this would be waters from the Gulf of Mexico intruding onto land. Most commonly, this would be caused by a tropical cyclone, but is possible during severe thunderstorms and other non-tropical weather systems. Additionally, coastal flooding can be caused by tides that are higher than normal. Commonly referred to as king tides, excessively high tides can flood low-lying coastal areas and increase risk of coastal flooding from severe weather if there is high winds during these times.

The National Weather Service (NWS) issues advisories, watches and warnings based on current and expected conditions. For flooding, coastal flooding and flash flooding, the NWS utilizes the below definitions.

Figure 5.11 NWS Flood Advisories

Advisory	Watch	Warning
Conditions are favorable for flooding but not expected to warrant a warning	Conditions are favorable for flooding and hazardous flooding is possible	Hazardous flooding is imminent or already happening.

Location

Approximately 44% of Pasco County's land mass is in a Special Flood Hazard Area as defined by FEMA. Figure 5.12 shows the flood hazard areas in Pasco County. Areas on the coast, areas near rivers, and low-lying areas throughout the county all have the potential to become flooded.

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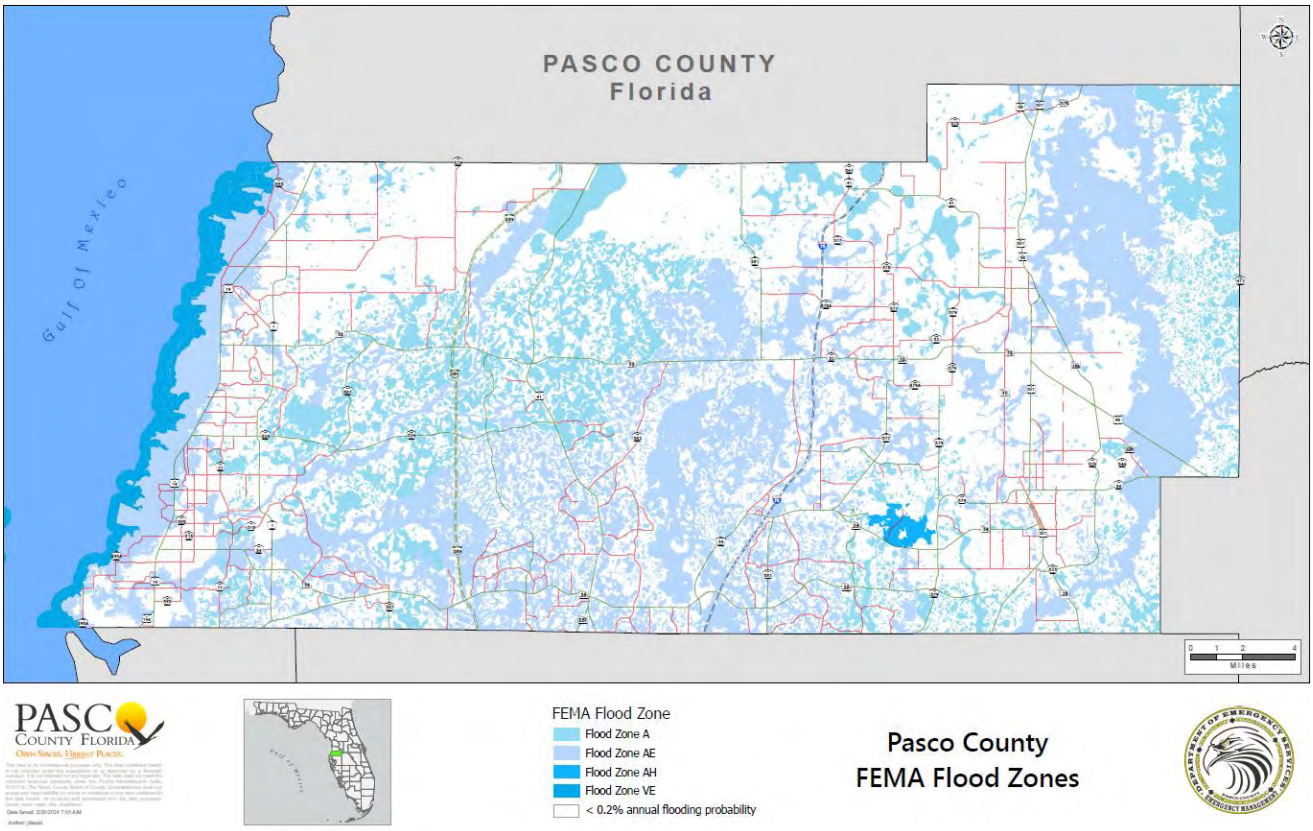
Figure 5.12 FEMA Flood Zones



The Withlacoochee River lies within the northeast quadrant of the County and the Anclote River lies within the southwestern section of the County. The Pithlachascotee River enters the mid-section of the County from the Gulf of Mexico. There is potential for repeat occurrences of flood surges along this heavily populated river during future tropical storms and hurricanes. Storm surge can push water into the Pithlachascotee and cause flooding well inland as the river escapes its banks and slows the drainage of rainwater that normally flows west via the river. The areas surrounding the Withlacoochee and Anclote Rivers are also subject to flood damage because they are high-density population areas. Rainfall over several days causes these rivers to exceed their banks and tend to overflow. Many of the residents along these rivers are in a floodplain that may flood at least once per year.

Bear Creek in Bayonet Point and Double Hammock Creek in Port Richey are both coastal creeks that can become overwhelmed by drainage during periods of wide-spread heavy rain. Further inland, Pasco County's many lakes represent low elevation areas where water naturally accumulates. Some of these, such as Bass Lake, Moon Lake, Buddy Lake, and Bird Lake can easily overflow and cause road and structure flooding. In the Land O' Lakes area, several interconnected lakes flow into each other and can be likewise overwhelmed by heavy rain. Areas near natural lakes tend to be at a lower elevation or near the bottom of a closed basin. Structures and roads near the bottom of basins are usually the first to experience flooding.

Pasco County has developed a series of Repetitive Loss Areas using NFIP and locally reported flooding data. The composite and individual maps and a breakdown of repetitive loss properties are included as Appendix D to this plan.

Extent

The National Weather Service has four categories of flood.

Figure 5.13 NWS Flood Categories

Minor Flood	Moderate Flood	Major Flood	Record Flood
Nuisance flooding with minimal or no property damage	Some inundation of structures and roads near bodies of water.	Extensive inundation of structures and roads. Evacuations may be necessary to move people to higher elevations.	Flooding that meets or exceeds the highest discharge on record.

Flood severity is also measured in inches of water inundation. Roads become impassible with just a few inches of standing water and six inches of water is enough to stall most vehicles. Likewise, six inches of water inside of a structure is enough to cause significant damage to the building.

While all jurisdictions can experience flooding caused by heavy rain and slow drainage through saturated soils, unincorporated Pasco County and the jurisdictions of New Port Richey and Port Richey are likely to experience riverine and compound flooding as well which can lead to major flood or record flood conditions. Because of their smaller geographic area, the jurisidctions of St. Leo and San Antonio are likely to receive moderate flooding.

Historical Occurances

The significant flooding event in Pasco County occurred in late August 2023. As Hurricane Idalia traveled near the Gulf Coast it caused significant coastal flooding in Hudson, Port Richey and New Port Richey. Strong winds caused coastal water levels to rise to 4-6 feet above ground level at the coast. Water surged inland as far as US-19 near Sea Ranch Drive. An estimated 2,000 structures were impacted by the water and FEMA received over 4,000 claims for Individual Assistance. A few months later, in December 2023, a non-tropical cold front caused heavy winds and coastal flooding again in the same area. Flood waters reached backyards and some low lying streets overnight, but receded quickly.

In July of 2018, prolonged heavy rain caused street flooding in Wesley Chapel, San Antonio and Blanton. 25 roads were impacted by standing water for over 24 hours and 12 roads had flooding related washout needing repair. In August of 2015, weak area of low pressure developed along a stationary frontal boundary and produced 6 to 8 inches of rain across Pasco on already saturated soils. The standing rain caused drainage backup and standing water in several low-lying areas throughout the county. The table below shows all flooding events between 2014 and 2023.

Figure 5.14 Flooding Occurrences

Location	Date	Incident Details
Coastal Flooding		
Hudson	1/22/2017	A line of strong and fast-moving thunderstorms developed ahead of a cold front Tide reported an estimated 2 feet higher than high tide levels Flooding reported as far inland as US-19 in Hudson
Hudson	12/19/2023	A line of strong thunderstorms ahead of a cold front

		Tide reported an estimated 1 foot higher than high tide levels Nuisance flooding in backyards and low-lying streets
Heavy Rain		
Hudson	9/27/2014	A stalled front produced localized areas of heavy rain Minor flooding in low-lying areas and around rivers Observed over 5.5 inches of rain in a 4-day period
Aripeka and Hudson	7/24/2015	An area of low pressure formed along a weak front over the eastern Gulf of Mexico Widespread flooding across western Pasco due to heavy rain, one site reported 11 inches Street Later caused flooding of the Anclote River, causing it to crest at 23.6 feet 321 homes needed to be evacuated near Elfers
Hudson	8/3/2015	A weak area of low pressure developed along a stalled front Observed 6.5 inches of rain in 6 hours Heavy rain on already saturated soils caused slow drainage and standing water in low-lying areas Caused flooding of the Anclote River near Elfters, cresting at 25.4 feet 36 mobile homes were destroyed, and 6 others received major damage, 46 single family homes were destroyed and 32 received major damage. 258 homes received minor damage.
Central and East Pasco	July 2018	Prolonged heavy rains over several days Significant street flooding in Wesley Chapel, San Antonio and Blanton 25 Roads impacted and 12 roads washed out
New Port Richey and Trinity	July 2022	Prolonged heavy rains over several days Heavy rain on already saturated soils caused slow drainage and significant street flooding of Little Road south of Ridge Road Minor flooding reported in roads and yards in Trinity
Tropical Weather		
Elfers	9/3/2016	Hurricane Hermine caused heavy rains that flooded the Anclote River, cresting at 25.08 feet Storm surge ranged from 2-7 feet above normal high tide Highest recorded surge in the area was 7.5 feet at Cedar Key
Elfers	9/11/2017	Heavy rains from Hurricane Irma caused the Anclote River to flood, cresting at 24.87 feet Several homes in Anclote River Estates and Anclote River Acres flooded, causing damage over $450,000 Western Pasco recorded rainfall over 4 inches with the highest in Port Richey of 6.8 inches Inland Pasco recorded rainfall over 6 inches with the highest in Richland of 9.6 inches
Hudson	8/30/2023	Hurricane Idalia caused coastal water levels to rise to 4-6 feet above ground level at the coast. Water surged inland as far as US-19 near Sea Ranch Drive An estimated 2,000 structures were impacted by the water and FEMA received over 4,000 claims for Individual Assistance

Source: NOAA and Local Emergency Management records

Probability

Although flooding does result from hurricanes, it can also occur during winter storms, as well as during prolonged summer thunderstorm activity. Prolonged periods of rainfall have shown increased potential for causing damage to property and the need for evacuation of residents due to flooding. The problem becomes more severe should the heavy rainfall occur at the same time as the astronomical high tide, thus preventing much of the rainfall from flowing through the drainage system into the Gulf of Mexico. Heavy rains and freshwater flooding occur in cycles that are commonly attributed to El Nino/La Nina. There is a long history of flooding in Pasco County and most of central Florida. This trend is expected to continue, and the probability of flooding is high for Pasco County, especially in the low-lying areas.

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Areas of coastal zone flooding, closed basin flooding, and riverine flooding are all mapped on the existing FEMA Flood Insurance Rate Map (FIRM) which were produced in 2020. The new coastal FIRM maps replaced older mapping systems and identified that a significant area of the county has a 1% annual chance of flooding. Figure 5.12 above shows the flood hazard area for the entire county.

Impacts

Flooding is often considered to be one of the deadliest natural hazards. Floods can cause immediate threats of drowning and elemental exposure. Flood waters can also cause populations to get stranded and unable to obtain necessary supplies or medical attention. Long-term, floods can cause mold in structures that can have lasting negative impacts on human health.

All jurisdictions have risk from flooding. While unincorporated Pasco County's coastline and the City of Port Richey and New Port Richey all have added threats of coastal storm surge flooding and riverine flooding, closed-basin flooding can occur in all jurisdictions at an even rate. Critical infrastructure in all jurisdictions such as roads, bridges, and utilities can become damaged by flood waters and flood-based erosion of infrastructure.

As future conditions change, the future impacts from flooding will change as well. Changes in atmospheric conditions and ocean temperatures can lead to more intense storms throughout the year and are not restricted to tropical cyclone activity. In 2024, Pasco County conducted a Risk and Vulnerability Assessment as part of the Resilient Pasco project. The results show that as sea levels rise over time, the level of exposure to tidal flooding on the coast will continue to increase.

Additionally, as development continues throughout the future there may be changes in the floodplain overall. While developments are required to make adjustments to counteract changes in drainage, the removal of pervious soils and standing wetlands can have cascading impacts on flooding concerns during periods of heavy rain.

Vulnerability

Because the coastal jurisdictions, including portions of unincorporated Pasco County, New Port Richey, and Port Richey have increased exposure to tidal flooding and other forms of coastal flooding, the vulnerability to flooding for these jurisdictions have been assessed as follows:

- Location – Significant
- Impact – Extreme
- Probability – High
- Overall Vulnerability – High

The inland communities of Dade City and Zephyrhills, and the rest of unincorporated Pasco County, although not at risk of coastal flooding, still have proximity to rivers and are likely to experience closed-basin flooding that could still cause uninhabitable conditions, albeit in more limited areas, therefore the vulnerability to flooding for these jurisdictions is as follows:

- Location – Significant
- Impact – Extreme
- Probability – High
- Overall Vulnerability – High

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The jurisdictions of St. Leo and San Antonio, because of their limited geographical size and distance from rivers are less likely to experience uninhabitable conditions, even when heavy rains cause a distribution of services. Therefore, the vulnerability to flooding for these jurisdictions has been assessed as follows:

- Location – Significant
- Impact – Moderate
- Probability – High
- Overall Vulnerability – High

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SEVERE STORMS

Description

Severe Storms occur often in Pasco County and fall into six broad categories based on their impact with land and people. Thunderstorms, Lightning, Hail, straight-line winds, Tornados and waterspouts are all potential categories of impacts from severe weather. Because it is rare for these impacts to occur without any of the others occurring at the same time, these are combined into a single hazard profile.

Thunderstorms are likely to occur daily during the summer months in Pasco County and less frequently during the fall and winter months. A thunderstorm is defined as a rain shower that produces thunder and is not always considered "severe." An annual estimate of 16 million thunderstorms occurs worldwide, with approximately 100,000 occurring in the United States. Ten percent of the annual rate meets severe storm criteria defined by The National Weather Service. The National Weather Service defines a severe thunderstorm as one which produces winds of 58 mph or greater, ¾ inch hail or larger and/or tornadoes[12]. The frequency of severe storms during summer months are often more disruptive to the daily lives of residents than other weather patterns or natural hazards that Pasco County experiences.

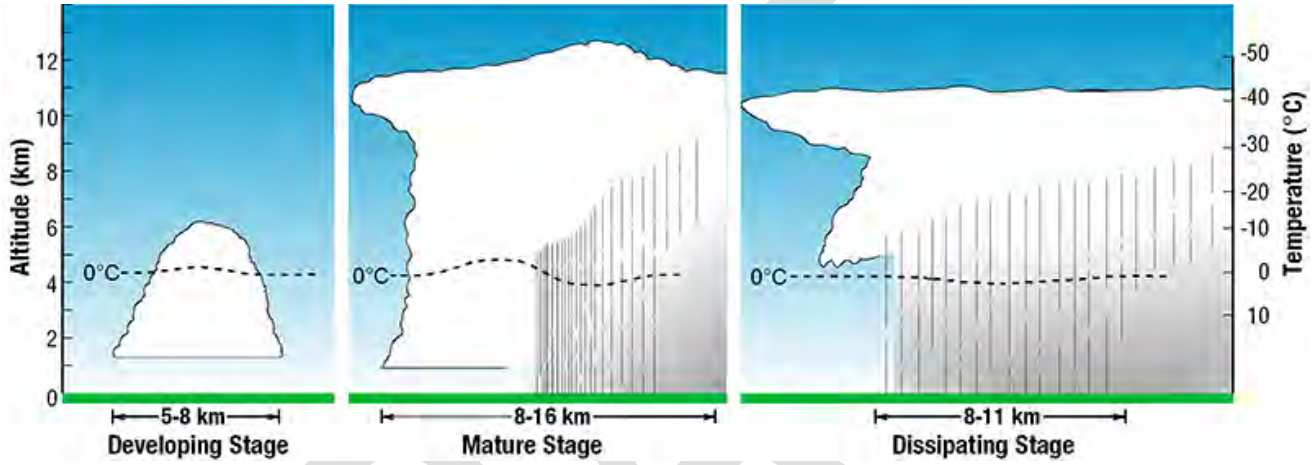
Three conditions need to be present to create a thunderstorm, moisture, rising unstable air, and a mechanism to lift and initiate the rising of unstable air[13]. As each condition becomes more intense, the storm conditions get progressively more severe

[12] https://www.noaa.gov/explainers/severe-storms

[13] https://www.nssl.noaa.gov/education/svrwx101/thunderstorms/

The life cycle of a thunderstorm includes three major stages, the developing stage, the mature stage, and the dissipating stage (insert footnote with link). During the developing stage, a cloud is pushed upward by a rising column of air, also known as an updraft, and the cloud starts to grow tall as the updraft continues to develop. Once the thunderstorm moves in the mature stage, rain begins to fall outside the updraft, resulting in a downdraft. It is common to experience conditions such as high wind gusts, hail, heavy rain, lightning, and tornadoes during the mature stage. Eventually, the precipitation will increase, and the downdraft widens, resulting in the dissipating stage and the thunderstorm no longer receives fuel and becomes less intense.

Figure 5.15 Life Cycle of a Thunderstorm



Source: National Oceanic Atmospheric Association

There are several different types of thunderstorms that are categorized and classified based on the conditions and stages of the storm. By identifying the various types of thunderstorms and the conditions that may increase the severity, this plan outlines four main types of thunderstorms and how they impact Pasco County.

The most common type of thunderstorms in Pasco County are single-cell thunderstorms, also referred to as popcorn convective storms. These generally small and weak storms typically last an hour and are driven by the summertime heat across the eastern region of Pasco County.

Like single-cell thunderstorms, multi-cell storms are common in the County. Multi-cell storms consist of multiple single-celled storms that are combined into one unit, allowing the mature stage to extend and updrafts remain ahead of rainfall. Unlike single-cell thunderstorms, multi-cell thunderstorms may last a few hours and have the potential to produce strong winds, tornadoes, and flooding.

Squall line thunderstorms typically form in a line and move quickly along frontal boundaries, which are the separation of two air masses creating weather fronts such as warm or cold fronts.

Squall lines can span hundreds of miles or as little as 10 miles and due to the forward direction and speed, they are less likely to produce tornadoes but may still cause damage due to strong winds.

Lastly, supercells are one of the most organized thunderstorms and occur mostly in the late afternoon and evening, sometimes carrying on throughout the night. This type of thunderstorm is one of the most dangerous types due to the timing of impact and intensity. Supercells often produce large hail, heavy rainfall, and strong gusty winds. Historically, supercells have produced the strongest tornadoes because of the tilting of the updraft and storm rotation.

Thunderstorms cause various natural hazards, such as tornadoes, strong winds, flooding, lightning, and even hail.

The severity of a thunderstorm is often determined by impacts of hail, wind speed, and tornadoes. However, while lightning is a common hazard that may occur during thunderstorms, lighting is a deadly hazard that occurs even in the weakest thunderstorms. Lightning strikes the United States approximately 38 million times a year[14]. Lightning is a potentially deadly giant spark of electricity, produced by electrical buildup and discharge of energy in the atmosphere between clouds, the air, or the ground[15]. Often accompanied by lighting, thunder is the audible result of rapid heating of air that creates a shockwave. While thunder does not have deadly impacts, lighting can be detrimental to property, humans, and livestock. Lightning does not necessarily need to strike someone to cause injury or death; it may strike trees, poles, homes, or other mediums which can cause secondary impacts. Some of the secondary impacts lead to sparking wildfires, power outages, damages to homes, and damage to trees leading to hazards in the roads. The risk of lighting is not limited to the areas impacted by thunderstorms and can strike miles from the center of a storm. According to the NWS, "Each spark of lightning can reach over five miles in length, soar to temperatures of approximately 50,000 degrees Fahrenheit, and contain 100 million electrical volts."

Hail occurs when there is a strong updraft in a mature thunderstorm, most seen when there is either a strong multi-cell or super celled system moving through the area. As the rain becomes heavy and falls to the ground, the updraft overtakes its falling speed and lifts it back into the air where cold air freezes the rain drop and/or adds an additional layer of ice to the droplet. The ice pellet will continue to fall and rise within the cloud until it is heavy enough to fall to the ground. Larger hail can cause property damage and may also cause injury to humans and other livestock[16].. Pasco County has experienced hail events, resulting in damage to windshields on vehicles as well as solar panels to residential homes and businesses. Pasco County residents partake in numerous outdoor recreational activities such as golf or natural parks, which inherently increases risk and vulnerability of potential loss of life or property.

Tornadoes are one of the most dangerous hazards associated with strong thunderstorms. Tornadoes are violently rotating column of air that extend from the base of thunderstorms to the ground[17]. Tornadoes can form from non-supercell thunderstorms and supercell thunderstorms[18]. Non-supercell tornadoes are a result of warm and cold air mixing along a boundary which causes vertical rotation that can be bumped upright

[14] Murphy, M. Et al. A Recent History of Upgrades to the U.S. National Lightning Detection Network.

[15] https://www.nssl.noaa.gov/education/svrwx101/lightning/faq/

[16] https://www.nssl.noaa.gov/education/svrwx101/hail/

[17] https://www.nssl.noaa.gov/education/svrwx101/tornadoes/

[18] https://www.nssl.noaa.gov/education/svrwx101/tornadoes/types/

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and form a tornado. The supercell tornado forms when the updraft in a supercell rotates and is more common and dangerous than a non-supercell tornado.

While tornadoes occur more often in cooler climates, Florida has experienced tornadoes and tornado threats over the years. Tornadoes form when warm and humid air collides with cool and dry air and intensifies when these atmospheric conditions are present. While tornadoes occur in other regions during the summer months, Pasco County is more likely to experience a tornado in the winter months.

Even though tornadoes do not heavily impact Pasco County, tornadoes still occur within the County. The risk and potential of tornadoes happening in the County support the need to include the hazard under the LMS.

Weak tornadoes can produce wind speeds up to 110 mph, which could cause damage to life if residents are not aware of the risks and property if infrastructure is older and not compliant with current building codes. The damage that tornadoes can leave behind is not only limited to the center of the tornadoes' path, but surrounding areas.

It is common for damage caused by a severe thunderstorm to be misinterpreted as tornado damage because of the strong winds that may occur during a thunderstorm event. While a tornado does not occur without a thunderstorm, the conditions have to be right for a tornado to occur. To provide a clear distinction between thunderstorm winds and a tornado, it is common to refer to strong winds not associated with tornadoes as "straight-line winds".

The states surrounding the Gulf of Mexico experience unique weather phenomena of tornadoes over water which are also known as waterspouts[19]. These are just as dangerous as tornadoes on land as waterspouts can produce similar damages to boats, marinas, and increase wave action. Waterspouts are most common in Florida. The Florida Keys are the number one location with annual reports of up to 500[20]. Closer to home, the Tampa Bay Region has the greatest number of damaging waterspouts. This may be attributed to the high number of boaters and marinas located throughout the Bay. The weakest waterspouts can capsize small boats, move smaller boats into other boats within a marina, and potentially damage weaker and older docks.

Straight-line winds account for about half of all severe weather reports in the Continental United States[21]. Straight-line winds would be the most common result from a severe thunderstorm as this is often the trigger for the thunderstorm warning. In Pasco County, winds that meet 58 mph or greater can cause great impact to property damage. Often, straight-line wind events are easily confused with tornadic damage because of similar impacts. Straight-line winds can cause minor damage of uprooting of trees and downed tree branches that may cascade to secondary impacts. Some of the secondary impacts could be loss of power or vehicle travel in localized areas. As the winds increases, damage potential increases. Previous straight-line wind events in Pasco have shown a loss in roofing, siding, shingles, lanais, and more.

Combining straight-line winds along the coastline of Pasco County may intensify a severe thunderstorm even further by producing additional effects of a coastal storm. Larger waves and potential storm surge may result from this combination. Storm surge is mainly driven by wind but is mostly associated with tropical

[19] http://glossary.ametsoc.org/wiki/Waterspout

[20] https://www.usatoday.com/story/weather/2015/05/26/waterspouts-florida/27954007/

[21] https://www.nssl.noaa.gov/education/svrwx101/wind/faq/

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cyclones. In a tropical cyclone, many of the rain bands can form different severe storms which can explain tornado warnings issued during the passing of a tropical cyclone.

Location

Severe storms of can impact any part of the county. The location of impacts is entirely dependent on the formation and movement of fronts and is most commonly steered by low pressure pockets. Because of the rapid development in the county as a whole, the likelihood of human impacts from these types of storms is increasing over time.

Extent

Tornadoes are categorized by the Enhanced Fujita (EF) scale, which is an upgrade to the original Fujita (F) scale in 2007. The older F scale relied solely on damages to report severity of a tornado. With advancements in technology and research, the F scale was revised to the EF scale to allow for damaged structures based on types and revised wind speeds. See Figure 5.16 for the relation of the EF scale, the F scale, and potential damages. The EF Scale has been created to support and maintain the original tornado F scale database[22].

Figure 5.16 Fujita and Enhanced Fujita Scale Comparison

F Scale	Wind Speed (mph)	EF Scale	Wind Speed (mph)	Anticipated Damage
F0	65-73	EF0	65-85	Light Damage
F1	73-112	EF1	86-110	Moderate Damage
F2	113-157	EF2	111-135	Considerable Damage
F3	158-206	EF3	136-165	Severe Damage
F4	207-260	EF4	166-200	Devastating Damage
F5	261-318	EF5	200+	Incredible Damage

Source: Storm Prediction Center

Because severe storms, including storms that produce damaging hail and tornadoes, are heavily dependent on frontal boundaries and transient atmospheric conditions, all jurisdictions can experience a tornado up to a F5 and damaging hail during severe weather.

[22] https://www.spc.noaa.gov/efscale/

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Figure 5.17 Watch and Warning Descriptions for Severe Thunderstorms and Tornadoes

	Watch	Warning
Severe Thunderstorm	Issued in coordination with the National Weather Service and the Storm Prediction Center and can be issued up to 6 to 7 hours prior to possible occurrence: Conditions are favorable for the development of severe thunderstorms and would meet the criteria of a Severe Thunderstorm Warning	Issued by the National Weather Service based on the imminent threat or actual occurrence of 1 inch or greater diameter hail; 58 mph or greater wind gusts, or damage from winds 58 mph or greater
Tornado	Issued in coordination with the National Weather Service and the Storm Prediction Center and can be issued up to 6 to 7 hours prior to possible occurrence: Atmospheric conditions are favorable for the development of severe thunderstorms capable of producing tornadoes	Issued by the National Weather Service based on the imminent threat of a tornado, based on sound radar data or trusted ground truth reports.

Source: The National Weather Service

Historical Occurrences

Pasco County experiences thunderstorms daily during the summer and fall months due to rapid heating and moisture. During the winter and spring months, thunderstorms occur less often and normally occur during a frontal or more organized event as moisture and heating. Figure 5.18 shows the list of thunderstorms that met Severe Thunderstorm Warning criteria for straight-line wind gusts of 50 knots (58 mph) or higher.

In December of 2020 severe storms caused straight-line winds in Land O' Lakes causing minor damage to 10 residential structures. In December of 2018, 73 manufactured homes were damaged by straight-line winds and 4 of those residences were majorly damaged.

Figure 5.18 Severe Thunderstorms Observed

Location	Date	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
GULF HARBORS	03/02/2010	Thunderstorm Wind	43 kts. EG	0	0	5.00K	0.00K
JASMINE ESTATES	03/02/2010	Thunderstorm Wind	43 kts. EG	0	0	5.00K	0.00K
ZEPHYRHILLS	03/11/2010	Thunderstorm Wind	52 kts. EG	0	0	80.00K	0.00K
ARIPEKA COMPS SITE	04/25/2010	Thunderstorm Wind	52 kts. EG	0	0	20.00K	0.00K
PORT RICHEY COMPS SITE	04/25/2010	Thunderstorm Wind	54 kts. MG	0	0	0.00K	0.00K
WORTHINGTON GARDENS	05/16/2010	Thunderstorm Wind	48 kts. EG	0	0	10.00K	0.00K

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CRYSTAL SPGS	06/03/2010	Thunderstorm Wind	52 kts. EG	0	0	18.00K	0.00K
RICHLAND	07/14/2010	Thunderstorm Wind	43 kts. EG	0	0	7.00K	0.00K
HUDSON	03/30/2011	Thunderstorm Wind	56 kts. EG	0	0	25.00K	0.00K
MOON LAKE ESTATES	03/30/2011	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
DADE CITY	03/30/2011	Thunderstorm Wind	56 kts. EG	0	0	15.00K	0.00K
ANCLOTE GULF PARKS COMP SITE	03/31/2011	Thunderstorm Wind	53 kts. MG	0	0	0.00K	0.00K
MOON LAKE ESTATES	03/31/2011	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
LAND O LAKES	03/31/2011	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
ARIPEKA	06/01/2011	Thunderstorm Wind	48 kts. EG	0	0	5.00K	0.00K
JESSAMINE	06/06/2011	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
ARIPEKA COMPS SITE	06/06/2012	Thunderstorm Wind	39 kts. EG	0	0	10.00K	0.00K
NEW PORT RICHEY	06/24/2012	Thunderstorm Wind	45 kts. EG	0	0	5.00K	0.00K
WESLEY CHAPEL	07/10/2012	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WESLEY CHAPEL	08/06/2012	Thunderstorm Wind	45 kts. EG	0	0	5.00K	0.00K
ZEPHYRHILLS	08/08/2012	Thunderstorm Wind	45 kts. EG	0	0	2.00K	0.00K
DADE CITY	03/24/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ZEPHYRHILLS	04/14/2013	Thunderstorm Wind	39 kts. EG	0	0	3.00K	0.00K
CRYSTAL SPGS	05/20/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
PASCO CO.	07/03/2013	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
PASCO CO.	07/04/2013	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
PASCO CO.	08/21/2013	Thunderstorm Wind	50 kts. EG	0	0	30.00K	0.00K
DENHAM	05/26/2014	Thunderstorm Wind	52 kts.EG	0	0	0.00K	0.00K
DREXEL	05/29/2014	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
HOLIDAY	06/16/2014	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
SAINT LEO	07/05/2015	Thunderstorm Wind	53 kts. EG	0	0	0.00K	0.00K
DADE CITY	03/24/2016	Thunderstorm Wind	60 kts. EG	0	0	145.00K	0.00K
NEW PORT RICHEY	01/22/2017	Thunderstorm Wind	55 kts. EG	0	0	50.00K	0.00K
HOLIDAY	01/22/2017	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K

WORTHINGTON GARDENS	07/10/2017	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
WESLEY CHAPEL	7/18/2017	Thunderstorm Wind	43 Kts EG	0	0	3.00K	0
ZEPHYRHILLS	6/15/2018	Thunderstorm Wind	40 Kts EG	0	0	2.00K	0
ELFERS	7/23/2018	Thunderstorm Wind	45 Kts EG	0	0	1.00K	0
FIVAY	7/23/2018	Thunderstorm Wind	45 Kts EG	0	0	30.00K	0
LUMBERTON	12/20/2018	Thunderstorm Wind	55 Kts EG	0	0	137.00K	0
	4/19/2019	Strong Wind	43 Kts EG	0	0	5.00K	0
NEW PORT RICHEY	4/19/2019	Thunderstorm Wind	55 Kts EG	0	0	25.00K	0
HOLIDAY	4/19/2019	Thunderstorm Wind	55 Kts EG	0	0	25.00K	0
EHREN	4/19/2019	Thunderstorm Wind	45 Kts EG	0	0	15.00K	0
LAND O LAKES	5/5/2019	Thunderstorm Wind	50 Kts EG	0	0	5.00K	0
DADE CITY	5/5/2019	Thunderstorm Wind	55 Kts EG	0	0	25.00K	0
DENHAM	12/24/2020	Thunderstorm Wind	52 Kts EG	0	0	10.00K	0
DADE CITY	3/3/2021	Thunderstorm Wind	43 Kts EG	0	0	1.00K	0
HOLIDAY	8/14/2021	Thunderstorm Wind	43 Kts EG	0	0	5.00K	0
FIVAY	10/28/2021	Thunderstorm Wind	43 Kts EG	0	0	1.00K	0
GOWERS CORNER	10/28/2021	Thunderstorm Wind	43 Kts EG	0	0	5.00K	0
WORTHINGTON GARDENS	6/4/2023	Thunderstorm Wind	56 Kts EG	0	0	0	0
Totals:				0	1	444.00K	0.00K

The area between Tampa and Orlando, FL have the most cloud to ground lightning strikes in the continental United States. This can be attributed to the daily summertime heating and persistent moisture in the atmosphere. For Pasco County, lightning strikes occur almost daily during the summer months, and which increases the vulnerability and risk of residential structure fires, critical facility fires, and damage to other infrastructure. The figure below lists notable lightning strikes between 2013 and 2023.

Figure 5.19 Lightning Damage Events

Location	Date	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
HOLIDAY	07/16/2014	Lightning		0	0	100.00K	0.00K
ELFERS	06/15/2015	Lightning		0	0	1.00K	0.00K
LAND O LAKES	08/16/2015	Lightning		0	0	350.00K	0.00K
DENHAM	05/04/2016	Lightning		0	0	50.00K	0.00K
HUDSON	08/31/2016	Lightning		0	0	0.00K	0.00K
ST. JOSEPH	07/06/2018	Lightning		0	0	45.00K	0.00

LOYCE	07/22/2018	Lightning	0	0	5.00K	0.00K
PORT RICHEY COMPS SITE	08/25/2018	Lightning	0	0	100.00K	0.00K
DREXEL	07/05/2019	Lightning	0	0	75.00K	0.00K
Totals:			0	0	772.00K	0.00K

Pasco County has experienced over 18 separate hail events of a 1 inch or greater since 2003. Pasco County experiences hail at least annually as strong squalls of severe storms develop during the springtime.

Figure 5.20 Hail Events

Location	Date	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
WESLEY CHAPEL	03/27/2003	Hail	1.75 in.	0	0	50.00K	0.00K
LAND O LAKES	03/27/2003	Hail	1.00 in.	0	0	0.00K	0.00K
ZEPHYRHILLS	06/13/2004	Hail	1.00 in.	0	0	0.00K	0.00K
HOLIDAY	05/04/2005	Hail	1.00 in.	0	0	0.00K	0.00K
ZEPHYRHILLS	08/04/2006	Hail	1.00 in.	0	0	0.00K	0.00K
WESLEY CHAPEL	05/05/2007	Hail	1.00 in.	0	0	0.00K	0.00K
ELFERS	05/14/2009	Hail	1.00 in.	0	0	0.00K	0.00K
PORT RICHEY	06/17/2009	Hail	1.00 in.	0	0	0.00K	0.00K
LAND O LAKES	06/28/2010	Hail	1.00 in.	0	0	0.00K	0.00K
HUDSON	03/24/2013	Hail	1.00 in.	0	0	0.00K	0.00K
FIVAY JCT	03/24/2013	Hail	1.00 in.	0	0	0.00K	0.00K
ARIPEKA	03/24/2013	Hail	1.00 in.	0	0	0.00K	0.00K
WESLEY CHAPEL	05/20/2013	Hail	1.00 in.	0	0	0.00K	0.00K
DREXEL	09/06/2013	Hail	1.00 in.	0	0	0.00K	0.00K
LOYCE	05/25/2014	Hail	1.25 in.	0	0	0.00K	0.00K
FIVAY	07/20/2019	Hail	1.00 in.	0	0	0.00K	0.00K
WORTHINGTON GARDENS	05/28/2020	Hail	1.00 in.	0	0	0.00K	0.00K
ELFERS	05/31/2022	Hail	1.00 in.	0	0	0.00K	0.00K
Totals:				0	0	50.00K	0.00K

Pasco County experienced 21 tornadoes between 2003-2023 as seen in Figure 5.21 below. Historically, tornado threats for Pasco County mainly occur during spring. In November of 2018, a severe weather system formed off the Gulf Coast and pushed through Pasco County creating at least 3 tornados in various locations causing over $600,000 in damage.

Figure 5.21 Tornado Events

Location	Date	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
DADE CITY	06/29/2003	Tornado	F0	0	0	40.00K	0.00K
NEW PORT RICHEY	08/14/2004	Tornado	F0	0	0	0.00K	0.00K
ARIPEKA	09/06/2004	Tornado	F0	0	0	0.00K	0.00K
LAND O LAKES	05/31/2005	Tornado	F1	0	0	80.00K	0.00K
LAND O LAKES	07/20/2006	Tornado	F0	0	0	0.00K	0.00K
PASCO	12/25/2006	Tornado	F2	0	2	3.500M	0.00K
LAND O LAKES	12/16/2007	Tornado	EF1	0	0	1.000M	0.00K

HOLIDAY	04/14/2009	Tornado	EF1	0	0	240.00K	0.00K
WESLEY CHAPEL	04/14/2009	Tornado	EF0	0	0	30.00K	0.00K
ZEPHYR HILLS MUNI AR	07/07/2011	Tornado	EF0	0	0	20.00K	0.00K
NEW PORT RICHEY	06/24/2012	Tornado	EF1	0	0	650.00K	0.00K
JASMINE ESTATES	04/07/2016	Tornado	EF0	0	0	100.00K	0.00K
NEW PORT RICHEY	11/02/2018	Tornado	EF1	0	0	500.00K	0.00K
GOWERS CORNER	11/02/2018	Tornado	EF1	0	0	27.00K	0.00K
LAND O LAKES	11/02/2018	Tornado	EF1	0	0	100.00K	0.00K
NEW PORT RICHEY	12/09/2018	Tornado	EF1	0	0	50.00K	0.00K
GULF PINE	11/30/2020	Tornado	EF0	0	0	1.00K	0.00K
ODESSA	08/10/2021	Tornado	EF0	0	0	10.00k	0.00K
ELFERS	05/31/2022	Tornado	EF0	0	0	20.00K	0.00K
LOYCE	12/15/2022	Tornado	EF1	0	0	50.000K	0.00K
NEW PORT RICHEY	10/12/2023	Tornado	EF0	0	0	2.00k	0.00k
Totals:				0	2	6.41M	0.00K

The strongest tornadoes move through Pasco County during the late winter and spring season, because the weather pattern is shifted toward the Gulf which creates a more favorable atmospheric dynamic for tornado formation. It is during this time; weather dynamics support a higher chance of multi-celled thunderstorms or supercells. Summertime tornadoes cannot be ruled out, but they tend to weaker in intensity and often spawned by tropical cyclones.

Probability

Based on the historical trend over the past five years, Pasco County can expect to experience thunderstorms daily and 1.6 chance of receiving a Severe Thunderstorm Warning based on wind gusts of 58mph or greater. The most likely timeframe of the thunderstorms meeting severe weather criteria based on climatology is between March and August[23]. Furthermore, Pasco County should expect at least one tornado or waterspout touchdown within the marine and land-based boundaries each year.

Impacts

Severe storms can cause tornados, hail, strong winds, lightning and heavy rains. These effects can cause a wide range of impacts to locations impacted. Tornados can cause severe damage to homes and other structures, and are especially damaging to mobile homes. These impacts can range from damage to roofs to loss of entire structures. Similarly, roads can be damaged by heavy rain, hail and tornados, causing loss of service and potentially isolated communities. Heavy winds can cause damage to power infrastructure, which can lead to lasting power outages and more heavily impact populations that are power dependent such as the elderly and people with special medical needs.

These impacts become more likely as the built environment continues to grow. As more of the community is developed, more structures, people and infrastructure become at risk to be damaged by severe storms. As mentioned in the flooding and tropical cyclone sections, changes in weather patterns bring a higher likelihood of severe weather in the future, thus increasing the potential impacts as time goes on.

[23] https://www.spc.noaa.gov/new/SVRclimo/climo.php?parm=anySvr

Vulnerability

The frequency, unpredictability, and widespread nature of thunderstorms in the Tampa Bay Area pose an overall risk for Pasco County. All unincorporated and incorporated areas of the County are subject to thunderstorms and potential damages or impacts.

Approximately 45% of the residential structures countywide were built prior to the year 2000. These homes were built prior to the required enhanced Florida Building Code at the turn of the century. In addition to the residential structures, mobile homes are particularly vulnerable to the impacts of severe weather systems. As mentioned earlier in the plan, Pasco County is home to almost 55,000 mobile homes. The majority of the mobile home units are on the eastern side of the county with the highest concentration near Zephyrhills.

Although all populations of the county are at risk from severe storms, those populations that already vulnerable are more likely to be disproportionately impacted. Elderly, children, people with disabilities and those that are socioeconomically disadvantaged have an increased vulnerability to the impacts of these storms. The impacts on most of these populations are similar to those outlined in the Tropical Cyclone section of this LMS. However, because economically disadvantaged populations are more likely to live in older (pre 1994) housing and less likely to have available resources to help with repairs, they are more likely to have long-lasting negative impacts from severe storms.

The Florida SHMP lists a federal risk for both tornadoes and severe storms as high. In relation to other hazards, severe storms have increased potential to happen multiple times in a single year. A stalled front could bring severe weather for days on end to portions of the community, therefore even if a limited location is impacted by a single event, the entire community carries ongoing risk. Because of the potential for high damage that exists in the entire county, Pasco County, including all jurisdictions, has been assessed the following vulnerability for severe storms:

- Location – Limited
- Impacts – Severe
- Probability – High
- Overall Vulnerability - High

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Source: Florida Forest Service; Silver Palm Wildfire (2017)

Description

With the exception of fires triggered by lightning strikes, which are usually mitigated in their impact by the precipitation of an accompanying thunderstorm, wildfires tend to be the culmination of hot, dry weather patterns that merely create the conditions for their occurrence. Once those conditions and the buildup of dry fuel to feed a fire are in place, the occurrence of a conflagration depends simply on the right spark in the right place and the disaster is set in motion. Wildfires often begin unnoticed. The three factors contributing directly to the behavior of wildfires are topography, fuel and weather. Wildfires spread quickly igniting brush, trees and homes. Every year, thousands of acres of wildland and many homes are destroyed by fires that can erupt at any time of the year from a variety of causes including arson, lightning and debris burning.

There are four types of forest fires:

1. **Surface:** A surface fire is the most common type and burns along the floor of the forest, moving slowly while killing or damaging trees.
2. **Ground**: Ground fires (muck fires) are usually started by carelessness. They burn on or below the forest floor. These fires are hard to detect, and even harder to extinguish.
3. **Crown:** Crown fires are spread rapidly by the wind and move fastest of all types of fires by jumping along the tops of trees.
4. **Wildland-Urban Interface**: WUI fires occur in a geographical area where structures and other human development meet or intermingle with wild lands or vegetative fuels.

In the wildland, fires have historically performed an important natural role in the cycle of the forest growth by naturally clearing underbrush to allow the regeneration of certain plant species at the expense of others. When assisted by humans, these fires are referred to as prescribed burns.

Location

The Southern Wildfire Risk Assessment Summary Report (SWRA) from the Southern Group of State Foresters was provided by Florida Forest Service and is included as Appendix F to this plan. The SWRA identifies locations of risk to wildfire and was used to determine probable extents of future fires.

The goal of the Southern Wildfire Risk Assessment (SWRA) project was to provide a consistent, comparable set of scientific results to be used as a foundation for wildfire mitigation and prevention planning in the Southern states. Results of the SWRA can be used to help prioritize areas in the state where tactical analyses, community interaction and education, or mitigation treatments might be necessary to reduce risk from wildfires. In addition, the information provided in the assessment can be used to support the following key priorities:

- Identify areas that are most prone to wildfire
- Identify areas that may require additional tactical planning, specifically related to mitigation projects and Community Wildfire Protection Planning
- Provide the information necessary to justify resource, budget and funding requests
- Allow agencies to work together to better define priorities and improve emergency response, particularly across jurisdictional boundaries
- Define wildland communities and identify the risk to those communities
- Increase communication with local residents and the public to address community priorities and needs
- Plan for response and suppression resource needs
- Plan and prioritize hazardous fuel treatment programs

The SWRA information is then incorporated into the Wildland Urban Interface (WUI) Risk Index. This data layer is a rating of the potential impact of a wildfire on people and their homes. They key input, WUI, reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Figure 5.22 shows the WUI areas for Pasco County taken from the 2024 report.

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Figure 5.22 Wildland Urban Interface

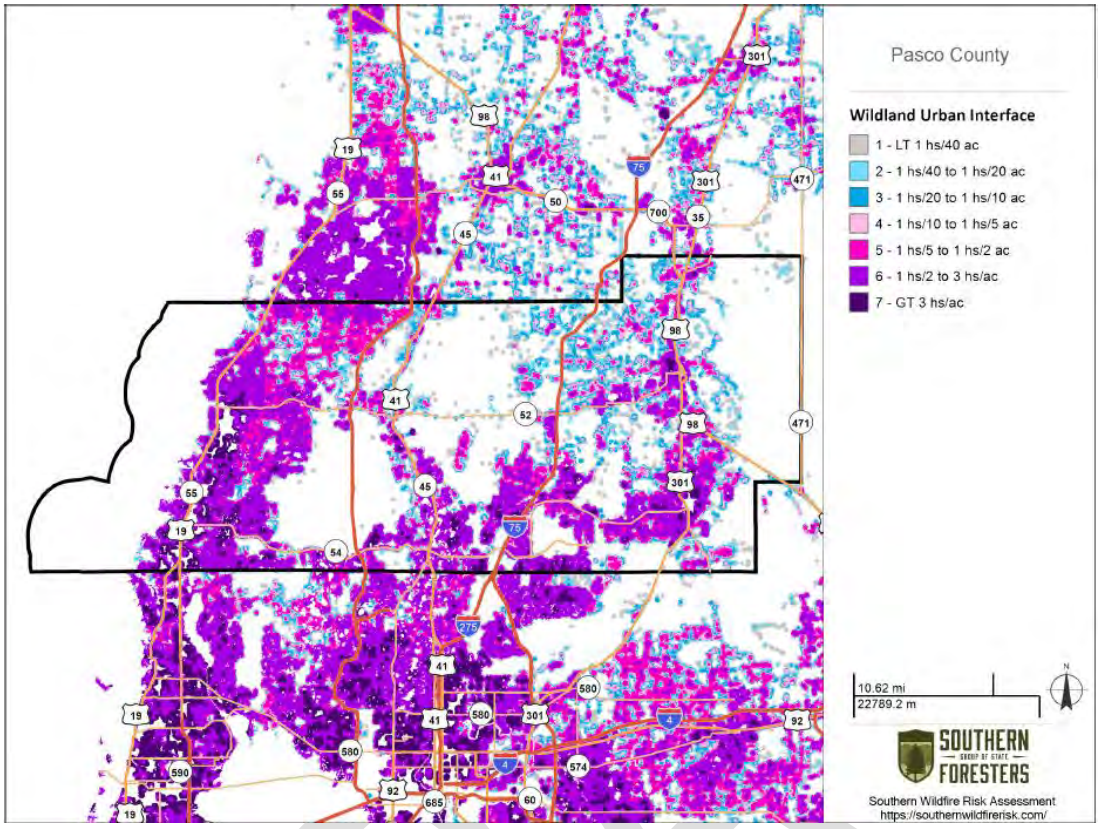

Figure 5.23 shows the overall WUI Risk Layer created by the report.

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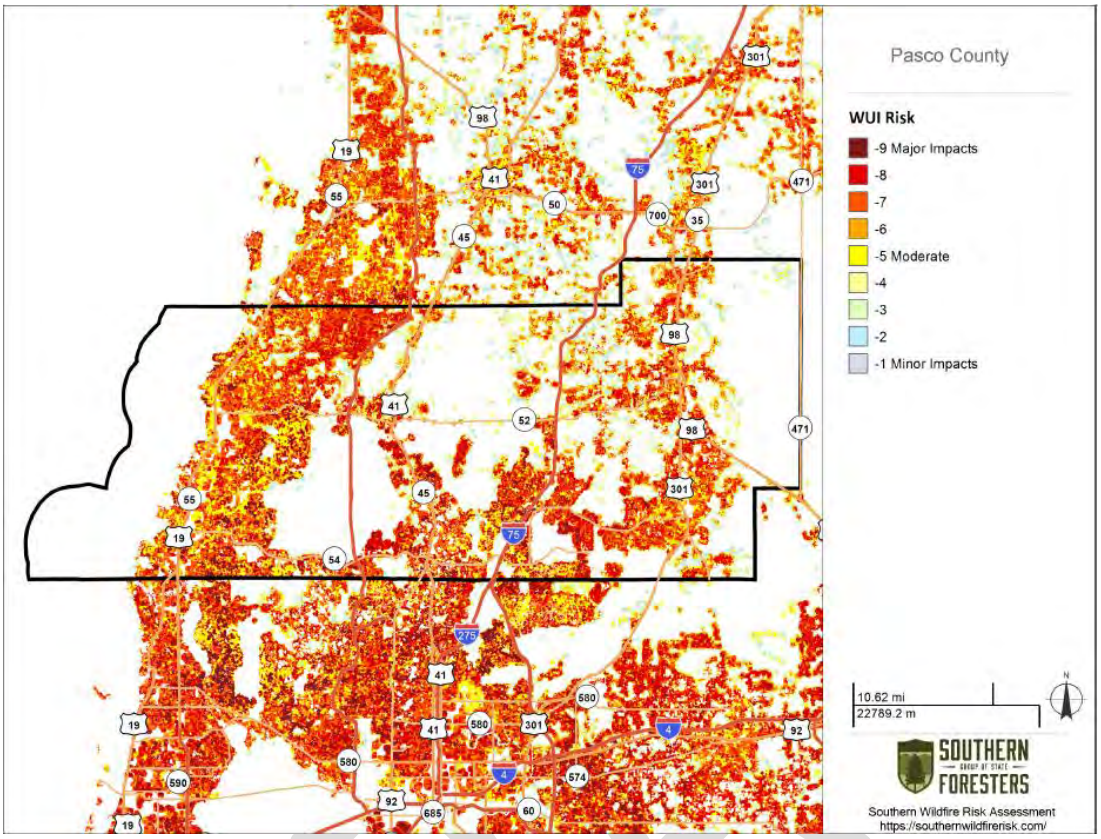
Figure 5.23 WUI Risk



WUI is a key indicator of the potential location of future wildfires. As Pasco County continues to develop, more homes and businesses are likely to be close to wildland fuels that are at risk of burning. As the above image shows, areas in West Central Pasco County between Little Road and Moon Lake Road; Central Pasco along State Road 54, US 41 and I-75; and east Pasco along Wesley Chapel Boulevard are all expected to have major impacts.

Extent

In Pasco County, Wildfires can occur at all times of the year. The size and magnitude of wildfires are determined by the acreage burned. The severity of the magnitude is determined by exposures. An exposure is a structure or other built resource that is directly threatened by the fire and may burn if the fire is not contained. Single-family homes and commercial structures are the most likely types of structures to be impacted by wildfires.

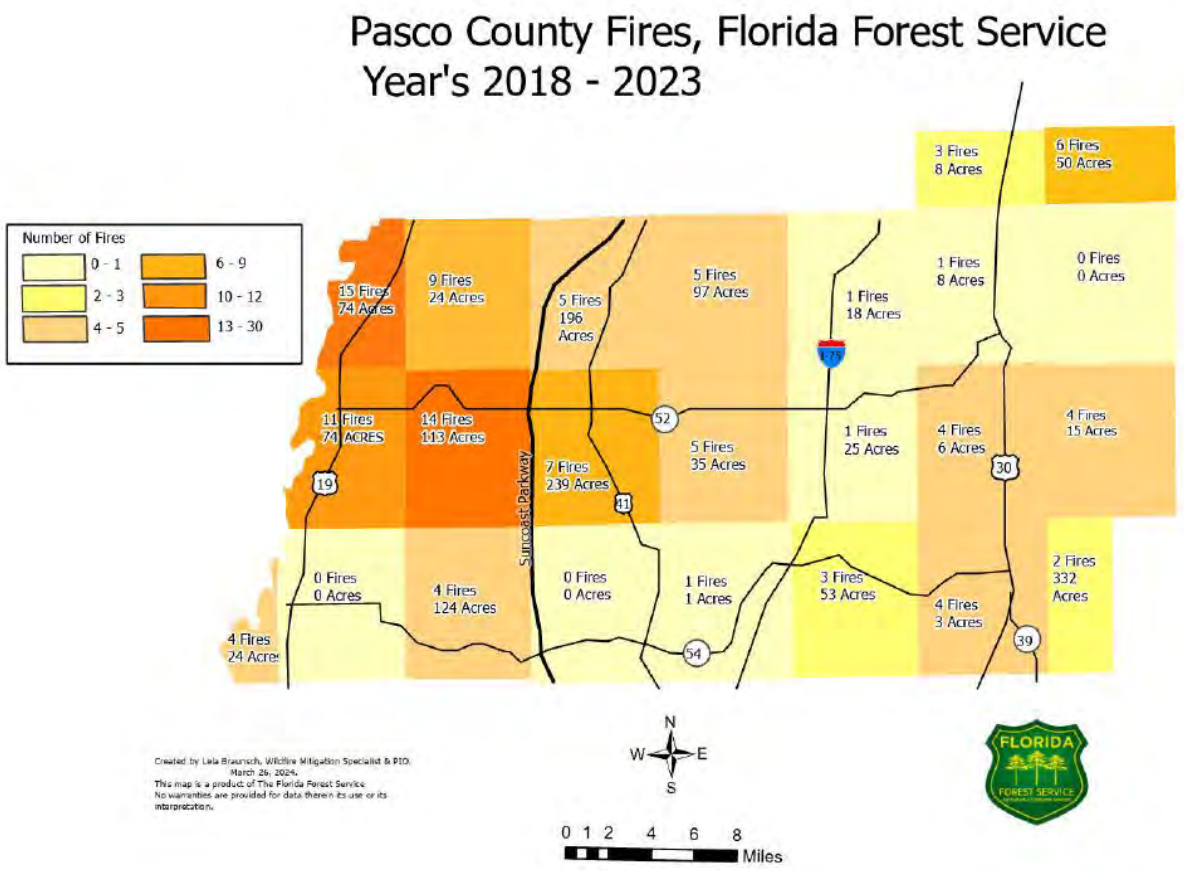
Wildfire activity can vary from year to year. Increased available fuels, dryer weather patterns and lack of mitigation efforts can all increase the severity of wildfires.

As shown by the WUI maps above, each jurisdiction has increased risk to wildfire due to developments abutting wildland areas.

Historical Occurrences

Between 2018-2023 Pasco County experienced far less wildfires than the previous planning cycle. During this time 1,519 acres were burned during a total of 109 fires. The areas most impacted by wildfires during the planning cycle were Hudson, New Port Richey, Port Richey and Moon Lake. Figure 5.24 shows the breakdown of wildfires by area.

Figure 5.24 Fires Observed



According to the Florida Forest Service, only 2 structures were exposed during this period and none were burned. The overall impacts during this planning period were much less severe than the previous period. Between 2013-2017 188 wildfires burned 5,604 acres.

The decrease in wildfires between planning periods could be explained by increased development restricting fuels and changing weather patterns.

Probability

Due to Pasco County's large area of undeveloped land, the increase development throughout the county, and historical weather conditions, it is likely that Pasco County experience wildfires on an annual basis. Pasco County Fire Rescue and Emergency Communications data show that conditions exist for at least five wildland fires per year in the county.

Impacts

Wildfires impact populations, natural resources and the built environment of areas they impact. Populations are impacted by wildfires in several ways. They could be directly impacted, by being evacuated from their homes, experiencing damage to their homes, or even injured by exposure and smoke inhalation. Populations that are already vulnerable such as the elderly, children and people experiencing homelessness are likely to experience impacts from wildfires at a disproportionate rate. Populations with existing health problems can have their health decline rapidly as a result of smoke and ash in the air.

There are also secondary impacts to populations. Impacted business or agricultural industry could result in loss of income or employment. Damage to roads could result in a limited availability to resources depending on location.

Wildfires have a large impact on natural resources. As they burn, wildfires consume fuel that can leave lasting impacts on an area. Loss of forested areas, areas used for recreation by the public, and loss of natural wildlife habitat all have lasting impacts on the natural environment for all jurisdictions.

Critical infrastructures such as roads, bridges, utility poles and wires, communications assets and public buildings are all in locations where high probability of fires exists. As conditions change in the future, and the built environment continues to grow and get closer to existing wildland areas, the potential future impacts of wildfires grow. More structures, including homes, businesses, roads and other infrastructure, become at risk for fires to jump from natural environments to built environments and cause significant damage and safety risks.

As environmental conditions continue to change in the future, the favorable conditions for wildfires are expected to increase. According to the Florida SHMP, the frequency of extreme heat or drought events is expected to increase in the future. "As these transitions occur, wildfire occurrences and severity could increase with the introduction of more flammable vegetation types or decrease with the introduction of more fire-resistant species. Florida has weather patterns that lead to both dry and wet periods each year. Climate change may cause one or the other, or both to increase in occurrence and magnitude"[24].

Vulnerability

Because of the wide area of possible locations for wildfire and the amount of potential exposure to people, nature and infrastructure Pasco County and all participating jurisdictions are at either a high risk from the hazard.

As the maps in the location section show, some areas of Unincorporated Pasco County, and areas in each of the municipal jurisdictions, have a slightly higher vulnerability than the other unincorporated areas included in the plan. Therefore, these jurisdictions have been assessed vulnerability to wildfire as follows:

- Location – Significant
- Impacts – Severe

[24] https://flshmp-floridadisaster.hub.arcgis.com/pages/wildfire#Climate_Change

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- Probability – Moderate
- Overall Vulnerability – High

Despite this difference, all areas and participants are encouraged to consider long-term mitigation initiatives to reduce the impacts of wildfire in the future. Florida Forest Service, as an example, conducts and assists with prescribed burns to reduce existing underbrush that may fuel future fires. During this planning period, Florida Forest Service has conducted 3 prescribed burns, reducing underbrush from over 500 acres throughout the county.

Other mitigation initiatives include public awareness and education to reduce hazardous actions that may cause fires during periods of drought.

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DROUGHT/EXTREME HEAT

Drought

A drought is defined by National Oceanic and Atmospheric Administration (NOAA) as a deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area. The severity of the drought depends on the degree of moisture deficiency, the duration, and the size of the affected area[25].

There are four ways to define drought[26]:

- Meteorological: Occurs when dry weather patterns dominate an area and can begin and end rapidly.
- Hydrological: Occurs when low water supply becomes evident, especially in streams, reservoirs, and groundwater levels, usually after many months of meteorological drought and takes time to develop and then recover.
- Agricultural: Occurs when soil moisture is insufficient and results in the lack of crop growth and production, which is primarily concerned with short-term drought situations.
- Socioeconomic: Occurs when the demand for an economic good exceeds supply as a result of a weather-related deficit in water supply.

Pasco County uses three indices, Keetch-Byram Drought Index (KBDI), Palmer Drought Severity Index (PDSI), and the U.S. Drought Monitor (USDM) to determine drought conditions throughout the County. KBDI is Pasco County's primary method of drought tracking, PDSI is widely used operationally through NOAA and used by climatologists to standardize global long-term drought analysis, and the USDM is used for updates and tracking in local documents such as this risk assessment.

KBDI is primarily used by the Florida Fire Service (FFS) to determine forest fire potential. KBDI reflects water gain or loss within soil layers by analyzing precipitation and soil moisture in a water budget model.

The PDSI is a standardized index based on a simplified soil water balance and estimates relative soil moisture conditions. The magnitude of PDSI indicates the severity of the departure from normal conditions. This data is a planning tool to assist in water conservation measures for local areas. PDSI measures the abnormality of recent weather for a region, and it places current conditions in historical perspective.

The National Drought Mitigation Center (NDMC) developed the USDM with NOAA and the U.S. Department of Agricultural (USDA) as a drought-monitoring tool that consolidates and centralizes drought monitoring activities. The USDM maps are adjusted manually to reflect real-world conditions

[25] https://www.ncdc.noaa.gov/monitoring-references/dyk/drought-definition

[26] Cybersecurity and Infrastructure Security Agency Drought and Infrastructure Planning Guide

as reported by numerous experts throughout the country and released weekly. Drought categories show experts' assessments of conditions related to dryness and drought including observations of how much water is available in streams, lakes, and soils compared to usual for the same time of year[27].

Extreme Heat

Extreme heat, which can often lead to a drought, is an extended interval of abnormally hot and unusually humid weather. To be defined as extreme heat, heat index values of more than 100 degrees need to be experienced or expected for at least two consecutive days. During the summer season, in warm climates, extreme heat can occur when an area of high pressure containing little or no rain or clouds, heats the air and ground to excess. When the high-pressure area remains static, it results in a persistent heat wave. Extreme heat has physical, psychological, and environmental impact. Each National Weather Service office throughout the County can issue Excessive Heat Warnings, Excessive Heat Watches, Heat Advisory, and Excessive Heat Outlooks to help prevent heat related illness and death[28].

Location

Given Florida's geographic location and historical weather patterns, the probability of hot temperatures is high across much of the state, including Pasco County. Areas with limited tree coverage are particularly vulnerable. Additionally, areas of Florida closer to the center of the state are more likely to have higher temperatures for sustained periods. Therefore, the jurisdictions of Dade City and Zephyrhills are more likely to be impacted by sustained periods of high temperatures and drought than the other jurisdictions in the planning area.

Extent

Drought is often categorized by using the Keetch-Byram Drought Index (KBDI). The KBDI value increased for each day in proportion to the daily high temperature and decreases when it rains. The scale ranges from 0 to 800, where zero is no moisture deficit.

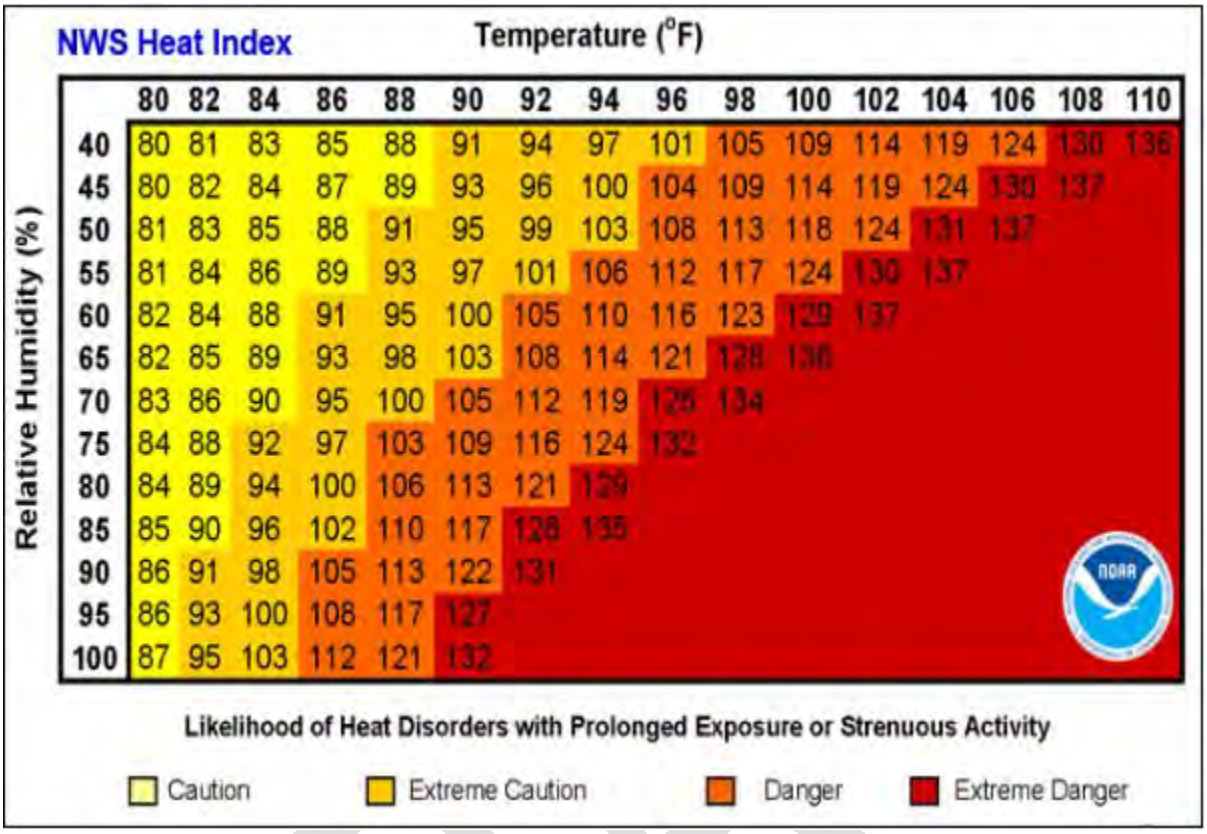
For extreme heat, the NWS uses the heat index to categorize temperatures according to their impacts on humans. A Heat Advisory is issued when heat indices are expected to reach at least 100 degrees[29]. The heat index values must be reached for at least two hours; typically, a single day event.

[27] https://www.drought.gov/data-maps-tools/us-drought-monitor

[28] https://www.weather.gov/safety/heat-ww

[29] National Weather Service: Excessive Heat Conditions

Figure 5.25 NWS Heat Index



Historical Occurrences

According to the Florida Climate Center[30], Florida has experienced at least one severe and widespread drought somewhere within Florida since 1900. Locally, Pasco County has experienced several prolonged dry periods in the past twenty years.

30 https://climatecenter.fsu.edu/topics/drought#:~:text=Historic%20Drought&text=Droughts%20that%20began%20in%201906,2006%20were%20the%20most%20severe.

Figure 5.26 Drought Occurrences

Date	Description
1949-1957	One of the state's most impactful drought, lasting 9 years. "In 1955, statewide runoff was estimated to be less than half the annual average of 14 in., and wildfires burned more than 300,000 acres of timberland in northwest and northeast Florida in addition to thousands of acres of soil in the Everglades[31]"
1970-1977	Most severe in the southwest region and the southern part of the northeast region of Florida. Rainfall totals in south Florida ranged from 37 to 80 percent below normal.
1995-2000	Freshwater withdrawals increased 13 percent; several hundred new sinkholes developed across Florida. More than 25,000 wildfires burned over 1.5 million acres across Florida, with the most devastating fire occurring in April 1999 and burning about 173,000 acres.
1998-2002	Considered the most severe drought in the state of Florida. "Record-setting instantaneous low streamflow occurred at many sites during the 1998-2002 drought, including the Withlacoochee River stream gage at Trilby, which recorded zero flow on June 10-11, 2000—the only time during its period of continuous record (1928-2004)[32]"
1998 – 2008	Resulted in many failed wells and ecological impacts that emphasized the environmental consequences of drought, which included loss in plant growth, increase in fire and insect outbreaks. In addition to the ecological impacts of past occurrences, the local economy was impacted due to a decrease in supply of raw water availability, leading to business closures.
2001 - 2002	The Tampa Bay area, along with the State of Florida and much of the Southeast United States, felt the impacts of a severe dry spell in 2001/2002. The below normal rains caused $100 million in crop damages, causing Florida's citrus crop was 6% less than normal because of a two-year drought. Lawns and landscape that could only be watered one day a week for four hours to comply with regional watering restrictions.
2006-2007	Considered a one in 25-year drought that impacted most of the state, including Pasco County.
2010-2012	Drought affected most of the state, but more severe impacts in the northern central region.
2016-2017	Drought conditions developed in late 2016 through mid-2017 resulting in several wildfires across the state.
2023	Lingering drought caused, more than 1,000 wildfires in Florida have burned over 33,000 acres

Droughts occur when a long period passes without substantial rainfall, Pasco County typically experiences a dry season from October through May, and then rainfall increases June through September.

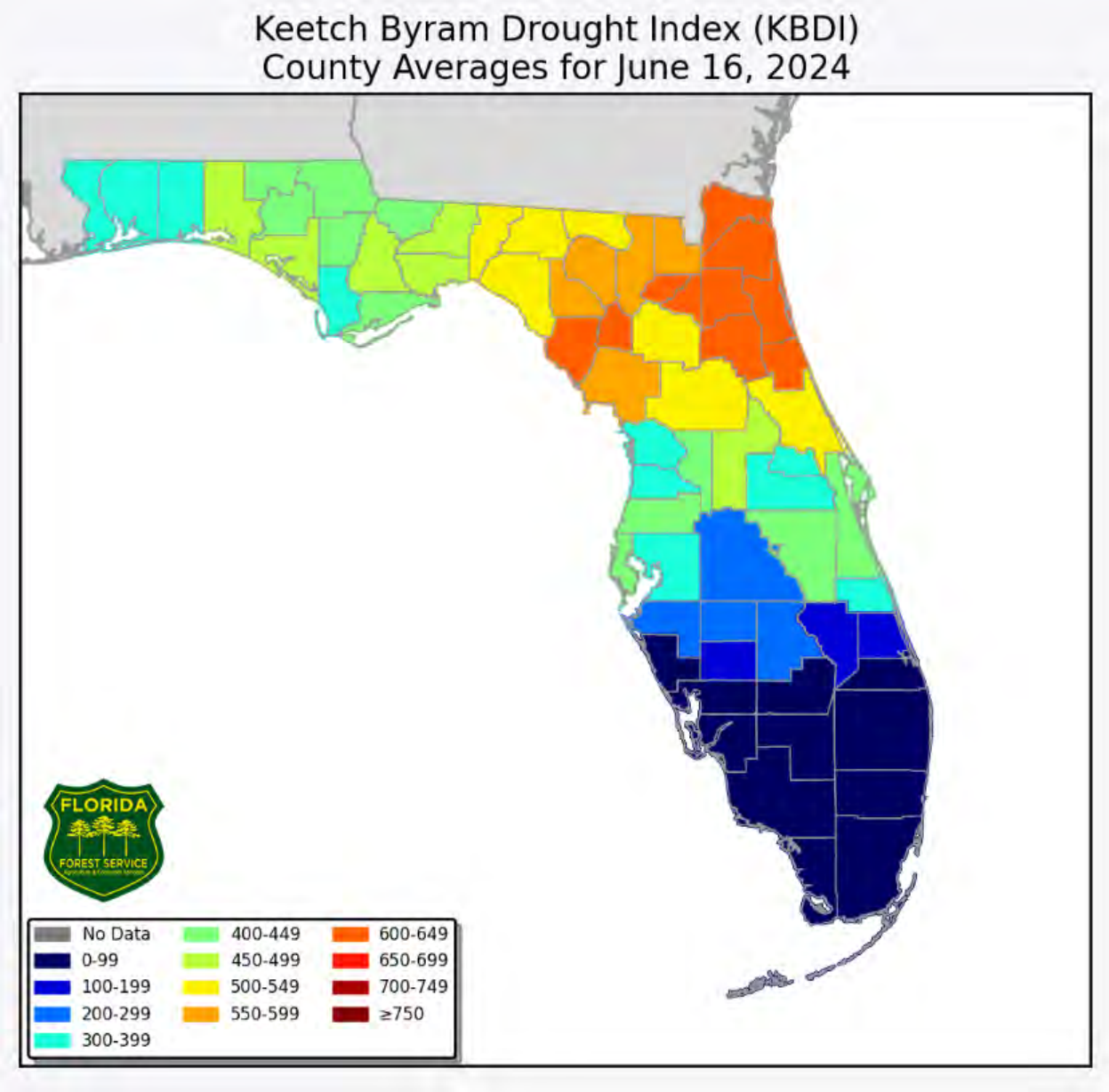
Pasco County experienced a yearly average of 60 inches, which must sustain the region through the dry season. While the average rainfall may seem high in comparison to areas of the state experiencing drier climates, this amount does not go far in serving the county over 365 days, some of which include days with scorched land that is unable to readily absorb the falling water.

On June 16, 2024, Pasco County Emergency Management produced current snapshots of the KBDI summary for the local area as it relates to a short term forecast for dryness. Figure 5.27 shows the visual representation of the average KBDI. The reports show Pasco County is not currently in drought.

[31] https://pubs.usgs.gov/circ/2006/1295/pdf/circ1295.pdf

[32] https://pubs.usgs.gov/circ/2006/1295/pdf/circ1295.pdf

Figure 5.27 KBDI Snapshot



During a heat advisory, proper actions to take include drinking plenty of fluids, stay out of the sun, and in an air-conditioned place. Figure 5.28 represents a record of Heat Advisories released between 2019 and 2022.

Figure 5.28 Heat Advisories

Issued	Phenomena	Type	Zone
6/26/2019	Heat	Advisory	Inland Pasco County
6/26/2019	Heat	Advisory	Coastal Pasco County
7/3/2019	Heat	Advisory	Inland Pasco County
7/3/2019	Heat	Advisory	Coastal Pasco County
7/4/2019	Heat	Advisory	Inland Pasco County
7/4/2019	Heat	Advisory	Coastal Pasco County
8/10/2019	Heat	Advisory	Inland Pasco County
9/5/2019	Heat	Advisory	Inland Pasco County
9/5/2019	Heat	Advisory	Coastal Pasco County
9/6/2019	Heat	Advisory	Inland Pasco County
9/6/2019	Heat	Advisory	Coastal Pasco County
6/25/2020	Heat	Advisory	Inland Pasco County
6/25/2020	Heat	Advisory	Coastal Pasco County
6/26/2020	Heat	Advisory	Inland Pasco County
6/26/2020	Heat	Advisory	Coastal Pasco County
6/27/2020	Heat	Advisory	Inland Pasco County
6/27/2020	Heat	Advisory	Coastal Pasco County
7/9/2020	Heat	Advisory	Inland Pasco County
7/9/2020	Heat	Advisory	Coastal Pasco County
7/11/2020	Heat	Advisory	Inland Pasco County

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7/11/2020	Heat	Advisory	Coastal Pasco County
7/31/2020	Heat	Advisory	Inland Pasco County
7/31/2020	Heat	Advisory	Coastal Pasco County
8/24/2020	Heat	Advisory	Inland Pasco County
8/24/2020	Heat	Advisory	Coastal Pasco County
8/25/2020	Heat	Advisory	Inland Pasco County
8/25/2020	Heat	Advisory	Coastal Pasco County
8/26/2020	Heat	Advisory	Inland Pasco County
8/26/2020	Heat	Advisory	Coastal Pasco County
9/3/2020	Heat	Advisory	Inland Pasco County
9/3/2020	Heat	Advisory	Coastal Pasco County
9/4/2020	Heat	Advisory	Inland Pasco County
9/4/2020	Heat	Advisory	Coastal Pasco County
8/19/2021	Heat	Advisory	Inland Pasco County
6/16/2022	Heat	Advisory	Inland Pasco County
6/16/2022	Heat	Advisory	Coastal Pasco County
6/17/2022	Heat	Advisory	Inland Pasco County
6/17/2022	Heat	Advisory	Coastal Pasco County
6/18/2022	Heat	Advisory	Inland Pasco County
6/18/2022	Heat	Advisory	Coastal Pasco County
6/19/2022	Heat	Advisory	Inland Pasco County

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6/19/2022	Heat	Advisory	Coastal Pasco County
6/24/2022	Heat	Advisory	Inland Pasco County

As shown in the table above, inland Pasco County experiences heat advisories on more days than coastal Pasco County. This further supports the inland jurisdictions having more risk to their communities than the coastal communities.

While drought is often averaged at the county level, inland jurisdictions, particularly Dade City and Zephyrhills are more likely to experience drought, as their average temperatures are higher for longer periods.

Probability

The probability of the occurrence of a drought is high because of Pasco County's variable water trends over long periods of time and the extreme temperatures the region endures annually. Figure 5.29 captures the annual rainfall from 2017 to 2022 for Pasco County, provided by The Southwest Florida Water Management District.

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Figure 5.29 Monthly Rainfall

2017	Monthly Rainfall	2018	Monthly Rainfall
January	2.07		4.28
February	1.72		1.12
March	0.67		1.15
April	0.28		4.11
May	4.03		9.52
June	10.27		6.79
July	7.81		10.83
August	10.77		8.67
September	10.86		4.15
October	1.78		1.37
November	0.93		1.57
December	0.92		8.63
2019		2020	
January	3.92		0.89
February	1.48		2.14
March	0.95		0.05
April	3.07		5.44
May	2.54		2.44
June	10.5		6.79
July	9.64		7.78
August	10.1		9.79
September	1.89		7.33
October	5.98		1.42
November	2.13		4.48
December	4.17		1.67
2021		2022	
January	0.39		1.56
February	2.54		0.7
March	1.04		5.02
April	3.65		4.84
May	0.37		2.21
June	9.06		4.74
July	11.42		8.84
August	8		8.28
September	6.99		9.44
October	3.2		0.77
November	3.35		5.14
December	1.01		2.87

During months in which temperatures are high and rainfall is low, the region can expect to experience drought conditions. The probability of a heat wave, on the other hand, is low, since one has not been measured here during the history in which records have been maintained. Neither drought nor heat wave appears on the list of NCEI-documented events appearing in Appendix E.

As recent as April 2020, Pasco County has experienced severe drought conditions. The US Drought Monitor reports, shown in Figure 5.30 and, Figure 5.31 provide a more detailed account of historical drought conditions data.

Figure 5.30 April 14, 2020 Drought Monitor

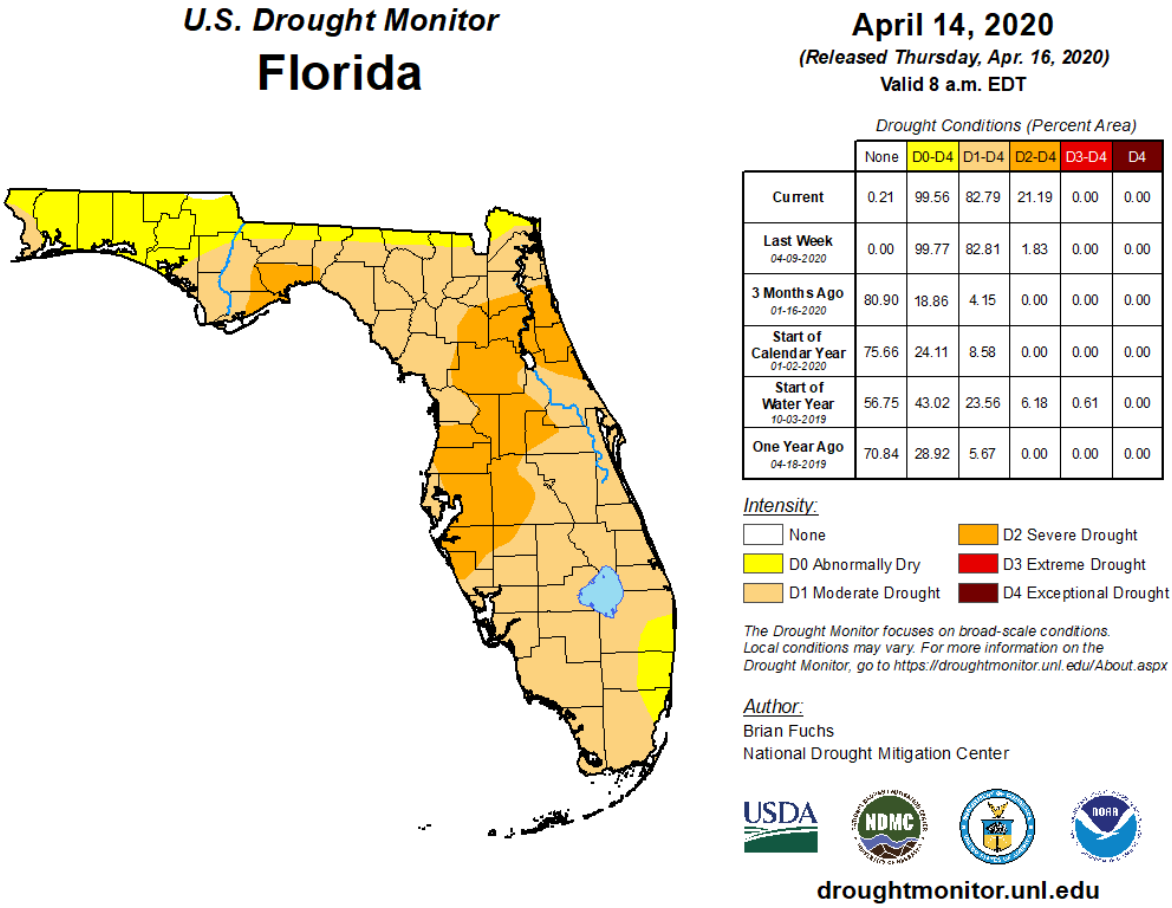
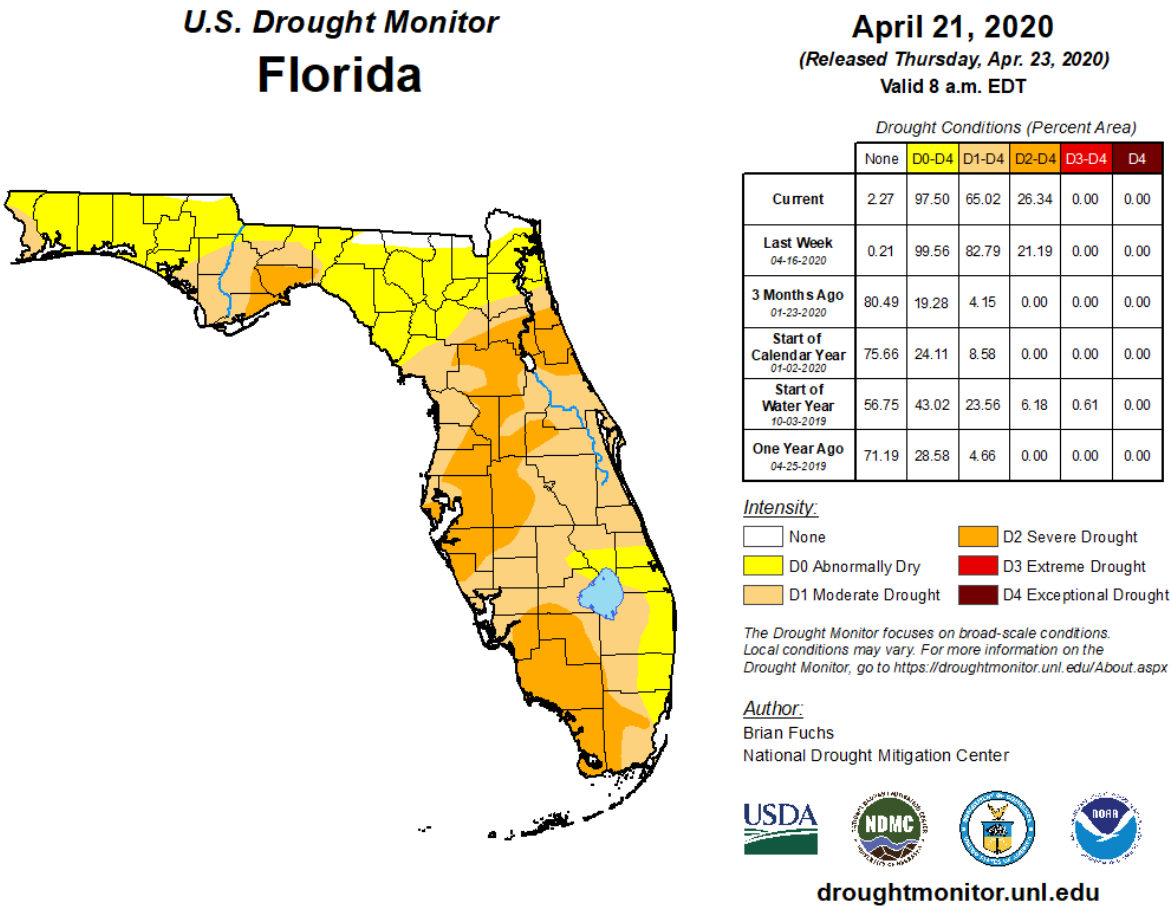


Figure 5.31 April 21, 2020 Drought Monitor



On April 28th, 2020, the District's Governing Board voted to declare a Phase I Water Shortage for the District's central and southern regions, which including Pasco County. The primary purpose for a Phase I water shortage is to alert the public that watering restrictions could be forthcoming. The order also requires local utilities to review and implement procedures for enforcing year-round water conservation measures and water shortage restrictions, including reporting enforcement activity to the District.

A Phase I water shortage order does not change allowable watering schedules; however, it does prohibit "wasteful and unnecessary" water use. The District considers both natural water resource conditions and the viability of public water supplies when deciding to declare a water shortage order – that means, restricting the amount of water the public can use.

Impacts

Direct hazards resulting from drought that threaten Pasco County include a decreased supply and increased demand of water, resulting in competition between water dependent sectors and community needs. There also may be an increase in concentration levels of contaminants, pollutants, sediments, and solid waste as raw water volumes diminish.

An additional impact from drought conditions may be to the vegetation, causing decay of tree root systems. In the event of high wind speeds, the unstable trees are a hazard. While the extent of danger from falling trees is unknown, the risk of falling trees include damage to life and property. The extent of social effects of extreme drought and heat waves includes brown outs, potential loss of life in the elderly and other at-risk populations, and possible water restrictions.

While there is a considerable agricultural community within Pasco County, there has been a decline in the total amount of agricultural acreage in Pasco County. This decline can be attributed to the purchase of land to increase both public infrastructure and residential housing to maintain quality service and provide resources to a growing population. Although there is a decrease in agricultural farms in Pasco County, the local economy is still dependent on local farming. The direct physical effects of drought typically include poor crops and foliage, increased fire danger, decreased water in the soil, decreased water in streams and reservoirs and less water available for livestock and wildlife. To incentivize Pasco County residents who own property suited to raise cattle, harvest hay, plant citrus groves, and cultivate tree farms, there are agricultural exemptions in place.

As Pasco County experiences population growth, the demand of water consumption will increase, straining the local water supply. Increased water consumption driven by development in the county could potentially increase the risk of a hydrological drought to become a hazard of much greater significance. To date there have been no measurable human or significant economic impacts from droughts in Pasco County.

The potential pressure put on the local water supply, combined with extreme heat or heatwaves, may result in a large incident. The effects of a prolonged heat wave on the human population include physical reactions such as: hyperthermia, heat edema, heat rash, heat cramps and dehydration. In addition to physical ailments, there are psychological and sociological effects resulting from stress that manifest in degraded performance and overall increase in violent crime.

The Florida Environmental Public Health Tracking (EPHT) [33] partners with the US Centers for Disease Control and Prevention collecting Heat-Related Hospitalizations and Heat-Related Deaths on an annual basis. According to the data collected by EPHT, Pasco County experienced 142 heat-related hospitalizations during summer months and zero (0) heat-related deaths between 2018 and 2021. The breakdown of heat-related hospitalizations each year is as followed: 41 in 2018; 41 in 2019; 29 in 2020; and 31 in 2021[34]. Heat-related illnesses occur when the body is unable to maintain a normal temperature and there are a range of symptoms depending on the severity of heat illness, such as mild dehydration requiring proper medical attention or sometimes as severe as heat stroke.

[33] Florida Environmental Public Health Tracking

[34] FDOH Heat-Related Events

Secondary hazards include land subsidence exacerbation, power grid failures, wildfires, and flooding[35]:

- Less moisture in the soil reduces the stability, contributing to soil erosion that may result in increased risk of damage to infrastructure due to shifts in soil/foundation, causing roads to buckle, water pipes to burst, and power transformers to explode
- "Prolonged periods of extreme heat can lead to power outages as heavy demands for air conditioning strain the power grid (EPA, 2022)[36]" resulting in region-wide brown outs or complete black outs
- Due to the reduced moisture in vegetation, air, and ground, vegetation becomes less resilient to combustion, thus enabling fire to spread more quickly
- Harden topsoil, soil erosion, and reduced moisture in vegetation and ground can increase risk of flooding

As developmental and environmental conditions change in the future, the likelihood for both drought and extreme heat are likely to rise. Changes in frequency of rain days, reductions in tree canopy, and proliferation of non-permeable surfaces all compound with higher overall atmospheric temperatures to create conditions where risk to individuals and infrastructure increases over time.

Vulnerability

There is a significant amount of acreage in Pasco County designated for conservation, public lands, and agricultural land use. When this acreage becomes parched during a drought, the area becomes vulnerable to wildfires. Due to the increase of development and decrease in agricultural land use, the economic impact from these events has not been high in recent events. Drought can strike anywhere in Pasco County; therefore, all the county critical facilities are equally vulnerable and at risk. However, drought usually does not cause direct structural damage to critical facilities. Therefore, the vulnerability is considered low due to the number of people impacted by a drought being not overly significant and compared to other events the economic costs of a drought event in Pasco County are low.

Pasco County has experienced a population boom, increasing the vulnerability of people, specifically underserved communities, and socially vulnerable populations. The NWS Heat Advisory serves as a precaution and offers adequate notice of when to be more mindful of heat index to help mitigate heat-related illnesses due to lack of proper protection against the heat.

A Heat Advisory serves as a notice that a period of excessive heat is expected. The combination of hot temperatures and high humidity will create a situation in which heat related illnesses are possible.

Despite the availability of early warning and forecasting, sections of the population of the entire community are more vulnerable to the impacts of both drought and heatwave. Homeless populations

35 https://www.cisa.gov/sites/default/files/publications/Drought_and_Infrastructure_A_Planning_Guide_508c.pdf

36 Environmental Protection Agency: Heat Waves

are likely to experience extensive health impacts because of these hazards, especially during extended periods of excessive heat and drought.

Elderly populations, regardless of their housing status may also be more vulnerable to health-related impacts caused by heat and drought as they are more likely to experience heat stroke.

Because the likelihood of Pasco County experiencing drought and extreme heat in the future, and the possibility of high-impacts on public health in limited areas, the vulnerability for all jurisdictions from drought and extreme heat has been assessed as follows:

- Location – Limited
- Impacts – Moderate
- Probability – Moderate
- Overall Vulnerability – Medium

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Source: WUSF News[37]

Description

Severe winter weather such as extreme cold, snow fall, ice storms, and winter storms affect every state in the continental United States. Regions in the United States where it is not common for severe winter weather to happen often, such as Florida, do not have systems that can withstand such weather, ultimately disrupting services and utilities. In addition to not having the infrastructure to handle the extreme cold weather and storms that often follow; states, county, and local governments in those regions do not keep snow removal equipment such as salt spreaders, blowers, or other equipment needed to plow roads and highways. Those regions do not have facilities to storm a large quantity of salt to maintain roads in the event of freezing rain or an ice storm. The equipment that some regions need for winter storm impacts are impracticable for Florida and would not be used often enough to justify the expense it would take to maintain and store. When winter hazards do occur, the storms may also spawn other hazards such as flooding, tornadoes, and extreme winds that may interfere with recovery efforts.

[37] http://wusfnews.wusf.usf.edu/post/protect-your-plants-during-cold-snap

Location

Severe winter weather and freezes are possible in any location throughout Pasco County and all participating jurisdictions. Sections of northern Unincorporated Pasco County become more likely to experience winter freezes than the southern portions.

Extent

The national weather service has identified parameters for cold weather advisories.

Freeze watch is when conditions are favorable for a freeze event to meet or exceed Freeze Warning criteria in the next 12 to 48 hours during the locally defined growing season.

Freeze Warning is during the growing season when surface temperatures are expected to drop below freezing over a large area for an extended period of time, regardless whether or not frost develops.

Hard Freeze Warning is when minimum shelter temperature is forecast to be 28°F or less (slightly lower or higher based on local criteria) during the locally defined growing season.

Frost advisory is when widespread frost formation is expected over an extensive area. Surface temperatures are usually in the mid 30s Fahrenheit.

NWS has also created a chart for identifying hazards associated with wind chill. Wind chill is a combination of ambient temperature and wind. Exposure to temperatures in these ranges and conditions can lead to health impacts, frostbite and death.

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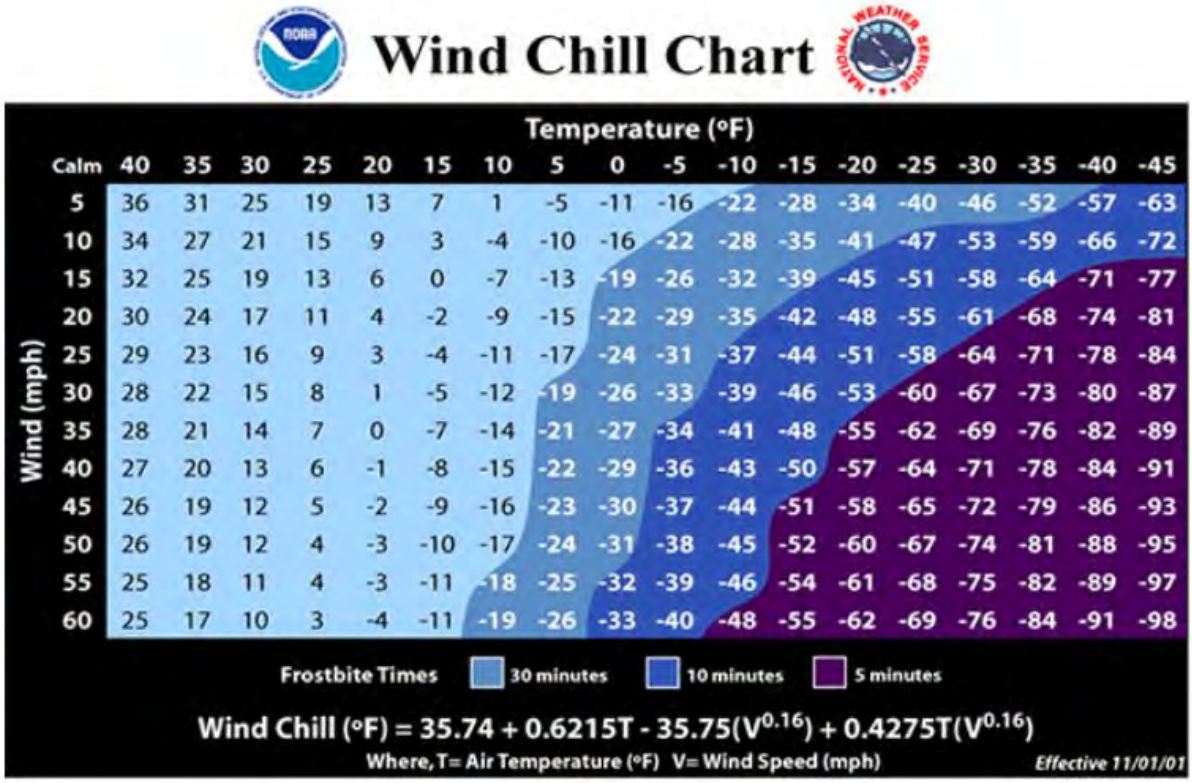
Figure 5.31 NWS Wind Chill Chart



Historical Occurrence

Pasco County has experienced moderate to severe freezes in the past. Unlike a drought, a freeze does not continue for an extended period of time in Pasco County, and precautions are taken by the residential and agricultural community to minimize the impacts. Winter storms and freezes are most likely to impact the agricultural industry in Pasco County. While declarations for freezing weather may not occur frequently, severe cold weather may still prose a threat to Pasco County.

The last winter weather FEMA declaration that included Pasco County was on February 5, 2001. FEMA declaration number 1359 provided unemployment compensation (Disaster Unemployment Assistance) benefits to individuals who lost jobs or businesses in designated counties as a direct result of freezing weather that struck much of Florida over the period of December 1 through January 25, 2001.

Figure 5.31 is a list of cold weather advisories experienced during this planning period.

Figure 5.32 Cold Weather Advisories

Issued	Phenomena	Type	Zone
1/4/2018	Freeze	Warning	Inland Pasco County
1/4/2018	Freeze	Watch	Inland Pasco County
1/5/2018	Freeze	Warning	Coastal Pasco County
1/5/2018	Freeze	Watch	Coastal Pasco County
1/5/2018	Freeze	Warning	Inland Pasco County
1/5/2018	Freeze	Watch	Inland Pasco County
1/5/2018	Hard Freeze	Warning	Inland Pasco County
1/6/2018	Freeze	Watch	Inland Pasco County
1/18/2018	Freeze	Warning	Coastal Pasco County
1/18/2018	Freeze	Watch	Coastal Pasco County
1/18/2018	Freeze	Watch	Inland Pasco County
1/18/2018	Hard Freeze	Warning	Inland Pasco County
1/18/2018	Hard Freeze	Watch	Inland Pasco County
1/19/2018	Freeze	Warning	Coastal Pasco County
1/19/2018	Freeze	Watch	Coastal Pasco County
1/19/2018	Freeze	Watch	Inland Pasco County
1/19/2018	Hard Freeze	Warning	Inland Pasco County

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1/19/2018	Hard Freeze	Watch	Inland Pasco County
1/17/2019	Frost	Advisory	Inland Pasco County
1/22/2020	Freeze	Warning	Inland Pasco County
1/22/2020	Freeze	Watch	Inland Pasco County
2/28/2020	Frost	Advisory	Inland Pasco County
12/2/2020	Freeze	Watch	Inland Pasco County
12/9/2020	Frost	Advisory	Inland Pasco County
12/26/2020	Freeze	Warning	Inland Pasco County
12/26/2020	Freeze	Watch	Inland Pasco County
12/27/2020	Freeze	Warning	Inland Pasco County
12/27/2020	Freeze	Watch	Inland Pasco County
1/10/2021	Frost	Advisory	Coastal Pasco County
1/10/2021	Frost	Advisory	Inland Pasco County
1/19/2021	Frost	Advisory	Inland Pasco County
2/4/2021	Frost	Advisory	Coastal Pasco County
2/4/2021	Freeze	Warning	Inland Pasco County
1/24/2022	Frost	Advisory	Coastal Pasco County
1/24/2022	Freeze	Warning	Inland Pasco County

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1/24/2022	Freeze	Watch	Inland Pasco County
1/30/2022	Freeze	Warning	Coastal Pasco County
1/30/2022	Freeze	Watch	Coastal Pasco County
1/30/2022	Hard Freeze	Warning	Coastal Pasco County
1/30/2022	Freeze	Watch	Inland Pasco County
1/30/2022	Hard Freeze	Warning	Inland Pasco County
1/30/2022	Hard Freeze	Watch	Inland Pasco County
3/13/2022	Freeze	Warning	Coastal Pasco County
3/13/2022	Freeze	Warning	Inland Pasco County
12/24/2022	Freeze	Warning	Coastal Pasco County
12/24/2022	Freeze	Watch	Coastal Pasco County
12/24/2022	Hard Freeze	Warning	Inland Pasco County
12/24/2022	Hard Freeze	Watch	Inland Pasco County
12/25/2022	Freeze	Warning	Coastal Pasco County
12/25/2022	Freeze	Watch	Coastal Pasco County
12/25/2022	Hard Freeze	Warning	Inland Pasco County
12/25/2022	Hard Freeze	Watch	Inland Pasco County
12/26/2022	Freeze	Warning	Inland Pasco County

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12/26/2022	Freeze	Watch	Inland Pasco County
1/15/2023	Freeze	Warning	Inland Pasco County
1/15/2023	Freeze	Watch	Inland Pasco County
1/16/2023	Frost	Advisory	Coastal Pasco County
1/16/2023	Frost	Advisory	Inland Pasco County

According to data provided by Pasco County Emergency Management cold weather shelters were opened 15 times between 2018-2023 and were open for 20 days total. For context, cold weather shelters open when there is a risk of temperatures dropping below 40 degrees Fahrenheit for four or more hours without windchill.

Probability

Historically, at least one advisory related to cold weather should be expected each year. Figures 5.33 and 5.34, taken from the Florida SHMP, show the average occurrence of winter weather and severe cold.

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Figure 5.33 Winter Weather Risk

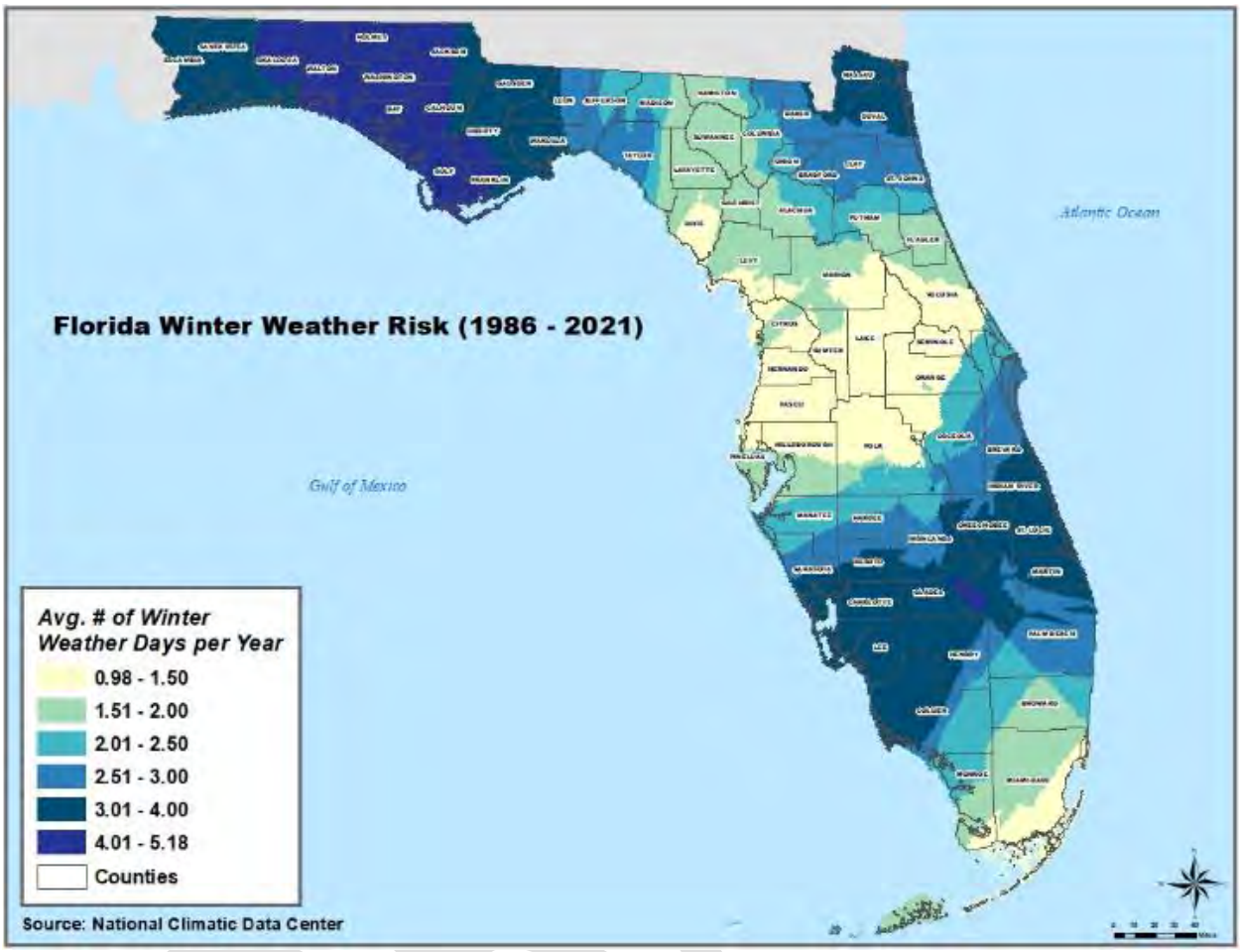
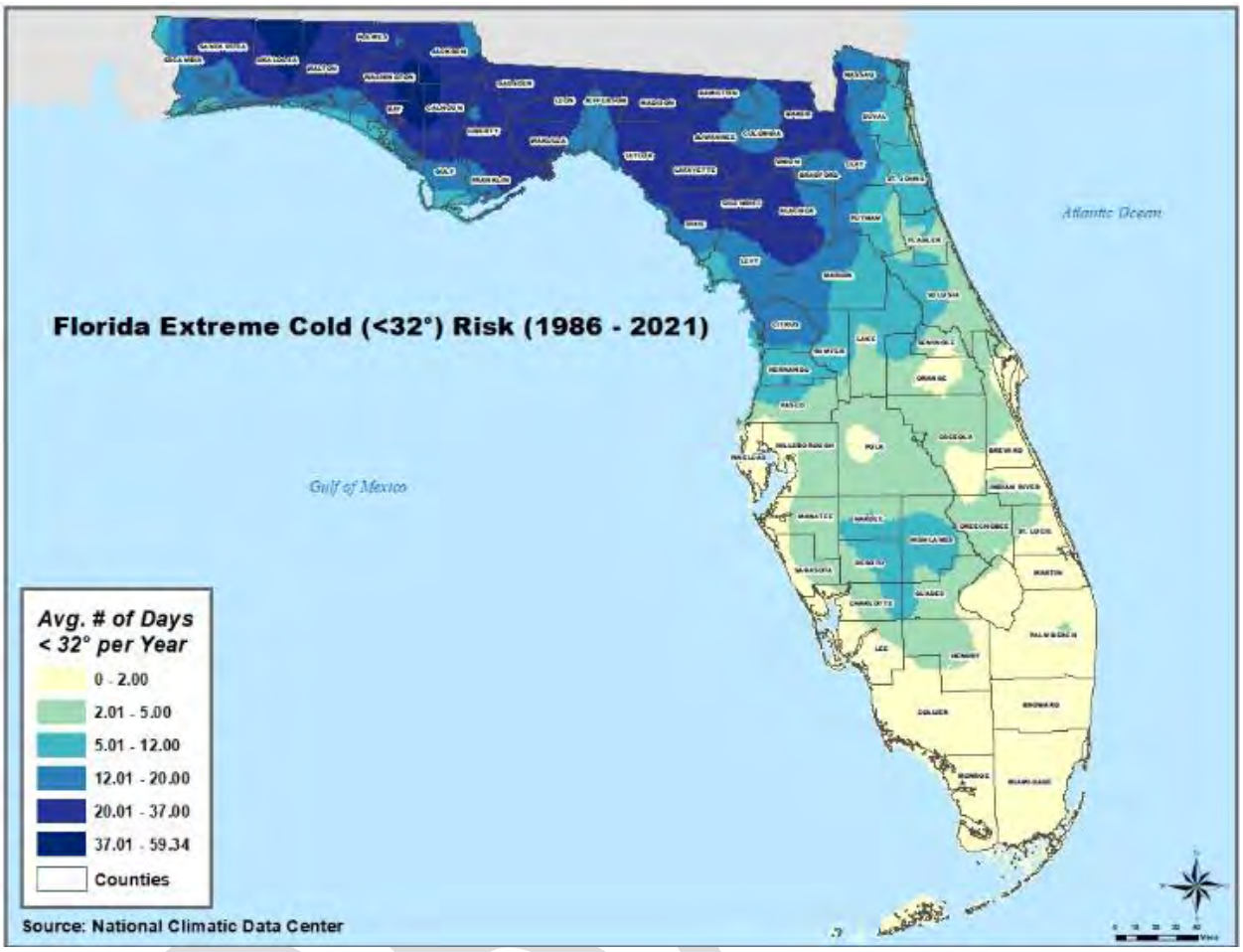


Figure 5.34 Extreme Cold Risk



Based on these figures, Pasco County is likely to experience one winter weather day and up to 12 days of extreme cold each year.

Impacts

Winter storms and freezes can have a wide range of impacts, depending on duration and severity. Freezing temperatures can have severe impact on the population. Exposure to freezing temperatures for a prolonged period can lead to hypothermia and eventually death. Freezing temperatures impact vulnerable populations at a disproportionate rate, especially those that are financially constrained or experience homelessness. Lack of shelter can put someone in danger in just a few hours.

Freezing temperatures also have cascading impacts on the population. Frozen roads could lead to increased traffic hazards, residential heating could cause fires or carbon monoxide poisoning.

History indicates that the entire county can experience moderate to severe freezes. The extent of damage is greatest in the eastern half of the county where farms/groves are located. The economic

impact from these events has not been high because less Pasco County land is used for agricultural purposes as parcels are sold in tracts for new development. The number of people impacted by a freeze event is not overly significant compared to other events and the economic costs are low.

When it comes to colder temperatures, not all Florida homes have access to heat sources and residents may require relocation. Florida homes often lack adequate heating and insulation leads to cold weather exposure. While cold weather doesn't have a similar financial impact on people to the extent of other hazards, the County still takes precautions. The Cold Weather Shelter Program for Pasco County is a community effort where stakeholders from Pasco County department and agencies, and local non-profit organizations work together to provide emergency sheltering for those in need during low temperatures.

The program is housed under Pasco County Division of Human Services, who work with local partners such as One Community Now[38], to provide sheltering for those without access to heat during low temperatures. Pasco County Emergency Management (**PCEM**) monitors temperatures using the National Weather Service Hourly Weather Forecast[39] and reports back to the Division of Human Services when there is a risk of temperatures dropping to 36°F or below. At that time, the Division of Human Services would work with partners to either stand up cold weather shelters (**shelters**) or find alternative housing; and determine location, dates, times of available shelters, and shelter staff. Once shelter information has been confirmed, information is sent to the Public Information Officer (**PIO**) for media dissemination. In addition to the media, shelter information is shared with 911, Pasco County Sheriffs Office, GoPasco, and local municipalities. At the end of each operational period the Division of Human Services will relay shelter numbers to PCEM, who will track applicable information.

Cold Weather Shelter operations activate if there is a risk of temperatures dropping to 36°F or below for four or more hours, without windchill. Shelters are typically open within an hour of forecasted low temperature, or sunset, whichever happens first.

Winter storms and freezes could also impact other critical infrastructure such as utility lines if exposed temperatures last long enough to fully freeze water lines.

As the SHMP points out, increases in overall temperature trends is not expected to eliminate the possibility of severe winter weather in the future.

Vulnerability

Because the likelihood of Pasco County experiencing freeze and extreme cold in the future, and the possibility of impacts on public health in limited areas, vulnerability to extreme cold for all jurisdictions has been assessed as follows:

- Location – Limited
- Impacts – Moderate
- Probability – Moderate
- Overall Vulnerability – Medium

[38] One Community Now

[39] National Weather Service Hourly Weather Forecast Graph

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EROSION

Description

Erosion changes the shape and structure of the coastal areas and riverbanks. Pasco County's western boundary is adjacent to the Gulf of Mexico resulting in the region being subject to coastal erosion resulting from tropical storms, hurricanes, strong waves, and high winds. Coastal erosion is the loss or displacement of land or long-term removal of sediment along the coastline. Erosion can occur from hydraulic action, abrasion, impact and corrosion caused by moving water. Erosion is often considered to have the most impact along sandy beach areas or coastal areas with dunes.

Inland, the course of any given river is fluid, constantly alter course, changing shape and depth trying to find a balance between the sediment transport capacity of the water and the sediment supply. This process, called riverine erosion, is usually seen as the wearing of riverbanks and riverbeds over a long period of time. Riverine erosion is often initiated by failure of a riverbank causing high sediment loads or heavy rainfall. This generates high volume and velocity run-off which will concentrate in the lower drainages within the river's catchment area. When the stress applied by these river flows exceeds the resistance of the riverbank material, erosion will occur. As the sediment load increases, fast-flowing rivers will erode their banks downstream. Eventually, the river becomes overloaded or velocity is reduced, leading to the deposition of sediment further downstream or in dams and reservoirs. The deposition may eventually lead to the river developing a new channel. Riverine erosion has many consequences including the loss of land and any development on that land. It can cause increased sedimentation of harbors and river deltas. It can hinder channel navigation and affect marine transportation sources.

Location

Despite Pasco County adjoining the Gulf of Mexico along its entire western boundary, most of that boundary is marsh, mangroves or otherwise vegetated shore. Still, erosion is possible along all shores and riverbanks in Pasco County.

Unincorporated Pasco County, New Port Richey and Port Richey all have locations of shore and riverbank that could be impacted by erosion over time.

Extent

Erosion can remove sediment, sands and vegetation along shores and riverbanks. Florida Department of Environmental Protection identifies two categories of erosion. The first is non-critical erosion. This is significant erosion that does not threaten any private or public interests. Critical erosion is significant erosion that threaten "upland development, recreational interests, wildlife habitat, or important cultural resources."

Because of proximity to rivers and the Gulf of Mexico, coastal and western Pasco county and the jurisdictions of New Port Richey and Port Richey are at risk from non-critical erosion and potentially critical erosion in the future.

Historical Occurrences

FDEP has identified two primary areas of erosion in Pasco County.

Anclote Key has experienced non-critical erosion. The southern half of the key has experienced significant erosion, but there is no lasting threat to public or private structures or interests. Currently,

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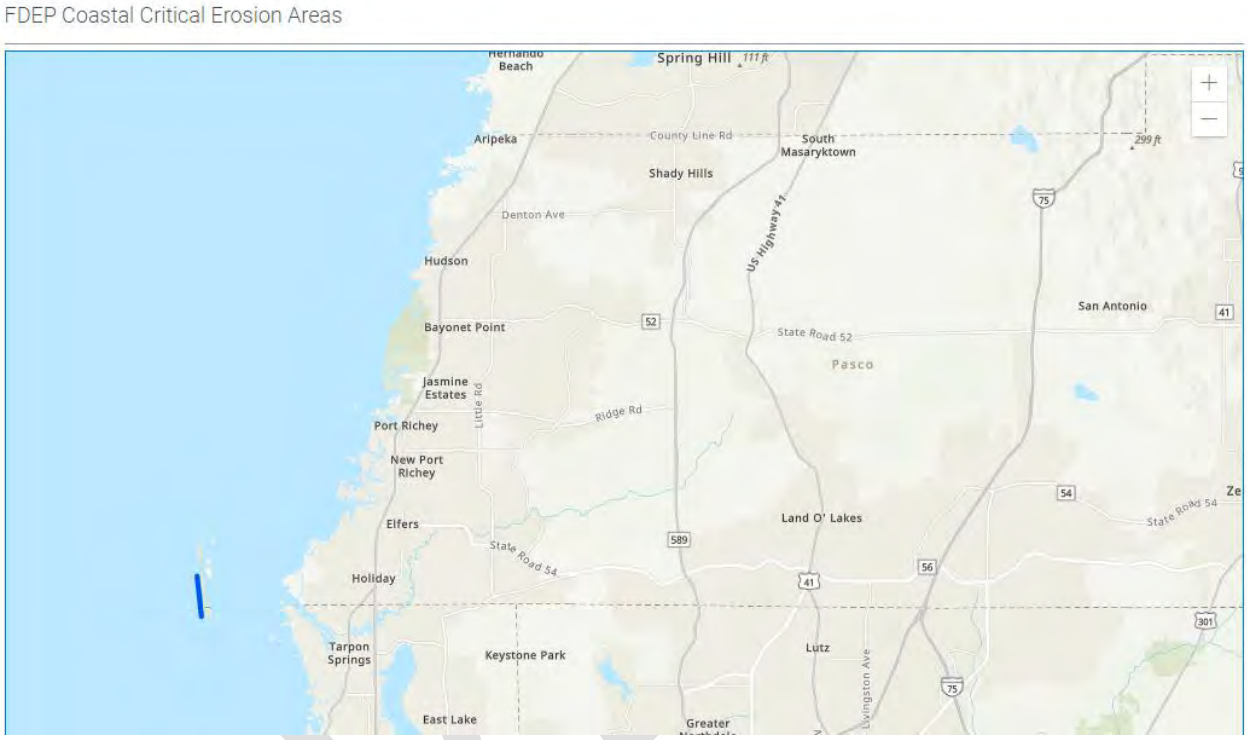
FDEP lists that Anclote Key as 1.1 miles of non-critically eroded beach. Conversely, Hudson Beach is considered to have experienced significant erosion. The entire area (0.2 miles) of Hudson Beach is considered critically eroded according to FDEP.

Figure 5.35 FDEP Critical Erosion Areas



Probability

The west coast of Pasco County is likely to experience erosion on an ongoing basis and could be considered annual, which means future erosion in Pasco County is very likely.

Impacts

Erosion has impacts to the population, buildings, infrastructure and natural resources depending on the location and extent. Currently, the most likely impact to the community is to natural resources. Hudson Beach and Anclote Key are both locations that host public parks. As time passes and erosion continues, these areas could lose function as parks and key components of the county's natural resources may be negatively impacted. Additionally, erosion over time may have impacts on water quality.

Erosion in the area of Hudson Beach may also impact the built environment in the future. Sea walls and utility structures may be impacted and damaged as a result of decreased sediment in the areas of the beach. If erosion is significant enough over time, there may be cascading impacts to the residential areas connected to the beach as well.

As future conditions change and sea levels and tides continue to rise, the amount of coastal land at risk from erosion increases. These previously undisturbed sandy sub and top soils can be washed away by tidal movement. Additionally, increased rainfall occurring in short periods of time could cause river banks to rise to unexpected levels, causing erosion to new areas in the future.

Vulnerability

Pasco County has a significant amount of shoreline and riverbed, all of which are areas where erosion may occur. The potential impacts to the county however, are relatively low. Because Pasco County's built environment typically does not directly abut the Gulf of Mexico, structures, populations and infrastructure are not at a significant risk. Coastal and riverine erosion occurs in small amounts and has not occurred significantly enough to generate overall statistics. If and when significant erosion occurs, Pasco County will experience a change in the shape of the coastline and riverbanks, as well as loss of structures business and residences located in vulnerable areas especially combined with tropical cyclone activity.

The vulnerability from erosion for coastal Pasco County, New Port Richey and Port Richey has been assessed as follows: as follows:

- Location – Limited
- Impacts – Moderate
- Probability – Moderate
- Overall Vulnerability – Medium

. All other jurisdictions have a low vulnerability to erosion.

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VI. MITIGATION STRATEGY

GUIDING PRINCIPLES AND GOALS

During the planning process, the Pasco County LMS Goals and Objectives Subcommittee developed a set of community values or Guiding Principles that serve as a vision for hazard mitigation in Pasco County. This set of values was approved by the overall LMS Working Group in the formulation of specific goals and objectives which helped direct the planning process and the selection and implementation of mitigation initiatives and programs. The set of Guiding Principles that were affirmed by the LMS Working Group are as follows:

- *Hazard mitigation should minimize future losses by reducing the risk to people and property;*
- *Hazard mitigation should emphasize pre-and-post disaster planning to decrease vulnerability of existing and new construction to loss;*
- *Hazard mitigation should prevent repetitive losses from natural disasters through regulation and education;*
- *Hazard mitigation should utilize comprehensive planning, regional and local area plans, zoning codes, development standards and incentives to protect vulnerable properties and vulnerable areas, and support development in less vulnerable areas;*
- *Hazard mitigation should strive to protect the public and private sectors by reducing their economic vulnerability and increasing their recovery capabilities;*
- *Hazard mitigation should strive to reduce the security risk to both public and private sectors in order to lessen all losses associated with physical and cyber-attacks; and*
- *Hazard mitigation should increase public awareness regarding mitigation.*

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The following goals and their associated objectives stemmed directly from the values that were created by the LMS Working Group. During this update cycle The LMS Working Group decided to enhance their goals and objectives by incorporating both short and long-term objectives. For the purpose of this plan, short-term objectives can be accomplished in two or less years, and long term are those that will take longer than that to accomplish or are ongoing. This resulted in reframing the existing goals and objectives to address current and future problems across Pasco County. The values of these goals and objectives were created by the LMS Working Group to harden mitigation across the county. The current goals and objectives both focus on the short-term aspect and long-term aspect of the mitigation process to ensure a stronger and more resilient community:

GOAL 1: Minimize future losses from disasters by reducing the risk to people and property.

Short Term Objectives:

Objective 1.1

Assure that Pasco County has sufficient shelter space to accommodate evacuees in time of need.

Objective 1.2

Work with the National Weather Service to enhance communication and coordination before and during severe weather events.

Long Term Objectives:

Objective 1.3

Protection of populations and properties in Pasco County susceptible to economic or physical loss from natural and man-made disasters shall be consistent with the standards established in the Local Mitigation Strategy and other planning documents.

Objective 1.4

Encourage higher standards of maintenance to existing drainage systems and retention ponds, and monitor cumulative development impacts with a macroscopic view.

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GOAL 2: Emphasize pre- and post-disaster planning to decrease vulnerability of existing and new construction to loss.

Short Term Objectives:

Objective 2.1

Identify and prioritize vulnerable properties by using topographic and storm surge maps, traffic analysis and evacuation modeling, economic and environmental impact analysis.

Objective 2.2

Review evacuation time estimates taking into consideration the limited east/west and north/south travel times.

Objective 2.3

Identify vulnerable existing public and private critical facilities and encourage pre-disaster retrofit.

Long Term Objectives:

Objective 2.4

Encourage structure retrofit programs to address identified flood, wind, and evacuation vulnerabilities based on income level.

Objective 2.5

Identify post-storm redevelopment options throughout the county and where feasible, purchase land in known vulnerable areas to prevent placing people and infrastructure in harm's way.

GOAL 3: Prevent flood-related repetitive losses from natural disasters through regulation and education.

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Short Term Objectives:

Objective 3.2

Require systematic maintenance programs for storm water management systems.

Objective 3.3

Encourage only low-density residential development in repetitive flood loss areas consistent with current residential code and other plans for residential development.

Long Term Objective:

Objective 3.1

Develop and support public and private projects and programs to retrofit, relocate or acquire properties susceptible to repetitive flooding.

GOAL 4: Strengthen and utilize comprehensive planning, regional and local area plans, zoning codes, development standards and incentives to protect vulnerable properties and vulnerable areas, and support development in less vulnerable areas.

Short Term Objectives:

Objective 4.1

Monitor floodplain regulations and enforcement to assess effectiveness.

Objective 4.2

Promote the Florida Building Code standards requiring new developments and construction to meet applicable wind load standards for the county.

Objective 4.3

Promote regulations for new structures in 100-year flood areas to be elevated in conformance with or exceeding current Florida Building Code.

Objective 4.4

Encourage locations of critical facilities (schools, hospitals, etc.) to be away from the proximity of identified hazardous material facilities.

Objective 4.5

Enact development standards in wildland urban interface areas, such as setbacks, forest maintenance, access of response vehicles and construction materials.

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Objective 4.6

Review and consider policies to assure more permeable area in development, by limiting construction of paved surfaces and decreasing run-off.

Objective 4.7

Identify strategies to encourage the understanding of climate change impacts to the county.

Long Term Objectives:

Objective 4.8

Develop and support economic incentive programs for both public and private sectors promoting benefits of structural retrofitting.

Objective 4.9

Discourage variances and exceptions in flood hazard areas as identified by Flood Insurance Rate Maps, storm surge, and historical flooding.

Objective 4.10

Strengthen existing land use regulations and policies through enhancement of review procedures, and enforcement.

Objective 4.11

Promote and support incentives to encourage higher standards of protection to structures and facilities from hazards.

GOAL 5: Strive to protect the public and private sector by reducing their economic vulnerability and increasing their recovery capabilities.

Short Term Objectives:

Objective 5.1

Encourage disaster planning training through collaborative programs with appropriate government agencies and the private sector.

Objective 5.2

Promote mitigation guidelines for businesses to raise awareness about local hazards, assist in vulnerability assessment, aid in the identification of financial and technical assistance available, and facilitate hazard mitigation implementation to include continuity of operations.

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Long Term Objectives:

Objective 5.3

Analyze the factors involved in small business decision making regarding preparing for disasters and integrating hazard mitigation into their management practices.

GOAL 6: Hazard mitigation should strive to reduce the security risk to both public and private sectors to lessen all losses associated with physical and cyber-attacks.

Short Term Objectives:

Objective 6.1

Develop and maintain Continuity of Operations Plans (COOP) to minimize public and private interruption and protect private records.

Objectives 6.2

Provide up to date information to public to plan for possible evacuation or shelter in place.

Long Term Objective

Objective 6.3

Utilize grant opportunities from the Federal, State, and District levels to harden critical infrastructure to minimize vulnerabilities to attack.

GOAL 7: Hazard mitigation should increase public awareness regarding mitigation.

Short Term Objectives:

Objective 7.1

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Provide education and information to the public and business community about potential hazards and property protection measures (i.e. events such as Hurricane Expo and general presentation to community group).

Objective 7.2

Utilize print media, television, radio, and computer technology to educate the public on mitigation.

Objective 7.3

Annually provide outreach specifically to properties immediately adjacent to the repetitive loss properties as part of the Community Rating System outreach and repetitive property owner outreach programs.

JURISDICTIONAL ANALYSIS

As discussed in the Community Profile, Pasco County is a diverse and growing community. Accordingly, the seven jurisdictions represented in this plan each have unique capabilities and challenges when it comes to creating and implementing mitigation initiatives. Over the 5-year cycle of this plan, each jurisdiction will be tasked with identifying gaps in the organization's ability to implement mitigation initiatives that would best serve their communities and Pasco County as a whole community, including using the Local Mitigation Strategy in conjunction with other plans and ordinances with the purpose of creating more robust hazard mitigation in the future.

The following capabilities have been identified by as core parts of the Jurisdictional Analysis for hazard mitigation programs:

1. Planning and Regulatory
2. Administrative and technical
3. Financial

During the jurisdictional analysis portion of this plan, each jurisdiction will identify capabilities and gaps for each capability area listed above. Below is an explanation of each area with examples of capabilities and gaps.

Planning and Regulatory

These capabilities can include Implementation of ordinances, policies and plans that aim at reducing impacts from hazards in the jurisdiction. As communities grow across all jurisdictions in the planning area, regulatory-related mitigation initiatives can be a vital aspect of reducing overall vulnerability. Each jurisdiction is responsible for planning and regulation within their political boundaries, utilizing the LMS and the LMSWG in these planning efforts can strengthen overall resiliency for the community. Each jurisdiction currently consults the LMS during the comprehensive planning process. The city of Port Richey and Pasco County BOCC have conducted vulnerability assessments and resiliency plans. Smaller jurisdictions, such as St. Leo and San Antonio, have constraints in their regulatory impacts of because of their limited geographic size.

Specific attention for this section of the jurisdictional analysis will be placed in identifying each jurisdiction's adoption and utilization of most recent Florida Building codes, and existing land use and development ordinance to identify potential areas where local building ordinance could be created or

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modified to limit future impacts from hazards. Participation in the LMSWG and completion of the Jurisdictional Analysis will allow the entire community to visualize important work already done and increase the connections between the LMS, impact reduction and planning efforts.

Administrative and Technical

These capabilities are focused on identifying each jurisdiction's staff and tools needed to implement mitigation initiatives identified. Examples include grant managers/writers, engineers, and other management staff needed to implement mitigation initiatives. All the municipal partners in the planning area are relatively small and have small staffs. This leads to a gap in the availability of funding and planning for mitigation. Quantifying these gaps in a Jurisdictional Analysis will allow each jurisdiction, and the working group, to understand necessary administrative resources for mitigation initiatives.

All municipal members of the working group work together to address administrative gaps. As an example, Pasco County Department of Emergency Management has staffed mitigation positions to assist municipal partners scope, apply for and carry out mitigation projects through FEMA HMA funding. Analyzing the specific gaps for each jurisdiction will result in a more efficient working group process.

Financial

These are resources that each jurisdiction has access to or is eligible to use to fund mitigation initiatives. Every jurisdiction has significant gaps in financial resources for mitigation. The Jurisdictional Analysis will allow each jurisdiction to express their needs to the working group and allow of collaborative development of initiatives. As mentioned above, the LMSWG currently offers assistance in grant application and development to assist with financial gaps.

A comprehensive understanding of capabilities and gaps on the community level is necessary to most efficiently create and maintain the mitigation program well into the future.

MITIGATION INITIATIVES

This section will identify and analyze a range of specific mitigation actions and projects for each hazard. It will describe the selection process used to identify the mitigation projects and programs. As conditions change and hazards evolve, mitigation initiatives may change and best practices may update. Throughout the life of this plan, current best practices and policies should be followed for each initiative. All mitigation initiatives will be presented to the LMS Working Group and tracked by Pasco County Emergency Management in coordination with participants and municipalities involved.

Tropical Cyclones

Implementation of mitigation efforts will be accomplished through public education outreach programs, led primarily by Emergency Management, that focus on wind retrofits. Wind protection focuses on reducing the damage from wind by strengthening floors, foundations, and wall/floor

attachments of existing structures. Some common techniques that help prevent internal structural damage include the use of storm shutters and shatterproof glass or windows that are rated for the design speed of the site. Improving the way roofs are attached to the walls (i.e. using gable and bracing on frame gables, nail patterns, roof sheathing, hurricane straps, etc.) can keep roofs from lifting up in hurricane force winds. Public education outreach programs regarding wind mitigation is a continuous process.

Enforcement of the county building code by the County and City permitting department. Ongoing efforts to support the enforcement of current best practices as the community continues to grow will be essential to reducing damage from future storms.

Identification and implementation of retrofit projects throughout the county. The focus will be on both public and private structures vulnerable to wind damage and the responsibility for project identification funding and execution will rest with the property owner. Grant programs such as the Flood Mitigation Assistance (FMA) and Hazard Mitigation Grant Program (HMGP) are federal programs that help fund local communities to eliminate or lessen the impacts from disasters. Additionally, there are state and federal funding sources that assist homeowners directly for wind mitigation.

Flood

In order to minimize vulnerability and future losses to buildings, infrastructure, and critical facilities, due to floods, stringent building regulations are currently strictly enforced. The County's Floodplain Manager is charged with enforcing the municipal codes and ordinances, which focus on flood damage prevention and protection. Two critical items to highlight from the code is the ability to use the "best available data" and the substantial improvement rule. Currently, Pasco County, in a partnership with FEMA and the Southwest Florida Water Management District, prepared new Digital Flood Rate Insurance Map (D-FIRM). With the completion of the study phase of 22 watersheds, preliminary maps were prepared ahead of the LIDAR data being ready.

Mitigation efforts related to the County's repetitive loss properties include annual outreach to properties identified by NFIP and FEMA as repetitive loss or severe repetitive loss. Emergency Management maintains a list that contains a complete listing of each property, a map of each location, a listing of adjacent properties (repetitive loss areas located in Appendix D of this plan) and documented previous attempts at mitigation. Outreach to these properties includes a detailed description of flood prevention measures and contact information for both the Floodplain Coordinator and Mitigation Lead for Pasco County to ensure that consultations are available and contain the most relevant information.

To mitigate damages to existing structures, several independent public outreach programs will be implemented in order to educate the public on mitigation options. The first is targeted specifically to properties located in or near identified repetitive loss areas. This outreach will become part of the county's general Community Rating System (CRS) outreach and will be performed annually in combination with the repetitive loss property owner outreach program. The GIS mapping office, with assistance from the Emergency Management staff, developed a specific address/target list of properties based on the repetitive loss properties list. General public outreach will be conducted at county events, including Disaster Expos, and general presentations to community groups. Finally, an outreach is

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planned specifically to target businesses and industry and will focus on mitigation (of existing structures) or prevention (when developing new structures).

In addition, the Public Works Department has identified and is working on several drainage improvements to help mitigate flood damages to neighborhoods throughout Pasco County. Timeframes for completion of flood mitigation projects will vary drastically. This is particularly true for privately owned residential mitigation projects, where local funding may not be available.

Coastal and Riverine Erosion

As discussed in an earlier section of this plan, the effects of coastal erosion are limited to a small geographic location. The vulnerability of coastal erosion resulting from tropical storms and hurricanes is high and therefore the likelihood of coastal erosion is moderate or high depending on jurisdiction.

As future impacts change, participants in the LMSWG will be encouraged to complete their understanding of erosion risks in their areas to provide future mitigation initiatives.

Geological

Sinkholes have occurred in almost every County in Florida. They cause structural damage to any nearby infrastructure. What starts as cracks in foundations and walls, can be early indicators of a possible sinkhole, which make a building unstable and dangerous. Pasco County continues to incorporate sinkhole awareness information about how sinkholes form, what the warning signs are, and what to do if a sinkhole develops into the public outreach. Furthermore, innovative ideas have stemmed from Emergency Management from the recent sinkhole response and can be identified in Appendix J.

Wildfire

Wildfire mitigation will be implemented through coordination with the LMSWG and jurisdictional fire departments. This plan identifies wildfire occurrence rates, cause trends, and identifies risk communities countywide. This information is used to develop and prioritize mitigation plans based on the identified communities at risk and then helps to implement public wildfire prevention education programs and outreach. Furthermore, this plan provides enhanced wild land fire protection to Pasco County communities through wildfire prevention programs, fuel reduction and treatment projects, and improving wildfire suppression capabilities. Development of this plan is the result of a partnership between the State Division of Forestry and Pasco County Fire Rescue with support from Emergency Management and the LMS Working Group.

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Severe Storms

Strict enforcement of building code helps mitigate damages in the future housing stock from severe storms. Also, educational and awareness campaigns are other actions that assist in mitigating community buildings and residential structures from severe storms. Providing awareness for wind retrofit projects and hardening existing structures to current compliance codes is essential as the majority of Pasco County was built prior to the enhancement of building codes.

Educational and targeted outreach also consists of injury and fatality prevention in severe storms. Some programs address the dangers of lightning, use of weather radios, and the proper use of warning systems for severe storms. Pasco County produced an alert program for citizens and employees called "Alert Pasco" to assist with seeking shelter in timely situations.

Drought/Heat Wave

Pasco County, as well as much of Florida, has experienced some sort of drought during the last five years. Local public education efforts by the county Utilities Department concerning water conservation have met with some success and were supported by the stringent watering schedules imposed by the Southwest Florida Water Management District. While there is little we can do today to create rain, there is much we can do to preserve existing resources and protect the aquifer.

Winter Storm/Freezes

Freezes and other cold weather events generally occur in Pasco County between the months of November and February each year. Public education outreach will provide information to homeowners and agricultural landowners to help them plan ahead and prepare for cold weather in order to protect themselves, sensitive crops and livestock.

Cyber Incident

Cyber awareness has increased over the past five year for not just Pasco County, but the United States. Pasco County has placed annual, mandatory cyber security trainings and refresher trainings for Pasco County employees because the majority of breach attempts are aimed at the government sector. Public outreach and education will also help provide citizens awareness and how they can further protect themselves and their family. In a world where technology and electronics continue to grow at a rapid pace, awareness is essential to protect personal information.

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Hazardous Materials

Mitigation of hazardous materials incidents includes techniques to reduce losses to emergency personnel, citizens, structures and the environment. These techniques include extensive training to personnel as well as notification and education of the public. The county participates on the regional Local Emergency Planning Committee (LEPC) which works together with other local governments, the private sector, and citizens to identify mitigation measures, projects and ensure the public's right to know under SARA Title III. There are no timeframes associated with this mitigation effort as it is constant and ongoing.

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PROCESS FOR SUBMITTING AND PRIORITIZING PROJECTS

The individual or group presenting new projects are now required to use the Pasco County LMS Project Submission Form. This provides a standardized approach for all members, including representatives from Pasco County municipalities, the Tampa Bay Region, State Organizations, and private partners. This submission process provides greater detail on the project description, cost and cost effectiveness, its location, and how it relates back to the LMS goals. The detail is necessary to show awareness to the County on the LMS Project List in Appendix C. All properly submitted projects are prioritized by the working group using the Prioritization Point Scale for Mitigation Initiatives rubric system based on funding cycles.

Both the project submission form and the scoring sheet are included in Appendix G. After submission to the project list, initiatives are ranked for each funding cycle to ensure that the best funding sources are applied for. The Project Scoring Sheet allows members to rank each project on effectiveness, cost effectiveness, populations served and consistency within the plan.

An open discussion followed the implementation of this ranking system to address any issues or concerns. Upon review, the working group feels that prioritization and ranking will be conducted per funding source as each funding source has its own set of priorities. Currently, the prioritization system's scoring method is written to allow each project to comply with the funding sources provided.

When there is a "tie", two or more projects with equal ranking, the members of the working group were asked to decide which element had the most value in the county. Where possible, they were asked to vote on projects in an effort to break a tie.

At the conclusion, members were asked to collaborate and approve the final prioritization for mitigation projects and programs. Ranking will occur per funding source due to different criteria per grant requirements. The reader is advised that not all projects are ranked. There are various reasons for this, not the least of which is the submission of an incomplete application. Where additional information is still required, the project is not automatically dismissed, but every effort is made to provide technical assistance to the applicant in order that an application is ultimately completed and that it offers the project an opportunity to come to fruition.

IMPLEMENTATION OF MITIGATION INITIATIVES

Public and private-sector coordination is vital for the long-term success of hazard mitigation. Increased educational awareness of the need for and importance of hazard mitigation can help to encourage home and business owners to retrofit their structures for improved protection. Hazard mitigation education is frequently provided by Emergency Management through outreach programs such as the Disaster Expo and presentations to homeowner or business groups prior to the annual hurricane season. These efforts are designed to encourage home and business owners to make preparations in advance of each hurricane season and will continue.

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Mitigation Projects/Programs

Appendix C identifies the current list of projects/programs included in the LMS. These can be funded through grant opportunities within Hazard Mitigation Assistance and other local, State, and Federal funding sources. The list developed includes information based on the project/program description, watershed location, responsible agency, project/program category, overview of funding sources, most relevant LMS goal and objective the project/program relates to, last update, and estimated costs.

Residential mitigation projects are included in the LMS project. The Hazard Mitigation Assistance (HMA) require the residential project to be adopted by the LMS Working Group and on the LMS Project List. The project titles and description will remain generic to adhere to the Privacy Act of 1974.

In addition to residential mitigation projects, retrofitting of critical facilities, drainage improvement projects, and generator projects are included in the LMS Project List. This comprehensive list will be analyzed by LMS Working Group and identify an additional funding opportunity to fund each project.

The availability of funding and the immediate priorities of the local government and municipalities will ultimately drive the selection of mitigation projects/programs for grant application submittal. The funding source, allocation, and priorities established by the grant program would determine if and when the mitigation projects/programs will be funded outside the regular local government budgetary process. The description of funding sources is based upon information currently available and does not preclude the consideration of other funding sources that are not identified here.

Identification and Analysis of Mitigation Initiatives: NFIP Compliance

Pasco County and its municipalities participate in the National Flood Insurance Program (NFIP) and as described below, maintain their rating under the Community Rating System through various programs. As stated earlier, a full description of this process is documented in the County's Floodplain Management Plan.

Approximately 35% of the land within Pasco County is controlled by governmental entities. This public land allows for beautiful wooded hammocks and open vistas and is an important component to the recharging of the underground Floridian Aquifer that provides water for much of West Central Florida. Public lands also allow space for flood waters to accumulate and dissipate, thereby reducing the possibility of flooding to nearby residences. Maintaining these natural areas contributes to the high water quality and adequate water supply that we enjoy in Pasco County.

In 2004, heavy rains from back-to-back hurricanes caused flooding in previously undocumented areas of the County. Isolated flooding was also seen in historically flood prone areas of the County during the drier seasons of 2005 and 2006. Periodic flooding, both from storm surge and from inland pooling of water, can occur in all sections of Pasco County. Many areas of the County contain environmentally sensitive lands and wetlands. Dumping in, polluting, or otherwise

compromising these areas can place our water supply and natural areas at greater risk from flooding, which will certainly impact our developed areas.

The Pasco County Building Code and the NFIP regulations require that a structure must meet the same construction codes as a new building if the cost of reconstruction, rehabilitation, repairs, additions, or other improvements is equal to or more than 50% of the existing structure's market value. This includes all floors of the structure. Buildings that are substantially damaged must also be brought up to the same codes and standards. Each jurisdiction is responsible for assigning a floodplain coordinator or building official to maintain these requirements on the local level. After a disaster, maintaining compliance with the rule is an important aspect of responsible redevelopment, each agency's floodplain coordinator is responsible for setting documentation requirements.

Currently, Pasco County's Code of Ordinance establishes a stricter threshold of 49 percent to increase resiliency throughout the county. All municipalities currently adhere to the 50 percent rule as outlined above.

Due to the amount of development constructed within the floodplain, as well as an increase of stormwater runoff as a result of the overall increase of development, floodplain management has become an important component in protecting the well-being of the County's residents and property. To help decrease the vulnerability of flood damage for thousands of properties located within the coastal and floodplain areas, the County actively participates in the FEMA NFIPCRS.

In 1968, the US Congress created the NFIP to provide affordable flood insurance to people living in high risk flood areas, also known as Special Flood Hazard Areas. The NFIP is a self-sustaining program administered by a branch of FEMA. The program makes flood insurance available in communities that adopt and enforce floodplain management ordinances and regulations to reduce future flood damage (NFIP Communities).

Communities that participate in the NFIP adopt and enforce floodplain management programs in order to reduce future flood damage. In exchange, the NFIP provides federally backed flood insurance for property owners and renters in the participating communities. In addition to providing flood insurance and reducing flood damage through floodplain management regulations, the NFIP identifies and maps the nation's floodplains.

The NFIP has been successful in requiring new buildings to be protected from damage by a 100-year flood event. However, flood damage still results from more frequent, less intense, flooding episodes and from flooding in unmapped areas. Under the CRS, there is an incentive for communities to do more than just regulate construction of new buildings to minimum national standards. The CRS adjusts flood insurance premiums to reflect community activities that reduce flood damage to existing buildings, manage development in areas not mapped by the NFIP, protect new buildings beyond the minimum NFIP protection level, and help insurance agents obtain flood data and help residents obtain flood insurance.

The objective of the CRS is to reward communities that are doing more than meeting the minimum NFIP requirements to help their citizens prevent or reduce flood loses. The CRS also provides an incentive for communities to initiate new flood protection activities. The goal of the CRS is to encourage, by the use of flood insurance premium adjustments, community and State activities beyond those required by the National Flood Insurance Program to reduce flood losses by:

- Protecting public health and safety,
- Reducing damage to buildings and contents,
- Preventing increases in flood damage from new construction,
- Reducing the risk of erosion damage,
- Protecting natural and beneficial floodplain functions,
- Facilitating accurate insurance rating, and
- Promoting the awareness of flood insurance.

In addition to

Presently, all jurisdictions are active participants in the NFIP. According to FEMA, policy statistics in Figure 6.1:

Figure 6.1

Community Name (Number)	Policies in Force	Total Coverage
DADE CITY, CITY OF (120231)	44	$ 12,166,000
NEW PORT RICHEY, CITY OF (120232)	1,223	$ 290,093,000
PASCO COUNTY * (120230)	21,342	$ 5,594,873,000
PORT RICHEY, CITY OF (120234)	857	$ 214,764,000
SAN ANTONIO, CITY OF (120634)	6	$ 1,581,000
ST. LEO, TOWN OF (120166)	1	$ 350,000
ZEPHYRHILLS, CITY OF (120235)	176	$ 54,423,000

Pasco County entered the NFIP in 1977 and the last community assistance visit was conducted on July 23, 2018. The County currently has a Class 6 rating under the CRS. To reiterate data shared earlier, there were 23,649 flood insurance policies in force countywide as of 01/31/2024. NFIP identified over 1100 repetitive loss properties in Pasco County that are discussed in detail in Appendix D. This report, and its inclusion in the LMS, is required for the community to maintain its CRS status.

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As a Class 5 community, Pasco County's CRS participation allows NFIP policyholders to receive a 25% discount on their flood insurance premium which translates to approximately $4 million in policy savings. According to the County's most recent recertification documentation, received in January 2020 the County performs activities related to the items for which it receives credit as follows:

Elevation Certificates
Map Information Service
Outreach Projects
Flood Protection Information
Higher Regulatory Standards
Repetitive Loss Area Outreach Project
Floodplain Management Planning
Drainage System Maintenance
Flood Protection Assistance

To summarize, the county and its municipalities will continue their commitment to NFIP by continuing to:

- Enforce the Floodplain Management Ordinance which regulates new development and substantial improvements in the special flood hazard areas.
- Adopt NFIP minimum floodplain management criteria via local regulation
- Adopt the latest effective Flood Insurance Rate Map (FIRM)
- Maintain elevation certificates on file for all new construction in the SFHAs or for substantial improvements to properties in the SFHA.
- Use best available (flood map) data for issuing construction permits.
- Maintain public records and make them available for review.
- Maintain records pertaining to LOMAs, and LOMRs, etc.
- Provide information related to Flood Hazards, Flood Maps, etc., to the public upon request.
- Continue community outreach efforts for compliance with the Community Rating System program.
- Continue to promote Flood Insurance to property owners.
- Continue to update the public and enable their participation in the Flood Remapping Project.
- Maintain flood hazard publications at the main branch of the Library.
- Implement and enforce local floodplain management regulations to developments in the SFHA
- Appoint a designee or agency to implement the addressed commitments and requirements of the NFIP

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- Where feasible, continue to identify/acquire land in the SFHA open space/preservation.
- Promote hazard flood mitigation to the public.
- Continue drainage maintenance and drainage system improvement projects.
- Continue Floodplain Management activities and target a Class 4 rating.

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Funding Sources

A description of currently identified funding sources is provided below. The description includes an overview of the resource, eligibility criteria, type of assistance available, and a point of contact.

In addition to the funding sources for the mitigation projects/programs, there are additional programs available to citizens and homeowners to strengthen their homes and businesses through Florida Alliance for Safe Homes (FLASH), and NFIP.

FLASH is a partnership of the insurance industry, state and federal government as well as national not-for-profit groups. The program is targeted at educating consumers about disaster mitigation. This is a multimedia campaign aimed at helping Floridians make their families, homes, and communities better able to withstand hurricanes and other severe windstorms. The initiative includes a toll-free information line (1-877-221-SAFE), web site[40], and television public service announcements concerning how to prepare for different hazards.

The NFIP provides flood insurance coverage for structures at risk in special flood hazard areas. The FDCA administers the NFIP in the state and provides technical assistance to local governments, residents and various building-trade groups on proper floodplain building and construction techniques. Insurance under the program is available only for loss due to flood. If floods damage a home or business, the NFIP may require the owner to meet certain building requirements to reduce flood damage. To help meet the costs associated with repairing or rebuilding, the NFIP grants policyholders up to $30,000 through Increased Cost of Compliance Coverage to bring their home or business into current code compliance[41].

There is a wealth of grant programs and various funding sources that can be used to fund identified mitigation projects. Figure 6.2 shows the funding sources list which is different programs that provide financial assistance to complete appropriately identified mitigation projects countywide. Figures 6.3 through Figure 6.28 describe each funding source in detail. Some programs on the list may no longer be in effect but are included because they have historically benefited Pasco County LMS Projects.

[40] http://www.flash.org/

[41] https://www.fema.gov/increased-cost-compliance-coverage

Figure 6.2

Funding Sources Index

Assistance to Firefighters Grant (Figure 6.3)	**National Hurricane Program (Figure 6.16)**
Buffer Zone Protection Program (Figure 6.4)	Nonpoint Source Implementation Grants (Figure 6.17)
Capitalization Grants for Clean Water State Revolving Funds (Figure 6.5)	Outdoor Recreations-Acquisition; Development and Planning (Land and Water Conservation Fund) (Figure 6.18)
Coastal Services Center Cooperative Agreements (Figure 6.6)	Pollution Prevention Grants Program (Figure 6.19)
Community Assistance Program-State (CAP-SSEE) (Figure 6.7)	Building Resilient Infrastructure and Communities (BRIC) Program (Figure 6.20)
Community Development Block Grant (Figure 6.8)	Public Assistance (PA) (Figure 6.21)
Emergency Management Preparedness and Assistance Trust Fund/Municipal Competitive Grant (Figure 6.9)	Repetitive Flood Claims Program (Figure 6.22)
Environmental Education Grant (Figure 6.10)	Severe Repetitive Loss Program (Figure 6.23)
Federal Highway Administration, Planning & Environment, Intermodal and Statewide Programs (Figure 6.11)	Special Economic Development and Adjustment Assistance Program-Sudden and Severe Economic Dislocation (SSED) and Long Term Economic Deterioration (LTED) (Figure 6.24)
Flood Mitigation Assistance Program (FMA) (Figure 6.12)	Transportation Equity Act for the 21st Century, Surface Transportation Block Grant Program (Figure 6.25)
Florida Communities Trust (FCT) (Figure 6.13)	Water and Waste Disposal Loans and Grants (Figure 6.26)
Hazard Mitigation Grant Program (HMGP) (Figure 6.14)	Water Pollution Control (Figure 6.27)
Hurricane Loss Mitigation Program (Figure 6.15)	Watershed Protection and Flood Prevention (Figure 6.28)

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Funding Sources Detailed

Figure 6.3

Assistance to Firefighters Grant (Fire Prevention Safety Grant)[42]

Overview	**Provide financial assistance to fire departments/non-affiliated EMS organizations to enhance their fire and related hazards capabilities and response needs. To support organizations lacking tools/resources necessary to effectively protect public health and safety and their response personnel with respect to fire and other hazards.**
Eligibility	Fire departments, non-affiliated EMS organizations, public or PNP that have a formal arrangement to provide fire suppression or EMS, operating in the 50 States, District of Columbia, and US territory, to a population within a fixed geographical area on a first-due basis, but is not affiliated with a hospital and does not serve a geographical area where EMS is adequately provided by a fire department.
Assistance Provided	This program has no statutory formula. However, federal cost shares are based on populations as follows: over 50,000, a 20% share, 20,000-50,000, a 10% share and under 20,000, a 5% share. Also, a maintenance effort is applied to ensure that federal funds are used to supplement, not supplant existing programs.
Contacts	Department of Homeland Security, Preparedness Directorate 245 Murray Lane, Bldg. 410, Washington, DC 20528

Figure 6.4

Buffer Zone Protection Program[43]

Overview	**The Buffer Zone Protection Program (BZPP) supports the DHS's focus on infrastructure protection. It is intended to strengthen the critical infrastructure against risks associated with terrorist attacks by: 1. Identifying significant assets at the terrorist targeted site(s). 2. Identifying specific threats and vulnerabilities associated with the site(s) and its assets. 3. Developing a buffer zone extending outward from the facility in which preventive measures can be employed. 4. Identifying applicable LE jurisdictions and other Federal, State and local agencies having a role in the prevention of, protection against, and response to terrorist threats or attacks specific to the CI/KR site(s) and points of contact within these organizations. 5. Evaluating the capabilities of the jurisdictions with respect to terrorism prevention and response. 6. Identifying specific planning, equipment, training, and exercise requirements that better enable jurisdictions to mitigate threats and vulnerabilities of the site(s) and its buffer zone.**
Eligibility	Through the BZPP, DHS continues to focus resources to reduce the risk associated with the highest priority CI/KR assets across targeted sectors, including: Highest consequence chemical, nuclear, liquefied natural gas facilities Critical water/wastewater systems and higher consequence dams Transportation system critical nodes, select food and agriculture facilities Critical telecommunications, banking, finance, public health and healthcare facilities
Assistance Provided	No cash or in-kind cost share for required for BZPP funds, but may change.
Contacts	Department of Homeland Security, Grant Programs Directorate Control Desk, 4th Floor 500 C Street SW, Washington, DC 20472

[42] https://www.fema.gov/welcome-assistance-firefighters-grant-program

[43] https://www.fema.gov/media-library/assets/documents/20601

Figure 6.5

Capitalization Grants for Clean Water State Revolving Funds[44]

Overview	**EPA awards grants to States to capitalize their Clean Water State Revolving Funds (SRF). The States make loans for high priority water quality activities. As loan recipients make payments back into the fund, money is available for new loans to be issued to other recipients. Previously used to build wastewater treatment facilities, loans are now used increasingly for other water quality management activities, including: 1. agricultural, rural and urban runoff control; 2. Estuary improvement; 3. Wet weather flow control, including stormwater and sewer overflows; 4. Alternative wastewater treatment technologies; and 5. Non-traditional projects such as landfills and riparian buffers.**
Eligibility	Grant funds available to States, Puerto Rico, Territories, District of Columbia and Indian Tribes can receive project grants from either EPA or Indian Health Service. States lend money to municipalities, communities, citizens' groups; nonprofit organizations; and private citizens implementing NPS and estuary management activities (provided for in State plans developed under CES Sections 319 and 320).
Assistance Provided	Loans provided by States to eligible recipients, 20% State match is required.
Contacts	U.S. Environmental Protection Agency, Office of Wastewater Management SRF Branch, Municipal Support Division (4204) 401 M Street SW, Washington, D.C. 20460

Figure 6.6

Coastal Services Center Cooperative Agreements[45]

Overview	**The Coastal Services Center supports projects aimed at developing creative science-based solutions to coastal management issues that will allow maintenance or improvement of natural resources while also allowing for economic growth. The Center will support activities in the following program areas: Landscape Characterization and Restoration; the Coastal Change Analysis Program; Coastal Remote Sensing; Integration and Development; the administration of the Coastal Management Fellowship program; training and meeting facilitation; and Special Projects.**
Eligibility	State and local governments, public nonprofit organizations, other public institutions/organizations.
Assistance Provided	Project Grants (Cooperative Agreements).
Contacts	Department of Commerce, National Oceanic and Atmospheric Administration National Ocean Service, Coastal Services Center 2234 South Hobson Avenue Charleston, SC 29405

Figure 6.7

Community Assistance Program-State (CAP-SSSE)[46]

Overview	**The CAP-SSSE is intended to identify, prevent and resolve floodplain management issues before they require enforcement action. FEMA annually informs each State of its eligibility to participate in the SSSE under notification separate from the solicitation package with the Cooperative Agreement Performance Partnership Agreement (PPA) Package. The SSSE is administered through the Mitigation Division of each FEMA Regional Office. The CAP-SSSE is a product-oriented program related to the NFIP flood loss reduction objectives.**

[44] https://www.epa.gov/cwsrf

[45] https://coast.noaa.gov/funding/links.html

[46] https://www.fema.gov/community-assistance-program-state-support-services-element

Eligibility	States and Indian Tribes.
Assistance Provided	Individual grants are awarded based on requests. States are required to provide a 25% match.
Contacts	FEMA, Mitigation Directorate 500 C Street SW, Washington, DC 20472

Figure 6.8

Community Development Block Grants (CDBG)[47]

Overview	**The Community Development Block Grants (CDBG) provide for long-term needs, such as acquisition, rehabilitation, or reconstruction of damaged properties and facilities and redevelopment of disaster-affected areas. Funds may also be used for emergency response activities, such as debris clearance and demolition, extraordinary increases in the level of necessary public services. Eligible projects include the following:** **Voluntary acquisition, or if appropriate, elevation of storm damaged structures;** **Relocation payments for displaced people and businesses;** **Rehabilitation or reconstruction of residential and commercial buildings;** **Assistance to help people buy homes, including down payment assistance and interest rate subsidies; and** **Improvements to public sewer and water facilities.**
Eligibility	State governments that have elected to administer CDBG funds for non-entitlement communities. States with designated major disaster areas may receive statutory and regulatory waivers of program requirements regarding the use of regular CDBG funds which recipients designate to address the damage.
Assistance Provided	Formula grants to States for non-entitlement communities. Additional grants are not available unless emergency supplemental CDBG funds are appropriated.
Contacts	Department of Housing and Urban Development Community Planning and Development 451 7th Street SW, Washington, DC 20410

Figure 6.9

Emergency Management Preparedness and Assistance Trust Fund/Municipal Competitive Grant Program[48]

Overview	**The EMPA provides competitive grants to state, regional, local governments, and PNP organizations to implement projects that will further state and local emergency management objectives. The Municipal Competitive Grant Program provides competitive grants to municipalities that are legally constituted, have an authorized, established, and maintained emergency management program, and have signed the Statewide Mutual Aid Agreement (SMAA). For both programs, applications are accepted in the following categories:** **Projects promoting public education on preparedness and recovery issues.** **Projects enhancing coordination of relief efforts of statewide private sector organizations, including public-private business partnership efforts.** **Projects to improve training and operations capabilities of agencies assigned lead or support responsibilities in the State CEMP.** **Other projects that will further state and local emergency management objectives which have been designed by the State of Florida as priorities in the applicable Notice of Fund Availability.**
Eligibility	State, regional agencies, local governments, and PNPs may submit multiple proposals to implement projects that will further state and local emergency management objectives; no

[47] https://www.hud.gov/program_offices/comm_planning/communitydevelopment/programs

[48] https://www.floridadisaster.org/dem/preparedness/grants-unit/

	individual proposal may exceed $300,000. Each Municipal EM program may apply for one competitive grant not to exceed $50,000 in requested grant funds.
Assistance Provided	Project grants.
Contacts	Emergency Management Preparedness and Assistance Trust Fund Program Division of Emergency Management 2555 Shumard Oak Blvd, Tallahassee, FL 32399

Figure 6.10

Environmental Education Grant[49]

Overview	**This grant provides financial support for projects that design, demonstrate or disseminate environmental education projects, methods or techniques. Projects must focus on one of the following: 1.) improving environmental education teaching skills; 2.) educating teachers, students or the public about human health problems; 3.) building State, local, Tribal government capacity to develop environmental education programs; 4.) educating communities through community-based organizations; or 5.) educating public through print, broadcast or other media.**
Eligibility	Local, Tribal or State education agencies, colleges and universities, non-profit organizations, State environmental agencies, and non-commercial education broadcasting agencies.
Assistance Provided	Project grants (up to $25,000 regionally; $25,000 to $250,000 nationally) Non-Federal government match of 25% required.
Contacts	U.S. Environmental Protection Agency Office of Environmental Education 401 M Street SW, Washington, DC 20460

Figure 6.11

Federal Highway Administration, Planning & Environment, Intermodal and Statewide Programs[50]

Overview	**The intent of the Federal Highway Administration (FHA) Intermodal and Statewide Programs is the expeditious development and management of high quality feasibility studies with FHA funds. Within the context of Title 23 U.S.C. or in 23 CFR guidelines, the meaning of feasibility has the following parts:** **The degree to which a given alternative mode, management strategy, designs or location is economically justified.** **The degree to which such an alternative is considered preferable from an environmental or social perspective.** **The degree to which eventual construction and operation of such an alternative can be financed and managed.**
Eligibility	Public or private, profit or non-profit entities or individuals, Local government agencies, Universities, colleges, technical schools, institutes.
Assistance Provided	Project grants (cooperative agreements). Matching funds may be required.
Contacts	U.S. Department of Transportation, Federal Highway Administration, ISTEA 400 7th Street SW, Washington, DC 20590

[49] https://www.epa.gov/education/environmental-education-ee-grants

[50] https://www.fhwa.dot.gov/hep/index.cfm

Figure 6.12

Flood Mitigation Assistance Program (FMA)[51]

Overview	**The Flood Mitigation Assistance (FMA) Program helps States and communities identify and implement measures to reduce or eliminate the long-term risk of flood damage to homes and other structures insurable under the National Flood Insurance Program (NFIP). Projects may include: 1.) elevation, relocation or demolition of insured structures; acquisition of insured structures and property; 2.) dry flood proofing of insured structures; 3.) minor, localized structural projects that are not fundable by State or other Federal programs (e.g. erosion-control and drainage improvements), and 4.) beach nourishment activities such as planting of dune grass.**
Eligibility	State agencies, participating NFIP communities, or qualified local organizations. Communities that have been suspended from the NFIP are not eligible.
Assistance Provided	Planning grants to assist communities with the development of Flood Mitigation Plans (assessment of flood risk and identification of actions needed to reduce risk). Project grants for the implementation of measures to reduce flood losses.
Contacts	FEMA Mitigation Directorate 500 C Street SW, Washington, DC 20472

Figure 6.13

Florida Communities Trust (FCT)[52]

Overview	**This grant program facilitates the purchase of lands for conservation and/or recreation purposes by local governments. This land acquisition program helps to implement conservation, recreation, open space, and coastal elements of local comprehensive plans. The Board of Florida Communities Trust has latitude to consider innovative financing arrangements, loans, and land swaps. However, most of the Trust's funding is for land acquisition. Land acquisition projects in which matching funds are available will receive more favorable consideration, although a portion of available funds may be awarded on outright grants.**
Eligibility	States and Tribes.
Assistance Provided	Individual grants are awarded based on requests.
Contacts	Florida Communities Trust 2555 Shumard Oaks Blvd, Tallahassee, FL 32399

Figure 6.14

Hazard Mitigation Grant Program (HMGP)[53]

Overview	**Program assists States and communities implementation of long-term hazard mitigation measures following a major disaster declaration. The program's objectives are to prevent or reduce the loss of life and property from natural hazards, to implement State or Local Mitigation Strategies, to enable mitigation measures to be implemented during recovery from a disaster and to provide funding for previously identified mitigation measures benefitting the disaster area. Eligible projects include: elevation, relocation, acquisition or demolition of structures that will reduce future losses and retrofitting of critical facilities. Examples of eligible projects include: Structure hazard control or protection such as storm water control facilities; retrofitting of critical facilities such as flood proofing or installation**

[51] https://www.fema.gov/flood-mitigation-assistance-grant-program

[52] https://floridadep.gov/lands/land-and-recreation-grants/content/florida-communities-trust-home

[53] https://www.fema.gov/hazard-mitigation-grant-program

	of hurricane shutters; property acquisition, relocation and elevation to protect structures from future damage; small scale drainage improvements to existing drainage facilities; and other small scale flood protection measures to critical facilities.
Eligibility	State, local governments, certain private non-profit organizations or institutions, and Indian tribes or authorized Tribal organizations and Alaskan Native villages or organizations. Project must be in a declared disaster area (by the President).
Assistance Provided	Project grant (match of funds or in-kind services required). FEMA can fund up to 75% of total eligible costs (50% if disaster was declared prior to 6/10/1993).
Contacts	FEMA Mitigation Directorate 500 C Street SW, Washington, DC 20472

Figure 6.15

Hurricane Loss Mitigation Program

Overview	**The Residential Construction Mitigation Program (RCMP) receives $7 million annually from the Florida Hurricane Catastrophe Trust Fund.**
Eligibility	State, regional agencies, local governments and private non-profits/for project organizations.
Assistance Provided	Competitive grants to implement projects furthering RCMP's statutory objectives.
Contacts	Florida Division of Emergency Management 2555 Shumard Oak Boulevard, Tallahassee, FL 32399

Figure 6.16

National Hurricane Program[54]

Overview	**This program provides state and local assistance; property protection; hazard identification and evacuation studies; post storm analysis; training and exercises; and public awareness and education campaigns, and materials to support State and local activities. The intent is to significantly reduce the loss of life, property, economic disruption and disaster assistance costs resulting from hurricanes.**
Eligibility	Several states, including Florida
Assistance Provided	Individual grants are awarded based on requests, States are required to provide a 25% match.
Contacts	FEMA Mitigation Directorate 500 C Street SW, Washington, DC 20472

Figure 6.17

Nonpoint Source Implementation Grants[55]

Overview	**The 319 program provides formula grants to the States to implement Nonpoint source projects and programs in accordance with Section 319 of the Clean Water Act. Examples of previously funded projects include best management practices (BMPs) installation for animal waste, design and implementation of BMP systems for stream, lake and estuary watersheds; basin-wide landowner education program; and lake projects previously funded under the CWA Section 314 Clean Lakes Program.**
Eligibility	States and Indian Tribes.

[54] https://www.fema.gov/pdf/rebuild/national_hurricane_program_fs_july_2006.pdf

[55] https://www.epa.gov/nps/319-grant-program-states-and-territories

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Assistance Provided	Formula grants are awarded to a lead agency in each State. States/local organizations are required to provide 40% of total project or program cost.
Contacts	U.S. Environmental Protection Agency Office of Wetlands, Oceans and Watersheds Assessment and Watershed Protection Division, Nonpoint Source Control Branch 401 M Street SW, Washington, DC 20460

Figure 6.18

Outdoor Recreation Acquisition, Development and Planning[56]

Overview	**This grant program provides financial assistance to the States and their political subdivisions for the preparation of Statewide Comprehensive Outdoor Recreation Plans (SCORPs) and acquisition and development of outdoor recreation areas and facilities for the general public, to meet current and future needs. Acquisition and development grants may be used for a wide range of outdoor recreation projects, such as picnic areas, inner city parks, campgrounds, tennis courts, boat launching ramps, bike trails, outdoor swimming pools, and support facilities such as roads, water supply, etc. Facilities must be open to the general public and not limited to special groups. Development of basic, rather than elaborate facilities is favored. Fund monies are not available for the operation and maintenance of these facilities.**
Eligibility	States and Indian Tribes.
Assistance Provided	Individual grants are awarded based on requests.
Contacts	Department of the Interior Recreation Grants National Park Service

Figure 6.19

Pollution Prevention Grants Program[57]

Overview	**This grant program provides project grants to States to implement pollution prevention projects. The grant program is focused on institutionalizing multimedia pollution (air, water & land) prevention as an environmental management priority, establishing prevention goals, providing direct technical assistance to businesses, conducting outreach, and collecting and analyzing data.**
Eligibility	States and Indian Tribes.
Assistance Provided	Individual grants are awarded based on requests. States are required to provide at least 50% of total project costs.
Contacts	U.S. Environmental Protection Agency Office of Pollution Prevention and Toxics Pollution Prevention Division 401 M Street SW Washington, DC 20460

[56] https://www.nal.usda.gov/ric/15916

[57] https://www.epa.gov/p2/grant-programs-pollution-prevention

Figure 6.20

Building Resilient Infrastructure and Communities (BRIC)[58]

Overview	**The purpose of the Building Resilient Infrastructure and Communities is to assist communities to implement hazard mitigation programs designed to reduce overall risk to the population and structures before the next disaster occurs. Mitigation projects that primarily focus on natural hazards are eligible, with a focus on building resiliency and nature-based solutions.**
Eligibility	State agencies; Federally recognized Indian Tribal governments, and local governments. Private non-profit organizations are not eligible to apply; except through a local government application for proposed activities on their behalf. All applicants must be participants in the NFIP if they have been identified through the NFIP as having a Special Flood Hazard Area. In addition, the community must be in good standing with the NFIP and participating in their respective county's Local Mitigation Strategy (LMS).
Assistance Provided	Grants provided to assist communities to implement hazard mitigation programs to reduce overall risk to the population and structures before the next disaster occurs. 25% State match is required.
Contacts	Division of Emergency Management Bureau of Recovery and Mitigation 2555 Shumard Oak Boulevard, Tallahassee, FL 32399

Figure 6.21

Public Assistance (PA) Grant Program[59]

Overview	**This grant program provides supplemental assistance to States, local governments, and certain private non-profit organizations to alleviate suffering and hardship resulting from major disasters or emergencies declared by the President. Grants can be used to clear debris; apply emergency protective measures to preserve life and property in response to the declared event; and repair or replace damaged structures, such as buildings, utilities, roads and bridges, water-control facilities and recreational facilities.**
Eligibility	States, Indian Tribes, and local governments. Also, eligible are PNPs that operate educational, utility, emergency or medical facilities, provide custodial care or essential services of a governmental nature to the public.
Assistance Provided	Individual grants are awarded based on requests. States are required to provide a 25% match.
Contacts	FEMA Infrastructure Support Division Response and Recovery Directorate 500 C Street SW, Washington, DC 20472

Figure 6.22

Repetitive Flood Claims Program[60]

Overview	**The Repetitive Flood Claims (RFC) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act (NFIA) of 1968. The Biggert Waters Flood Insurance Reform Act of 2012 eliminated the RFC program. The program details are to remain in the LMS to allow for reference to previously completed RFC projects.**
Eligibility	State agencies, Local and Tribal Governments that participate in the NFIP communities and are in good standing.

[58] https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities

[59] https://www.fema.gov/public-assistance-local-state-tribal-and-non-profit

[60] https://www.fema.gov/repetitive-flood-claims-program

Assistance Provided	Project grants for the implementation of measures to reduce flood losses.
Contacts	FEMA Mitigation Directorate 500 C Street SW, Washington, DC 20472

Figure 6.23

Severe Repetitive Loss Program[61]

Overview	**The Severe Repetitive Loss (SRL) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program (NFIP). The Biggert Waters Flood Insurance Reform Act of 2012 eliminated the SRL program. The program details are to remain in the LMS to allow for reference previously completed SRL projects.**
Eligibility	State agencies, local and tribal governments that participate in the NFIP communities and are in good standing.
Assistance Provided	Project grants for the implementation of measures to reduce flood losses.
Contacts	FEMA Mitigation Directorate 500 C Street SW, Washington, DC 20472

Figure 6.24

Special Economic Development and Adjustment Assistance Program: Sudden and Severe Economic Dislocation (SSED) and Long Term Economic Deterioration (LTED)[62]

Overview	**The EAPG assists State and local areas in the development and/or implementation of strategies designed to address structural economic adjustment problems resulting from sudden and severe economic dislocation such as plant closings, military base closures and defense contract cutbacks, and natural disasters (SSED), or from long-term economic deterioration in the area's economy (LTED). Grants may be made to develop and Economic Adjustment Strategy or to implement such strategies. Grants may be made for the construction of public facilities, business development and financing (including revolving loan funds), technical assistance, training or any other activity that addresses the economic adjustment problem.**
Eligibility	States, cities, counties or other political subdivisions, consortia of such political subdivisions, public or PNPs representing redevelopment areas designated under the Public Works and Economic Development Act of 1965, Economic Development Districts established under Title IV of the Act, Indian Tribes. Geographic areas, which meet either LTED and/or SSED eligibility criteria. LTED eligibility determined by: 1.) Very high unemployment; 2.) low per capita income; and 3.) chronic distress. For SSED eligibility, the economic dislocation must exceed certain job loss thresholds for the area.
Assistance Provided	Project grants.
Contacts	Department of Commerce Economic Adjustment Division Economic Development Administration Room H7327, Herbert C. Hoover Building, Washington, DC 20230

[61] https://www.fema.gov/media-library/collections/14

[62] https://www.eda.gov/funding-opportunities/

Figure 6.25

Transportation Equity Act for the 21st Century, Surface Transportation Block Grant Program[63]

Overview	**Surface Transportation Program (STP) funds may be used by State and local governments for any roads (including the National Highway System) that are not functionally classified as local or rural minor collectors. Each State sets aside 10% of STP funds for transportation enhancements, which can include water related projects, such as wetland mitigation and implementation of control technologies to prevent polluted highway runoff from reaching surface water bodies. Other transportation enhancements include landscaping and other scenic beautification, pedestrian and bicycle trails, archaeological planning and research, preservation of abandoned railway corridors, historic preservation, sidewalk modifications to comply with ADA, natural habitat or wetland mitigation efforts, Intelligent Transportation System (ITS) capital improvements and environmental/pollution abatement projects.**
Eligibility	Public or private, profit or non-profit entities or individuals, local government agencies, Universities, colleges, technical schools or institutes.
Assistance Provided	Project grants (cooperative agreements), matching funds may be required.
Contacts	U.S. Department of Transportation Federal Highway Administration 400 7th Street SW, Washington, DC 20590

Figure 6.26

Water and Waste Disposal Loans and Grants[64]

Overview	**This program provides water and waste disposal facilities and services to low income rural communities whose residents face significant health risks. Funds may be used for 100% construction costs to construct, enlarge, extend, or otherwise improve a community water or sewer system; extend service lines and connect individual residences to a system. The program allows applicants to make grants directly to individuals to extend service lines, connect resident's plumbing to system, pay reasonable charges and fees for connecting to system, installation of plumbing and related fixtures, and construction in dwelling of a bathroom.**
Eligibility	Local governments, Indian Tribes and non-profit associations.
Assistance Provided	Individual grants are awarded based on requests.
Contacts	U.S. Department of Agriculture Rural Utilities Service, Water Programs 1400 Independence Avenue SW, Washington, DC 20250

Figure 6.27

Water Pollution Control Program Grants[65]

Overview	**This program assists in the establishment and maintenance of adequate measures for prevention and control of surface and ground water pollution. The program provides broad support for the prevention and abatement of surface and ground water pollution from point and non-point sources including water quality planning, monitoring, water quality**

[63] https://www.fhwa.dot.gov/specialfunding/stp/

[64] https://www.rd.usda.gov/programs-services/water-waste-disposal-loan-grant-program

[65] https://www.epa.gov/water-pollution-control-section-106-grants/tribal-grants-under-section-106-clean-water-act

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	standards, assessments, permitting, pollution control studies, planning, surveillance and enforcement; advice and assistance to local agencies; training; and public information. Funds cannot be used for construction, operation, or maintenance of waste treatment plants, nor can they be used for costs financed by other Federal grants.
Eligibility	States, Indian Tribes and interstate agencies for establishing and maintaining adequate measures for prevention and control of surface and ground water pollution.
Assistance Provided	Individual grants are awarded based on requests.
Contacts	U.S. Environmental Protection Agency Office of Pollution Prevention and Toxics Pollution Prevention Division 401 M Street SW, Washington, DC 20460

Figure 6.28

Watershed Protection and Flood Prevention Operations Program[66]

Overview	**This program works through local government sponsors and helps participants solve natural resource and related economic problems on a watershed basis. Projects include watershed protection, flood prevention, erosion and sediment control, water supply, water quality, fish and wildlife habitat enhancement, wetlands creation and restoration, and public recreation in watersheds of 250,000 or fewer acres. Technical and financial assistance is available for installation of works of improvement to protect, develop, and utilize the land and water resources in small watersheds.**
Eligibility	State agency, county, municipality, township, soil and water conservation district, flood prevention or flood control district, Indian Tribe or Tribal organization, or PNP with authority to execute operate watershed improvement works.
Assistance Provided	Cost-sharing (funds cover 100% of flood prevention construction costs; 50% of construction costs related to agricultural water management, recreation and fish and wildlife; and none of the costs for other municipal and industrial water management). Technical assistance and counseling.
Contact	Local or State Natural Resources Conservation Service Department of Agriculture Natural Resources Conservation Service P.O. Box 2890, Washington, DC 20013

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66 https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/landscape/wfpo/?cid=nrcs143_008271

VII. PLAN MAINTENANCE

This plan will be monitored, evaluated and updated as needed to meet the changing needs of the community. To do so, the LMS Working Group will convene quarterly to review and revise as necessary under the following circumstances:

- Annually in the month of January, or
- When actual events substantially alter or negate parts of the strategy, or
- At the request of a member of the LMS Working Group; or
- At the request of a municipality or the local government.

All meetings will be preceded by one or all of the following forms of invitation to the working group members, municipalities, private and public non-profits, businesses, general public and any other interested parties: email, press release, advertisement in the local newspaper, posting on the County's official calendar website.

In addition, Emergency Management will annually solicit input from all working group members in order to prepare an annual progress report that accurately reflects the status of the LMS Working Group and its projects. The progress report will be presented to Florida Division of Emergency Management on behalf of Pasco County. In addition, all meeting information will be posted on the Emergency Management website. It will include but is not limited to the agenda and meeting minutes for each meeting held. At a minimum, the following items will be reviewed to assess the status of the plan:

- Relevance/Applicability: Does the plan continue to be relevant to the community's goals?
- Usefulness/Benefits/Value: Does the plan continue to be useful, provide benefits to the community and continue to have value to the residents of Pasco County?
- Progress: Is progress being made towards completion of plan goals and mitigation projects?
- Participation: Is there sufficient community involvement in the LMS process or does outreach need to be conducted?

The schedule/guide for the annual update is seen in Figure 7.1:

Figure 7.1 Annual Update Guide

Monthly Milestones	Action
April	Solicit input for an update. Review plan, criteria and input received, prepare draft.
July	Public meeting to provide update in mitigation activities and modify report as appropriate.
August	Finalize report, submit for review to LMS Working Group and public.
October	Conduct an LMS Working Group meeting to approve or deny update
January	Conduct an LMS Annual Update Meeting to summarize all changes, project status updates/retires, grant updates, project submissions, and membership updates for the calendar year. Submit the annual update to FDEM after this meeting commences.

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Every 5 years, the LMS Working Group will complete an intensive review and update to the LMS. This updated plan will be submitted and reviewed by FDEM and FEMA for approval. Post approval, the plan will be presented to the Board of County Commissioners and the municipalities of New Port Richey, Port Richey, Zephyrhills, Dade City, San Antonio, and St. Leo. The newly adopted plan will be posted on the Emergency Management website. The schedule/guide to complete the 5 year update is seen in Figure 7.2.

Figure 7.2 5-Year Update Guide

Time from Due Date	Action
T-18 months	First public meeting and formation of different subcommittees, begin data collection and research for the risk analysis.
T-12 months to 7 months	Public meetings, task assignments, plan updates, complete draft.
T-6 months	Final public meeting, plan approval by LMS Working Group, submit plan to State of Florida for review.
T-6 months to 3 months	Make revisions if necessary.
T-3 months	Submit to FEMA for review.
Target due date	Receive FEMA approval.
T+2 months	Board of County Commissioners and Municipalities for adoption process.

The plan will be reviewed by Emergency Management in partnership with the following: the County's Zoning, Planning, Engineering, the Cities of New Port Richey, Port Richey, Zephyrhills, Dade City, San Antonio, St. Leo, subcommittees consisting of appropriate members from the LMS Working Group, and the general public. This process will require members to provide detailed information concerning their projects, ordinances, progress and programs. Emergency Management will compile the collected information which will be presented to the entire LMS Working Group and the public at various meetings for comment and approval. The review will be accomplished by public notices and published meeting information.

Public participation will be essential to producing a quality program for the County and the municipalities to implement. It is anticipated that notices will be placed in newspapers, public meeting places, libraries, and the County website to encourage participation in the process. It is also the intent of the members to personally encourage participation through public speaking engagements.

It is also recommended that the overall five-year update advises on changes in development for Pasco County. Since the previous update in 2019, Pasco County continues to grow rapidly. The majority of the development has been through rejuvenation efforts of existing neighborhoods and commercial building along our major thoroughfares, specifically U.S. 19, State Road 54, and Ridge Road. The most recent and notable neighborhood development is the Bexley communities, Briar Oaks, Lakeside Estates, Epperson, and Starkey Ranch communities. The most notable developments from a commercial/infrastructure perspective includes AdventHealth ER Central Pasco (opened in January 2018), Florida Hospital Center Ice (opened in January of 2017), the Tampa Premium Outlets (opened in 2015), and the planned Wiregrass Sport Complex. The newly

developed and rejuvenated residential and commercial structures are reflected in the revised Hazard Identification Risk Assessments completed in Section II of this LMS.

Upon final approval of the plan by FDEM and FEMA, the LMS will be presented to the Pasco County Board of County Commissioners.

Incorporation into Existing Planning Mechanisms

The County's LMS is incorporated into existing planning mechanisms as follows:

The Central Permitting section of the Building department enforces the Building Code Ordinance. The code has specific criteria related to both wind and flood mitigation. At the point of permitting, enforcement of the Code supports the mitigation strategy.

The Stormwater Management department manages the Floodplain Management Plan. The FMP is a broad planning document that focuses specifically on a mitigation strategy related to repetitive loss properties and flood mitigation in general throughout the entire County.

The Planning Department has a mechanism in place to identify the potential impact to shelters related to any new developments within the evacuation zones. A process is in place whereby developers must either address evacuation concerns or work with Emergency Management officials to develop mitigation plans or contribute financially to mitigation efforts.

Information from the current LMS, specifically which is contained within the Risk Assessment section, will be compared against the existing Comprehensive Emergency Management Plan (CEMP). This information will inform the update of the CEMP in 2025.

Each of these plans, processes, procedures and ordinances are therefore incorporated by reference to this LMS. Each is available for review at the Pasco County Office of Emergency Management.

Each participating jurisdiction is highly encouraged to integrate this plan into their own planning measures. To date, jurisdictions have not incorporated the LMS into plan updates on the municipal level. Each adopting jurisdiction is also encouraged to expand and improve upon the elements including in this plan. During this planning period special partner meetings will be held to ensure each jurisdiction has the ability to appropriately incorporate the LMS to promote mitigation initiatives community wide.

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