



2026 ORANGE COUNTY **LOCAL MITIGATION STRATEGY**





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Plan Introduction and Authority

The Orange County Local Mitigation Strategy (LMS) establishes a framework for reducing long-term risk to people, property, infrastructure, natural resources, and community lifelines. It addresses the natural, human-caused, and technological hazards retained in the hazard inventory: tornadoes, wildland fire, winter storms (extreme cold/wind chill and freezing temperatures), meteorological and hydrological drought, infectious disease pandemic, animal/agricultural disease outbreak, hazardous materials incidents (fixed-facility releases), heat waves, subsidence/sinkhole, severe thunderstorm/lightning/hail, cyberterrorism, floods, terrorism/chemical, biological, nuclear, and explosive (CBRNE) incidents, and tropical storms/hurricanes.

The planning area includes unincorporated Orange County and the 14 additional jurisdictions and entities seeking approval under this multi-jurisdictional LMS. The 15 approval-seeking participants are identified in Planning Process Table 23 and addressed through corresponding participant-specific annexes. Orange County Emergency Management coordinates plan preparation and maintenance with County departments, municipal representatives, and participating stakeholders.

The authority for preparing, adopting, and maintaining this Local Mitigation Strategy is grounded in the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the Disaster Mitigation Act of 2000; and 44 CFR §201.6. A current Federal Emergency Management Agency (FEMA)-approved local mitigation plan is a condition of eligibility for certain FEMA mitigation assistance, including the Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) program, as applicable. The LMS is also developed and maintained in accordance with Florida Administrative Code Chapter 27P-22, including the requirements for County LMS Working Groups and Local Mitigation Strategies.

Formal adoption of the LMS by the Orange County Board of County Commissioners, or other relevant governing authority, is required for plan approval. Adoption documentation will be included in the plan's appendices upon completion of the approval process. Participating municipalities and entities will be responsible for adopting the plan through their own governing bodies as evidence of their commitment to mitigation planning and implementation.

Orange County commits to reviewing, updating, and maintaining the LMS on a regular schedule, with comprehensive updates occurring at least every five years as federally required. This plan maintenance cycle ensures that the LMS remains relevant, responsive to changes in hazard risk, and consistent with evolving community needs. The County intends to monitor mitigation progress, integrate new data, and engage stakeholders throughout the five-year span, maintaining compliance with FEMA standards and eligibility for mitigation assistance. If adoption records are not available at this time, their completion is a forward-looking requirement for plan finalization and grant eligibility.

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Context

Location

Orange County is located in Central Florida within the Orlando metropolitan area. It has a total area of approximately 1,003 square miles, including water, and 902.02 square miles of land. The County is bordered by Seminole County to the north, Lake County to the west and northwest, Osceola County to the south, and Brevard County to the east. Orlando is the County seat.¹

The County's physical landscape is characterized by numerous lakes and water bodies, with Lake Apopka, the largest, on the western boundary, and the Butler Chain of Lakes, Lake Conway, and Lake Eola further shaping local hydrology and land use. The County is generally low-lying, with elevations ranging from just under 50 feet above sea level in some areas to over 120 feet along parts of the northwest. This geography lends itself to both flood risks and localized hazard exposures, further influenced by ongoing development and urban expansion.

Major transportation corridors traverse Orange County, including Interstate 4 (I-4), which runs diagonally through the County connecting Orlando with other regional hubs, Florida's Turnpike, State Road 528 (Beachline Expressway), State Road 408 (East-West Expressway), State Road 417 (Central Florida GreeneWay), and State Road 429. Orlando International Airport, situated in the southeast quadrant of the County, is a critical facility for both commercial air travel and economic activity. The Greater Orlando Aviation Authority operates airport facilities that are central to regional logistics and emergency management.

Orange County's planning area incorporates all unincorporated and incorporated territory within these boundaries. Figure 1 shows all jurisdictional boundaries of plan participants. The presence of extensive urban development is balanced by noted conservation areas and state parks such as Wekiwa Springs State Park and the Tibet-Butler Preserve, demonstrating the interface between built infrastructure and natural resource management. The County's land area is primarily urban and suburban, with continuing development trends focused on infill, mixed-use, and transit-oriented growth patterns as identified in recent comprehensive planning documents.

¹ U.S. Census Bureau, QuickFacts: Orange County, Florida, land area and population characteristics, <https://www.census.gov/quickfacts/fact/table/orangeCountyflorida/PST045225>.

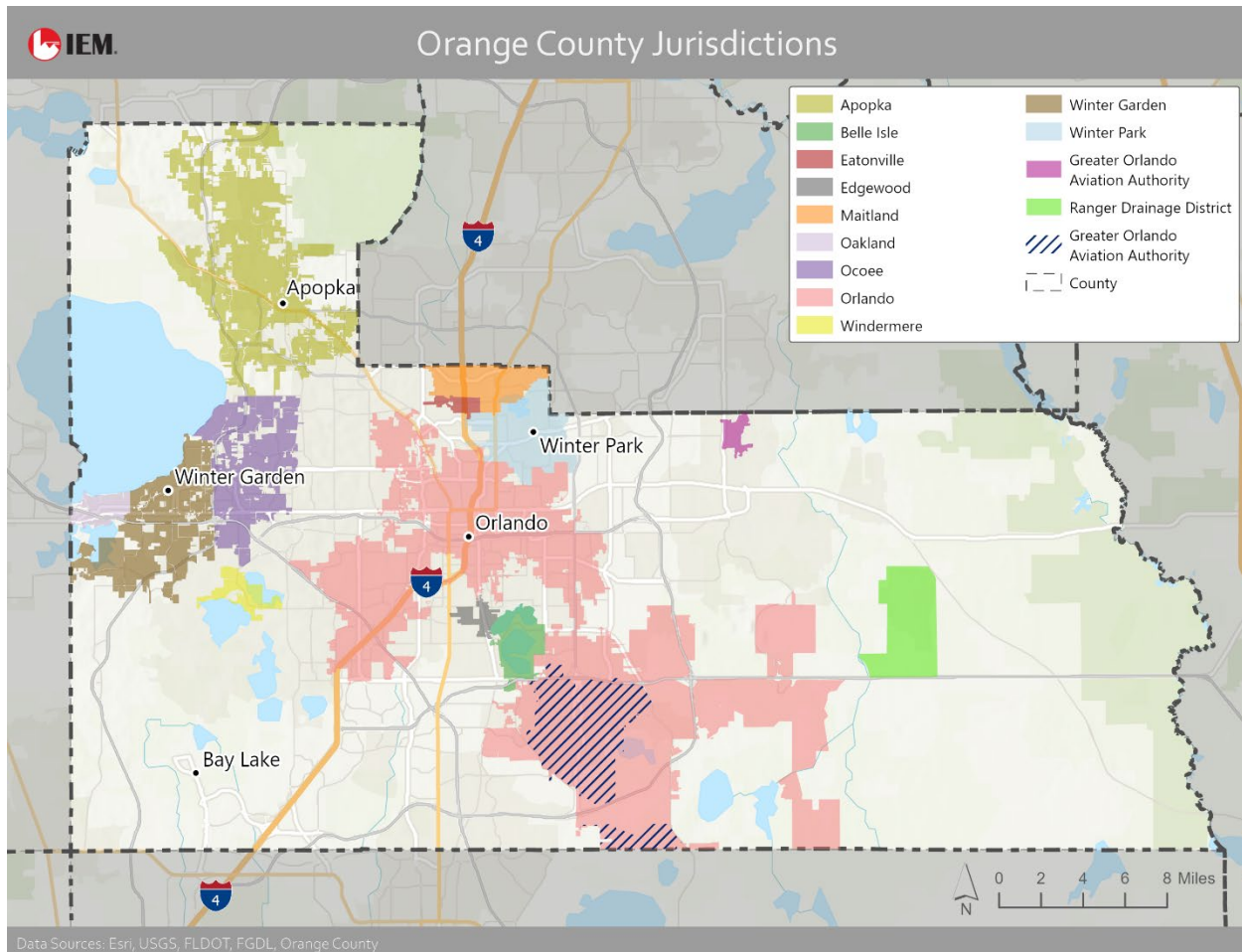


Figure 1: Orange County Jurisdictional Boundaries of Plan Participants

Orange County coordinates with neighboring jurisdictions on shared water management, emergency response, and transportation issues because hazards and infrastructure systems cross jurisdictional boundaries. The County's role in Central Florida's economy and transportation network makes continuity and regional coordination central to multi-hazard mitigation.

History

Orange County, Florida, has experienced several distinct periods of settlement and development that have shaped its current hazard exposure, infrastructure network, and land-use mix. The County's earliest permanent settlements began in the 1840s, with the area being largely agricultural through the late 19th and early 20th centuries. Orange County's citrus industry drove early economic and settlement patterns, resulting in dispersed rural communities and infrastructure adapted to support agriculture, especially between the 1870s and the citrus boom of the 1920s.

Following the decline of agriculture in mid-century, particularly after catastrophic freezes in the 1890s and again in the 1980s, suburbanization accelerated. By the 1950s and 1960s, the construction of new

transportation corridors, such as I-4 and the Florida Turnpike, further transformed the County's development patterns. These highways enabled rapid residential and commercial growth, especially in the vicinity of Orlando, as agricultural lands were increasingly converted into subdivisions, shopping centers, and supporting infrastructure.

A watershed moment in the County's development occurred in 1971 with the opening of Walt Disney World, propelling a wave of population growth and economic diversification. Orange County became a global tourism destination, fueling extensive commercial and hospitality development across the southwestern and central parts of the County. This period saw significant increases in impervious surfaces and a shift toward dense urban and suburban land uses, particularly between the 1970s and 1990s. As a result, natural drainage corridors were altered, increasing vulnerability to flooding in several redeveloped areas.

Throughout the late 20th and early 21st centuries, growth extended into new master-planned residential communities, especially west and southwest of Orlando, as well as reinvented urban cores. Development followed new expressways such as State Roads 408, 417, and 429, concentrating jobs and population along these travel corridors, while other areas remained protected as conservation lands, parks, and water management areas.

Historic communities such as Winter Garden, Eatonville (incorporated in 1887 as one of the oldest Black-incorporated municipalities in the United States), and Windermere grew alongside Orlando's rise, each maintaining unique historical resources, older infrastructure, and land-use patterns established before and during early suburbanization. These municipalities face special considerations in hazard mitigation due to their historic building stock and location within older, denser settlement areas.

In recent decades, Orange County has continued to experience rapid population increases and development pressure, with ongoing expansion of both residential areas and major employment centers, including health, education, and technology hubs. The County's comprehensive plans balance this growth with efforts to set aside additional conservation lands and maintain critical natural features that help mitigate wildfire risk, protect water quality, and reduce flood vulnerability.

Today, Orange County encompasses a diverse array of urban, suburban, rural, and preserved natural areas. Current land use and infrastructure, as well as community exposure to hazards such as flooding, wildfire, severe weather, and others, directly reflect the County's layered history of agricultural origins, mid-century suburbanization, emergence as a tourism hub, and ongoing population growth and redevelopment. The legacy of past development underlines the importance of integrating mitigation policies that address both historic and emerging vulnerabilities as the County continues to grow and adapt.

Climate

Orange County has a humid subtropical climate characterized by hot, humid summers, mild winters, a summer wet season, and a comparatively dry late-fall-through-spring period. Afternoon thunderstorms

and tropical systems can produce intense rainfall, while the Atlantic hurricane season runs from June 1 through November 30. Site-specific precipitation normals should be taken from the applicable National Oceanic and Atmospheric Administration (NOAA) climate station rather than treated as a single uniform County value.

The Fifth National Climate Assessment concludes that the Southeast is warming and is experiencing increasing exposure to extreme heat and heavy precipitation. These regional findings support planning for hotter conditions, warmer nights, and more extreme rainfall in Orange County, but the assessment does not establish a single County-specific temperature change or a mid-century increment for Orange County.²

Precipitation in Central Florida is variable across seasons and years. Longer dry periods can stress water supplies and vegetation, while intense rainfall from thunderstorms and tropical systems can overwhelm drainage and produce pluvial, lake, and riverine flooding. No Countywide threshold count for recent extreme rainfall days was verified for this update; local station records and engineering rainfall frequency data should be used for project-level analysis.

Orange County has no coastline, so direct coastal storm surge and sea-level-rise inundation are not County hazards. Regional sea-level rise can affect the broader economy and transportation system, but local flood planning should focus on rainfall, lakes, streams, groundwater, and stormwater systems rather than Lake Okeechobee or coastal inundation pathways.

Periodic drought and high temperatures can increase wildfire potential, particularly at the wildland-urban interface. Fire danger varies with current fuels and weather conditions and should be evaluated using current Florida Forest Service and local fire service information; a fixed frequency for any Keetch-Byram Drought Index category was not established for this update.

Freezing temperatures and hazardous wind chill are uncommon but possible during winter cold-air outbreaks. Because conditions vary by event and location, current National Weather Service forecasts and observations should be used rather than a single Countywide winter-low value.

Sinkhole (subsidence) risk exists in some parts of the County due to local geology; however, climate-driven impacts on sinkhole occurrence remain largely unquantified. There are currently data gaps in detailed projections of wind chill risks, winter storm intensity, and County-specific impacts of climate change on infectious disease dynamics and agricultural disease outbreaks.

Overall, Orange County's climate context is one of increasing variability, marked by higher average temperatures, record high extremes, changing precipitation regimes, and evolving risk profiles for natural hazards such as flooding, drought, heat waves, hurricanes, and wildfires. Continued monitoring and

² U.S. Global Change Research Program, Fifth National Climate Assessment (2023), DOI: <https://doi.org/10.7930/NCA5.2023>.

integration of updated climate projections and local hazard data will be necessary to maintain an effective mitigation strategy.

Demographics

The 2020 Census counted 1,429,908 residents in Orange County, and the Census Bureau's July 1, 2025, population estimate is 1,528,002. Population is concentrated in and around Orlando, with additional incorporated and unincorporated growth centers throughout the County.³ Figure 2 shows population density throughout the County.

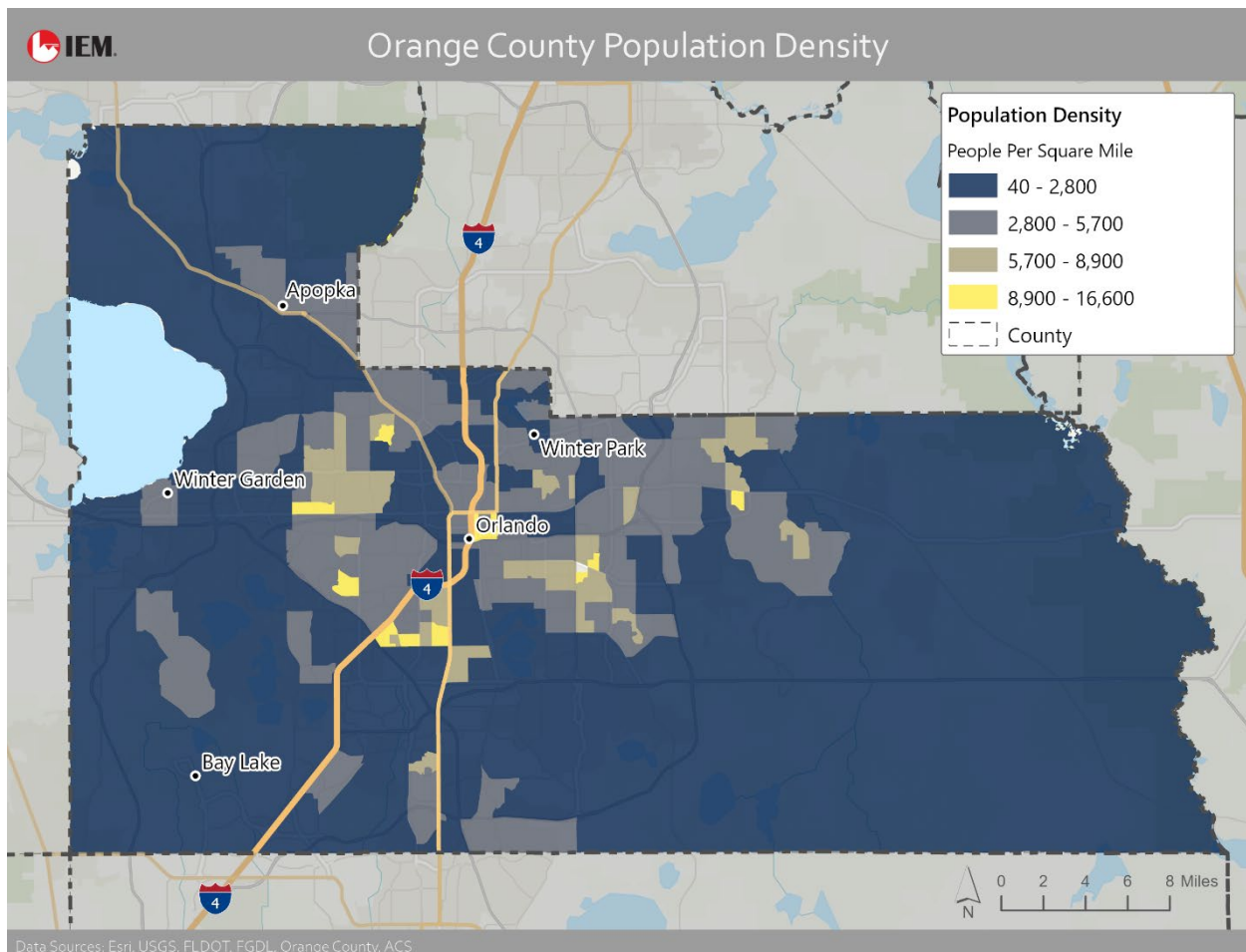


Figure 2: Orange County Population Density

U.S. Census Bureau data for 2020–2024 indicate that Orange County has 527,776 households, with an average household size of 2.72 persons and an owner-occupied housing unit rate of 56.8 percent. The

³ U.S. Census Bureau, QuickFacts: Orange County, Florida, July 1, 2025 population estimate; 2020 Census; and 2020–2024 characteristics, <https://www.census.gov/quickfacts/fact/table/orangeCountyflorida/PST045225>.

complementary tenure share is approximately 43.2 percent renter-occupied, subject to rounding. Figure 3 shows the homeowner occupancy throughout the County.

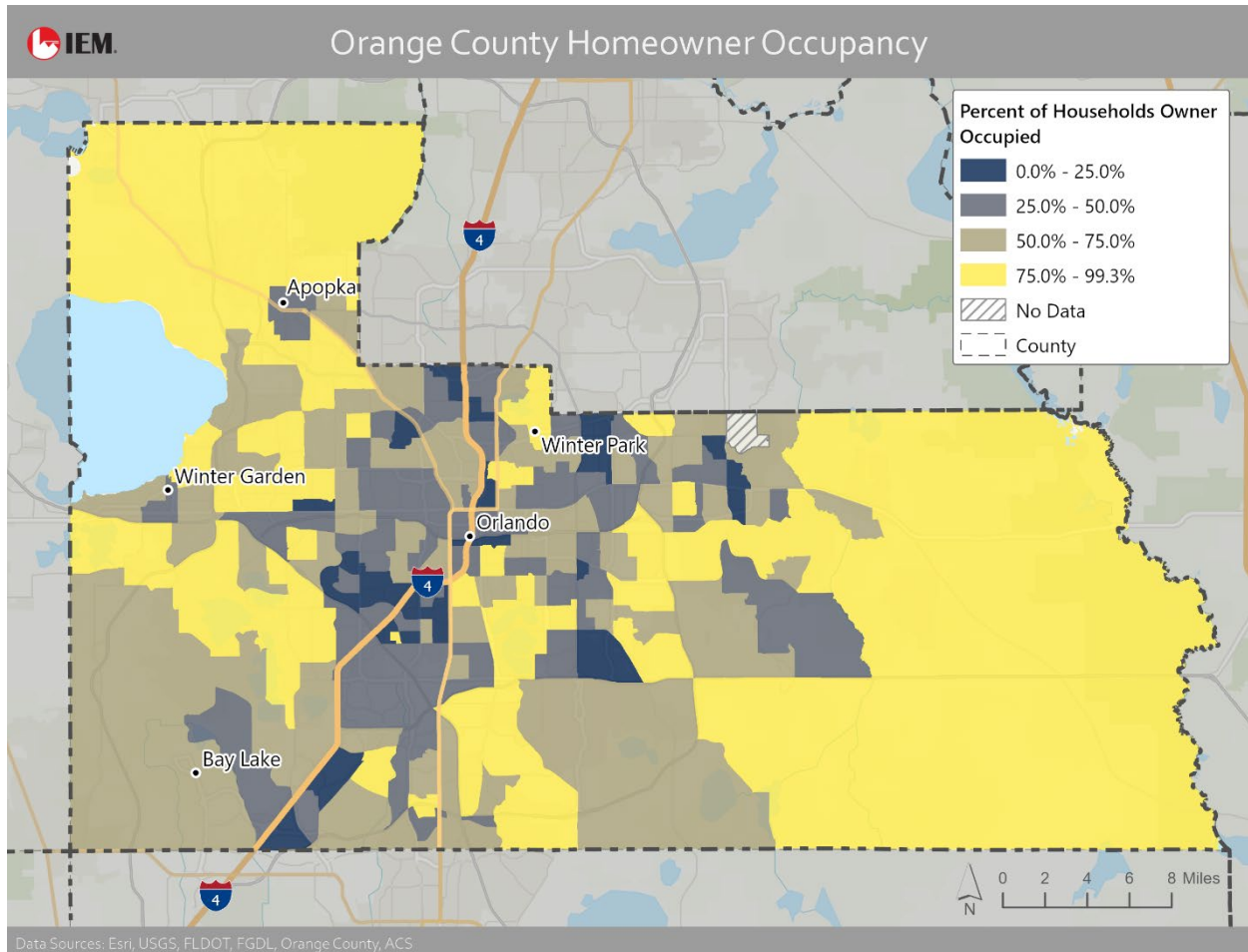


Figure 3: Orange County Homeowner Occupancy

The population includes 20.7 percent of persons under age 18 and 14.3 percent of persons age 65 and older. These groups may have different transportation, sheltering, medical, and communication needs that should be considered in mitigation planning.

The Census Bureau also reports that 7.9 percent of residents under age 65 have a disability. The Census QuickFacts measure is not a percentage of the total population and should not be presented as such.

Adjusted to 2024 dollars, the median household income in Orange County was \$79,719 during the 2020–2024 period, while 12.4 percent of residents lived below the poverty line. The poverty statistic is measured at the individual level rather than by household. Housing tenure and structure types also shape exposure to hazards. A substantial share of the housing stock comprises single-family homes, but multi-family structures, mobile homes, and condominiums are also prominent. Much of the new residential growth is occurring in previously undeveloped areas at the urbanizing periphery, raising challenges for infrastructure resilience and the equitable distribution of protective measures.

Orange County's diversity requires tailored mitigation actions. The County's significant immigrant, refugee, and migrant communities, as well as concentrations of seasonal workers and students, demand culturally and linguistically appropriate outreach and support. A growing number of residents live in group quarters, assisted living, and institutional settings, further emphasizing the need for inclusive planning. Figure 4 shows racial and ethnic minority status throughout the County.

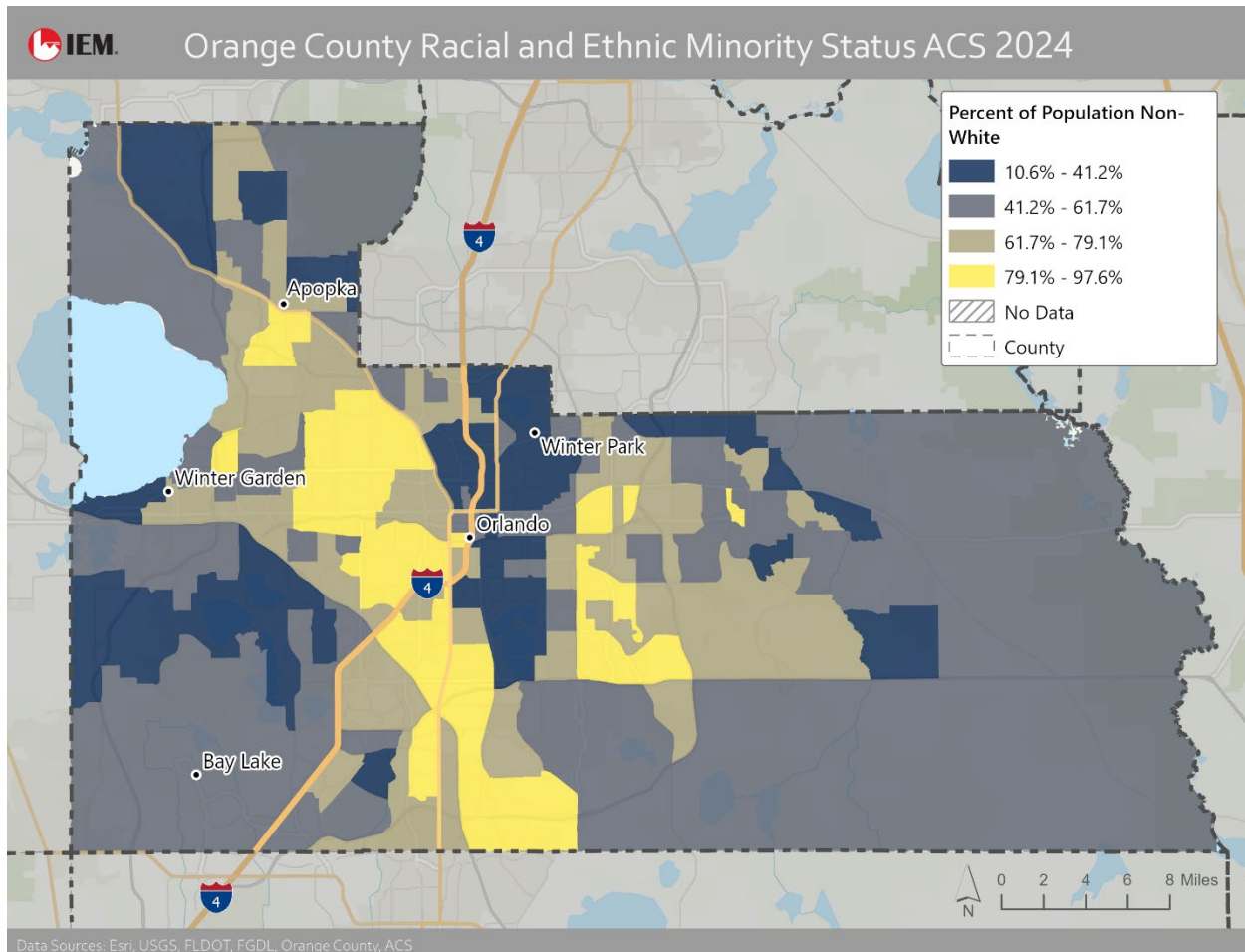


Figure 4: Orange County Racial and Ethnic Minority Status (ACS 2024)

Unless otherwise stated, County demographic characteristics in this section use the Census Bureau's 2020–2024 American Community Survey (ACS) five-year period as presented in QuickFacts; population totals distinguish the April 1, 2020, Census count from the July 1, 2025, estimate. Percentages retain the Census Bureau's published universes and should not be converted between persons, households, or age-limited populations.

Economy

Orange County's economy is anchored by tourism and hospitality and also includes substantial health care, education, professional services, construction, retail, and transportation activity. Major visitor

destinations and the airport make continuity of transportation, utilities, lodging, and public services important to both local and regional recovery.

Official Census economic measures provide a consistent Countywide baseline. Orange County had a total of 842,028 employment positions in 2023. In 2022, accommodation and food services sales were \$14.475 billion, and total retail sales were \$37.163 billion. These measures use different reference years and should not be combined as a single economic-impact estimate.

The Greater Orlando Aviation Authority and the University of Central Florida are major regional institutions, but their passenger, enrollment, and workforce measures use institutional reporting periods rather than Census economic-establishment definitions. Their current verified figures are presented in the respective annexes and are not added to the County employment total.

Hazards can interrupt visitor access, business operations, supply chains, education, health care, and transportation. Because no single current, County-specific tourism economic-impact figure was verified on a definition consistent with the Census measures above, this plan does not present one as a County total.

Key economic assets whose disruption would impede recovery include major employers (theme parks, hospitals, airport operations), tourist accommodations, and logistics centers. The concentration of employment and infrastructure in specific areas makes mitigating hazards especially critical to protecting economic functions.

Economic considerations inform the prioritization of actions that protect major employers, transportation and hospitality operations, and the Countywide economic system. These measures support business continuity and post-disaster recovery.

Vulnerable Populations

Orange County, Florida, is home to a diverse population, with several groups facing heightened vulnerability to natural and human-caused hazards based on socioeconomic, health, and demographic factors. Effective mitigation, warning, evacuation, sheltering, and recovery strategies require special consideration of these groups Countywide.

Based on current demographic and social vulnerability data, the five most vulnerable populations in Orange County are:

- **Children and Youth:** Persons under age 18 comprise 20.7 percent of Orange County's population for 2020–2024. Children may depend on adults for transportation, shelter access, and interpretation of emergency instructions.
- **Older Adults:** Persons age 65 and older comprise 14.3 percent of Orange County's population for 2020–2024. Some older adults may have mobility, sensory, medical, transportation, or power-dependence needs during hurricanes, heat, and extended outages.

- **People with Disabilities:** For 2020–2024, 7.9 percent of residents under age 65 are reported as having a disability. Accessible communication, transportation, sheltering, and continuity of medical support are therefore essential planning considerations.
- **People with Limited Incomes:** For 2020–2024, 12.4 percent of Orange County residents are below the poverty line. This person-level measure indicates potential constraints on preparedness, resilient housing, evacuation, and recovery resources.
- **People with Limited English Proficiency:** For 2020–2024, 38.5 percent of residents age five and older speak a language other than English at home. Because this is not an LEP measure, the plan uses it only as an indicator of the need for multilingual communication and does not label all such residents as limited-English-proficient.

Mitigation planning in Orange County prioritizes these vulnerable populations through targeted public outreach, accessible warnings and communications, shelter accommodations, and coordination with service providers. Equity-focused strategies are incorporated to reduce disproportionate impacts and ensure effective access to mitigation, evacuation, and recovery support for these at-risk groups.

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Risk Assessment

PRT alignment—B1 and B2: This section establishes the Countywide hazard inventory and documents hazard type, location, extent, previous occurrences, future probability, methodology, and regional vulnerability. Each annex applies that framework to participant-specific ratings, consequences, exposed facilities and lifelines, NFIP and RL/SRL information, and data limitations; the annexes incorporate Countywide hazard science by reference.

Introduction

The risk assessment provides the factual basis for hazard mitigation planning. It combines technical data and local knowledge to identify hazard types, locations, extent, probability, and consequences and to inform mitigation priorities.

The assessment addresses the natural, human-caused, and technological hazards retained in the plan: tornado, wildland fire, extreme cold/wind chill, meteorological drought, hydrological drought, infectious disease pandemic, animal/agricultural disease outbreak, fixed-facility chemical release, heat wave, subsidence/sinkhole, severe thunderstorm/lightning/hail, cyberterrorism, floods, freezing temperatures, terrorism/CBRNE, and tropical storm/hurricane. Each profile documents hazard description, location, extent, magnitude and severity, previous occurrences, future probability, and consequences for people and property.

The methodology combines hazard identification and profiling with local records, state and federal datasets, the FEMA National Risk Index (NRI), and documented input from planners and subject-matter experts. It accounts for differences in hazard conditions and exposure across Orange County.

Next, the County's assets are inventoried, including existing and planned buildings, infrastructure, and critical facilities. This asset data is geographically compared with hazard areas to determine exposure. The analysis estimates potential losses in terms of human, social, economic, and environmental impacts, including a review of local land-use patterns and anticipated development that could affect vulnerability. Special attention is given to FEMA's NFIP data, particularly to identifying structures that have been repeatedly damaged by floods, as required for continued grant eligibility.

The FEMA NRI is used as a County- and Census-tract-level screening reference, while the locally developed risk matrix provides the plan's jurisdiction-specific prioritization. These sources are interpreted at their published geographic scales and are not treated as interchangeable rankings.

Together, the hazard profiles, asset inventory, vulnerability assessment, loss information, and risk ranking inform the mitigation goals and actions presented later in the LMS.

National Risk Index

FEMA's NRI, version 1.20 (December 2025), is a comparative screening dataset for 18 natural hazards. It publishes County- and Census-tract-level records built from Expected Annual Loss, Social Vulnerability, and Community Resilience. It does not publish composite records for municipalities, a university campus, a drainage district, or airport facilities.⁴

Expected Annual Loss is a modeled annualized measure derived from hazard exposure, annualized frequency, and historic loss ratios. In this plan, it is used only as a standardized screening indicator at the geography represented by the FEMA record; it is not a facility-level loss estimate or a substitute for engineering analysis.

Social Vulnerability is a Census-derived comparative indicator. County values describe Orange County as a whole, and tract values describe entire Census tracts. Neither value should be described as a municipal or facility-specific measure unless a documented geospatial aggregation has been completed.

Community Resilience is likewise a comparative indicator for the published County or tract geography. It does not directly measure the capabilities, continuity arrangements, infrastructure redundancy, or mutual-aid agreements of an individual participating jurisdiction or institution.

The composite NRI score is useful for comparison among like FEMA geographies. County results may inform regional context, but they cannot establish a citywide or special-district rating, and a tract intersecting a jurisdiction does not by itself describe only the portion inside that jurisdiction.

Accordingly, the plan does not reproduce unsupported municipal or facility NRI rankings. Hazard priorities for Orange County and each annex are derived from the local risk matrix and supported by verified event history, regulatory mapping, asset information, and subject-matter review.

NRI results are national model outputs and may not reflect recent development, local mitigation projects, unreported losses, campus or airport operations, or assets smaller than the published geography. These limitations are material when the dataset is applied to small or non-Census jurisdictions.

The NRI remains a useful screening resource for County- and tract-level context. Final local conclusions in this LMS rely on evidence at the appropriate scale and explicitly identify where a current jurisdiction-specific dataset or defensible aggregation is unavailable.

⁴ Federal Emergency Management Agency, National Risk Index data, version 1.20 (December 2025), County and Census tract geographies, <https://www.fema.gov/about/openfema/data-sets/national-risk-index-data>.

Sources

The Orange County risk assessment uses federal, state, regional, and local plans and technical datasets, whose geographic and date ranges are stated where applicable. Stakeholder and public-input findings rely only on participation documented in the supporting LMS planning record.

The source register identifies each referenced plan or dataset by exact title, version or date, custodian, geographic scope, and the LMS section, finding, or decision it informed. As applicable, it includes the FEMA Local Mitigation Planning Policy Guide and Handbook (2025); the Florida Enhanced State Hazard Mitigation Plan; FEMA National Flood Hazard Layer, NRI, Hazus, NFIP, multiple-loss-property, and disaster-declaration data; NOAA event records; state and regional water-management data; prior Orange County LMS materials; local plans; Geographic Information System (GIS) and asset information; and meeting, stakeholder, or public input used in the update. Items without supporting source records remain identified as data gaps.

FEMA and Federal Datasets: The National Flood Hazard Layer supports regulatory flood-hazard mapping; FEMA disaster and NFIP datasets support declaration and program-status checks; Hazus can support scenario modeling when model inputs and dates are documented; and the NRI provides County- and tract-level comparative screening. None of these sources is described as providing municipal or facility-specific results unless the plan documents a local analysis at that scale.

State and Regional Datasets: The risk assessment incorporated the Florida Division of Emergency Management's Enhanced State Hazard Mitigation Plan, Statewide Regional Evacuation Study, and associated state hazard datasets. These resources informed hazard characterization and regional disaster trends and supported consistency with statewide vulnerability information. GIS layers from the St. Johns River Water Management District and South Florida Water Management District were used to identify flood-prone areas, hydrographic features, and critical water infrastructure. Florida Department of Environmental Protection records and locational data informed the assessment of hazardous materials sites and subsidence or sinkhole hazards.

Orange County Plans and Data: The Orange County Comprehensive Plan, prior Local LMS documents, and the Orange County Emergency Operations Plan (EOP) supplied information on County land-use, development patterns, population distribution, and location of critical facilities and assets. Orange County Property Appraiser datasets were referenced to estimate counts and values of buildings and parcels exposed to hazard areas, while the Orange County GIS division provided spatial data layers including parcel boundaries, critical facility points, and utility infrastructure. Public Works floodplain mapping, recent repetitive loss reports, and infrastructure vulnerability studies were also referenced to support analysis.

Historic Event and Meteorological Data: Historical storm, wildfire, drought, and extreme weather records were reviewed from NOAA's Storm Events Database, National Climatic Data Center (NCDC) records, and the Southeast Regional Climate Center. These sources supported frequency analysis, trend identification, and probabilistic event modeling for hurricanes, tornadoes, extreme rainfall, drought, and

heat waves. Epidemiological data regarding pandemics and agricultural disease outbreaks were obtained from the Florida Department of Health and the U.S. Department of Agriculture.

Technical Studies and Methodologies: The risk assessment used technical loss-modeling reports from prior FEMA HMGP applications, prior Orange County LMS materials, and available Hazus hurricane and flood modeling. The Orange County Wildland Fire Management Plan supplied spatial data and risk-ranking methods for the wildfire assessment.

An early hazard-risk-perception survey was distributed to all 15 approval-seeking LMS participants, and six responses were received. The survey instrument, distribution record, and responses are retained in the supporting planning record. Survey results are used only as documented input from those six participants and are not generalized to nonresponding participants or represented as public opinion.

The planning team considered the recency, relevance, geographic scale, and technical limitations of available sources. The plan uses current local information where it is available and identifies limitations where older, regional, or screening-level information is retained. Source dates, versions, and uses should be documented in the planning record so the analysis can be reproduced during plan review and future updates.

Taken together, these sources provide the basis for the risk assessment and for linking documented hazards and vulnerabilities to mitigation priorities and actions.

Methodology

The risk assessment for Orange County, Florida, applies a multi-step methodology intended to address FEMA's Local Mitigation Planning Policy Guide (2025), and 44 CFR §201.6. FEMA's approval criteria apply to natural hazards. The LMS also addresses selected human-caused and technological hazards for local planning purposes; these supplemental hazards do not substitute for the required natural-hazard assessment or mitigation strategy. The methodology identifies, evaluates, and ranks hazards relevant to the County, considers exposure and vulnerability, and uses available loss information to inform mitigation priorities.

Hazard Screening and Profiling

The assessment began with a comprehensive hazard screening process. The planning team reviewed historical disaster data, prior hazard mitigation plans, technical studies, and input from subject matter experts to confirm the current threat landscape in Orange County. The hazards profiled in detail for this plan include tornado, wildland fire, extreme cold/wind chill, meteorological drought, hydrological drought, infectious disease pandemic, animal/agricultural disease outbreak, fixed-facility chemical release, heat wave, subsidence/sinkhole, severe thunderstorm/lightning/hail, cyberterrorism, floods, freezing temperatures, terrorism/CBRNE, and tropical storm/hurricane. For each hazard, the type, location, extent, previous occurrences, and probability of future events were documented based on available data and documented participant and stakeholder input where available.

Asset Inventory and Exposure Analysis

An inventory of the County's assets was compiled, focusing on buildings (residential, commercial, and public), infrastructure, and critical facilities, including those that support essential services and vulnerable populations. GIS data, parcel records, and infrastructure inventories were cross-referenced with hazard maps to determine which assets are exposed to specific hazards. Land use data, development trends, and population growth projections were also considered to evaluate future exposure and risk.

Loss Estimation

Where feasible, loss estimation modeling was conducted using available tools such as Hazus, FEMA's standardized software for estimating potential losses from hazards like flooding, hurricane winds, and earthquakes. These models integrate hazard characteristics, asset inventories, topography, and economic data to estimate direct economic damage, business interruption, and displacement for different hazard scenarios. For hazards where quantitative loss modeling was not feasible, qualitative or semi-quantitative estimates were developed based on historical impacts, expert judgment, and analogous jurisdictions.

Vulnerability Assessment

Vulnerability analyses focused on the sensitivity of structures, populations, and infrastructure to each hazard. Criteria included building construction type, age, occupancy, socioeconomic factors, special-needs populations, and the resilience or redundancy of critical infrastructure. Populations and facilities located within identified hazard zones, such as the FEMA Special Flood Hazard Area (SFHA), were highlighted as especially vulnerable. The impacts on NFIP-insured repetitive loss properties were assessed using claim and loss records.

Probability and Impact Scoring

For each hazard, probability and impact were evaluated using a combination of local historical event frequency, recurrence intervals, scientific projections, and expert opinion. Standardized scoring matrices were developed to compare hazards on a common scale. Probability scores considered past event frequency, while impact scores incorporated potential human, economic, and infrastructure consequences. In some cases, the magnitude and geographical extent of potential impacts were also factored into scoring.

Risk Ranking

A risk ranking process combined probability and impact scores to generate an overall risk prioritization for each hazard. This approach ensures that the hazards posing the greatest combined likelihood and potential consequences receive the most attention in the mitigation strategy. The risk ranking process

also accounted for documented participant and stakeholder input where available, recent changes in hazard patterns, climate and land-use trends, and future conditions, where data allowed.

Data Limitations

Several data limitations affected the risk assessment process. Gaps in historical hazard data, incomplete asset inventories, and constrained loss data for non-federally modeled hazards (such as cyberattacks and pandemics) introduced uncertainty into exposure and vulnerability estimates. When quantitative data was not available or reliable, the planning team relied on best-available qualitative information and documented expert or stakeholder input where such input was actually recorded. All notable data limitations were documented alongside the relevant hazard or asset discussion to inform future data collection and planning updates.

This methodology is intended to provide a consistent basis for comparing hazards while recognizing limitations in hazard modeling, source data, and exposure forecasting.

Magnitude, Severity, and Evidence Conventions

Each hazard profile now separates four concepts: physical magnitude, event probability, exposed people/assets, and community consequence. An official physical scale is used when one exists. When no accepted cross-hazard scale exists, the profile labels the tiers as plan-defined operational consequences. The hazard-specific tables support, but do not automatically replace, the adopted probability, consequence, or overall-risk rating.

Table 1: Cross-Hazard Interpretation and Evidence Rules

Assessment Component	Question Answered	Preferred Evidence	Use In Rating
Physical magnitude	How large or intense was/could the event be?	Official hazard scale; observed depth, wind, temperature, concentration, duration or area	Describes the event; does not alone determine community consequence
Probability	How often is a locally consequential event expected?	Local history, recurrence intervals, official forecast/climate information and documented expert judgment	High=1–5 years; Moderate=6–25 years; Low=more than 25 years/no documented local occurrence
Exposure	Who and what intersects the hazard?	Boundary-matched population, buildings, critical facilities, lifelines and infrastructure	Must use the same geography and data vintage as the hazard overlay

Assessment Component	Question Answered	Preferred Evidence	Use In Rating
Consequence	What disruption or loss could result?	Deaths/injuries, displacement, damage, service duration, economic/environmental effects, and redundancy	Low=limited; Moderate=localized/short-term significant effects; High=fatalities, widespread damage or major lifeline disruption
Uncertainty	What is unknown or not comparable?	Source limitations, missing attributes, model/scenario, scale, date, and geography	A data gap is stated; it is not filled by an uncited estimate

Observed Event-Data Check (2021–2025)

Table 2 is a reproducible recent-history check from NOAA Storm Events bulk details files.⁵ It is limited to County-coded Orange County records and does not include every event represented by an NWS forecast zone, every non-reported local incident, or complete insured/public-assistance losses. Counts are database records rather than independent storm systems.

Table 2: NOAA Storm Events County-Coded Records for Orange County, 2021–2025

Event Type	Records	Maximum Reported Magnitude	Direct Deaths/Injuries	Reported Property-Damage Estimate
Flood + Flash Flood	7	Not consistently coded	0 / 0	\$221.01 million
Thunderstorm Wind	30	59 kt measured (about 68 mph)	2 / 2	\$633,750
Hail	19	1.75 inches	0 / 0	\$100
Lightning	1	Not applicable	0 / 1	\$0 reported
Tornado	2	Both EF0	0 / 0	\$8,000
Heavy Rain	1	Not consistently coded	0 / 0	\$0 reported

⁵ NOAA National Centers for Environmental Information, Storm Events Database and bulk details files, <https://www.ncei.noaa.gov/stormevents/> and <https://www.ncei.noaa.gov/pub/data/swdi/stormevents/csvfiles/>. Local check filters: State=Florida, CZ_TYPE=County, CZ_NAME=Orange, event years 2021–2025; files available through the August 19, 2026 release for 2025. Counts are database records, not independent storms; damage entries are reported estimates and may be blank or incomplete.

Risk Matrix

PRT probability convention: where an annex uses a five-point frequency score, 5 means at least annual; 4 means once in 1–5 years; 3 means once in 6–25 years; 2 means once in 26–50 years; and 1 means more than 50 years or no documented local occurrence. For plan-wide comparison, scores 4–5 roll up to High probability, 3 to Moderate, and 1–2 to Low. Qualitative consequence and overall-risk labels remain the controlling local assessment; numeric scores are screening aids and do not imply parcel-level precision.

Orange County uses a structured risk matrix and hazard-ranking process to compare natural hazards and the supplemental human-caused and technological hazards retained for local planning. The results provide a common basis for considering mitigation priorities and project development.

The displayed results are the risk rankings used in this draft. Before submission, the draft Countywide risk matrix and participant-specific hazard rankings, along with their respective annexes, were provided to all 15 LMS participants for review. Table 23 and the supporting planning record identify the participants who reviewed or confirmed the rankings, comments received, and resulting revisions. No participant review is inferred solely from the distribution of the draft.

Risk Matrix Methodology

The Orange County risk matrix evaluates probability, historical impacts, consequences to people, property, infrastructure, the economy, and the environment, and the vulnerability of populations and assets. Standardized ratings combine available event data, modeled loss information, and documented local knowledge and professional judgment.

- **Probability:** Likelihood of occurrence or locally consequential activation within the planning period, based on documented history, current conditions, and official information.
- **Consequence:** Expected severity for people, property, lifelines, the economy, the environment, and continuity of services.
- **Vulnerability:** Exposure and susceptibility of populations, buildings, infrastructure, critical facilities, natural systems, and service dependencies.

The matrix assigns each hazard a Low, Moderate, or High rating for probability and consequence, using the definitions below. The planning team combines those ratings into an overall risk category and relative priority, considering documented occurrences, local impacts, vulnerability, and professional judgment. The final scoring worksheet should be retained with the planning record so the rankings can be reproduced during plan maintenance and the next update.

Hazard Ranking Summary

Table 3 summarizes Orange County's risk rankings for the hazards identified as relevant to the planning area.

Table 3: Orange County Hazard Risk Rankings

Hazard	Probability	Consequence	Overall Risk	Relative Priority
Floods	High	High	Very High	Very High
Tropical Storm/Hurricane	High	High	Very High	Very High
Severe Thunderstorm/Lightning/Hail	High	Moderate	High	Very High
Tornado	Moderate	High	High	Very High
Extreme Cold/Wind Chill (Winter Storm)	High	Moderate	High	High
Wildland Fire (Wildfire)	Low	Moderate	Moderate	High
Heat Wave (Extreme Heat)	Moderate	Moderate	Moderate	High
Meteorological Drought	Moderate	Moderate	Moderate	High
Hydrological Drought	Moderate	Moderate	Moderate	Moderate
Subsidence/Sinkhole	Low	Moderate	Low	Moderate
Freezing Temperatures	Moderate	Moderate	Moderate	Moderate
Fixed-Facility Chemical Release	Low	Moderate	Low	Moderate
Infectious Disease Pandemic	High	Moderate	High	Moderate
Animal/Agricultural Disease Outbreak	Low	Moderate	Low	Low
Terrorism/CBRNE	Low	Moderate	Low	Low
Cyberterrorism (Cyberattack)	Low	Moderate	Low	Low

How the Matrix Informs Priorities

The final ranking enables Orange County to focus planning efforts and resources on hazards with the greatest combined risk, such as floods and hurricanes. Mitigation measures aimed at these highest-ranked hazards are prioritized for grant application, project development, and policy updates. Lower-priority hazards are still addressed but receive resource allocation in proportion to their risk scores and community vulnerability.

Scoring Criteria Definitions

- **High Probability:** Event expected to occur within 1–5 years or occurs regularly.
- **Moderate Probability:** Event expected to occur in 6–25 years or documented isolated past events.
- **Low Probability:** Event is not expected within 25 years based on available records, or has not occurred during the documented period.
- **High Consequence:** Potential for fatalities, wide-scale destruction, severe economic loss, or major disruption of community functions.
- **Moderate Consequence:** Potential for injuries, moderate infrastructure damage, and limited business or service interruption.
- **Low Consequence:** Minimal injuries or damage, no long-term service or critical facility impacts.

Methodology Attribution

This hazard ranking and risk matrix approach was adapted from prior Orange County hazard mitigation planning efforts and updated to reflect current hazards, best practices, and FEMA guidance. Where possible, calculations and risk judgments are grounded in historic loss data, FEMA Hazus risk assessments, local incident reports, and documented planning-team determinations where retained in the supporting planning record.

Floods

Hazard Description

Flooding in Orange County, Florida, is a significant natural hazard with the potential to impact life, property, and vital infrastructure. Floods in the County can result from a variety of causes, including prolonged or intense rainfall, tropical storms, hurricanes, and overflow from natural and human-made water bodies such as rivers, lakes, and canals. The high water table and prevalence of low-lying areas further increase flood risk, while rapid development and urbanization can exacerbate localized flooding through increased impervious surfaces and altered drainage patterns.

Flooding in Orange County primarily manifests as riverine, flash, and urban (stormwater) flooding. Riverine flooding occurs along major waterways, such as the Econlockhatchee and Little Econlockhatchee Rivers, often following sustained heavy rainfall or tropical systems. Flash flooding can develop rapidly in response to intense rainfall, especially in areas with poor drainage or steep terrain. Urban flooding routinely affects streets, neighborhoods, and business districts where stormwater systems may become overwhelmed during heavy storms.

The hurricane season from June through November poses a heightened flood risk because tropical systems can bring heavy rainfall to the region. Hurricanes and tropical storms can drive widespread and localized inland flooding. Orange County's network of lakes, wetlands, canals, and river systems can also experience elevated water levels and overbank flooding during extreme precipitation events, increasing the risk in adjacent areas.

Cascading impacts of flooding in Orange County may include infrastructure damage, road closures, overwhelmed wastewater treatment facilities, contamination of drinking water supplies, and risks to public health and safety. Flooding can also disrupt transportation and emergency services, damage homes and businesses, and temporarily displace populations. Flood risk is a particular concern for vulnerable populations, including those living in mobile homes, older housing units, or flood-prone neighborhoods.

Flooding is included as a primary hazard in this plan because of its frequency, the severity of potential impacts, and the persistent threat posed by seasonal storms, hurricanes, and ongoing development within floodplains. The County's emphasis on floodplain management, stormwater regulation, and mitigation planning reflects the importance of addressing this hazard to protect residents, critical facilities, and economic assets.

Hazard Location and Extent

Flood hazards in Orange County, Florida, occur throughout the jurisdiction, with varying degrees of risk driven primarily by low-lying terrain, extensive surface water bodies, and a subtropical climate that fosters frequent heavy rainfall. Much of Orange County is characterized by flat topography, numerous lakes, streams, and canals, and several significant watersheds, including the Little Wekiva, Middle St. Johns, Econlockhatchee, and Shingle Creek. The risk of flooding is both jurisdiction-wide and localized, with pronounced vulnerability in areas adjacent to major watercourses, natural floodplains, and locations designated as SFHAs by FEMA.

FEMA's Flood Insurance Rate Maps delineate Special Flood Hazard Areas and other mapped flood-risk areas across Orange County, including A-zone designations along local rivers, creeks, lakes, drainage systems, and low-lying areas. Incorporated and unincorporated neighborhoods may experience riverine, lake, and stormwater flooding. Tropical cyclones and severe thunderstorms can produce localized inundation where rainfall exceeds drainage capacity. Current effective FIRM panels and the National Flood Hazard Layer should be used to identify site-specific regulatory flood zones. Figure 5 shows the Flood Hazard Zones and critical infrastructure in the County.

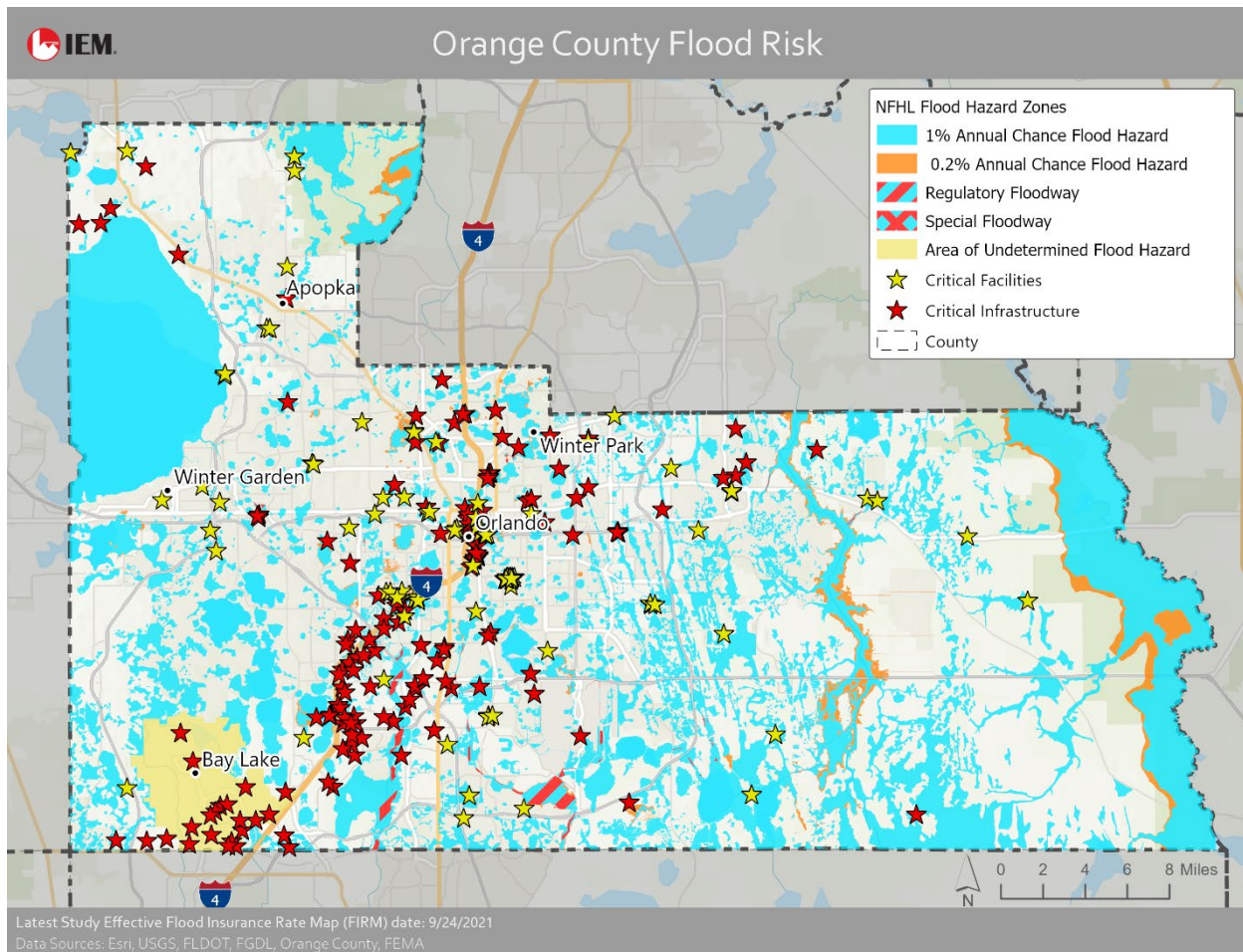


Figure 5: Orange County Flood Hazard Zones and Critical Infrastructure

The extent of flood impacts is highly contingent on rainfall magnitude and antecedent ground saturation. Riverine flooding can result in widespread inundation affecting hundreds of acres at a time, whereas urban flooding tends to be more localized but can cause significant disruption to property and infrastructure. The County has experienced significant flooding from both riverine and stormwater sources, with impacts ranging from shallow ponding of less than one foot to depths exceeding three feet in the worst-affected neighborhoods, particularly during large storm events. FEMA SFHA data, as referenced in local regulatory ordinances, indicate that hundreds of parcels and structures are exposed to at least a one percent annual chance of flooding.

While most current mapped flood hazard zones align with FEMA FIRMs, continuous urbanization and climate-related changes are expected to alter future risk locations and extents. Increased impervious surface coverage from development may exacerbate stormwater runoff and expand areas subject to urban flooding. Watershed management documents anticipate that flood hazard boundaries may expand, particularly in rapidly growing communities and the County's low-lying southern portions.

Overall, the flood hazard in Orange County encompasses a mixture of jurisdiction-wide risk and distinct high-exposure corridors along rivers, urban streams, and lake-adjacent developments, with both mapped

and anticipated increases in the spatial extent of vulnerable areas as population growth and climate impacts continue to evolve.

Hazard Magnitude and Severity

Flood probability is expressed with annual-chance recurrence, while event severity is evaluated using depth, duration, velocity, spatial extent, access restrictions, displacement, and lifeline interruption. The regulatory flood zones are not a complete inventory of pluvial or drainage flooding, and a mapped recurrence interval does not predict the date of the next event.

Table 4: Flood Magnitude, Probability, and Consequence Indicators

Measure/ Level	Technical Threshold	Orange County Application	Interpretation/Limit
Localized stormwater flooding	No universal recurrence threshold	Record observed depth, duration, road closures, structures, and lifelines affected.	May occur outside mapped SFHAs; use drainage studies and incident records.
10-percent annual chance	1-in-10 probability in any year	Useful design or screening frequency where modeled.	Not equivalent to a prediction that an event occurs once every 10 years.
1-percent annual chance/ base flood	1-in-100 probability in any year	Defines the FEMA base flood and generally the SFHA; compare assets with base flood elevation (BFE)/depth data.	Assuming a stationary annual probability, the chance of at least one event in 30 years is about 26 percent.
0.2-percent annual chance	1-in-500 probability in any year	Screen low-probability, high- consequence exposure beyond the SFHA	The mapped extent and elevation depend on the effective study and model.
Consequence escalation	No single federal numeric threshold	Evaluate inundation of occupied buildings, emergency routes, utilities, pump/lift stations, and RL areas.	Physical magnitude and community consequence must be documented separately.

Past Occurrences and Declarations

Orange County, Florida, has experienced numerous flood events throughout its history, affecting both incorporated and unincorporated areas. Flooding in the County is primarily caused by heavy rainfall from tropical storms and hurricanes, intense seasonal thunderstorm activity, and associated increases in surface water and stream levels. Significant flood events have resulted in FEMA disaster declarations, local state of emergency declarations, and considerable impacts on residents, businesses, and public infrastructure.

FEMA Disaster Declarations Summaries reviewed through September 2, 2026, identify the following post-Irma Orange County designations relevant to tropical-cyclone and flood history: Hurricane Isaias (EM-3533-FL); Hurricane Ian (EM-3584-FL and DR-4673-FL); Hurricane Nicole (EM-3587-FL and DR-4680-FL); Hurricane Idalia (EM-3596-FL and DR-4734-FL); Hurricane Debby (EM-3605-FL and DR-4806-FL); and Hurricane Milton (EM-3622-FL and DR-4834-FL). No additional Orange County designations appear for 2025 through the September 2, 2026, data cutoff.⁶

Historical records indicate that Orange County has been included in multiple FEMA disaster declarations resulting from major flood-inducing tropical systems. Notably, Hurricanes Charley, Frances, and Jeanne in 2004 produced widespread flooding across the County, overwhelming local drainage systems, closing roads, and damaging residential and commercial properties. The remnants of Hurricane Fay in August 2008 also caused extensive flooding, particularly in low-lying areas and along streams and retention ponds. Most recently, Hurricane Irma in September 2017 led to prolonged periods of standing water, infrastructure damage, and disruptions in transportation and utilities, prompting a federal disaster declaration that included Orange County.

Smaller-scale flooding events not tied to major storms also occur with some frequency, particularly during periods of above-average rainfall. Such events, while not always resulting in formal disaster declarations, can result in localized property and infrastructure damage, road closures, and temporary displacement of residents. Local records compiled in a prior planning document detail periodic, recurrent flooding in specific neighborhoods after heavy summer downpours, underscoring the County's ongoing vulnerability to this hazard.

Loss and damage estimates associated with major flood events in Orange County vary by event and by affected area. However, impacts typically include flooding of residential and commercial structures, road and bridge washouts, erosion of public spaces, damage to public facilities such as schools, and temporary service interruptions or evacuation requirements. Data from prior hazard mitigation plans and local incident reports highlight that certain flood-prone areas have experienced repetitive loss claims under NFIP.

The major federally declared events listed above, Hurricanes Charley, Frances, and Jeanne (2004), Fay in 2008, and Irma in 2017, define the most severe flood occurrences in recent decades. Local records indicate that additional flood incidents have been addressed at the municipal level, particularly in the City of Orlando and low-lying unincorporated areas, though complete tabular documentation of these events is not consistently available in the available data. This reflects a data gap in the systematic cataloging of all flood occurrences, especially for non-declared or chronic local flooding episodes. The 2021 Orange County Local Mitigation Strategy update recommends improved tracking of these smaller-scale but recurrent incidents to better inform future mitigation efforts.

⁶ Federal Emergency Management Agency, OpenFEMA Disaster Declarations Summaries, version 2, <https://www.fema.gov/openfema-data-page/disaster-declarations-summaries-v2>.

Future Conditions and Probability

Future flood risk is expected to increase in consequence even where the effective FEMA annual-chance zones remain unchanged. Growth and the expansion of impervious surfaces can increase runoff, resulting in greater exposure of people, buildings, and lifeline infrastructure to flooding. Site-specific probability should continue to use the effective FIRM/FIS, current drainage and watershed models, observed high-water data, and current asset overlays rather than a generalized climate multiplier.

For the Southeast, NCA5 reports that some seasonal, annual-average, and extreme precipitation amounts are expected to increase, driven mainly by more extreme events, including precipitation of 3 inches or more in 24 hours at higher warming levels. NCA5 also shows increased flood-related average annual losses by 2050 under an intermediate RCP4.5 scenario, but that figure is a regional modeling product and is not an Orange County-specific loss estimate.

Severe Thunderstorm/Lightning/Hail

Hazard Description

Severe thunderstorms are meteorological events characterized by the occurrence of one or more hazardous weather phenomena, including strong winds, heavy rainfall, frequent lightning, and hail. In Orange County, Florida, severe thunderstorms are common and can occur throughout much of the year, but are particularly prominent during the late spring and summer months due to the area's subtropical climate. These storms develop rapidly, often fueled by intense surface heating combined with moisture-laden air masses, which are typical patterns in Central Florida.

Lightning is an inherent component of almost all thunderstorms in the region. Florida, including Orange County, is known for having one of the highest lightning strike frequencies in the United States. Thunderstorm-related lightning can result in direct threats to life safety, cause structural fires, and damage electrical and communications infrastructure. Hail occurs less frequently than lightning, but when it does develop within severe thunderstorms, it can damage vehicles, roofs, crops, and windows. Hail size varies, with occasional reports of hailstones large enough to pose a risk to people and property.

Primary causes of severe thunderstorms in Orange County include the collision of sea breeze fronts, atmospheric instability, and the influx of warm, humid air from the Gulf of Mexico and Atlantic Ocean. Intense solar heating, prevailing wind patterns, and tropical disturbances all contribute to favorable conditions for severe thunderstorm development in this area.

Secondary or cascading effects initiated by severe thunderstorms, lightning, or hail may include localized flash flooding from intense rainfall, lightning-sparked wildfires, widespread utility outages, and traffic accidents due to sudden hazardous conditions. Severe thunderstorms frequently impact transportation and outdoor activities, and may cause school or business closures if conditions become especially hazardous.

Severe thunderstorms, including their subtypes of lightning and hail, are included in this plan due to their high frequency, broad potential impacts on public safety and property, and their potential to trigger additional hazards such as power outages, fires, and flooding. The hazard profile for Orange County, therefore, encompasses the full spectrum of severe thunderstorm risks, recognizing their relevance to the region's public safety, emergency response, and resilience planning.

Hazard Location and Extent

Severe thunderstorms, lightning, and hail are hazards that can occur throughout Orange County, Florida. Risk from these events is considered jurisdiction-wide, affecting both urban and rural areas, and is not limited to specific corridors or facilities. Severe thunderstorms have the potential to impact all portions of the County due to its subtropical climate and location within central Florida.

Mapping and hazard analyses from prior planning documents indicate that lightning strikes are frequently recorded across Orange County, with higher incident rates observed during the summer months. While no sub-County boundaries, census tracts, or specific neighborhoods have been identified as having significantly elevated risk, exposure is universal due to the widespread nature of convective storm activity in the region. Hail-producing thunderstorms are possible anywhere in Orange County but tend to be sporadic, with varying severity, and are not concentrated within any particular corridor.

Given the County's size and population density, all developed and undeveloped areas, including residential neighborhoods, commercial zones, transportation corridors, government facilities, and recreational areas, are vulnerable to the direct impacts of severe thunderstorms, lightning, and hail. Parks, open spaces, and infrastructure with above-ground utilities may be especially exposed to lightning and high winds associated with these storms.

There is no documented evidence of significant shifts in hazard extent or zone over time, and future geographic shifts are not anticipated based on available analysis. The full expanse of Orange County remains exposed, and continued urban growth does not appear to reduce or significantly alter the hazard's areal extent. This assessment aligns with past local mitigation plans and regional studies of severe weather in central Florida.

Hazard Magnitude and Severity

For severe convective storms, NWS wind and hail thresholds provide a reproducible physical-magnitude scale. Lightning and rainfall require separate consequence measures because neither is represented by the wind/hail warning tag. Local severity also depends on tree fall, utility exposure, outdoor population, roof and vehicle damage, and flash flooding.

Table 5: Severe Thunderstorm Wind, Hail, and Lightning Scale

NWS Level/ Component	Wind or Hail Threshold	Orange County Consequence Indicators	Interpretation/ Limit
Base severe	Wind at least 58 mph and/or hail at least 1.00 inch	Tree/line damage, roof or vehicle damage, localized outages	Official severe-thunderstorm threshold
Considerable damage tag	Wind at least 70 mph and/or hail at least 1.75 inches	More extensive tree, roof, vehicle and utility damage	Warning damage-threat tag; not a Countywide risk category
Destructive damage tag	Wind at least 80 mph and/or hail at least 2.75 inches	Life-safety threat, substantial property damage, widespread outages possible	Warning tag may trigger Wireless Emergency Alerts
Lightning	Any cloud-to-ground strike can be dangerous	Track deaths/injuries, structural or wildland ignition, and critical-system damage	Lightning frequency is not part of the severe thunderstorm warning threshold
Rainfall / flash flood	Use observed rainfall and flood-warning data	Track depth, closure duration, drainage exceedance and affected assets	Assess under the Flood profile; do not infer flood severity from wind/hail tags

Past Occurrences and Declarations

NOAA/National Centers for Environmental Information (NCEI) Storm Events identify 30 Thunderstorm Wind reports in Orange County during 2021–2025 (3 in 2021, 4 in 2022, 10 in 2023, 9 in 2024, and 4 in 2025). These are reportable event segments, not distinct storms. Separate hail reports are also included in the NCEI database.⁷

Central Florida has high lightning exposure, creating risks to outdoor activities, utilities, and structures. County-specific injuries, fatalities, and fire counts were not verified in a complete local series for this update and are therefore not stated as totals or isolated anecdotes. FEMA disaster declaration data for Orange County indicate that severe thunderstorm impacts are typically incorporated under larger Tropical Storm and Hurricane federal declarations or, on occasion, under statewide severe weather events.

⁷ National Centers for Environmental Information, Storm Events Database, Florida detail files StormEvents_details-ftp_v1.0_d2021_c20260323.csv.gz; StormEvents_details-ftp_v1.0_d2022_c20260625.csv.gz; StormEvents_details-ftp_v1.0_d2023_c20260323.csv.gz; StormEvents_details-ftp_v1.0_d2024_c20260728.csv.gz; and StormEvents_details-ftp_v1.0_d2025_c20260819.csv.gz, filtered to STATE=FLORIDA, CZ_NAME=ORANGE, EVENT_TYPE=Thunderstorm Wind; entries are event segments rather than unique storms, <https://www.ncei.noaa.gov/pub/data/swdi/stormevents/csvfiles/>.

However, there is no record of a standalone federal disaster declaration for severe thunderstorm, lightning, or hail in Orange County within the past decade. State and local authorities have periodically issued emergency advisories and declared localized states of emergency to support storm response and recovery for severe thunderstorm outbreaks, although specific declaration dates are not fully detailed in available records.

Data gaps exist in the comprehensive quantification of property damage, agricultural losses, and precise event-by-event impact statistics, particularly for hail- and lightning-driven events. Local records and prior planning documents consistently note that severe thunderstorm impacts may be underreported, especially for minor events that do not meet the threshold for federal or state declarations or insurance claims. As such, available documentation likely understates the true frequency and impact of less severe but disruptive thunderstorm-related hazards in Orange County.

Future Conditions and Probability

The hazard remains Countywide and frequent. Population growth, tree and overhead utility exposure, outdoor events, and dependence on communications and power can increase consequences even without a demonstrated change in storm frequency.

NCA5 identifies intensifying climate stressors in the Southeast and increasing exposure to thunderstorms as development expands, while its strongest regional evidence for projections is for heat and extreme precipitation. It does not provide an Orange County-specific change factor for severe-thunderstorm wind, lightning frequency, or hail size. Accordingly, this plan applies the NCA5 heavy-rainfall signal to the flood component, monitors NOAA Storm Events and local outage/response data for convective hazards, and does not alter thunderstorm, lightning, or hail probability solely from the regional assessment.

Tornado

Hazard Description

A tornado is a rapidly rotating column of air that extends from a thunderstorm to the ground, often marked by a distinctive funnel-shaped cloud. Tornadoes can exhibit a wide range of intensities and sizes, but even the weakest tornadoes are capable of producing significant damage to structures, vehicles, vegetation, utilities, and infrastructure. In Orange County, Florida, tornadoes are primarily associated with severe thunderstorms and occasionally with tropical systems such as hurricanes and tropical storms, which can spawn tornadoes as they make landfall and move inland.

Tornadoes are classified according to the Enhanced Fujita (EF) Scale, which ranks them from EF0 (weakest) to EF5 (most severe) based on estimated wind speeds and resulting damage. In Central Florida, including Orange County, most tornadoes fall in the EF0 to EF2 range, but stronger events are possible. The most common types of tornadoes in this region include short-lived, lower-intensity tornadoes generated by

isolated severe thunderstorms as well as those forming in rainbands associated with landfalling hurricanes and tropical storms.

Tornadoes can occur year-round in Orange County, but the region experiences a higher frequency of tornadoes during late spring to early summer and during hurricane season (June 1 to November 30). These storms often strike with little warning and can cause significant localized impacts, including damage to buildings and infrastructure, downed trees and power lines, injuries or loss of life, and temporary disruptions to transportation and emergency services. Tornadoes may also cause cascading effects, such as secondary fires, hazardous material releases if struck facilities are damaged, and exacerbated flooding when debris blocks storm drainage systems.

The inclusion of tornadoes in the Orange County LMS is based on historical evidence of occurrence, the potential for high-impact events given the region's population density, and the risk of cascading impacts affecting vital community functions. Understanding the forms and drivers of tornado hazards is critical for guiding mitigation strategies to reduce risk and enhance community resilience.

Hazard Location and Extent

Tornado risk in Orange County, Florida, is considered a jurisdiction-wide hazard, with tornadoes potentially occurring throughout the County. The flat terrain and subtropical climate of Central Florida make Orange County susceptible to tornadoes spawned by both severe thunderstorms and tropical cyclones. Historical records and mapping efforts cited in prior planning documents indicate that no specific subregions within the County are immune to tornadoes; both urban centers, such as Orlando, and outlying communities have experienced tornadoes.

While the risk is Countywide, certain corridors may have heightened exposure due to denser development. Highly urbanized areas, including Downtown Orlando, have recorded tornado incidents in the past. Manufactured home parks and mobile home communities, which are dispersed across the County, represent particularly vulnerable zones due to construction type and prevalence, but they are not localized to a single area.

Mapping efforts utilized National Weather Service track data and the EF Scale to delineate areas where tornado path overlap or frequency is higher. These efforts did not indicate any single corridor or neighborhood with dramatically increased risk compared to the County as a whole. The 1998 tornado outbreak, which affected large portions of Central Florida, including Orange County, involved tornadoes that crossed both developed and rural areas to a significant extent, underlining the widespread exposure of both the urban and unincorporated areas. Figure 6 shows Orange County tornado tracks from 1950-2025 along with critical infrastructure locations throughout the County.

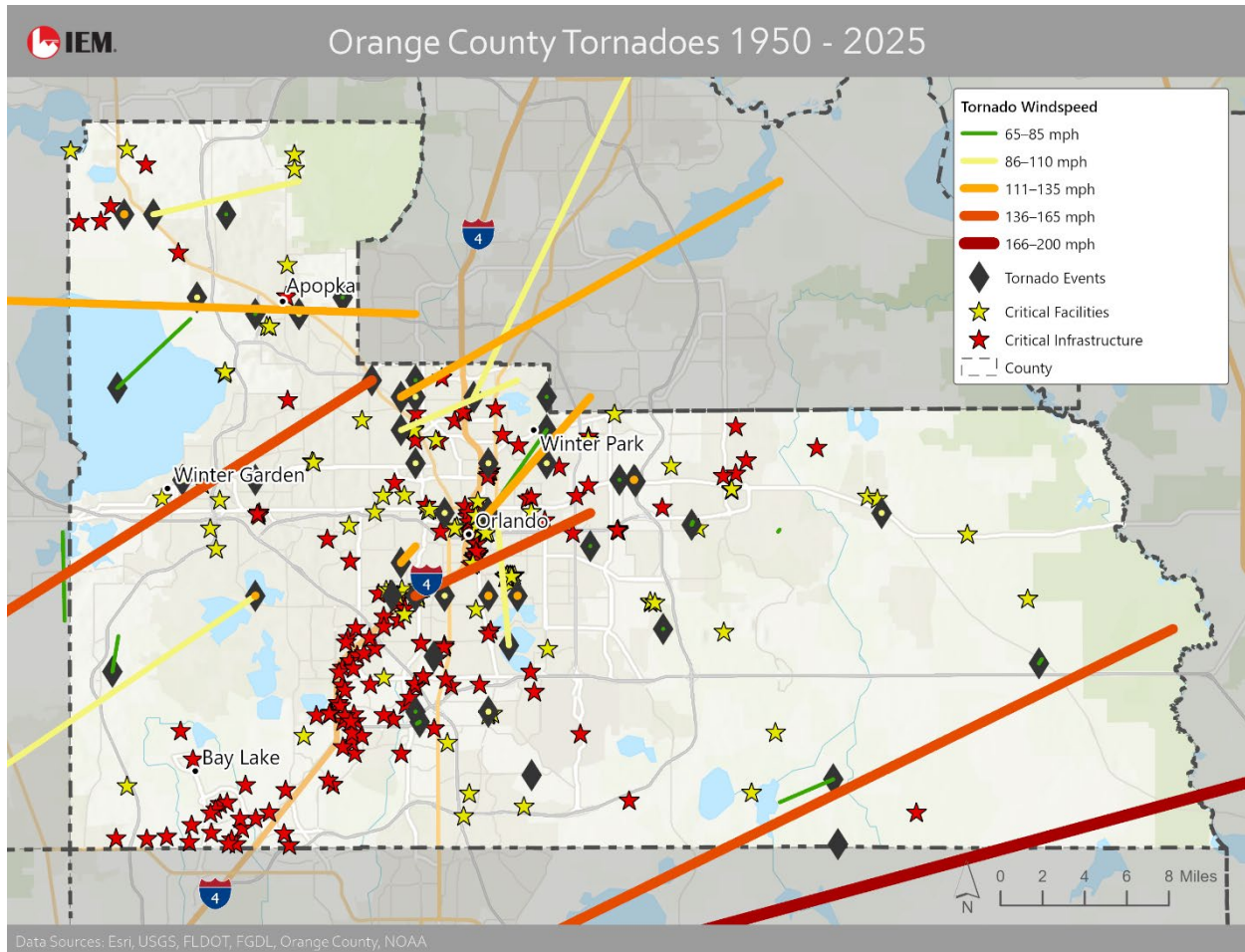


Figure 6: Orange County Tornadoes and Critical Infrastructure 1950-2025

In terms of hazard extent, tornadoes in Orange County have historically ranged from EF0 to EF3 in severity, with path widths typically varying from less than 100 yards up to several hundred yards and path lengths extending several miles. While the vast majority of tornadoes are weaker, rare but powerful tornadoes with broader paths and longer tracks have occurred.

Current evidence does not indicate any foreseeable geographic shifts in tornado risk within the County; rather, the entire jurisdiction remains uniformly exposed. Future changes in risk extent would likely be associated with increases in the built environment or shifts in local climate patterns, but specific projections for new or emerging tornado “hotspots” in Orange County are not available at this time.

Hazard Magnitude and Severity

Tornado magnitude is rated after a damage survey using the Enhanced Fujita (EF) Scale. EF wind speeds are estimates tied to damage indicators and degrees of damage, not direct measurements. Historical F-scale ratings are retained as originally assigned and are not silently converted to EF ratings.

Table 6: Enhanced Fujita Tornado Magnitude Scale

EF Rating	Estimated 3-Second Gust	General Magnitude	Orange County Use/ Limitation
EF0	65–85 mph	Weak	Document path, width, duration, damage indicators and affected assets
EF1	86–110 mph	Weak	Localized structural, tree and utility damage may still be consequential
EF2	111–135 mph	Strong	Potential major damage to vulnerable buildings and lifelines
EF3	136–165 mph	Strong	Potential severe structural damage and mass sheltering needs
EF4	166–200 mph	Violent	Low-frequency, catastrophic local consequence scenario
EF5	More than 200 mph	Violent	Low-frequency, catastrophic local consequence scenario

Past Occurrences and Declarations

Orange County has a documented tornado history, including the severe 1998 Central Florida outbreak and more recent weak tornadoes. Official event records support continued Moderate probability and High consequence planning without implying that every location has the same recurrence or exposure. Figure 7 shows all tornado occurrences throughout the County from 1950 to 2025.

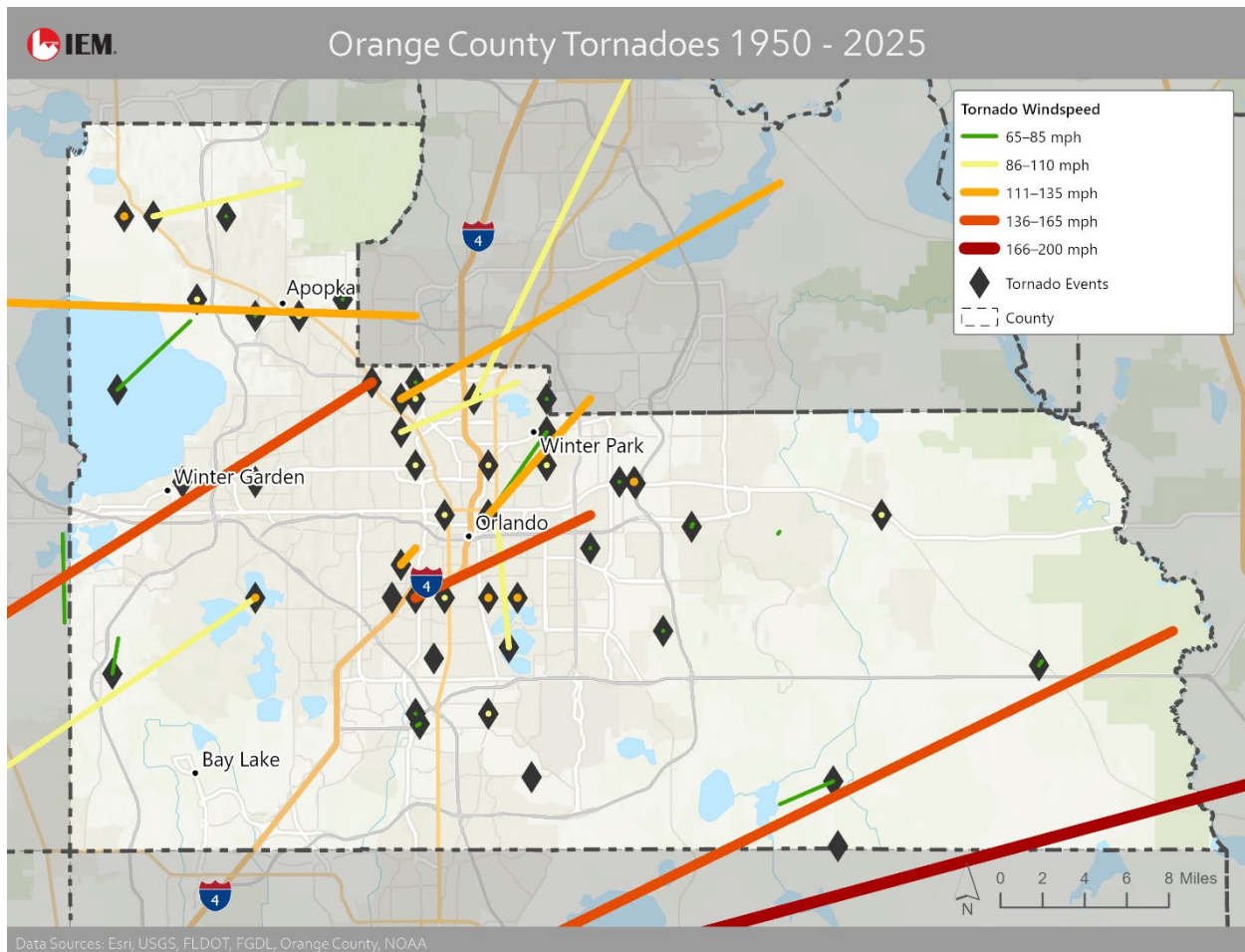


Figure 7: Orange County Tornado Occurrences 1950-2025

On February 22–23, 1998, seven confirmed tornadoes crossed east-central Florida. The outbreak caused 42 deaths across the region, more than 260 injuries, damage to more than 3,000 structures, and destruction of more than 700 structures. A long-track F3 tornado affected the Winter Garden area. These figures are regional outbreak totals, not Orange County totals. FEMA declared DR-1204-FL.⁸

NOAA/NCEI records an EF0 tornado near Piedmont at FL-414 and US-441 on June 6, 2024, with no reported damage, and an EF0 waterspout that briefly moved ashore in the Lake Pickett/Waterford Lakes

⁸ National Weather Service Melbourne, East Central Florida Tornado Outbreak of February 22–23, 1998, <https://www.weather.gov/media/mlb/research/EastCentralFloridaTornadoOutbreakof22-23February1998.pdf>; FEMA, Florida Severe Storms and Tornadoes, DR-1204-FL.

area on May 26, 2025, causing minor roof damage reported at \$8,000. These locations and losses are event-record values; they are not extrapolated Countywide.⁹

Available historical records do not show more recent major federal tornado-specific disaster declarations for Orange County, though tornado events are sometimes included in broader severe storm or hurricane disaster designations. Data gaps remain regarding comprehensive impacts; for example, detailed figures on property loss and crop or infrastructure-specific damage for smaller tornado events are not consistently available. Local records and the NOAA/NCEI storm event database provide incident details but may lack full impact assessments or may group tornadoes with other convective storm hazards.

In summary, tornadoes have periodically affected Orange County, resulting in fatalities, injuries, property destruction, and emergency declarations, most notably during the 1998 outbreak. However, limits in consistent local impact tracking mean the historical record is incomplete, and some minor events may have gone undocumented or been grouped under broader storm categories in regional records.

Future Conditions and Probability

Tornadoes remain a Countywide, low-spatial-footprint hazard with potentially severe local consequences. Continued growth increases the number of people, buildings, campuses, venues, mobile/manufactured homes, and lifelines that may intersect a tornado path.

NCA5 does not provide a defensible Orange County-specific projection for tornado frequency or EF intensity. The plan, therefore, makes no climate-driven adjustment to annual tornado probability. Future updates should use NOAA Storm Events, NWS damage surveys, and local warning/shelter data, while mitigation efforts emphasize safe rooms, protective actions, warning reach, and wind-resistant construction because exposure can rise even when the climate signal is uncertain.

Infectious Disease Pandemic

Hazard Description

An infectious disease pandemic is characterized by the widespread transmission of a contagious disease across multiple countries or continents, resulting in significant health, economic, and social disruptions within impacted communities. In Orange County, Florida, this hazard is defined as the rapid or sustained outbreak of a novel or highly transmissible pathogen—such as a virus or bacterium—that causes widespread illness in the local population.

⁹ National Centers for Environmental Information, Storm Events Database, Florida detail files StormEvents_details-ftp_v1.0_d2024_c20260728.csv.gz and StormEvents_details-ftp_v1.0_d2025_c20260819.csv.gz, Orange County EF0 event records dated June 6, 2024, and May 26, 2025, <https://www.ncei.noaa.gov/pub/data/swdi/stormevents/csvfiles/>.

Pandemics may be caused by various types of infectious agents, most commonly respiratory viruses such as influenza and coronaviruses (such as SARS-CoV-2, the virus responsible for COVID-19), but can also be triggered by bacterial diseases or emerging zoonotic pathogens transmitted from animals to humans. The main forms a pandemic can take in Orange County include influenza pandemics (such as the H1N1 outbreak) and novel viral outbreaks (like COVID-19), as well as less common threats like novel bacterial diseases or re-emerging pathogens.

Primary causes of a pandemic typically involve the introduction or mutation of a pathogen for which the human population has little or no immunity, combined with efficient human-to-human transmission. Such conditions are facilitated by factors including global travel, urban density, and the presence of high-risk environments such as hospitals, long-term care facilities, and congregate settings.

Common cascading effects of a pandemic in Orange County may include surges in demand for healthcare services, widespread absenteeism among critical workforce sectors, disruptions to education due to school closures, interruptions to economic activity, strained supply chains (especially for medical and household supplies), increased mental health needs, and temporary limitations on public gatherings or travel.

There is no seasonal limitation to pandemics, but the spread of specific agents (like influenza) may follow patterns related to climate or human behavior, with respiratory illnesses historically peaking during cooler months. Due to Florida's humid and subtropical climate and status as a tourism and transportation hub, Orange County is particularly susceptible to rapid disease spread during a pandemic.

This hazard is included in the plan due to its demonstrated potential to cause high-impact, long-duration disruptions across all sectors, with disproportionate effects on vulnerable populations including the elderly, individuals with pre-existing health conditions, and economically disadvantaged groups. The inclusion of infectious disease pandemic planning is further justified by the recent and ongoing impacts of the COVID-19 pandemic, which have revealed significant vulnerabilities and underscored the importance of community mitigation strategies in limiting morbidity, mortality, and cascading societal effects.

Hazard Location and Extent

Infectious disease pandemics pose a Countywide hazard in Orange County, Florida, as they are not limited by geographic boundaries and can affect the entire population regardless of location within the jurisdiction. The risk is equally high across densely populated urban areas, suburban neighborhoods, and less populated or rural communities, due to how infections spread through human interactions, shared indoor spaces, and high-traffic venues. Hospitals, nursing homes, schools, and other congregate living or gathering environments are particularly exposed due to close contact among individuals and the presence of vulnerable populations.

The extent of pandemic impacts in Orange County is inherently jurisdiction-wide, with transmissibility influenced by factors including local and regional mobility patterns, the presence of large-scale venues and theme parks, and the influx of domestic and international tourists, which are significant for the area.

Certain census tracts or neighborhoods with higher population densities or substantial critical workforce facilities, such as health care campuses and major employment centers, may experience higher initial exposure or disruption. However, the nature of infectious disease transmission means containment is challenging, so the risk must be considered widespread.

Specific geographic boundaries for pandemic risk cannot be mapped with precision, and future outbreaks will continue to pose Countywide threats given patterns of population movement and connectivity within Orange County. There is no evidence of pandemic risk being corridor-based, localized to particular communities, or restricted by land use or environmental features. The expected impacts of pandemics can affect every census tract, potentially affecting population segments across all social, economic, and demographic groups.

Credibly, as population density and interconnectivity increase over time, especially in urbanizing or rapidly growing areas, the overall extent and speed of disease transmission during future pandemics may expand jurisdiction-wide. Data specific to mapped hazard areas or future shifts in geographic risk related to infectious disease pandemics in Orange County are not available.

Hazard Magnitude and Severity

No single physical-magnitude scale applies to all pathogens. Orange County should evaluate transmissibility and clinical severity separately, consistent with the Centers for Disease Control and Prevention's (CDC) Pandemic Severity Assessment Framework, and track the operational phase using the Pandemic Intervals Framework. The consequence tiers in Table 7 are plan-defined for continuity planning and must be populated from current health surveillance.

Table 7: Infectious-Disease Magnitude and Operational-Severity Framework

Dimension/ Tier	Measurable Indicators	Operational Interpretation	Use/ Limitation
Transmissibility	Case growth, attack rate, effective reproduction, geographic spread, absenteeism.	How quickly and broadly illness is spreading.	Indicator selection depends on pathogen and surveillance quality
Clinical severity	Hospitalization, ICU use, deaths, emergency visits, healthcare capacity.	How serious illness is among infected persons and for the health system.	Do not use case counts alone as severity
Limited	Isolated/localized activity; routine capacity.	Monitoring and targeted response.	Plan-defined consequence tier
Moderate	Sustained transmission or rising	Expanded coordination and continuity measures.	Plan-defined consequence tier

Dimension/ Tier	Measurable Indicators	Operational Interpretation	Use/ Limitation
	absenteeism; surge manageable.		
Major	High spread or severity; healthcare or essential staffing stressed.	Countywide emergency measures may be required.	Plan-defined consequence tier
Extreme	High spread and high severity; prolonged multi-system disruption.	Regional/state/federal support and sustained continuity operations.	Plan-defined consequence tier

Past Occurrences and Declarations

Orange County, Florida, has experienced significant impacts from infectious disease pandemics, most notably during the COVID-19 pandemic. In March 2020, following the rapid global spread of COVID-19, Orange County was included in Presidential Disaster Declaration DR-4486, which covered the entire state of Florida. This declaration activated federal assistance programs in response to widespread illness, hospitalizations, and major disruptions to County services and businesses. During the COVID-19 pandemic, Orange County reported thousands of confirmed cases and numerous fatalities; cumulative numbers fluctuated across multiple waves in 2020 and 2021, according to local public health authorities. The pandemic caused extended closures of schools, non-essential businesses, and County facilities, as well as interruptions to transportation and hospitality sectors that are vital to the regional economy.

Prior to 2020, documented pandemic-scale infectious disease events in Orange County are limited. The 2009 H1N1 influenza pandemic, while significant nationally, did not result in a major federal disaster declaration for the area, although it led to heightened public health response and increased absenteeism in schools and workplaces. Past planning documents from the region have referenced the potential threat of outbreaks such as the 1918 influenza pandemic and the 2003 SARS outbreak, but there are no records of direct federal disaster declarations for infectious disease in Orange County outside of COVID-19.

Local state-of-emergency declarations were also enacted by Orange County officials during the COVID-19 pandemic, enabling specific measures such as curfews, mask mandates, and the reallocation of resources to health services and emergency management operations. The extent of health, economic, and infrastructure impacts caused by COVID-19 far exceeded those documented for any previous infectious disease event in modern Orange County history, representing an unprecedented local challenge.

Data gaps exist for infectious disease outbreaks prior to 2009, because consistent local incident records are unavailable for earlier events. There is also limited detailed data on localized outbreaks of other pandemics, such as Zika or West Nile virus, which did not warrant federal disaster declarations but may have caused public health advisories and smaller-scale impacts within Orange County.

Future Conditions and Probability

Future pandemic probability and severity depend on pathogen emergence, population immunity, travel and contact patterns, surveillance, vaccination, and healthcare capacity. Those drivers cannot be reduced to a single recurrence interval, so the adopted rating should be revisited when public-health surveillance or after-action evidence changes.

NCA5 states that climate change can broaden the geographic distribution and season of some disease-carrying mosquitoes and ticks in the Southeast, including vectors associated with West Nile virus and Zika. That finding applies to a climate-sensitive subset of infectious diseases and is not a projection of pandemic incidence in Orange County. The local planning implication is to integrate vector surveillance, heat and flood-related public-health messaging, healthcare surge and continuity planning without assigning an unsupported numerical climate increase to pandemic probability.

Hydrological Drought

Hazard Description

Hydrological drought in Orange County, Florida, is characterized by prolonged periods of below-normal surface and subsurface water levels, typically affecting rivers, lakes, reservoirs, wetlands, and groundwater supplies. Unlike meteorological drought, which stems from a lack of precipitation, hydrological drought manifests as diminishing water availability in hydrologic systems after extended dry periods. This can lead to significant reductions in streamflow, lowered groundwater tables, and declining surface water storage, often persisting beyond the initial meteorological drought conditions due to delayed hydrologic response.

Primary causes of hydrological drought in Orange County include sustained rainfall deficiencies, high evaporation rates, especially during the region's hot and prolonged dry seasons, and increased water demand from agricultural, municipal, and industrial users. Urbanization can also influence hydrological drought by altering natural drainage, increasing impervious surfaces, and accelerating runoff, thereby reducing infiltration and groundwater recharge.

Common impacts and cascading effects of hydrological drought in the County include reduced water availability for public water supplies, stress on agriculture and landscaping, adverse effects on aquatic ecosystems, and potential degradation of water quality as concentrated pollutants become less diluted in smaller water volumes. Navigational, recreational, and economic activities that depend on ample water supplies may also be disrupted.

Hydrological drought in Orange County tends to align with seasonal and climatic patterns, often increasing in occurrence during late winter to early spring before the onset of summer rains, though persistent droughts can magnify effects throughout the year. The hazard is included in the plan due to Orange County's reliance on surface and groundwater for drinking water, agriculture, and economic

activity, as well as its sensitivity to extended periods of water scarcity that can have regionwide and cascading effects on public health, economic stability, and ecosystem resilience.

Hazard Location and Extent

Hydrological drought in Orange County, Florida, can have both Countywide and localized impacts, depending on factors such as water demand, surface-water interactions, groundwater availability, and drought intensity across regional watersheds. Drought conditions can affect the entire jurisdiction, as the County's major watersheds, including the St. Johns River and the Upper Ocklawaha River, span urban, suburban, and agricultural areas. Surface water bodies such as Lake Apopka, Lake Jessamine, and the Econlockhatchee River are particularly sensitive to prolonged periods of below-normal streamflow and declining lake levels.

Areas dependent on sensitive lakes, rivers, or groundwater recharge zones may experience greater impacts during hydrological drought events. Communities with limited alternative water supplies, such as those on the edges of the County or those reliant on wells in the surficial aquifer system, tend to be most exposed to reductions in streamflow or falling water tables. Agricultural zones and properties with direct surface water withdrawal permits are also more likely to experience significant effects.

While hydrological drought is generally regarded as a jurisdiction-wide hazard, localized effects can be intensified in areas experiencing rapid development or increased water demand outpacing available supplies. The extent of drought impacts can shift over time as land use and water extraction patterns change. According to prior planning documents, the most at-risk locations may include headwater areas of principal lakes and major tributaries, as well as regions near groundwater recharge zones susceptible to drawdown during prolonged droughts.

Future changes in population, urban expansion, and changes in water management practices may alter both the location and severity of vulnerability to hydrological drought. There is currently no mapped hazard area specifically delineating drought risk within the County, but vulnerability tends to correspond with hydrological units such as watershed boundaries and known groundwater recharge or discharge regions. Data specific to census tracts or individual communities is not available for this hazard at this time.

Hazard Magnitude and Severity

Hydrological drought is measured by sustained departures in streamflow, lake levels, groundwater levels, storage, and water-supply reliability. Because managed water systems and local hydrogeology affect those indicators, no single gauge or percentile controls the County rating. The operational tiers in Table 8 combine a published USGS streamflow definition with plan-defined local consequences.

Table 8: Hydrological-Drought Magnitude and Consequence Indicators

Level/ Measure	Technical Indicator	Orange County Application	Interpretation/ Limit
Early warning	Streamflow below the 25th percentile or declining lake/ groundwater/ storage indicators.	Increase monitoring across representative sites and utilities.	Plan-defined trigger; compare with the season and period of record.
Hydrologic drought	Monthly streamflow below the 20th percentile for 3 consecutive months.	Published the U.S. Geological Survey (USGS) research definition for long-duration streamflow drought.	Research definition; not an automatic local declaration trigger.
Severe local stress	Very low flow/levels plus supply, ecological, or service constraints.	Document restrictions, well/utility impacts, environmental flows and duration.	Use local utility and water-management thresholds where available.
Extreme consequence	Record or near-record deficits with prolonged service or ecosystem impact.	Regional coordination, emergency supply and continuity actions.	Plan-defined consequence tier; requires incident-specific evidence.

Past Occurrences and Declarations

Historical records indicate that hydrological droughts have periodically affected Orange County, Florida, though formal disaster declarations specific to hydrological drought are rare. Review of available FEMA Disaster Declarations and local emergency records for Orange County does not show any federal-level disaster declarations for hydrological drought in the past two decades. While the County and surrounding region have experienced water stress and declining lake and river levels during prolonged dry periods, these conditions have typically not led to official disaster declarations by federal or state authorities.

Local data and prior hazard mitigation planning documents often reference periods of persistent low streamflow, groundwater depletion, and reduced reservoir levels, especially during multi-year dry spells. Recorded impacts from these hydrological drought events include temporary restrictions on water use, lowered surface water availability for agricultural irrigation, and occasionally reduced streamflow affecting aquatic habitat. However, there is limited documentation of severe impacts such as widespread infrastructure disruption, major property damage, or direct loss of life specifically attributable to hydrological drought in Orange County.

A noted data gap exists in the systematic recording of local hydrological drought events, including consistent impact assessment and documentation of associated emergency declarations. Event histories often draw on state or regional water management reports rather than locally collated incident records or loss data for hydrological drought. As such, the characterization of past occurrences of hydrological

drought in Orange County relies primarily on qualitative accounts and regional assessments, rather than a comprehensive, event-level chronology.

Future Conditions and Probability

Future hydrological drought consequences depend on the duration and timing of rainfall deficits, evapotranspiration, groundwater and lake response, water demand, utility interconnections, and management actions. Growth can increase demand even if the frequency of meteorological drought does not change.

NCA5 reports increasing intensity of Southeast climate stressors, including drought persistence and severity, and states that temperature, drought, and extreme rainfall threats to regional food- and water-dependent systems are expected to worsen with each increment of warming. It does not provide an Orange County-specific projection of streamflow, lake levels, or groundwater. The plan, therefore, treats hotter conditions and demand growth as potential consequence amplifiers, requires monitoring across multiple hydrologic indicators, and retains the local probability rating pending a documented basin- or utility-scale analysis.

Animal/Agricultural Disease Outbreak

Hazard Description

An animal or agricultural disease outbreak refers to the introduction and spread of infectious diseases that impact livestock, poultry, or other agricultural animal populations. In Orange County, Florida, this hazard primarily consists of contagious diseases affecting livestock, including avian influenza, foot-and-mouth disease, and African swine fever, as well as vector-borne diseases transmitted by mosquitoes, ticks, and other vectors that can affect domestic animals and wildlife. These diseases may originate from natural sources, such as wildlife migrations or environmental conditions, or result from accidental or intentional human actions, including the movement of infected animals, contaminated feed, or lapses in biosecurity at agricultural operations.

Animal and agricultural disease outbreaks are included in this plan due to their potential to cause widespread economic loss among farming and agribusiness sectors, disrupt food supplies, and create cascading impacts on public health, regional trade, and ecosystem stability. Outbreaks can lead to mass culling or quarantine of animals, market closures, and heightened requirements for surveillance, biosecurity, and emergency response. Secondary impacts may include negative effects on related industries, such as transport, food processing, or tourism, as well as interruptions to household incomes and community services in rural areas.

In Florida, the risk is elevated by factors such as a large and diverse population of livestock and poultry, the state's subtropical climate that supports year-round farming and enables some disease vectors to thrive, and its role as a hub for animal movement, agricultural trade, and tourism. Additional challenges

arise from proximity to migratory bird pathways and frequent extreme weather events, which may increase disease transmission or complicate response measures.

Animal disease outbreaks can occur at any time, though some may show seasonal patterns depending on disease ecology; for example, vector-borne diseases may be more prevalent during wet or warm seasons that favor vector breeding. The inclusion of animal or agricultural disease outbreaks as a profiled hazard is essential for maintaining agricultural security, protecting the local economy, and ensuring public health preparedness in Orange County.

Hazard Location and Extent

Animal and agricultural disease outbreaks in Orange County, Florida, can affect both urban and rural areas due to the County's mix of densely populated communities and agricultural operations. The risk for this hazard is considered jurisdiction-wide, as disease transmission among livestock, poultry, or other agricultural assets can occur in any area where commercial or hobby farming is present, or where livestock are transported, processed, or concentrated. Key agricultural concentrations within Orange County include equine facilities, poultry operations, and small- to medium-sized farms distributed throughout the County, as well as educational and demonstration farms operated by organizations such as the University of Florida/ Institute of Food and Agricultural Sciences (IFAS) Extension.

The geographic extent of an outbreak depends greatly on the nature of the disease, affected species, and scale of exposure. For airborne or highly transmissible animal diseases such as avian influenza or foot-and-mouth disease, the spread can cover multiple properties and potentially extend across municipal boundaries within the County. Outbreaks are not limited to agricultural areas; companion animals in urban neighborhoods may also be affected by diseases such as canine influenza or rabies, posing additional risks to human populations.

Transportation corridors, such as major highways and rail lines, could serve as conduits for the rapid spread of disease through the movement of animals and animal products. Additionally, livestock auctions, animal shelters, and temporary exhibition venues may act as focal points for outbreaks depending on event timing and participant volume.

While mapping animal disease vulnerability is highly dependent on up-to-date inventories of livestock and agricultural assets, neither a Countywide map nor a census-tract breakdown of at-risk agricultural operations is available for Orange County in currently available data. This limits precise identification of "high-risk" zones, though it is recognized that risk is not confined solely to rural or peri-urban areas. Future shifts in outbreak extent are possible if agricultural activity trends change, with suburban encroachment into rural areas or changes in animal trade and agricultural practices potentially altering exposure zones. Quantitative data for the current or historical mapped extent of specific disease outbreaks is not available in the reviewed material.

Hazard Magnitude and Severity

Disease-specific response plans control technical case definitions and control zones. Because the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) does not use one universal magnitude scale for all animal diseases, the plan uses affected premises, geographic spread, zoonotic potential, movement controls, disposal needs, food-supply effects, and duration as measurable consequence indicators.

Table 9: Animal/Agricultural Disease Operational-Severity Scale

Plan Tier	Observable Indicators	Likely Operating Posture	Interpretation / Limit
Limited	Single investigation or affected premises; no sustained spread.	Routine state/federal notification and targeted biosecurity.	Disease-specific case definitions govern.
Moderate	Multiple linked premises or localized wildlife/ vector transmission.	Control area, tracing, testing, and movement-management support.	Scale depends on species, pathogen, and production system.
Major	Multi-jurisdiction spread, significant depopulation/ disposal, or food-supply disruption.	Unified coordination and sustained continuity support.	Plan-defined consequence tier.
Extreme	Widespread zoonotic or production impact; prolonged trade/movement restrictions.	State/federal-led response with substantial local public-health and logistics support.	Plan-defined consequence tier; not a federal disease classification.

Past Occurrences and Declarations

A review of available sources indicates a lack of documented major animal or agricultural disease outbreaks in Orange County, Florida that have led to federal disaster declarations under the Stafford Act. Previous hazard mitigation planning documents for Orange County, as well as incident logs and state-level agricultural records, do not identify specific historical outbreaks of diseases such as foot-and-mouth disease, avian influenza, or other zoonotic or crop-impacting diseases within the County that resulted in widespread economic loss, mass livestock culling, or emergency response actions requiring state or federal assistance.

No events are noted in FEMA's Disaster Declaration archive for Orange County relating specifically to animal or agricultural disease outbreaks. Local records reviewed in prior planning documents also do not name significant incidents of agricultural disease or pest infestation for the County that would warrant

emergency declarations, large-scale quarantines, or loss assessments. National resources such as NOAA/NCEI do not maintain focused tracking of localized non-human infectious disease events, and no relevant entries for Orange County animal or plant disease outbreaks have been identified.

Although Florida has experienced statewide impacts of diseases like citrus greening and certain livestock-related threats in the past, available data does not confirm notable economic loss or emergency actions in Orange County from such outbreaks. This represents a data gap that may be attributed to incomplete public records or the relative rarity of such events locally.

Consistent with the planner-curated hazard inventory, animal/agricultural disease outbreaks remain a recognized hazard for Orange County, but the absence of recorded historic occurrences or formal disaster declarations underscores the need for improved local incident tracking and data collection regarding agricultural and animal disease events.

Future Conditions and Probability

Future outbreak conditions depend on the affected species and pathogen, animal movement and trade, wildlife reservoirs, vector ecology, biosecurity, and detection speed. Changes in land use and agricultural activity alter exposure, but no Countywide recurrence interval can be derived from the available record.

NCA5 finds that increasing heat, drought, and water-laden tropical storms threaten crops, livestock, and food systems in the Southeast, and that warming can extend the season or range of some disease vectors. These are stress and pathway findings, not an Orange County projection for any specific animal disease. The plan uses them to support surveillance, biosecurity, continuity of business, and carcass/logistics planning, while leaving disease-specific probability assessments to USDA, state agriculture, and public health authorities.

Meteorological Drought

Hazard Description

Meteorological drought in Orange County refers to an extended period of below-average precipitation that significantly reduces water availability for ecosystems, agriculture, water supply systems, and other human uses. This type of drought develops when rainfall levels are substantially below normal over weeks, months, or even years, impacting both surface and groundwater resources. Meteorological drought is distinct from other forms of drought, such as hydrological drought, which focuses on reduced streamflow and water reservoir levels, or agricultural drought, which concerns soil moisture deficits affecting crops.

In Orange County, meteorological drought can manifest as a reduction in rainfall during the typically drier winter and spring months or as prolonged dry spells at any time of year due to variable climate patterns. The primary causes are persistent high-pressure systems, altered weather patterns such as shifts in the jet

stream, and the cyclical effects of phenomena like El Niño or La Niña, which influence precipitation distribution throughout Central Florida.

Meteorological drought is included in the hazard mitigation plan because it can trigger a cascade of secondary impacts, including reduced reservoir and aquifer recharge, increased wildfire risk from dry vegetation, agricultural stress, and water-use restrictions for residents and businesses. The hazard is also important due to Orange County's reliance on groundwater and surface water for its population, tourism industries, and recreational resources, making even moderate precipitation deficits a concern. Historically, meteorological droughts have contributed to lower lake levels, impaired water quality, heightened competition for water supply, and economic losses in water-dependent sectors. The hazard is considered relevant to the County due to a history of periodic droughts affecting both urban and rural areas, necessitating careful monitoring and management of water resources. Seasonal variations and regional climate trends suggest that meteorological drought can occur throughout the year, but periods of particular concern are often from winter into early spring when rainfall is often minimal and demand may be high.

Hazard Location and Extent

Meteorological drought risk in Orange County, Florida, is considered jurisdiction-wide, affecting the entire County rather than a particular corridor, watershed, or set of communities. Due to the region's subtropical climate and reliance on surface and groundwater sources for municipal, agricultural, and commercial needs, all areas within the County could experience the impacts of meteorological drought. These impacts typically manifest as prolonged periods of below-average precipitation that can strain water supplies, agricultural productivity, and ecosystem health.

Based on prior planning documents, drought hazard mapping has not specified localized hot spots or sub-County boundaries of higher risk for meteorological drought in Orange County. Instead, the risk is generally characterized as affecting the County as a whole, with all incorporated and unincorporated areas—urban, suburban, and rural—considered potentially impacted. While some agricultural zones may experience effects earlier than densely developed areas due to irrigation and crop sensitivity, no specific census tracts or neighborhoods have been formally delineated as more vulnerable in the available hazard mapping.

Given Florida's overall exposure to periodic drought conditions and Orange County's reliance on regional groundwater resources, water management agencies monitor groundwater levels and streamflow data to detect emerging drought conditions. However, there are currently no permanent, mapped drought-prone zones in the County, and the hazard area is expected to remain jurisdiction-wide under both current and projected future conditions.

In summary, meteorological drought in Orange County is not limited by natural or artificial boundaries and is anticipated to affect all geographic areas within the County similarly, although specific impacts may vary by land use and water consumption patterns. Data on potential future shifts in the extent of risk, based on climate projections or land-use changes, are not available.

Hazard Magnitude and Severity

The U.S. Drought Monitor (USDM) provides a consistent weekly drought-intensity scale synthesized from multiple indicators and expert review.¹⁰ D0 is abnormally dry and is not drought; D1 through D4 represent increasing drought intensity. County planning should also examine the duration and percentage of the County affected.

Table 10: U.S. Drought Monitor Magnitude Scale

USDM Class	Description	Example Percentile Range For Most Indicators	Orange County Interpretation
None	Normal or wet	30.01 or above	No USDM drought classification
D0	Abnormally Dry	20.01–30.00	Early warning or recovery condition; not drought
D1	Moderate Drought	10.01–20.00	Emerging water, landscape and agriculture stress
D2	Severe Drought	5.01–10.00	Likely broader resource and fire-weather consequences
D3	Extreme Drought	2.01–5.00	Major, widespread drought consequences
D4	Exceptional Drought	0.00–2.00	Rare, highest-intensity drought classification

Past Occurrences and Declarations

Orange County, Florida, has experienced multiple periods of meteorological drought, with significant impacts documented throughout recent decades. According to past hazard mitigation planning documents and local incident records, drought episodes in the County typically manifest through extended rainfall deficits, leading to diminished water supplies, increased wildfire risk, agricultural losses, and disruptions to daily water use. However, meteorological drought in the County is rarely associated with federal disaster declarations, as this hazard often lacks the direct and acute property damage thresholds required for such designation.

Notable drought episodes in Orange County include the statewide drought of 1998–1999, which resulted in widespread wildfires and water use restrictions throughout Central Florida. During this period, the

¹⁰ U.S. Drought Monitor, Drought Classification, <https://droughtmonitor.unl.edu/About/AbouttheData/DroughtClassification.aspx>, and What Is the USDM?, <https://droughtmonitor.unl.edu/About/WhatistheUSDM.aspx>. D0 is abnormally dry; D1–D4 are drought.

County faced unusually low rainfall, with documented water shortages affecting both urban and agricultural users. The prior mitigation plan noted that no FEMA Major Disaster Declarations specific to meteorological drought have occurred within Orange County, though the impacts from compounded hazards such as wildland fire are indirectly associated with periods of drought. Additionally, the severe drought experienced between 2006 and 2008 led to declining groundwater levels and prompted local water management districts to issue mandatory water use restrictions, but did not trigger a federal disaster declaration.

The USDA monitors drought conditions affecting crop and pastureland, occasionally issuing Secretarial Disaster Designations for agricultural losses in Central Florida. Orange County has periodically been included in such designations, most recently during the drought in 2017 which caused documented declines in crop yield and prompted state-level drought advisories.

Despite these events, comprehensive data on deaths, injuries, or direct property damage from meteorological drought in Orange County is limited. Available records mostly highlight infrastructure and service impacts, particularly stress on public water supply systems and heightened risk of wildfires. The absence of precise loss figures or detailed local incident records for meteorological drought events represents a data gap for this hazard in the County.

Future Conditions and Probability

Meteorological drought will continue to vary substantially from year to year. The most useful local trend record is the duration and County coverage of USDM D1–D4 conditions, supplemented by precipitation and evapotranspiration indicators; a single dry week or D0 classification is not a drought occurrence.

NCA5 identifies drought persistence and strength as an intensifying Southeast climate stressor and states that drought-related threats are expected to worsen with additional warming. It does not publish an Orange County-specific percentage change in drought frequency. The planning conclusion is that higher temperature and evaporative demand may increase the consequences of a rainfall deficit, while annual probability remains uncertain; future updates should calculate a reproducible County USDM time series before changing the rating.

Heat Wave

Hazard Description

A heat wave, also referred to as extreme heat, is a prolonged period of abnormally high temperatures that exceeds the historical average for a specific geographic area. In Orange County, Florida, heat waves are characterized by sustained daytime high temperatures, often accompanied by elevated nighttime temperatures and high humidity levels, which can exacerbate health and infrastructure impacts. Extreme heat events in this region typically occur during the late spring, summer, and early fall months, when subtropical atmospheric conditions persist.

The primary causes of heat waves in Orange County include persistent high-pressure systems that trap warm air at the surface and reduce cloud cover, thereby intensifying solar radiation. These conditions may be worsened by local factors such as urbanization and the heat island effect in densely built environments, which can increase nighttime temperatures and reduce opportunities for cooling. In some cases, heat waves may coincide with drought conditions, further amplifying stress on water supplies and ecosystems.

Heat waves in this area can manifest in several forms, ranging from short-term episodes lasting several days to extended events that may persist for a week or longer. Extreme heat can result in heat-related illnesses and fatalities, increased energy demand for cooling, and disruptions to critical infrastructure. Vulnerable populations, including older adults, children, and individuals with underlying health conditions, are often at the greatest risk of adverse impacts.

Cascading effects associated with heat waves may include an increased probability of wildfires resulting from dry vegetation and elevated temperatures, worsened air quality due to higher levels of ground-level ozone, and negative impacts on agricultural productivity and water resources. These factors together make heat waves a significant public health and emergency management concern in Orange County.

The inclusion of heat wave as a profiled hazard in this plan is based on its documented potential to threaten public safety, stress emergency response systems, strain critical infrastructure, and disrupt community functions. Aligning with FEMA guidance, the planning team recognizes that climate change may further increase the frequency, duration, and severity of extreme heat events in Central Florida, making proactive hazard mitigation essential for long-term community resilience.

Hazard Location and Extent

Heat waves in Orange County, Florida, are a jurisdiction-wide hazard, affecting both urban centers such as Orlando and outlying suburban and rural areas. The entire County routinely experiences elevated temperatures that can lead to extreme heat events. Due to the region's subtropical climate, heat waves are characterized by prolonged periods of unusually high temperatures often combined with elevated humidity levels, resulting in dangerous heat index values across all communities. There are no geographic corridors, flood zones, or coastal boundaries that confine the extent of heat wave impacts; risk is distributed Countywide, including densely populated neighborhoods, tourist districts, and less developed zones.

Extreme heat can affect the entire County, with local variation associated with land cover, shade, building conditions, occupation, health, and access to cooling. No verified NRI category or Countywide microclimate map is asserted here; neighborhood-level conclusions require a documented heat and vulnerability analysis.

Looking forward, credible future shifts in hazard extent relate to the projected impacts of climate change, which indicate a likelihood of more frequent and intense heat waves across the entirety of Orange County. This means the current jurisdiction-wide risk is expected to persist and potentially worsen in terms of both

the number of extreme heat days and the intensity of heat events. However, no local data was available describing mapped microclimate variation or detailed exposure by census tract for this hazard.

Hazard Magnitude and Severity

NWS HeatRisk is used as the primary operational severity scale because it incorporates the unusualness and duration of heat for a location and identifies the potential for health impacts.¹¹ Air temperature, heat index, wet-bulb globe temperature, warm-night duration, power reliability and access to effective cooling remain essential supporting measures.

Table 11: NWS HeatRisk And Supporting Heat-Severity Measures

HeatRisk Level	Risk Of Heat-Related Impacts	Orange County Application	Interpretation/ Limit
0/Green	Little to no risk	Routine seasonal readiness	Location- and date-specific product
1/Yellow	Minor	Focus on people extremely sensitive to heat	A low category does not mean zero risk
2/Orange	Moderate	Target sensitive groups and people without effective cooling/hydration	Begin enhanced outreach and operational monitoring
3/Red	Major	Broad protective action; monitor healthcare, outdoor events, power and cooling access	Impacts possible for anyone without effective cooling/hydration
4/Magenta	Extreme	Highest level of response; prolonged or rare heat can stress multiple systems	Potentially widespread health and infrastructure consequences
Supporting metrics	Daily maximum at/above 95°F; warm nights at/above 70°F; WBGT/heat index	Track duration, nighttime recovery, outdoor work/event exposure and outages	The 95°F and 70°F values are NCA5 projection metrics, not universal health thresholds

¹¹ National Weather Service Weather Prediction Center, NWS HeatRisk, <https://www.wpc.ncep.noaa.gov/heatrisk/> and <https://www.wpc.ncep.noaa.gov/heatrisk/understanding.html>. HeatRisk categories run from 0 (little to no risk) through 4 (extreme).

Past Occurrences and Declarations

NOAA/NCEI records an Excessive Heat event for Orange County on June 24, 2022, when Florida Automated Weather Network (FAWN) sites at Apopka and Avalon each measured a peak heat index of 113°F. The event record reports no direct injuries, deaths, or property damage; it does not establish the absence of health effects not captured in that dataset.¹²

A complete, consistently defined Orange County series of heat-related emergency visits, illnesses, deaths, and infrastructure impacts was not identified in the verified source set. Health and trend claims should use a citable dataset with a stated case definition, geography, and period.

Despite the health and infrastructure impacts, heat waves in Orange County have not met the criteria for formal federal disaster declaration under FEMA, as heat is not typically a standalone qualifying hazard for such declarations. Local emergency declarations and public health advisories have occasionally been issued by Orange County authorities during prolonged periods of excessive heat, focusing on public cooling centers and targeted assistance to at-risk populations.

Recorded damages specific to property or infrastructure are rare for heat wave events in this region, with impacts largely limited to public health, utility demand spikes, and occasional service interruptions. Quantitative data on deaths, injuries, property damage, and economic losses linked solely to heat waves are limited and not comprehensively tracked in current local or state databases. This represents an important data gap, highlighting the need for improved incident tracking and reporting related to extreme heat events in future planning cycles.

Future Conditions and Probability

Future heat exposure will increase as the County grows and as housing, power, cooling access, outdoor work, schools, campuses, tourism, and large events place more people in heat-sensitive settings. Severity should be tracked with HeatRisk, duration, warm nights, WetBulb Globe Temperature (WBGT)/heat index, health outcomes, and power/cooling failures rather than maximum temperature alone.

NCA5 projection. Figure 22.9 projects an increase in days with maximum temperature at or above 95°F by 2050 relative to 1991–2020 under a high SSP3–7.0 scenario across the Southeast, with larger increases in the southern part of the region. NCA5 also reports that WBGT has already increased in parts of the Southeast and is expected to increase through this century; nationally, warm nights are very likely to increase faster than daytime temperatures. The figure is on a state/regional scale and does not provide an exact Orange County day count. The plan, therefore, treats heat magnitude and consequence as

¹² National Centers for Environmental Information, Storm Events Database, Florida detail file StormEvents_details-ftp_v1.0_d2022_c20260625.csv.gz, Orange County Excessive Heat event dated June 24, 2022, <https://www.ncei.noaa.gov/pub/data/swdi/stormevents/csvfiles/>.

increasing, prioritizes neighborhood-level heat and cooling-access data, and avoids presenting the regional map as a County-specific forecast.¹³

Extreme Cold/Wind Chill

Hazard Description

Extreme cold and wind chill in this LMS mean locally consequential cold conditions that can threaten health, require warming or outreach operations, increase heating demand, and affect exposed infrastructure. This operational planning definition is broader than freezing temperature and is informed by NWS Melbourne cold-support thresholds for air temperature and wind chill.¹⁴

Cold episodes generally occur during winter cold-front passages and are often most hazardous overnight and during the early morning. Unsheltered people, older adults, young children, people with medical or mobility needs, and households without adequate heating may require protective support even when the air temperature remains above 32°F.

Possible consequences include hypothermia and cold stress, unsafe use of supplemental heat, power demand, service disruption, pipe or vegetation damage during stronger events, and the need for coordinated warming-center, transportation, animal, and outreach operations.

This hazard is retained separately from Freezing Temperatures. A high probability for locally consequential cold does not mean that a freeze occurs every year; the freezing-temperature profile retains its lower probability based on the more restrictive physical threshold.

Hazard Location and Extent

Cold and wind chill can affect all of Orange County, but exposure and consequence differ by shelter, housing condition, heating access, occupation, transportation, health, and duration. Station observations and forecasts should be used to determine event-specific extent rather than assuming a uniform temperature across the County.

¹³ Hoffman et al., NCA5 Chapter 22, Southeast, Figure 22.9 and accompanying text, <https://nca5.climate.us/chapter/22>; NCA5 Chapter 2, Climate Trends, Figure 2.11, <https://nca5.climate.us/chapter/2>. Figure 22.9 compares 2050 with 1991–2020 under SSP3-7.0; map values are regional/state scale.

¹⁴ National Weather Service Melbourne, Cold Decision Support, including local temperature and wind-chill threshold maps, <https://www.weather.gov/mlb/coldsupport>.

The NWS Melbourne cold-support framework displays duration thresholds for air temperature at or below 40°F, 32°F, and 27°F and wind chill at or below 40°F, 30°F, and 20°F. These are decision-support categories, not a statement that every category occurs annually in Orange County.¹⁵

No permanent geographic shift is assumed. Future changes in housing, homelessness, health, power reliability, and access to heating can change consequence even if the meteorological footprint does not expand.

Hazard Magnitude and Severity

Cold severity is measured with actual air temperature, wind, exposure duration, wetness, access to shelter, and effects on medically or electrically dependent people. Wind chill applies to people and animals; it does not lower pipes, roads or equipment below the actual air temperature. NWS local alert criteria should be recorded for each event because thresholds vary geographically.

Table 12: Extreme-Cold And Wind-Chill Magnitude Measures¹⁶

Measure/ Condition	Technical Threshold or Example	Primary Consequence	Interpretation/ Limit
Wind Chill Index applicability	Air temperature at or below 50°F and wind above 3 mph	Human and animal heat loss	Does not apply to inanimate objects
Freeze-capable air	Actual temperature below 32°F	Frostbite becomes physically possible; pipes/crops may freeze	Wind chill alone cannot freeze exposed skin when actual air is above freezing
Severe exposure example	0°F with 15 mph wind produces about –19°F wind chill	Exposed skin can freeze in about 30 minutes	NWS example, not a typical Orange County forecast
Operational consequence	Duration, unsheltered population, heating/power failures, water-system damage	Determines local severity and resource need	Use active NWS Melbourne products and local incident data

¹⁵ National Weather Service Melbourne, Cold Decision Support, including duration thresholds for air temperature and wind chill, <https://www.weather.gov/mlb/coldsupport>.

¹⁶ National Weather Service, Understanding Wind Chill, <https://www.weather.gov/safety/cold-wind-chill-chart>, and Wind Chill Questions, <https://www.weather.gov/safety/cold-faqs>. Wind chill is defined for air temperature at or below 50°F and wind above 3 mph and applies to people and animals.

Past Occurrences and Declarations

Orange County opened or supported temporary warming centers or cold-weather shelter operations during documented cold episodes in December 2022, January 2023, January 2024, January 2025, and January 2026. Several activations covered multiple nights. These official notices demonstrate a recurring local operational consequence.¹⁷

The warming-center record does not prove that temperatures fell below freezing in each year and is not used as a freeze count. It does support a High probability rating for locally consequential Extreme Cold/Wind Chill under this LMS definition.

No FEMA major disaster declaration specific to extreme cold was identified for Orange County, and a complete public record of cold-related illnesses, deaths, damages, and costs was not verified. Absence of such a declaration or a complete loss series does not negate documented local protective operations.

Future Conditions and Probability

Episodic cold remains possible and can be locally consequential where residents, visitors, agriculture, plumbing, and facilities are not acclimated to or winterized for cold. The annual rating should be based on observed local temperatures, NWS products, and cold-response activations, not on northern-climate wind-chill thresholds.

NCA5 reports decreases in the intensity and frequency of disruptive cold-season events, including frost days, in the Southeast. At a global warming level of 2°C, the assessment projects fewer cold days (minimum temperature at or below 32°F) relative to 1991–2020. This is a directional regional projection, not elimination of Orange County cold events. Planning should maintain shelter, outreach and infrastructure protection capabilities while monitoring whether local event frequency or duration changes.

¹⁷ Orange County Government, official warming-center and cold-weather shelter notices: December 23–26, 2022, <https://newsroom.ocfl.net/media-advisories/press-releases/2022/12/orange-County-government-assists-homeless-services-network-with-cold-weather-shelter-support/>; January 13–15, 2023, <https://newsroom.ocfl.net/media-advisories/press-releases/2023/01/orange-County-government-assists-homeless-services-network-with-shelter-support-2/>; January 20–21, 2024, <https://newsroom.ocfl.net/media-advisories/press-releases/2024/01/orange-County-government-opens-warming-center/>; January 6–10, 2025, <https://newsroom.ocfl.net/media-advisories/press-releases/2025/01/orange-County-governments-temporary-warming-centers-to-remain-open-through-friday-morning-january-10-2025/>; and January 26–29, 2026, <https://newsroom.ocfl.net/media-advisories/press-releases/2026/01/orange-County-government-to-open-temporary-warming-centers-updated-schedule-now-includes-wednesday/>.

Freezing Temperatures

Hazard Description

Freezing temperatures in Orange County are periods when outdoor air temperatures fall to levels at or below 32°Fahrenheit. While Central Florida's subtropical climate means that such events are rare, freezing temperatures can still occur, particularly during strong winter cold fronts or when continental high-pressure systems bring Arctic air into the region. These events may be brief, lasting for a few hours overnight, but even short-duration freezes or near-freeze events can have significant local impacts.

Freezing temperatures can manifest as frost (where surface temperatures drop enough for ice crystals to form on exposed surfaces), hard freeze (extended periods of sub-freezing temperatures, typically below 28° Fahrenheit), or wind chill events (where the apparent temperature is much colder than the measured air temperature because of strong winds). In Orange County, the most common subtype is the radiational freeze, which typically occurs on clear, calm nights when heat escapes rapidly from the ground.

Primary causes of freezing temperatures in the County include the passage of polar air masses and the lack of cloud cover or wind at night, which enhances atmospheric cooling. Though rare, hard freezes may be recorded during especially strong cold-air outbreaks associated with broader meteorological patterns affecting the southeastern United States.

Cascading effects and impacts of freezing temperatures in Orange County may include crop and landscape damage, broken water pipes, vehicular accidents caused by icy conditions or frost on bridges, increased energy demand for heating, and health risks for vulnerable populations such as the elderly, unsheltered, or those with low income and limited access to heating. Freeze events may also stress local infrastructure, disrupt utilities, and affect the local economy, particularly in the agriculture and tourism sectors.

Freeze conditions in Orange County most commonly occur between December and February, with the highest likelihood during overnight and early morning hours. While less frequent than in northern or panhandle regions of Florida, these events are included in the hazard mitigation plan because of their potential to cause significant disruption and damage when they do occur. Their inclusion is also informed by the need to protect vulnerable resident populations, infrastructure, and the region's agricultural assets from the rare but serious consequences of freezing temperatures.

Hazard Location and Extent

Freezing temperatures in Orange County, Florida, are rare and generally occur as brief episodes during the winter months. The risk of freezing temperatures is considered Countywide, as such events can potentially affect all geographic areas within the County due to the uniform topography and widespread exposure of residential, commercial, and agricultural assets.

While there are no formal hazard maps specifically delineating freezing temperature risk corridors or hot spots in Orange County, historical reporting and prior planning documents indicate that the hazard is not confined to any particular region, community, or census tract. Both urban and rural areas, including the cities of Orlando, Winter Park, and Apopka, as well as unincorporated regions, have experienced temperature drops at or below freezing during historic cold snaps.

Since Orange County is characterized by generally subtropical conditions, any freeze event, defined locally as temperatures at or below 32°F for several hours, can pose a significant threat to sensitive communities, agriculture, and infrastructure. The extent of freezing events tends to be uniform across the County during major outbreaks, as arctic air masses penetrate central Florida. However, microclimates, such as low-lying areas and locations removed from the moderating influence of larger lakes, may experience slightly colder overnight minimums.

Climate projections included in prior planning documents do not indicate any major shift in the spatial distribution of cold-weather risk within Orange County. Thus, the entire County remains potentially susceptible during particularly strong winter cold fronts, though the historic frequency and spatial occurrence have been low relative to northern states.

Mapped data underpinning this assessment in prior planning efforts typically use NWS station reports and County-level summaries to describe the uniform Countywide exposure to this hazard. As no detailed census-tract-level risk mapping for freezing temperatures were found in the reviewed documents, planning and impact considerations are based on localized temperature data and broad-area vulnerability, rather than specific mapped boundaries.

Hazard Magnitude and Severity

Freezing-temperature magnitude is based on actual air temperature and duration, not wind chill. The scale below supports agricultural, plumbing, water-system, and shelter planning. NWS products and growing-season practices can vary by forecast office, so the active local warning remains controlling.

Table 13: Freeze Magnitude and Consequence Scale¹⁸

Condition	Air-Temperature Criterion	Orange County Consequence Indicators	Interpretation/ Limit
Frost potential	Can occur with reported air temperatures in the	Sensitive vegetation and exposed microclimates	Frost is site-specific and not identical to a freeze

¹⁸ National Weather Service, Cold Weather Safety, <https://www.weather.gov/safety/cold>, and Understanding Cold Weather Alerts, <https://www.weather.gov/safety/cold-ww>. NWS states that a freeze occurs below 32°F; temperatures below 28°F for an extended period can kill most crops and residential plants. Local warning criteria control.

Condition	Air-Temperature Criterion	Orange County Consequence Indicators	Interpretation/ Limit
	mid-30s under clear/calm conditions		
Freeze	Below 32°F	Crops, exposed plumbing, irrigation, and vulnerable populations	Record minimum temperature and hours below freezing
Hard freeze	28°F or lower for an extended period	Greater risk to vegetation, exposed pipes, and water infrastructure	Duration criteria can vary locally; use the current NWS product
Major local consequence	Freeze plus power/heating loss or widespread water-system damage	Sheltering, utility restoration, and agricultural loss	Plan-defined consequence tier, not an NWS temperature category

Past Occurrences and Declarations

Freezing temperatures remain a Low-probability hazard distinct from the more frequently activated Extreme Cold/Wind Chill category. Strong freezes have occurred historically and can damage plumbing, vegetation, agriculture, and exposed equipment, but the warming-center record is not a freeze count.

State-level emergency management documents note a series of notable cold events in the 1980s, including the Christmas Freeze of December 1983 and the cold wave of January 1985, which affected much of Florida's citrus industry, including groves in Orange County. These events affected property and infrastructure, particularly vulnerable populations, with some power outages reported due to increased energy demand. Despite these impacts, there is no record of County-specific presidential disaster declarations for freezing temperatures. County-level emergency declarations or activations related to freezing temperatures were also not documented in the available sources.

No fatalities or injuries directly linked to freezing temperatures in Orange County were found in the records surveyed. Documentation of direct property damage is limited, but adverse effects on agriculture and landscaping were reported in several past events. Gaps exist in local historical documentation, as some older incidents may not have been systematically recorded, and property/crop loss figures are not comprehensively tracked.

While freezing temperatures are uncommon, the historical record confirms that Orange County has been periodically affected by such events, usually as part of wider regional cold outbreaks impacting much of Florida. The absence of major disaster declarations and comprehensive loss data represent significant data gaps for this hazard in the County.

Future Conditions and Probability

Freeze probability is expected to decline over the long term, but damaging episodes remain possible because exposure is sensitive to event timing, duration, microclimate, crop stage, power conditions, and the degree of winterization. Consequences can also arise if development increases exposed landscaping, irrigation, and water infrastructure.

NCA5 projects fewer cold days, defined for its national analysis as days with minimum temperature at or below 32°F, at a 2°C global warming level relative to 1991–2020, and reports declining frost-day intensity and frequency in the Southeast. The assessment does not provide a County-specific freeze recurrence interval. Orange County should retain operational freeze planning, track hours below 32°F and 28°F at representative stations, and update probability only after a documented local trend analysis.

Subsidence/Sinkhole

Hazard Description

Subsidence and sinkhole hazards in Orange County, Florida, refer to the downward movement of the ground surface with little or no horizontal movement, resulting in a loss of surface elevation. In this region, subsidence most commonly takes the form of sinkholes—a specific type of ground subsidence resulting from the collapse of surface material into underground voids. These voids typically form in karst terrain, characterized by soluble rocks such as limestone that are dissolved by groundwater over time.

Sinkholes in Orange County may develop gradually as the ground settles or may occur suddenly, often with little warning, leading to structural damage or the collapse of roadways and buildings. The two primary natural sinkhole types in the area are solution sinkholes, which form through the gradual dissolution of limestone at or near the ground surface, and cover-collapse sinkholes, which occur when overlying soil or sediment suddenly collapses into underlying cavities. Human activities, such as excessive groundwater extraction and changes in water drainage patterns, can exacerbate subsidence risk and trigger sinkhole formation.

Subsidence and sinkholes can have cascading impacts, including the disruption of transportation corridors, damage to homes and businesses, interruption of utility services, and contamination of water supplies if hazardous materials are released during soil collapse. There is no pronounced seasonal pattern for sinkhole occurrence, but episodes of heavy rainfall, drought periods followed by intense precipitation, or changes in water tables can increase the likelihood of sinkhole development. Orange County includes subsidence/sinkhole in its mitigation planning due to the potential for significant property damage, economic impacts, and threats to public safety associated with these geologic hazards.

Hazard Location and Extent

Subsidence and sinkhole hazards in Orange County, Florida, are primarily associated with underlying karst geology, which makes certain parts of the County more susceptible to ground collapse and subsurface movement of material. These hazards are most likely in areas with significant limestone bedrock near the surface, a widespread characteristic in central Florida, including Orange County. Risk is not uniform across the entire County; locations with thin overburden, high groundwater fluctuations, and intensive water withdrawal are typically more exposed. Notably, sinkholes often emerge in the northwestern, western, and southern portions of the County, where mapped karst terrain is prevalent.

Figure 8 shows recorded sinkholes and critical infrastructure throughout the County. Urbanized areas such as Apopka, Winter Garden, and sections of Orlando have been identified as zones with notable subsidence and sinkhole risk based on claims data and historical reports. Additionally, corridor-based vulnerabilities are recognized along certain roadways and developments where heavy infrastructure or changes in water management may exacerbate the potential for subsidence.

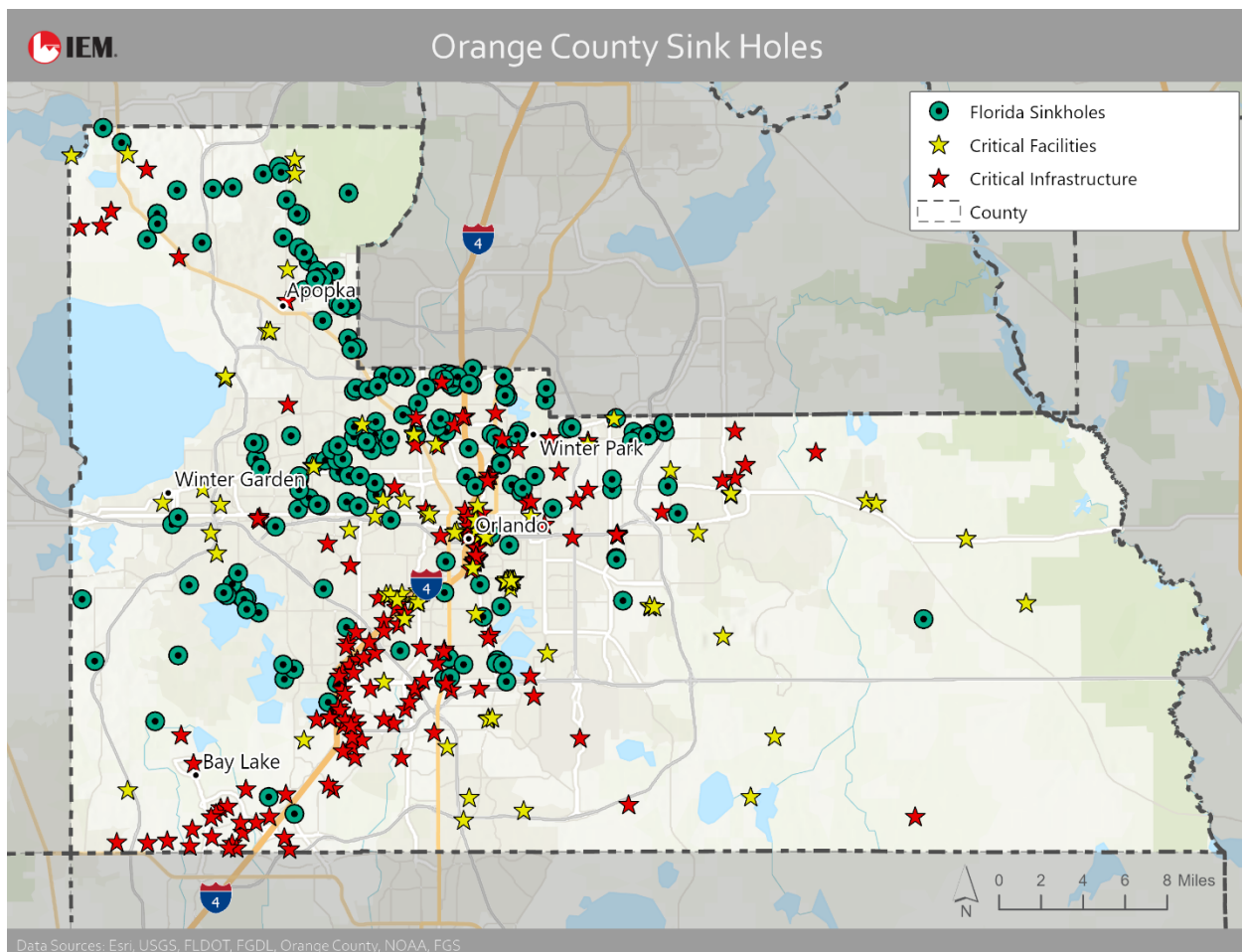


Figure 8: Orange County Recorded Sinkholes and Critical Infrastructure

The extent of sinkhole hazard is typically measured by the area potentially impacted, which can range from small sites affecting individual lots or roads to larger collapses impacting multiple parcels, utility corridors, or critical infrastructure. Current mapping efforts rely on the distribution of past occurrences, reported insurance claims, and underlying geology to delineate higher-risk zones. Modern GIS analysis and prior hazard mitigation plans have utilized these factors to guide spatial risk assessments rather than prescribe exact future boundaries.

Sinkhole susceptibility is governed by karst geology, groundwater conditions, rainfall, and human activity, and is not uniform across the County. Without a validated predictive map, the plan describes localized exposure rather than assigning an undocumented NRI category to neighborhoods or facilities.

Where recent or detailed mapped hazard areas are unavailable, subsidence and sinkhole risk should be considered localized, with the highest level of attention in karst-affected census tracts and historically impacted communities. Data limitations preclude precise future delineations.

Hazard Magnitude and Severity

There is no nationally adopted sinkhole magnitude scale comparable to the EF scale for tornadoes or the Saffir–Simpson for tropical storms/hurricanes. Orange County, therefore, measures severity by verified ground movement and consequences to occupied structures, roads, utilities, and access. A depression or reported subsidence incident is not, by itself, proof of a geologically confirmed sinkhole.

Table 14: Subsidence/Sinkhole Operational-Severity Scale¹⁹

Plan Tier	Observable Condition	Asset/ Lifeline Consequence	Evidence Required
Limited	Localized settlement or depression; no closure	Inspection and monitoring	Site observation: distinguish drainage, construction, and karst causes
Moderate	Confirmed ground movement affecting one site	Temporary evacuation, localized repair, or utility isolation	Geotechnical/geologic assessment and mapped location
Major	Collapse damages an occupied structure, roadway, or critical utility	Extended closure, displacement, or emergency access impact	Engineering assessment, dimensions, duration, and costs

¹⁹ Florida Department of Environmental Protection, Florida Geological Survey, <https://floridadep.gov/fgs>; U.S. Geological Survey, Water Science School FAQ: What Is a Sinkhole?, <https://www.usgs.gov/water-science-school/faq>. The plan's consequence tiers are local operational categories, not a federal geologic magnitude scale.

Plan Tier	Observable Condition	Asset/ Lifeline Consequence	Evidence Required
Extreme	Multiple structures or lifelines affected; casualties or regional service disruption	Long-term relocation and major reconstruction	Incident-specific expert confirmation; plan-defined tier

Past Occurrences and Declarations

A major sinkhole began in Winter Park on May 8, 1981, damaging property and infrastructure and drawing national attention. No fatalities are reported in the cited USGS summary. Smaller subsidence incidents have occurred in Orange County, but a complete, quality-controlled County event inventory with comparable diameter, depth, and loss fields was not identified. No federal disaster declaration specific to an Orange County sinkhole was identified in the reviewed declaration data.

Property damage, infrastructure repair costs, and service interruptions are the most commonly reported impacts, though data on cumulative financial losses are limited. The historical record for sinkhole and subsidence occurrences is incomplete, with local reports and prior planning documents indicating that some minor events may go unreported unless they result in major infrastructure impacts or media attention. This represents a data gap in understanding the full scope of subsidence and sinkhole hazards in Orange County.

Future Conditions and Probability

Future sinkhole and subsidence risk depends on karst geology, groundwater levels and withdrawals, drainage, construction, and site conditions. Development can increase exposure by placing more structures and infrastructure over susceptible terrain.

NCA5 does not provide a quantitative projection for sinkhole occurrence in Orange County, and this plan does not convert projected heat, drought, or heavy rainfall into a sinkhole probability multiplier. Those climate conditions may be screened as compound stresses when a site-specific geotechnical or hydrogeologic analysis supports the connection. Until then, the local rating is maintained, and future updates should use verified Florida Geological Survey data, geotechnical investigations, and asset-specific incident records.

Fixed-Facility Chemical Release

Hazard Description

A fixed-facility chemical release is the accidental or uncontrolled release of hazardous materials from a stationary source such as industrial plants, chemical manufacturing facilities, storage terminals,

distribution hubs, water and wastewater treatment plants, or service and research buildings that use or store chemicals. In Orange County, Florida, this hazard includes the release of toxic gases, flammable liquids, corrosive substances, and other regulated chemicals that are manufactured, stored, processed, or handled at designated facilities.

Chemical releases can be caused by equipment failure, human error, aging infrastructure, natural disasters disrupting facilities (such as hurricanes, flooding, or severe thunderstorms), intentional sabotage, or improper storage and handling. Common scenarios include spillages, leaks from containers or tanks, ruptured pipelines, malfunctioning valves, or fires and explosions that cause the spread of hazardous materials. Secondary or cascading impacts may include fires, explosions, environmental contamination, public health emergencies, and population displacement. These incidents can also strain emergency response resources, disrupt transportation corridors, and impact local economic activity.

Fixed-facility chemical releases are of concern in Orange County due to the presence of industrial zones, transportation corridors for chemical delivery, and a population with residential areas, schools, hospitals, and critical facilities that could be affected by airborne or waterborne chemical contamination. The inclusion of this hazard in the plan reflects the recognition of ongoing chemical manufacture, storage, and use within the County, along with the potential for severe, widespread, and rapid-onset impacts on public health, safety, and the environment. There is no pronounced seasonal pattern for such releases, as incidents may occur at any time of year, depending on facility operations and external risk factors.

Hazard Location and Extent

Fixed-facility chemical release hazards in Orange County, Florida, are primarily localized and facility-specific, reflecting the locations of major chemical storage, manufacturing, and industrial operations throughout the County. Facilities required to report under the Emergency Planning and Community Right-to-Know Act (EPCRA), such as Tier II chemical storage sites and facilities identified under the Risk Management Plan (RMP) program, represent key points of concern for this hazard. These facilities are distributed throughout the urban and industrial areas of Orange County, often near transportation corridors and population centers. The most significant risk is concentrated around industrial parks, large commercial zones, and areas adjacent to major highways such as I-4 and State Road 528, where facilities are more likely to store or handle hazardous materials.

Mapped hazard extent is defined by the emergency planning zones developed for each facility, which are based on the worst-case release scenarios outlined in local emergency response plans. These zones may range from a few hundred yards around smaller storage sites to several miles for larger facilities that house highly toxic or volatile chemicals. In Orange County, the reach of a chemical release is determined by factors such as chemical type, storage volume, facility safeguards, and prevailing wind patterns, which influence potential downwind exposure. Some vulnerable communities and high-risk receptors, including residential neighborhoods, schools, hospitals, and childcare centers, are located within or near these planning zones, increasing the potential for population exposure in the event of a release. Figure 9 shows all hazardous waste facilities along with critical infrastructure in the County.

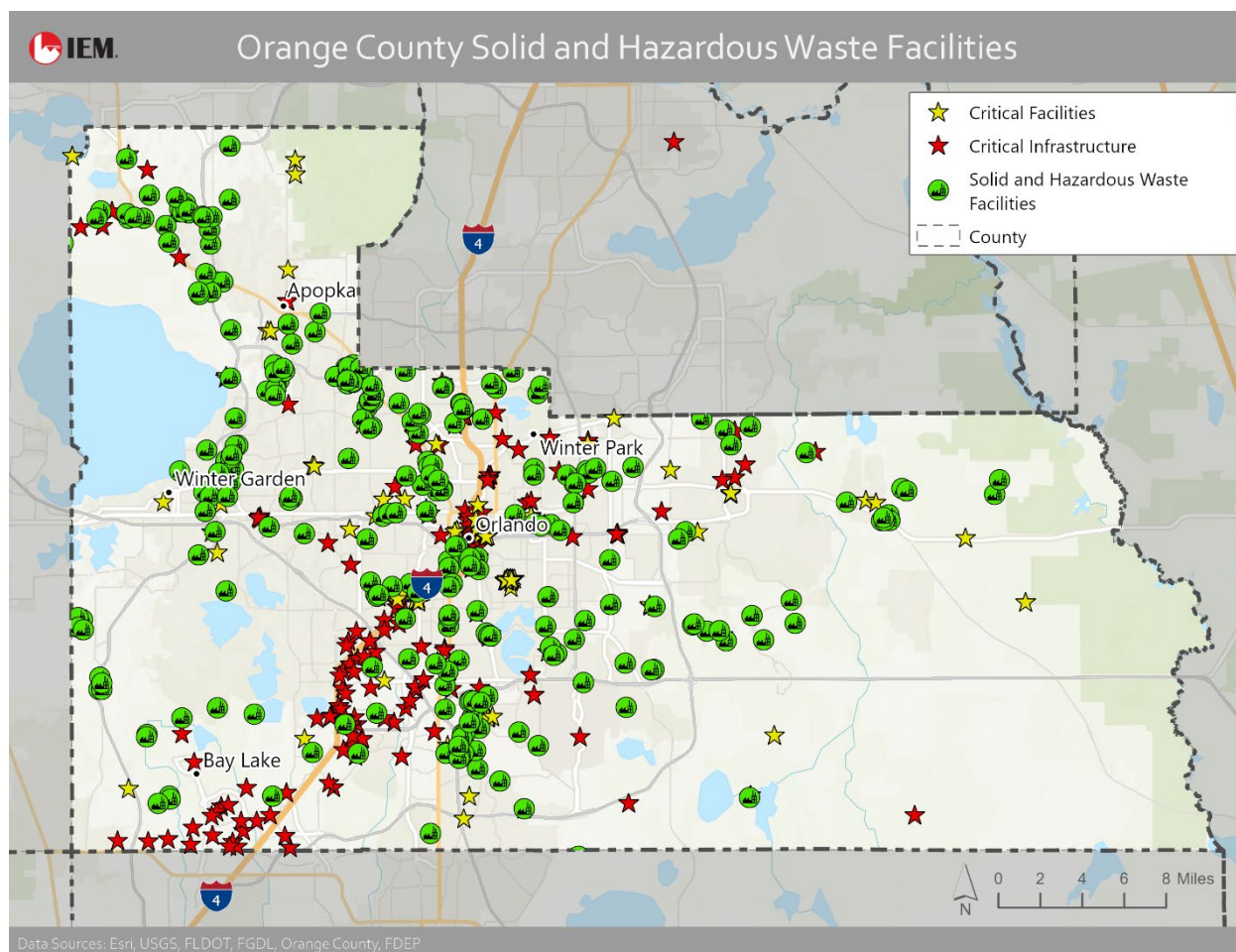


Figure 9: Orange County Solid and Hazardous Waste Facilities and Critical Infrastructure

Areas at highest risk of a fixed-facility chemical release remain consistent due to the fixed locations of facilities; however, future development of new industrial parks, changes in facility operations, or expansion of chemical storage capacities could alter the extent of exposure areas over time. There is no evidence in the current record of significant recent shifts in the spatial distribution of facilities or major changes in the regulated facility count, but ongoing monitoring of industrial development is necessary to assess changes in the extent of hazards. Formal hazard mapping, as used in prior Orange County mitigation plans, typically relies on facility inventory data, emergency planning zone modeling, and a review of local land-use patterns to identify areas of greatest concern.

Hazard Magnitude and Severity

For airborne toxic releases, the Environmental Protection Agency (EPA) Acute Exposure Guideline Levels (AEGLs) provide chemical- and duration-specific concentration thresholds.²⁰ The correct value depends on

²⁰ U.S. Environmental Protection Agency. (n.d.). *Acute Exposure Guideline Levels for airborne chemicals*. <https://www.epa.gov/aeql>.

the chemical and exposure time; an AEGL number without both is not meaningful. Fire, explosion, water contamination, and oxygen-displacement hazards require additional measures.

Table 15: Airborne Chemical-Release Severity Using EPA AEGLs

AEGL Level	Health-Effect Threshold	Planning Application	Interpretation/ Limit
Below AEGL-1	Below the chemical/time-specific AEGL-1 concentration	Monitor plume and sensitive locations	Odor or symptoms may still occur; use chemical-specific guidance
AEGL-1	Notable discomfort or irritation; effects are generally non-disabling, transient, and reversible after exposure ends	Protective messaging and exposure reduction	Value is specific to chemical and 10-min, 30-min, 1-hr, 4-hr, or 8-hr duration
AEGL-2	Irreversible or other serious long-lasting effects, or impaired ability to escape	Shelter/evacuation and responder protection decisions	Use plume modeling and actual/estimated concentration
AEGL-3	Life-threatening health effects or death	Highest life-safety priority and exclusion/control zones	Does not describe explosion, fire, or ecological severity
Consequence overlay	Population in plume, facilities affected, duration, containment, and lifeline interruption	Determines local consequence rating	AEGL exceedance and community consequence are related but distinct

Past Occurrences and Declarations

Orange County has experienced several incidents involving fixed-facility chemical releases, primarily due to its high concentration of industrial facilities and transportation corridors that handle hazardous materials. According to prior local hazard mitigation planning documents, multiple minor chemical release events have been recorded over the past two decades. Notable incidents include ammonia leaks from refrigeration facilities, chlorine releases at water treatment plants, and accidental spills at industrial warehouses in the Orlando metropolitan area.

While no federally declared disasters specifically related to fixed-facility chemical releases were identified in FEMA's disaster database for Orange County, several events have prompted localized emergency responses and temporary evacuations. For example, an incident in 2014 involved a hydrochloric acid spill at a manufacturing site in the southeastern part of the County, which led to the evacuation of nearby

workers and short-term closure of adjacent roads. In 2017, a fire at an auto salvage yard released hazardous vapors and prompted precautionary shelter-in-place orders for nearby residents.

Despite these responses, there has been no record of fatalities or major injuries directly attributable to fixed-facility chemical releases in Orange County during the period surveyed by past local plans. Economic impacts from these events have generally been limited to cleanup costs, business interruptions, and short-term environmental monitoring.

Available records indicate that no Countywide emergency declarations have been issued in Orange County solely due to a fixed-facility chemical release. Historically, incidents have been managed at the municipal or facility level with assistance from Orange County Fire Rescue and regional hazardous materials teams. No state or federal disaster declarations were identified as specifically attributable to fixed-facility chemical releases within the County.

Historical incident data for this hazard are subject to limitations. A previous planning document identified gaps in the tracking of minor chemical releases, and records may be incomplete for older incidents, unreported events, or incidents that did not require a multi-agency response or cause significant impacts. As a result, the available record likely underrepresents the total number of less severe chemical release incidents.

Future Conditions and Probability

Future occurrence is governed primarily by facility inventory, chemical quantities, process safety, regulation, maintenance, and human factors. Population or development near regulated facilities can increase exposure and evacuation/shelter complexity.

NCA5 does not project the probability of fixed-facility chemical releases. Heat, flooding, wind, power loss, and tropical cyclones can be evaluated as compound initiating or response-stressing conditions, but this is an inference for scenario planning rather than a climate-based probability adjustment. Future assessments should overlay the current regulated-facility inventory, chemical-specific planning zones, flood/wind exposure, and nearby populations using protected data as appropriate.

Terrorism/CBRNE

Hazard Description

Terrorism/CBRNE hazards refer to the intentional use of force or violence, including the release or threatened release of CBRNE materials, by individuals or groups to achieve political, ideological, or economic objectives. In Orange County, this hazard includes both direct acts of violence, such as bombings and shootings, as well as incidents involving hazardous substances designed to cause mass casualties, widespread disruption, or fear.

Chemical terrorism includes the deliberate release of toxic chemicals or industrial agents intended to injure or kill people, damage property, or disrupt essential services. Biological terrorism involves the use or threat of infectious agents or biotoxins to cause disease, death, or environmental harm. Radiological terrorism, sometimes referred to as a “dirty bomb” attack, entails dispersing radioactive material to contaminate people, buildings, or infrastructure. Explosive terrorism includes the use of conventional explosives, car bombs, or improvised explosive devices (IEDs) in public places or against critical facilities.

These attack types can manifest in a variety of forms in Orange County, ranging from physical assaults on crowded public spaces, major events, and critical infrastructure, to clandestine contamination of air, water, or food supplies with hazardous substances. Possible cascading effects include mass casualties, displacement, environmental contamination, disruption of public services (such as power, water, or transportation), and prolonged psychological trauma among the community.

Terrorist threats are not strictly limited by season or geography but are often associated with high-visibility targets, densely populated areas, transportation corridors, government buildings, tourist attractions, and event venues—all present in Orange County. The inclusion of Terrorism/CBRNE in the hazard mitigation plan reflects ongoing concerns about emerging threats and the potential for such incidents to cause severe human, economic, and environmental harm within the community. Recognizing this hazard allows for improved preparedness, interagency coordination, and protective measures aimed at reducing risk and minimizing the impact of potential attacks.

Hazard Location and Extent

Terrorism and CBRNE threats in Orange County, Florida, can affect a broad range of geographic areas due to the County’s role as a major population center, vacation destination, and hub for critical infrastructure. The risk is considered Countywide, with particular emphasis on locations that feature large gatherings, critical infrastructure, and high visibility. These include tourist attractions, major theme parks, transportation hubs, government facilities, public venues, and educational campuses. The vulnerability is heightened in areas with dense populations or frequent public events.

The extent of potential incidents varies by type of CBRNE agent and scenario. Chemical incidents can result in localized yet severe contamination in the immediate vicinity of release sites, such as industrial parks, transportation corridors, or facilities that handle hazardous materials. Biological threats may have a broader, dispersed impact, especially if aerosolized agents are released indoors or in crowded open-air environments. Radiological threats are likely to affect localized areas near the point of release, but wind and water movement can extend the hazard footprint. Explosive devices primarily generate localized impacts, but secondary effects such as structural fires or infrastructure disruption may extend into surrounding communities.

Critical corridors include major highways (such as I-4 and the Florida Turnpike), the Orlando International Airport, public transit routes, and distribution facilities, which are frequently cited as potential targets due to high throughput and visibility. Additionally, the presence of multiple hospitals, government buildings, convention centers, and large sporting venues creates multiple nodes of increased potential exposure.

Most high-risk facilities and corridors are mapped and inventoried for response planning, though precise facility lists are not presented here due to security sensitivity.

Future hazard extent may expand as the population grows and economic activity increases in new development corridors. The potential impact area for terrorist incidents can also shift as critical infrastructure expands, large gatherings are held in new venues, or as threat intelligence identifies new targets of opportunity. The adaptability of terrorist tactics means the geographic footprint for potential incidents can change over time, underscoring the need for Countywide preparedness and investment in detection, response, and mitigation measures across Orange County.

Hazard Magnitude and Severity

No universal physical-magnitude scale applies across conventional CBRNE incidents. The plan, therefore, uses a consequence-based operational scale. Threat credibility is assessed by law enforcement and intelligence partners and is not inferred from consequence alone.

Table 16: Terrorism/CBRNE Operational-Severity Scale

Plan Tier	Observable Indicators	Potential Consequence	Interpretation/Limit
Limited	Credible threat, suspicious device/material, or contained incident	Localized closure and investigation	Does not imply a confirmed attack
Moderate	Confirmed event with a limited footprint	Localized casualties, evacuation, or service interruption	Hazard-specific toxicological/ radiological/ explosive measures also apply
Major	Large release/blast, multiple sites, or mass-casualty potential	Multi-agency response and significant lifeline disruption	Plan-defined consequence tier
Extreme	Regional or cascading event affecting multiple lifelines	Prolonged displacement, mass casualties, or continuity-of-government impacts	Plan-defined consequence tier; probability remains intelligence-led

Past Occurrences and Declarations

A review of available records indicates that Orange County, Florida, has not experienced a major terrorism or CBRNE incident that resulted in a presidential disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Searches of public incident records, FEMA disaster declaration

archives, and prior mitigation planning documents have not identified any large-scale terrorist attacks or CBRNE incidents formally declared as disasters for Orange County.

While there have been no federal disaster declarations for terrorism or CBRNE events in the County, smaller-scale incidents or threats may have occurred. However, available documentation does not present detailed records of localized CBRNE incidents, thwarted attempts, or credible public threats involving chemical, biological, radiological, or explosive hazards within Orange County during the documented review periods.

Local reports and prior hazard mitigation planning documents sometimes note general concerns about terrorism and critical infrastructure vulnerability, particularly due to the County's status as a major tourism and convention destination. The planning process has also included discussion of regular preparedness exercises and participation in regional counter-terrorism task forces, but these refer to readiness activities, not to specific past occurrences.

Data specific to deaths, injuries, property damage, disruption, or emergency declarations due to CBRNE terrorism is not available for Orange County. This represents a data gap that planning stakeholders should continue to monitor, and future planning efforts may benefit from additional coordination with local law enforcement, emergency management, and regional intelligence resources to improve incident documentation for this hazard.

Future Conditions and Probability

Future probability is intelligence- and threat-led, and cannot be estimated from climate projections. Growth, major venues, campuses, transportation hubs, and high-profile events can change consequence and response complexity even if the likelihood is unchanged.

NCA5 provides no projection for terrorism or CBRNE occurrence. Climate-related disasters may coincide with or complicate a deliberate incident by reducing available response capacity, disrupting communications, or increasing sheltering needs; the plan treats this possibility as only a compound scenario. It does not use climate information to raise or lower the terrorism probability rating.

Cyberterrorism

Hazard Description

Cyberterrorism in Orange County, Florida, is defined as the intentional use of digital technologies and electronic networks to disrupt, damage, or threaten critical computer systems, infrastructure, or data for terrorist purposes. This hazard involves deliberate actions by individuals or groups to compromise the security, integrity, or functionality of information and communication systems, often intended to instill fear, cause economic loss, disrupt vital public services, or undermine trust in government and public institutions.

Cyberterrorism can take many forms within the County, including, but not limited to, unauthorized access or hacking of government or emergency services networks; deployment of malware or ransomware that cripples public safety dispatch, health services, or utilities; coordinated attacks against transportation, water, or energy infrastructure; and efforts to manipulate or destroy critical data needed for County operations. Other manifestations include denial-of-service attacks designed to overwhelm essential online services, phishing campaigns targeting public sector employees, and sabotage of communications systems during a concurrent disaster response.

The principal causes of cyberterrorism are vulnerabilities within digital infrastructure, such as outdated software, weak access controls, or poor cybersecurity hygiene, alongside the increasing interconnectivity of critical public and private systems. The presence of major population centers, key transportation corridors, regional health providers, and a concentration of tourist operations in Orange County elevates its profile as a target for ideologically motivated cybercriminals or terrorist networks seeking to maximize disruption or gain leverage.

Cascading effects from a significant cyberterrorism incident may include prolonged loss or degradation of emergency services (911 dispatch, law enforcement, fire-rescue notifications), interruption of water and power utility controls, disruption of healthcare information systems, financial loss, loss of public trust, and delayed response to other concurrent emergencies, such as hurricanes or floods. The consequences may be especially severe if cyberattacks coincide with natural disasters, impeding coordination and delivery of urgent services.

Cyberterrorism is included in the Orange County hazard mitigation plan due to the County's reliance on digital technologies for its day-to-day operations and emergency response, its regional importance as a tourism and economic hub, and rising trends in cyber threats against public sector entities nationwide. The hazard's capacity for causing widespread disruption, financial loss, and cascading impacts on life safety and public welfare justifies continued vigilance and pre-incident mitigation measures. While cyberattacks are not bound by seasonality or geographic patterns in the traditional sense, the rapid evolution of technology requires ongoing risk assessment and adaptive mitigation strategies.

Hazard Location and Extent

Cyberterrorism poses a Countywide threat throughout Orange County, Florida, by targeting the digital infrastructure that supports government operations, public utilities, emergency response, healthcare, financial institutions, transportation systems, and private enterprises. The impacts of cyberterrorism are not geographically constrained in the same way as physical hazards; rather, they are determined by the connectivity and interdependency of networks spanning the entire County. Critical assets at risk include County information technology infrastructure, municipal servers, school district databases, water utility control systems, public safety dispatch centers, and major healthcare provider networks.

The extent of a cyberterrorism event is best characterized by the breadth of impacted systems and the cascading effects on essential services. An incident could affect operations at a single facility, multiple agencies, or, in a coordinated attack, Countywide service delivery. Given the interconnected nature of

digital and utility networks in Orange County, disruptions could propagate rapidly between jurisdictions and facility types, resulting in loss of access to government websites, interruption of emergency dispatch services, financial fraud, exposure of sensitive data, or degradation of utility operations. While no specific neighborhoods or census tracts are disproportionately exposed, areas with major concentrations of critical infrastructure, such as the Orlando metropolitan area and County government complexes, are key locations of concern.

Currently, the risk of cyberterrorism is not mapped spatially in the same manner as natural hazards. However, Orange County's critical facilities register and network architecture diagrams identify nodes and sectors where impact from cyber incidents would be most severe. Future extensions or upgrades to Countywide digital services and infrastructure, as well as increased reliance on cloud-based operations and automation in public services, may alter the scope of potential impacts over time, possibly increasing the number of critical nodes susceptible to cyber threats. At present, all areas and departments that depend on networked systems should be considered potentially affected by a cyberterrorism incident, with no specific community or geographic area exempt from risk.

Hazard Magnitude and Severity

Vulnerability severity scores such as the Common Vulnerability Scoring System (CVSS) do not measure the community consequence of an actual cyber incident. Orange County therefore rates incident magnitude using service degradation, systems affected, data compromise, safety consequences, geographic reach and restoration duration, aligned with the National Institute of Standards and Technology (NIST) Cybersecurity Framework's risk-management approach.

Table 17: Cyber-Incident Operational-Severity Scale

Plan Tier	Observable Indicators	Community Consequence	Interpretation/Limit
Limited	Contained event; no material service loss or sensitive-data compromise	Routine incident response	Plan-defined consequence tier
Moderate	Single system/service degraded; restoration generally within 24 hours	Localized operational delay and manual workarounds	Duration is a planning anchor, not a federal incident rating
Major	Multiple systems or essential functions affected; significant data compromise; 24–72 hour disruption	Continuity activation, public notification, or mutual aid	Assess operational technology and safety effects separately

Plan Tier	Observable Indicators	Community Consequence	Interpretation/Limit
Extreme	Prolonged or multi-jurisdiction outage; public-safety, utility, or major financial consequence	Regional coordination and extended recovery	Plan-defined tier; do not disclose sensitive technical details in the public plan

Past Occurrences and Declarations

There is limited publicly available documentation on past occurrences of cyberterrorism incidents affecting Orange County, Florida. A review of available sources, including local emergency management records and prior hazard mitigation planning documents, revealed no recorded FEMA disaster declarations for cyberterrorism or related cyber incidents in Orange County. This is consistent with FEMA's current disaster declaration process, which primarily addresses natural hazards and lacks a specific category for cyberterrorism.

While specific, verifiable data on significant cyberterrorism events targeting Orange County's infrastructure, public sector, or critical services is not available in the records, national and regional reporting indicates that local governments across the United States, including Florida, have experienced an increasing number of cyberattacks in recent years. Common impacts of reported cyber incidents in other Florida jurisdictions include temporary website shutdowns, disruptions to public services, such as permitting, utility billing, or emergency communications, and potential exposure of sensitive information. However, confirmation of such impacts specific to Orange County is not available in the data reviewed.

The lack of comprehensive historical incident data for cyberterrorism in Orange County represents a data gap. This may be due in part to underreporting, the classification of past events under the general "cybersecurity incidents" category rather than "cyberterrorism," and the absence of formal disaster declarations for this hazard type. The planning team should continue to monitor local incident reports, collaborate with regional cybersecurity agencies, and update this section as more data becomes available.

Future Conditions and Probability

Cyber risk is expected to evolve with digitization, interconnections, remote services, vendor dependencies, and adversary capability. Because a public LMS cannot safely inventory sensitive vulnerabilities, the consequence rating should be validated through protected continuity, cybersecurity, and operational-technology assessments.

NCA5 does not project cyberattack frequency. Extreme weather can produce simultaneous power, communications, and staffing disruptions that complicate cyber response or restoration, so the plan includes compound outage/cyber exercises and redundancy as prudent measures. This is not a climate-based adjustment to cyber probability.

Wildland Fire

Hazard Description

Wildland fire, also commonly referred to as wildfire, is the uncontrolled burning of vegetative fuels, including grasslands, forests, brush, and scrubland. In Orange County, Florida, wildland fire can take several forms, including surface fires (burning low vegetation at or near ground level), ground fires (burning organic matter beneath the surface), and crown fires (burning through tree canopies, though less common in Florida due to humid subtropical conditions and vegetation type). The region features a mix of wildland-urban interface areas, woodlands, grasslands, wetlands, and agricultural lands, all of which can serve as fuel during dry periods.

Wildland fires in Orange County are most commonly caused by human activities, such as debris burning, arson, power line failures, and accidents, as well as by natural sources, such as lightning strikes, particularly during the spring and early summer months. Periods of drought or extended dry weather, as well as seasonal winds, can further increase the risk and potential for spread of these fires.

Cascading effects of wildland fires may include property and infrastructure damage, degraded air quality from smoke that can pose significant health risks to vulnerable populations, temporary displacement of residents, increased risk of soil erosion and flooding in post-burn landscapes, and the destruction of habitats and ecosystems. Wildland fires may also trigger secondary hazards, such as transportation disruptions, utility outages, and threats to critical facilities within or adjoining wildland areas.

Inclusion of wildland fire in this plan reflects both ongoing exposure, given Orange County's mix of urban, suburban, and natural landscapes, and its potential to significantly disrupt communities, harm life and property, and strain emergency response and public health systems. Consideration is warranted due to observed patterns of periodic fire seasonality, coupled with regional trends showing fluctuating but persistent fire risk driven by climate variability and increased development at the wildland-urban interface.

Hazard Location and Extent

Wildland fire risk in Orange County, Florida, is primarily associated with areas that contain significant wildland-urban interface (WUI), forested lands, and parks. The hazard is not uniformly distributed across the County but is concentrated in localized regions, particularly near natural preserves, managed conservation areas, and undeveloped tracts bordering residential communities. Key locations of concern include the WUI zones adjacent to the Tosohatchee Wildlife Management Area, the Hal Scott Regional Preserve and Park, and forested corridors along the eastern and southern edges of the County. These locations exhibit abundant combustible vegetation and proximity to developed neighborhoods, increasing the likelihood of impacts to both natural resources and built environments. Figure 10 shows overall wildfire risk in the County, highlighting occurrences, critical infrastructure, and population density.

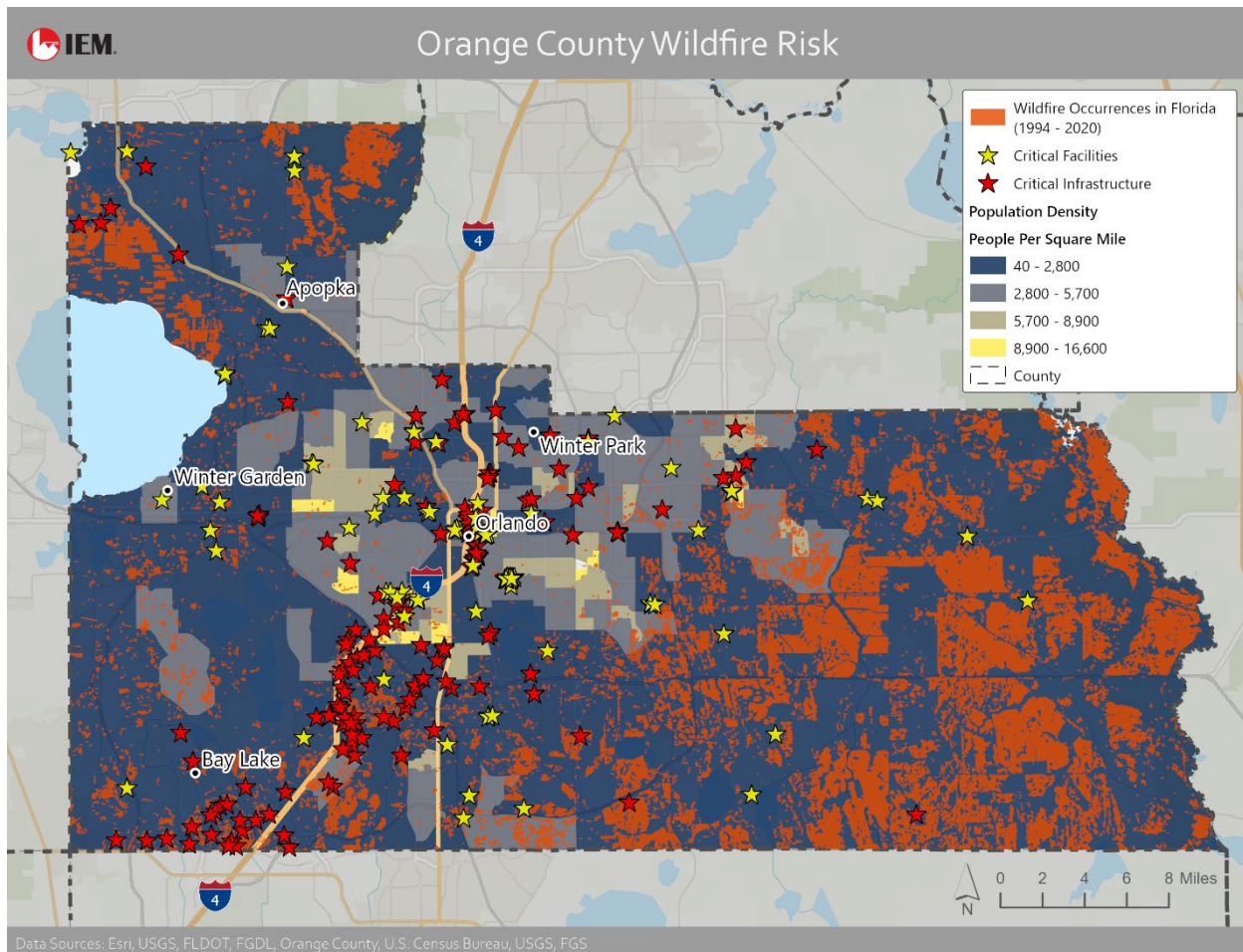


Figure 10: Orange County Wildfire Occurrences, Critical Infrastructure, and Population Density

In prior planning efforts, wildfire hazard mapping has shown that risk is elevated in census tracts with high densities of natural fuels and limited road access for response. The most exposed communities are those situated near large conservation areas or where residential developments abut unmanaged woodland. Several unincorporated areas, particularly in east and southeast Orange County, consistently appear within high-risk wildfire polygons on regional risk maps. The central and western urban core, including downtown Orlando and contiguous urbanized neighborhoods, are generally considered to have low risk due to minimal wildland fuel loads and separation from unmanaged lands.

Geographically, the wildland fire hazard footprint may shift over time due to ongoing development patterns, changes in land management, and climatic trends that influence fuel moisture and vegetation growth. Increases in population and residential expansion into wooded areas may create new WUI exposures, particularly as undeveloped parcels are converted to housing or commercial use. Encroachment into conservation buffers and the fragmentation of vegetated corridors may further modify the extent and distribution of risk in future years.

Overall, wildland fire risk in Orange County is best described as corridor-based and WUI-concentrated, rather than jurisdiction-wide. The most significant exposures are found in the periphery of the County, at

the interface between managed wildlands and expanding suburban development, with particular vulnerability in tracts adjacent to large parks, state lands, and other forested holdings. Data are not available to delineate specific parcel-by-parcel boundaries of high risk across all communities, but mapped WUI analyses and risk studies in prior planning documents consistently identify these thematic areas of greatest concern.

Hazard Magnitude and Severity

The KBDI is used as a continuous 0–800 measure of soil and duff moisture deficit and a fire-potential indicator.²¹ It is not a fire-intensity or structure-loss scale. Event severity must also include fire size, rate of spread, flame behavior, spotting, smoke, evacuation, structures threatened/lost, and lifeline interruption.

Table 18: KBDI Fire-Potential Scale And Event-Severity Measures

KBDI Range	Fire-Potential Description	Orange County Application	Interpretation/Limit
0–200	Low; wet fuels with little initiation danger	Routine monitoring and prevention	KBDI alone does not include wind, ignition, or fuel continuity
201–400	Moderate; drying with some fire danger	Monitor fine fuels, planned burns, and local response readiness	Actual fire behavior may differ
401–600	High; ground cover is dry and burns readily	Elevated WUI, response, and public information posture	Combine with fire-weather products and local fuel conditions
601–800	Extreme; dead and live fuels burn readily	Highest preparedness posture; intense/deep burning and spotting may occur	Not an automatic burn-ban or evacuation trigger
Event severity	Acres, spread rate, intensity/spotting, structures, evacuation, smoke, and lifelines	Documents the actual community consequence	Use incident records; do not infer losses from KBDI

Past Occurrences and Declarations

Orange County, Florida, has experienced several wildland fire incidents over the past decades, though comprehensive, centrally consolidated event data is limited. According to a prior planning document,

²¹ Keetch, J. J., & Byram, G. M. (1968). *A drought index for forest fire control* (Research Paper SE-38). U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station.

significant wildland fires have impacted various parts of the County, particularly areas bordering conservation lands and undeveloped tracts. However, a detailed event-by-event incident timeline is not fully available. Figure 11 displays Orange County wildfire occurrences throughout 1994 to 2020, with most occurrences on the eastern side of the County.

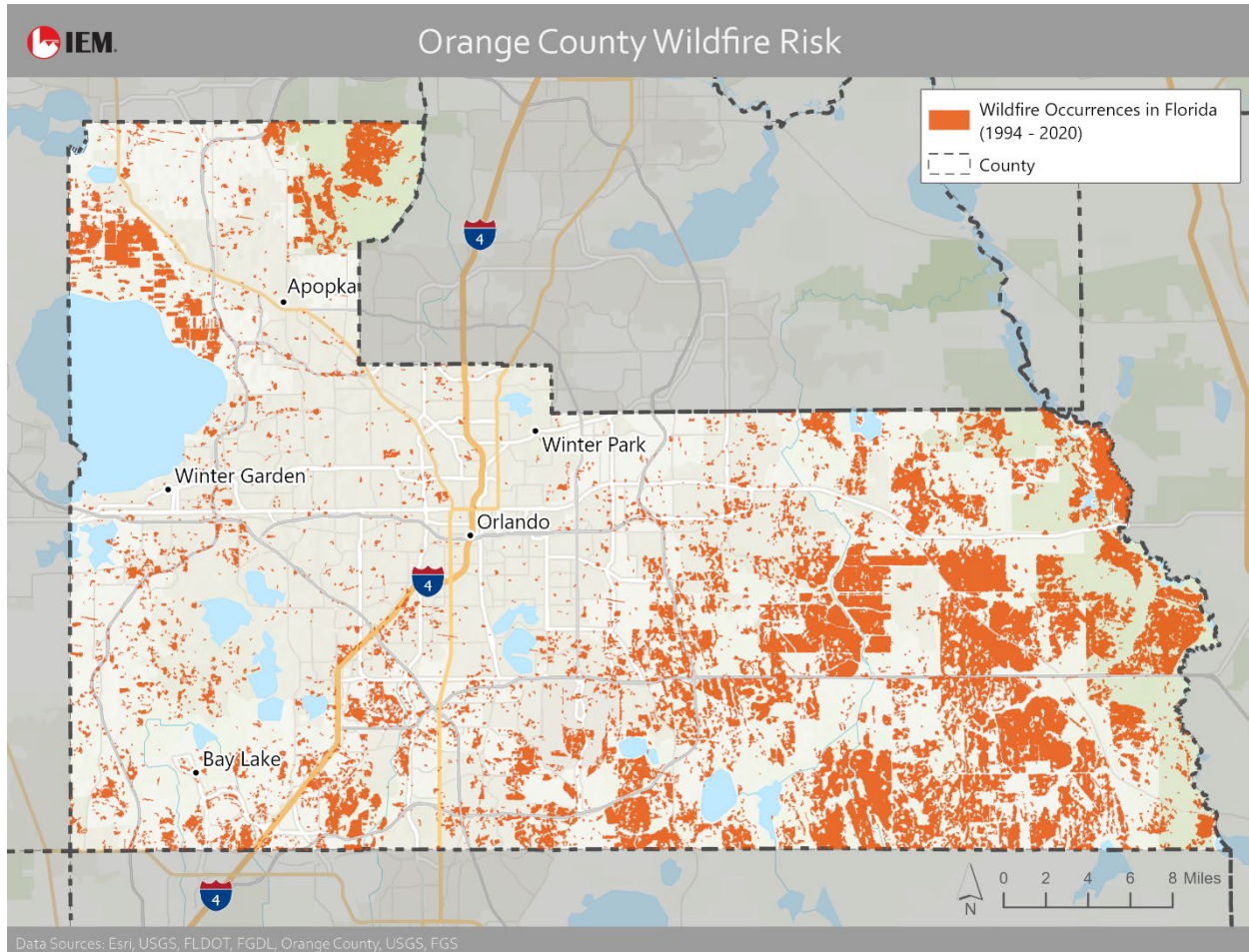


Figure 11: Orange County Wildfire Occurrences 1994-2020

One notable event cited in a prior planning document is the 1998 Florida wildfires, a statewide emergency that affected Orange County and led to widespread evacuations, temporary road closures, and air quality alerts. During that period, numerous fires burned thousands of acres in Central Florida, and several encroached on populated areas of Orange County. The severity of the 1998 event prompted federal response activity, including assistance coordinated through the Florida Division of Emergency Management, although a County-specific FEMA disaster declaration number is not cited in available documents.

Regular annual wildland fire activity in Orange County tends to spike during periods of drought and extreme dryness, particularly in the spring. According to historical summaries in a prior planning document, brush fires have led to short-term road closures and threatened some residential neighborhoods, though there is no record of large-scale loss of life or major injuries in the available

sources. Property damage is generally limited but does occur, especially where fire approaches the wildland-urban interface. There is no available data on crop losses or major infrastructure disruptions specifically attributed to wildland fire events in Orange County.

Overall, available documentation indicates that wildland fires are a recurrent seasonal hazard in Orange County, with significant events in 1998 and lesser, more localized incidents occurring in most years. The historical record includes specific examples of area evacuations and short-term disruptions.

Comprehensive data on damages and declaration statuses for all past wildland fire occurrences, however, is not fully available at this time. The lack of a centralized historical incident database for this hazard is a recognized data gap for this planning period.

Future Conditions and Probability

Future wildfire risk reflects both climate and non-climate drivers: fuel condition, drought, ignition, suppression access, prescribed fire, and growth at the wildland-urban interface. Urbanization can fragment fuels while also increasing the number of people, structures, and evacuation demand near burnable vegetation.

NCA5 states that more hot days may exacerbate soil moisture deficits and heighten wildfire risk in the Southeast, and that conditions favorable for wildfire may become more frequent under a warming and drying climate. It does not provide an Orange County-specific fire count or acres burned projection. The plan, therefore, treats heat/drought as potential fire-weather amplifiers, monitors KBDI and local incident data, and changes the probability rating only when a reproducible local trend or model supports it.

Tropical Storm/Hurricane

Hazard Description

Tropical storms have maximum sustained winds of 39–73 mph, and hurricanes begin at 74 mph. The Saffir-Simpson Hurricane Wind Scale classifies hurricanes from Category 1 through Category 5 based solely on maximum sustained wind speed; rainfall, tornadoes, storm surge, and inland flooding are separate hazards.²²

In Orange County, tropical storms and hurricanes are primarily driven by the Atlantic hurricane season, which spans from June 1 through November 30 each year, peaking from August through October. Hurricanes impacting the region typically originate in the Atlantic Ocean, Gulf of Mexico, or the Caribbean Sea and are fueled by warm waters that enable rapid intensification. While coastal areas are most vulnerable to storm surge, inland areas like Orange County can still experience extensive damage from

²² National Hurricane Center, Saffir-Simpson Hurricane Wind Scale, <https://www.nhc.noaa.gov/aboutsshws.php>.

high winds, tornadoes spawned by the storm, and prolonged rainfall that leads to riverine and urban flooding.

The primary impacts of tropical storms and hurricanes in Orange County include wind damage to homes and critical infrastructure, downed trees and power lines, localized to widespread flooding, and cascading effects such as power outages, water supply disruptions, and hazardous material releases caused by infrastructure failures. Secondary hazards may also include tornadoes generated by the storm's outer bands and the potential for prolonged utility disruptions.

Tropical storms and hurricanes have been included in the hazard mitigation plan for Orange County because of their historical record of impact, the frequency of threats during the Atlantic hurricane season, and the potential for large-scale human, economic, and environmental consequences. The inclusion of this hazard reflects the need to plan for the diverse and severe effects these powerful weather systems can have on the County's built and natural environments.

Hazard Location and Extent

Tropical storms and hurricanes are regionwide hazards that can affect all of Orange County, Florida. Due to its geographic location in central Florida, the County is not directly coastal; however, its inland position does not insulate it from the extensive impacts of hurricanes and tropical storms making landfall along either Florida coast. Storm tracks frequently move inland and can bring strong winds, heavy rainfall, tornadoes, and flooding hazards throughout the County.

The entire County is exposed to wind hazards during hurricanes and tropical storms, and extreme wind events can occur across all incorporated and unincorporated areas. The National Hurricane Center's Saffir-Simpson Hurricane Wind Scale is commonly used to characterize hurricane intensity, with Category 1 hurricanes capable of producing sustained winds of 74–95 mph and Category 5 storms exceeding 157 mph. While the County is not directly threatened by storm surge due to its lack of coastline, it is vulnerable to inland flooding, especially near rivers such as the Little Econlockhatchee River, Shingle Creek, and Lake Apopka, as well as in low-lying neighborhoods susceptible to water accumulation.

Hurricane wind can affect all of Orange County, while associated flood exposure varies with topography, drainage, rainfall, and mapped flood hazards. FEMA FIRMs do not establish "NRI wind zones"; wind design requirements and flood maps should be consulted through their respective authoritative sources.

The extent of a tropical storm or hurricane event can range from localized wind damage and downed trees to extensive flooding affecting multiple census tracts, depending on storm path, intensity, rainfall totals, and antecedent ground conditions. All areas within the County are considered at risk for some combination of wind, rain, and tornado hazards associated with these storms.

While there is no evidence of a current or projected shift in exposure boundaries, the risk remains Countywide, and future changes in storm frequency, intensity, or rainfall patterns due to changing climate conditions may alter the severity but not the general location of hurricane and tropical storm impacts within Orange County.

Hazard Magnitude and Severity

Tropical cyclone wind magnitude is described by the maximum sustained surface wind. The Saffir–Simpson Hurricane Wind Scale applies only to hurricane wind; it does not represent rainfall, inland flooding, tornadoes, storm size, forward speed, or duration.²³ Those components must be documented separately for Orange County.

Table 19: Tropical-Cyclone and Hurricane Wind Magnitude Scale

Classification	Maximum Sustained Wind	Wind Interpretation	Orange County Use/ Limitation
Tropical depression	38 mph or less	Organized tropical cyclone below tropical-storm strength	Rainfall and tornadoes can still be consequential
Tropical storm	39–73 mph	Named tropical storm	Track outages, trees, debris, rainfall, flood depth, and duration
Category 1	74–95 mph	Hurricane	Wind damage possible; combined hazards determine local consequence
Category 2	96–110 mph	Hurricane	More extensive wind damage is possible
Category 3	111–129 mph	Major hurricane	High-consequence wind scenario
Category 4	130–156 mph	Major hurricane	Catastrophic wind damage possible
Category 5	157 mph or higher	Major hurricane	Catastrophic wind damage possible

Past Occurrences and Declarations

Orange County, Florida, has experienced multiple significant tropical storms and hurricanes, resulting in several federal disaster declarations and major impacts on the community. The County's location in Central Florida exposes it to both direct and indirect effects from Atlantic hurricanes and tropical storms. Notable events documented in prior planning documents include:

²³ NOAA National Hurricane Center, Saffir–Simpson Hurricane Wind Scale, <https://www.nhc.noaa.gov/aboutsshws.php>. The scale is based on maximum sustained wind and does not account for rainfall, storm surge, tornadoes or storm size.

- **Hurricane Milton** (October 2024): Milton made landfall near Siesta Key on October 9, 2024, as a Category 3 hurricane after reaching Category 5 intensity over the Gulf. Orange County experienced inland wind, rain, tornado, outage, sheltering, and flood impacts and was included in EM-3622-FL and DR-4834-FL.
- **Hurricane Ian** (September 2022): Ian made landfall near Cayo Costa on September 28, 2022, as a Category 4 hurricane and produced damaging winds, heavy rainfall, tornadoes, and severe inland flooding across Florida. Orange County was included in EM-3584-FL and DR-4673-FL.
- **Hurricane Irma** (September 2017): Hurricane Irma struck Florida as a Category 4 storm and caused substantial impacts in Orange County. The County experienced widespread power outages, wind damage, and flooding. Presidentially-declared Disaster DR-4337-FL was issued for this event, which included individual and public assistance. Irma resulted in downed trees, roof and structural damage to homes, blocked roadways, and large-scale utility disruptions. Local emergency management and public safety resources were fully activated for response and recovery.
- **Hurricane Matthew** (October 2016): Although the storm remained offshore before making landfall north of Orange County, it generated tropical storm force winds, minor flooding, and localized damage. Orange County was included in the Major Disaster Declaration DR-4283-FL, receiving public assistance for emergency protective measures and debris removal.
- **Hurricane Charley** (August 2004): Charley made landfall on the west coast of Florida and tracked northeast, passing directly over Orange County as a strong Category 1 hurricane. The storm caused widespread wind damage, numerous downed trees and power lines, structural wind damage, and extended power outages. Orange County was included in the federal disaster declaration DR-1539-FL, receiving both public and individual assistance.
- **Hurricane Frances and Hurricane Jeanne**: Orange County experienced impacts from Hurricanes Frances (DR-1545-FL) and Jeanne (DR-1561-FL) in September 2004. These storms produced heavy rainfall, localized flooding, additional wind damage, and further strained recovery resources.
- **Tropical Storm Fay** (August 2008): Fay produced persistent heavy rainfall over several days in Orange County, resulting in extensive street flooding and road closures, particularly in low-lying and poorly-drained areas. The impacts contributed to the issuance of federal disaster declaration DR-1785-FL.

Past hazard mitigation plans and local incident records also indicate that other tropical events have produced periods of damaging winds, heavy rainfall, and tornadoes spawned by landfalling tropical systems. Impacts documented for these events include residential and commercial property damage, prolonged power and utility service interruptions, traffic signal outages, blocked roadways, and emergency shelter activations. Figure 12 **Error! Reference source not found.** shows hurricane tracks by Saffir-Simpson category from 1950 to 2025. The dashed purple circle represents a 50-mile radius around the county, illustrating that a hurricane passing within this distance could still have significant impacts on the county.

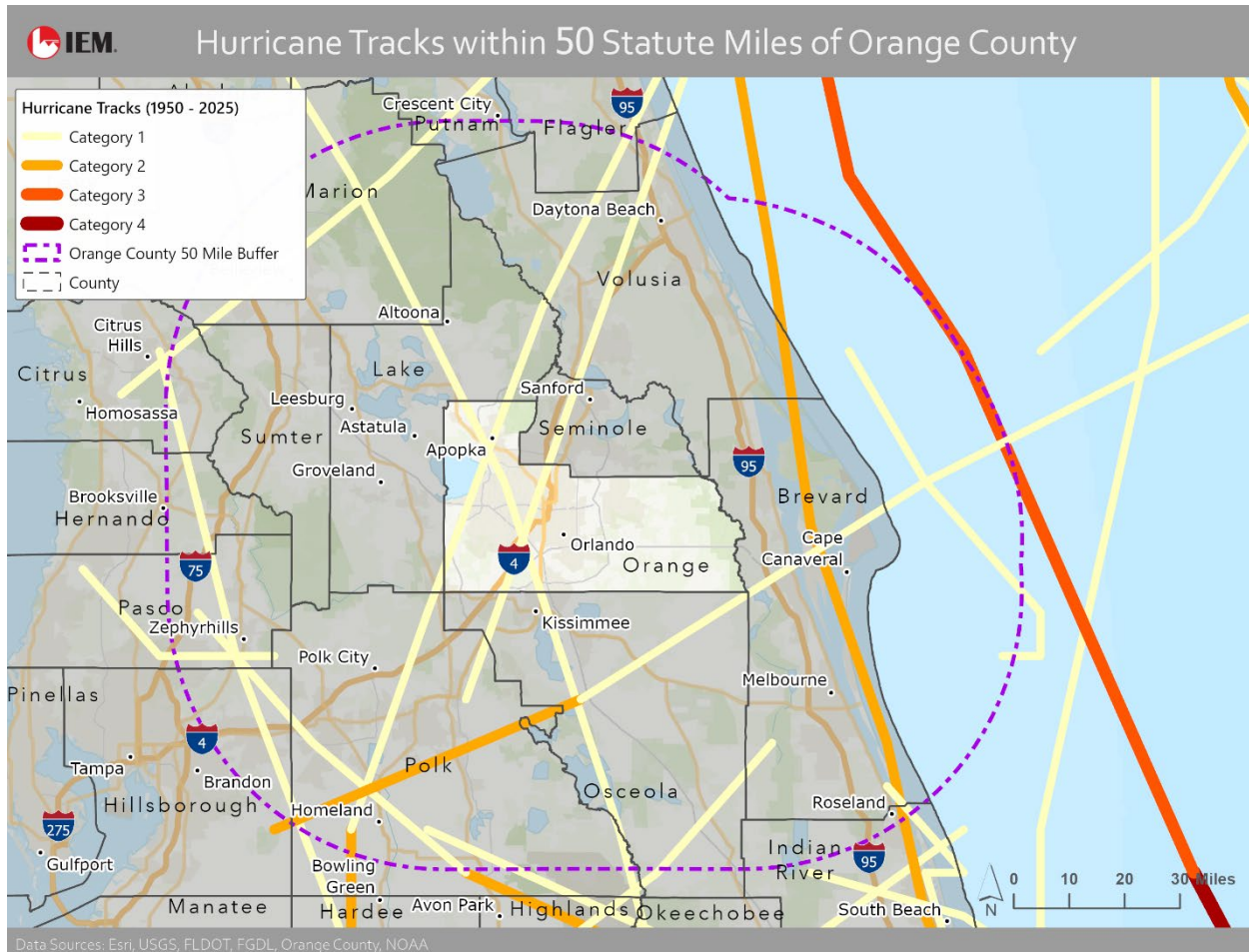


Figure 12: Orange County Area Hurricane Occurrences 1950- 2025

While the above events represent major storm impacts and declarations in Orange County, lower-magnitude tropical storms and depressions occur more frequently, occasionally producing localized flooding and wind-related damage not rising to the level of a federal disaster declaration. Historical incident records may be incomplete for minor events and for non-declared emergencies.

Future Conditions and Probability

Orange County will remain exposed to tropical cyclone wind, rainfall, inland flooding, tornadoes, debris, and prolonged outages. Growth and critical-system interdependence can increase losses even if the number of storms affecting the County does not change.

NCA5 projection. With additional warming, more North Atlantic hurricanes are expected to strengthen to at least Category 4 intensity and undergo rapid intensification, and tropical-cyclone rainfall is expected to increase. NCA5 also notes that the total number of storms could decrease and that uncertainty remains about the degree of change in hurricane activity affecting the Southeast. Because Orange County is

inland, sea-level-rise storm surge is not a direct County hazard, but stronger winds, heavier rainfall, and rapid intensification and evacuation timing can increase local consequences. The plan retains a high probability based on history and applies the NCA5 signal to scenario severity, rainfall design review, and continuity planning.²⁴

²⁴ Hoffman et al., NCA5 Chapter 22, Southeast, discussion of future tropical cyclones, <https://nca5.climate.us/chapter/22>. NCA5 describes expected increases in Category 4+ strengthening, rapid intensification and tropical-cyclone rainfall with remaining uncertainty in activity affecting the Southeast.

Capabilities

PRT alignment—C1 and C2: This section inventories Countywide planning and regulatory, administrative and technical, financial, outreach, building and land-use, and NFIP capabilities, including opportunities for expansion. Each annex identifies participant-specific capabilities and NFIP administrative documentation or identifies the evidence still needed for finalization.

Introduction

The capability assessment inventories the authorities, policies, programs, staffing, technical tools, funding sources, and outreach resources available to support mitigation. It links these capabilities to the hazards and vulnerabilities identified in the risk assessment.

The assessment identifies existing strengths and opportunities to improve or expand local capabilities. It also identifies where regional partners, state agencies, and private-sector organizations can support mitigation.

The mitigation strategy uses this inventory to match actions with available authorities, staff, technical resources, and funding. Regular review identifies capability gaps and supports practical, implementable investments.

Planning and Regulatory

Orange County maintains planning and regulatory tools that reduce hazard risk and guide development. County departments, municipalities, and regional partners apply these tools within their respective authorities.

Comprehensive Plan

The Orange County Comprehensive Plan serves as the foundation for land use and growth management, establishing policies that address hazard mitigation through designated flood areas, wetland protection, stormwater management, and future land use mapping. The plan includes elements on infrastructure, public safety, conservation, and intergovernmental coordination, linking mitigation priorities with development guidance and environmental stewardship. Updates to the Comprehensive Plan are completed every four years, with the most recent expected in 2026, ensuring alignment with evolving hazard profiles and resilient community goals.

Zoning and Land Use Regulations

Orange County's zoning code regulates development intensity, permitted uses, and special districts, including overlay zones for flood-prone areas and hurricane evacuation corridors. The use of overlay districts, transfer of development rights (TDRs), and cluster zoning supports both conservation of natural hazard buffers and reduction of risk for new and existing structures.

Subdivision Regulations

Subdivision regulations require hazard evaluation as part of plat approval, including minimum lot elevations, stormwater retention, infrastructure standards, and access routes for emergency vehicles. These requirements are reviewed by county planning and engineering staff to prevent creation of new vulnerabilities in areas prone to flooding, sinkholes, or wildland fire.

Building Codes

Orange County enforces the Florida Building Code, incorporating standards for wind resistance, floodproofing, and wildland fire mitigation. The building code applies to all new construction and significant alterations, providing minimum standards for protection against tornadoes, hurricanes, floods, and severe storms. The county also implements enhanced permitting for structures in FEMA flood zones, requiring elevations above the base flood level and adherence to NFIP guidelines.

Floodplain Management Ordinance

Orange County participates in the NFIP and has adopted a comprehensive Floodplain Management Ordinance. This ordinance prescribes minimum floor elevations for new and substantially improved structures, regulates development in SFHAs, requires floodproofing for critical facilities, and mandates stormwater practices to maintain post-development runoff rates. The County actively maintains floodplain mapping and participates in FEMA's Community Rating System (CRS), which provides insurance premium incentives for compliant property owners.

Stormwater Management Standards

The Orange County Stormwater Management Ordinance requires detention/retention systems, prohibits increases in post-development runoff, and establishes minimum water quality standards. All developments must submit stormwater plans for review to ensure that flood risk is minimized and pollution is mitigated. These standards are coordinated with the county's capital improvement plan for drainage infrastructure upgrades.

Capital Improvement Plan

The Orange County Capital Improvement Plan (CIP) targets hazard mitigation infrastructure such as drainage improvements, flood control structures, emergency communication systems, and wildfire buffer zones. Funding and scheduling are prioritized based on risk assessment outcomes, cost-benefit analysis, and alignment with mitigation goals established in this LMS.

Disaster Recovery and Emergency Operations Plans

The Orange County Disaster Recovery Plan and EOP, which are elements of the Comprehensive Emergency Management Plan (CEMP), outline post-disaster redevelopment, guidance on temporary housing, and the restoration of critical infrastructure. These plans incorporate hazard mitigation measures, including debris management, emergency protective actions, and coordination with local, state, and federal agencies to enhance recovery and resilience.

Climate and Resilience Planning

Orange County has adopted supplemental plans addressing climate adaptation, extreme heat, and drought resilience, such as the Sustainable Operations & Resilience Action Plan (SORAP), adopted in 2021, and the Central Florida Regional Water Initiative (CFWI) Regional Water Supply Plan. These documents guide sustainable land use, water supply protection, and emergency response to meteorological and hydrological drought. Climate adaptation efforts are aligned with the comprehensive plan and are continually revised as environmental conditions and scientific recommendations evolve.

Ordinances Targeting Specific Hazards

To address hazardous materials risk, the county enforces fixed-facility chemical safety regulations, including facility inspection, spill reporting, and emergency preparedness requirements. These include:

- **Spill/discharge and cost recovery:** Ch. 14.5,
- **Spill reporting:** Ch. 15, Art. IV, § 15-116,
- **Fixed-facility controls:** Ch. 37, Art. XX, Div. 3
- **Fire code hazmat permitting/inspection:** Ch. 18, Art. II, § 18-32. II.

Wildland fire risk is managed through vegetation management ordinances and public education campaigns. Severe thunderstorm and lightning risk is reduced through requirements for surge protection in critical infrastructure and lightning detection systems in public facilities. The ordinances include:

- **Burn ban:** Ch. 18, Art. I, § 18-4
- **Open burning:** Ch. 15, Art. III, Div. 3

- **Vegetation (lot cleaning):** Ch. 28, Art. II, §§ 28-31 through 28-42
- **Building and residential codes:** Ch. 9, Art. II (§ 9-33 for FBC Building and § 9-35 for FBC Residential)

Review and Expansion Capabilities

The County Planning Division and partnering departments have the capacity to expand and improve existing regulatory tools as needs arise. Periodic ordinance reviews, public comment, and intergovernmental coordination mechanisms ensure continued effectiveness. This process incorporates lessons from recent hazard events, public input, and best practices from peer jurisdictions.

Table 20: Key Planning and Regulatory Capabilities

Capability Type	Lead Agency/Division	Hazard Mitigation Focus	Ability to Expand/Improve
Comprehensive Plan	Planning Division	All hazards; land use, growth management	Regular updates, public input
Zoning Regulations	Zoning/Planning Division	Flood, hurricane, wildfire, sinkhole	Overlay districts, Transferable Development Rights (TDRs), revisions
Subdivision Regulations	Planning/Engineering Divisions	Flood, sinkhole, wildfire, storm	Infrastructure and access standards
Building Codes	Building Department	Tornado, hurricane, flood, wildfire, heat	Florida code amendments
Floodplain Ordinance	Floodplain Administrator	Flood, hurricane, severe storm	CRS participation, mapping updates
Stormwater Standards	Public Works/Engineering	Flood, drought	Infrastructure upgrades, Best Management Practices (BMPs)
Capital Improvement Plan	Budget/Infrastructure Divisions	All hazards; infrastructure investment	Risk-based project prioritization
Disaster Recovery/EOP	Emergency Management	All hazards: recovery, redevelopment	Post-event updates, cross-plan sync
Climate/Resilience Plans	Sustainability Office/Planning	Drought, heat, hurricane, flood	Science/evidence-based revision
Hazardous Materials Ordinance	Environmental Health	Hazardous materials, chemical release	Facility inspection enhancements
Wildland Fire Management	Fire Rescue, Environmental Health	Wildfire, heat	Vegetation ordinances, public outreach

Capability Type	Lead Agency/Division	Hazard Mitigation Focus	Ability to Expand/Improve
Severe Storm Regulations	Engineering/Facilities	Thunderstorm, hail, lightning	Surge and detection system upgrades

Orange County's planning and regulatory capabilities provide the foundation for hazard mitigation and are reviewed as risks, development patterns, and mitigation priorities change.

Administrative and Technical

Orange County, Florida, possesses robust administrative and technical capabilities that support hazard mitigation initiatives across the jurisdiction. Multiple departments and agencies coordinate to implement and sustain mitigation efforts, leveraging a combination of highly trained personnel, comprehensive policies, advanced technology, and intergovernmental partnerships.

The Orange County Office of Emergency Management (OEM) serves as the central hub for mitigation planning, project management, and grant administration. OEM coordinates closely with the Orange County Planning and Development Department (PDD), which provides expertise in land use, zoning, and development codes. The Environmental Protection Division (EPD) oversees environmental risk analysis, stormwater management, and remediation measures, and manages compliance with local, state, and federal environmental regulations. The Public Works Department (PWD) maintains infrastructure inventories and coordinates post-disaster damage assessment and repairs.

Orange County uses advanced GIS and mapping systems to analyze hazard risk, model probable losses, and plan mitigation measures. The county GIS Division provides geospatial data that informs floodplain management, hurricane evacuation routing, wildfire risk mapping, and other hazard-specific planning needs. Historical hazard data, such as tornado occurrences and drought impacts, are maintained and analyzed within GIS systems to inform future vulnerability assessments.

Technical expertise in Orange County encompasses engineers, architects, environmental scientists, planners, public health specialists, and emergency managers. The county's staff regularly participates in FEMA training, Florida Division of Emergency Management workshops, and NWS briefings. Joint exercises are held with neighboring counties to test response and recovery capabilities for a wide range of hazards, including tropical storms, pandemics, and hazardous materials incidents.

Grant administration capabilities are centralized in OEM, which tracks eligibility, application, and compliance for FEMA HMGP, FMA, and Pre-Disaster Mitigation (PDM) funds. The County has successfully administered mitigation grant projects, such as floodplain acquisitions, drainage system improvements, and wildfire fuel reduction, since 2016. Dedicated grant analysts monitor project progress, perform cost-benefit reviews, and ensure alignment with FEMA requirements.

Inspection and enforcement capacity is provided by multiple departments. The Building Safety Division administers building code enforcement across unincorporated areas and maintains compliance with Florida Building Code requirements, including wind-resistant design for hurricane and tornado hazards. The Code Enforcement Division monitors land use ordinances related to floodplains, stormwater management, and hazardous materials handling. Regular inspections are performed for critical facilities, public infrastructure, and NFIP-insured structures, especially those that have sustained repetitive flood damage. The 2021 Orange County LMS attributed its repetitive loss structure analysis to a prior planning document.

Emergency management coordination is facilitated through the Orange County Emergency Operations Center (EOC), which links county agencies, municipal partners, healthcare organizations, educational institutions, and utility providers. Mutual aid agreements (MAAs) are in place with regional counties and cities, ensuring resource sharing and operational support during disaster events. OEM also participates in Florida's Statewide MAA, enabling statewide surge support for major events such as hurricanes or pandemics.

Other administrative resources include the County Board of Commissioners, which formally adopts the hazard mitigation plan and allocates funding; advisory boards, such as the Water Management Advisory Board, which advises on policy related to hydrological drought and flooding risks; and technical working groups focused on cyber threats, infectious diseases, and emerging hazards. Orange County collaborates with the Florida Department of Health on pandemic planning and response, and with the Florida Forest Service on wildfire mitigation.

Orange County continuously strives to improve its capabilities by participating in technical training, expanding GIS modeling capacity, updating building codes, and strengthening enforcement mechanisms. The County regularly reviews best practices from FEMA guidance and other community mitigation plans to identify areas for expansion and improvement. Orange County's administrative and technical strengths position it well to implement a broad range of mitigation actions, reducing vulnerabilities to tornado, wildfire, drought, pandemic, hazardous materials, extreme heat/cold, subsidence, severe storms, cyberattack, flood, freezing temperatures, terrorism/CBRNE, and tropical storm/hurricane hazards.

Financial

Orange County leverages a range of financial resources to implement hazard mitigation activities, with commitments reflected through County budgets, capital improvement programs, participation in federal grant programs, and partnerships in special districts. The County's financial capabilities influence its selection, prioritization, and long-term sustainability of mitigation actions.

Inventory of Financial Resources

Orange County funds hazard mitigation projects through various mechanisms, including general funds, capital improvement funds, and dedicated revenue for stormwater infrastructure. The county manages a

Stormwater Utility that supports the operations and maintenance of flood-mitigation infrastructure and has the authority to issue bonds to finance large-scale capital projects. Additionally, special districts and municipal partnerships provide avenues for resource pooling and targeted mitigation funding, especially for water management and flood control.

The Orange County Board of County Commissioners sets annual priorities for capital improvement planning, enabling strategic investment in mitigation infrastructure such as flood control, drainage upgrades, and emergency communications systems. Routine maintenance and enhancements for critical facilities, including public safety buildings and EOCs, are financed through designated reserve funds and budgeted maintenance allocations.

Federal and State Grant Programs

Orange County actively pursues FEMA grants, including HMGP, PDM, FMA, and Building Resilient Infrastructure and Communities (BRIC). The county also tracks eligibility for state-level mitigation funding provided through the Florida Division of Emergency Management. Recent experience demonstrates successful applications for HMGP projects following tropical storms and hurricanes, as well as periodic success in securing PDM and FMA funding for flood mitigation and risk reduction projects.

Matching funds for federal and state grants are typically provided from general or capital improvement reserves, with the county maintaining the capacity to meet required local shares on a project-by-project basis. Local matching amounts vary based on project size and grant requirements, but the County's financial planning process incorporates anticipated match obligations into budget forecasts.

Special Districts and Partnerships

Orange County participates in regional water management districts, such as the St. Johns River Water Management District and the South Florida Water Management District, which provide supplemental funding and technical resources for flood and drought mitigation projects. These districts coordinate hydrologic planning and are empowered to levy assessments to sustain mitigation actions. The County also partners with municipal governments and school districts to leverage additional funding streams and share fiscal responsibilities for multi-jurisdictional mitigation initiatives.

Constraints to Funding

Despite the breadth of financial tools available, Orange County faces budget constraints driven by competing needs, statutory expenditure limits, and fluctuating revenue sources. Not all mitigation projects can be fully funded from local revenues, and grant allocations are limited and highly competitive. The county pursues efficiencies through phased project implementation and prioritization of actions with demonstrable cost-benefit ratios. Secondary funding through private-sector partnerships and philanthropic programs is occasionally explored but is not routinely available for mitigation-specific projects.

Potential Funding Sources

To expand its mitigation capabilities, Orange County continuously monitors emerging funding opportunities, including federal infrastructure bills, state resilience grants, and innovative financing strategies such as resilience bonds and revolving loan funds. The county evaluates each source for feasibility, eligibility, and alignment with prioritized mitigation actions.

Experience and Capacity

Orange County's mitigation planning and financial management capacity is routinely strengthened through staff training, engagement with grant administrators, and participation in workshops on grant compliance and project management. Periodic audits and reporting provide oversight to ensure funds are allocated in accordance with programmatic and regulatory requirements.

The County's financial capabilities and constraints, including grant experience, capital improvement planning, stormwater utility operations, bonding authority, and local matching capacity, are integral to sustaining hazard mitigation and building resilience against the region's prioritized hazards.

Education and Outreach

Orange County offers a range of education and outreach programs designed to support mitigation of the hazards identified in the plan. These initiatives aim to inform, engage, and prepare residents, businesses, neighborhoods, schools, and community organizations for potential risks such as tornadoes, wildland fires, winter storms, droughts, pandemics, hazardous materials releases, extreme heat, sinkholes, severe thunderstorms, cyberattacks, floods, freezing temperatures, and tropical storms or hurricanes.

Orange County OEM regularly engages the public through multiple channels, including preparedness campaigns, virtual community briefings, and online neighborhood forums. These activities emphasize personal and family preparedness, evacuation procedures, shelter information, and hazard-specific risk-reduction strategies. Materials are distributed in English and Spanish, and efforts are underway to translate key documents into additional languages to better serve the county's diverse population. Accessibility accommodations, including remote sign language interpretation and large-print resources, are provided for major outreach activities.

The county's OCFL Alert notification system delivers severe weather warnings, evacuation notices, and emergency updates via phone calls, text messages, and email, helping to ensure timely communication. Social media platforms, such as Facebook, Twitter, and Instagram, are used to broadcast public safety information and hazard alerts to followers. The Orange County website hosts an Emergency Management page featuring preparedness checklists, hazard profiles, and educational videos. Periodically, the county partners with local radio and television stations to run public service announcements, especially during hurricane season or when extreme weather is forecast.

Orange County Public Schools (OCPS) integrate hazard mitigation education into their curriculum, providing grade-appropriate lessons on tornado safety, hurricane preparedness, flood awareness, and general disaster response. OCPS organizes classroom drills and participates in countywide hazard exercises, reinforcing safe behaviors and readiness. Materials are adjusted to support students with disabilities, and resources are available for families with LEP.

Nonprofit and business organizations, including the American Red Cross and local Chambers of Commerce, collaborate with Orange County to deliver virtual preparedness workshops tailored for vulnerable populations, such as seniors, persons with disabilities, and non-English speakers. Neighborhood associations are encouraged to build local response teams and participate in the county's Community Emergency Response Team (CERT) program, which offers training in disaster response, search and rescue, and first aid. CERT materials are available in both English and Spanish.

The Orange County Health Department provides outreach and guidance specific to infectious disease pandemics and animal/agricultural disease outbreaks, disseminating public health advisories and prevention tips through digital platforms and community clinics. During heat waves and extreme cold events, the department circulates protective recommendations and shelter locations, prioritizing outreach to at-risk groups.

Despite comprehensive efforts, gaps remain in reaching populations with limited access to digital communication, such as seniors in rural areas or residents lacking internet connectivity. Some preparedness content is not yet available in all target languages, and additional outreach is needed to address new and emerging hazards, such as cyberattacks. There is also an ongoing need for more tailored educational materials for various neighborhoods, especially those historically underserved or disproportionately affected by flooding and hurricanes.

To address these gaps, Orange County is exploring partnerships with faith-based organizations, expanding multilingual material development, and implementing mobile outreach units to deliver hazard education directly to vulnerable communities. The county will continue to evaluate outreach effectiveness and seek input from residents to refine education and engagement programs, ensuring they support mitigation goals and reduce long-term vulnerability to identified hazards.

National Flood Insurance Program

Orange County has maintained its status as a participating jurisdiction since its initial entry into the NFIP in 1981. The County designates a Floodplain Administrator housed within the Division of Building Safety, responsible for overseeing NFIP compliance, managing floodplain development permitting, and enforcing the county's floodplain ordinances. These ordinances are regularly reviewed, with updates implemented as needed to ensure alignment with current NFIP standards and effective FIRMs:

- Orange County is an active NFIP community (Community Identification [CID] 120179) with a current effective map date of September 24, 2021.

- FEMA’s Community Status Book, refreshed August 25, 2026, lists CRS Class 5, with a 25-percent SFHA discount and 10-percent non-SFHA discount.
- FEMA’s privacy-protected NFIP Multiple Loss Properties dataset, as of August 2, 2026, contains 50 records for CID 120179, including 49 flagged NFIP RL properties and 2 flagged NFIP severe-RL properties; categories may overlap.²⁵

Orange County administers Chapter 19 of the County Code through Public Works, Stormwater Management Division, in coordination with Building Safety. SFHA development requires permit review and applicable elevation or floodproofing documentation, inspections, and enforcement; the County also documents substantial-improvement and substantial-damage determinations after proposed major improvements or damaging events.

The County’s floodplain regulations require all proposed developments within SFHAs to obtain permits prior to construction. The permitting process includes a review of FIRM panels with a current effective map date of September 24, 2021, to confirm current flood risk zones and applicable building standards for each parcel. Permitting staff enforces elevation, construction, and floodproofing requirements, and the County conducts regular inspections to ensure compliance, with corrective steps taken as necessary.

Orange County actively manages properties with repetitive loss and severe repetitive loss through targeted outreach and mitigation efforts. According to a prior planning document, properties with multiple flood insurance claims are tracked, and the County prioritizes these sites for mitigation funding opportunities such as elevation, acquisition, or floodproofing projects. Outreach to affected property owners includes educational campaigns about flood safety, options for retrofitting their structures, and guidance on maintaining NFIP coverage. When relevant, the County applies for FEMA grant funding to support mitigation projects for these high-risk areas.

The County participates in the CRS, a voluntary program administered by FEMA that recognizes and encourages community floodplain management practices that exceed minimum NFIP requirements. Orange County’s CRS initiatives include public education about flood risks, maintenance of open space in flood-prone areas, and adoption of higher regulatory standards than NFIP requires. These efforts have contributed to improved CRS ratings, resulting in discounted flood insurance premiums for residents.

To support ongoing NFIP compliance, Orange County regularly conducts flood risk awareness workshops and distributes updated floodplain maps and guidance to residents, developers, real estate professionals, and other stakeholders. The County ensures coordination with neighboring jurisdictions, regional planning agencies, and state-level floodplain management programs to share best practices and enhance overall flood resilience.

²⁵ Federal Emergency Management Agency, NFIP Community Status Book, version 1, <https://www.fema.gov/openfema-data-page/nfip-community-status-book-v1>, refreshed August 25, 2026; and NFIP Multiple Loss Properties, version 1, <https://www.fema.gov/openfema-data-page/nfip-multiple-loss-properties-v1>, data as of August 2, 2026.

Orange County leverages NFIP participation as part of its comprehensive hazard mitigation strategy, integrating floodplain management practices with broader land use policies and development review procedures. The County also references state and federal technical guidance when considering amendments to floodplain ordinances or when proposing new mitigation projects.

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Mitigation Strategy

PRT alignment—C3 through C5: The mitigation goals guide an action portfolio for existing and future development. Action records identify hazard coverage, responsible office, specific funding path, expected timeframe, status, and priority based on documented benefits and costs, risk reduction, feasibility, equity and lifeline considerations, and implementation readiness.

Introduction

The mitigation strategy translates the risk and capability assessments into goals and actions for reducing losses. It addresses protection of people, property, infrastructure, community lifelines, the economy, and the environment over the five-year planning cycle.

The mitigation strategy establishes a clear relationship between the plan's broad goals and specific mitigation actions. Goals are intended to reduce or avoid long-term vulnerabilities to hazards such as tornadoes, wildland fire, drought, pandemic threats, hazardous materials incidents, heat waves, subsidence/sinkholes, severe thunderstorms, cyberattacks, floods, freezing temperatures, terrorism, and tropical storms or hurricanes. Each action is developed to address vulnerabilities identified in the risk assessment, with an emphasis on protecting both new and existing buildings and infrastructure across Orange County.

The strategy relies on Orange County's existing authorities and programs, including land-use regulations, building codes, emergency management, and NFIP participation, while identifying capability improvements needed for implementation. Prior actions are evaluated for completion, continuation, revision, or removal based on supporting records.

Implementation responsibilities for mitigation actions are designated to specific offices, departments, or partner agencies, with each entity accountable for oversight and administration. Potential funding sources are identified for each action, including local resources, state and federal grants, such as those available through FEMA's HMGP, and relevant private partnerships. The strategy also describes a prioritization process, which evaluates actions according to criteria such as cost-benefit analysis, risk reduction impact, feasibility, and alignment with community goals and available resources.

Monitoring and reporting support implementation, accountability, public information, and continued eligibility for state and federal mitigation funding. The strategy provides the Countywide framework for risk reduction and adaptation to changing hazard conditions.

Mitigation Goals

The mitigation goals guide the selection and implementation of actions that reduce long-term vulnerability and protect people, property, infrastructure, community lifelines, the economy, and environmental resources. The goals reflect the risk assessment, local capabilities, statutory requirements, and anticipated development.

Goal 1: Protect Human Life and Health

Prioritize efforts that save lives and reduce injuries by enhancing preparedness, strengthening emergency warning and communication systems, safeguarding vulnerable populations, and promoting community-wide hazard awareness. Emphasize protection from tornadoes, wildfires, hurricanes, floods, extreme heat, drought, pandemics, and hazardous materials incidents.

Goal 2: Reduce Property and Infrastructure Losses

Mitigate the risk of damage to homes, businesses, public facilities, transportation networks, utilities, and critical infrastructure. Encourage retrofitting, compliance with updated building codes, prudent land use, and the use of structural and non-structural mitigation techniques to minimize losses due to floods, hurricanes, tornadoes, severe thunderstorms, and wildfires.

Goal 3: Enhance Community Capacity and Capabilities

Strengthen local capabilities to plan, respond, and recover from hazard events by increasing interagency coordination, supporting training and exercises, updating ordinances and regulations, and investing in hazard-specific expertise. Foster partnerships with public, private, and non-profit organizations to address the impacts of all hazards, including cyberattacks, terrorism, infectious and agricultural disease outbreaks, and hazardous materials releases.

Goal 4: Promote Sustainable Development and Environmental Stewardship

Encourage development that reduces risk and preserves natural functions, including protection of wetlands, floodplains, and wildfire buffers. Integrate hazard mitigation planning with comprehensive and capital improvement plans, recognizing land use trends and making informed decisions about growth areas vulnerable to subsidence, sinkholes, extreme heat, droughts, and flooding.

Goal 5: Support Continuity of Government, Business, and Essential Services

Develop and maintain plans and resources to ensure the continuity of government operations, emergency services, utilities, communications, and healthcare, especially during and after hazard events. Promote business continuity planning and protect the economic vitality of the County from disruptions due to hurricanes, cyberattacks, chemical releases, and pandemics.

Goal 6: Increase Public Awareness, Engagement, and Readiness

Foster a culture of risk awareness by providing accessible hazard information, facilitating public input, and encouraging residents, businesses, and institutions to participate in mitigation activities. Conduct outreach campaigns targeting specific threats such as hurricanes, wildfires, droughts, infectious diseases, and severe storms, promoting readiness and community-led solutions.

Goal 7: Promote Equity and Inclusion in Mitigation Initiatives

Ensure that all populations, including vulnerable and historically underserved communities, have access to resources, information, and opportunities to participate in hazard mitigation. Address disproportionate impacts through targeted risk reduction, risk communication, and access to assistance programs for hazards such as flooding, extreme heat, disease outbreaks, and storms.

These goals guide action prioritization and long-term investment in public safety, economic continuity, infrastructure, and environmental resources.

Mitigation Actions

The action portfolio addresses the hazards and vulnerabilities identified in the risk assessment through projects, programs, policies, and ongoing activities. Action records identify the responsible entity, implementation information, priority, and status available for this draft.

An elapsed planning range triggers status review and does not establish completion; 'ongoing' denotes recurring or continuous work. The first named office is the implementation lead. Funding entries identify potential sources rather than awards and must describe a specific implementation path before plan finalization. Each participant must confirm action coverage for every applicable natural hazard and identify whether each action addresses existing development, future development, or both.

Table 21 summarizes the mitigation actions documented for this plan, including specific actions prioritized for consideration by the Orange County Local Mitigation Strategy Working Group as of July 2026. Each action record identifies, where available, the action title, lead agency or jurisdiction, hazard addressed, action type, problem or need, responsible party, potential or secured funding, timeframe, priority, and status.

Table 21: Current Mitigation Actions

Action Title	Jurisdiction/ Owner	Hazards Addressed	Action Type	Problem Addressed	Responsible Party	Potential Funding	Timeframe	Priority	Status
Detention Pond Construction at Orlo Vista	Orange County	Floods, Hurricanes	Structural	Chronic flooding in Orlo Vista community	Public Works Department	FEMA HMGP, County Funds	Short-term	High	In Progress
Critical Facility Backup Power Initiative	Orange County, Municipalities	Hurricane, Flood, Severe Thunderstorm	Infrastructure Improvement	Power loss at shelters and critical facilities	Orange County Office of Emergency Management	FDEM Grants, Local Funds	Short-term	High	Planned
Wildfire Fuel Reduction Chipping Program	Orange County, Fire Rescue	Wildland Fire (Wildfire)	Vegetation Management	Risk of wildfires in WUI areas	Orange County Fire Rescue	County Funds, Grant Programs	Ongoing	Medium	Ongoing
Sinkhole Vulnerability Assessment	Orange County	Subsidence/ Sinkhole	Study/ Assessment	Unidentified sinkhole risk to structures and roads	Orange County Planning Division	State Mitigation Funds	Long-term	Medium	Planned
Municipal Hazard Mitigation Public Education	Orange County, Partner Cities	Tornado, Flood, Drought, Hurricane	Public Education & Outreach	Limited public awareness of hazard response and risk reduction	Orange County Office of Emergency Management	Local Funds, Nonprofit Partners	Ongoing	Medium	Ongoing
Critical Facility Floodproofing	Orange County, Partner Cities	Floods, Severe Storm, Hurricane	Structural	Flood-prone public buildings	Orange County Public Works & Facility Management	FEMA HMGP, Local Funds	Long-term	High	Planned

Action Title	Jurisdiction/ Owner	Hazards Addressed	Action Type	Problem Addressed	Responsible Party	Potential Funding	Timeframe	Priority	Status
Stormwater System Retrofit & Maintenance	Orange County, Public Works	Flood, Hurricane, Severe Storm	Structural	Undersized or deteriorated drainage infrastructure	Orange County Public Works	County Funds, State Grants	Long-term	High	Ongoing
Countywide Drought Resilience Plan	Orange County Utilities, Environmental Protection Division	Meteorological & Hydrological Drought	Plan/Policy	Water supply vulnerability to drought conditions	Environmental Protection Division	County Funds	Medium-term	Medium	Planned
Chemical Release Incident Preparedness	Orange County, EPCRA Committee	Hazardous Materials	Emergency Planning	Response and mitigation for fixed-facility chemical releases	Orange County Emergency Management, Fire Rescue	Federal & State Grants	Ongoing	High	Ongoing
Pandemic Mass Communication Strategy	Orange County, Health Department	Infectious Disease Pandemic	Communications/ Outreach	Communication gaps during pandemic events	Orange County Health Department	CDC, County Funds	Ongoing	Medium	Ongoing
Enhanced Cybersecurity for Critical Infrastructure	Orange County IT	Cyberterrorism/Cyberattack	Infrastructure Security	Vulnerability to cyberattacks affecting County systems/ services	Orange County Information Technology	Homeland Security Grants, County Funds	Short-term	High	In Progress
Pre-disaster Debris Management Plan Update	Orange County, Public Works	Hurricane, Severe Storm, Wildland Fire	Plan/Policy	Efficiency of debris clearance and response	Orange County Public Works	Local Funds	Short-term	Medium	Planned

Action Title	Jurisdiction/ Owner	Hazards Addressed	Action Type	Problem Addressed	Responsible Party	Potential Funding	Timeframe	Priority	Status
Countywide Back-up Water Storage Initiative	Orange County Utilities	Drought, Hurricane	Infrastructure	Need for redundant water supplies in hazard events	Orange County Utilities	Local Funds	Long-term	Medium	Planned
OUC-Pershing Emergency Diesel Generator	OUC	Hurricane; Severe Storm	Infrastructure Improvement	Potential loss of electrical power affecting Pershing operations during hazard events.	OUC	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Short-term	High	Planned
Lift Station Emergency Bypass Pumping Resilience	Winter Park	Flood; Hurricane; Severe Storm	Infrastructure Improvement	Potential lift-station service disruption and wastewater bypass needs during flooding or power loss.	Winter Park	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Short-term	High	Planned
Orlando Hospital Well	AdventHealth	Drought; Hurricane; Severe Storm	Infrastructure Improvement	Need for a resilient water supply at the Orlando hospital during utility disruption or water shortage.	AdventHealth	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Medium-term	High	Planned
East Orlando Hospital Well	AdventHealth	Drought; Hurricane; Severe Storm	Infrastructure Improvement	Need for a resilient water supply at the	AdventHealth	FEMA 4834-DR-FL federal funding (75%);	Medium-term	High	Planned

Action Title	Jurisdiction/ Owner	Hazards Addressed	Action Type	Problem Addressed	Responsible Party	Potential Funding	Timeframe	Priority	Status
				East Orlando hospital during utility disruption or water shortage.		nonfederal match			
Apopka Hospital Well	AdventHealth	Drought; Hurricane; Severe Storm	Infrastructure Improvement	Need for a resilient water supply at the Apopka hospital during utility disruption or water shortage.	AdventHealth	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Medium-term	High	Planned
Winter Garden Hospital Well	AdventHealth	Drought; Hurricane; Severe Storm	Infrastructure Improvement	Need for a resilient water supply at the Winter Garden hospital during utility disruption or water shortage.	AdventHealth	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Medium-term	High	Planned
MLK Park Stormwater Mitigation	Winter Park	Flood; Hurricane; Severe Storm	Structural / Stormwater	Stormwater flooding affecting MLK Park and surrounding areas.	Winter Park	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Medium-term	Medium	Planned
Woodsmere Pump Station Improvements	Orange County	Flood; Hurricane; Severe Storm	Infrastructure Improvement	Pump-station capacity or reliability limitations that	Orange County	FEMA 4834-DR-FL federal funding (59.77%);	Medium-term	Medium	Planned

Action Title	Jurisdiction/ Owner	Hazards Addressed	Action Type	Problem Addressed	Responsible Party	Potential Funding	Timeframe	Priority	Status
				may contribute to flooding or drainage disruption.		nonfederal match			
Orlando Lift Station Generators	City of Orlando	Hurricane; Severe Storm; Flood	Infrastructure Improvement	Power loss affecting lift-station operations and continuity of wastewater service.	City of Orlando	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Short-term	Medium	Planned
Winter Park Hospital Well	AdventHealth	Drought; Hurricane; Severe Storm	Infrastructure Improvement	Need for a resilient water supply at the Winter Park hospital during utility disruption or water shortage.	AdventHealth	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Medium-term	Medium	Planned
C-29, C-29A, C-29B, and C-29C Canal Conveyance Improvement	South Florida Water Management District	Flood; Hurricane; Severe Storm	Structural / Stormwater	Insufficient canal conveyance capacity contributing to flood risk.	South Florida Water Management District	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Long-term	Medium	Planned
Lake Mary Jane Pump Station	South Florida Water Management District	Flood; Hurricane; Severe Storm	Structural / Stormwater	Need for pumping capacity to manage water levels and	South Florida Water Management District	FEMA 4834-DR-FL federal funding (75%);	Long-term	Medium	Planned

Action Title	Jurisdiction/ Owner	Hazards Addressed	Action Type	Problem Addressed	Responsible Party	Potential Funding	Timeframe	Priority	Status
				reduce flood risk near Lake Mary Jane.		nonfederal match			
Lake Anderson Pump Station	Orange County	Flood; Hurricane; Severe Storm	Structural / Stormwater	Need for pumping capacity to manage water levels and reduce flood risk near Lake Anderson.	Orange County	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Medium-term	Medium	Planned
Dwarf Lake Pump Station	Orange County	Flood; Hurricane; Severe Storm	Structural / Stormwater	Need for pumping capacity to manage water levels and reduce flood risk near Dwarf Lake.	Orange County	FEMA 4834-DR-FL federal funding (75%); nonfederal match	Medium-term	Medium	Planned

The actions above target both new and existing structures and infrastructure, with priorities determined using a combination of hazard risk ranking, population impact, mitigation cost-benefit, and critical lifeline/protection factors, consistent with the 44 CFR §201.6(c)(3) requirement to maximize benefit through prioritized action.

Orange County identifies the lead agency or department for each action, drawing on existing authorities, policies, and management structures. The funding column reflects a mix of local, state, and federal support, and projects are planned and implemented based on technical feasibility, available resources, and community priorities.

Where a program is ongoing or planned, the responsible party coordinates progress through annual reviews and interdepartmental meetings, with regular updates provided to the public and stakeholders as part of a transparent plan maintenance process. For all actions, Orange County's departments and partnering municipalities coordinate to ensure compliance with the National Flood Insurance Program (NFIP), support for vulnerable populations, and adherence to applicable codes and ordinances.

This action portfolio will be updated as new risks are identified, funding becomes available, or priorities shift due to hazard events, completed projects, or changes in vulnerability analysis.

Status of Prior Actions

The prior approved Orange County LMS, adopted January 11, 2022 and revised August 17, 2022, used three related layers to organize mitigation projects and actions. Table 36 established the strategic mitigation framework: stormwater and drainage; public outreach and responder training; structural hardening and retrofit; hazard identification and detection; emergency notification systems; property and equipment acquisition; public safety and prevention; and preservation or restoration of environmentally sensitive areas.

The prior LMS also states that Annex 4 contains the detailed Project Priority List and that Annex 5 contains the Active Initiatives List, which represented current action items submitted by sponsors, ranked by the Planning Committee, and approved by the Working Group. In the adopted-plan copy available for the 2026 update, however, Annex 4 and Annex 5 contain the introductory pages but not the referenced underlying detailed lists. The complete 2022 current-action register therefore cannot be reconstructed from the available adopted-plan copy alone.

The prior LMS narrative reports 152 completed projects, 38 deferred projects, and 18 deleted projects and states that these historical items would no longer be tracked on the current project list. The 2026 update does not reproduce or reopen the 152 projects already classified as completed or the 18 projects already classified as deleted.

For the 2026 update, the deferred-project tables were reviewed as the best available record of unfinished legacy actions. That review identified 40 individual deferred-project entries rather than the 38 reported in

the prior narrative. Fourteen of the 40 deferred entries also appear under the same or a near-identical title in the prior Completed Projects tables, creating internal status conflicts in the legacy record.

Note: Proposed 2026 dispositions remain subject to participant confirmation during final pre-submission review. Where a legacy action appears in both the deferred and completed histories, the proposed status is Completed only if the responsible participant confirms that both records refer to the same scope; otherwise, any residual need is carried forward or deleted as shown.

Table 22 reconciles all 40 deferred entries against the available 2022 record and the current 2026 mitigation action portfolio. The proposed disposition and 2026 successor mapping are planning determinations for this draft, not newly created historical facts. They remain subject to confirmation by the responsible participant during final pre-submission review.

Note: Proposed 2026 dispositions remain subject to participant confirmation during final pre-submission review. Where a legacy action appears in both the deferred and completed histories, the proposed status is Completed only if the responsible participant confirms that both records refer to the same scope; otherwise, any residual need is carried forward or deleted as shown.

Table 22: Reconciliation of Unfinished Actions from the Prior LMS

Old ID / 2022 Action	Participant / Responsible Agency	2022 Status / Result	Proposed 2026 Disposition	Reason	2026 Successor ID
No ID - Cathodic Protection	University of Central Florida (UCF)	Deferred; information gaps for project application; no accomplishment documented.	Proposed Deleted unless UCF revalidates.	No direct current counterpart; legacy project remains insufficiently defined.	None
No ID - Ranger Drainage District (Emergency Pumps)	Ranger Drainage District	Deferred; terminology of emergency pumps; no accomplishment documented.	Proposed Carried Forward/Consolidated if still needed.	Pump capability fits the current drainage-system maintenance function.	RDD-01
A-01 - Acquisition and Rehab of Special Needs Facility	City of Orlando	Deferred; no reason stated in Appendix D; no accomplishment documented.	Proposed Deleted unless Orlando revalidates.	No direct current structural/special-needs-facility action.	None
No ID - Corrections Compound Water Tower	Orange County Corrections Department	Deferred for lack of funds; no accomplishment documented.	Proposed Deleted unless Orange County revalidates.	No direct 2026 action addresses a Corrections water tower.	None
No ID - Hazard Mitigation Educational Campaign	Orange County Office of Emergency Management	Deferred; no reason stated; no accomplishment documented.	Proposed Deleted as a standalone legacy project; concept retained if still applicable.	Public information remains relevant, but the obsolete generic project need not remain a separate action.	No direct OCU ID
No ID - People with Special Needs Shelter Generator or Transfer Switch for Emergency Generator	Orange County on behalf of Orange County Public Schools	Deferred for lack of funds; no accomplishment documented.	Proposed Carried Forward/Consolidated if the facility need remains.	Directly fits the current critical-facility backup-power strategy.	OCU-02
No ID - Emergency Power Project	Orange County on behalf of The Salvation Army	Deferred because new priorities were identified; no accomplishment documented.	Proposed Deleted unless the facility remains a designated critical facility and the sponsor revalidates it.	Old sponsor-specific project has not been revalidated.	OCU-02 closest analog

Old ID / 2022 Action	Participant / Responsible Agency	2022 Status / Result	Proposed 2026 Disposition	Reason	2026 Successor ID
No ID - Black Lake Floodplain Restoration	Orange County Public Works Department	Deferred because new priorities were identified; no accomplishment documented.	Proposed Carried Forward/Consolidated only if residual need remains.	Current strategy appropriately uses a programmatic stormwater action rather than retaining a decades-old site project.	OCU-03
No ID - Crane Strand Erosion Control	Orange County Public Works Department	Deferred because new priorities were identified; no accomplishment documented.	Proposed Carried Forward/Consolidated if residual need remains.	Erosion/drainage scope fits current stormwater improvements.	OCU-03
No ID - Design replacement for frontal panel wall for the Main Utility Plant	University of Central Florida (UCF)	Deferred for lack of funds; no accomplishment documented.	Proposed Deleted unless UCF revalidates.	No clearly equivalent current structural-hardening action.	None
No ID - Drainage mitigation for Engineering III building	University of Central Florida (UCF)	Deferred for lack of funds; no accomplishment documented.	Proposed Carried Forward/Consolidated.	Same problem class as current campus stormwater improvements.	UCF-07
No ID - Drainage mitigation for Health and Public Affairs I and II building	University of Central Florida (UCF)	Deferred for lack of funds; no accomplishment documented.	Proposed Carried Forward/Consolidated.	Same current campus stormwater program.	UCF-07
No ID - Drainage mitigation for Math and Physics Building	University of Central Florida (UCF)	Deferred for lack of funds; no accomplishment documented.	Proposed Carried Forward/Consolidated.	Same current campus stormwater program.	UCF-07
No ID - Drainage mitigation for the Howard Phillips Hall building	University of Central Florida (UCF)	Deferred because new priorities were identified; no accomplishment documented.	Proposed Carried Forward/Consolidated only if UCF confirms residual exposure.	Current UCF-07 can absorb site-specific drainage work.	UCF-07
No ID - Drainage mitigation for the Library building	University of Central Florida (UCF)	Deferred for lack of funds; no accomplishment documented.	Proposed Carried Forward/Consolidated.	Current campus stormwater action is the appropriate successor.	UCF-07
No ID - Drainage mitigation of Academic Village residence halls	University of Central Florida (UCF)	Deferred because new priorities were identified; no accomplishment documented.	Proposed Carried Forward/Consolidated only if still needed.	Current UCF-07 covers student-housing and research-area stormwater improvements.	UCF-07
No ID - Drainage mitigation of Teaching Academy building	University of Central Florida (UCF)	Deferred for lack of funds; no accomplishment documented.	Proposed Carried Forward/Consolidated.	Same current campus stormwater program.	UCF-07

Old ID / 2022 Action	Participant / Responsible Agency	2022 Status / Result	Proposed 2026 Disposition	Reason	2026 Successor ID
No ID - Hazard Mitigation Plan	University of Central Florida (UCF)	Deferred because new priorities were identified; no accomplishment documented.	Proposed Deleted as a standalone action.	UCF is addressed through the 2026 multi-jurisdictional LMS and annex unless UCF elects to develop a separate campus plan.	None
No ID - Remove/replace existing roof and penthouse from Main Utility Plant	University of Central Florida (UCF)	Deferred because new priorities were identified; no accomplishment documented.	Proposed Deleted unless UCF revalidates.	No direct current structural-wind action; continuing need should not be inferred.	None
No ID - Wildfire Mitigation Project	University of Central Florida (UCF)	Deferred because new priorities were identified; no accomplishment documented.	Proposed Carried Forward/Consolidated if UCF confirms continuing need.	Explicit current wildfire/Firewise action.	UCF-03
No ID - County Courthouse Building Shuttering project	Orange County Facilities Management Division	Deferred; no reason stated in Appendix D; no accomplishment documented.	Proposed Deleted unless a current facility assessment confirms remaining need.	No direct 2026 courthouse/wind-retrofit action.	None
No ID - Bearhead Lake Area Flood Control	Orange County Public Works Department	Listed as Deferred for lack of funds and also listed in Completed Projects.	Proposed Completed if Orange County confirms the records refer to the same scope; otherwise residual work Carried Forward/Consolidated.	Resolve the 2022 status contradiction rather than carrying a duplicate legacy action.	OCU-03 if residual
No ID - Border Lake outfall/pumping station installation	Orange County Public Works Department	Listed as Deferred and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Same-title 2022 status contradiction.	OCU-03 if residual
No ID - Christmas Park stormwater development	Orange County Public Works Department	Deferred at the Public Works Director's request and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Same-title 2022 status contradiction.	OCU-03 if residual
No ID - Crane Strand System Flood Control	Orange County Public Works Department	Deferred at the Public Works Director's request and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same	Same-title 2022 status contradiction.	OCU-03 if residual

Old ID / 2022 Action	Participant / Responsible Agency	2022 Status / Result	Proposed 2026 Disposition	Reason	2026 Successor ID
			scope; otherwise residual work Carried Forward/Consolidated.		
No ID - Edgewater Vegetated Slope	Orange County Public Works Department	Deferred for lack of funds and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Same-title 2022 status contradiction.	OCU-03 if residual
No ID - Elba Dredge and Grade	Orange County Public Works Department	Deferred for lack of funds and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Same-title 2022 status contradiction.	OCU-03 if residual
No ID - Flood protection study	Orange County Public Works Department	Deferred for lack of funds and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same study; otherwise any new study need should be addressed under the current program.	No reason to carry a completed study absent a newly identified need.	OCU-03 only if a new study is needed
No ID - High water level outfall installation	Orange County Public Works Department	Deferred because new priorities were identified and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Same-title 2022 status contradiction.	OCU-03 if residual
No ID - Install outfalls in lieu of current drainwells	Orange County Public Works Department	Deferred because new priorities were identified and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Same-title 2022 status contradiction.	OCU-03 if residual
No ID - Install sedimentation/retention pond	Orange County Public Works Department	Deferred at the Public Works Director's request and also appears as the completed 'Installation of sedimentation/retention pond.'	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Near-identical title/status contradiction in the 2022 history.	OCU-03 if residual

Old ID / 2022 Action	Participant / Responsible Agency	2022 Status / Result	Proposed 2026 Disposition	Reason	2026 Successor ID
No ID - Install stormwater control structure	Orange County Public Works Department	Deferred at the Public Works Director's request and also appears as the completed 'Installation of stormwater control structure.'	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Near-identical title/status contradiction in the 2022 history.	OCU-03 if residual
No ID - Isle of Pines/Lake and Pines Estates Subdivisions	Orange County Public Works Department	Deferred at the Public Works Director's request and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Same-title 2022 status contradiction.	OCU-03 if residual
No ID - Plan and install outfall from Lake Price	Orange County Public Works Department	Deferred for lack of funds; no completed duplicate identified in Appendix D.	Proposed Deleted unless current Public Works review confirms continuing need.	Very old project with no current validation.	OCU-03 if retained
No ID - Purchase property for detention basin	Orange County Public Works Department	Deferred for lack of funds and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Same-title 2022 status contradiction.	OCU-03; OCU-01 if a new acquisition remains
No ID - Retrofit culverts along Apopka Blvd	Orange County Public Works Department	Deferred at the Public Works Director's request; no completed duplicate identified in Appendix D.	Proposed Deleted unless Public Works currently identifies the need.	Legacy project was affirmatively deferred at the sponsoring department's request.	OCU-03 if retained
No ID - Stormwater line installation	Orange County Public Works Department	Deferred for lack of funds and also listed in Completed Projects.	Proposed Completed if Orange County confirms the same scope; otherwise residual work Carried Forward/Consolidated.	Same-title 2022 status contradiction.	OCU-03 if residual
No ID - Stormwater systems retrofit	Orange County Public Works Department	Deferred because new priorities were identified; no completed duplicate identified in Appendix D.	Proposed Carried Forward/Consolidated rather than retained as a separate legacy project.	The work is the type now covered by programmatic OCU-03.	OCU-03

Old ID / 2022 Action	Participant / Responsible Agency	2022 Status / Result	Proposed 2026 Disposition	Reason	2026 Successor ID
No ID - Upgrade Park Manor	Orange County Public Works Department	Deferred at the Public Works Director's request; no completed duplicate identified in Appendix D.	Proposed Deleted unless Public Works revalidates.	Legacy project was explicitly removed from priority by the sponsor.	OCU-03 if retained
No ID - Upgrade pump station	Orange County Public Works Department	Deferred because new priorities were identified; no completed duplicate identified in Appendix D.	Proposed Carried Forward/Consolidated if a current need exists; otherwise Deleted.	Current stormwater infrastructure program can absorb necessary pump work.	OCU-03

The 2021/2022 LMS reported 38 deferred projects; review of Appendix D during the 2026 update identified 40 individual deferred-project entries. Several projects were also listed separately as completed. The 2026 update reconciles these records against available documentation and the current mitigation strategy rather than perpetuating inconsistent legacy statuses.

The adopted-plan copy available for this update does not contain the underlying Annex 5 Active Initiatives List referenced by the prior LMS. If that list or its source spreadsheet is located before submittal, it will be reconciled against Table 22 and the 2026 action registers. If it is not located, the supporting planning record will retain this limitation rather than representing the unavailable register as reviewed.

Action Implementation and Monitoring Strategy

Orange County implements and monitors mitigation actions through the prioritization, assignment, funding, tracking, and maintenance procedures described below.

Action Prioritization

Action owners and the LMS Working Group prioritize actions by documented consideration of: life-safety and risk-reduction benefit; monetary and nonmonetary benefits relative to implementation, operation, and maintenance cost; technical, legal, environmental, and administrative feasibility; protection of community lifelines and underserved populations; alignment with plan goals; funding readiness; and urgency. High priority indicates a strong, feasible risk-reduction case and near-term readiness; Medium indicates a worthwhile action with material dependencies; Low indicates lower relative benefit, readiness, or feasibility. A project-specific benefit-cost analysis is completed when a funding program requires it; screening under this plan is not a substitute for that analysis.

Implementation Structure

Each mitigation action is assigned to the office, department, agency, or participating jurisdiction with the relevant authority and subject-matter responsibility. Orange County Emergency Management leads planwide coordination and emergency-communication initiatives, while public works, planning and development, environmental protection, fire rescue, and other action owners implement projects within their responsibilities. The action tables identify the lead for each action.

A general timeline is established for each action:

- Short-term actions: targeted for implementation within 1 to 2 years
- Medium-term actions: implemented within 2 to 5 years
- Long-term actions: to be initiated after 5 years or contingent on grant funding, major development plans, or other dependencies

Funding Mechanisms

Each action must identify a specific, plausible implementation source, such as the responsible department's adopted capital or operating budget account, FEMA HMGP, FEMA FMA, HUD Community Development Block Grant, an identified state program, or a named partner contribution. Generic entries such as 'grants' or 'local funds' remain placeholders until the participant identifies a specific path; they do not establish an award or budget commitment.

Monitoring and Tracking Progress

Orange County Emergency Management coordinates annual action-status review. Action owners report milestones, barriers, changes in scope or priority, expenditures when available, funding needs, and next steps.

These reviews use a standardized tracking matrix that documents:

- Action description and intended outcomes
- Responsible agency/office and points of contact
- Implementation status (e.g., not started, in progress, completed, on hold)
- Funding secured or expended to date
- Timeframe and key project milestones
- Progress notes, including updates on benefit-cost considerations and community impacts

The results of these monitoring activities inform the annual evaluation of the overall Local Mitigation Strategy's effectiveness and provide the basis for making necessary adjustments to action priorities, timelines, and resource allocations.

Integration with Plan Maintenance

Action monitoring is part of plan maintenance. The LMS Working Group reviews annual tracking results to evaluate strategy effectiveness, identify emerging needs, and recommend changes to actions, responsibilities, or priorities. The LMS is comprehensively updated at least every five years in accordance with FEMA requirements.

Implementation and tracking support transparency through non-sensitive status information and documented public-comment opportunities on official channels. The supporting record identifies what was posted, availability dates, and comments received. No undocumented virtual meeting is represented as completed.

This process links action implementation and annual monitoring to long-term risk reduction across the hazards identified in the LMS.

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Planning Process

PRT alignment—A1 through A4, D1 through D3, E1–E2, and F1: This section is supported by the participant, meeting, public-comment, source-to-decision, annual-maintenance, post-event, integration, update, prior-action, and adoption records. Invitations and unsupported narratives do not establish participation or completed actions.

Introduction

Orange County prepared the 2026 multi-jurisdictional Local Mitigation Strategy to reduce long-term risk from natural hazards, coordinate mitigation decisions across participating jurisdictions and entities, and maintain eligibility for applicable FEMA hazard mitigation assistance. The update follows 44 CFR §201.6 and the FEMA Local Mitigation Planning Policy Guide (2025).

Orange County Emergency Management coordinated preparation of the 2026 update with consultant support. The initial working draft was developed primarily from the previously approved LMS; current federal, state, regional, and local data; adopted plans and regulations; available County and jurisdictional information; and technical research undertaken for the update.

The planning record available during development of the initial draft did not document a series of participant meetings or substantive involvement by all 15 jurisdictions and entities seeking approval under this multi-jurisdictional plan. The LMS therefore does not reconstruct or imply participation that did not occur.

Early in the update process, a hazard-risk-perception survey was distributed to all 15 approval-seeking participants. Six participants submitted responses. The survey instrument, distribution record, and individual responses are retained in the supporting planning record. Those responses were considered as documented input from the six responding participants only; they are not represented as input from nonresponding participants or as a survey of the general public.

To complete participant review before plan submission, Orange County Emergency Management conducted a formal pre-submission review process. On [DATE DRAFT DISTRIBUTED], each of the 15 approval-seeking participants was provided the complete draft LMS and the participant's jurisdiction- or entity-specific annex, including its risk assessment, capability assessment, NFIP information where applicable, and proposed mitigation action register. Participants were asked to review the material and provide comments, corrections, concurrence, or other jurisdiction-specific information.

On [MEETING DATE], Orange County Emergency Management convened a pre-submission LMS review meeting to discuss the draft, participant annexes, risk findings, mitigation actions, outstanding verification needs, and the process for finalizing and submitting the LMS. Each participant was invited to the meeting

and was provided an opportunity to identify changes needed to accurately represent its jurisdiction or organization.

By [FINAL RESPONSE DATE], each participant credited with active participation had either participated in the pre-submission review meeting or provided documented written review, concurrence, corrections, or comments on its annex and the draft plan. The supporting planning record retains the meeting invitation, distribution emails, attendance documentation, written responses, comments, and resulting revisions.

Table 23 summarizes the participation of each jurisdiction and entity seeking approval. Invitations and transmittal of the draft are documented as outreach actions; they are not, by themselves, represented as substantive participation.

Table 23: 2026 LMS Participant Review and Participation Matrix

Participant	Current Representative/ Title	Specific Contribution to 2026 Update	Meeting/ Review Date(s)	Material Reviewed or Supplied	Annex / Actions Reviewed	Resulting Plan Change
Orange County (Unincorporated)	Stacie Johnson /EM Specialist/Community Outreach/LMS	Early survey: Reviewed draft/annex; concurred or commented.	4/24/2026	Full LMS; participant annex; risk/action tables.	Orange County (Unincorporated) annex; OCU action register	[No change / describe]
City of Apopka	Wilfredo Rivera Sanchez / Fire Chief	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	4/24/2026	Full LMS; participant annex; risk/action tables.	City of Apopka annex; APO action register	[No change / describe]
City of Belle Isle	Rick J Rudometkin / City Manager	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	City of Belle Isle annex; BEL action register	[No change / describe]
Town of Eatonville	Valerie Mundy / Civil Engineer	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	Town of Eatonville annex; EAT action register	[No change / describe]
City of Edgewood	Brett Sollazzo / Administrative Project Manager	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	City of Edgewood annex; EDG action register	[No change / describe]
City of Maitland	Christopher Kennedy /Deputy Public Works Director	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	City of Maitland annex; MAI action register	[No change / describe]
Town of Oakland	Michael Parker / Capital Projects Coordinator	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	Town of Oakland annex; OAK action register	[No change / describe]
City of Ocoee	Richard Campanale /City Engineer	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	City of Ocoee annex; OCO action register	[No change / describe]
City of Orlando	Manuel Soto / Emergency Manager	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	City of Orlando annex; ORL action register	[No change / describe]

Participant	Current Representative/ Title	Specific Contribution to 2026 Update	Meeting/ Review Date(s)	Material Reviewed or Supplied	Annex / Actions Reviewed	Resulting Plan Change
Town of Windermere	Tonya Elliott Moore / Assistant Town Manager	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	Town of Windermere annex; WIN action register	[No change / describe]
City of Winter Garden	Jose Gainza /Fire Chief	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	City of Winter Garden annex; WGR action register	[No change / describe]
City of Winter Park	Anthony Braish / Fire-Rescue Department Manager	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	City of Winter Park annex; WPK action register	[No change / describe]
Greater Orlando Aviation Authority	Joseph Nealon / Manager of Airport Operations	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	Greater Orlando Aviation Authority annex; GOAA action register	[No change / describe]
Ranger Drainage District	Dawn Mullins /General Manager	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	Ranger Drainage District annex; RDD action register	[No change / describe]
University of Central Florida	Joseph Thalheimer / Director of Emergency Management	Early survey: [Yes/No]; reviewed draft/annex; concurred or commented.	[DATE]	Full LMS; participant annex; risk/action tables.	University of Central Florida annex; UCF action register	[No change / describe]

Planning History and Current Update Record

The 2026 update builds on the Orange County LMS adopted in 2021-2022 and constitutes the required five-year review and revision of that plan. The update retained useful Countywide hazard and planning information while revising the LMS to address current FEMA planning requirements, updated risk information, participant-specific annexes, and a participant-specific mitigation strategy.

The initial 2026 working draft was prepared by Orange County Emergency Management with consultant support. Available records did not demonstrate a continuous current-cycle participant committee process comparable to the process described in the prior LMS. Accordingly, this plan distinguishes between technical plan preparation, participant outreach, and documented participant review.

The first documented participant-wide input activity identified for this update was the hazard-risk-perception survey distributed to all 15 approval-seeking participants. Six participants responded. Those responses are retained in the planning record and are credited only to the responding participants.

The participant-review process was completed before submission through distribution of the full LMS and each participant-specific annex, followed by the [DATE] pre-submission LMS review meeting and written follow-up. Table 23 identifies the participation documented for each approval-seeking participant, the materials reviewed, substantive input received, and any resulting change to the plan.

The supporting current-cycle planning record includes, as applicable:

- the participant roster and current representatives;
- the hazard-risk-perception survey instrument, distribution record, and six responses;
- the pre-submission meeting invitation, agenda, attendance record, and meeting materials;
- transmittal of the complete draft and participant annexes;
- written participant comments, corrections, and concurrence;
- stakeholder outreach records;
- public notice and draft-review documentation;
- the public-comment disposition record;
- state and FEMA review correspondence; and
- participant adoption documentation.

This record provides the documentary basis for the participation and update findings summarized in the LMS. Where a participant-specific fact could not be independently verified, the plan either identifies the limitation or relies on the participant's documented review and confirmation.

Plan Integration

Orange County's LMS was developed through a comprehensive review and assessment of existing plans, studies, reports, and technical information relevant to hazard mitigation, land use, emergency management, and community development. The planning team systematically identified and evaluated key documents to ensure alignment and integration across local government efforts and to maximize the effectiveness of mitigation strategies.

The plans and resources below informed the development of the LMS:

- **Orange County Comprehensive Plan:** The plan outlines policies for land use, community development, environmental protection, and public facilities. Its components related to natural hazards, disaster recovery, floodplain management, and environmental conservation were referenced to ensure that mitigation actions complement ongoing County directives.
- **CIP:** The CIP was analyzed to identify critical facility upgrades, infrastructure improvements, and projects with implications for hazard resilience. Integration of mitigation projects into the CIP provides a pathway for budgeting and resource allocation.
- **Orange County EOP:** The EOP was examined to coordinate mitigation actions with preparedness, response, and recovery activities. Specific attention was given to evacuation planning, sheltering, and continuity of operations strategies for natural hazard events.
- **FMP and Local Flood Damage Prevention Ordinances:** Documents guiding floodplain development, stormwater management, and regulatory adherence to the NFIP were incorporated to support mitigation actions for flood hazards.
- **Watershed Management Plans, Stormwater Master Plans, and Water Supply Studies:** Technical analyses of hydrological risk, drought vulnerability, and water resource management informed the drought and flood mitigation section.
- **County and Regional Wildfire Prevention Plans:** These sources provided information on wildland fire risks, emergency response protocols, and land management practices relevant for wildland fire mitigation actions.
- **Hazardous Materials Response Plans:** Inventories of hazardous material facilities, spill response capabilities, and risk communication strategies were referenced to support the hazardous materials section.
- **Public Health Plans and Pandemic Response Strategies:** To accommodate emerging hazards, recent infectious disease and public health preparedness documents were reviewed for pandemic and agricultural disease mitigation content.

Information from these documents was incorporated into the LMS by aligning identified risks, response gaps, and vulnerability findings with relevant plan sections. Technical studies and historical hazard data were used to strengthen risk assessment and support the prioritization of mitigation actions. Policy recommendations and regulatory requirements were also reviewed for consistency to support cross-referencing of objectives and minimizing conflicts among agency mandates.

Integration of the LMS into ongoing and future planning mechanisms will occur through established procedures:

- LMS recommendations and identified mitigation projects will be entered into the annual update cycle for the Orange County Comprehensive Plan and CIP.
- Emergency management staff will coordinate with land use planners and public works departments to ensure that updated hazard maps, vulnerability analyses, and prioritized mitigation actions inform future zoning, permitting, and infrastructure design decisions.
- Flood, wildfire, and drought mitigation strategies will be directly incorporated into agency-specific operational and maintenance plans (e.g., stormwater management, water conservation efforts, and wildfire controls).
- The LMS will be used as a guiding document for the review of development proposals in hazard-prone areas, including floodplains, wildfire interface zones, and sinkhole-prone regions.
- Integration with the EOP ensures that mitigation actions are reflected in pre-disaster planning, evacuation routes, and resource allocation for emergency shelters.
- Procedures are established for continued collaboration with public health authorities to maintain relevance for emerging hazards, such as pandemics and agricultural disease outbreaks.

Orange County will use annual cross-departmental meetings to review progress on actions, update the LMS, and coordinate integration with other plans and programs. Coordination with regional agencies, neighboring jurisdictions, and stakeholder organizations supports cross-boundary mitigation and access to external resources.

Through these measures, the Orange County LMS will remain a living document that informs and guides local government actions to reduce risk from natural hazards, supporting a comprehensive and resilient community planning framework.

Public Outreach

Public Survey

Public input from 70 respondents to the Mitigation Strategy Public Survey is incorporated into the comprehensive, multi-jurisdictional mitigation strategy to clearly connect the updated hazard and risk assessment to prioritized, feasible mitigation actions. Survey results reinforce this approach: 97.1% of respondents rated implementing a comprehensive countywide mitigation plan as important or very important, and 95.7% supported county, municipal, and regional mitigation strategies. Strategies developed by the LMS planning team address the hazards of greatest public concern (see Figure 13), including severe weather (90.0% concerned), extreme temperatures (87.1%), and flooding (78.6%), through actions such as flood and drainage improvements, protection or retrofit of critical facilities and infrastructure, resilient development and land-use practices, emergency power and continuity measures, and projects that reduce risks to vulnerable populations and neighborhoods. Each proposed action is tied

to identified hazards and vulnerabilities and documented with the responsible jurisdiction or agency, implementation priority, estimated timeframe and cost, potential funding sources, and a process for tracking progress.

Action Title	Jurisdiction/ Owner	Hazards Addressed	Action Type
Detention Pond Construction at Orlo Vista	Orange County	Floods, Hurricanes	Structural
Critical Facility Backup Power Initiative	Orange County, Municipalities	Hurricane, Flood, Severe Thunderstorm	Infrastructure Improvement

Figure 13: Example of Mitigation Actions Informed by Public Survey Input

The updated mitigation strategy also documents sustained public and stakeholder participation and demonstrates how public input influenced mitigation priorities. Survey findings strongly support increasing public, nonprofit, and private-sector involvement (94.3% rated this important or very important), while 50.0% of respondents reported not receiving enough hazard information and 34.3% said they do not know how to reduce their risk. Accordingly, the plan includes ongoing hazard education, preparedness and risk-reduction outreach through emergency alerts, local-government websites and social media, television, community organizations, schools, and other accessible channels, with special attention to populations that may face greater disaster vulnerability. The county and participating jurisdictions will integrate these strategies into capital improvement programs, comprehensive plans, emergency management activities, and other local planning mechanisms, and establish a routine process to monitor, evaluate, and update mitigation actions throughout the plan cycle so progress can be demonstrated at the next update cycle.

Public Draft Plan Review

Orange County provided the public an opportunity to review and comment on the draft LMS before adoption. The public-review opportunity was separate from the earlier hazard-risk-perception survey distributed to the 15 LMS participants; that jurisdictional survey was not a public-opinion survey and is not represented as such.

The draft LMS was made available for public review from [START DATE] through [END DATE] through [WEBSITE/OTHER ACCESS METHOD]. Notice of the review opportunity was provided on [DATE] through

[NOTICE METHOD] and identified how members of the public could access the draft and submit comments. [Describe language/accessibility accommodations if applicable.]

Comments received during the public-review period were evaluated by Orange County Emergency Management and the planning team. Table 24 identifies substantive comments received, their disposition, and any resulting change to the LMS. The supporting planning record retains the public notice, evidence of draft availability, submitted comments, and associated disposition documentation.

Table 24: Public Comment Disposition Log

Date	Commenter / Affiliation	Method	Section/Topic	Substantive Comment	Disposition	Resulting Plan Change/ Location
[DATE]	[NAME or member of public]	[Email/ web/etc.]	[Topic]	[Comment]	Accepted/ Partially accepted/ No change	[Change and page/section]

Stakeholder Involvement

Stakeholder outreach was conducted separately from the formal review required of the 15 jurisdictions and entities seeking approval under the multi-jurisdictional LMS. Orange County used its LMS stakeholder contact list to provide an opportunity for organizations with relevant governmental, regulatory, infrastructure, emergency management, economic, nonprofit, educational, health, and regional interests to review or participate in the update.

On 9/10/2026, the stakeholders summarized in Table 25 were invited to participate in the pre-submission LMS review process and/or provided access to the draft LMS. Stakeholder outreach was intended to include neighboring jurisdictions; agencies with hazard-mitigation, development, environmental, or resource-management responsibilities; infrastructure and utility operators; major public institutions; businesses and employers; nonprofit and community organizations; and academic institutions.

The supporting planning record retains the stakeholder contact list, invitations and distribution records, substantive comments received, and resulting changes to the plan. An organization is credited with substantive stakeholder participation only where the planning record documents actual input, review, or a planning decision; receipt of an invitation alone is recorded as an outreach opportunity.

Organizations that are themselves approval-seeking LMS participants—including the Greater Orlando Aviation Authority, University of Central Florida, and Town of Oakland—are documented primarily in the participant matrix in Table 23 rather than relying on their appearance in the stakeholder contact list.

Table 25: Stakeholder Organizations Invited to the 2026 LMS Review

Stakeholder Category	Organizations Included in Outreach	Relevance to Mitigation Planning
State and regional mitigation, planning, and resource agencies	Florida Division of Emergency Management; Florida Department of Agriculture and Consumer Services; East Central Florida Regional Planning Council; South Florida Water Management District; St. Johns River Water Management District	State mitigation coordination, wildfire/forestry, regional planning, water resources, flood and watershed management
Neighboring county government and planning agencies	Seminole County Office of Emergency Management; Seminole County Planning and Development	Cross-boundary hazard, emergency management, development and infrastructure coordination
Neighboring municipalities	Altamonte Springs; Casselberry; Lake Mary; Longwood; Oviedo; Sanford; Winter Springs; Kissimmee; St. Cloud; Clermont; Groveland; Minneola; Montverde; Tavares; Leesburg; Eustis; Mount Dora; Astatula	Cross-jurisdictional development, evacuation, infrastructure, watershed and hazard coordination
Infrastructure, utilities, public facilities and critical-service institutions	Central Florida Tourism Oversight District; Orange County Convention Center; Orange County Public Schools; Orlando Utilities Commission; AdventHealth; Orlando Health	Utilities, public facilities, schools, health care, continuity, lifelines and critical infrastructure
Nonprofit, humanitarian and public-safety organizations	American Red Cross; The Salvation Army; Center for Public Safety	Shelter, mass care, community preparedness, vulnerable-population support and public safety
Higher education and academia	Valencia College; Rollins College	Research, education, campus preparedness and community outreach
Private sector, engineering and major employers	Universal Orlando; Pegasus Engineering; iParametrics; Kimley-Horn Engineering Services	Economic continuity, engineering, infrastructure, development and technical expertise
Approval-seeking LMS participants also appearing on the stakeholder contact list	Greater Orlando Aviation Authority; University of Central Florida; Town of Oakland	Formal plan participants; participation documented in Table 23

Plan Monitoring, Evaluation, and Updating

Orange County OEM coordinates plan monitoring, evaluation, and updates over the five-year cycle, with participation from the LMS Working Group, County departments, municipal representatives, and stakeholders.

Monitoring includes annual reviews and post-event assessments. Orange County OEM convenes the LMS Working Group at least annually to review progress toward goals, mitigation-action status, and changes in risks or vulnerabilities. Additional review follows a major hazard event when conditions warrant. The Working Group evaluates the plan's effectiveness, documents lessons learned, and determines whether an interim amendment is needed.

Each action owner reports on status, milestones, barriers, funding needs, expenditures (when available), and next steps. Orange County OEM compiles the information into an annual progress summary for public review.

The LMS Working Group evaluates plan effectiveness based on (1) risk and loss reduction and (2) integration of mitigation actions into other planning mechanisms. Evaluation includes review of progress reports, participant and stakeholder input, changes in exposure and vulnerability, development patterns, and mitigation-project outcomes.

The amendment process distinguishes administrative updates from substantive changes. Administrative updates may be incorporated through plan maintenance when they do not change eligibility or the core risk framework. Substantive changes, including new hazards or major revisions to the mitigation strategy, follow the adoption and state and FEMA review process applicable to a plan update.

The next update will incorporate revised risk assessments, mitigation-action status, development trends, lessons from recent events, and stakeholder input. The update process will begin at least twelve months before the end of the five-year cycle so that review, participation, submittal, and adoption can be completed on time. Outreach will include participating jurisdictions, development authorities, infrastructure operators, businesses, academia, nonprofit organizations, and the public.

Plan changes resulting from participation and outreach are documented in the supporting planning record. This draft does not rely on an undocumented survey, a virtual session, an attendance total, or a feedback theme.

Orange County OEM coordinates with planning, public works, utilities, and environmental departments to integrate mitigation priorities into comprehensive plans, capital improvement programs, emergency operations plans, land-use policies, and permitting processes. Each participant identifies the mechanism and outcome of local integration during annual reviews.

This maintenance process is intended to keep the Orange County LMS current and responsive to changing risks and community needs and to support the plan-maintenance requirements of 44 CFR §201.6(c)(4).

Plan Adoption

This LMS is prepared under FEMA Local Mitigation Planning Policy Guide FP-206-21-0002 and 44 CFR §201.6, which require adoption by the governing body. Adoption confirms each participant's commitment to the plan and supports eligibility for FEMA mitigation assistance.

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Orange County Board of County Commissioners will consider the Countywide LMS and the unincorporated-area annex at a public meeting. The signed resolution or approval action, action number, date, and meeting record will be inserted in the plan-adoption appendix before final approval.

After public review, required revisions, and FEMA Approval Pending Adoption, the Orange County Board of County Commissioners will consider the LMS by resolution. The plan-adoption appendix will identify the adopting body, action number, date, and supporting record. The adoption action confirms the County's commitment to implement, monitor, and update the LMS in accordance with 44 CFR §201.6.

If adoption remains pending at submission, Orange County will seek adoption at the earliest practicable Board meeting after public review and required revisions. The signed adoption action will be transmitted through the State Hazard Mitigation Officer for FEMA's final approval.

For this multi-jurisdictional plan, each participating jurisdiction must adopt the plan through its governing body. The plan appendix will identify each jurisdiction, adopting body, adoption date, resolution or ordinance number, and appendix location. Until a jurisdiction adopts, the plan record will identify its status as pending; the final record will include the signed adoption documentation.

Adoption documentation will be retained with the LMS throughout the five-year maintenance cycle to support accountability and mitigation-assistance eligibility.

Annexes

The annexes present participant-specific jurisdiction profiles, local risk, capabilities, NFIP information where applicable, mitigation actions, update findings, maintenance and integration procedures, and adoption status. Participant involvement in the 2026 update is documented once in Planning Process Table 23 and the supporting planning record and is incorporated into each annex by reference.

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University of Central Florida

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

The University of Central Florida's (UCF) main campus encompasses approximately 1,420 acres in east Orange County. Campus hazard analysis should distinguish the university's managed property from surrounding Census tracts and off-campus housing.²⁶

Geographically, UCF's primary campus is characterized by gently rolling terrain, a mix of developed institutional land use, natural preserves, stormwater retention features, and forested areas. The campus contains several lakes and ponds, with Lake Claire as the primary water body within its boundaries. Wetlands and conservation zones are preserved on the eastern and southern portions of the campus, supporting local biodiversity and affecting land use, development, and emergency access.

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

UCF reported fall 2025 enrollment of 70,674 students. Because this total includes students with varying attendance patterns and living arrangements, it should not be interpreted as the number of individuals physically present on the main campus at any given time. UCF also reports 12,280 beds across on-campus and affiliated housing facilities; however, this figure represents housing capacity rather than the number of residents on the main campus. In addition, the university employs more than 13,000 people. Employee headcount is a separate institutional metric and should not be combined with enrollment, residential population, or estimates of daily campus occupancy.

Students, employees, visitors, and residents may have varied mobility, sensory, medical, transportation, and communication needs. No campuswide disability percentage was verified for this update, and County demographic percentages are not used as substitutes for campus-specific measures. UCF serves a diverse student body and should maintain multilingual, accessible emergency communication, but no unverified campus language or ethnicity percentages are used in this section. Financial constraints can also affect preparedness and recovery for some students and employees; therefore, the plan does not use an uncited financial-aid percentage as a measure of campus vulnerability.

²⁶ University of Central Florida adopted 2025–2035 Campus Master Plan, Introduction, main-campus acreage, <https://fp.ucf.edu/wp-content/uploads/planning/mp2025/Adopted/INTRODUCTION%20%202025-35%20CMP%20.pdf>.

UCF housing exposure includes on-campus residence halls and off-campus housing outside the university's managed-property inventory. The plan does not estimate a campus renter share or apply Countywide housing-tenure statistics to the university. Housing resilience, warning, transportation, and evacuation needs should instead be evaluated by location and responsible jurisdiction. Institutional totals in this section use UCF's 2025–2026 published facts. Census County or tract data may provide surrounding-community context, but they are not substituted for university enrollment, employment, housing, or occupancy records.

Vulnerability considerations include on- and off-campus students; persons with disabilities and access and functional needs (AFN); limited English proficiency (LEP); medical or assistive-technology dependence; limited financial resources or no private vehicle; visitors unfamiliar with campus procedures; and occupants of residential, research, and health facilities. These factors affect warning accessibility, evacuation, sheltering, power continuity, transportation, and recovery.

LAND USE AND DEVELOPMENT PATTERN

The planning area is an institutional campus rather than a general-purpose municipality. Academic, residential, research, athletic, utility, transportation, stormwater, and conservation uses are concentrated within managed property. Campus development should be evaluated against the current campus master plan and asset inventory rather than inferred from surrounding Census tracts.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context (NRI), and methodology. This annex incorporates those materials by reference and presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

UCF's large daily population, campus infrastructure, research and academic facilities, and dependence on regional systems shape its exposure and consequences. The discussion below applies the Countywide hazard profiles to campus operations and assets.

Population Vulnerability: UCF's campus is home to a high-density population of resident and commuter students, faculty, staff, and visitors. The university's vulnerability to tornadoes, hurricanes, severe thunderstorms, and wildfires is heightened during academic sessions, major events, and campus activities, when population concentrations are greatest. Infectious disease pandemics, including COVID-19 and potential animal/agricultural disease outbreaks, pose significant threats to public health, especially in dormitory housing and communal campus facilities.

Critical Facilities and Services: Vulnerable critical facilities include the university's Emergency Operations Center (EOC), police, health clinic, residence halls, and information technology centers. Cyberterrorism and terrorism/Chemical, Biological, Radiological, and Explosive (CBRNE) hazards pose risks to campus operations, data integrity, and physical security, potentially affecting university emergency response and continuity of services. Fixed-facility chemical releases (hazardous materials incidents) may occur in research and teaching labs, raising risks for both the immediate campus area and adjacent neighborhoods.

Table 26: UCF Hazard Risk and Draft Action-Coverage Crosswalk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Tropical Storm/Hurricane	High	High	Very High	UCF-01, UCF-02, UCF-06, UCF-07, UCF-08
Floods	High	High	High	UCF-01, UCF-06, UCF-07, UCF-08
Tornado	Moderate	High	Moderate	UCF-02, UCF-06
Wildland Fire (Wildfire)	Moderate	Moderate	Moderate	UCF-02, UCF-03, UCF-06
Severe Thunderstorm/ Lightning/Hail	High	Moderate	High	UCF-01, UCF-02, UCF-06
Meteorological Drought	Moderate	Moderate	Moderate	UCF-06, UCF-11
Hydrological Drought	Moderate	Moderate	Moderate	UCF-06, UCF-11
Infectious Disease Pandemic	Moderate	High	High	UCF-05, UCF-06
Animal/ Agricultural Disease Outbreak	Low	Low	Low	UCF-06
Fixed-Facility Chemical Release	Low	High	Moderate	UCF-06, UCF-09
Heat Wave (Extreme Heat)	High	Moderate	Moderate	UCF-06, UCF-08
Subsidence/ Sinkhole	Low	Moderate	Low	UCF-06, UCF-10
Cyberterrorism (Cyberattack)	Moderate	High	Moderate	UCF-04, UCF-06
Freezing Temperatures	Low	Moderate	Low	UCF-06
Extreme Cold/ Wind Chill	Moderate	Moderate	Moderate	UCF-06
Terrorism/ CBRNE	Low	Moderate	Low	UCF-06

POPULATION AND SOCIAL VULNERABILITY

Population exposure varies with the academic calendar, residential occupancy, events, commuting, and visitor activity; enrollment, beds, employee headcount, and daily occupancy are not interchangeable. Planning should address accessible and multilingual warning, transportation for people without vehicles, medical and assistive-technology needs, residence-hall continuity, and off-campus coordination without applying Countywide percentages as campus statistics.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 27: UCF Local Asset and Lifeline Exposure

Facility/Lifeline	Representative Examples	Primary Hazards	Known Vulnerability Factors
Emergency Services	UCF Police, Fire, EOC, Health	Hurricane, Tornado, Flood	Access routes, facility wind/water resilience
Educational Facilities	Classroom, Labs, Libraries	Severe Storm, Wildfire	Occupant density, hazardous materials presence
Shelters/Housing	Dormitories, Storm Shelters	Hurricane, Tornado	Structural integrity, backup power availability
Energy Infrastructure	Central Energy Plant, Substations	Hurricane, Cyberattack	Grid interdependence, vulnerable to flooding
Water/Wastewater Systems	Supply/Treatment Facilities	Drought, Flood	Age of infrastructure, proximity to hazard zones
Communications	Data Centers, Radio Towers	Lightning, Cyberattack	Redundancy, physical exposure
Transportation	Campus Roads, Parking, Bridges	Flood, Severe Storm	Low-lying areas, connectivity for emergency evacuation
Food Supply	Dining Halls, Distribution Sites	Hurricane, Supply Chain	Inventory levels, power backup
Government/Admin	Admin Offices, Records Storage	Hurricane, Tornado	Information system fortification
Hazardous Materials	Labs, Storage Rooms	Chemical Release, Terrorism	Emergency containment protocols

Table 28 supplements the facility and lifeline inventory by distinguishing existing and future campus assets and the hazards relevant to each asset type.

Table 28: UCF Assets and Areas at Risk

Asset Type	Hazard Exposure	Existing/Future	Notes
Residence Halls	Flood, Hurricane, Tornado, Extreme Heat	Existing/Future	Eastern halls in Special Flood Hazard Area (SFHA), ongoing new builds
Academic Buildings	Severe Storm, Flood, Tornado, Hazardous Materials	Existing/Future	Central campus, dense clustering
Critical Utilities (Power Plant, Water)	Flood, Severe Storm, Power Outage	Existing	Located near low elevations, flood risk
Athletic Facilities	Tornado, Severe Storm, Extreme Heat	Existing	High occupancy, roof span vulnerability
Research Labs	Hazardous Materials, Flood, Tornado	Existing/Future	Chemical inventory, spill response mandated
Parking Structures	Flood, Severe Storm	Existing/Future	Expansion planned, flood mitigation required
Conservation Areas, Trails	Wildland Fire, Drought	Existing	Periphery exposure, buffer management
New Development Zones	Flood, Wildland Fire, Sinkhole	Future	Master planning for risk reduction

BUILT AND NATURAL ENVIRONMENT

The campus combines high-occupancy buildings, laboratories, housing, utilities, roads, parking, stormwater systems, lakes, wetlands, conservation areas, and wooded edges. These systems create linked consequences in flood, wind, heat, wildfire, hazardous materials, power, communications, and access. Asset-level decisions should preserve natural storage and buffers while maintaining emergency access, utility redundancy, and continuity for critical research and residential functions.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

The materials available for this draft do not provide a complete, quantified record of changes in campus development and vulnerability since the previous plan. The 2026 annex establishes a current baseline for campus land use, assets, drainage, access, enrollment-related activity, and continuity dependencies, but no boundary-matched before-and-after exposure analysis was located.

For UCF, the principal climate-adjusted pathways are heavier rainfall interacting with campus drainage and access; increasing heat affecting a dense population of residents, commuters, and outdoor workers; and

potentially wetter or stronger tropical cyclones stressing power, communications, housing, laboratories, and continuity. Tornado, lightning, and hail trends remain uncertain, and declining regional cold-day frequency does not eliminate the need for cold protection.

2021–2026 UPDATE FINDINGS

Table 29: UCF 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available records do not support a complete boundary-matched before/after finding for campus development or vulnerability. The 2026 annex establishes a current campus baseline, but no quantified 2021–2026 exposure comparison was located. No material change has been identified in available records pending UCF confirmation; this does not mean that no campus development occurred.
Change in mitigation priorities	A material proposed priority change is documented in the prior-action reconciliation: multiple legacy building-specific drainage actions are consolidated into UCF-07, the prior wildfire project is mapped to UCF-03, and other legacy items are proposed for deletion unless UCF revalidates them. Final disposition remains subject to UCF confirmation.
Integration accomplished since prior approval	No completed UCF-specific integration into a campus master-planning, design, capital/budget, emergency management, or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, UCF should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and Flood Insurance Rate Map (FIRM):** UCF is not separately listed as an NFIP community. The main campus is regulated through Orange County (CID 120179), whose current effective FIRM date is September 24, 2021, and whose current Community Rating System (CRS) class is 5.
- **Adopted floodplain regulations:** Floodplain development on the main campus is subject to the applicable Orange County floodplain regulations rather than a separate UCF NFIP ordinance.
- **Administering office/designee:** UCF coordinates with the applicable local Floodplain Administrator and its own facilities, planning, and emergency management functions.
- **Permitting/enforcement, including substantial improvement/damage:** UCF coordinates applicable permits, elevation documentation, inspections, and substantial-improvement/substantial-damage review with the local Floodplain Administrator.

- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** The privacy-protected public multiple-loss dataset does not identify records as UCF assets; UCF's reviewed campus asset record identifies no known repetitive-loss or severe-repetitive-loss facility.

DATA LIMITATIONS AND VERIFICATION NEEDS

The principal limitation for UCF is the absence of a single, current campus dataset that connects daily occupancy, housing, buildings, laboratories, utilities, transportation, and replacement values to each hazard footprint. Enrollment, beds, employees, surrounding Census data, and managed-asset exposure are not interchangeable. UCF should maintain a dated campus asset and hazard overlay and document changes through plan maintenance.

3. Capability Assessment

Countywide capability descriptions are incorporated by reference. Table 30 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities. Plan finalization requires confirmation against current adopted documents, organizational assignments, and budgets.

Table 30: UCF Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
Planning & regulatory	Campus master planning; facility design/construction standards; emergency and continuity planning	Confirm current campus masterplan, design/construction, emergency, and continuity document titles/dates and document where mitigation findings/actions are integrated.
Administrative & technical	Emergency Management; Facilities Planning/Construction; Environmental Health and Safety; information technology	Confirm current offices, staffing assignments, GIS/asset-data ownership, action owners, and annual tracking responsibility; no staffing shortfall is inferred without UCF confirmation.
Financial	University operating and capital budgets; applicable state/federal grants	Link each action to a specific university operating/capital account or applicable grant program and document match requirements where relevant.

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
NFIP/ floodplain	UCF coordinates with the applicable local Floodplain Administrator; see the verified NFIP paragraph above	Retain host-jurisdiction permitting, inspection, elevation, and substantial-improvement/substantial-damage coordination evidence; UCF has no separate NFIP program.

4. Mitigation Strategy

The Countywide mitigation goals, prioritization method, benefit-versus-cost screening, and timeframe definitions are incorporated by reference. The action register identifies participant-specific actions and implementation information.

Table 31: UCF Mitigation Action Register

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
UCF-01	Floodproofing of Critical Facilities [Structural (Building)] Need: Water damage to research, IT, and high-value assets	Flood, Hurricane, Severe Thunderstorm	UCF Facilities Planning	University Capital, HMGP	2024–2026; status: In Progress	High
UCF-02	UCF Campus Outdoor Warning System Enhancement [System/Technology] Need: Gaps in campus-wide alert coverage for rapid-onset hazards	Tornado, Hurricane, Severe Thunderstorm, Wildfire	UCF Emergency Management	University Funds	2023–2025; status: In Progress	High
UCF-03	Firewise Landscaping Around Key Buildings [Natural Systems] Need: Vulnerability of academic clusters at wildland-urban interface	Wildfire	UCF Utilities & Energy Services	EOC Grant, UCF Budget	2024–2027; status: Planned	Medium
UCF-04	Redundant Network Infrastructure (Cyber Resilience) [Infrastructure/IT]	Cyberattack	UCF Office of Information Security	University Funding	2023–2025; status: Ongoing	High

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
	Need: Disruption to online learning and administrative systems					
UCF-05	Infectious Disease Plan Review and PPE Stockpiles [Planning/Operations] Need: Readiness gaps for future pandemic events	Pandemic	UCF Health Services	FEMA/Health Partnerships	2023–2024; status: Ongoing	High
UCF-06	Mass Notification System Upgrades [Technology/ / Communication] Need: Gaps in multi-channel communications for students/faculty	All Hazards	UCF Emergency Management	University, DHS Funds	2024–2025; status: Planned	High
UCF-07	Stormwater Management Improvements [Infrastructure] Need: Outdated stormwater control in student housing and research areas	Flood, Tropical Storm/ Hurricane	UCF Facilities & Sustainability	FEMA, University Capital	2024–2028; status: Planned	Medium
UCF-08	Energy System Hardening (Backup Power for Labs) [Infrastructure] Need: Loss of critical operations and research during outages	Hurricane, Flood, Extreme Heat	UCF Utilities	University, HMGP	2025–2027; status: Planned	Medium
UCF-09	HazMat Response Training and Exercises [Training/Exercises] Need: Need for campus-wide hazardous materials incident readiness	Hazardous Materials, Fixed Facility	UCF Environmental Health & Safety	University, DHS	Annual; ongoing	Medium

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
UCF-10	Sinkhole Incident Response and Monitoring [Monitoring/Emergency] Need: Sudden ground subsidence threatening buildings/roads	Subsidence/ Sinkhole	UCF Facilities & EH&S	University	2024–2027; status: Not Started	Low
UCF-11	Drought-Resilient Irrigation Retrofit [Infrastructure] Need: High water use in landscaping during drought	Drought (Meteorological/ Hydrological)	UCF Sustainability Initiatives	State, University	2025–2028; status: Planned	Low

STATUS OF PRIOR ACTIONS

Prior unfinished actions attributed to the University of Central Florida in the 2021/2022 LMS Appendix D are reconciled in Countywide Table 22. The table records the prior deferred status, the proposed 2026 disposition, and a current successor action where applicable. Proposed UCF mappings include consolidation of legacy drainage actions into UCF-07 and the prior wildfire project into UCF-03; other legacy items are proposed for deletion unless UCF revalidates them.

5. Maintenance, Integration, and Adoption

Table 32: UCF Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's Local Mitigation Strategy (LMS) representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/ losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.

PRT Element	Participant Procedure
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the campus master plan, capital program, design/construction standards, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, responsible office, decision/date, and result—or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During annual review, UCF should evaluate this annex's risk findings and actions through campus master planning, capital programming, facilities and utility planning, emergency management, continuity planning, and budgeting. The maintenance record should identify the specific document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the UCF Board of Trustees or other legally authorized university body will consider the Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

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Town of Windermere

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

Windermere is located in southwestern Orange County among the Butler Chain of Lakes, including Lake Butler, Lake Down, and Wauseon Bay. Water surrounds much of the Town and materially affects flood exposure, land use, drainage, and emergency access.

Windermere's land area is primarily residential, with a compact downtown core that features municipal services, parks, and small businesses. The Town is bordered by unincorporated Orange County to the north, south, and west; to the east, the boundaries are largely delineated by Lake Down and by further unincorporated communities across the water. The Town of Ocoee lies farther north, and the City of Winter Garden is roughly west-northwest across Lake Butler.

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020 Census counted 3,030 residents in Windermere, while the 2020–2024 American Community Survey (ACS) five-year estimate is 3,086. The ACS estimate is used for the characteristics below, with margins of error taken into account due to the Town's small population.²⁷ The 2020–2024 ACS also estimates 1,184 households, 2.6 persons per household, and 1,359 housing units in Windermere.

The 2020–2024 ACS estimates a median household income of \$177,778 in Windermere and 1.3 percent of persons below the poverty line. Because estimates for small populations can have large margins of error, these values are used as screening indicators rather than precise counts of vulnerable residents.

LAND USE AND DEVELOPMENT PATTERN

Windermere's compact, predominantly residential pattern and lake setting concentrate municipal functions, local businesses, homes, and access routes within a small area. Development review and capital planning should evaluate drainage and lake-adjacent conditions, mature-tree exposure, utility and septic/well dependencies where applicable, and the reliability of limited road access during severe weather.

²⁷ U.S. Census Bureau, data.census.gov profile: Windermere town, Florida, 2020 Census and 2020–2024 American Community Survey five-year estimates, https://data.census.gov/profile/Windermere_town,Florida?g=160XX00US1278050.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex incorporates those materials by reference and presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

The hazards evaluated for Windermere are tornado, wildland fire, extreme cold/wind chill, meteorological drought, hydrological drought, infectious disease pandemic, animal/agricultural disease outbreak, fixed-facility chemical release, heat wave, subsidence/sinkhole, severe thunderstorm/lightning/hail, cyberterrorism, floods, freezing temperatures, terrorism/chemical, biological, radiological, nuclear, and explosives (CBRNE), and tropical storm/hurricane.

Current Federal Emergency Management Agency (FEMA) multiple-loss data show no Windermere repetitive-loss or severe-repetitive-loss records under Community Identification (CID) 120381 as of August 2, 2026. This supersedes narrative references to a concentration of RL properties.

Essential community services such as emergency response, water and sewer systems, and electrical distribution face disruption risks from severe storms, hurricanes, tornadoes, and cyberterrorism. The Town's single access point and roadways, especially Main Street, are susceptible to blockage or damage during a disaster, which could impede evacuation and emergency operations. The presence of hazardous materials at nearby fixed facilities and along transportation routes increases the risk of accidental or intentional chemical releases, which would be exacerbated by constrained local response resources.

Table 33 records the jurisdiction-specific basis for including each hazard in Windermere's risk assessment; it supplements the probability and consequence ratings in Table 33.

Table 33: Windermere Hazard Risk and Action-Coverage Crosswalk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Tornado	High	High	High	WIN-04, WIN-05, WIN-12, WIN-13
Wildland Fire (Wildfire)	Moderate	High	Moderate	WIN-02, WIN-13
Extreme Cold/Wind Chill (Winter)	High	Moderate	Moderate	WIN-10, WIN-13
Meteorological Drought	High	High	High	WIN-13
Hydrological Drought	Moderate	High	Moderate	WIN-13

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Infectious Disease Pandemic	Low	High	High	WIN-08, WIN-13, WIN-14
Animal/Agricultural Disease Outbreak	Low	Low	Low	WIN-13, WIN-14
Fixed-Facility Chemical Release	Low	High	Moderate	WIN-13
Heat Wave (Extreme Heat)	High	High	High	WIN-09, WIN-13
Subsidence/Sinkhole	Moderate	Moderate	Moderate	WIN-06, WIN-13
Severe Thunderstorm/Lightning/Hail	High	Moderate	Moderate	WIN-01, WIN-04, WIN-05, WIN-12, WIN-13
Cyberterrorism	Low	Moderate	Low	WIN-08, WIN-11, WIN-13
Floods	High	High	Very High	WIN-01, WIN-03, WIN-13
Freezing Temperatures	Moderate	Low	Low	WIN-10, WIN-13
Terrorism/CBRNE	Low	High	Moderate	WIN-08, WIN-11, WIN-13
Tropical Storm/Hurricane	High	High	Very High	WIN-04, WIN-05, WIN-12, WIN-13

POPULATION AND SOCIAL VULNERABILITY

The ACS indicators in Section 1 are screening measures and should not be converted to counts within hazard areas without the underlying table and margin of error. Warning, transportation, sheltering, and recovery planning should account for children, older adults, persons with disabilities or medical-support needs, people with limited English proficiency, and households with constrained resources, while recognizing the uncertainty in small-area estimates.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 34: Windermere Representative Assets and Lifeline Functions

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
Emergency services	Municipal police and fire-rescue functions	Flood, tropical cyclone, severe storm, tornado	Access, communications, power, fuel, and facility

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
			continuity require asset-level verification.
Healthcare	Hospitals, clinics, and care providers	Tropical cyclone, flood, heat, pandemic	Operations depend on power, water, communications, supplies, and transportation.
Schools and shelter support	Schools and facilities designated for emergency use	Tropical cyclone, tornado, flood, heat	Designation, structural capacity, accessibility, and backup systems require current confirmation.
Government operations	City administration, records, and public works	Flood, tropical cyclone, cyberattack	Continuity sites, records protection, staffing, and communications affect recovery.
Utilities	Electric, water, wastewater, and stormwater systems	Flood, tropical cyclone, severe storm, heat, cyberattack	Interdependencies and backup capabilities should be evaluated by asset.
Transportation and communications	Roads, traffic systems, and telecommunications	Flood, wind, debris, cyberattack	Blocked routes or service loss can delay response and restoration.
Natural and cultural resources	Lakes, canals, parks, mature trees, and historic resources	Flood, wind, heat, drought, wildland fire	Water levels, tree fall, access, and resource protection require location-specific review.

BUILT AND NATURAL ENVIRONMENT

Homes, municipal facilities, roads, utilities, and small businesses are interwoven with lakes, shoreline conditions, mature trees, parks, and drainage features. Flooding, wind, debris, power loss, blocked access, drought, and heat can affect several systems at once. Parcel and corridor review is necessary because the Townwide risk rating does not establish uniform lake, elevation, drainage, or structural conditions.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

The materials available for this draft do not provide a complete, quantified record of changes in development and vulnerability within Windermere since the previous plan. The current annex identifies the Town's lake setting, access routes, drainage, utilities, population indicators, and exposed assets as a 2026 planning baseline.

For Windermere, the principal climate-adjusted pathways are lake- and drainage-related flooding, access constraints, septic/well and utility dependencies, mature-tree exposure, and heat. NCA5 supports increased heat and heavy-precipitation stress and potentially greater tropical-cyclone rainfall intensity, while it does not provide Town-specific changes in hurricane, tornado, or drought recurrence.

2021–2026 UPDATE FINDINGS

Table 35: Windermere 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not support a verified participant-specific 2021–2026 before/after finding for development or vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline from available demographics, land use, assets, and risk information, but no boundary-matched change analysis was located. No material change is identified from available records pending participant confirmation; this does not mean no development occurred.
Change in mitigation priorities	No material change in mitigation priorities was identified from the available 2021/2022 Appendix D record because no deferred action was attributed to this participant, and the referenced Annex 5 Active Initiatives List was unavailable. The 2026 action register is therefore the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed participant-specific integration into a comprehensive/land-use plan, code, capital improvement program, budget, emergency operations plan, or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the participant should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and Flood Insurance Rate Map (FIRM):** Windermere is an active NFIP community (CID 120381) with a current effective FIRM date of September 24, 2021; FEMA does not list a current Community Rating System (CRS) class or discount.
- **Adopted floodplain regulations:** The Town administers adopted floodplain management regulations applicable to development in mapped flood hazard areas.
- **Administering office/designee:** The designated local Floodplain Administrator is responsible for program administration.
- **Permitting/enforcement, including substantial improvement/damage:** Administration includes permit review, elevation or floodproofing documentation, inspections, and enforcement, and documented substantial-improvement and substantial-damage determinations.

- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** FEMA's August 2, 2026, privacy-protected multiple-loss dataset contains no record for CID 120381; the absence of a public record is not treated as proof that no insured loss has occurred.

DATA LIMITATIONS AND VERIFICATION NEEDS

The principal limitation for Windermere is the absence of a single, current participant-scale overlay that connects people, structures, critical facilities, lifelines, and replacement values to each hazard footprint. The annex therefore does not publish parcel-level exposure or loss estimates where source data are unavailable.

3. Capability Assessment

Countywide capability descriptions are incorporated by reference. Table 36 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 36: Windermere Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
Planning & regulatory	Comprehensive plan; land-development/zoning and building regulations; floodplain and capital-planning mechanisms	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	Windermere administration; planning/community development; public works; building/code functions; emergency management and response coordination	Confirm the current Local Mitigation Strategy (LMS) representative, responsible Geographic Information Systems (GIS)/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility. No staffing shortfall is inferred without participant confirmation.
Financial	Annual operating and capital budgets; legally authorized utility/stormwater revenues; applicable grants	Link each action to a specific budget, Capital Improvement Plan (CIP)/utility, or grant mechanism and document local-match strategy where applicable;

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
		update the funding record during annual review.
NFIP/ floodplain	See the verified NFIP paragraph above	No material program gap is identified from the verification summarized above; maintain the current ordinance/designee, permitting/enforcement and Substantial Improvement/Substantial Damage (SI/SD), CRS information where applicable, and annual RL/SRL reconciliation.

4. Mitigation Strategy

The Countywide mitigation goals, prioritization method, benefit-versus-cost screening, and timeframe definitions are incorporated by reference. The action register identifies participant-specific actions and implementation information.

Table 37: Windermere Mitigation Action Register

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
WIN-01	Drainage System Upgrades [Structural Improvement] Need: Ineffective stormwater drainage causing localized flooding	Flood, Severe Thunderstorm	Public Works Department	Local funds, Hazard Mitigation Grant Program (HMGP)	Multi-year; status: In Progress	High
WIN-02	Community Wildfire Awareness Campaign [Public Education] Need: Lack of community understanding of wildfire risks	Wildland Fire (Wildfire)	Emergency Management, Fire Dept.	Local funds, U.S. Forest Service (USFS) grants	Annual; ongoing	Medium

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
WIN-03	NFIP Participation and Floodplain Management [Policy/Regulatory] Need: Need for consistent floodplain regulations and insurance compliance	Flood	Planning & Zoning, Administration	Local funds	Continuous; status: Active	High
WIN-04	Critical Facility Backup Power Installation [Structural Improvement] Need: Vulnerability of emergency operations during power outages	Hurricane, Severe Storm, Tornado	Facilities Management	HMGP, FMA, local funds	Multi-year; status: Planned	High
WIN-05	Severe Weather Early Warning System Enhancement [Technology/ / Warning Systems] Need: Delayed community notifications of severe weather events	Tornado, Hurricane, Thunderstorm	Emergency Management	Local funds, grant funding	1–2 years; status: In Progress	Medium
WIN-06	Sinkhole Risk Assessment and Public Outreach [Study/Public Education] Need: Limited information and awareness about areas at risk for sinkholes	Subsidence/ Sinkhole	Public Works, Emergency Management	Local funds, U.S. Geological Survey (USGS) grants	As needed; status: Planned	Medium

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
WIN-07	Enhanced Hazardous Materials Inventory Program [Study/Policy] Need: Potential for spill incidents and insufficient materials tracking	Fixed-facility Chem Release	Emergency Management, Fire Dept.	Local funds	Annual; ongoing	Medium
WIN-08	Business Continuity Planning Initiative [Planning/Policy] Need: Vulnerability of municipal operations to cyber and biological threats	Cyberterrorism , Pandemic	Administration , Emergency Mgmt.	Local funds	1–2 years; status: Planned	High
WIN-09	Heat Wave Response Planning [Planning/ / Public Education] Need: Lack of preparedness for extreme heat impacting vulnerable populations	Heat Wave (Extreme Heat)	Emergency Management	Local funds, Centers for Disease Control and Prevention (CDC) grants	Annual review; status: Ongoing	Medium
WIN-10	Winter Weather Preparedness Campaign [Public Education] Need: Limited awareness and resources for mitigating freezing temperature risks	Extreme Cold, Freezing Temps	Emergency Management, Public Works	Local funds	Annual; ongoing	Low
WIN-11	Facility Security Upgrades [Structural/ /	Terrorism/CBR NE, Cyberattack	Facilities Management, Police Dept.	Local funds, U.S. Department	Multi-year; status: In Progress	Medium

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
	Security] Need: Risk of targeted attacks on municipal buildings and networks			of Homeland Security (DHS) grants		
WIN -12	Storm-Resistant Construction Incentives [Policy/ / Incentive] Need: Need to improve resilience for new and existing homes and businesses	Hurricane, Severe Storm, Tornado	Planning & Zoning Department	Local funds, private sector	1–3 years; status: Active	High
WIN -13	Emergency Communication System Modernization [Technology] Need: Outdated emergency communications limits coordination during disasters	All Hazards	Emergency Management, IT	Local funds, FEMA grants	1–2 years; status: In Progress	High
WIN -14	Pandemic Preparedness Training [Training/ / Public Education] Need: Gaps in response capabilities for infectious and agricultural diseases	Infectious Disease, Animal Disease	Emergency Management, Health Department	Local funds, CDC grants	Annual; ongoing	Medium

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to Town of Windermere. This finding is limited to Appendix D and does not establish that no active initiative existed, because the Annex 5 Active Initiatives List referenced by the prior plan was not present in the adopted-plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 38: Windermere Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/ losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, responsible office, decision/date, and result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During annual review, Windermere should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Windermere Town Council will consider the Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

Town of Eatonville

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

The Town of Eatonville is located in central Orange County, Florida, within the heart of the Greater Orlando metropolitan area. Eatonville is one of the oldest historically African-American municipalities in the United States, bordered by the City of Maitland to the north and east, and the City of Orlando to the south. The Town's geographic boundaries are defined by Kennedy Boulevard to the north, Wymore Road and Interstate 4 (I-4) to the east, and Lake Destiny Road to the west, with Lake Avenue often serving as the southern extent. Eatonville occupies approximately 1.0 square mile of land.

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020 Census counted 2,349 residents in Eatonville; the 2020–2024 American Community Survey (ACS) five-year estimate is 2,290.²⁸ The 2020–2024 ACS estimates 1,001 households and approximately 2.1 persons per household. Median household income is estimated at \$32,768, with 28.2 percent of persons below the poverty line.

LAND USE AND DEVELOPMENT PATTERN

Eatonville's small, largely developed municipal area concentrates homes, public facilities, businesses, and transportation connections within a limited land base. Redevelopment and infrastructure decisions should account for drainage, wind exposure, heat, access, and continuity without treating broader County or tract conditions as uniform within the Town.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data

²⁸ U.S. Census Bureau, data.census.gov profile: Eatonville town, Florida, 2020 Census and 2020–2024 American Community Survey five-year estimates, https://data.census.gov/profile/Eatonville_town,Florida?g=160XX00US1219650.

limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Eatonville's location, historic development pattern, population characteristics, infrastructure, and municipal capabilities shape its vulnerability to the natural, human-caused, and technological hazards identified in the Countywide assessment.

Eatonville's vulnerability is closely linked to both its physical setting and community characteristics. Many homes, businesses, and public facilities are located within areas susceptible to inland flooding, severe thunderstorms, tornadoes, and the effects of tropical storm systems. Flooding risk is elevated due to localized low-lying areas and proximity to surface waters. Critical assets such as Town Hall, the police department, and local schools could be temporarily out of service or sustain damage during major hazard events, disrupting essential services for residents. Public housing and elderly care facilities, as well as sites of historical or cultural significance, are particularly sensitive to the impacts of hazards due to limited mobility, resource constraints, or preservation needs.

The Federal Emergency Management Agency's (FEMA) August 2, 2026, Multiple Loss Properties dataset contains one repetitive-loss record and no severe-repetitive-loss record for Eatonville Community Identification (CID) 120182.

Table 39: Eatonville Hazard Risk and Draft Action-Coverage Crosswalk

Hazard	Probability	Consequence	Overall/ Rank	Action coverage
Floods	High	High	Very High	EAT-01, EAT-02
Tropical Storm/Hurricane	High	High	Very High	EAT-01, EAT-02
Tornado	Moderate	High	High	EAT-04
Wildland Fire	Moderate	High	High	EAT-03
Meteorological Drought	High	Moderate	Moderate	Action coverage pending
Fixed-facility Chemical Release	Moderate	High	Moderate	EAT-05
Severe Thunderstorm/Lightning/Hail	High	Moderate	Moderate	EAT-02, EAT-04
Heat Wave	Moderate	Moderate	Low	EAT-04, EAT-06
Infectious Disease Pandemic	Low	High	Low	EAT-06
Subsidence/Sinkhole	Low	Moderate	Low	EAT-07
Winter Storm (incl. Freezing)	Moderate	Moderate	Moderate	EAT-04, EAT-06
Cyberterrorism	Low	Moderate	Low	EAT-08

Hazard	Probability	Consequence	Overall/ Rank	Action coverage
Terrorism/CBRNE	Low	Moderate	Low	EAT-08
Hydrological Drought	Low	Moderate	Low	Action coverage pending
Animal/Agricultural Disease Outbreak	Low	Low	Low	Action coverage pending

POPULATION AND SOCIAL VULNERABILITY

The ACS indicators in Section 1 describe the Town as a whole and do not identify which residents or households are located within a hazard footprint. Income and poverty estimates indicate that recovery resources may be constrained for some households, while communication, transportation, disability, age, and medical-support needs require current participant-specific information and accessible planning. Project-level decisions should use the best available local data rather than converting townwide percentages into hazard-area counts.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 40: Eatonville Local Asset and Lifeline Exposure

Lifeline Sector	Examples in Town of Eatonville	Known Hazards Affecting Sector
Emergency Services	Eatonville Police, Fire Rescue Station 42	Flood, hurricane, tornado, cyberattacks
Health Care	Hungerford Health Center, clinics	Flood, hurricane, pandemic
Public Education	Hungerford Elementary, Eatonville Elementary	Tornado, severe storm, hurricane
Community Shelter	Town-designated public shelter sites (school gyms, etc.)	Flood, hurricane, tornado
Energy	Electrical substations, OUC lines, fuel stations	Wind, hurricane, severe storm
Water/Wastewater	Town water treatment plant, wastewater system	Flood, drought, hurricane
Communications	Cell towers, fiber lines, 911 dispatch	Hurricane, tornado, cyberattacks
Transportation	Major roads (Wymore Rd, Kennedy Blvd, SR 436), Lynx bus stops	Flood, storm, debris, sinkhole
Food Supply	Local grocery stores, food pantries	Pandemic, supply-chain incidents
Government Facility	Eatonville Town Hall, public works	Flood, hurricane, hazardous material

BUILT AND NATURAL ENVIRONMENT

Eatonville's compact built environment concentrates housing, public facilities, businesses, roads, drainage, utilities, and community resources. Flood, wind, heat, power, communications, and access disruptions can therefore produce Townwide operational consequences even when physical damage is localized. Natural drainage and open-space functions should be considered with infrastructure maintenance and redevelopment decisions.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For Eatonville, heavier rainfall can compound localized drainage and flood exposure; increasing heat can place greater stress on older adults, people with chronic illness, outdoor workers and households with limited cooling resources; and tropical-cyclone rainfall/wind can disrupt housing, utilities and access. These are planning directions, not town-specific probability multipliers.

2021-2026 UPDATE FINDINGS

Table 41: Eatonville 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not support a verified participant-specific 2021-2026 before/after finding for development or vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline from available demographics, land use, assets, and risk information, but no boundary-matched change analysis was located. No material change is identified from available records pending participant confirmation; this does not mean no development occurred.
Change in mitigation priorities	No material change in mitigation priorities was identified from the available 2021/2022 Appendix D record because no deferred action was attributed to this participant and the referenced Annex 5 Active Initiatives List was unavailable. The 2026 action register is therefore the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed participant-specific integration into a comprehensive/land-use plan, code, capital improvement program, budget, emergency operations plan, or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the participant should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and Flood Insurance Rate Map (FIRM):** Eatonville is an active NFIP community (CID 120182) with a current effective FIRM date of September 25, 2009; FEMA does not list a current Community Rating System (CRS) class or discount.
- **Adopted floodplain regulations:** The Town administers adopted floodplain management regulations applicable to development in mapped flood hazard areas.
- **Administering office/designee:** The designated local Floodplain Administrator is responsible for program administration.
- **Permitting/enforcement, including substantial improvement/damage:** Administration includes permit review, elevation or floodproofing documentation, inspections, and enforcement, and documented substantial-improvement and substantial-damage determinations.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** FEMA's August 2, 2026, privacy-protected multiple-loss dataset lists 1 NFIP repetitive-loss property and no NFIP SRL property for CID 120182.

3. Capability Assessment

Table 42 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 42: Eatonville Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
Planning & regulatory	Comprehensive plan; land-development/zoning and building regulations; floodplain and capital-planning mechanisms	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	Eatonville administration; planning/community development; public works; building/code functions; emergency management and response coordination	Confirm the current Local Mitigation Strategy (LMS) representative, responsible Geographic Information Systems (GIS)/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility. No staffing shortfall is inferred without participant confirmation.

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
Financial	Annual operating and capital budgets; legally authorized utility/stormwater revenues; applicable grants	Link each action to a specific budget, Capital Improvement Plan (CIP)/utility, or grant mechanism and document local-match strategy where applicable; update the funding record during annual review.
NFIP / floodplain	See the verified NFIP paragraph above	No material program gap is identified from the verification summarized above; maintain the current ordinance/designee, permitting/enforcement and Substantial Improvement/Substantial Damage (SI/SD), CRS information where applicable, and annual RL/SRL reconciliation.

4. Mitigation Strategy

The action register identifies participant-specific actions and implementation information. Plan finalization requires participant verification of each action's status, responsible office, specific funding path, schedule, cost or cost range, priority, technical basis, and application to existing or future development.

Table 43: Eatonville Mitigation Action Register

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
EAT-01	Floodplain Management and NFIP Compliance [Administrative/Regulatory] Need: Flood risk in developed areas, repetitive loss structures, improved community resilience	Flood, Tropical Storm/ Hurricane	Town of Eatonville Planning Department	Town funds, FEMA Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA)	Ongoing; status: Active	High
EAT-02	Stormwater System Upgrades [Structural] Need: Insufficient drainage, urban flooding	Flood, Severe Thunderstorm, Tropical Storm/ Hurricane	Public Works Department	Town funds, FEMA HMGP, Community Development Block Grant	1–5 years; status: Planning	Medium

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
	impacting homes/businesses			Programs (CDBG)		
EAT-03	Community Wildfire Preparedness and Vegetation Management [Non-structural, Structural] Need: Increased wildfire risk from overgrown parcels and interface areas	Wildland Fire	Public Works Department	State grants, local funds	2–3 years; status: Initiated	Medium
EAT-04	Emergency Warning System Improvements [Non-structural] Need: Existing warning systems require modern upgrades for hazard-specific alerts	Tornado, Severe Thunderstorm, Extreme Heat, Winter Storm	Emergency Management	FEMA HMGP, Urban Area Security Initiative (UASI)	1–2 years; status: In progress	High
EAT-05	Hazmat Facility Inventory and Public Outreach [Administrative/ / Regulatory, Public Education] Need: Risk from hazardous materials storage near residential areas	Hazardous Materials	Emergency Management and Town Planning	Local funds, state grants	Ongoing; status: Active	Medium
EAT-06	Vulnerable Population Shelter Improvements [Structural, Non-structural] Need: Limited capacity and accessibility of shelters for vulnerable populations during emergencies	Pandemic, Extreme Heat, Winter Storm	Town of Eatonville and Public Works	FEMA HMGP, State Emergency Shelter Funding, nonprofit grants	2–4 years; status: Pending funding	High
EAT-07	Sinkhole Risk Mapping and Response Planning [Administrative/ Regulatory, Mapping] Need: Incomplete identification of sinkhole-prone areas jeopardizes response	Subsidence/ Sinkhole	Emergency Management	Local funds, U.S. Geological Survey (USGS), FEMA HMGP	1–3 years; status: Planning	Low
EAT-08	Cybersecurity Enhancement for Critical Facilities	Cyberattack, Terrorism/ CBRNE	IT Department,	FEMA grants, U.S. Department	1–2 years; status: Ongoing	Medium

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
	[Administrative/ Regulatory] Need: Increasing vulnerability of municipal systems to cyber incidents		Town Administration	of Homeland Security (DHS) grants		

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to Town of Eatonville. This finding is limited to Appendix D and does not establish that no active initiative existed, because the Annex 5 Active Initiatives List referenced by the prior plan was not present in the adopted-plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 44: Eatonville Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/ losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County Emergency Management and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, Eatonville should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Eatonville Town Council will consider the Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

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Ranger Drainage District

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

Ranger Drainage District (RDD) covers 10.38 square miles, or approximately 6,643 acres, in eastern Orange County. It is a special-purpose drainage district rather than a Census geography.²⁹ The District's legal boundary in eastern Orange County includes drainage infrastructure and areas influenced by lakes, wetlands, and adjacent development.

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

RDD is situated in eastern Orange County, Florida, encompassing areas that reflect both rural and urbanizing characteristics. Ranger Drainage District is not a Census-designated geography, so the Census Bureau does not publish a standalone district population or demographic profile.

LAND USE AND DEVELOPMENT PATTERN

RDD is a special-purpose drainage district rather than a land-use authority or Census geography. Its development context includes residential, transportation, utility, wetland, open-space, and other uses within and adjacent to the legal district boundary. Land-use controls remain with Orange County or the applicable municipality, while the District's mitigation role centers on drainage infrastructure, water conveyance, maintenance access, and coordination with those land-use authorities.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

²⁹ Ranger Drainage District, About Us, district area, creation date, and canal system, <https://www.rangerdrainagedistrict.com/about-us>; Florida Legislature, Chapter 2018-167 (House Bill 997), Ranger Drainage District boundary legislation, <https://www.flhouse.gov/Sections/Bills/billsdetail.aspx?BillId=61680>.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Tropical storms and hurricanes bring widespread impacts, including wind damage, power outages, and heightened flood risk. Residential dwellings, especially those built before modern building codes, as well as roadways and bridges, are highly vulnerable to structural damage and service interruptions. The District's drainage facilities may be overwhelmed, contributing to local flooding and restricting access for emergency services.

Wildland fire poses a risk to undeveloped and forested portions of the District. Periods of drought further increase this vulnerability, affecting natural resources, agricultural activities, and water supply reliability. Severe thunderstorm activity, including tornadoes, regularly affects the area, with impacts ranging from property damage to injury and fatalities. Lightning strikes in particular have the potential to harm both built and natural environments.

Extreme heat and meteorological drought stress residents, particularly vulnerable populations such as older adults and those with chronic health conditions. Extended heat waves may lower water levels and limit cooling resources, while droughts can reduce the water supply for irrigation and domestic consumption, impacting economic activities dependent on agriculture and landscaping.

Table 45: Ranger Drainage District Hazard Risk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Floods	High	Major	Very High	RDD-01, RDD-02, RDD-03, RDD-04, RDD-05, RDD-06, RDD-07
Tropical Storm/Hurricane	High	Major	Very High	RDD-01, RDD-02, RDD-05
Severe Thunderstorm/Lightning/Hail	High	Moderate	High	RDD-01, RDD-05, RDD-06
Wildland Fire (Wildfire)	Moderate	Moderate	Moderate	RDD-04
Tornado	Moderate	Moderate	Moderate	Action coverage pending
Meteorological Drought (Drought)	Moderate	Moderate	Moderate	Action coverage pending
Fixed-Facility Chemical Release (Hazmat)	Low	Major	Moderate	Action coverage pending
Subsidence/Sinkhole	Low	Moderate	Low	Action coverage pending
Extreme Cold/Wind Chill	High	Moderate	High	Action coverage pending
Infectious Disease Pandemic	Low	Major	Moderate	Action coverage pending
Animal/Agricultural Disease Outbreak	Low	Moderate	Low	Action coverage pending

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Heat Wave (Extreme Heat)	Moderate	Moderate	Moderate	Action coverage pending
Cyberterrorism	Low	Major	Moderate	Action coverage pending
Freezing Temperatures	Low	Limited	Low	Action coverage pending
Hydrological Drought	Low	Moderate	Low	Action coverage pending
Terrorism/CBRNE	Low	Major	Moderate	Action coverage pending

POPULATION AND SOCIAL VULNERABILITY

RDD has no standalone Census population or verified districtwide social-vulnerability profile. Population vulnerability is therefore evaluated qualitatively for residents, workers, property owners, and service users who depend on drainage, road access, utilities, and emergency services. County- or tract-level demographic values should not be attributed to the District without a boundary-matched analysis.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 46: Ranger Drainage District Local Asset and Lifeline Exposure

Lifeline Category	Facility Type	Primary Hazards	Potential Impacts
Stormwater Infrastructure	Canals, pumps, basins	Flood, hurricane	Loss of flood protection, property damage
Transportation	Roads, bridges	Flood, severe storm, hurricane	Restricted access, emergency response delays
Water/Wastewater	Septic, lift stations (supporting)	Flood, severe storm	Service disruption, public health hazards
Energy & Communications	Utility lines/substations	Hurricane, tornado, severe storm	Outages, communications loss
Community Facilities	Schools/municipal in adjacent areas	Flood, hurricane	Shelter accessibility, evacuee risk
Hazardous Materials	Industrial/agricultural storage	Flood, severe storm	Chemical release, environmental hazard
NFIP Repetitive Loss Properties	Residential, commercial	Flood	Financial loss, increased vulnerability

BUILT AND NATURAL ENVIRONMENT

RDD's canals, ditches, crossings, control structures, access routes, wetlands, open space, and adjacent developed or agricultural land function as one hydrologic system. Flooding, tropical-cyclone rainfall,

debris, erosion, drought, wildfire, and infrastructure deterioration can reduce drainage performance or access.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For Ranger Drainage District, the most important climate-adjusted pathway is heavier rainfall interacting with canals, control structures, pumps, maintenance access, and downstream development. Heat/drought may affect vegetation, fire weather and water conditions.

2021–2026 UPDATE FINDINGS

Table 47: Ranger Drainage District 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available records do not provide a verified before/after finding for development or vulnerability within the District boundary. The 2026 annex establishes a current drainage system and service-dependency baseline, while land-use change is controlled by Orange County or the applicable municipality. No material change is identified from available records pending District confirmation.
Change in mitigation priorities	No material shift in the District's core drainage and flood-mitigation priority was identified. The prior emergency-pumps action is proposed for carry-forward or consolidation into the current RDD action register if the need remains; final disposition remains subject to District confirmation.
Integration accomplished since prior approval	No completed District-specific integration into a capital, maintenance, budget, interlocal, or emergency/continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, RDD should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and Flood Insurance Rate Map (FIRM):** RDD is not separately listed as an NFIP community. Floodplain regulation depends on the Orange County or municipal jurisdiction in which a District project or property is located.
- **Adopted floodplain regulations:** The applicable host local government's adopted floodplain regulations govern development; RDD does not exercise general land-use or floodplain-regulatory authority.
- **Administering office/designee:** The Floodplain Administrator for the applicable host local government administers NFIP requirements, with District coordination as needed for drainage projects and data.

- **Permitting/enforcement, including substantial improvement/damage:** RDD coordinates with the applicable local government for floodplain permits and related compliance; substantial-improvement and substantial-damage determinations are not a separate District function.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** Public multiple-loss information is reported by NFIP community and does not provide a verified District-specific RL/SRL aggregate; no District-specific aggregate was established for this update.

3. Capability Assessment

Table 48 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 48: Ranger Drainage District Capability Summary

Capability Type	Participant Mechanisms/ Resources	Gap/ Improvement Needed
Planning & regulatory	District enabling authority; drainage operations and maintenance; capital planning; interlocal coordination	Document the current District authority, maintenance/capital mechanisms, and how 2026 risk findings/actions are incorporated into District decisions; no prior-cycle integration record was verified in this draft.
Administrative & technical	District board, management, engineering, maintenance resources, contractors, and County/municipal coordination	Confirm current board/management, engineering/maintenance action owners, GIS/inventory data ownership, and a formal annual action-and-asset update process.
Financial	District budget and legally available revenues; partner contributions and applicable grants	Associate each action with a specific District budget, capital, or grant mechanism and document local-match needs where applicable.
NFIP/ floodplain	RDD is not the local NFIP regulator; see the verified NFIP paragraph above	The document that hosts the NFIP community regulates each project/property and retains coordination evidence; RDD has no separate NFIP program.

4. Mitigation Strategy

The Countywide mitigation goals, prioritization method, benefit-versus-cost screening, and timeframe definitions are incorporated by reference. The action register identifies participant-specific actions and implementation information.

Table 49: Ranger Drainage District Mitigation Action Register

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe / Status	Priority
RDD-01	Drainage System Maintenance Program Need: Reduce flood risk and maintain capacity of drainage infrastructure	Floods, Severe Thunderstorm/ Lightning/ Hail, Hurricane	District Operations	Annual operating budget	Ongoing; status: Active	High
RDD-02	Culvert Replacement Initiative [Infrastructure Upgrade] Need: Upgrade aging culverts to prevent blockages and ensure stormwater flow	Floods, Tropical storm/ hurricane	District Engineering	Capital funds, grants	2024–2026; status: In progress	Moderate
RDD-03	Stormwater System Inventory & Mapping [Data Collection/ Planning] Need: Identify vulnerabilities and support future flood mitigation projects	Floods	District GIS Team	Operating budget	Initial phase 2024; status: Initiated	High
RDD-04	Vegetation Management Policy [Prevention]	Wildland fire (Wildfire), Floods	District Operations	Operating budget	Annual; ongoing	Moderate

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe / Status	Priority
	Need: Reduce wildfire and flood risk via routine vegetation clearing along drainage corridors					
RDD-05	Emergency Response Coordination [Coordination/ Planning] Need: Enhance preparedness and multi-agency response during major storm events	Floods, Hurricane, Severe Thunderstorm/ Lightning/ Hail	District Manager, Orange County Emergency Management	County funds, FEMA	Ongoing; status: Active	High
RDD-06	Community Flood Hazard Outreach [Public Education] Need: Increase resident awareness of drainage system function and flood safety	Floods, Severe Thunderstorm/ Lightning/ Hail	District Outreach Office	Operating budget	Annual; ongoing	Moderate
RDD-07	NFIP Coordination and Compliance [Regulatory/ Administrative] Need: Support County-wide compliance with National Flood Insurance Program standards	Floods	District Compliance Officer	Operating budget	Ongoing; status: Active	High

STATUS OF PRIOR ACTIONS

The unfinished Ranger Drainage District action identified in the 2021/2022 LMS Appendix D is reconciled in Countywide Table 22. The prior emergency-pumps project is proposed for carry-forward/consolidation into RDD-01 if the District confirms that the need remains.

5. Maintenance, Integration, and Adoption

Table 50: Ranger Drainage District Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's Local Mitigation Strategy (LMS) representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the district budget, capital program, operations/maintenance program, engineering standards, and interlocal agreements. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, RDD should evaluate this annex's risk findings and actions across inspection and maintenance schedules, capital planning, budgeting, asset management, and coordination with Orange County, affected municipalities, utilities, and emergency management partners. The record should identify the process reviewed, the responsible party, the decision, and the integration outcome.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Ranger Drainage District Board of Supervisors will consider the Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

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Orange County (Unincorporated)

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

The unincorporated Orange County planning area addressed by this annex is the portion of Orange County governed directly by the Board of County Commissioners rather than an incorporated municipality. It includes urban, suburban, rural, agricultural, and conservation settings and is interwoven with municipal boundaries, major transportation corridors, lakes, wetlands, and other natural systems. Because this annex concerns only the unincorporated area, Countywide population or exposure totals should not be treated as unincorporated-area totals without a boundary-matched analysis.

The boundaries of unincorporated Orange County are shaped by the jurisdictional limits of neighboring cities such as Orlando, Winter Park, Ocoee, Apopka, and Maitland. To the north, the County is bordered by Seminole County; to the east, by Brevard and Osceola Counties; to the south, by Osceola County; and to the west, by Lake County. The area consists of residential neighborhoods, commercial corridors, agricultural zones, and substantial conservation land.

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

Unincorporated Orange County is not a standalone Census geography. A current population total must be produced with a documented Geographic Information Systems (GIS) allocation or by subtracting contemporaneous incorporated populations using boundaries and population estimates from the same date. No current total from that method is documented in this plan.³⁰

LAND USE AND DEVELOPMENT PATTERN

The unincorporated area includes urban, suburban, rural, agricultural, and conservation settings. Because growth and service demands vary substantially across this geography, development-related vulnerability must be evaluated with boundary-current land-use, parcel, infrastructure, and hazard data rather than a single Countywide density or exposure assumption.

³⁰ U.S. Census Bureau, Geographic Areas Reference Manual and Census geographic-area guidance, <https://www.census.gov/programs-surveys/geography/guidance/geo-areas.html>; unincorporated Orange County is not presented as a standalone QuickFacts geography.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Orange County faces significant vulnerability to a range of hazards, shaped by its rapidly growing population, extensive development, and presence of critical infrastructure. The most impactful hazards include floods, hurricanes and tropical storms, severe thunderstorms, tornadoes, droughts, wildland fires, hazardous materials releases, and cyberattacks, as well as episodic risks such as pandemics, extreme heat, and subsidence.

Hurricanes and tropical storms pose widespread risks through wind damage, flooding, downed power lines, and debris impacts. Major storms have historically disrupted the power supply, damaged critical facilities, including hospitals and Emergency Operations Centers (EOCs), and caused extensive property damage. Tornadoes, while less frequent, cause severe localized destruction, especially to mobile homes, manufactured housing, and exposed infrastructure, resulting in both immediate physical loss and longer-term community instability.

Wildland fire vulnerability is concentrated in the County's undeveloped and peri-urban areas, with the potential for fire spread into residential zones during periods of prolonged drought or extreme heat. Large tracts of open space and preserved wetlands are susceptible, and homes adjacent to these areas face increased risk during heightened fire weather conditions.

Table 51: Orange County (Unincorporated) Hazard Risk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Floods	High	High	Very High	OCU-01, OCU-02, OCU-03, OCU-06, OCU-09
Tropical Storm/Hurricane	High	High	Very High	OCU-01, OCU-02, OCU-03, OCU-06, OCU-09
Severe Thunderstorm/ Lightning/Hail	High	Moderate	High	OCU-02, OCU-03, OCU-06, OCU-09
Tornado	Moderate	High	High	OCU-05, OCU-06, OCU-09
Winter Storm (Extreme Cold, Freezing Temps)	High	Moderate	High	OCU-06, OCU-09

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Wildland Fire (Wildfire)	High	Moderate	High	OCU-04, OCU-06, OCU-09
Fixed-Facility Chemical Release	Moderate	Moderate	Moderate	OCU-06, OCU-08, OCU-09
Drought (Meteorological & Hydrological)	Moderate	Moderate	Moderate	OCU-04, OCU-06, OCU-09
Extreme Heat (Heat Wave)	Moderate	Moderate	Moderate	OCU-06, OCU-09
Infectious Disease Pandemic	Low	High	Moderate	OCU-06, OCU-07, OCU-09
Cyberterrorism	Low	High	Moderate	OCU-06, OCU-09
Animal/ Agricultural Disease Outbreak	Low	Moderate	Low	OCU-06, OCU-07, OCU-09
Subsidence/ Sinkhole	Low	Moderate	Low	OCU-06, OCU-09, OCU-10
Terrorism/CBRNE	Low	Moderate	Low	OCU-06, OCU-08, OCU-09

POPULATION AND SOCIAL VULNERABILITY

Countywide demographic values in the Context chapter are contextual proxies, not unincorporated-area estimates. Table 52 distinguishes those Countywide indicators from measures that require boundary-matched analysis for the unincorporated area. Current local information on age, disability, language, housing, transportation, medical-support needs, and household resources should be combined with hazard and service-area data when prioritizing warning, evacuation, sheltering, cooling, continuity, and recovery actions.

Table 52: Orange County (Unincorporated) Population Exposure and Vulnerability Indicators

Indicator	Metric/Estimate	Key Considerations
Population (American Community Survey [ACS] Estimate)	Not published as a standalone ACS geography	Requires current boundary-matched allocation
Households without Vehicles	Not verified for current boundaries	Do not substitute Countywide rate
Non-English-speaking households	38.5% Countywide proxy (persons age 5+)	Language-other-than-English; not limited English proficiency (LEP) or unincorporated-specific
Residents below the poverty line	12.4% Countywide proxy (persons)	Not a household or unincorporated-specific rate

Indicator	Metric/Estimate	Key Considerations
Seniors (65+)	14.3% Countywide proxy	Not an unincorporated-specific rate
Disability prevalence	7.9% Countywide proxy (under age 65)	Age-limited denominator; not unincorporated-specific
Manufactured housing units	Not verified for current boundaries	Requires current housing and boundary overlay

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 53: Orange County (Unincorporated) Local Asset and Lifeline Exposure

Facility Type	Example Assets	Primary Hazards	Noted Vulnerabilities
Emergency Services	Fire stations, emergency medical services (EMS) posts, shelters	Flood, Hurricane, Tornado	Access limitations, power outages
Healthcare	Hospitals, clinics	Hurricane, Flood, Severe Storm	Power, water supply, road access
Education/ Shelters	Schools, colleges	Flood, Wildfire, Hurricane	Secondary shelter risk, wind/flood
Utilities	Water/wastewater plants, substations	Flood, Hurricane, Tornado	Equipment failure, contamination
Communications	Cell towers, data centers	Severe Storm, Hurricane	Connectivity loss, storm damage
Transportation	Roads, bridges, railways	Flood, Hurricane, Sinkhole	Route closure, structural failure
Food/Fuel Supply	Distribution centers, stores, stations	Flood, Hurricane	Supply disruption, access limitation
Government Facilities	EOC, admin offices	Hurricane, Tornado, Flood	Operational disruption, access limits
Hazardous Materials	Industrial/agricultural storage sites	Flood, Hurricane, Chemical Release	Spill, contamination, evacuation zone

BUILT AND NATURAL ENVIRONMENT

The unincorporated area contains extensive and varied housing, commerce, public facilities, roads, utilities, agriculture, wetlands, lakes, conservation lands, and wildland-urban-interface areas. Exposure and mitigation opportunities differ across this large geography. Growth, drainage modification, infrastructure

aging, and loss or restoration of natural storage can alter flood, heat, wildfire, wind, and continuity consequences.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For unincorporated Orange County, growth can amplify climate risk by adding impervious cover, extending development into the wildland–urban interface and increasing dispersed service demand. Heavier rainfall, increasing heat and potentially wetter/stronger tropical cyclones should be incorporated into drainage, capital, land-use, housing, cooling and continuity decisions at the project scale.

2021–2026 UPDATE FINDINGS

Table 54: Orange County (Unincorporated) 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not provide a boundary-matched 2021–2026 comparison of development and vulnerability for the unincorporated area. The 2026 annex establishes a current baseline but Countywide totals are not treated as unincorporated-area change measures. No material change is identified from available records pending County confirmation; this does not mean no development occurred.
Change in mitigation priorities	Core drainage/flood and critical-facility continuity priorities continue in the proposed 2026 strategy. Legacy Public Works drainage/flood and backup-power actions are mapped to current OCU actions where applicable, while conflicting or incomplete prior records remain subject to County confirmation before final disposition.
Integration accomplished since prior approval	No completed unincorporated-area-specific integration into a comprehensive plan, code, Capital Improvement Plan (CIP), budget, emergency operations plan (EOP), or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the County should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and Flood Insurance Rate Map (FIRM):** The unincorporated area is covered by Orange County NFIP CID 120179, with a current effective FIRM date of September 24, 2021. FEMA lists CRS Class 5, with a 25-percent Special Flood Hazard Area (SFHA) discount and a 10-percent non-SFHA discount.
- **Adopted floodplain regulations:** Orange County Chapter 19 provides the County floodplain-management framework for the unincorporated area.

- **Administering office/designee:** Orange County Public Works, Stormwater Management Division, administers the floodplain program in coordination with Building Safety.
- **Permitting/enforcement, including substantial improvement/damage:** The County administers floodplain permits, inspections, enforcement, elevation documentation, and determinations of substantial improvement and substantial damage.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** FEMA's August 2, 2026, privacy-protected multiple-loss dataset contains 50 records for CID 120179, including 49 flagged NFIP RL properties and 2 flagged severe-RL properties; the categories may overlap.

3. Capability Assessment

Countywide capability descriptions are incorporated by reference. Table 55 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 55: Orange County (Unincorporated) Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap/ Improvement Needed
Planning & regulatory	Comprehensive plan; land development and building regulations; floodplain, stormwater, and capital-planning mechanisms	Document specific prior-cycle integrations into the comprehensive plan, land-development regulations, Capital Improvement Plan (CIP), budget, Emergency Operations Plan (EOP), or other mechanisms; no unincorporated-area-specific integration record was verified in this draft.
Administrative & technical	Emergency management; planning and zoning; public works/stormwater; building safety; fire rescue; utilities; GIS	Confirm current action owners, boundary-matched GIS/asset data owners, continuity roles, and the annual process for updating exposure, loss, and action status.
Financial	County operating and capital budgets; utility/stormwater revenues, where authorized; applicable grants	Link each action to a specific County operating/capital account or grant program and document local-match requirements where applicable.
NFIP/ floodplain	Orange County administers NFIP CID 120179 for the unincorporated area; see the verified NFIP paragraph above	No material program gap is identified from the verification summarized above; maintain Chapter 19

Capability Type	Participant Mechanisms/Resources	Gap/ Improvement Needed
		administration, CRS documentation, permitting/enforcement, SI/SD records, and annual RL/SRL reconciliation.

4. Mitigation Strategy

The Countywide mitigation goals, prioritization method, benefit-versus-cost screening, and timeframe definitions are incorporated by reference. The action register identifies participant-specific actions and implementation information.

Table 56: Orange County (Unincorporated) Mitigation Action Register

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
OCU-01	Community Floodplain Property Acquisition [Property Acquisition & Conservation] Need: Frequent flooding of residential properties	Flood, Hurricane	Orange County Office of Emergency Management (OEM) & Public Works	Hazard Mitigation Grant Program (HMGP), FMA, Local Funds	Ongoing; status: Active	High
OCU-02	Critical Facility Generator Retrofits [Structural Retrofit] Need: Power loss impacting emergency services	Hurricane, Severe Thunderstorm, Flood	Orange County Public Safety/EOC	HMGP, EOC Grants, Local Funds	1–3 Years; status: Implementation Phase	High
OCU-03	Stormwater Infrastructure Enhancements [Infrastructure Upgrade] Need: Insufficient drainage causing urban flooding	Flood, Severe Thunderstorm, Hurricane	Orange County Public Works	Community Development Block Grant (CDBG), HMGP, Local Funds	Ongoing	High
OCU-04	Wildfire Fuel Reduction Program [Vegetative Fuel Management] Need: Risk of wildfire spread near communities	Wildland Fire, Drought	Orange County Fire Rescue	Pre-Disaster Mitigation (PDM), Local Funds	Annual Review; status: Annual Implementation	Medium
OCU-05	Tornado Safe Room Initiative [Construction of Safe Rooms] Need: Vulnerability of	Tornado, Extreme Wind Events	Orange County Building Division	HMGP, Local Funds	As Funding Permits; status: In Development	Medium

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
	residents/ critical workers to tornadoes					
OCU-06	Emergency Warning System Upgrades [Public Information/ Warning] Need: Gaps in real-time notification for weather and CBRNE events	All Hazards	Orange County Emergency Management	Emergency Management Performance Grant (EMPG), Urban Area Security Initiative (UASI), Local Funds	1–2 Years; status: Implementation Phase	High
OCU-07	Infectious Disease Pandemic Preparedness [Planning, Supplies, Outreach] Need: Impacts to health, business, supply chain continuity	Infectious Disease Pandemic, Animal Disease	Orange County Health Services	Administration for Strategic Preparedness and Response (ASPR), Health and Human Services (HHS), Local Funds	Ongoing; status: Annual Review	High
OCU-08	Hazardous Material Fixed Facility Planning [Planning & Outreach] Need: Releases, transportation incidents near populations	Hazardous Materials, Terrorism/ CBRNE	Orange County Environmental Protection	Hazardous Materials Emergency Preparedness (HMEP), Local Funds	1–3 Years; status: Ongoing	Medium
OCU-09	Cybersecurity Resilience Improvements [Technology, Planning] Need: Disruption to critical local government operations	Cyberterrorism, All Hazards	Orange County IT Department	U.S. Department of Homeland Security (DHS) Grants, Local Funds	Ongoing; status: Under Review	Medium
OCU-10	Subsidence/ / Sinkhole Risk Mapping [Risk Assessment & Outreach] Need: Unmapped and public-unaware sinkhole risk areas	Subsidence/ Sinkhole	Orange County Public Works	HMGP, Local Funds	As Funding Permits; status: Project Initiation	Medium

STATUS OF PRIOR ACTIONS

Prior unfinished actions attributed to Orange County departments and County-sponsored partners in the 2021/2022 LMS Appendix D are reconciled in Countywide Table 22. The table addresses legacy Public Works drainage and flood projects, critical-facility backup-power needs, and other County actions, with proposed mappings to OCU-01, OCU-02, and OCU-03 where applicable. Several Public Works entries

were listed as both deferred and completed in the prior LMS; their final status depends on County confirmation that the records refer to the same scope.

5. Maintenance, Integration, and Adoption

Table 57: Orange County (Unincorporated) Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County OEM will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, Orange County should evaluate this annex's risk findings and actions through comprehensive planning, land-development regulation, capital programming, stormwater and floodplain management, housing and infrastructure programs, emergency management, and budgeting. The record should identify the specific process reviewed, the responsible office, the decision, and the integration outcome.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Orange County Board of County Commissioners will consider the

Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

Greater Orlando Aviation Authority

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

GOAA's planning area consists principally of Orlando International Airport, approximately 11,605 acres, and Orlando Executive Airport, approximately 967 acres. These are operational facility areas rather than Census geographies. The annex therefore evaluates runways, terminals, airfield systems, utilities, cargo and support functions, tenant areas, surface transportation, stormwater features, secured operations, and continuity dependencies as an interconnected aviation system rather than as a residential jurisdiction.³¹

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

Greater Orlando Aviation Authority (GOAA) facilities do not have a conventional resident population. Exposure varies over time among passengers, employees, tenants, contractors, meeters-and-greeters, and other visitors, so annual traffic, employment, and peak occupancy must be kept as separate measures.

MCO handled more than 57 million passenger movements annually in the latest verified GOAA reporting cited for this update. Travelers may include children, older adults, unaccompanied minors, and people requiring additional assistance. Annual passenger throughput is not a daily population, and no current airport-wide employee total is stated here.³²

GOAA's workforce and traveler population includes people with varied communication needs. Emergency information should use accessible, multilingual methods appropriate to the needs of verified passengers and the workforce. This annex does not assign airport-wide language percentages or infer them from surrounding Census data. GOAA facilities serve travelers with varied mobility, sensory, medical, communication, and cognitive needs.

³¹ Greater Orlando Aviation Authority, Orlando International Airport fact sheet (11,605 acres), <https://assets.ctfassets.net/qiecpoxp4bka/2DEapghklpQbAHJcFyn5LX/2e7df5989f866b8185426861a6a90711/Fact-Sheet.pdf>; Orlando Executive Airport general information (967 acres), <https://flymco.com/orlando-executive-airport/general-information/>.

³² Greater Orlando Aviation Authority, Orlando International Airport traffic statistics, <https://flymco.com/airport-business/traffic-statistics/>; 2025 GOAA releases report more than 57 million passengers in 2024, <https://flymco.com/media/press-releases/4/>.

Vulnerability considerations include travelers with limited English proficiency (LEP) or disabilities and access and functional needs (AFN); older adults; children and unaccompanied minors; medically dependent travelers; lower-income workers and contractors; people without stable housing; organized groups; and people dependent on disrupted transit. These factors affect warning, accountability, evacuation, sheltering, medical support, and continuity of airport operations.

LAND USE AND DEVELOPMENT PATTERN

GOAA's planning area is an operational aviation system rather than a residential jurisdiction. Runways, terminals, airfield systems, utilities, cargo and support functions, tenant areas, surface transportation, stormwater features, and conservation lands must be assessed as interdependent assets, while population exposure is treated as time-varying passenger and workforce presence.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

GOAA operates the Orlando International Airport and Orlando Executive Airport. Concentrated passenger and employee populations, terminals, runways, control towers, utilities, support buildings, and reliance on continuous operations create participant-specific exposure to natural, human-caused, and technological hazards.

People are particularly at risk during hazard events such as hurricanes, tornadoes, and pandemics, given the high daily population of employees, passengers, and visitors. Disruption to transportation services can strand thousands of travelers, inhibit emergency medical evacuations, and impede the flow of essential goods. Populations with access and functional needs, as well as non-English speakers, may be disproportionately affected by mobility and communication challenges during emergencies.

GOAA's property and infrastructure are highly vulnerable to several hazards, as indicated in Table 58.

Table 58: GOAA Hazard Risk

Hazard	Probability	Consequence	Overall / Rank	Action Coverage
Floods	High	High	Very High	GOAA-01, GOAA-03, GOAA-04, GOAA-11

Hazard	Probability	Consequence	Overall / Rank	Action Coverage
Tropical Storm/Hurricane	High	High	High	GOAA-01, GOAA-02, GOAA-03, GOAA-04
Tornado	Moderate	High	Moderate	GOAA-02
Severe Thunderstorm/ Lightning/Hail	High	Moderate	Moderate	GOAA-01, GOAA-02, GOAA-03, GOAA-10
Wildland Fire (Wildfire)	Low	Moderate	Low	GOAA-05
Fixed-Facility Chemical Release	Low	High	Moderate	GOAA-04
Heat Wave (Extreme Heat)	Moderate	Low	Low	GOAA-02, GOAA-09
Subsidence/Sinkhole	Low	Low	Low	GOAA-08
Terrorism/CBRNE	Low	High	Moderate	GOAA-03, GOAA-06
Meteorological Drought	Low	Low	Low	Action coverage pending
Infectious Disease Pandemic	Low	High	Moderate	GOAA-07
Cyberterrorism (Cyberattack)	Moderate	High	Moderate	GOAA-03, GOAA-06

POPULATION AND SOCIAL VULNERABILITY

Exposure at GOAA facilities varies by time of day, season, flight activity, workforce scheduling, events, and irregular operations; annual passenger throughput is not an occupancy count. Planning should account for passengers, employees, tenants, contractors, and visitors, including children, older adults, people with disabilities or medical needs, travelers with limited English proficiency, and people unfamiliar with local emergency procedures. Accessible and multilingual warning, wayfinding, sheltering, transportation, and continuity measures, therefore, should be based on operational data rather than a single Census denominator.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 59: GOAA Local Asset and Lifeline Exposure

Facility Type	Facility Description	Typical Hazards at Risk
Emergency Services	Fire Rescue, Airport Police, and emergency medical services (EMS) stations	Hurricane, tornado, thunderstorm, hazmat release
Health Care	First Aid Centers, hospital transfer points	Pandemic, heat wave, hurricane

Facility Type	Facility Description	Typical Hazards at Risk
Transportation	Terminals, runways, taxiways, bus stations	Flooding, hurricane, tornado, sinkhole
Communications	Control Towers, Operations Centers	Cyberattack, hurricane, thunderstorm
Energy	Substations, generators, fuel storage	Hurricane, extreme heat, flood
Water/Wastewater	Treatment plants, pumping stations	Flood, drought, hazardous materials
Food/Shelter	Shelters, food service areas	Hurricane, drought, pandemic
Government	Command centers, administrative offices	Hurricane, cyberattack, terrorism
Hazardous Materials	Fuel farms, chemical storage	Hazmat release, hurricane, thunderstorm

BUILT AND NATURAL ENVIRONMENT

Airport resilience depends on the combined performance of terminals, runways, airfield systems, utilities, communications, fuel and support functions, access roads, stormwater systems, and conservation lands. Flood, wind, lightning, heat, wildfire, hazardous materials, cyber, and power events can cascade across operations.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

Future conditions and climate-adjusted local implications. For GOAA, increasing heat can affect outdoor work, cooling demand, pavement and equipment operations, while heavier rainfall and tropical-cyclone conditions can affect airfield drainage, surface access, utilities, terminal operations, and regional transportation links. Current airport engineering, asset, drainage, continuity, and operational data are needed to translate regional climate findings into facility-level design and action priorities; Countywide climate signals do not by themselves change GOAA's adopted hazard ratings.

2021–2026 UPDATE FINDINGS

Table 60: GOAA 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not provide a quantified before/after comparison of GOAA-managed development, asset exposure, or vulnerability for 2021–2026. The 2026 annex establishes a current airport-system baseline. No material change is identified from available records pending GOAA confirmation; this does not mean no airport development or capital work occurred.

Update Element	2021–2026 Finding and Basis
Change in mitigation priorities	No material change in mitigation priorities was established from the available 2021/2022 deferred-project record because no deferred GOAA action was identified there, and the referenced Annex 5 Active Initiatives List was unavailable. The 2026 GOAA action register is the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed GOAA-specific integration into airport master/capital planning, design standards, budgets, the Airport Emergency Plan, or continuity mechanisms during the prior cycle was verified in the records available for this draft. Before submission, GOAA should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and Flood Insurance Rate Map (FIRM):** GOAA is not separately listed as an NFIP community. Floodplain and NFIP administration for airport property is provided by the local government with jurisdiction over the property or project. Orange County (CID 120179) and the City of Orlando (CID 120186) have current effective FIRM dates of September 24, 2021, and CRS classes 5 and 6, respectively.
- **Adopted floodplain regulations:** The applicable Orange County or City of Orlando floodplain regulations govern airport development according to project location.
- **Administering office/designee:** GOAA coordinates with the applicable local Floodplain Administrator and with its own engineering, facilities, operations, and emergency management functions.
- **Permitting/enforcement, including substantial improvement/damage:** GOAA coordinates applicable permitting, elevation documentation, inspections, enforcement, and substantial improvement/substantial damage review with the local Floodplain Administrator.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** The privacy-protected public multiple-loss dataset does not identify records as GOAA facilities; GOAA's reviewed asset record identifies no known repetitive-loss or severe-repetitive-loss managed facility.

3. Capability Assessment

Table 61 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 61: GOAA Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
Planning & regulatory	Airport master plans; capital program; design standards; Airport Emergency Plan and continuity procedures	Document current airport master/capital, design, emergency, and continuity mechanisms and where the 2026 risk findings/actions are integrated; no prior-cycle integration record was verified in this draft.
Administrative & technical	Emergency management, operations, engineering/construction, public safety, information technology, and tenant coordination	Confirm current GOAA LMS representative, engineering/facilities/operations action owners, asset/GIS data owners, and annual action-tracking responsibility.
Financial	Airport revenues and capital budgets; applicable state/federal aviation and mitigation programs	Link each action to a specific GOAA capital/operating budget, tenant responsibility, or applicable grant program and document match needs where relevant.
NFIP/ floodplain	GOAA coordinates with the local government having regulatory jurisdiction; see the verified NFIP paragraph above	Retain evidence identifying the host jurisdiction for each floodplain project and the related permitting, inspection, elevation, and substantial-improvement/substantial-damage coordination; GOAA has no separate NFIP program.

4. Mitigation Strategy

The Countywide mitigation goals, prioritization method, benefit-versus-cost screening, and timeframe definitions are incorporated by reference. The action register identifies participant-specific actions and implementation information.

Table 62: GOAA Mitigation Action Register

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
GOAA-01	Stormwater System Upgrades at Orlando International Airport [Infrastructure (retrofit/ upgrade)] Need: Frequent flooding threatens operations and safety at airport facilities	Floods, Hurricanes, Severe Thunderstorm	GOAA Engineering Department	Federal Aviation Authority (FAA), Orange County, Hazard Mitigation Grant Program (HMGP), GOAA Capital Improvement	2024–2026; status: Design phase; construction planned	High
GOAA-02	Airfield Shelter Expansion [New/ Enhanced Facility] Need: Lack of adequate shelter for personnel and passengers during severe weather events	Tornado, Hurricane, Severe Thunderstorm, Extreme Heat, Winter Storm	GOAA Operations & Facilities	GOAA, FEMA Pre-Disaster Grant Program (PDM), State Mitigation Funds	2023–2025; status: Ongoing construction	High
GOAA-03	Emergency Power Upgrades for Critical Facilities [Infrastructure (backup power)] Need: Power loss disrupts airport safety and emergency operations	Floods, Hurricanes, Severe Thunderstorm, Terrorism/ CBRNE, Cyberattack	GOAA Facilities & Maintenance	HMGP, GOAA Capital Budget	2023–2025; status: Implementation phase	Medium
GOAA-04	Fuel Storage and Spill Containment Improvements [Operational/Physical Retrofit] Need: Hazardous material spills risk environmental and operational impacts	Fixed-facility Chemical Release, Floods, Hurricanes	GOAA Environmental Compliance	GOAA, Environmental Protection Agency (EPA) Grants	2024–2027; status: In planning	Medium

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
GOAA-05	Wildfire Mitigation Brush Management [Vegetative Management] Need: High brush growth increases wildfire vulnerability near airport perimeter and runway approaches	Wildland Fire	GOAA Environmental Compliance	GOAA, Florida Department of Agriculture and Consumer Services (FDACS)	2024; status: Annual maintenance	Low
GOAA-06	Cybersecurity Enhancement for Operations [Administrative/ Technical] Need: Increasing cyber threats pose risks to airfield operations and traveler safety	Cyberterrorism	GOAA IT Department	GOAA, U.S. Department of Homeland Security (DHS) Cybersecurity Grants	2023–2026; status: Ongoing upgrades	High
GOAA-07	Continuity of Operations (COOP) Pandemic Planning [Planning/Standard Operations Procedure (SOP) Development] Need: Outbreaks threaten continuity of staff, critical operations, and communication	Infectious Disease Pandemic, Animal/ / Agricultural Disease	GOAA HR & Emergency Management	GOAA, Centers for Disease Control and Prevention (CDC) Grants	2022–2024; status: Established plans; update cycle ongoing	Medium
GOAA-08	Sinkhole Detection and Repair Program [Engineering/ Monitoring] Need: Subsidence may compromise runways and taxiways	Subsidence/ Sinkhole	GOAA Engineering	GOAA, Federal Highway Administration (FHWA)	2025; status: Scoping recommended	Medium
GOAA-09	Heat Resilience Infrastructure (Shaded Walkways/ Canopies) Need: Extreme heat impacts passenger and worker safety on airside/apron areas	Heat Wave, Extreme Heat	GOAA Facilities	GOAA, FEMA Building Resilient Infrastructure and Communities (BRIC)	2024–2026; status: Conceptual planning	Medium

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
GOAA-10	Severe Storm Warning and Monitoring System [Technology/ Early Warning] Need: Delays in warning increase risk for exposed personnel and equipment	Severe Thunderstorm, Lightning, Hail	GOAA Emergency Management	GOAA, FAA	2023–2025; status: Implementation ongoing	Medium
GOAA-11	NFIP Participation and Floodplain Compliance [Regulatory/ Participation] Need: Mitigate flood risk and maintain compliance for insured structures	Floods	GOAA Facilities & Environmental	GOAA, Orange County	Ongoing; status: Maintained annually	High

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to Greater Orlando Aviation Authority. This finding is limited to Appendix D and does not establish that no active initiative existed, because the Annex 5 Active Initiatives List referenced in the prior plan was not present in the adopted plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 63: GOAA Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's Local Mitigation Strategy (LMS) representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.

PRT Element	Participant Procedure
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the airport master plans, capital program, design standards, Airport Emergency Plan, and continuity procedures. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, GOAA should evaluate this annex's risk findings and actions through airport master and capital planning, asset management, stormwater and environmental programs, emergency management, continuity planning, tenant coordination, and budgeting. The record should identify the specific process reviewed, the responsible office, the decision, and the integration outcome.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the GOAA Board will consider the Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

City of Winter Park

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

Winter Park contains 8.76 square miles of land. Lakes Osceola, Virginia, Maitland, and Killarney, together with connecting canals and other local water bodies, shape drainage, land use, access, and flood exposure. The City's established neighborhoods, institutional and commercial areas, mature vegetation, roads, and municipal utility systems create closely linked built and natural systems that should be considered together in mitigation planning.

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020 Census counted 29,795 residents in Winter Park, and the July 1, 2025, Census estimate is 30,444. For 2020–2024, Winter Park had 12,846 households, 2.19 persons per household, and an occupied housing unit tenure profile in which 66.2 percent of occupied housing units were owner-occupied, with a complementary renter share of approximately 33.8 percent, subject to rounding. During the same period, persons under age 18 comprised 17.1 percent of Winter Park's population, persons age 65 and older comprised 24.8 percent, and 4.8 percent of residents under age 65 were reported as having a disability; the age-limited denominator must be retained. 17.0 percent of Winter Park residents age five and older spoke a language other than English at home. Winter Park's median household income was \$105,724 in 2024 dollars, and 9.3 percent of persons were below the poverty line.

Unless otherwise stated, characteristics use 2020–2024 American Community Survey (ACS) five-year data as presented in QuickFacts; population totals distinguish the 2020 Census from the July 1, 2025, estimate.

LAND USE AND DEVELOPMENT PATTERN

Winter Park is a developed municipality shaped by lakes and canals, established neighborhoods, institutional and commercial activity, mature vegetation, roads, and municipal utility systems. Redevelopment and infrastructure work can reduce building-level vulnerability through current standards while also changing drainage, asset concentration, access, tree exposure, and utility dependencies, all of which should be considered in project review.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI)

context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Winter Park's hazard consequences are shaped by its lakes, development pattern, population characteristics, and critical infrastructure. The risk matrix evaluates floods, tropical cyclones, severe thunderstorms and lightning, tornadoes, wildland fire, meteorological and hydrological drought, heat, hazardous materials releases, cyberattacks, pandemics, animal/agricultural disease outbreaks, terrorism, sinkholes, and freezing temperatures.

Hurricane and tropical storm vulnerability is notable given Winter Park's location within Central Florida, which experiences wind, rain, and debris impacts during hurricane season. Recent hurricane events have resulted in power outages, tree damage, blocked roadways, and temporary loss of municipal services. Tornadoes and severe thunderstorms also pose risks to people and property, with historical events causing property damage and personal injury.

Wildland fire risk is influenced by proximity to wooded areas, parks, and undeveloped parcels. While urban development reduces large-scale fire risk, drought and extreme heat periods can intensify vulnerability, particularly for residents at the urban-wildland interface.

Table 64: Winter Park Hazard Risk

Hazard	Probability	Consequence	Overall / Rank	Action Coverage
Floods	High	High	Very High	WPK-01, WPK-02, WPK-04, WPK-05, WPK-06, WPK-08, WPK-09
Tropical Storm/Hurricane	High	High	Very High	WPK-01, WPK-02, WPK-03, WPK-04, WPK-06, WPK-08, WPK-09, WPK-16
Severe Thunderstorm/ Lightning/ Hail	High	Moderate	High	WPK-01, WPK-02, WPK-03, WPK-04, WPK-08, WPK-09, WPK-16
Tornado	Moderate	High	High	WPK-04, WPK-08, WPK-16
Extreme Cold/Wind Chill	High	Moderate	High	WPK-04, WPK-08, WPK-10
Wildland Fire (Wildfire)	Low	Moderate	Moderate	WPK-03, WPK-04, WPK-07, WPK-08
Heat Wave (Extreme Heat)	Moderate	Moderate	Moderate	WPK-04, WPK-08

Hazard	Probability	Consequence	Overall / Rank	Action Coverage
Infectious Disease Pandemic	Low	High	Moderate	WPK-04, WPK-08, WPK-13
Subsidence/ Sinkhole	Low	Moderate	Moderate	WPK-04, WPK-08, WPK-15
Fixed-Facility Chemical Release	Low	Moderate	Moderate	WPK-04, WPK-08, WPK-14
Meteorological Drought	Moderate	Low	Low	WPK-04, WPK-08, WPK-11
Animal/ Agricultural Disease Outbreak	Low	Low	Low	WPK-04, WPK-08, WPK-13
Hydrological Drought	Low	Low	Low	WPK-04, WPK-08, WPK-11
Cyberterrorism	Low	Moderate	Low	WPK-04, WPK-08, WPK-12
Terrorism/ CBRNE	Low	Moderate	Low	WPK-04, WPK-08
Freezing Temperatures	Low	Moderate	Low	WPK-04, WPK-08, WPK-10

POPULATION AND SOCIAL VULNERABILITY

The ACS indicators in Section 1 are screening measures for inclusive planning, not counts within hazard areas. Winter Park should use them to support accessible warning, transportation, sheltering, cooling, continuity, and recovery while using current local information to identify where older adults, children, persons with disabilities, people with limited English proficiency (LEP), medically dependent residents, and households with constrained resources may need additional support.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Critical facilities and lifelines in the City of Winter Park play an essential role in disaster response, community health, and continuity of operations during hazard events. These facilities are exposed to a variety of natural and human-caused hazards confirmed for Orange County, including floods, hurricanes, tornadoes, wildfires, droughts, pandemics, hazardous materials releases, heat waves, sinkholes, severe thunderstorms, cyberattacks, freezing temperatures, and terrorism. This vulnerability analysis profiles categories of critical infrastructure, identifies examples located in Winter Park, and summarizes their risk profiles where information is available.

- Winter Park's municipal police and fire-rescue functions depend on accessible facilities, power, communications, fuel, and transportation routes.

- Healthcare services in and near Winter Park support routine and emergency medical needs. Their continuity during tropical cyclones, flooding, extreme heat, outages, and public-health emergencies depends on power, water, communications, supplies, staffing, and transportation.
- Schools and shelter-support facilities, when designated by emergency management, may support evacuation, sheltering, and community services.

Table 65 is a functional screening inventory compiled from the verified jurisdiction profile and existing annex record.

Table 65: Winter Park Representative Assets and Lifeline Functions

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
Emergency services	Municipal police and fire-rescue functions	Flood, tropical cyclone, severe storm, tornado	Access, communications, power, fuel, and facility continuity require asset-level verification.
Healthcare	Hospitals, clinics, and care providers	Tropical cyclone, flood, heat, pandemic	Operations depend on power, water, communications, supplies, and transportation.
Schools and shelter support	Schools and facilities designated for emergency use	Tropical cyclone, tornado, flood, heat	Designation, structural capacity, accessibility, and backup systems require current confirmation.
Government operations	City administration, records, and public works	Flood, tropical cyclone, cyberattack	Continuity sites, records protection, staffing, and communications affect recovery.
Utilities	Electric, water, wastewater, and stormwater systems	Flood, tropical cyclone, severe storm, heat, cyberattack	Interdependencies and backup capabilities should be evaluated by asset.
Transportation and communications	Roads, traffic systems, and telecommunications	Flood, wind, debris, cyberattack	Blocked routes or service loss can delay response and restoration.
Natural and cultural resources	Lakes, canals, parks, mature trees, and historic resources	Flood, wind, heat, drought, wildland fire	Water levels, tree fall, access, and resource protection require location-specific review.

BUILT AND NATURAL ENVIRONMENT

Winter Park's buildings, municipal services, utilities, roads, healthcare, and community functions are interdependent with lakes, canals, parks, mature trees, and other environmental resources. Flooding, wind, falling trees, outages, heat, drought, and water-quality effects can cross asset categories.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For Winter Park, the principal climate-adjusted pathways are lake/canal and stormwater flooding, mature-tree and utility exposure, increasing heat, and tropical-cyclone wind and rainfall. Current lake, drainage, road, facility, vegetation, and utility information is needed to translate the Countywide climate signal into project-level design and maintenance decisions.

2021–2026 UPDATE FINDINGS

Table 66: Winter Park 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not support a verified participant-specific 2021-2026 before/after finding for development or vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline using available demographic, land-use, asset, and risk information, but no boundary-matched change analysis was found. No material change is identified from available records pending participant confirmation; this does not mean no development occurred.
Change in mitigation priorities	No material change in mitigation priorities was identified from the available 2021/2022 Appendix D record because no deferred action was attributed to this participant, and the referenced Annex 5 Active Initiatives List was unavailable. The 2026 action register is therefore the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed participant-specific integration into a comprehensive/land-use plan, code, capital improvement program, budget, emergency operations plan, or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the participant should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and Flood Insurance Rate Map (FIRM):** Winter Park is an active NFIP community (CID 120188) with a current effective FIRM date of September 25, 2009; the

Federal Emergency Management Agency (FEMA) does not list a current Community Rating System (CRS) class or discount.

- **Adopted floodplain regulations:** The City administers adopted floodplain management regulations applicable to development in mapped flood hazard areas.
- **Administering office/designee:** The designated local Floodplain Administrator is responsible for program administration.
- **Permitting/enforcement, including substantial improvement/damage:** Administration includes permit review, elevation or floodproofing documentation, inspections and enforcement, and documented substantial-improvement and substantial-damage determinations.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** FEMA's August 2, 2026 privacy-protected multiple-loss dataset lists 6 NFIP RL properties and no NFIP SRL property for CID 120188.

4. Capability Assessment

Countywide capability descriptions are incorporated by reference. Table 67 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 67: Winter Park Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap/ Improvement Needed
Planning & regulatory	Comprehensive plan; land-development/zoning and building regulations; floodplain and capital-planning mechanisms	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	Winter Park administration; planning/community development; public works; building/code functions; emergency management and response coordination	Confirm the current Local Mitigation Strategy (LMS) representative, responsible Geographic Information Systems (GIS)/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility. No staffing shortfall is inferred without participant confirmation.
Financial	Annual operating and capital budgets; legally authorized utility/stormwater revenues; applicable grants	Link each action to a specific budget, Capital Improvement Plan (CIP)/utility, or grant mechanism and document local-match strategy where applicable; update the funding record during annual review.

Capability Type	Participant Mechanisms/Resources	Gap/ Improvement Needed
NFIP/ floodplain	See the verified NFIP paragraph above	No material program gap is identified from the verification summarized above; maintain the current ordinance/designee, permitting/enforcement and Substantial Improvement/Substantial Damage (SI/SD) documentation, CRS information where applicable, and annual RL/SRL reconciliation.

CAPABILITY PRIORITIES AND GAPS

For Winter Park, the capability table identifies the principal implementation mechanisms and the remaining verification or expansion needs.

4. Mitigation Strategy

The Countywide mitigation goals, prioritization method, benefit-versus-cost screening, and timeframe definitions are incorporated by reference. The action register identifies participant-specific actions and implementation information.

Table 68: Winter Park Mitigation Action Register

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
WPK-01	Floodplain Acquisition and Structure Removal [Property Acquisition/ Demolition] Need: Repetitive flooding of at-risk structures	Floods, Hurricanes, Severe Thunderstorms	City of Winter Park Public Works	FEMA Hazard Mitigation Grant Program (HMGP), City funds	Ongoing; status: In progress	High
WPK-02	Stormwater Master Plan Implementation [Infrastructure Improvement] Need: Urban flooding, drainage insufficiency	Floods, Hurricanes, Severe Thunderstorms	Winter Park Utilities Dept.	FEMA Building Resilient Infrastructure and Communities (BRIC), City funds	Ongoing	High

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
WPK-03	Tree Trimming and Powerline Management Program [Vegetative Management] Need: Downed power lines and tree debris hazards	Severe Thunderstorm, Hurricanes, Wildfires	Winter Park Urban Forestry	City funds	Ongoing	High
WPK-04	Backup Power for Critical Facilities [Critical Facility Protection] Need: Emergency operation continuity	All Hazards	Winter Park Emergency Management	FEMA Pre-Disaster Mitigation (PDM), City funds	1–5 years; status: Planned	Medium
WPK-05	Repetitive Loss Property Mitigation [Elevation/ Floodproofing] Need: Recurrent flood damage to insured structures	Floods	Building Department, Public Works	FEMA Flood Mitigation Assistance (FMA), NFIP	1–3 years; status: Planned	High
WPK-06	Community Flood Education and Outreach Need: Limited public awareness of flood insurance and risk	Floods, Hurricanes	Winter Park Communications	City funds, NFIP	Annual; ongoing	Medium
WPK-07	Wildfire Risk Reduction Program [Fuel Management/ Zoning] Need: Wildfire exposure in WUI areas	Wildfires	Urban Forestry, Planning Department	State grants, City	1–5 years; status: In progress	Medium
WPK-08	Enhanced Warning and Notification Platforms [Warning/ Communication] Need: Gaps in	All Hazards	Emergency Management	City funds, FEMA	1–2 years; status: In progress	High

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
	rapid warning systems					
WPK-09	Critical Infrastructure Resilience Upgrades [Infrastructure Retrofit] Need: Key facility vulnerability (power, structural)	Hurricanes, Flood, Severe Thunderstorm	Public Works, Utility Department	FEMA BRIC	2–5 years; status: Planned	High
WPK-10	Winter Weather Preparedness Campaign [Public Information/ Education] Need: Inadequate household and business preparedness	Winter Storms (Freezing, Extreme Cold)	Emergency Management, Partners	City funds	Annual; ongoing	Medium
WPK-11	Drought-Tolerant Landscaping Incentives [Incentive/ Rebate Program] Need: Water conservation needs during extended dry periods	Meteorological/ Hydrological Drought	Water Utility, Planning	City funds, State	1–3 years; status: Planned	Medium
WPK-12	Cybersecurity Enhancement for City Systems Need: Increasing cyber risk to municipal operations	Cyberattack	IT Dept., Emergency Management	City funds	Ongoing; status: Action started	High
WPK-13	Pandemic Preparedness Plan Review [Continuity Planning] Need: Gaps in local pandemic response and continuity	Infectious Disease Pandemic, Animal Disease	Emergency Management, Health Department	City, State, Centers for Disease Control and Prevention (CDC)	Annual; ongoing	Medium

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
WPK-14	Hazardous Materials Storage Enforcement [Regulation/ Enforcement] Need: Potential release or spill risks	Fixed-Facility Chemical Release	Building and Fire Department	City funds	Ongoing	Medium
WPK-15	Sinkhole Vulnerability Assessment [Planning/ Assessment] Need: Unmapped subsidence hazard areas	Subsidence/ Sinkhole	Public Works, Planning	City funds, U.S. Geological Survey (USGS)	2–4 years; status: Planned	Medium
WPK-16	Severe Weather Shelter Retrofit Program [Retrofit/ Incentive] Need: Lack of safe shelter options in public/ private buildings	Tornado, Severe Thunderstorm, Hurricane	Building Department, OEM	FEMA HMGP, City funds	2–5 years; status: Planned	Medium

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to City of Winter Park. This finding is limited to Appendix D and does not establish that no active initiative existed, because the Annex 5 Active Initiatives List referenced in the prior plan was not present in the adopted plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 69: Winter Park Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.

PRT Element	Participant Procedure
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/losses; capability or funding changes; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, responsible office, decision/date, and result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, Winter Park should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Winter Park City Commission will consider the Countywide LMS and this annex at a public meeting and complete the applicable approval or adoption action for the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

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City of Winter Garden

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

The City of Winter Garden is located in western Orange County, Florida, and is part of the greater Orlando metropolitan area. The city's municipal boundaries encompass a land area defined by the city limits as recognized in local planning documents and described under the Orange County jurisdictional framework. Winter Garden is bordered by the communities of Ocoee to the east, Windermere to the south, and the unincorporated areas of Orange County to the north and west. The city's geographic location places it within central Florida's inland region, removed from the immediate risks of coastal hazards yet still subject to various climatic and meteorological threats important for mitigation planning.

Winter Garden features a blend of residential, commercial, and light industrial land uses, contributing to a diverse and growing community. Major transportation corridors include State Road 50, which runs east-west through the city and serves as a primary commercial artery, and State Road 429 (Western Beltway), which provides access to the greater Orlando region and connectivity for evacuation and emergency response routes. Additional major roads, such as County Road 535 and the Florida Turnpike, influence development and movement patterns within and around the city.

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020 Census counted 46,964 residents in Winter Garden, and the July 1, 2025, Census estimate is 48,063.³³ For 2020–2024, Winter Garden had 15,980 households, 2.96 persons per household, and an owner-occupied housing-unit rate of 65.7 percent, with a complementary renter share of approximately 34.3 percent. During the same period, persons under age 18 comprised 25.2 percent of the population, persons age 65 and older comprised 13.8 percent, 5.2 percent of residents under age 65 had a disability, and 25.1 percent of persons age five and older spoke a language other than English at home. Winter Garden's median household income was \$106,495 in 2024 dollars, and 9.9 percent of persons were below the poverty line.

Unless otherwise stated, characteristics use 2020–2024 American Community Survey (ACS) five-year data as presented in QuickFacts, while population totals distinguish the 2020 Census from the July 1, 2025, estimate.

³³ U.S. Census Bureau, QuickFacts: Winter Garden city, Florida, July 1, 2025 population estimate; 2020 Census; and 2020–2024 characteristics, <https://www.census.gov/quickfacts/fact/table/wintergardencityflorida/PST045225>.

LAND USE AND DEVELOPMENT PATTERN

Winter Garden combines established neighborhoods and downtown areas with newer residential, commercial, and employment growth along major corridors. This pattern can shift exposure as buildings, roads, drainage facilities, utilities, and service demands are added or redeveloped. Current land-use, infrastructure, and development-review information should therefore be considered with hazard data during plan maintenance rather than assuming uniform exposure across the City.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Winter Garden's population, development patterns, infrastructure, essential services, natural resources, and economy shape its exposure to and consequences of the hazards identified in the Countywide assessment.

- **Population Vulnerability:** Winter Garden's residential, business, and vulnerable populations, including elderly, medically dependent, and low-income residents, are at heightened risk during hazard events. Flooding and hurricanes threaten life safety, housing continuity, and access to essential services. Extreme heat and drought can exacerbate health conditions among sensitive groups, especially those without reliable cooling or with limited financial resources. Infectious diseases and animal/agricultural outbreaks challenge the community's health infrastructure and can disrupt daily activities.
- **Property and Infrastructure Exposure:** Residential and commercial properties in Winter Garden may be located within flood-prone areas, particularly near Lake Apopka and the city's various tributaries. Hurricanes, tornadoes, and severe thunderstorms pose risks of structural damage, debris, and utility outages. Older buildings and critical facilities, such as emergency services, schools, and healthcare providers, are exposed to wind, water, and fire hazards, especially if constructed before recent building code improvements. Wildfire risk is elevated in undeveloped or interface zones adjacent to natural reserves. Sinkholes and subsidence hazards threaten localized infrastructure, especially in areas with historic karst features, potentially impacting roads and water/sewer lines.

Table 70: Winter Garden Hazard Risk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Floods	High	High	Very High	WGR-01, WGR-03, WGR-04
Severe Thunderstorm/ / Lightning	High	High	Very High	WGR-13
Tornado	Moderate	High	High	WGR-03, WGR-05
Tropical Storm/Hurricane	Moderate	High	High	WGR-01, WGR-03
Wildland Fire	Moderate	Moderate	Moderate	WGR-02
Hazardous Materials (Chemical)	Moderate	Moderate	Moderate	WGR-06
Heat Wave	High	High	High	WGR-07
Infectious Disease Pandemic	Low	High	Moderate	WGR-11
Drought (Meteorological/Hydrological)	Moderate	Moderate	Moderate	WGR-09
Subsidence/Sinkhole	Moderate	Moderate	Moderate	WGR-08
Winter Storm (Cold/Freezing)	Moderate	Moderate	Moderate	WGR-10
Terrorism/CBRNE	Low	Moderate	Low	WGR-12, WGR-14
Animal/Agricultural Disease Outbreak	Low	Moderate	Low	WGR-11
Cyberterrorism	Moderate	Moderate	Moderate	WGR-12

POPULATION AND SOCIAL VULNERABILITY

The ACS indicators in Section 1 do not establish parcel-level exposure, but they identify considerations for warning, transportation, sheltering, cooling, and recovery. Population growth and housing development can increase the number of people and assets requiring services during floods, tropical cyclones, severe storms, heat, and outages; current neighborhood-scale data are needed to identify these needs.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 71: Winter Garden Local Asset and Lifeline Exposure

Vulnerable Element	Hazards Most Impactful	Impact Overview
People (residents, vulnerable groups)	Flood, hurricane, extreme heat, pandemic	Injury, displacement, health impacts, isolation

Vulnerable Element	Hazards Most Impactful	Impact Overview
Property (residential, commercial)	Flood, hurricane, tornado, wildfire	Structural damage, business interruption, evacuation
Critical infrastructure (utilities, emergency services)	Flood, severe storm, cyberattack, hazardous materials	Utility disruption, emergency access, costly repairs
Essential services (schools, healthcare)	Flood, pandemic, winter storm	Service interruption, operational delays
Natural resources (lakes, parks)	Flood, drought, wildfire	Habitat loss, erosion, water quality decline
Economic function (business, agriculture)	Flood, drought, extreme heat, pandemic	Productivity loss, supply interruption, financial strain

Table 72: Winter Garden Local Assets and Areas at Risk

Asset Type	Locations at Risk	Hazard Exposure
Residential Buildings	Older neighborhoods, floodplains	Floods, tornadoes, hurricane, wildfire
Commercial Buildings	SR 50 corridor, business districts	Floods, hurricane, hazardous materials
Industrial Facilities	Northern/eastern city limits	Hazardous materials, severe weather
Critical Facilities	Downtown core, flood zone periphery	Floods, tornadoes, power outage
Utility Infrastructure	Across city, near water bodies	Floods, severe storms, sinkholes
Undeveloped Land	Wetlands, forest preserves	Wildfire, hurricane, flood, sinkholes

BUILT AND NATURAL ENVIRONMENT

Existing neighborhoods, new development, commercial and employment areas, roads, utilities, drainage systems, lakes, wetlands, parks, and remaining interface areas create different exposure patterns. Flood, wind, heat, wildfire, power, communications, and access impacts can compound. Development and capital projects should preserve drainage and natural-storage functions while improving system redundancy and emergency access.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For Winter Garden, continued growth and additional impervious cover can increase runoff and the value of exposed assets, while expansion toward less-developed western areas can change access, drainage, utility, and wildland-urban-interface conditions. Heavier rainfall, rising heat, and tropical-cyclone wind and

rain are the principal regional climate signals to monitor, but project-level conclusions require current neighborhood-scale data on development, drainage, and infrastructure.

2021-2026 UPDATE FINDINGS

Table 73: Winter Garden 2021-2026 Update Findings

Update Element	2021-2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not support a verified participant-specific 2021-2026 before/after finding for development or vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline using available demographic, land-use, asset, and risk information, but no boundary-matched change analysis was found. No material change is identified from available records pending participant confirmation; this does not mean no development occurred.
Change in mitigation priorities	No material change in mitigation priorities was identified from the available 2021/2022 Appendix D record because no deferred action was attributed to this participant, and the referenced Annex 5 Active Initiatives List was unavailable. The 2026 action register is therefore the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed participant-specific integration into a comprehensive/land-use plan, code, capital improvement program, budget, emergency operations plan, or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the participant should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and Flood Insurance Rate Map (FIRM):** Winter Garden is an active NFIP community (CID 120187) with a current effective FIRM date of September 24, 2021; the Federal Emergency Management Agency (FEMA) does not list a current Community Rating System (CRS) class or discount.
- **Adopted floodplain regulations:** The City administers adopted floodplain management regulations applicable to development in mapped flood hazard areas.
- **Administering office/designee:** The designated local Floodplain Administrator is responsible for program administration.
- **Permitting/enforcement, including substantial improvement/damage:** Administration includes permit review, elevation or floodproofing documentation, inspections and enforcement, and documented substantial-improvement and substantial-damage determinations.

- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** FEMA's August 2, 2026, privacy-protected multiple-loss dataset lists 2 NFIP RL properties and no NFIP SRL property for CID 120187.

3. Capability Assessment

Countywide capability descriptions are incorporated by reference. Table 74 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 74: Winter Garden Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap/ Improvement Needed
Planning & regulatory	Comprehensive plan; land-development/zoning and building regulations; floodplain and capital-planning mechanisms	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	Winter Garden administration; planning/community development; public works; building/code functions; emergency management and response coordination	Confirm the current Local Mitigation Strategy (LMS) representative, responsible Geographic Information Systems (GIS)/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility. No staffing shortfall is inferred without participant confirmation.
Financial	Annual operating and capital budgets; legally authorized utility/stormwater revenues; applicable grants	Link each action to a specific budget, Capital Improvement Plan (CIP)/utility, or grant mechanism and document local-match strategy where applicable; update the funding record during annual review.
NFIP/ floodplain	See the verified NFIP paragraph above	No material program gap is identified from the verification summarized above; maintain the current ordinance/designee, permitting/enforcement, and Substantial Improvement/Substantial Damage (SI/SD) documentation, CRS information where applicable, and annual RL/SRL reconciliation.

CAPABILITY PRIORITIES AND GAPS

For Winter Garden, the capability table identifies the principal implementation mechanisms and the verification or expansion needs that remain.

4. Mitigation Strategy

The action register identifies participant-specific actions and implementation information.

Table 75: Winter Garden Mitigation Action Register

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/Status	Priority
WGR-01	Stormwater Infrastructure Improvements [Capital Improvements] Need: Inadequate capacity in stormwater system leads to flooding during hurricanes and severe storms	Floods, Hurricanes	Public Works Department	FEMA Hazard Mitigation Grant Program (HMG)P, Local CIP	2025–2030; status: In Progress	High
WGR-02	Wildfire Risk Reduction in Peri-urban Areas [Vegetation Management] Need: Increased risk of wildfire due to proximity to urban interface and unmanaged vegetation areas	Wildland fire	Parks and Recreation Department	Local funds, U.S. Forest Service (USFS) grants	2024–2027; status: Ongoing	Medium
WGR-03	Critical Facility Generator Installation [Infrastructure Resilience] Need: Loss of power at essential government and public safety facilities during major disasters	Hurricane, Floods, Tornado	Emergency Management Division	FEMA Pre-Disaster Mitigation (PDM), Local funds	2024–2026; status: Planned	High
WGR-04	Enhanced Floodplain Management and NFIP Compliance [Regulatory/ Policy] Need: Need for improved floodplain protection and enforcement for	Floods	Planning & Zoning Department	FEMA Flood Mitigation Assistance (FMA), Local funds	2025–2028; status: Ongoing	High

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
	repetitive loss properties					
WGR-05	Tornado Shelter and Warning System Expansion [Public Safety/ Education] Need: Insufficient early warning and community shelter capacity for tornado emergencies	Tornado	Emergency Management Division	Local funds, U.S. Department of Homeland Security (DHS) grants	2025–2029; status: Planned	Medium
WGR-06	Hazardous Materials Spill Response Training [Training/ Preparedness] Need: Need for improved response capacity for hazardous materials spills	Fixed-facility chemical release	Fire Department	Local funds, Environmental Protection Agency (EPA) grants	2024–2027; status: Ongoing	Medium
WGR-07	Heat Wave Public Health Outreach [Education/ Preparedness] Need: Vulnerable populations exposed to extreme heat with little access to cooling resources	Heat wave	Public Health Department	Centers for Disease Control and Prevention (CDC) grants, Local funds	2024–2025; status: Ongoing	Low
WGR-08	Sinkhole Risk Mapping and Remediation Planning [Mapping/ Remediation] Need: Need to identify areas prone to sinkhole incidents and plan for remediation and risk reduction	Subsidence/ sinkhole	Public Works Department	Local funds, FEMA HMGP	2025–2028; status: Planned	Medium
WGR-09	Drought-Resilient Water Supply Initiatives [Infrastructure/ Policy] Need: Threats to water supply during periods of drought	Meteorological/ Hydrological drought	Utilities Department	Local funds, State grants	2025–2030; status: Planned	Medium
WGR-10	Winter Storm Preparedness and Infrastructure Hardening [Infrastructure Resilience] Need: Community	Extreme cold/ wind chill, freezing temperatures	Public Works Department	FEMA HMGP, Local funds	2024–2027; status: Planned	Low

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
	infrastructure vulnerable to winter storm impacts					
WGR-11	Pandemic Readiness Enhancement [Preparedness/ Training] Need: Gaps in local ability to respond to large-scale infectious disease events	Infectious disease pandemic, animal/ / agricultural disease outbreak	Public Health Department	CDC grants, Local funds	2024–2026; status: Ongoing	Medium
WGR-12	Cybersecurity Upgrades for Municipal Systems [Infrastructure/ Preparedness] Need: Increased vulnerability of critical municipal systems to cyberattacks	Cyberterrorism	Information Technology Division	DHS grants, Local funds	2024–2026; status: Planned	Medium
WGR-13	Severe Thunderstorm Community Education [Education/ Preparedness] Need: Low awareness of risks posed by severe thunderstorms and hail	Severe thunderstorm/ lightning/hail	Emergency Management Division	Local funds	2024–2025; status: Ongoing	Low
WGR-14	Terrorism/ / CBRNE Prevention and Response Training [Training/ Preparedness] Need: Gaps in community first responder capacity for coordinated terrorism/ CBRNE event response	Terrorism/ CBRNE	Police and Fire Departments	DHS grants, Local funds	2024–2027; status: Ongoing	Medium

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to the City of Winter Garden. This finding is limited to Appendix D and does not establish that no active initiative existed, because the Annex 5 Active Initiatives List referenced in the prior plan was not present in the adopted plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 76: Winter Garden Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/ losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, responsible office, decision/date, and result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During annual review, Winter Garden should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Winter Garden City Commission will consider the Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

City of Orlando

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

Orlando is the seat of Orange County and covers 110.62 square miles of land. City boundaries are delineated by neighboring municipalities, notably Winter Park to the north, Edgewood to the south, and Maitland and Pine Hills to the east and west. Orlando is surrounded by unincorporated areas of Orange County that contribute to the greater metropolitan landscape. The City's urbanized area is the historical and economic center of the Orlando-Kissimmee-Sanford metropolitan region.

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020 Census counted 307,573 residents in Orlando, and the July 1, 2025, Census estimate is 333,888.³⁴ For 2020–2024, Orlando was 35.4 percent Hispanic or Latino, 23.4 percent Black alone, and 5.0 percent Asian alone, with Census race and ethnicity categories able to overlap. During the same period, 40.8 percent of persons age five and older spoke a language other than English at home, persons under age 18 comprised 21.4 percent of the population, persons age 65 and older comprised 11.3 percent, and 7.6 percent of residents under age 65 had a disability. Orlando had 131,179 households, 2.41 persons per household, and an owner-occupied housing-unit rate of 39.5 percent, with a complementary renter share of approximately 60.5 percent. Orlando's 2020–2024 median household income was \$72,336 in 2024 dollars, and 14.7 percent of persons were below the poverty line.

Unless otherwise stated, characteristics use 2020–2024 American Community Survey (ACS) five-year data as presented in QuickFacts; population totals distinguish the 2020 Census from the July 1, 2025, estimate.

LAND USE AND DEVELOPMENT PATTERN

Orlando's dense urban form concentrates residents, employment, visitors, housing, critical services, transportation, utilities, and regional institutions. Redevelopment and growth can increase asset values and interdependencies even where current codes reduce building-level vulnerability.

³⁴ U.S. Census Bureau, QuickFacts: Orlando city, Florida, July 1, 2025 population estimate; 2020 Census; land area; and 2020–2024 characteristics, <https://www.census.gov/quickfacts/fact/table/orlandocityflorida/PST045225>.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Orlando's urban density, population, economy, infrastructure, and regional service role shape its exposure and consequences across the hazards identified in the Countywide assessment.

Tropical storms and hurricanes, while often less intense as they move inland from coastal zones, can still produce destructive winds, rainfall-induced flooding, and extended power outages. Vulnerability is heightened by high-density housing developments, critical care facilities, and regional transportation nodes. Disruptions to utilities, economic activity, and access to emergency services can be severe following a major hurricane, with recovery complicated by population transience and pockets of social vulnerability.

Severe thunderstorms, including tornadoes, pose risks of wind damage, hail, and lightning, and have historically caused damage to roofs, windows, and utility infrastructure citywide. Tornadoes, while less frequent than in some regions, remain a dangerous threat due to the high concentration of vulnerable structures, especially mobile and modular homes, as well as older residential neighborhoods built to lower wind standards.

Table 77: Orlando Hazard Risk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Tropical Storm/Hurricane	High	High	Very High	ORL-01, ORL-02, ORL-04
Tornado	Moderate	High	High	ORL-04, ORL-10
Floods (Flood)	Moderate	High	High	ORL-01, ORL-02, ORL-12
Severe Thunderstorm/Lightning/Hail	High	Moderate	High	ORL-11
Wildland Fire (Wildfire)	Low	Moderate	Moderate	ORL-03
Cyberterrorism (Cyberattack)	Moderate	Moderate	Moderate	ORL-08
Heat Wave (Extreme Heat)	Moderate	Moderate	Moderate	ORL-07

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Infectious Disease Pandemic	Low	High	Moderate	ORL-09
Fixed-Facility Chemical Release	Low	High	Moderate	ORL-06
Terrorism/CBRNE	Low	High	Low	Action coverage pending
Subsidence/Sinkhole	Low	Low	Low	ORL-05

POPULATION AND SOCIAL VULNERABILITY

Orlando's housing tenure, language-at-home, age, disability, and poverty indicators support neighborhood-scale inclusive planning but do not by themselves measure limited English proficiency (LEP) or hazard exposure. Because vulnerability can vary substantially within the City, decisions on warning, transportation, sheltering, cooling, medical support, continuity, and recovery should use current neighborhood- and facility-level information rather than Citywide percentages alone.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

The City of Orlando is home to a diverse and complex network of critical facilities and community lifelines that play essential roles in both day-to-day operations and emergency response. These assets are exposed to a range of hazards, including tornadoes, wildland fires, extreme cold, drought, pandemics, hazardous materials incidents, heat waves, subsidence, severe thunderstorms, cyberattacks, floods, winter storms, terrorism, and hurricanes, as identified in the region's authoritative hazard inventory.

Representative municipal and regional lifeline functions include police, fire rescue, and emergency communications; hospitals and other healthcare providers; schools and designated shelter-support facilities; city government and public works; and water, wastewater, stormwater, transportation, energy, and communications systems.

Table 78 is a functional screening inventory compiled from the verified jurisdiction profile and existing annex record.

Table 78: Orlando Representative Assets and Lifeline Functions

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
Emergency services	Police, fire-rescue, emergency communications, and coordination	Tropical cyclone, flood, tornado, severe storm, cyberattack	Facilities, access, communications, staffing, power, and fuel require current verification.

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
Healthcare and public health	Hospitals, clinics, care providers, and public-health functions	Tropical cyclone, flood, heat, pandemic, outage	Continuity depends on utilities, supplies, transportation, communications, and surge capacity.
Schools and shelter support	Schools and facilities designated for emergency use	Tropical cyclone, tornado, flood, heat	Designation, structural capacity, accessibility, and backup systems require current confirmation.
Government and public works	City administration, records, fleet, and public works functions	Flood, tropical cyclone, cyberattack, hazardous materials	Continuity sites, records, equipment, staffing, and interdepartmental coordination affect recovery.
Utilities and communications	Water, wastewater, stormwater, energy, and telecommunications	Flood, wind, heat, cyberattack, outage	System interdependencies and backup capability should be evaluated by asset and service area.
Transportation and regional mobility	Roads, transit connections, traffic systems, and access corridors	Flood, wind, debris, heat, cyberattack	Disruption can delay evacuation, response, workforce movement, and restoration.
Housing, business, and event areas	Dense neighborhoods, commercial districts, institutions, and venues	Flood, tropical cyclone, tornado, heat, outage	Population concentration, displacement, access, and continuity vary by neighborhood and event.

BUILT AND NATURAL ENVIRONMENT

Orlando's dense built environment includes housing, businesses, government operations, healthcare, schools, utilities, transportation, communications, parks, lakes, and drainage systems. Flooding, wind, heat, power loss, cyber disruption, and transportation interruption can cascade across neighborhoods and regional services.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For Orlando, the principal climate-adjusted pathways are urban heat and warm nights, stormwater flooding, dense populations and events, power/cooling dependence, and transportation and utility interdependencies during tropical cyclones. Neighborhood-scale data on heat, drainage, and social vulnerability are needed because Countywide averages do not capture intra-city exposure.

2021–2026 UPDATE FINDINGS

Table 79: Orlando 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not provide a verified citywide 2021–2026 before/after comparison of development and vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline from Citywide demographics, land use, lifelines, and risk information. No material change is identified in the available records pending City confirmation; this does not mean that development or redevelopment did not occur.
Change in mitigation priorities	A proposed priority change is documented for the prior A-01 special-needs facility acquisition/rehabilitation action, which is proposed for deletion unless Orlando revalidates a continuing need. The 2026 action register is the proposed current priority set; final changes remain subject to City confirmation.
Integration accomplished since prior approval	No completed Orlando-specific integration into a comprehensive plan, code, Community Improvement Plan (CIP), budget, emergency operations plan (EOP), or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the City should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and Flood Insurance Rate Map (FIRM):** Orlando is an active NFIP community (CID 120186) with a current effective FIRM date of September 24, 2021. The Federal Emergency Management Agency (FEMA) lists CRS Class 6, with a 20-percent Special Flood Hazard Area (SFHA) discount and a 10-percent non-SFHA discount.
- **Adopted floodplain regulations:** The City administers adopted floodplain management regulations applicable to development in mapped flood hazard areas.
- **Administering office/designee:** The designated City Floodplain Administrator is responsible for program administration.
- **Permitting/enforcement, including substantial improvement/damage:** Administration includes permit review, elevation or floodproofing documentation, inspections, and enforcement, and documented substantial-improvement and substantial-damage determinations.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** FEMA's August 2, 2026, privacy-protected multiple-loss dataset lists 13 NFIP RL properties and no NFIP SRL property for CID 120186.

3. Capability Assessment

Countywide capability descriptions are incorporated by reference. Table 80 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities. Plan finalization requires confirmation against current adopted documents, organizational assignments, and budgets.

Table 80: Orlando Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap/ Improvement Needed
Planning & regulatory	Comprehensive plan; land-development/zoning and building regulations; floodplain and capital-planning mechanisms	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	Orlando administration; planning/community development; public works; building/code functions; emergency management and response coordination	Confirm the current Local Mitigation Strategy (LMS) representative, responsible Geographic Information Systems (GIS)/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility. No staffing shortfall is inferred without participant confirmation.
Financial	Annual operating and capital budgets; legally authorized utility/stormwater revenues; applicable grants	Link each action to a specific budget, Community Improvement Plan (CIP)/utility, or grant mechanism and document local-match strategy where applicable; update the funding record during annual review.
NFIP/ floodplain	See the verified NFIP paragraph above	No material program gap is identified from the verification summarized above; maintain the current ordinance/designee, permitting/enforcement and Substantial Improvement/Substantial Damage (SI/SD), CRS information where applicable, and annual RL/SRL reconciliation.

CAPABILITY PRIORITIES AND GAPS

For Orlando, the capability table identifies the principal implementation mechanisms and the verification or expansion needs that remain.

4. Mitigation Strategy

The action register identifies participant-specific actions and implementation information.

Table 81: Orlando Mitigation Action Register

ID	Action/ Risk-Reduction purpose	Hazards	Lead	Potential funding	Timeframe/ Status	Priority
ORL-01	Stormwater Drainage Improvements [Infrastructure Upgrade] Need: Flooding in vulnerable neighborhoods	Flood, Hurricane	City of Orlando Public Works	FEMA Hazard Mitigation Grant Program (HMGP), City CIP	2023–2025; status: Ongoing	High
ORL-02	Elevation of Critical Facilities [Structural Mitigation] Need: Flooding of emergency and utility facilities	Flood, Hurricane	City of Orlando Emergency Management	FEMA PDM, City Funds	2023–2026; status: In Progress	High
ORL-03	Wildfire Buffer Creation in Urban Forests [Vegetation Management] Need: Risk of wildfire in urban interface zones	Wildland fire	City Parks & Recreation	City Funds	2024–2025; status: Planned	Medium
ORL-04	Severe Wind Retrofit for Municipal Buildings [Structural Retrofit] Need: Wind vulnerability of public buildings	Hurricane, Tornado	City Facilities Management	FEMA HMGP	2024–2027; status: Planned	High
ORL-05	Sinkhole Monitoring & Public Outreach [Monitoring & Education] Need: Sinkhole risk in designated neighborhoods	Subsidence/ Sinkhole	City of Orlando Planning Dept	City Funds	Ongoing	Medium
ORL-06	Multi-Agency HazMat Response Training [Emergency Response	Chemical Release	Orlando Fire Department	FEMA Grants, Local	Annual; ongoing	High

ID	Action/ Risk- Reduction purpose	Hazards	Lead	Potential funding	Timeframe/ Status	Priority
	Capability] Need: Fixed-facility hazardous materials releases					
ORL-07	Enhanced Heat Wave Warning & Cooling Centers [Community Engagement & Shelter] Need: Extreme heat impacts on vulnerable populations	Extreme Heat	Orlando Public Health	City Funds	Summer 2024; status: Planned	Medium
ORL-08	Cyber Resilience for Municipal IT Infrastructure [Technical Security Upgrade] Need: Vulnerability to cyberterrorism	Cyberattack	City IT Department	City Funds, U.S. Department of Homeland Security (DHS)	2024–2025; status: Planned	High
ORL-09	Pandemic Response Coordination for Health Events [Multi-Agency Coordination] Need: Pandemic readiness and continuity	Infectious Disease Pandemic	Orlando Public Health	City Funds, Health and Human Services (HHS)	Ongoing	Medium
ORL-10	Tornado Safe Room Construction in Schools Need: Lack of dedicated tornado shelters	Tornado	Orlando School District	FEMA PDM	2025–2028; status: Proposed	Medium
ORL-11	Severe Thunderstorm Public Awareness Campaign [Public Education] Need: Residents unprepared for severe storms	Thunderstorm/ Lightning/ Hail	City Communications Office	City Funds	Annual; ongoing	Low
ORL-12	NFIP Participation and Compliance Activities [Planning/ Administrative] Need: NFIP compliance and repetitive loss property	Flood	City of Orlando Planning Dept	NFIP, City Funds	Annual; ongoing	High

STATUS OF PRIOR ACTIONS

The unfinished City of Orlando action identified in the 2021/2022 LMS Appendix D is reconciled in Countywide Table 22. A-01, Acquisition and Rehab of Special Needs Facility, is proposed for deletion unless Orlando revalidates the project and confirms a continuing need.

5. Maintenance, Integration, and Adoption

Table 82: Orlando Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/ losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During annual review, Orlando should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Orlando City Council will consider the Countywide LMS and this annex at a public meeting and complete the applicable approval or adoption action for the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

City of Ocoee

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

Ocoee contains 15.60 square miles of land in western Orange County. Major water bodies in Ocoee include Starke Lake, which is centrally located and serves as a focal point for community and recreational activities. Several smaller lakes and ponds are scattered throughout the city, including Lake Olympia and Lake Prima Vista. These water features, along with nearby wetlands, shape local flood risk and inform water management strategies.

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020 Census counted 47,295 residents in Ocoee, and the July 1, 2025, Census estimate is 51,932.³⁵ For 2020–2024, persons under age 18 comprise 25.1 percent of Ocoee’s population, while persons age 65 and older comprise 11.5 percent. During the same period, Ocoee had 15,588 households and an average household size of 3.13 persons. The city’s population was 38.0 percent White alone (not Hispanic or Latino), 21.2 percent Black alone, and 28.0 percent Hispanic or Latino, with race and ethnicity categories potentially overlapping. In addition, 29.8 percent of residents age five and older spoke a language other than English at home. Ocoee’s 2020–2024 median household income was \$98,911 in 2024 dollars, 10.3 percent of persons were below the poverty line, and 73.2 percent of occupied housing units were owner-occupied, making the complementary renter share approximately 26.8 percent. For residents under age 65, 7.3 percent were reported as having a disability.

Unless otherwise stated, characteristics use 2020–2024 American Community Survey (ACS) five-year data as presented in QuickFacts; population totals distinguish the 2020 Census from the July 1, 2025, estimate.

LAND USE AND DEVELOPMENT PATTERN

Ocoee’s developed residential and commercial areas, lakes and wetlands, roads, drainage systems, utilities, and expanding service demands create different risk conditions across the City. New development and infrastructure can alter runoff, access, asset concentration, and continuity needs, so plan maintenance should use current development, drainage, utility, and hazard information rather than a uniform Citywide assumption.

³⁵ U.S. Census Bureau, QuickFacts: Ocoee city, Florida, July 1, 2025, population estimate; 2020 Census; land area; and 2020–2024 characteristics, <https://www.census.gov/quickfacts/fact/table/ocoee-city-florida/PST045225>.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Ocoee's land-use pattern, population, infrastructure, and development trends shape its exposure and consequences across the hazards identified in the Countywide assessment.

- **Population and Community Vulnerability:** Ocoee's population includes residents living in both densely developed neighborhoods and areas adjacent to natural features such as lakes, wooded land, and wetland corridors. Vulnerable populations, including elderly residents, individuals with access and functional needs, and economically disadvantaged households, face elevated risks from hazards such as heat waves, extreme cold, and infectious disease pandemics. Schools, healthcare facilities, and congregate living sites are particularly sensitive to direct and indirect impacts from severe weather and biological hazards.
- **Transportation and Utilities:** Key transportation corridors, including major roads and rail lines, are susceptible to disruption from flooding, severe storms, and hazardous materials incidents. Utilities, such as electricity, water, sewer, and communications, may be interrupted by hurricanes, tornadoes, and cyberattacks, leading to cascading impacts across homes, businesses, and healthcare sites. Power outages and water service disruptions would significantly affect vulnerable populations, disrupt business continuity, and delay disaster recovery efforts.

Table 83: Ocoee Hazard Risk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Floods	High	High	Highest	OCO-01, OCO-02, OCO-04, OCO-07
Tornado	Medium	High	High	OCO-04, OCO-06
Tropical Storm/Hurricane	Medium	High	High	OCO-01, OCO-04
Severe Thunderstorm/Lightning/Hail	High	Medium	High	OCO-02, OCO-04
Wildland Fire	Low	Medium	Moderate	OCO-03, OCO-04, OCO-06

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Hazardous Materials (Chemical Release)	Medium	Medium	Moderate	OCO-04, OCO-09
Extreme Heat (Heat Wave)	Medium	Medium	Moderate	OCO-04, OCO-07
Drought (Meteorological/Hydrological)	Low	Medium	Moderate	OCO-04, OCO-08
Winter Storm (Extreme Cold/Wind Chill)	High	Medium	High	OCO-04
Subsidence/Sinkhole	Low	Medium	Moderate	OCO-04, OCO-05
Cyberterrorism	Low	High	Moderate	OCO-04, OCO-10
Terrorism/CBRNE	Low	High	Moderate	OCO-04, OCO-10
Pandemic (Infectious/Animal/Agricultural)	Low	High	Moderate	OCO-04, OCO-06

POPULATION AND SOCIAL VULNERABILITY

The ACS indicators in Section 1 are planning measures and should not be converted into counts within hazard areas without a boundary-matched overlay. Household size, age, disability, language at home, housing tenure, vehicle access, income, and medical support needs can affect warning, evacuation, sheltering, cooling, continuity, and recovery.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 84: Ocoee Local Asset and Lifeline Exposure

Facility Type	Examples/Locations	Relevant Hazards	Vulnerabilities
Emergency Services	Fire Rescue Headquarters, Police Department	Tornado, Hurricane, Flood, Wildfire	Wind damage, flood inundation, access disruption
Health Care	Urgent Care Clinics, Orlando Health Central	Hurricane, Flood, Hazardous Materials	Flooding, wind, chemical release
Schools/Shelters	Ocoee High/ Middle/ Elementary Schools	Severe Storm, Tornado, Flood	Wind/flood impacts, sheltering requirements
Utilities	Water/Wastewater Plants, Substations	Wildfire, Flood, Hurricane, Cyberterrorism	Physical damage, cyberattack, hazardous spill
Transportation	Stated Road (SR) 429, SR 50, SR 408, Local Roads	Flood, Sinkhole, Wildfire, Storms	Road damage, access cutoff

Facility Type	Examples/Locations	Relevant Hazards	Vulnerabilities
Food Systems	Supermarkets, Distribution Centers	Flood, Hurricane, Severe Storm	Supply chain interruption
Government Facilities	City Hall, Community Center	Tornado, Hurricane, Flood	Continuity, facility damage
Hazardous Materials Sites	Fuel, Water Treatment, Commercial Facilities	Flood, Hurricane, Hazardous Materials	Chemical release, proximity to population

BUILT AND NATURAL ENVIRONMENT

Ocoee's housing, businesses, public facilities, roads, utilities, lakes, wetlands, parks, and drainage systems are exposed to different degrees of flood, wind, heat, drought, wildfire, and service interruptions.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For Ocoee, growth, drainage, and utility expansion can increase exposure to heavier rainfall, increasing heat, and tropical-cyclone disruption, with localized wildland-urban-interface considerations. Current neighborhood-scale development, drainage, asset, and utility data are needed to translate regional climate findings into project priorities; the regional signal alone does not change the City's adopted hazard ratings.

2021–2026 UPDATE FINDINGS

Table 85: Ocoee 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not support a verified participant-specific 2021-2026 before/after finding for development or vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline from available demographics, land use, assets, and risk information, but no boundary-matched change analysis was located. No material change is identified from available records pending participant confirmation; this does not mean no development occurred.
Change in mitigation priorities	No material change in mitigation priorities was identified from the available 2021/2022 Appendix D record because no deferred action was attributed to this participant, and the referenced Annex 5 Active Initiatives List was unavailable. The 2026 action register is therefore the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed participant-specific integration into a comprehensive/land-use plan, code, capital improvement program, budget, emergency operations plan, or continuity mechanism during the prior cycle was verified in the records available for this draft.

Update Element	2021–2026 Finding and Basis
	Before submission, the participant should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and FIRM:** Ocoee is an active NFIP community (CID 120185) with a current effective FIRM date of September 24, 2021. FEMA lists CRS Class 9, with 5-percent discounts in Special Flood Hazard Areas (SFHAs) and non-SFHAs.
- **Adopted floodplain regulations:** Ocoee's floodplain-management ordinance regulates development in flood-hazard areas, including substantial-improvement and substantial-damage projects.
- **Administering office/designee:** The designated local administrator coordinates NFIP and floodplain management functions.
- **Permitting/enforcement, including substantial improvement/damage:** Administration includes permit review, elevation or floodproofing documentation, inspections, enforcement, and post-event substantial improvement/substantial damage determinations.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** FEMA's August 2, 2026, privacy-protected multiple-loss dataset lists 2 NFIP RL properties, including 1 flagged SRL property, for CID 120185.

3. Capability Assessment

Countywide capability descriptions are incorporated by reference. Table 86 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 86: Ocoee Capability Summary

Capability Type	Participant Mechanisms/ Resources	Gap/ Improvement Needed
Planning & regulatory	Comprehensive plan; land-development/zoning and building regulations; floodplain and capital-planning mechanisms	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	Ocoee administration; planning/community development; public works; building/code functions;	Confirm the current Local Mitigation Strategy (LMS) representative, responsible Geographic Information

Capability Type	Participant Mechanisms/ Resources	Gap/ Improvement Needed
	emergency management and response coordination	Systems (GIS)/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility. No staffing shortfall is inferred without participant confirmation.
Financial	Annual operating and capital budgets; legally authorized utility/stormwater revenues; applicable grants	Link each action to a specific budget, Community Improvement Plan (CIP)/utility, or grant mechanism and document local-match strategy where applicable; update the funding record during annual review.
NFIP/ floodplain	See the verified NFIP paragraph above	No material program gap is identified from the verification summarized above; maintain the current ordinance/designee, permitting/enforcement and Substantial Improvement/Substantial Damage (SI/SD), CRS information where applicable, and annual RL/SRL reconciliation.

CAPABILITY PRIORITIES AND GAPS

For Ocoee, the capability table identifies the principal implementation mechanisms and the verification or expansion needs that remain.

4. Mitigation Strategy

The action register identifies participant-specific actions and implementation information.

Table 87: Ocoee Mitigation Action Register

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
OCO-01	Flood Control Infrastructure Upgrades [Structural project] Need: Recurrent flooding in flood-prone neighborhoods	Floods, Tropical Storm/Hurricane	Public Works Department	Hazard Mitigation Grant Program (HMGP), City Funds	2024–2027; status: Planned	High

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
OCO-02	Stormwater System Maintenance [Maintenance and retrofit] Need: Blocked stormwater drains and insufficient drainage capacity	Floods, Severe Thunderstorm	Public Works Department	City Budget, Flood Mitigation Assistance (FMA)	Ongoing	Medium
OCO-03	Wildland Fire Risk Reduction [Vegetative management] Need: Overgrown vegetation in wildland-urban interface areas	Wildland fire	Ocoee Fire Department	Urban Area Security Initiative (UASI)	Annual; ongoing	Medium
OCO-04	Enhanced Emergency Warning Systems [System upgrade] Need: Limited warning coverage for severe weather	All hazards, especially tornadoes	Ocoee Emergency Management	Emergency Management Performance Grant (EMPG), City Funds	2024–2026; status: Planned	High
OCO-05	Sinkhole Monitoring and Response [Monitoring, public outreach] Need: Risks to infrastructure and homes from sinkhole activity	Subsidence /Sinkhole	Public Works Department	City Funds, HMGP	Ongoing	Low
OCO-06	Community Disaster Preparedness Outreach [Public education] Need: Limited resident knowledge of hazard response	Pandemic, Tornado, Wildland fire	Ocoee Emergency Management	EMPG, City Funds, FEMA	Annual; ongoing	Medium

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
OCO-07	Green Infrastructure Pilot Projects [Non-structural enhancement] Need: Lack of permeable surfaces and shade in urban areas	Floods, Extreme Heat	Planning & Zoning Dept.	Federal Grants, City Funds	2025–2028; status: Proposed	Medium
OCO-08	Water Conservation and Drought Planning [Policy initiative] Need: Periods of reduced water supply and increased demand	Meteorological & Hydrological Drought	Utilities Department	State Grants, City Budget	2024–2027; status: Planned	Medium
OCO-09	Hazardous Materials Incident Training [Training, capacity building] Need: Limited local response capacity for hazardous materials spills	Fixed-facility chemical release	Ocoee Fire Department	HMGP, City Funds	Annual; ongoing	High
OCO-10	Cybersecurity Enhancement Program [Technology upgrade] Need: Vulnerability of municipal systems to cyberattacks	Cyberterrorism	Information Technology	City Funds, U.S. Department of Homeland Security (DHS) Cyber Grants	2024–2026; status: Proposed	Low

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to City of Ocoee. This finding is limited to Appendix D and does not establish that no active initiative existed,

because the Annex 5 Active Initiatives List referenced in the prior plan was not present in the adopted plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 88: Ocoee Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/, and losses; capability or funding changes; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, Ocoee should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Ocoee City Commission will consider the Countywide LMS and this annex

at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

City of Belle Isle

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

The City of Belle Isle is located in central Orange County, Florida, within the Greater Orlando metropolitan area. The city is situated along the northern and eastern shorelines of Lake Conway, a prominent water body comprising multiple interconnected lakes that significantly influence Belle Isle’s landscape and serve as major recreational features. Belle Isle is a compact area primarily surrounded by the City of Orlando, with local boundaries defined by residential neighborhoods, municipal parks, and commercial corridors. Belle Isle contains 2.40 square miles of land. Municipal total area is larger because the boundary includes water; land area should be used for density and like-for-like jurisdiction comparisons.³⁶

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020 Census counted 7,032 residents in Belle Isle, and the July 1, 2025, Census estimate is 7,688.³⁷ For 2020–2024, Belle Isle had 2,998 households, an average household size of 2.48 persons per household, and an owner-occupied housing-unit rate of 90.9 percent. During the same period, persons under the age of 18 comprised 24.7 percent of Belle Isle’s population, while persons age 65 and older comprised 23.6 percent. In addition, 9.2 percent of Belle Isle residents under age 65 were reported as having a disability, and 14.2 percent of residents age five and older spoke a language other than English at home. Belle Isle’s 2020–2024 median household income was \$104,559 in 2024 dollars, and 11.6 percent of persons were below the poverty line.

Unless otherwise stated, characteristics use 2020–2024 American Community Survey (ACS) five-year data as presented in QuickFacts; population totals distinguish the 2020 Census from the July 1, 2025, estimate.

³⁶U.S. Census Bureau, QuickFacts: Belle Isle city, Florida, land area, <https://www.census.gov/quickfacts/fact/table/belleislecityflorida/PST045225>.

³⁷U.S. Census Bureau, QuickFacts: Belle Isle city, Florida, July 1, 2025, population estimate; 2020 Census; and 2020–2024 characteristics, <https://www.census.gov/quickfacts/fact/table/belleislecityflorida/PST045225>.

LAND USE AND DEVELOPMENT PATTERN

Belle Isle is a compact, predominantly residential municipality organized around lakes and established neighborhoods. Lakefront conditions, limited roadway connections, mature vegetation, utilities, and the age and condition of individual structures can materially affect vulnerability.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex provides participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Belle Isle is a predominantly residential city along Lake Conway, with low-lying terrain and extensive waterfront development. These conditions shape local exposure to flooding, severe storms, tropical cyclones, tornadoes, wildland fire, drought, heat, hazardous materials incidents, cyberattacks, and disease outbreaks.

Hurricane and tropical-storm risks are significant for Belle Isle because Central Florida is exposed to high winds, intense precipitation, tornadoes, and inland flooding. These events can cause power outages, property damage, and disruption to municipal services. Older adults, people with access and functional needs, and residents of less wind-resistant housing may require additional warning, transportation, sheltering, or recovery support. Exposed assets include homes, municipal facilities, public works infrastructure, and utilities.

Severe thunderstorms, tornadoes, and lightning pose additional threats due to their rapid onset and localized impacts. Tornadoes have historically caused scattered property damage, uprooted trees, and short-term disruptions to utility services. The city’s tree canopy and overhead power lines increase exposure to wind and lightning hazards, with outages affecting both homes and essential facilities.

Table 89: Belle Isle Hazard Risk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Tornado	High	High	Very High	BEL-03, BEL-05, BEL-06, BEL-07
Wildland Fire (Wildfire)	Moderate	Moderate	Moderate	BEL-04, BEL-06, BEL-07

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Extreme Cold/Wind Chill (Winter Storm)	Moderate	Moderate	Moderate	BEL-06, BEL-07
Meteorological Drought (Drought)	Moderate	Moderate	Moderate	BEL-06, BEL-07, BEL-08
Hydrological Drought (Drought)	High	Moderate	High	BEL-06, BEL-07, BEL-08
Infectious Disease Pandemic (Pandemic)	Low	High	Moderate	BEL-06, BEL-07
Animal/Agricultural Disease Outbreak	Low	Moderate	Low	BEL-06, BEL-07
Fixed-Facility Chemical Release (Hazardous Mat)	Low	High	Moderate	BEL-06, BEL-07, BEL-09
Heat Wave (Extreme Heat)	Moderate	High	High	BEL-06, BEL-07, BEL-08
Subsidence/Sinkhole	Moderate	Low	Low	BEL-06, BEL-07
Severe Thunderstorm/Lightning/Hail	High	Moderate	High	BEL-01, BEL-03, BEL-04, BEL-05, BEL-06, BEL-07
Cyberterrorism (Cyberattack)	Moderate	High	Moderate	BEL-06, BEL-07, BEL-10
Floods (Flood)	High	High	Very High	BEL-01, BEL-02, BEL-06, BEL-07
Freezing Temperatures (Winter Storm)	Moderate	Moderate	Moderate	BEL-06, BEL-07
Terrorism/CBRNE (Terrorism)	Low	High	Moderate	BEL-06, BEL-07
Tropical Storm/Hurricane (Hurricane)	High	High	Very High	BEL-03, BEL-05, BEL-06, BEL-07

POPULATION AND SOCIAL VULNERABILITY

Belle Isle's age, disability, household, language-at-home, housing-tenure, and poverty indicators inform accessible warning, transportation, sheltering, cooling, and recovery efforts, but do not determine who is exposed to a particular hazard. Current local information should be used to identify residents with mobility, medical-support, communication, transportation, or power-dependence needs, especially where lakefront access, outages, or severe weather may compound those needs.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 90: Belle Isle Local Asset and Lifeline Exposure

Population Segment	Key Vulnerabilities	Relevant Hazards	Additional Considerations
Seniors (65+)	Mobility, medical dependence	Heat, hurricane, flood	Use the 2020–2024 ACS age estimate
Children (<18)	Dependence, evacuation challenges	Hurricane, flood, tornado	Schools, childcare facilities
Persons with disabilities	Access, medical reliance	All hazards	Need for accessible communications
Medically dependent	Power, transport to facilities	Heat, hurricane, flood	Presence of care/assisted living
Lower-income households	Resource constraints	All hazards	Use the 2020–2024 ACS person-level poverty measure
People age 5+ speaking a language other than English at home	Language barriers	All hazards	Use the 2020–2024 ACS language-at-home measure; not limited English proficiency (LEP)

Table 91: Belle Isle Local Assets and Areas at Risk

Asset Type	Hazard Exposure (Flood/Hurricane/Thunderstorm/Tornado/Wildfire)	Notes
Lakefront Residential	High (Flood/Hurricane), Moderate (Thunderstorm/Wildfire)	High-value lakefront assets; one FEMA repetitive-loss record citywide as of Aug. 2, 2026
Inland Residential	Moderate (Wind/Thunderstorm), Low (Flood)	Wind and tornado damage potential
Critical Public Facilities	Moderate (Flood/Hurricane), Low (Wildfire)	City Hall, fire/police, lift stations
Utility Infrastructure	High (Flood/Wind/Lightning)	Sewer, water, pump stations near lakes
Local Roads and Bridges	Moderate (Flood/Hurricane), Low (Thunderstorm)	Evacuation and emergency access
Commercial/Retail Clusters	Low (Flood/Hurricane), Moderate (Wind/Thunderstorm)	Local business recovery impact
Schools	Moderate (Wind/Flood)	Serve as emergency shelters

BUILT AND NATURAL ENVIRONMENT

Belle Isle's housing, municipal services, roads, utilities, parks, lakes, shorelines, drainage features, and mature vegetation form a closely connected system. Flooding, wind, falling trees, power loss, blocked routes, heat, and water-quality effects can compound.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For Belle Isle, the principal climate-adjusted pathways are Lake Conway/lakefront and stormwater exposure, lift-station and access dependencies, mature-tree and power-line exposure, increasing heat, and tropical-cyclone wind/rain. Current lake, drainage, facility, and road data are needed to translate the regional climate signal into project-level design.

2021–2026 UPDATE FINDINGS

Table 92: Belle Isle 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not support a verified participant-specific 2021-2026 before/after finding for development or vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline from available demographics, land use, assets, and risk information, but no boundary-matched change analysis was located. No material change is identified from available records pending participant confirmation; this does not mean no development occurred.
Change in mitigation priorities	No material change in mitigation priorities was identified from the available 2021/2022 Appendix D record because no deferred action was attributed to this participant and the referenced Annex 5 Active Initiatives List was unavailable. The 2026 action register is therefore the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed participant-specific integration into a comprehensive/land-use plan, code, capital improvement program, budget, emergency operations plan, or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the participant should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and FIRM:** Belle Isle is an active NFIP community (CID 120181) with a current effective FIRM date of September 25, 2009; FEMA does not list a current Community Rating System (CRS) class or discount.

- **Adopted floodplain regulations:** The City administers its floodplain-management ordinance, including Ordinance 17-01 and subsequent amendments.
- **Administering office/designee:** The City administers the local floodplain program through its designated floodplain-management function.
- **Permitting/enforcement, including substantial improvement/damage:** Administration includes permit review, elevation or floodproofing documentation, inspections, and enforcement, and documented substantial-improvement and substantial-damage determinations.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** FEMA's August 2, 2026, privacy-protected multiple-loss dataset lists 1 NFIP repetitive-loss property and no NFIP SRL property for CID 120181.

3. Capability Assessment

Countywide capability descriptions are incorporated by reference. Table 93 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities. Plan finalization requires confirmation against current adopted documents, organizational assignments, and budgets.

Table 93: Belle Isle Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
Planning & regulatory	Comprehensive plan; land-development/zoning and building regulations; floodplain and capital-planning mechanisms	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	Belle Isle administration; planning/community development; public works; building/code functions; emergency management and response coordination	Confirm the current Local Mitigation Strategy (LMS) representative, responsible Geographic Information Systems (GIS)/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility. No staffing shortfall is inferred without participant confirmation.
Financial	Annual operating and capital budgets; legally authorized utility/stormwater revenues; applicable grants	Link each action to a specific budget, Community Improvement Plan (CIP)/utility, or grant mechanism, and document the local-match strategy where applicable; update the funding record during the annual review.

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
NFIP / floodplain	See the verified NFIP paragraph above	No material program gap is identified from the verification summarized above; maintain the current ordinance/designee, permitting/enforcement and Substantial Improvement/Substantial Damage (SI/SD), CRS information where applicable, and annual RL/SRL reconciliation.

4. Mitigation Strategy

The action register identifies participant-specific actions and implementation information.

Table 94: Belle Isle Mitigation Action Register

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/Status	Priority
BEL-01	Stormwater System Maintenance and Enhancement [Infrastructure Improvement] Need: Localized flooding due to stormwater drainage limitations	Flood, Severe Thunderstorm	Public Works Department	Local Funds, Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA)	Ongoing; status: In Progress	High
BEL-02	Participation and Compliance with NFIP [Program Participation] Need: Floodplain management and insurance compliance	Flood	Planning & Zoning	Local Funds	Ongoing; status: Active	High
BEL-03	Public Education: Hurricane and Tornado Awareness [Public Outreach] Need: Lack of resident awareness	Hurricane, Tornado, Severe Thunderstorm	City Administration	Local Funds, EMPG	Annually; status: Scheduled	Medium

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
	of severe weather preparedness					
BEL-04	Vegetation Management Program Need: Risk of fire spread and wind/thunderstorm debris	Wildfire, Severe Thunderstorm	Public Works Department	Local Funds	Ongoing	Medium
BEL-05	Backup Power for Critical Facilities [Infrastructure Improvement] Need: Loss of power to police station and emergency centers	Hurricane, Severe Storm, Tornado	City Manager/Police Department	HMGP, Emergency Management Performance Grant (EMPG), Local Funds	2024–2026; status: Planned	High
BEL-06	Vulnerability Assessment of Essential Facilities [Planning/ Assessment] Need: Identifying weak points in key infrastructure	All Hazards	Planning & Zoning	Local Funds, HMGP	2024; status: In Progress	High
BEL-07	Community Emergency Response Team (CERT) Training [Public Outreach/ Preparedness] Need: Limited citizen response capacity during disasters	All Hazards	City Administration	Local Funds, CERT Program	Annually; status: Active	Medium
BEL-08	Risk Communication for Extreme Heat and Drought [Public Outreach] Need: Lack of awareness about health risks and conservation	Extreme Heat, Drought	City Administration	Local Funds, Centers for Disease Control and Prevention (CDC)/ Department of Health (DOH) grants	Annually; status: Ongoing	Medium

ID	Action / Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/Status	Priority
BEL-09	Spill Prevention and Response Planning [Planning/Contingency] Need: Fixed-facility chemical release risk	Hazardous Materials	Public Works/Fire Department.	Local Funds	Ongoing; status: In Progress	Medium
BEL-10	IT System Security Upgrades [Infrastructure Improvement] Need: Potential cyber disruptions to city operations	Cyberattack	IT Department	Local Funds, U.S. Department of Homeland Security (DHS) Grants	2024; status: Planned	High

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to the City of Belle Isle. This finding is limited to Appendix D and does not establish that no active initiative existed, because the Annex 5 Active Initiatives List referenced in the prior plan was not present in the adopted plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 95: Belle Isle Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/ losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review,

PRT Element	Participant Procedure
	public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, Belle Isle should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Belle Isle City Council will consider the Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

City of Apopka

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

Apopka is in northwestern Orange County and includes an urbanizing municipal area associated with the Lake Apopka basin, as well as other lakes and drainage systems. The Census Bureau reports 34.56 square miles of land. The City's mix of established neighborhoods, growth areas, employment and agricultural functions, drainage infrastructure, and wildland-urban interface conditions makes current land-use and infrastructure information important for understanding how exposure changes over time.³⁸

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020 Census counted 54,873 residents, and the Census Bureau's July 1, 2025, estimate is 65,552. For 2020–2024, QuickFacts reports 19,324 households, 3.00 persons per household, 77.7 percent owner occupancy, 25.3 percent under age 18, 14.0 percent age 65 or older, 6.5 percent disability among persons under age 65, 32.3 percent speaking a language other than English at home among persons age five or older, median household income of \$96,884 in 2024 dollars, and 10.2 percent of persons below poverty.³⁹ Unless otherwise stated, demographic characteristics in this annex use the U.S. Census Bureau's 2020–2024 American Community Survey (ACS) five-year estimates.

LAND USE AND DEVELOPMENT PATTERN

Apopka's municipal area includes established neighborhoods, growth areas, employment and agricultural functions, lakes, drainage systems, and wildland-urban-interface conditions. Continued growth can change runoff, service demand, evacuation and access needs, and the value of exposed assets. Current development and infrastructure data should inform each plan-maintenance cycle.

³⁸ U.S. Census Bureau, QuickFacts: Apopka city, Florida, land area, <https://www.census.gov/quickfacts/fact/table/apopkacityflorida/PST045225>.

³⁹ U.S. Census Bureau, QuickFacts: Apopka city, Florida, 2020 Census, July 1, 2025 estimate, and 2020–2024 American Community Survey five-year characteristics, <https://www.census.gov/quickfacts/fact/table/apopkacityflorida/PST045225>.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Apopka's principal recurring vulnerabilities arise from heavy rainfall and drainage issues, tropical-cyclone winds and outages, severe thunderstorms, heat, and locally consequential cold. The Citywide matrix does not imply equal parcel-level exposure.

Table 96: Apopka Hazard Risk

Hazard	Probability	Consequence	Overall / Rank	Action Coverage
Floods	High	High	Very High	APO-1, APO-2, APO-3
Tropical Storm/Hurricane	High	High	Very High	APO-1, APO-2, APO-4, APO-6
Severe Thunderstorm/Lightning/Hail	High	Moderate	High	APO-2
Tornado	Moderate	High	High	APO-2, APO-4
Heat Wave	High	Moderate	High	APO-2, APO-5
Extreme Cold/Wind Chill	High	Moderate	High	APO-2, APO-5
Freezing Temperatures	Low	Moderate	Low	APO-2, APO-5
Wildland Fire	Moderate	Moderate	Moderate	APO-2, APO-6
Meteorological Drought	Moderate	Moderate	Moderate	APO-2
Hydrological Drought	Moderate	Moderate	Moderate	APO-2
Infectious Disease Pandemic	Low	High	Moderate	APO-2
Fixed-Facility Chemical Release	Low	High	Moderate	APO-2
Cyberattack	Low	High	Moderate	APO-2, APO-7
Subsidence/Sinkhole	Low	Moderate	Low	APO-2
Animal/Agricultural Disease	Low	Moderate	Low	APO-2
Terrorism/CBRNE	Low	High	Moderate	APO-2

POPULATION AND SOCIAL VULNERABILITY

Apopka's age, disability, household, language-at-home, housing tenure, and poverty indicators guide inclusive planning but do not identify people in hazard areas. Rapid population change increases the importance of current neighborhood-scale information for warning, evacuation, transportation, cooling, sheltering, and recovery, especially where drainage, utility, agricultural, and wildland-interface conditions overlap.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 97 is a functional screening inventory compiled from the verified jurisdiction profile and existing annex record.

Table 97: Apopka Representative Assets and Lifeline Functions

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
Government and emergency services	Municipal administration, public safety, and emergency coordination	Flood, tropical cyclone, tornado, severe storm, cyberattack	Access, communications, staffing, power, and continuity require current verification.
Water, wastewater, and stormwater	Treatment, collection, distribution, drainage, and maintenance functions	Flood, tropical cyclone, drought, heat, outage	Capacity, backup power, access, and interdependencies should be evaluated by asset.
Transportation	Roads, bridges, traffic systems, and evacuation access	Flood, wind, debris, wildfire, hazardous materials	Route disruption can delay evacuation, response, and restoration.
Energy and communications	Electric and telecommunications dependencies	Tropical cyclone, severe storm, heat, cyberattack	Outages can affect warning, cooling, utilities, public safety, and recovery.
Shelter and health support	Facilities and partners designated for sheltering, health, and mass care	Tropical cyclone, tornado, heat, pandemic	Designation, accessibility, capacity, and backup systems require participant confirmation.
Community and economic assets	Neighborhoods, businesses, schools, and community facilities	Flood, wind, heat, outage, pandemic	Exposure and continuity vary by location, construction, access, and population needs.
Natural and agricultural systems	Lakes, drainage features, parks, agricultural areas, and interface lands	Flood, drought, heat, wildfire, tropical cyclone	Water management, vegetation, access, and land-use change affect risk.

BUILT AND NATURAL ENVIRONMENT

Apopka's built and natural systems include neighborhoods, businesses, public facilities, roads, utilities, agriculture, lakes, drainage features, parks, and wildland-interface areas. Flooding, tropical-cyclone wind and rain, severe storms, heat, drought, wildfire, and utility interruption can affect several systems at once.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For Apopka, the principal climate-adjusted pathways are Lake Apopka and local drainage conditions, continued growth and impervious cover, agricultural and water-system stress, increasing heat, wildland-urban-interface exposure, and tropical-cyclone rainfall and wind. Current neighborhood- and project-scale development, drainage, utility, agricultural, and asset data are needed to translate these regional signals into mitigation priorities.

2021–2026 UPDATE FINDINGS

Table 98: Apopka 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not support a verified participant-specific 2021–2026 before/after finding for development or vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline using available demographic, land-use, asset, and risk information, but no boundary-matched change analysis was found. No material change is identified from available records pending participant confirmation; this does not mean no development occurred.
Change in mitigation priorities	No material change in mitigation priorities was identified from the available 2021/2022 Appendix D record because no deferred action was attributed to this participant, and the referenced Annex 5 Active Initiatives List was unavailable. The 2026 action register is therefore the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed participant-specific integration into a comprehensive/land-use plan, code, capital improvement program, budget, emergency operations plan, or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the participant should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and FIRM:** Apopka participates in the NFIP under CID 120180 in the Regular Program, with a current effective FIRM date of September 24, 2021. FEMA lists CRS

Class 8, corresponding to a 10-percent Special Flood Hazard Area (SFHA) premium credit and a 5-percent credit outside the SFHA.

- **Adopted floodplain regulations:** The City Land Development Code and floodplain-management requirements govern development in mapped flood-hazard areas; City flood-preparedness guidance requires an approved development plan and building permit for floodplain development.
- **Administering office/designee:** The City Engineer/Floodplain Administrator and Engineering Division provide floodplain management, plan review, permitting, and floodplain analysis.
- **Permitting/enforcement, including substantial improvement/damage:** City guidance requires floodplain development review and permits and describes the City Engineer/Floodplain Administrator role in substantial-improvement determinations, including the 50-percent threshold.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** A public Multiple Loss Properties query returned no Apopka records as of August 2, 2026; because the dataset is privacy-protected, that absence is not used to claim zero insured losses.⁴⁰

3. Capability Assessment

Table 99 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 99: Apopka Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
Planning & regulatory	Comprehensive plan; land-development/zoning and building regulations; floodplain and capital-planning mechanisms	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	Apopka administration; planning/community development; public works; building/code functions; emergency management and response coordination	Confirm the current Local Mitigation Strategy (LMS) representative, responsible Geographic Information Systems (GIS)/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility.

⁴⁰Federal Emergency Management Agency, NFIP Community Status Book v1, Apopka CID 120180, dataset refreshed August 25, 2026, <https://www.fema.gov/openfema-data-page/nfip-community-status-book-v1>; NFIP Multiple Loss Properties v1, data as of August 2, 2026, <https://www.fema.gov/openfema-data-page/nfip-multiple-loss-properties-v1>.

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
		No staffing shortfall is inferred without participant confirmation.
Financial	Annual operating and capital budgets; legally authorized utility/stormwater revenues; applicable grants	Link each action to a specific budget, Community Improvement Plan (CIP)/utility, or grant mechanism, and document the local-match strategy where applicable; update the funding record during the annual review.
NFIP / floodplain	See the verified NFIP paragraph above	No material administrative gap is identified from the verified City floodplain-management information; maintain CRS documentation, current permitting/Substantial Improvement (SI) procedures, and participant/NFIP verification of the RL/SRL aggregate.

4. Mitigation Strategy

The action register identifies participant-specific actions and implementation information.

Table 100: Apopka Mitigation Action Register

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
APO-1	Drainage and flood data program	Flood, hurricane	Engineering / Public Services	Local capital; Hazard Mitigation Program (HMGP)/ Flood Mitigation Program (FMA)/Building Resilient Infrastructure and Communities (BRIC) if eligible	2026–2031; proposed	High
APO-2	Critical-facility hazard and backup-power gap assessment	All hazards	Administration / Departments	Local; state/federal grants	2026–2028; proposed	High
APO-3	Maintain NFIP compliance and CRS Class 8 or better	Flood	Floodplain Administration	Local; eligible grants	Annual; proposed continuation	High
APO-4	Multi-channel accessible severe-weather alerting	Storm, tornado, hurricane	Public Safety / Communications	Local; preparedness grants	2026–2029; proposed	High

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
APO-5	Heat and cold protective operations coordination	Heat, extreme cold	Administration / Orange County	Local; partner resources	Annual; proposed	Moderate
APO-6	Vegetation, debris, and severe-weather continuity program	Storm, hurricane, wildfire	Public Services / Utilities	Local capital/operations	2026–2031; proposed	Moderate
APO-7	Cyber continuity and recoverable-backup assessment	Cyberattack	Information Technology	Local; cybersecurity grants	2026–2028; proposed	Moderate

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to the City of Apopka. This finding is limited to Appendix D and does not establish that no active initiative existed, because the Annex 5 Active Initiatives List referenced in the prior plan was not present in the adopted plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 101: Apopka Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/ losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the

PRT Element	Participant Procedure
	comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, Apopka should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the City of Apopka governing body will consider the Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

City of Edgewood

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

Edgewood is a compact residential municipality approximately three miles south of downtown Orlando. Official city information identifies the shores of Lakes Conway, Gatlin, Jennie Jewel, Jessamine, and Mary Jess as defining local features. The city has approximately 1.2 square miles of land.⁴¹

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020–2024 American Community Survey (ACS) five-year estimate is 2,758 residents and 1,160 households, with approximately 2.4 persons per household. The same release estimates 21.5 percent under age 18, 16.2 percent age 65 or older, 9.3 percent disability among persons under age 65, 16.4 percent speaking a language other than English at home among persons age five or older, median household income of \$81,481 in 2024 inflation-adjusted dollars, 5.0 percent of persons below poverty, and 51.9 percent of persons age 25 or older with a bachelor's degree or higher.⁴² Unless otherwise stated, demographic characteristics in this annex use the U.S. Census Bureau's 2020–2024 ACS five-year estimates.

LAND USE AND DEVELOPMENT PATTERN

Edgewood's compact residential form and lake setting place homes, municipal operations, roads, drainage, utilities, mature vegetation, and emergency access within a small area. Redevelopment, maintenance, and capital decisions should therefore consider lake and drainage conditions, tree and power exposure, roadway access, and utility and lift-station dependencies together rather than as isolated systems.

⁴¹ City of Edgewood, Residents, location, lakes, municipal history, and approximate population, <https://edgewood-fl.gov/residents>.

⁴² U.S. Census Bureau, data.census.gov profile: Edgewood city, Florida, 2020–2024 American Community Survey five-year estimates, place FIPS 1219900, https://data.census.gov/profile/Edgewood_city_Florida?q=160XX00US1219900. Calculations retain the published ACS universe for each measure.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Edgewood's lake setting, compact road and drainage network, mature vegetation, and small municipal organization shape its exposure. Flooding, tropical cyclones, severe thunderstorms, heat, and recurring cold-weather protective operations are priority concerns.

Table 102: Edgewood Hazard Risk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Floods	High	High	Very High	EDG-1, EDG-2, EDG-3
Tropical Storm/Hurricane	High	High	Very High	EDG-1, EDG-2, EDG-4, EDG-6
Severe Thunderstorm/ Lightning/ Hail	High	Moderate	High	EDG-2
Tornado	Moderate	High	High	EDG-2, EDG-4
Heat Wave	High	Moderate	High	EDG-2, EDG-5
Extreme Cold/Wind Chill	High	Moderate	High	EDG-2, EDG-5
Freezing Temperatures	Low	Moderate	Low	EDG-2, EDG-5
Meteorological Drought	Moderate	Low	Moderate	EDG-2
Hydrological Drought	Moderate	Moderate	Moderate	EDG-2
Wildland Fire	Low	Moderate	Low	EDG-2
Infectious Disease Pandemic	Low	High	Moderate	EDG-2
Fixed-Facility Chemical Release	Low	High	Moderate	EDG-2
Cyberattack	Low	High	Moderate	EDG-2, EDG-7
Subsidence/ Sinkhole	Low	Moderate	Low	EDG-2
Animal/ Agricultural Disease	Low	Moderate	Low	EDG-2
Terrorism/ CBRNE	Low	High	Moderate	EDG-2

POPULATION AND SOCIAL VULNERABILITY

Edgewood's ACS indicators are screening measures and therefore carry material uncertainty due to the city's small population. They should provide accessible warning, transportation, sheltering, cooling, continuity, and recovery without being converted to precise counts in hazard areas.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 103 is a functional screening inventory compiled from the verified jurisdiction profile and existing annex record.

Table 103: Edgewood Representative Assets and Lifeline Functions

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
Government and public safety	City administration, police, communications, and emergency coordination	Flood, tropical cyclone, tornado, severe storm, cyberattack	Access, staffing, communications, records, and backup power require current verification.
Roads and drainage	Local roads, drainage facilities, and access routes	Flood, tropical cyclone, severe storm, debris	Localized flooding or blockage can limit response and access.
Utility dependencies	Water, wastewater, electric, and telecommunications services	Flood, wind, heat, cyberattack, outage	Continuity depends on provider coordination, backup capability, and accessible infrastructure.
Health and shelter support	Regional healthcare, shelter, and mass-care partners	Tropical cyclone, tornado, heat, pandemic	Capacity, designation, transportation, and accessibility require current confirmation.
Residential areas	Established and lake-adjacent neighborhoods	Flood, wind, tornado, heat, outage	Exposure varies by elevation, drainage, construction, trees, and access.
Schools and community functions	Schools, parks, and community-serving facilities	Severe storm, tropical cyclone, heat, flood	Facility status, protection, and emergency role require participant verification.
Natural systems	Lakes, shorelines, drainage features, parks, and mature vegetation	Flood, wind, heat, drought	Water levels, tree fall, access, and water quality require location-specific review.

BUILT AND NATURAL ENVIRONMENT

Edgewood's homes, municipal services, roads, drainage, utility dependencies, parks, lakes, shorelines, and mature vegetation form a compact and interdependent system. Flooding, wind, falling trees, outages, heat, and blocked access can affect multiple functions simultaneously.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For Edgewood, lake setting, compact drainage and road networks, mature vegetation, lift-station/utility dependencies, and limited municipal capacity make heavier rainfall, increasing heat, and tropical-cyclone wind/rain the priority climate-adjusted pathways. Facility- and parcel-scale conclusions remain dependent on current city assets and Geographic Information Systems (GIS) data.

2021–2026 UPDATE FINDINGS

Table 104: Edgewood 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not support a verified participant-specific 2021–2026 before/after finding for development or vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline using available demographic, land-use, asset, and risk information, but no boundary-matched change analysis was found. No material change is identified from available records pending participant confirmation; this does not mean no development occurred.
Change in mitigation priorities	No material change in mitigation priorities was identified from the available 2021/2022 Appendix D record because no deferred action was attributed to this participant, and the referenced Annex 5 Active Initiatives List was unavailable. The 2026 action register is therefore the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed participant-specific integration into a comprehensive/land-use plan, code, capital improvement program, budget, emergency operations plan, or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the participant should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and FIRM:** Edgewood participates in the NFIP under CID 120183 in the Regular Program, with a current effective FIRM date of September 25, 2009; FEMA does not list a current Community Rating System (CRS) class or premium discount.

- **Adopted floodplain regulations:** The City adopted flood-damage-prevention regulations through Ordinance 2018-13, codified in Chapter 106; current amendments should be confirmed during participant review.
- **Administering office/designee:** Ordinance 2018-13 designates the Mayor as Floodplain Administrator and permits delegation of duties; the current organizational designation should be confirmed before submission.
- **Permitting/enforcement, including substantial improvement/damage:** The ordinance authorizes administration and enforcement of the floodplain regulations. Current permit/enforcement documentation, as well as substantial-improvement/substantial-damage procedures, should be confirmed in the participant record before submission.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** A public Multiple Loss Properties query returned no Edgewood records as of August 2, 2026; because the dataset is privacy-protected, that absence is not used to claim zero insured losses.⁴³

3. Capability Assessment

Table 105 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 105: Edgewood Capability Summary

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
Planning & regulatory	Comprehensive plan; land-development/zoning and building regulations; floodplain and capital-planning mechanisms	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	Edgewood administration; planning/community development; public works; building/code functions; emergency management and response coordination	Confirm the current Local Mitigation Strategy (LMS) representative, responsible GIS/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility.

⁴³ Federal Emergency Management Agency, NFIP Community Status Book v1, Edgewood CID 120183, dataset refreshed August 25, 2026, <https://www.fema.gov/openfema-data-page/nfip-community-status-book-v1>; NFIP Multiple Loss Properties v1, data as of August 2, 2026, <https://www.fema.gov/openfema-data-page/nfip-multiple-loss-properties-v1>.

Capability Type	Participant Mechanisms/Resources	Gap / Improvement Needed
		No staffing shortfall is inferred without participant confirmation.
Financial	Annual operating and capital budgets; legally authorized utility/stormwater revenues; applicable grants	Link each action to a specific budget, Community Improvement Plan (CIP)/utility, or grant mechanism, and document the local-match strategy where applicable; update the funding record during the annual review.
NFIP / floodplain	See the verified NFIP paragraph above	Confirm the current Floodplain Administrator designation and any amendments to Chapter 106; retain current permit/enforcement and Substantial Improvement/Substantial Damage (SI/SD) procedures and reconcile RL/SRL information annually.

4. Mitigation Strategy

The action register identifies participant-specific actions and implementation information.

Table 106: Edgewood Mitigation Action Register

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
EDG-1	Drainage, lake, and flood-exposure inventory	Flood, hurricane	Planning / Administration	Local; Hazard Mitigation Grant Program (HMGP)/ Flood Mitigation Assistance (FMA)/ Building Resilient Infrastructure and Communities (BRIC) if eligible	2026–2029; proposed	High
EDG-2	Critical-facility continuity and backup-power gap assessment	All hazards	Administration/ Police	Local; state/federal grants	2026–2028; proposed	High
EDG-3	Maintain NFIP compliance and assess CRS feasibility	Flood	Floodplain Administration	Local; eligible grants	Annual; proposed	High
EDG-4	Accessible multi-channel alerts and public guidance	Storm, tornado, hurricane	Police/ Administration	Local; preparedness grants	2026–2029; proposed	High

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
EDG-5	Heat and cold protective operations coordination	Heat, extreme cold	Administration/ Orange County	Local; partner resources	Annual; proposed	Moderate
EDG-6	Tree, debris, and severe-weather continuity program	Storm, hurricane	Administration / Contractors	Local capital/operations	2026–2031; proposed	Moderate
EDG-7	Cyber continuity and recoverable-backup assessment	Cyberattack	Administration/ IT support	Local; cybersecurity grants	2026–2028; proposed	Moderate

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to the City of Edgewood. This finding is limited to Appendix D and does not establish that no active initiative existed, because the Annex 5 Active Initiatives List referenced in the prior plan was not present in the adopted plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 107: Edgewood Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/ losses; changes in capabilities or funding; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the

PRT Element	Participant Procedure
	comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, Edgewood should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the City of Edgewood governing body will consider the Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

City of Maitland

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

Maitland is a compact, built-out, and redeveloping municipality in northern Orange County. Its official community profile describes established neighborhoods, condominiums and garden apartments, a growing downtown and commerce center, and scenic tree-filled parks. The Census Bureau reports 5.36 square miles of land.⁴⁴

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020–2024 American Community Survey (ACS) five-year estimate is 19,469 residents, 8,972 households, 2.16 persons per household, and 10,017 housing units. The same release estimates 17.6 percent of residents under age 18, 13.0 percent age 65 or older, 5.2 percent with disabilities among persons under age 65, 20.7 percent speaking a language other than English at home, 44.4 percent owner occupancy, a median household income of \$97,150, and 10.4 percent of persons below the poverty line.⁴⁵ Unless otherwise stated, demographic characteristics in this annex use the U.S. Census Bureau's 2020–2024 ACS five-year estimates.

LAND USE AND DEVELOPMENT PATTERN

Maitland is largely developed and continues to experience redevelopment in a setting characterized by established neighborhoods, multifamily housing, commerce, lakes, parks, roads, and municipal utilities. Redevelopment can reduce building vulnerability through current codes while also increasing asset concentration and system dependence.

⁴⁴ City of Maitland, About Maitland, <https://www.maitlandfl.gov/339/About-Maitland>; U.S. Census Bureau, 2024 Gazetteer Files, Places, Maitland city (GEOID 1242575), <https://www.census.gov/geographies/reference-files/time-series/geo/gazetteer-files>.

⁴⁵ U.S. Census Bureau, 2020–2024 American Community Survey five-year estimates, QuickFacts: Maitland city, Florida, <https://www.census.gov/quickfacts/fact/table/maitlandcityflorida/PST045225>.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI) context, and methodology. This annex provides participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Maitland's lakes, dense development and redevelopment, road network, tree cover, municipal utilities, and power dependence shape its exposure. Flooding, tropical-cyclone wind and rainfall, severe thunderstorms, heat, tornadoes, and service interruption are priority concerns. Lakefront and low-lying drainage conditions can differ substantially within the city, so the matrix below does not imply uniform parcel exposure.

Table 108: Maitland Hazard Risk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Floods	High	High	Very High	MAI-1, MAI-2, MAI-3
Tropical Storm/ Hurricane	High	High	Very High	MAI-1, MAI-2, MAI-4, MAI-6
Severe Thunderstorm/ Lightning/ Hail	High	Moderate	High	MAI-2, MAI-4, MAI-6
Tornado	Moderate	High	High	MAI-2, MAI-4
Heat Wave	High	Moderate	High	MAI-2, MAI-5
Extreme Cold/Wind Chill	High	Moderate	High	MAI-2, MAI-5
Freezing Temperatures	Low	Moderate	Low	MAI-2, MAI-5
Meteorological Drought	Moderate	Low	Moderate	MAI-1, MAI-2, MAI-6
Hydrological Drought	Moderate	Moderate	Moderate	MAI-1, MAI-2, MAI-6
Wildland Fire	Low	Moderate	Low	MAI-2, MAI-4, MAI-6
Infectious Disease Pandemic	Low	High	Moderate	MAI-2, MAI-5
Fixed-Facility Chemical Release	Low	High	Moderate	MAI-2, MAI-4

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Cyberattack	Low	High	Moderate	MAI-2, MAI-7
Subsidence/Sinkhole	Low	Moderate	Low	MAI-1, MAI-2
Animal/Agricultural Disease	Low	Moderate	Low	MAI-2
Terrorism/CBRNE	Low	High	Moderate	MAI-2, MAI-4

POPULATION AND SOCIAL VULNERABILITY

Maitland's age, disability, language-at-home, housing tenure, and poverty indicators support inclusive planning but do not identify vulnerable residents within hazard areas. Redevelopment and multifamily housing increase the importance of building-level communication, evacuation, cooling, transportation, and continuity information, especially where flood, wind, heat, and utility disruptions can compound.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 109 is a functional screening inventory compiled from the verified jurisdiction profile and existing annex record. It does not provide facility counts, geocoded exposure, generator status, or protection levels.

Table 109: Maitland Representative Assets and Lifeline Functions

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
Government and emergency services	City administration, police, fire-rescue, and emergency coordination	Flood, tropical cyclone, tornado, severe storm, cyberattack	Access, staffing, communications, power, and continuity require current verification.
Public works and transportation	Roads, traffic systems, fleet, and public works functions	Flood, wind, debris, heat	Route access, equipment, staffing, and restoration priorities affect response.
Water, wastewater, and stormwater	Production, distribution, collection, drainage, and lake-management functions	Flood, tropical cyclone, drought, heat, outage	Capacity, water quality, backup power, and interdependencies should be evaluated by asset.
Energy and communications	Electric and telecommunications dependencies	Tropical cyclone, severe storm, heat, cyberattack	Outages can affect warning, cooling, utilities, public safety, and recovery.
Health and shelter support	Healthcare, shelter, and community-support facilities and partners	Tropical cyclone, tornado, heat, pandemic	Designation, capacity, accessibility, and backup

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
			systems require current confirmation.
Residential and commercial areas	Neighborhoods, multifamily housing, downtown, and commerce areas	Flood, wind, heat, outage	Exposure varies by location, construction, occupancy, trees, and access.
Natural and cultural resources	Lakes, parks, mature trees, and community resources	Flood, wind, heat, drought	Water levels, tree fall, access, and resource protection require location-specific review.

BUILT AND NATURAL ENVIRONMENT

Maitland's housing, commerce, public facilities, roads, water, wastewater, stormwater, electric and communications dependencies, parks, lakes, and mature vegetation are interconnected. Flood, wind, heat, falling trees, outages, and access disruption can cascade across services.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

Maitland, the principal climate-adjusted pathways are heavier rainfall interacting with lake shorelines, storm drainage, and redevelopment; increasing heat affecting residents, outdoor activity, buildings, and utility demand; and potentially wetter or stronger tropical cyclones affecting trees, power, roads, and water/wastewater continuity.

2021–2026 UPDATE FINDINGS

Table 110: Maitland 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not support a verified participant-specific 2021–2026 before/after finding for development or vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline using available demographic, land-use, asset, and risk information, but no boundary-matched change analysis was found. No material change is identified from available records pending participant confirmation; this does not mean no development occurred.
Change in mitigation priorities	No material change in mitigation priorities was identified from the available 2021/2022 Appendix D record because no deferred action was attributed to this participant, and the referenced Annex 5 Active

Update Element	2021–2026 Finding and Basis
	Initiatives List was unavailable. The 2026 action register is therefore the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed participant-specific integration into a comprehensive/land-use plan, code, capital improvement program, budget, emergency operations plan, or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the participant should identify the mechanism/date/result for any integration accomplished or affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and FIRM:** Maitland participates in the NFIP under CID 120184 in the Regular Program, with a current effective FIRM date of September 25, 2009; FEMA lists no current Community Rating System (CRS) class or premium discount.
- **Adopted floodplain regulations:** Land Development Code Section 5.7, Flood Damage Prevention, is the City's floodplain management ordinance and adopts the applicable FIS and FIRM by reference.
- **Administering office/designee:** Section 5.7.3 designates the City Manager or a designee as Floodplain Administrator.
- **Permitting/enforcement, including substantial improvement/damage:** Section 5.7 requires floodplain development permits, inspections and enforcement, and directs the Floodplain Administrator, in coordination with the Building Official, to administer and document substantial-improvement and substantial-damage determinations.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** A public Multiple Loss Properties query returned no Maitland records as of September 4, 2026; a zero-row public query is not proof that no flood claims have occurred and does not replace participant/NFIP verification.⁴⁶

3. Capability Assessment

Table 111 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

⁴⁶ Federal Emergency Management Agency, OpenFEMA National Flood Insurance Program Community Status Book, Maitland community identification number 120184 (dataset last refreshed August 25, 2026), and OpenFEMA National Flood Insurance Program Multiple Loss Properties public query for community 120184 (zero returned rows).

Table 111: Maitland Capability Summary

Capability Type	Participant Mechanisms/ Resources	Gap / Improvement Needed
Planning & regulatory	Maitland 2035 Comprehensive Development Plan (adopted March 2019); Land Development Code (adopted February 28, 2022); planning/zoning, site and subdivision review; Florida Building Code; flood-damage prevention provisions	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	City management; Planning & Zoning; Building/Code; Public Works divisions; Police; Fire-Rescue; Orange County and regional coordination	Confirm the current Local Mitigation Strategy (LMS) representative, responsible Geographic Information Systems (GIS)/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility. No staffing shortfall is inferred without participant confirmation.
Financial	Annual operating/capital budgets; environmental stormwater utility; water/wastewater revenues; applicable state and federal grants	Link each action to a specific budget, Community Improvement Plan (CIP)/utility, or grant mechanism, and document the local-match strategy where applicable; update the funding record during the annual review.
NFIP/ floodplain	See the verified NFIP paragraph above; Land Development Code flood-damage prevention provisions	No material administrative gap is identified from Land Development Code (LDC) Section 5.7; maintain the current designee, permit/enforcement, and SI/SD records, and participant/NFIP verification of the RL/SRL aggregate.

4. Mitigation Strategy

The action register identifies participant-specific actions and implementation information.

Table 112: Maitland Mitigation Action Register

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
MAI-1	Stormwater, lake, and flood-exposure inventory and project prioritization	Flood, hurricane, drought, sinkhole	Public Works/ Lakes	Stormwater utility; local capital; Hazard Mitigation Grant Program (HMGPP)/ Flood	2026–2029; proposed	High

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
				Mitigation Assistance (FMA)/ Building Resilient Infrastructure and Communities (BRIC) if eligible		
MAI-2	Critical-facility and utility continuity/backup-power gap assessment	All hazards	Administration/ Public Work/ Public Safety	Local capital; state/federal grants	2026–2028; proposed	High
MAI-3	Maintain NFIP compliance, verify multiple-loss status, and assess CRS feasibility	Flood	Floodplain Administration	Local; eligible flood-mitigation grants	Annual; proposed	High
MAI-4	Accessible multi-channel alerts, emergency access, and public protective guidance	Storm, tornado, hurricane, chemical, terrorism	Police/ Fire Rescue/ Administration	Local; preparedness grants	2026–2029; proposed	High
MAI-5	Heat, cold, and public-health protective operations coordination	Heat, extreme cold, freeze, infectious disease	Fire Rescue Administration/ Orange County	Local; public health, and partner resources	Annual; proposed	Moderate
MAI-6	Tree, debris, wind, and water-supply resilience program	Storm, hurricane, drought, wildland fire	Public Works/ Parks/ Utilities	Local capital/operations; eligible grants	2026–2031; proposed	Moderate
MAI-7	Cyber continuity and recoverable-backup assessment	Cyberattack	Administration/ IT	Local; cybersecurity grants	2026–2028; proposed	Moderate

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to the City of Maitland. This finding is limited to Appendix D and does not establish that no active initiative existed, because the Annex 5 Active Initiatives List referenced in the prior plan was not present in the adopted plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 113: Maitland Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
D2-b—Evaluation	At least annually, evaluate action completion and effectiveness; changes in hazards/exposure/vulnerability/, and losses; capability or funding changes; progress toward goals; and whether priorities or the plan require amendment.
D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, Maitland should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

DRAFT REVIEW STATUS - ADOPTION PENDING. Formal adoption has not occurred. Following FEMA Approval Pending Adoption, the Maitland City Council will consider the Countywide LMS and this annex at a public meeting and complete the approval or adoption action applicable to the participant. The signed resolution or approval action, action number if applicable, date, and supporting meeting record will be added to the plan-adoption appendix before the annex is identified as adopted.

Town of Oakland

PRT alignment—A1-b, B1-f/B2, C1/C2/C4/C5, D1–D3, E1–E2, and F1: This annex should be read with the Countywide chapters and supporting planning record. Items identified as pending participant verification remain open requirements for plan finalization.

1. Jurisdiction Profile

Oakland is a small municipality in western Orange County located between Lake Apopka and John's Lake. Its land-use context includes established neighborhoods, newer development, municipal facilities and the Oakland Nature Preserve on the south shore of Lake Apopka. The Census Bureau's 2024 Gazetteer reports 2.431 square miles of land.

DEMOGRAPHIC AND COMMUNITY CHARACTERISTICS

The 2020–2024 American Community Survey (ACS) five-year estimate is 3,646 residents, 1,298 households, 2.81 persons per household, and 1,545 housing units. The same release estimates 27.5 percent of residents under age 18, 13.0 percent age 65 or older, 10.4 percent with disabilities among persons under age 65, 10.5 percent speaking a language other than English at home, 82.9 percent owner occupancy, a median household income of \$152,195, and 7.2 percent of persons below the poverty line.⁴⁷ Unless otherwise stated, demographic characteristics in this annex are based on the U.S. Census Bureau's 2020–2024 ACS five-year estimates.

LAND USE AND DEVELOPMENT PATTERN

Oakland combines established neighborhoods, newer development, municipal facilities, utility systems, and natural areas between Lake Apopka and John's Lake. New development and infrastructure expansion should be evaluated for drainage, wetland and lake adjacency, transportation access, heat, wind, and utility-continuity implications.

2. Jurisdiction-Specific Risk Assessment

The Countywide Risk Assessment provides the hazard definitions, scientific context, location-and-extent framework, prior occurrences, future-probability basis, source documentation, National Risk Index (NRI)

⁴⁷ U.S. Census Bureau, 2020–2024 American Community Survey five-year Detailed Tables B01001, B11001, B25010, B25001, B25003, C16001, B17001, B19013 and B18101, Oakland town, Florida (GEOID 1600000US1250525), official 2024 ACS table-based summary files, <https://www.census.gov/data/developers/data-sets/acs-5year.html>. Percentages were calculated from the published estimates and rounded to one decimal place.

context, and methodology. This annex presents participant-specific risk ratings, consequences, exposed facilities and lifelines, National Flood Insurance Program (NFIP) information, action coverage, and data limitations. Ratings are planning judgments at the participant scale and do not establish parcel-level conditions.

HAZARD PRIORITIES AND LOCAL CONSEQUENCES

Oakland's lake setting, compact road network, public works and water/wastewater systems, school and public-safety dependencies, natural areas, and limited municipal scale shape its consequences. Flooding, tropical cyclones, severe thunderstorms, heat, tornadoes, and service interruption are priority concerns.

Table 114: Oakland Hazard Risk

Hazard	Probability	Consequence	Overall/ Rank	Action Coverage
Floods	High	High	Very High	OAK-1, OAK-2, OAK-3, OAK-6
Tropical Storm/Hurricane	High	High	Very High	OAK-1, OAK-2, OAK-3, OAK-4, OAK-6
Severe Thunderstorm/Lightning/Hail	High	Moderate	High	OAK-2, OAK-3, OAK-4
Tornado	Moderate	High	High	OAK-2, OAK-3, OAK-4
Heat Wave	High	Moderate	High	OAK-2, OAK-5, OAK-6
Extreme Cold/Wind Chill	High	Moderate	High	OAK-2, OAK-5
Freezing Temperatures	Low	Moderate	Low	OAK-2, OAK-5
Meteorological Drought	Moderate	Moderate	Moderate	OAK-2, OAK-4, OAK-6
Hydrological Drought	Moderate	Moderate	Moderate	OAK-2, OAK-6
Wildland Fire	Low	Moderate	Low	OAK-2, OAK-4, OAK-6
Infectious Disease Pandemic	Low	High	Moderate	OAK-2, OAK-5
Fixed-Facility Chemical Release	Low	High	Moderate	OAK-2, OAK-3
Cyberattack	Low	High	Moderate	OAK-2, OAK-7
Subsidence/Sinkhole	Low	Moderate	Low	OAK-1, OAK-2
Animal/Agricultural Disease	Low	Moderate	Low	OAK-2
Terrorism/CBRNE	Low	High	Moderate	OAK-2, OAK-3

POPULATION AND SOCIAL VULNERABILITY

Oakland's ACS indicators are screening measures and should not be treated as counts within lake-, wetland-, drainage-, or wind-exposed areas. The Town should use current local information to address warning, transportation, sheltering, cooling, medical support, and recovery needs for children, older adults, persons with disabilities, people with limited English proficiency, and households with constrained resources.

CRITICAL FACILITIES, COMMUNITY LIFELINES, AND INFRASTRUCTURE

Table 115 is a functional screening inventory compiled from the verified jurisdiction profile and existing annex record. It does not provide facility counts, geocoded exposure, generator status, or protection levels; those items remain subject to participant verification.

Table 115: Oakland Representative Assets and Lifeline Functions

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
Government and public safety	Town administration, police, and interlocal fire-rescue support	Flood, tropical cyclone, tornado, severe storm, cyberattack	Access, staffing, communications, power, and coordination require current verification.
Water, wastewater, and public works	Utility, drainage, maintenance, and fleet functions	Flood, tropical cyclone, drought, heat, outage	Capacity, backup power, access, and interdependencies should be evaluated by asset.
Transportation	Roads, traffic systems, and regional access	Flood, wind, debris, wildfire	Route disruption can delay evacuation, response, and restoration.
Schools and community support	School, shelter-support, and community-serving facilities	Tropical cyclone, tornado, flood, heat	Designation, capacity, accessibility, and backup systems require current confirmation.
Energy and communications	Electric and telecommunications dependencies	Tropical cyclone, severe storm, heat, cyberattack	Outages can affect warning, cooling, utilities, public safety, and recovery.
Residential and developing areas	Established neighborhoods and newer development	Flood, wind, heat, outage	Exposure varies by drainage, construction, occupancy, access, and utility dependence.
Natural systems	Lake Apopka, John's Lake, wetlands, parks, and the Oakland Nature Preserve	Flood, wind, heat, drought, wildfire	Water levels, drainage, vegetation, access, and

Lifeline or Asset Function	Representative Local Example	Principal Hazards	Planning Consideration
			habitat functions require location-specific review.

BUILT AND NATURAL ENVIRONMENT

Oakland's neighborhoods, developing areas, municipal services, school and public-safety dependencies, roads, utilities, lakes, wetlands, parks, and the Oakland Nature Preserve create interconnected built-and-natural-systems concerns. Flood, wind, heat, wildfire, power, communications, and access impacts can compound. Development decisions should preserve drainage, wetland, and natural buffer functions while supporting resilient access and utilities.

CHANGES SINCE THE PREVIOUS PLAN AND FUTURE VULNERABILITY

For Oakland, the principal climate-adjusted pathways are heavier rainfall interacting with Lake Apopka/John's Lake drainage, roads and new development; increasing heat affecting residents, outdoor activity, water demand and utilities; potentially wetter or stronger tropical cyclones; and hot/dry periods affecting vegetation and natural-area fire conditions.

2021–2026 UPDATE FINDINGS

Table 116: Oakland 2021–2026 Update Findings

Update Element	2021–2026 Finding and Basis
Development/vulnerability change since the prior plan	Available update records do not support a verified participant-specific 2021-2026 before/after finding for development or vulnerability in hazard-prone areas. The 2026 annex establishes a current baseline using available demographic, land-use, asset, and risk information, but no boundary-matched change analysis was found. No material change is identified from available records pending participant confirmation; this does not mean no development occurred.
Change in mitigation priorities	No material change in mitigation priorities was identified from the available 2021/2022 Appendix D record because no deferred action was attributed to this participant, and the referenced Annex 5 Active Initiatives List was unavailable. The 2026 action register is therefore the proposed current priority set pending participant verification.
Integration accomplished since prior approval	No completed participant-specific integration into a comprehensive/land-use plan, code, capital improvement program, budget, emergency operations plan, or continuity mechanism during the prior cycle was verified in the records available for this draft. Before submission, the participant should identify the mechanism/date/result for any integration accomplished or

Update Element	2021–2026 Finding and Basis
	affirmatively confirm that none occurred; the future D3 procedure is not evidence of past integration.

NFIP AND MULTIPLE-LOSS VERIFICATION

- **NFIP/Community Identification (CID) and FIRM:** Oakland participates in the NFIP under CID 120663 (displayed as 120663D in the status report) in the Regular Program, with a current effective FIRM date of September 24, 2021; FEMA lists no current Community Rating System (CRS) class or premium discount.
- **Adopted floodplain regulations:** A current ordinance citation was not independently verified in the materials available for this draft and should be confirmed by the Town before submission.
- **Administering office/designee:** The current administering office/designee was not independently verified in the materials available for this draft and should be confirmed by the Town before submission.
- **Permitting/enforcement, including substantial improvement/damage:** Current floodplain permitting, enforcement, and substantial-improvement/substantial-damage procedures should be documented in the participant record before submission.
- **Repetitive Loss/Severe Repetitive Loss (RL/SRL) aggregate:** A public Multiple Loss Properties query returned no Oakland records as of September 4, 2026; a zero-row public query is not proof that no flood claims have occurred and does not replace participant/NFIP verification.⁴⁸

3. Capability Assessment

Table 117 summarizes participant-specific planning and regulatory, administrative and technical, financial, and NFIP and floodplain-management capabilities.

Table 117: Oakland Capability Summary

Capability Type	Participant Mechanisms/ Resources	Gap / Improvement Needed
Planning & regulatory	Oakland Comprehensive Plan (2021); Land Development Code/zoning and design guidelines; contracted Planning	Document current plan/code titles and adoption or amendment dates, and record where mitigation risk

⁴⁸ Federal Emergency Management Agency, OpenFEMA National Flood Insurance Program Community Status Book, Oakland community identification number 120663 (dataset last refreshed August 25, 2026), and OpenFEMA National Flood Insurance Program Multiple Loss Properties public query for community 120663 (zero returned rows), <https://www.fema.gov/openfema-data-page/national-flood-insurance-program-community-status-book-v1> and <https://www.fema.gov/openfema-data-page/national-flood-insurance-program-multiple-loss-properties-v1>.

Capability Type	Participant Mechanisms/ Resources	Gap / Improvement Needed
	& Zoning; Building/Permit and Code Enforcement; Orange County subdivision/Public Works standards, where used	findings/actions were integrated or should be integrated. No participant-specific prior-cycle integration record was verified in this draft.
Administrative & technical	Town management; contracted Planning & Zoning; Public Works; Water; Police; Building/Code; Orange County Fire Rescue and emergency management coordination	Confirm the current Local Mitigation Strategy (LMS) representative, responsible Geographic Information Systems (GIS)/asset-data owners, continuity roles, action owners, and annual action-tracking responsibility. No staffing shortfall is inferred without participant confirmation.
Financial	Annual general and utility budgets; water/wastewater revenues; legally authorized fees; applicable state/federal grants	Link each action to a specific budget, Community Improvement Plan (CIP)/utility, or grant mechanism, and document the local-match strategy where applicable; update the funding record during the annual review.
NFIP/ floodplain	See the verified NFIP paragraph above	Before submission, confirm the current floodplain ordinance citation, administering office/designee, permitting/enforcement, and Substantial Improvement/Substantial Damage (SI/SD) procedures; maintain annual RL/SRL reconciliation.

4. Mitigation Strategy

The action register identifies participant-specific actions and implementation information.

Table 118: Oakland Mitigation Action Register

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
OAK -1	Drainage, lake/wetland, and flood-exposure inventory and project prioritization	Flood, hurricane, sinkhole	Public Works/ Planning	Local/utility capital; Hazard Mitigation Grant Program (HMGP)/ Flood Mitigation Assistance (FMA)/ Building Resilient Infrastructure and Communities (BRIC) if eligible	2026–2029; proposed	High

ID	Action/ Risk-Reduction Purpose	Hazards	Lead	Potential Funding	Timeframe/ Status	Priority
OAK -2	Critical-facility, school, and water/ wastewater continuity/ backup-power gap assessment	All hazards	Administration/ Public Works/ Police	Local capital; state/ federal grants	2026–2028; proposed	High
OAK -3	Emergency access, culvert/road continuity, and accessible multi-channel alerts	Flood, storm, tornado, hurricane, chemical, terrorism	Public Works/ Police/ Administration	Local; preparedness/transportation grants	2026–2029; proposed	High
OAK -4	Tree, debris, severe-weather, and wildland fire coordination	Storm, tornado, hurricane, wildland fire	Public Works/ Police / Orange County Fire Rescue	Local operations; eligible grants	2026–2031; proposed	Moderate
OAK -5	Heat, cold, and public-health protective operations coordination	Heat, extreme cold, freeze, infectious disease	Administration/ Orange County partners	Local; public-health, and partner resources	Annual; proposed	Moderate
OAK -6	Maintain NFIP compliance and integrate flood, drainage, heat, and natural area risk into development review	Flood, hurricane, drought, wildland fire	Floodplain Administration/ Planning	Local; eligible flood/mitigation grants	Annual; proposed	High
OAK -7	Cyber continuity and recoverable-backup assessment	Cyberattack	Administration/ IT support	Local; cybersecurity grants	2026–2028; proposed	Moderate

STATUS OF PRIOR ACTIONS

Review of the 2021/2022 LMS Appendix D deferred-project list identified no deferred project attributed to the Town of Oakland. This finding is limited to Appendix D and does not establish that no active initiative existed, because the Annex 5 Active Initiatives List referenced in the prior plan was not present in the adopted plan copy available for this update.

5. Maintenance, Integration, and Adoption

Table 119: Oakland Maintenance and Integration Procedure

PRT Element	Participant Procedure
D1—Future public participation	The participant's LMS representative and Orange County Office of Emergency Management (OEM) will provide an accessible public review/comment opportunity during the annual review and the next update. The record will identify notice method/date, access period, accommodations, comments, and dispositions.
D2-a—Monitoring	Action owners report at least annually and after a major hazard event to the participant LMS representative, who reports to Orange County OEM. The action log records status, milestones, barriers, funding, expenditures if available, and next steps.
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D2-c—Update	Orange County OEM and participant representatives initiate the full update no later than the fourth year after FEMA approval and complete review, public/stakeholder participation, submittal, and adoption by the five-year deadline.
D3—Integration	During each applicable annual budget, plan, code, or program update, the participant representative routes relevant risk findings and actions into the comprehensive plan, land development regulations, capital improvement program, annual budget, emergency operations plan, and continuity procedures. The annual record identifies the mechanism, the responsible office, the decision/date, and the result, or expressly records that no integration occurred.

INTEGRATION PRIORITIES

During the annual review, Oakland should evaluate this annex's risk findings and actions through comprehensive or land-use planning, development review, capital programming, infrastructure and stormwater management, emergency operations, continuity planning, and budgeting, as applicable. The maintenance record should identify the specific local document or process reviewed, the responsible office, the decision made, and whether integration occurred.

ADOPTION STATUS

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