

# Community Resilience Plan

## South of Gandy and Palmetto Beach

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City of Tampa Coastal Area Action Plan

MARCH 2024



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## Community Resilience Plan

South of Gandy and Palmetto Beach

City of Tampa

Coastal Area Action Plan

March 2024





## Community Resilience Plan – South of Gandy and Palmetto Beach

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**Project name:** Coastal Area Action Plan  
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## Executive Summary

The City of Tampa is preparing a Coastal Area Action Plan for Palmetto Beach and the neighborhoods south of Gandy Boulevard to address vulnerabilities to extreme weather events and hurricanes. As part of that plan, this report recommends resilience and adaptation projects and strategies at the neighborhood level with a focus on vulnerable populations and geographic areas.

Using 2020 U.S. Census data, Jacobs assessed the effectiveness of current plans and policies to improve resilience in areas with vulnerable populations in the South of Gandy and Palmetto Beach neighborhoods, strengthening ties with community support organizations and identifying projects that support resilience, respectively (Tasks 1 and 2). Building on the findings and recommendations resulting from this assessment, Jacobs and Benesch developed planning-level, neighborhood-scale recommendations to address the social vulnerabilities in the two communities (Task 3, provided in this report).

The Centers for Disease Control and Prevention Social Vulnerability Index (SVI) forms the basis for this analysis, along with results of stakeholder engagement, the Federal Emergency Management Agency (FEMA) National Risk Inventory, key social variables, the Local Mitigation Strategy, and the City of Tampa’s Climate Action and Equity Plan.

Palmetto Beach is a low-lying coastal community of approximately 630 single-family residences, an elementary school, a rail cargo transfer facility, some industrial land uses, and a few local businesses. The SVI indicates high levels of social and economic vulnerability. The FEMA National Risk Inventory identifies hurricanes and lightning as high hazard risk.

South of Gandy (outside of MacDill Air Force Base) is approximately 9 square miles of residential area. The SVI demonstrates a moderate level of vulnerability; however, the Rembrandt Gardens neighborhood does score higher. The FEMA National Risk Inventory names hurricanes and tornados as relatively high hazard risks.

As part of the planning process, both communities identified physical, social, and infrastructure risk as detailed in this report. To address these concerns, the report lists potential climate mitigation and adaptation strategies to build community resilience. These include targeted community services and programs, policy updates, and capital investments.

Identifying community lifeline partners who may support or participate as stakeholders for each recommended project is a key next step, as well as coordination with those partners and the City stakeholders to discuss implementation. Through regional coordination, project definitions can be created along with an initial implementation plan, funding options, anticipated permitting hurdles, and a timeline. This coordination process is a critical step to facilitate the identification and prioritization of those projects that will move forward in the near term, and those that will be implemented at a later time or require additional input to define and build support for their implementation.

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## Acronyms and abbreviations

AFB	air force base
BRIC	Building Resilient Infrastructure and Communities
CDC	Centers for Disease Control and Prevention
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
LEP	limited English proficiency
LMI	low-to-moderate income
NAVD	North American Vertical Datum
NRI	National Risk Index
SLR	sea level rise
SVI	Social Vulnerability Index

## 1. Introduction

There are three primary tasks involved in developing the Coastal Area Action Plan (Action Plan). Tasks 1 and 2 involved assessing the effectiveness of current plans and policies to improve resilience in areas with vulnerable populations in the South of Gandy and Palmetto Beach neighborhoods, strengthening ties with community support organizations and identifying projects that support resilience, respectively. Task 3, which has been performed by Jacobs, involved conducting a social vulnerability analysis and hazard risk assessment in these areas to identify at-risk populations who may experience a disproportionate impact based on criteria that indicate the existence of social and economic vulnerability. This report describes the results of the Task 3 analysis and informs the Action Plan, providing community- and neighborhood-level recommendations to reduce potential impacts.

### 1.1 Evaluation of Current Plans and Policies

Task 1 of the Action Plan evaluated the ability of current plans and policies to create resilience for vulnerability communities. As part of this work, public workshops were held in five neighborhoods of the South of Gandy and Palmetto Beach communities. Residents and business owners mentioned the following concerns most often:

- **Water intrusion** – Specifically the need for maintaining and improving the stormwater system and concerns about new developments exacerbating the flood impacts for older homes.
- **Disinvestment** – This topic, prevalent in vulnerable communities, is a concern about lack of investment in community infrastructure and services, such as sidewalks, bike lanes, stormwater facilities, and sea walls, as well as the lack of maintenance and law enforcement.
- **Mobility** – This is a general concern about the lack of multimodal transportation options, inadequate evacuation routes, traffic congestion, and the lack of accessibility to important destinations like Picnic Island Park.
- **Gentrification** – There is concern about the increasing rate of new development/redevelopment changing the character of the neighborhood, increasing prices, and increasing population density.
- **Open Space** – There is a strong desire to preserve the limited public open spaces—improving community parks, planting mangroves along the shoreline, and planting more shade trees.

Though each community voiced its own set of circumstances, existing conditions, and desires, there is a shared perception among residents and business owners of South of Gandy and Palmetto Beach areas, and both groups seek to live in a neighborhood that reflects their wants and needs.

### 1.2 Connections to FEMA Community Lifelines

Task 2 evaluated the eight Federal Emergency Management Agency (FEMA) Community Lifelines, which enable the continuous operation of critical government and business services essential to human health and safety or economic security.<sup>1</sup> The eight lifelines are the following:

1. **Safety and Security** – Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety

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<sup>1</sup> Federal Emergency Management Agency (FEMA). 2018. "Community Lifelines." Updated on February 20, 2024. [Community Lifelines | FEMA.gov](https://www.fema.gov/community-lifelines).



2. **Food, Hydration, Shelter** – Food, Hydration, Shelter, Agriculture
3. **Health and Medical** – Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
4. **Energy** – Power Grid, Fuel
5. **Communications** – Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch
6. **Transportation** – Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
7. **Hazardous Material** – Facilities, HAZMAT, Pollutants, Contaminants
8. **Water Systems** – Potable Water Infrastructure, Wastewater Management



Figure 1-1. FEMA's Community Lifeline Chart

Source: FEMA 2018 (updated 2024).

### 1.3 Developing the Neighborhood Resilience Plan

Task 3 for the Action Plan involves two key actions: 1) evaluating the social vulnerability of the population within the South of Gandy and Palmetto Beach communities using 2020 Census data, and 2) recommending projects and strategies to improve resilience at the neighborhood level to address social

vulnerabilities. These recommendations integrate the findings and recommendations from Tasks 1 and 2 and form the foundation of creating a neighborhood adaptation plan. The planning process includes the following:

- Consideration of key indicators, City documents and data, and stakeholder input.
- Recommended programs and projects will address actions that the City can undertake to make the vulnerable populations (those scoring higher than 0.75 on the Centers for Disease Control and Prevention [CDC] Social Vulnerability Index [SVI]) more resilient to flooding and coastal storm events. Programs and projects will reference community lifeline partners.

The SVI forms the basis for this analysis, with results of stakeholder engagement, the FEMA National Risk Inventory, key social variables, the Local Mitigation Strategy, and Tampa’s Climate Action and Equity Plan informing the assessment. These key tools and data inputs identify social vulnerabilities from varying perspectives to:

- Identify and describe social, economic, and geographic elements
- Identify measures of social vulnerability

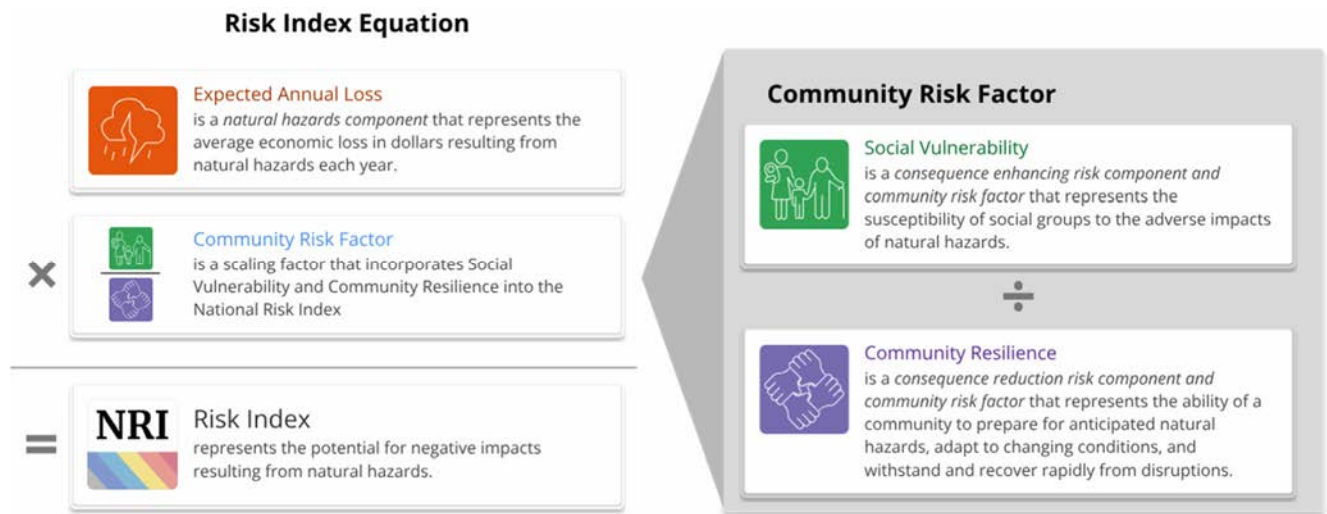
The SVI integrates the values of specific 2020 Census (block and tract) data to identify potential areas of vulnerability that are of particular importance given the potential for disproportionate impacts to infrastructure or other development, especially from environmental stressors. The SVI integrates and ranks four categories of population sensitivity independently and then combines these measures to develop a combined index value, assigning percentile values between 0 and 1. Higher values indicate greater levels of population vulnerability<sup>2</sup> (CDC 2023). Census tracts that score higher than 0.75 in any individual factor will be flagged. The four categories and data integrated in each are as follows:

- **Socioeconomic status** – Indicators: Below 150% poverty, unemployment, housing cost burden, no high school diploma, no health insurance
- **Household characteristics** – Indicators: Aged 65 or older, aged 17 or younger, civilian with a disability, single-parent households, Limited English Proficiency (LEP)
- **Racial and ethnic minority status** – Indicators: Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino
- **Housing type and transportation** – Indicators: Multi-unit structures, mobile homes, crowded housing, lack of vehicle access, group quarters

The FEMA National Risk Index scores represent a combined “risk” based on probability of loss resulting from various threats, based on historical event and loss data. The expected annual loss values are calculated using an equation that combines scores for natural hazards and social vulnerability and divides by community resilience, as shown on Figure 1-2.

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<sup>2</sup> [https://www.atsdr.cdc.gov/placeandhealth/svi/at-a-glance\\_svi.html](https://www.atsdr.cdc.gov/placeandhealth/svi/at-a-glance_svi.html)



**Figure 1-2. National Risk Index Calculation**

Source: <https://hazards.fema.gov/nri/determining-risk>

The scores for each census tract are presented as a composite score for all 18 hazard types, as well as individual scores for each hazard type, which allows an understanding of the threats facing each community. While this tool does not factor in future threats from evolving conditions resulting from climate change, it does provide a good basis for identifying likely threats that face each community. This information is used to develop strategies to mitigate these threats and help build community resilience.

## 2. Palmetto Beach Community

### 2.1 Geographic and Social Characteristics

Palmetto Beach comprises approximately 3 square miles of land area with approximately 630 single-family residences, Desoto Community Park, DeSoto Elementary School, a rail cargo transfer facility, some industrial land uses, and a few local businesses.

The ground surface elevation averages around 5 to 6 feet North American Vertical Datum (NAVD), with low points along the coastline and the southern portions of the neighborhood and higher elevations around 10 feet farther from the coastline and to the north. The area comprises Census Tract 12057005302 (as shown on Figure 2-1) and lies adjacent to FL 618 (Selman Expressway) to the north, South 20<sup>th</sup> Street to the west, McKay Bay to the south, and South 34<sup>th</sup> Street to the east.

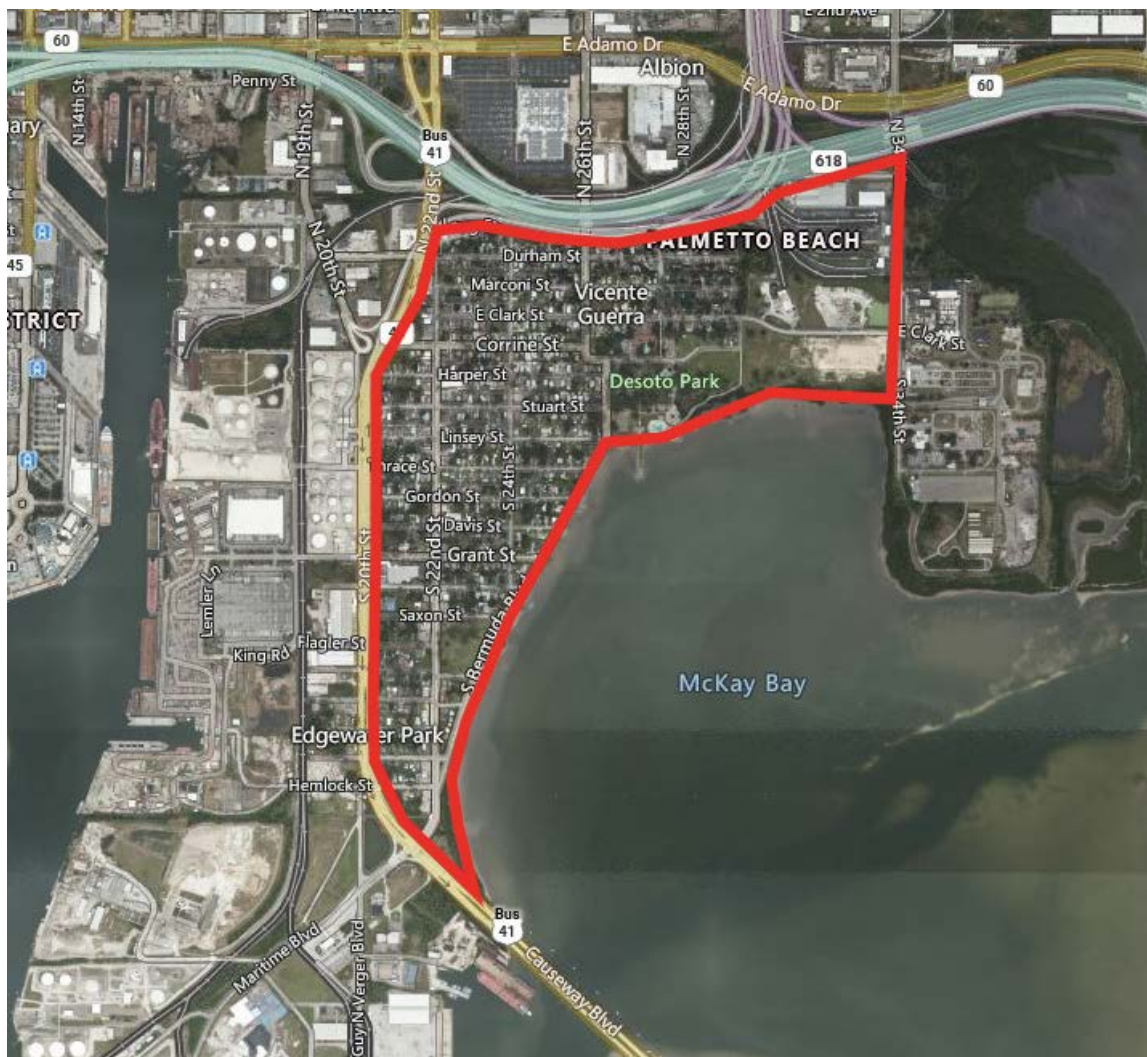


Figure 2-1. Palmetto Beach Community – Study Area Boundary

Source: Jacobs

The Palmetto Beach neighborhood sits between the Marathon’s fuel tank farm and the McKay Bay waterfront, just south of the Selmon Expressway. Established in 1867, and with a current population of around 2,000, it is one of the oldest single-family residential neighborhoods and was once home to five cigar factories. Palmetto Beach sits in a quiet area of town with limited businesses and a small residential population. The neighborhood is home to a few small bodegas, an elementary school, and small cafes. Palmetto Beach has a limited tree canopy and limited sidewalks. There is very little active residential construction occurring in the community.



**Photo 2-1. Example of Palmetto Beach Area Homes**

*Source: Jacobs 2024*

## **2.2 Summary of Community Needs, Issues, and Concerns**

Through various evaluations, areas of needs, issues, and concerns have been identified within the Palmetto Beach neighborhood. Areas of concern have been categorized into three categories: physical, social, and infrastructure. Addressing these identified areas of concern will improve residents’ quality of life and reduce the overall vulnerability of the neighborhood.

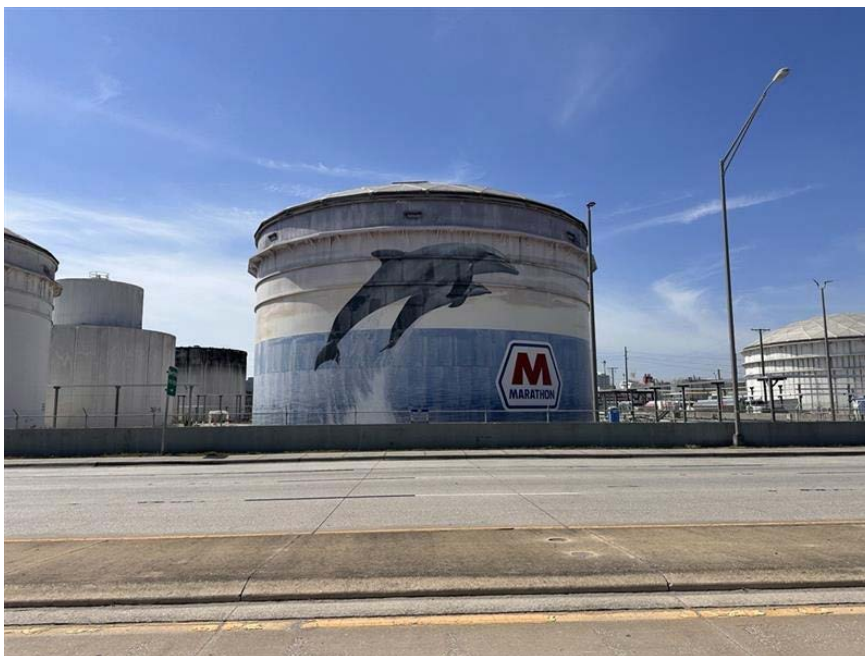
There are a variety of physical needs, issues, and concerns that have been identified in the Palmetto Beach neighborhood. Several identified concerns pertain to transportation and pedestrian infrastructure. Currently, there is a need to improve vehicular access into and out of the neighborhood and a need for bike lanes, especially along the coastline and through parks. A lack of sidewalks has been identified as an issue in the neighborhood as it results in pedestrian safety problems. Additionally, flooding has been identified as a concern by the community, as the northern section of the neighborhood was identified by residents as being flood-prone. The waterfront area of the Palmetto Beach neighborhood has been identified as an area of concern because the waterfront is currently underused and is an area of opportunity to make improvements within the neighborhood. A final physical issue identified within the

neighborhood is the proximity of port bulk storage and fuel tanks to residential housing. Their close proximity to houses acts as a threat to residents and increases community vulnerability.



**Photo 2-2. Palmetto Beach Neighborhood without Sidewalks**

*Source: Jacobs 2024*



**Photo 2-3. Fuel Tank Storage Facility Proximate to Palmetto Beach Neighborhood**

*Source: Jacobs 2024*

Social needs and concerns in Palmetto Beach hinder the overall quality of life for residents. The social needs of Palmetto Beach include a consensus among residents that there is general disenfranchisement by the City, a lack of essential services and businesses, minimal shade along park sidewalks and trails, displacement, and homelessness from the closure of apartments, interest in local historic designation to help with investment needs, vehicular speeding, and illegal trash dumping. Additionally, there are various social concerns relating to increasing crime rates. Residents are seeing elevated drug use and violent behavior throughout the night in various areas of the neighborhood, as well as overall high crime rates and a lack of law enforcement within Palmetto Beach. These issues create an unsafe environment for residents and increase community vulnerability.



**Photo 2-3. Palmetto Beach Sidewalk with No Tree Canopy**

*Source: Jacobs 2024*



**Photos 2-5 and 2-6. Damaged Sidewalks with Minimal Tree Canopy in Palmetto Beach**

*Source: Jacobs 2024*

Residents have voiced concern about infrastructure performance in Palmetto Beach. Issues such as crumbling/spalling seawalls and bulkheads and general seawall failures and collapses create an unsafe environment for residents. Flooding in the Palmetto Beach neighborhood is the result of tidal surge and intense rainfall events. This flooding risk is heightened because of a lack of curbs and gutters and minimal stormwater management systems throughout the neighborhood. Additional areas of concern include damaged roads resulting from heavy vehicles, elevated levels of pollutants in the bay from stormwater inlets along the shoreline, and missing driveways and sidewalks in some areas.





**Photos 2-7 and 2-8. Crumbling Seawall in Palmetto Beach Area**

*Source: Jacobs 2024*

## **2.3 Neighborhood Social Vulnerability**

The Palmetto Beach neighborhood vulnerability was analyzed through the lenses of social and natural hazard vulnerabilities. Social vulnerability in Palmetto Beach was assessed using the CDC SVI tool. Natural hazard vulnerability in Palmetto Beach was characterized using the NRI tool.

The SVI uses U.S. Census data to determine the social vulnerability of every census tract and then ranks each tract on 16 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes. Each tract receives a separate ranking for each of the four themes, as well as an overall ranking. The themes categorized included socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation.

Analysis of Palmetto Beach social vulnerability involved the comparison of Palmetto Beach scores to the overall vulnerability scores for Hillsborough County, as provided in Appendix A. The overall social vulnerability score of Palmetto Beach (0.8505) was greater than Hillsborough County (0.6818). Palmetto Beach also scored higher than Hillsborough County in the socioeconomic status (0.9509 versus 0.5606) and household characteristics (0.8002 versus 0.7879) themes. In contrast, Palmetto Beach scored lower than Hillsborough County in racial and ethnic minority (0.7613 versus 0.8939) and housing type and transportation (0.5165 versus 0.5303) themes.

The composite score of 0.8505 represents elevated levels of social and economic vulnerability in the area. The subindexes of socioeconomic status and household characteristics drive this propensity for disproportionate impact. Because the values combine several measures, it is important to identify which indicators, particularly key indicators that correlate to health and safety outcomes, in that index are proportionally high. For this analysis, Jacobs pulled data from EJScreen, the U.S. Environmental Protection Agency's environmental justice mapping and screening tool, for each indicator to identify whether all individual indicators were high or, if not, which indicators drove the value.

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For socioeconomic status, the tract is in the 80 to 90 percentiles, with western parts of the study area showing higher rates of low-income populations (80<sup>th</sup> to 90<sup>th</sup> percentile) than eastern parts of the area, as shown on Figure 2-2. Low income is correlated with housing cost burden, which is also a criterion in this subindex.



**Figure 2-2. Low Income Populations in Palmetto Beach**

Source: <https://ejsscreen.epa.gov/mapper/>

There are exceedingly high rates of the population (as much as 90 to 100 percent) without a high school diploma, as shown on Figure 2-3. Approximately 32 percent of residents in the study area do not have health insurance coverage.

For household characteristics, approximately 11 percent of residents are aged 65 and older and 26 percent are aged 17 and younger. There are high levels of LEP, as noted on Figure 2-4.

## Community Resilience Plan – South of Gandy and Palmetto Beach

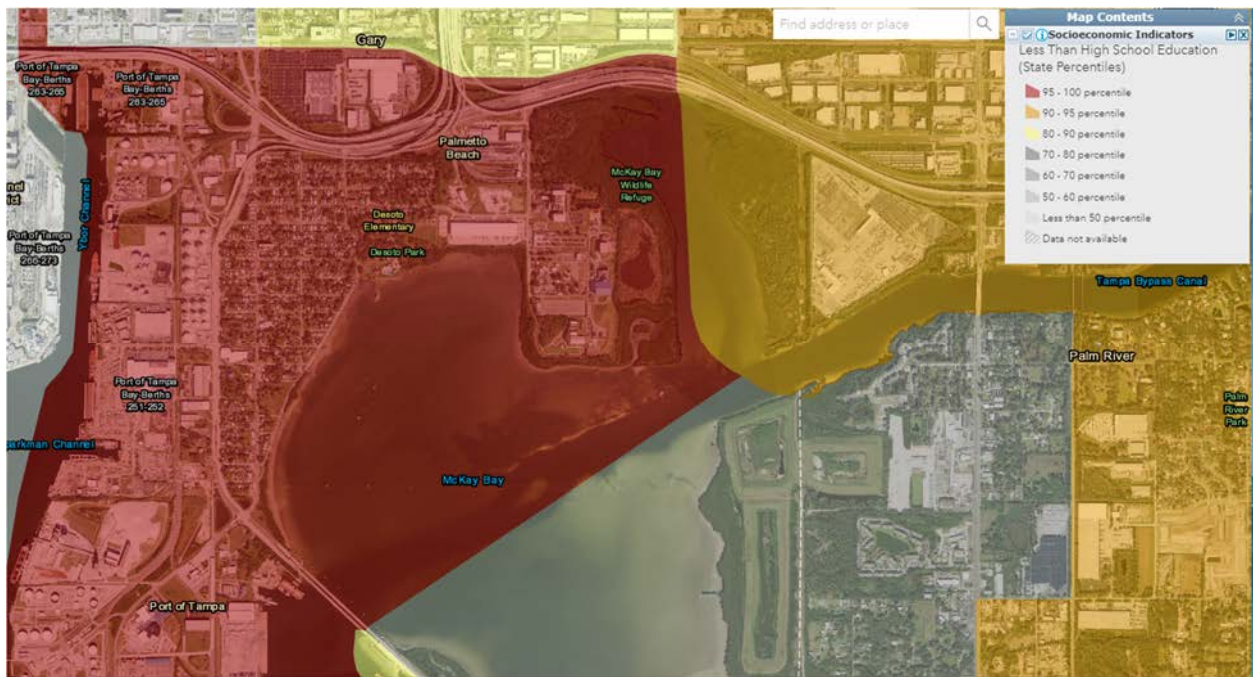


Figure 2-3. Less than High School Education for Palmetto Beach

Source: <https://ejscreen.epa.gov/mapper/>



Figure 2-4. Limited English Proficiency in Palmetto Beach

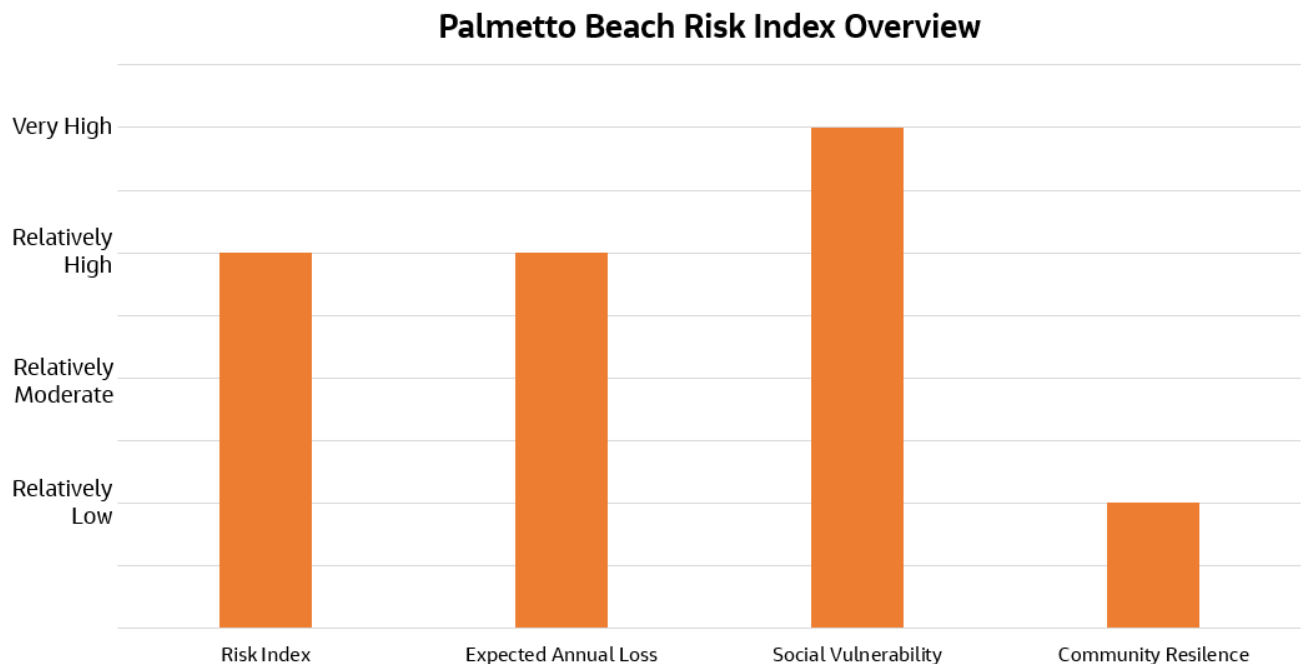
Source: <https://ejscreen.epa.gov/mapper/>

## 2.4 Neighborhood Hazard Vulnerability

The FEMA NRI<sup>3</sup> is an interactive tool that shows communities most at risk to natural hazards. It includes data about the expected annual losses resulting from individual natural hazards and social vulnerability and factors in community resilience. These data are available at the county and census tract levels.

The risk index value for Palmetto Beach, including all identified hazards, is 92.7 out of 100, which is lower than the Hillsborough County average of 99.6. The following is a summary of the NRI results for the Palmetto Beach neighborhood.

Within Palmetto Beach social vulnerability has been identified as very high risk and the expected annual loss is relatively high, as shown on Figure 2-5. Throughout the neighborhood, the community resilience score is relatively low. The culmination of these risks makes the Palmetto Beach neighborhood vulnerable to both social vulnerabilities and to natural hazards.



**Figure 2-5. Palmetto Beach Risk Index Overview**

The NRI tool assesses the risk rating for specific natural hazards within the area. Natural hazards that threaten Palmetto Beach include hurricanes, tornados, riverine flooding, lightning, coastal flooding, earthquakes, cold waves, strong winds, hail, landslides, and wildfires. Figure 2-6 identifies the risk ratings for each natural hazard.

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<sup>3</sup> <https://www.fema.gov/flood-maps/products-tools/national-risk-index>

### Palmetto Beach Hazard Type Risk Ratings

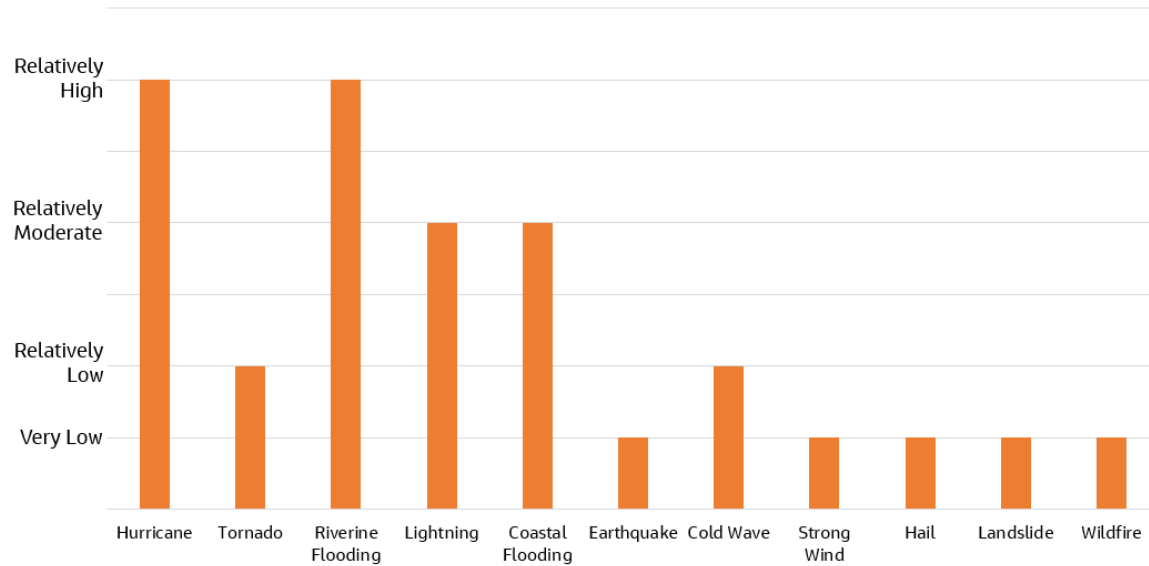


Figure 2-6. Palmetto Beach Hazard Type Risk Rating

Coastal flooding is a moderate risk to the Palmetto Beach neighborhood. The majority of the Palmetto Beach neighborhood is in the 100-year floodplain, including some in the high hazard area, as shown on Figure 2-7. A small section of the neighborhood is in the 500-year floodplain.



Figure 2-7. FEMA Flood Insurance Rate Map (effective date: 10/7/21)

Accessed through FEMA's National Flood Hazard Layer Viewer ([arcgis.com](https://www.fema.gov/national-flood-hazard-layer-viewer)).

Special hazard flood zones, including AE 11 through VE 16.

## Community Resilience Plan – South of Gandy and Palmetto Beach

Understanding the impact that future sea level rise (SLR) will have on the area is important when proposing projects to reduce neighborhood vulnerability. Figure 2-8 shows the Palmetto Beach neighborhood at 3 feet of SLR and Figure 2-9 shows the neighborhood after 4 feet of SLR. At 3 feet of SLR, southern regions of the neighborhood are considered low-lying areas. However, at 4 feet of SLR, the areas bordering McKay Bay are at risk of being underwater. At 4 feet of SLR there would be significant threats to infrastructure.

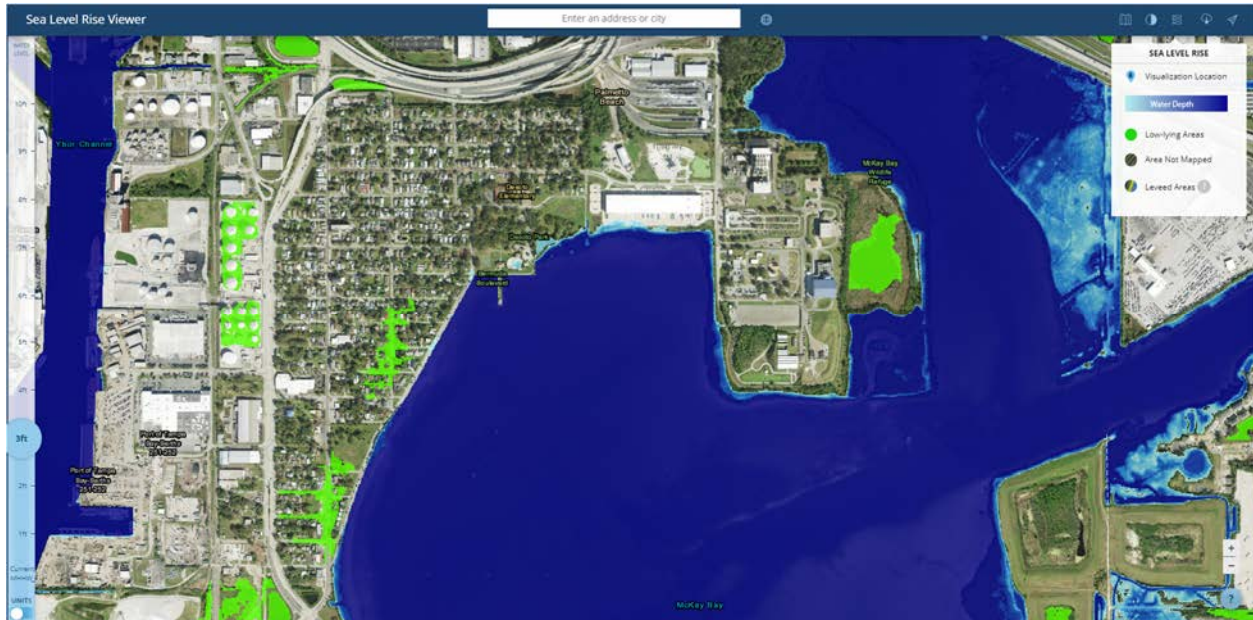


Figure 2-8. National Oceanic and Atmospheric Administration SLR Viewer: 3 feet of SLR at Mean Higher High Water (MHHW) tidal datum

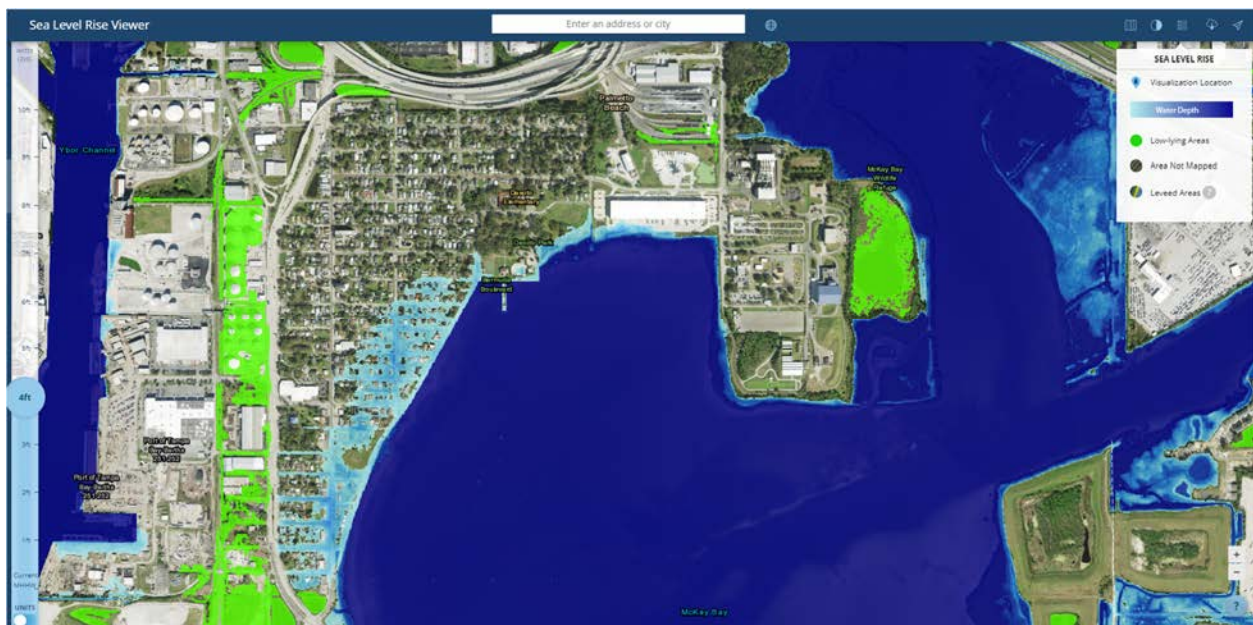


Figure 2-9. National Oceanic and Atmospheric Administration SLR Viewer: 4 feet of SLR at MHHW tidal datum

## 2.5 Neighborhood Recommendations

Based on the identified neighborhood needs, issues, and concerns and the results of the social and natural hazard vulnerability assessments, neighborhood recommendations can be proposed. Neighborhood recommendations are categorized into two categories: community programs and services and capital projects. Further, these recommendations align with the 2023 Applied Sciences report, *Inventory of Resilience and Mitigation Projects*.<sup>4</sup>

Palmetto Beach has acute needs that can be addressed by various community programs and services. The proposed programs and services include improving social services for the homeless population, increasing law enforcement presence to reduce crime rates, and implementing resilience hubs throughout the neighborhood. Implementing these programs and services will reduce social vulnerability throughout Palmetto Beach.

Capital projects consist of work that either builds new facilities or improves existing facilities. Capital projects can be implemented to address physical or infrastructure concerns. Projects that could be beneficial for Palmetto Beach include roadway and stormwater infrastructure projects, coastal defense improvements, and natural/green infrastructure implementation. Roadway and stormwater infrastructure projects benefit the neighborhood by reducing the flood threat, which enhances service reliability from an equity perspective. Coastal defense improvements include the development of new seawalls and reinforcing existing seawalls and living shorelines for coastal flood defenses. The implementation of natural/green infrastructure can take form as bioswales, rain gardens, and an increase in the tree canopy. The full suite of recommendations is provided in Appendix A.

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<sup>4</sup> Applied Sciences. 2023. *Inventory of Resilience and Mitigation Projects*. City of Tampa Coastal Area Action Plan. January 26. [CAAP-Mitigation-Projects\\_2023-01-26.pdf \(tpacoastal.org\)](#).

### 3. South of Gandy Neighborhoods

#### 3.1 Geographic and Social Characteristics

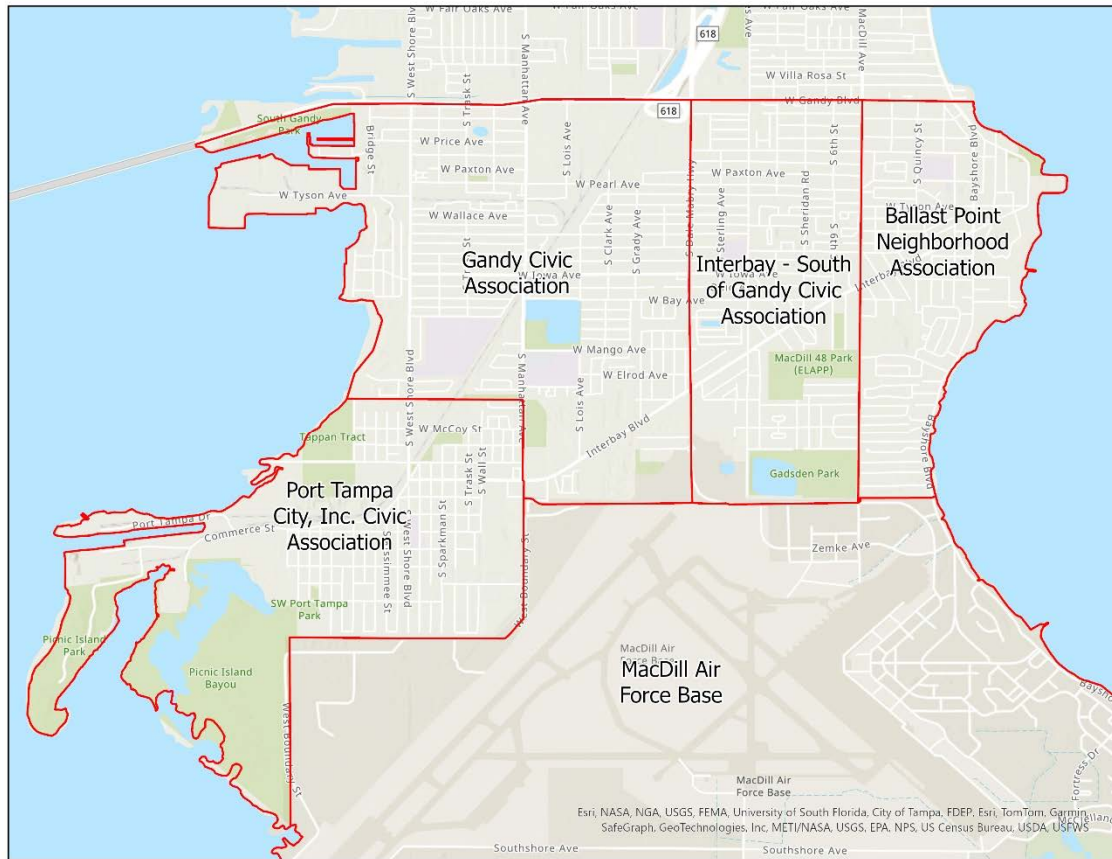
The South of Gandy neighborhoods comprise approximately 8.5 square miles of land bounded by Gandy Boulevard to the north, MacDill Air Force Base (AFB) to the south, Old Tampa Bay to the west, and Hillsborough Bay to the east. The area consists of four neighborhoods and regions, including Ballast Point, Interbay, Gandy Civic Association, and Port Tampa City Civil Association, as shown on Figures 3-1 and 3-2.



Figure 3-1. South of Gandy Community – Study Area Boundary

Source: Jacobs 2024

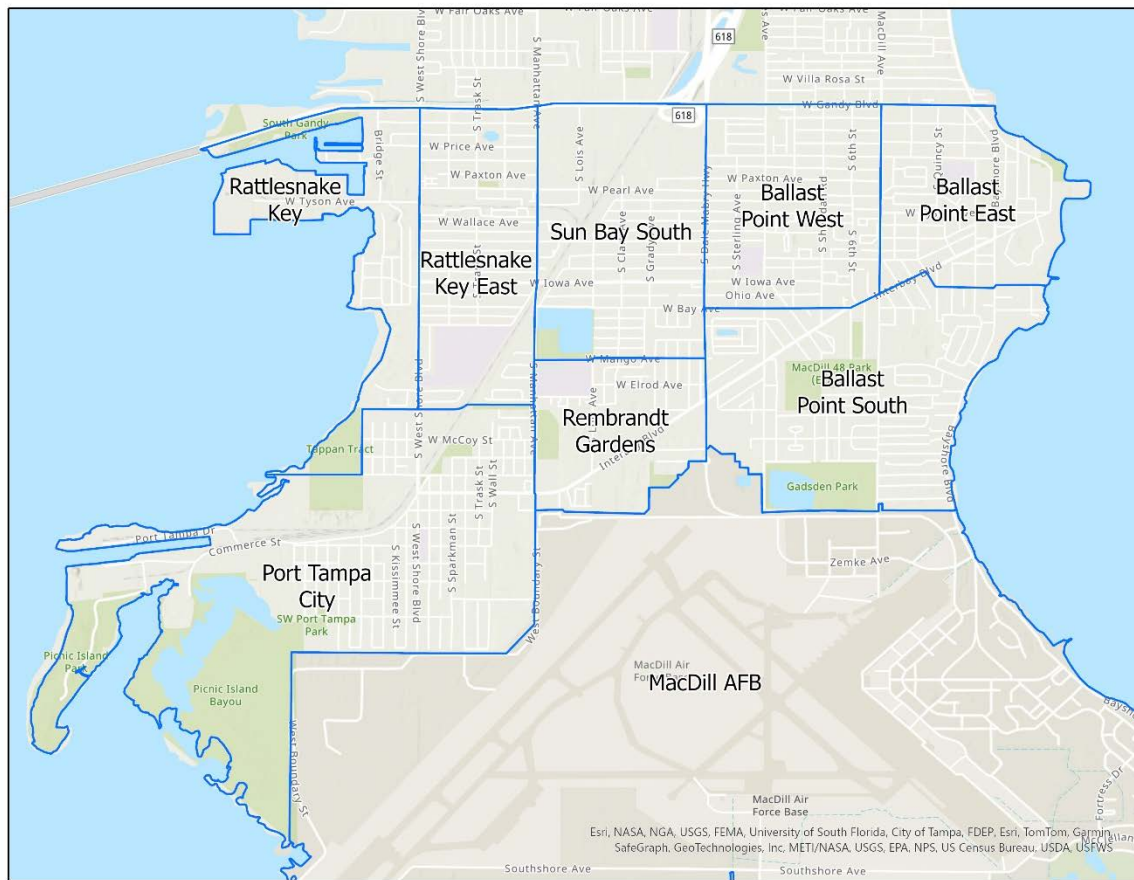




**Figure 3-2. South of Gandy Community – Neighborhood Map**

The ground surface elevation within this area ranges from around 7 to 12 feet NAVD, with low points along the coastline and higher elevations along the center of the peninsula. The neighborhoods comprise nine census tracts (Figure 3-3):

- Rembrandt Gardens (12057007002)
- Sun Bay South (12057007001)
- Ballast Point West (12057006801)
- Rattlesnake Key East (12057007103)
- Port Tampa City (12057007200)
- Rattlesnake Key (12057007102)
- Ballast Point South (12057006900)
- MacDill AFB (12057007300)
- Ballast Point East (12057006802)



**Figure 3-3. South of Gandy Census Tracts**

The South of Gandy neighborhood character varies between neighborhoods. Each of the four neighborhoods, Ballast Point, Interbay, Gandy Civic Association, and Port Tampa City Civil Association, has a distinct character. The neighborhood has an estimated population of nearly 41,000 residents, including residents of MacDill AFB. South of Gandy is home to a mix of big-box retail stores along Gandy Boulevard, small local shops, industrial, and residential land uses, with a range of housing types (single-family, multifamily, and townhouse). In recent years the neighborhoods have undergone robust rates of new project development.

### 3.2 Summary of Community Needs, Issues and Concerns

Through various evaluations, areas of needs, issues, and concerns were identified within South of Gandy. Areas of concern were categorized into three categories: physical, social, and infrastructure. Addressing these identified areas of concern will improve the residential quality of life and reduce the overall vulnerability of the neighborhood.

A multitude of physical needs, issues, and concerns were identified in the South of Gandy neighborhoods. All neighborhoods experience flooding from extreme tides/storm surge or extreme rainfall because of storm events. These concerns varied based on the neighborhood.

Threats to the Port Tampa neighborhood are primarily related to transportation. Problems include heavy traffic and insufficient public transportation options throughout the neighborhood.

The Gandy Civic neighborhood experiences both traffic issues and stormwater concerns. Traffic issues are prevalent throughout the neighborhood because of a lack of traffic lights, heavy congestion, and industrial traffic along the neighborhood perimeter. New land development within the neighborhood increases impervious areas and strains the existing regional stormwater management system, potentially resulting in increased drainage issues.

There are various physical concerns and issues within the Interbay neighborhood. Issues affecting this neighborhood include a lack of sidewalks, poorly functioning drainage ditches that retain water and provide breeding grounds for mosquitos, one-lane roads in and out of the neighborhood, and a lack of accessible greenspaces because of poor infrastructure and minimal entry points.

Issues within the Ballast Point neighborhood pertain to transportation infrastructure. Within this neighborhood there is a lack of bike lanes, difficulty in accessing public/open green space from some locations within the neighborhood, few connections between parks and green space (pocket parks), one lane roads in and out of the neighborhood, and the area has mostly single-lane brick roads with heavy amounts of traffic.



**Photo 3-1. South of Gandy Neighborhood Road without Sidewalk and Open Drainage**

*Source: Jacobs 2024*



**Photo 3-2. Poorly Maintained Drainage Ditch in South of Gandy**  
*Source: Jacobs 2024*



**Photo 3-3. Road with Narrow Sidewalk and No Bike Lane in South of Gandy**  
*Source: Jacobs 2024*

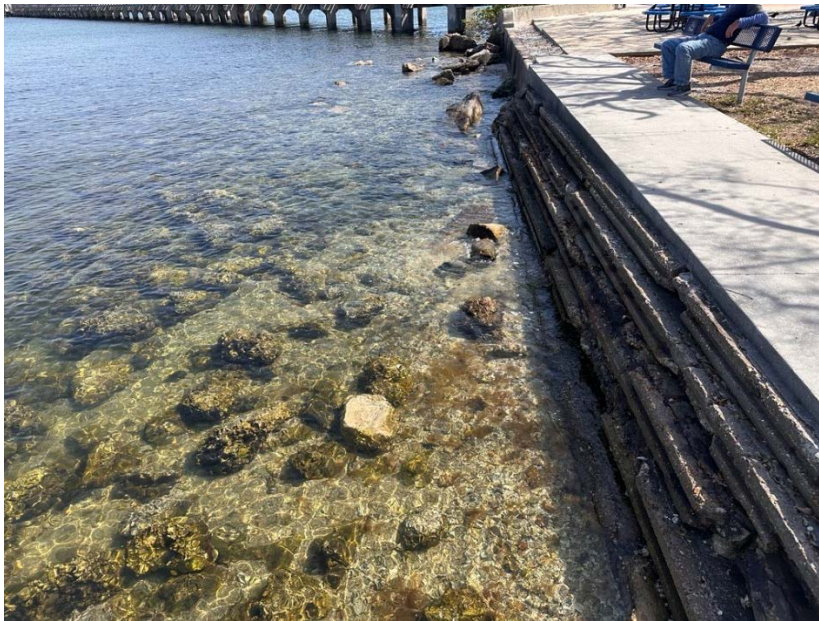
Social needs and concerns within South of Gandy have a negative impact on the overall quality of life for residents. Each neighborhood within South of Gandy experiences unique social needs and concerns. The Port Tampa neighborhood is currently undergoing rapid growth, unwanted by residents, which increases rates of gentrification. Social issues affecting the Gandy Civic neighborhood include increased development not accompanied by increasing services and economic activity. New developments within Gandy Civic are primarily residential which limits opportunity for entertainment, retail, or other commercial activity. The Interbay neighborhood social issues include new services in the neighborhood that do not consider the resident's needs and a lack of park programs and amenities for the youth population.

Concerns regarding infrastructure performance have been identified in South of Gandy. Transportation infrastructure issues include heavy traffic on Dale Mabry Highway from MacDill AFB employees and visitors; high truck traffic to the port; industrial uses on local roads; poor road conditions that require additional repair and maintenance; dangerous vehicular intersections; missing sidewalks and driveways in some areas; and vehicular speeding. Other infrastructure concerns are related to flooding hazards. These include flooding resulting from tidal/storm surge and intense rainfall events, inadequate stormwater storage and conveyance capacity in some areas outside of recently improved areas, and new developments increasing the flood risk for surrounding properties. Additional infrastructure concerns include hurricane evacuation difficulties because of the high area population density, land use conversion/rezoning from low- to high-density residential, the proximity of port bulk storage and fuel tanks to residential housing, and a lack of shade trees in some areas.



**Photo 3-3. Sidewalk without Protection from Vehicles and with Minimal Tree Canopy in South of Gandy**

*Source: Jacobs 2024*



**Photo 3-4. Current South of Gandy Shoreline**

*Source: Jacobs 2024*

### **3.3 Neighborhood Social Vulnerability**

The South of Gandy neighborhood vulnerability was analyzed through the lenses of social and natural hazard vulnerabilities. Social vulnerability in South of Gandy was assessed using the CDC SVI tool.

The SVI uses U.S. Census data to determine the social vulnerability of every census tract (Figure 3-4). The SVI ranks each tract on 16 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes. Each tract receives a separate ranking for each of the four themes, as well as an overall ranking. The themes categorized include socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation.

The overall ranking Composite SVI levels by census tract is as follows:

1. Rembrandt Gardens: 0.89 (high vulnerability)
2. Sun Bay South: 0.61 (medium to high vulnerability)
3. Ballast Point West: 0.37 (medium vulnerability)
4. Rattlesnake Key East: 0.37 (medium vulnerability)
5. Port Tampa City: 0.33 (medium vulnerability)
6. Rattlesnake Key: 0.24 (low vulnerability)
7. Ballast Point South: 0.17 (low vulnerability)
8. MacDill AFB: 0.15 (low vulnerability)
9. Ballast Point East: 0.13 (low vulnerability)

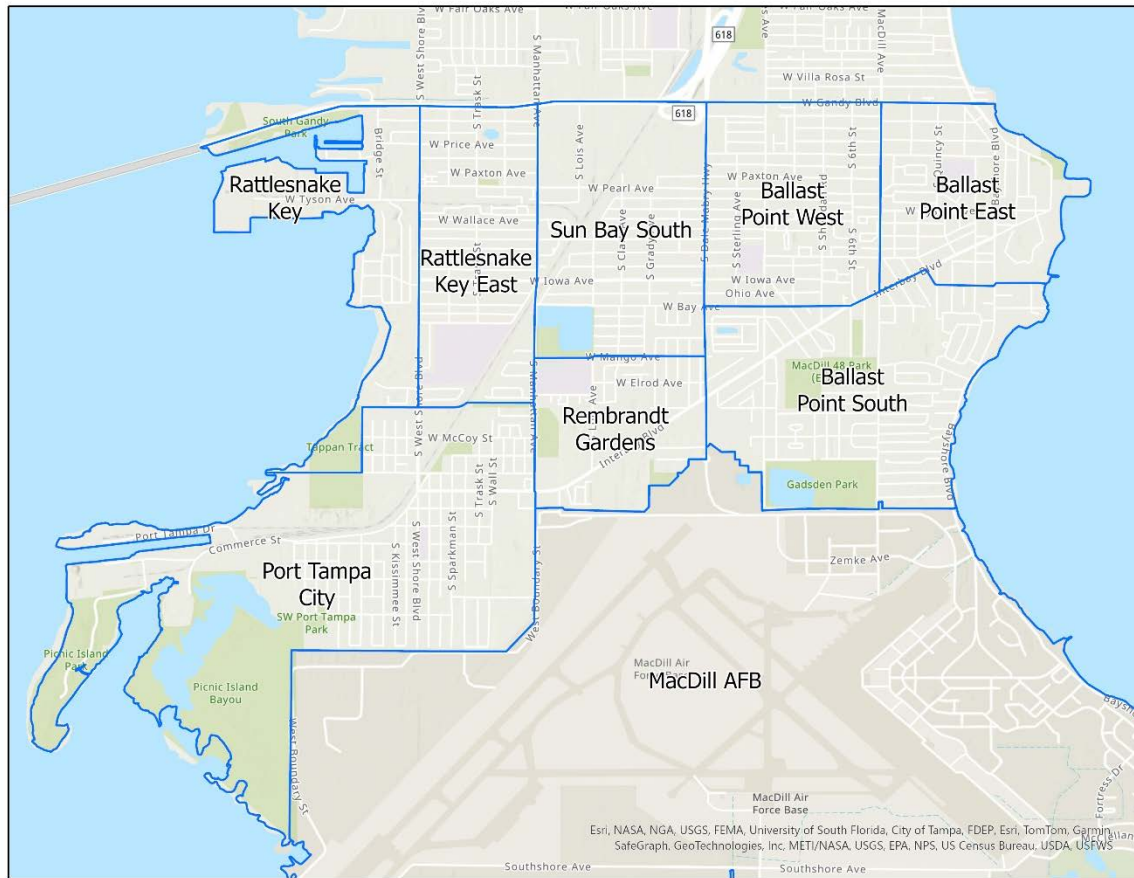


Figure 3-4. South of Gandy Census Tracts

The area has a composite average of social vulnerability score of 0.36, indicating an overall moderate level of collective vulnerability collectively across the South of Gandy area. However, there is one area (census tract) with high vulnerability, Rembrandt Gardens, which has a social vulnerability score of 0.89. The other eight census tracts in the South of Gandy neighborhood have a social vulnerability score lower than the Hillsborough County composite average score (0.6818).

For this analysis, Jacobs pulled data from EJScreen for each indicator to identify whether all individual indicators were high or, if not, which indicators drove the value. For socioeconomic status, the tract primarily fell below the 50<sup>th</sup> percentile. However, the Gandy Civic neighborhood showed higher rates of low-income populations and areas that fell between the 70<sup>th</sup> and 90<sup>th</sup> percentiles, as shown on Figure 3-5. Low income is correlated with housing cost burden, which is also a criterion in this subindex.

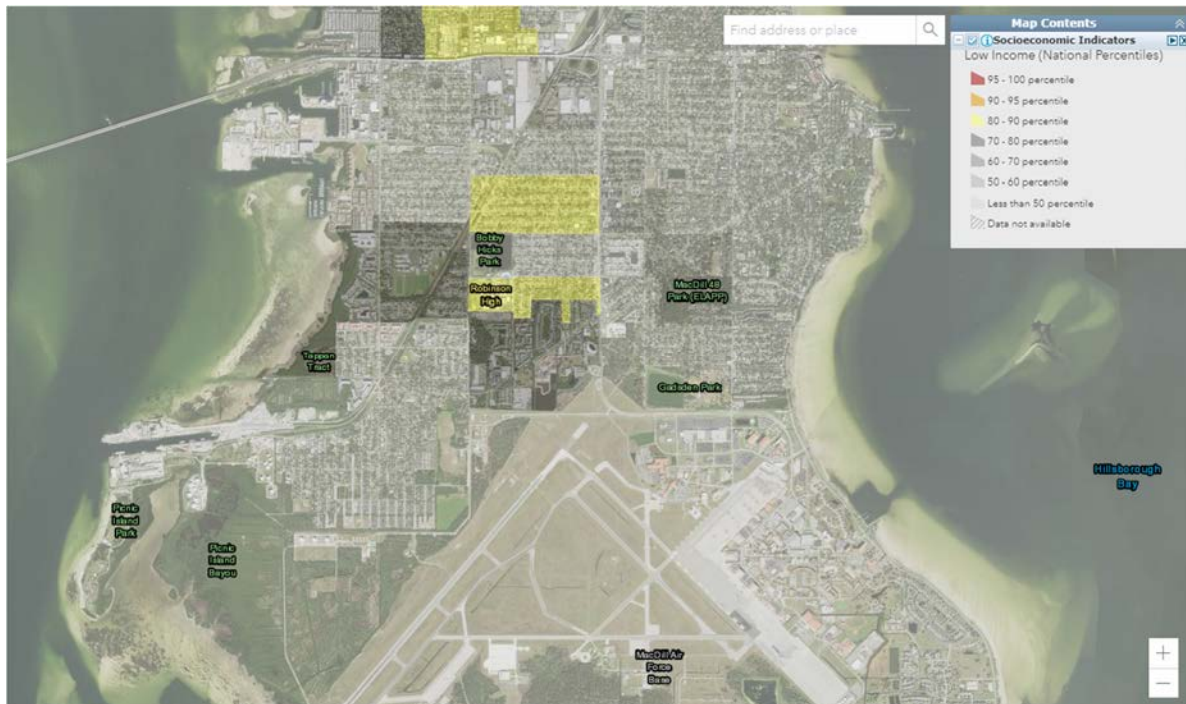
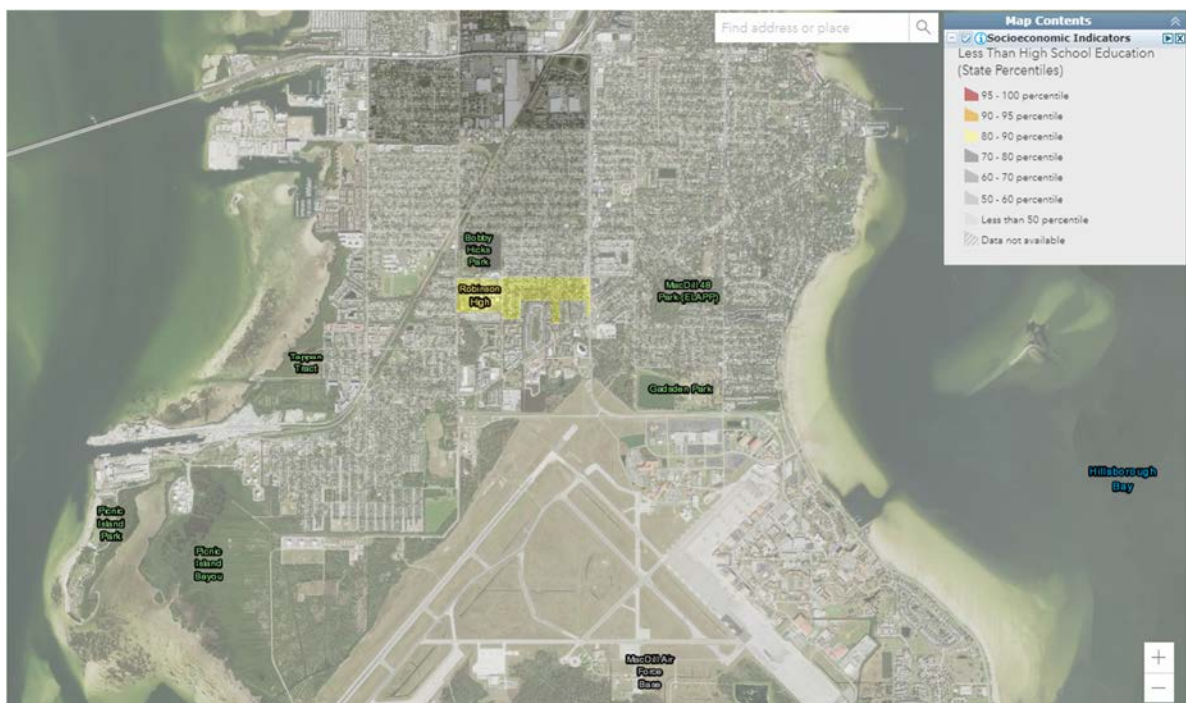


Figure 3-5. Low-Income Populations in South of Gandy

Source: <https://ejsscreen.epa.gov/mapper/>

Overall, the South of Gandy area has low rates of residents without a high school diploma (with the majority falling below 50 percent of the population), as shown on Figure 3-6. The Gandy Civic neighborhood is the only area in South of Gandy where the population without a high school diploma exceeds 50 percent (60 to 90 percent).





**Figure 3-6. Residents with No High School Diploma in South of Gandy**

Within South of Gandy there are low levels of LEP, as noted in Figure 3-7. The Gandy Civic neighborhood has higher rates of LEP than the rest of the South of Gandy area (the majority of the neighborhood falls between the 60<sup>th</sup> and 90<sup>th</sup> percentiles).

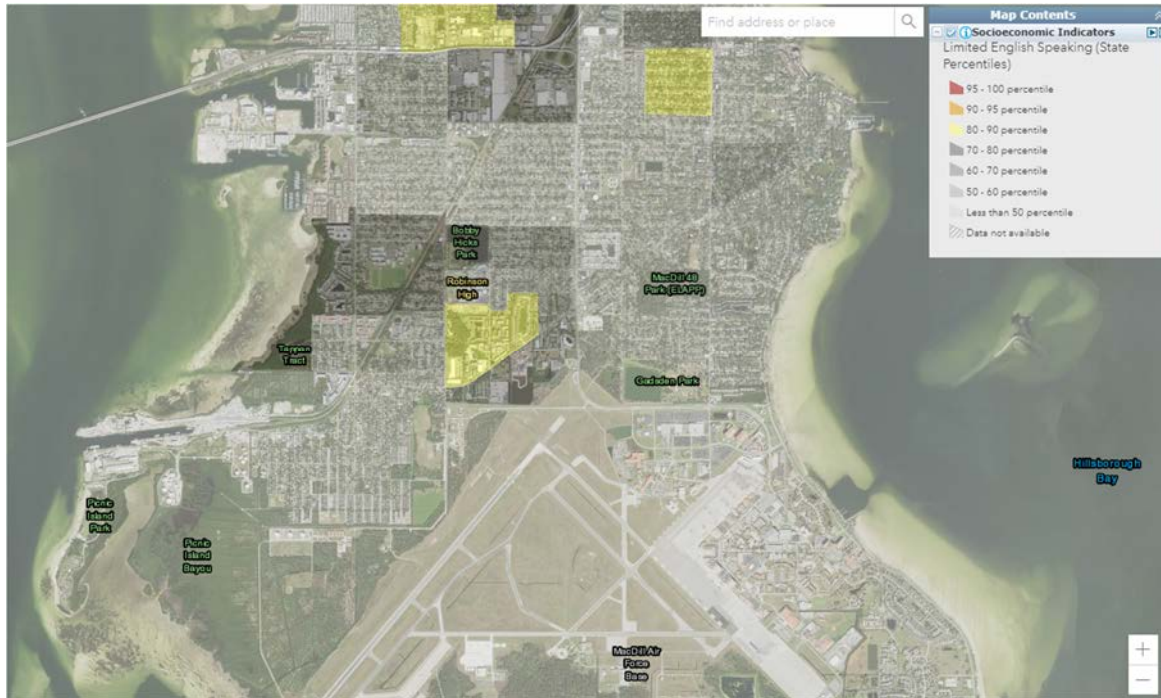
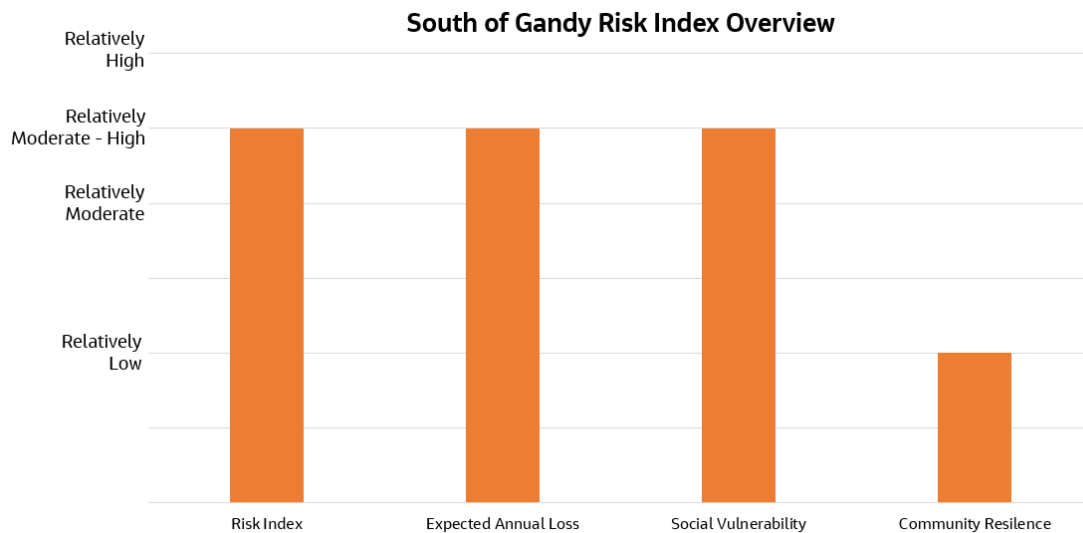


Figure 3-7. LEP Residents in South of Gandy

### 3.4 Neighborhood Hazard Vulnerability

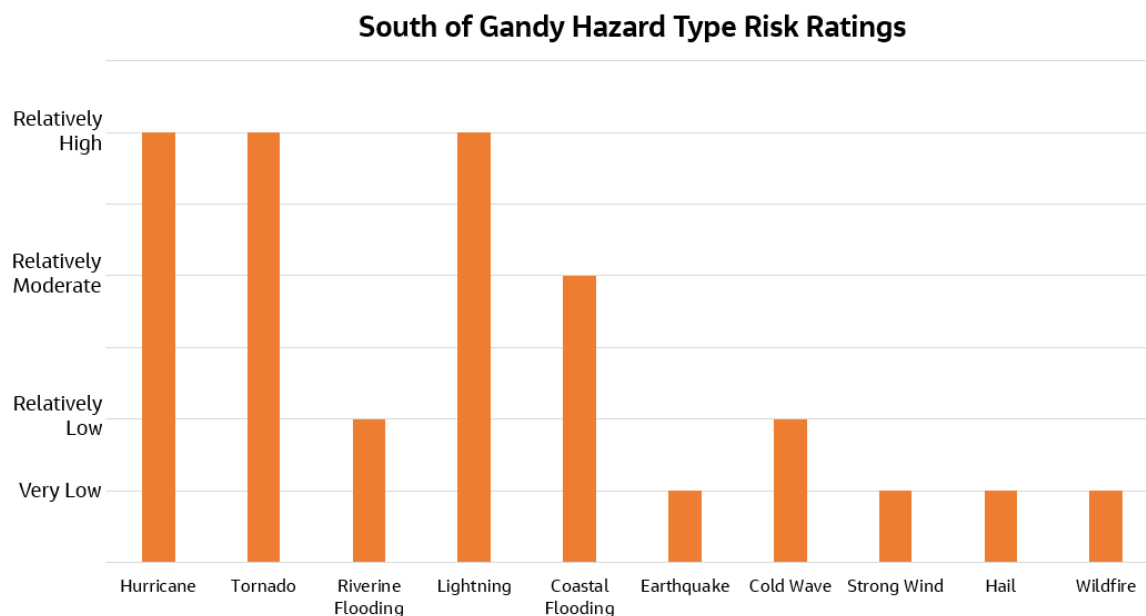
Natural hazard vulnerability in the South of Gandy neighborhood was primarily calculated using the NRI. The risk index average value for this neighborhood, including all identified hazards, is 78.7 out of 100, which is lower than the Hillsborough County average of 99.6. Figure 3-8 shows a summary of the NRI results for the South of Gandy neighborhood.



**Figure 3-8. South of Gandy Risk Index Overview**

Within South of Gandy, risk index, expected annual loss, and social vulnerability were identified as relatively moderate to high risk. Throughout the neighborhood, the community resilience score was relatively low. The culmination of these risks makes the South of Gandy neighborhoods vulnerable to both social vulnerabilities and natural hazards.

Jacobs assessed the risk rating for specific natural hazards within the area using the NRI tool. Natural hazards that threaten South of Gandy include hurricanes, tornados, riverine flooding, lightning, coastal flooding, earthquakes, cold waves, strong winds, hail, and wildfires. Figure 3-9 identifies the risk ratings for each natural hazard.



**Figure 3-9. South of Gandy Hazard Type Risk Ratings**



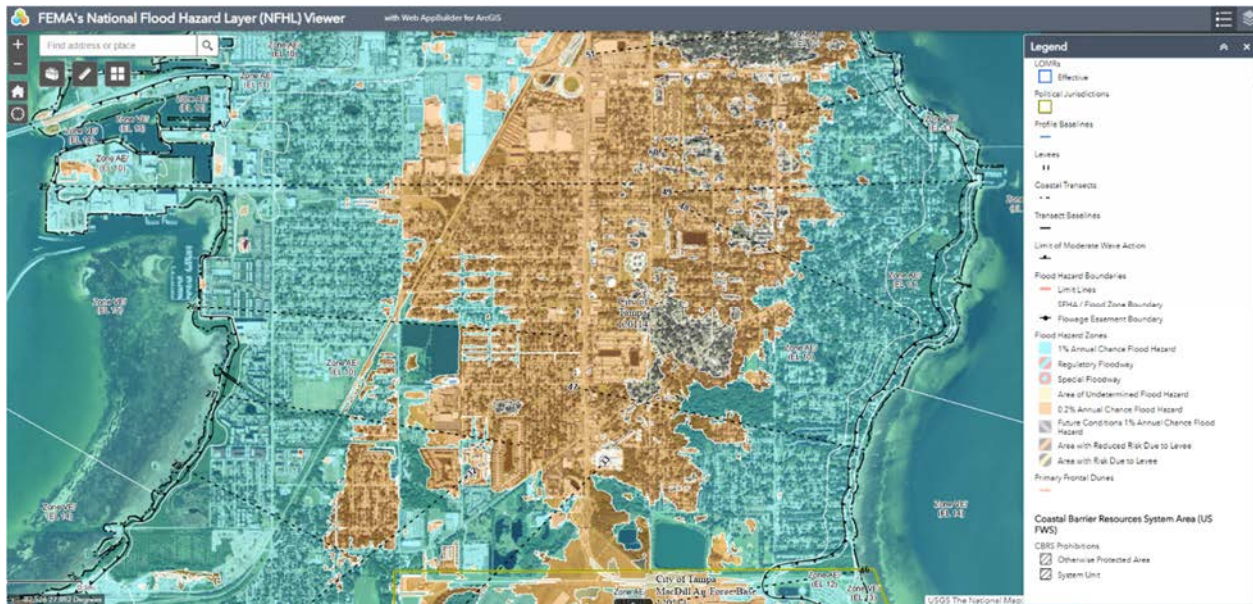
**Picture 3-5. Coastal Flooding along Bayshore Boulevard**

*Source: MacDill Air Force Base, Facebook*

*[https://www.facebook.com/MacDillAirForceBase/posts/780213560801306?ref=embed\\_post](https://www.facebook.com/MacDillAirForceBase/posts/780213560801306?ref=embed_post)*

Coastal flooding is a relatively moderate risk to the South of Gandy. The Port Tampa, Ballast Point, and a portion of the Gandy Civic neighborhoods are in the 100-year floodplain, as shown on Figure 3-10. Interbay and the remaining part of Gandy Civic are in the 500-year floodplain.

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**Figure 3-10. FEMA Flood Insurance Rate Map (effective date: 10/7/21)**

Accessed from FEMA's National Flood Hazard Layer Viewer ([arcgis.com](https://arcgis.com)).

Special hazard flood zones, including X Zone, AE 10 through VE 15.

Understanding the impact that future SLR will have on the area is important when proposing projects to reduce neighborhood vulnerability. Figure 3-11 shows the South of Gandy neighborhoods at 3 feet of SLR and Figure 3-12 shows the neighborhoods after 4 feet of SLR. At 3 feet of SLR, Port Tampa and Ballast Point have areas at risk of being underwater. At 4 feet of SLR, these threats worsen; however, Gandy Civic and Interbay are not at high risk of being underwater at 3 and 4 feet of SLR.

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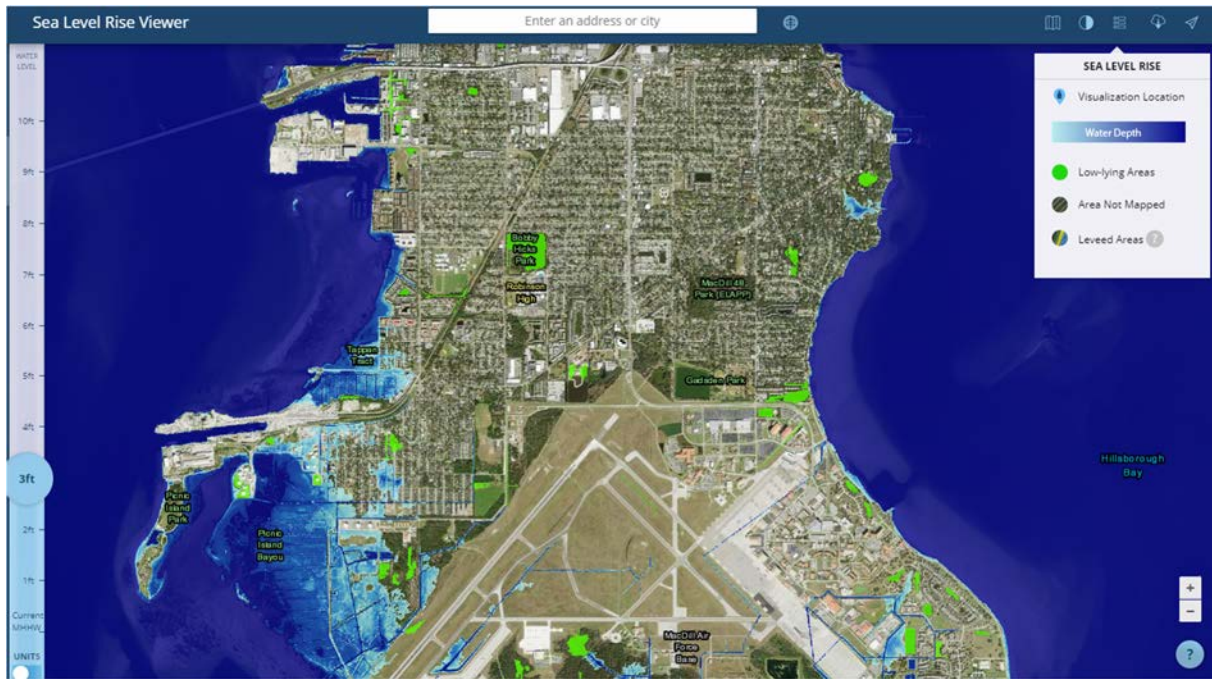


Figure 3-11. National Oceanic and Atmospheric Administration SLR Viewer: 3 feet of SLR at MHHW tidal datum

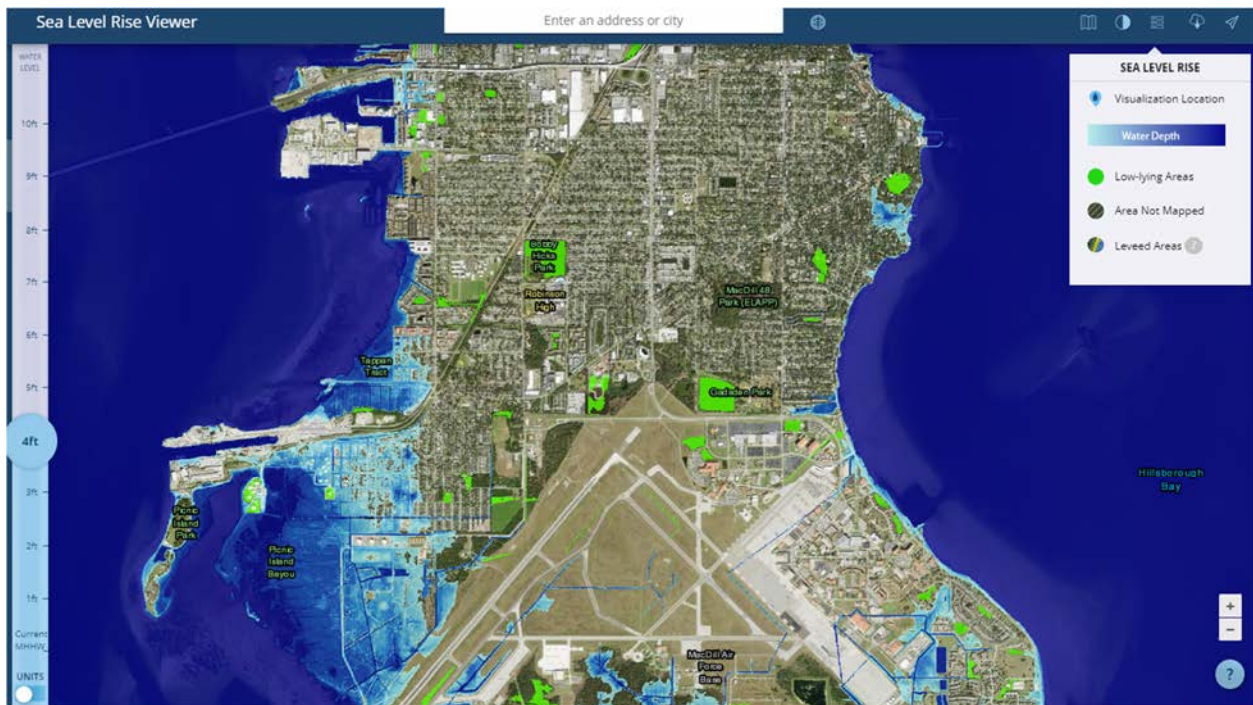


Figure 3-12. National Oceanic and Atmospheric Administration SLR Viewer: 4 feet of SLR at MHHW tidal datum

### **3.5 Neighborhood Recommendations**

Based on the identified neighborhood needs, issues, and concerns and the conducted social and natural hazard vulnerability assessments, neighborhood recommendations can be proposed. Neighborhood recommendations are categorized into two categories: community programs and services and capital projects.

South of Gandy has issues that can be addressed by various community programs and services. The proposed programs and services include adding park programs and amenities for youth engagement, creating policies to control growth and gentrification, increasing City services and law enforcement in the area, increasing multimodal transportation options and regional connectivity, and implementing resilience hubs throughout the neighborhood. Implementing these programs and services will reduce social vulnerability throughout South of Gandy.

Capital projects consist of work that either builds new facilities or improves existing facilities. Capital projects can be implemented to address physical or infrastructure concerns. Capital projects that would be beneficial for South of Gandy include roadway, stormwater, and utility infrastructure projects; coastal defense improvements; and natural/green infrastructure implementation.

Roadway, stormwater, and utility infrastructure projects that can be implemented include hardening existing infrastructure systems to enhance water and sanitary sewer service reliability, reducing traffic congestion, increasing bicycle infrastructure, and improving neighborhood walkability through installation of new sidewalks.

Coastal defense improvements include hardening the shoreline, protecting against coastal erosion, and flooding. This can be accomplished through the elevation of seawalls and bulkheads and armoring coastlines with riprap and vegetation to promote sediment accretion and preempt erosion/scour.

The implementation of natural/green infrastructure can take form as bioswales, rain gardens, and increasing the tree canopy. Additionally, improvements can be made to make green space more accessible. Throughout South of Gandy, repairs and upgrades to drainage ditches will improve the conveyance and storage of stormwater. The full suite of recommendations is provided in Appendix B.

## 4. City-Wide Adaptation Recommendations and Next Steps

This section provides an overview of potential hazard mitigation and climate adaptation strategies and community-focused actions to support building community resilience for the Palmetto Beach and South of Gandy neighborhoods, and beyond. These recommendations are focused on City- or community-wide programs, services, and policies that help to mitigate identified vulnerabilities and address community concerns.

### 4.1 Community Programs and Services

Community programs and services can benefit neighborhoods by improving community resilience in a variety of ways. Simultaneously, they can also improve quality of life and foster a sense of community. The recommended programs are as follows:

- Development of resilience hubs program to address localized community needs and social vulnerabilities. Hubs are hyper-local community-centric service centers. All hubs are uniquely tailored to community needs and desires. They operate on a day-to-day basis offering services and can easily shift into emergency mode and serve as the first line of emergency response.
- Targeted FEMA Community Emergency Response Team training and exercises to facilitate neighborhood-based first responders.
- Urban forestry and tree giveaway program and maintenance workshops to address heat islands through increased shade.
- Data collection by “citizen scientists” to foster community involvement, such as preparing a heat map, conducting a tree canopy study, and identifying the need for more trees.
- Outreach, education, public information to improve awareness and engagement, as well as serve as a call to action.
- Multimodal improvement program to promote and increase bus, pedestrian, and bicycle use and safety.
- Flood risk management program to provide information and resources to assist property owners in identifying and reducing their flood risk, including access to funding such as FEMA Hazard Mitigation Grant Program and FEMA Hazard Mitigation Assistance grants.

### 4.2 Community Policies

These policies are enacted by legislation and guide activities, such as development, zoning, or infrastructure, within a community. The following list of policies is suggested with the intent of addressing community needs (as discussed in Section 3):

- Create City freeboard ordinance of 2 to 3 feet minimum to promote resilient construction above current Florida Building Code/regulatory requirement of 1 foot above current FEMA base flood elevation.
- Change point of building height measurement for zoning regulations, from existing ground elevation to building finished floor elevation, including up to 3 to 5 feet of freeboard.
- Change land uses to address development in hazardous areas and issues identified in Tasks 1 and 2.

- Review zoning policy to ensure gentrification concerns are addressed.
- Consider ordinance or ballot question aimed at land conservation.
- Create resilience district or overlay, including more stringent design standards for high-risk and coastal areas.
- Consider impact fees or a special taxing district to address neighborhood infrastructure priorities such as sidewalks and roads.
- Consider and review stormwater management level of service and/or future rainfall projections and tidal boundary conditions to inform infrastructure system performance, investment needs, and best management practice design.
- Review stormwater utility fees to address flooding and aging infrastructure.
- Create Blue Natural/green infrastructure policy (low-impact development) to enhance water quality improvements through both public and private new construction and major renovation projects.
- Consider micro-mobility programs to address lack of public transportation (scooters, bicycles, Freebie carts).
- Implement zoning policies to ensure that new development is accompanied by increased economic activity (commercial, retail, entertainment).
- Require that new development capture and retain sufficient stormwater to prevent transportation of pollutants and nutrients to Tampa Bay.

### **4.3 Next Steps**

Upon finalizing this report, including the identification of the community lifeline partners who may support or participate as stakeholders for each recommended project, coordination with those partners and the City stakeholders to discuss implementation of each project must occur. Through this regional coordination, project definitions can be created along with an initial implementation plan including key steps, funding options, anticipated permitting hurdles, and a timeline.

This coordination process is a critical next step to facilitate the identification and prioritization of those projects that will move forward in the near term, and those that will be implemented at a later time or require additional input to define and build support for them.



## Appendix A. Palmetto Beach Community Data

Table A-1. Palmetto Beach SVI Measures

CDC Vulnerability Tool Component	Indicators	Census Tract Score	Hillsborough Countywide Comparison
Social Vulnerability Score	Composite of Socioeconomic Status; Household Characteristics; Racial & Ethnic Minority Status; & Housing Type and Transportation	0.8505 (high level of vulnerability)	0.6818 (medium to high level of vulnerability)
Socioeconomic Status	Below 150% poverty, unemployment, housing cost burden, no high school diploma, no health insurance	0.9509 (high level of vulnerability)	0.5606 (medium to high level of vulnerability)
Household Characteristics	Aged 65 or older, aged 17 or younger, civilian with a disability, single-parent households, English language proficiency	0.8002 (high level of vulnerability)	0.7879 (medium to high level of vulnerability)
Racial and Ethnic Minority Status	Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino	0.7613 (high level of vulnerability)	0.8939 (high level of vulnerability)
Housing Type and Transportation	Multi-unit structures, mobile homes, crowded housing, lack of vehicle access, group quarters	0.5165 (medium to high level of vulnerability)	0.5303 (medium to high level of vulnerability)

**Table A-2. Palmetto Beach Adaptation Action Recommendations**

Action	Need/Issues Addressed	Type of Intervention (Policy, Infrastructure Project, Coordination with Community Service Provider/Lifeline)	Alignment with City Goals & Objectives	Associated FEMA Community Lifeline	Potential Funding Sources
Evaluate robustness/vulnerability of critical public services & assets (water, wastewater, transportation, electrical & comm)	Equitable public services and investment	Public works system evaluations and prioritized capital plan for neighborhood.	Yes	Water Systems; Energy; Communications	Utility fees, General Fund, bonds, Florida Department of Environmental Protection (FDEP) Resilient Florida Grant Program, Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC), Florida Department of Transportation RAISE Grant and other grant programs.
Harden shoreline and elevate seawall/bulkhead	Coastal flooding	Public works project to enhance coastal defenses including both gray and green solutions for social and environmental benefits.	Yes	Safety & Security	General Fund, bonds, FDEP Resilient Florida Grant Program, FEMA BRIC, National Fish and Wildlife Foundation and National Oceanic and Atmospheric Administration Coastal Grants.
Enhance stormwater management system	Stormwater flooding	Public works project to upgrade stormwater management infrastructure to meet higher	Yes	Water Systems	Utility fees, General Fund, bonds, FDEP Resilient Florida Grant Program, FEMA BRIC, Florida

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Action	Need/Issues Addressed	Type of Intervention (Policy, Infrastructure Project, Coordination with Community Service Provider/Lifeline)	Alignment with City Goals & Objectives	Associated FEMA Community Lifeline	Potential Funding Sources
		design standards and improved performance.			Department of Transportation RAISE Grant and other grant programs.
Create Resilience Hub	Community vulnerability	Public facility and services & partnership with community leaders to support and address neighborhood needs.	Yes	Safety & Security	General Fund, bonds, FDEP Resilient Florida Grant Program, 3 <sup>rd</sup> party (partner) funding and other grant programs.

## Appendix B. South of Gandy Community Data

Table B-1. South of Gandy SVI Measures

CDC Vulnerability Tool Component	Indicators	Census Tract Score									Hillsborough Countywide Score
		12057007002	12057007001	12057006801	12057007103	12057007200	12057007102	12057006900	12057007300	12057006802	
<b>Social Vulnerability Score</b>	Composite of Socioeconomic Status; Household Characteristics; Racial & Ethnic Minority Status; Housing Type & Transportation	0.8883 (high vulnerability)	0.6043 (medium to high vulnerability)	0.3235 (low to medium vulnerability)	0.3571 (low to medium vulnerability)	0.3046 (low to medium vulnerability)	0.2541 (low to medium vulnerability)	0.1345 (low vulnerability)	0.2357 (low vulnerability)	0.1276 (low vulnerability)	0.6818 (medium to high level of vulnerability)
<b>Socioeconomic Status</b>	Below 150% poverty, unemployment, housing cost burden, no high school diploma, no health insurance	0.8991 (high vulnerability)	0.7998 (high vulnerability)	0.3151 (low to medium vulnerability)	0.4019 (low to medium vulnerability)	0.2714 (low to medium vulnerability)	0.1945 (low vulnerability)	0.2503 (low to medium vulnerability)	0.3000 (low to medium vulnerability)	0.0662 (low vulnerability)	0.5606 (medium to high level of vulnerability)
<b>Household Characteristics</b>	Aged 65 or older, aged 17 or younger, civilian with a disability, single-parent household, English language proficiency	0.8859 (high vulnerability)	0.8305 (high vulnerability)	0.3810 (low to medium vulnerability)	0.5378 (medium to high vulnerability)	0.3666 (low to medium vulnerability)	0.1793 (low vulnerability)	0.0830 (low vulnerability)	0.0451 (low vulnerability)	0.0593 (low vulnerability)	0.7879 (medium to high level of vulnerability)
<b>Racial and Ethnic Minority Status</b>	Hisp. or Latino (any race); Black & African Amer., Not Hisp. or Latino; Amer. Indian & Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian & Other Pac. Islander, Not Hisp. or Latino; 2 or More Races, Not Hisp or Latino; Other Races, Not Hisp. or Latino	0.7278 (medium to high vulnerability)	0.5077 (medium to high vulnerability)	0.3234 (low to medium vulnerability)	0.4419 (low to medium vulnerability)	0.4009 (low to medium vulnerability)	0.4254 (low to medium vulnerability)	0.3438 (low to medium vulnerability)	0.6247 (medium to high vulnerability)	0.4134 (low to medium vulnerability)	0.8939 (high level of vulnerability)
<b>Housing Type and Transportation</b>	Multi-unit structures, mobile homes, crowded housing, lack of vehicle access, group quarters	0.7317 (medium to high vulnerability)	0.1495 (low vulnerability)	0.3926 (low to medium vulnerability)	0.2340 (low vulnerability)	0.3782 (low to medium vulnerability)	0.4683 (low to medium vulnerability)	0.1876 (low vulnerability)	0.3894 (low to medium vulnerability)	0.4713 (low to medium vulnerability)	0.5303 (medium to high level of vulnerability)

**Table B-2. South of Gandy Adaptation Action Recommendations**

Action	Need/Issues Addressed	Type of Intervention (Policy, Infrastructure Project, Coordination with Community Service Provider/Lifeline)	Alignment with City Goals & Objectives	Associated FEMA Community Lifeline	Potential Funding Sources
Evaluate robustness/ vulnerability of critical public services & assets (water, wastewater, transportation, electrical & comm)	Equitable public services and investment	Public works system evaluations and prioritized capital plan for neighborhood.	Yes	Water Systems	Utility fees, General Fund, bonds, Florida Department of Environmental Protection (FDEP) Resilient Florida Grant Program, Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC), Florida Department of Transportation (FDOT) RAISE Grant and other grant programs.
Enhance multi-modal facilities and regional connectivity	Lack of accessibility and safe multi-modal options to connect to key	Regional multi-modal study and enhancement of key corridors and connections.	Yes	Transportation	General Fund, bonds, FEMA BRIC, FDOT RAISE Grant and other grant programs.

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Action	Need/Issues Addressed	Type of Intervention (Policy, Infrastructure Project, Coordination with Community Service Provider/Lifeline)	Alignment with City Goals & Objectives	Associated FEMA Community Lifeline	Potential Funding Sources
	public services/facilities				
Enhance community parks, recreational opportunities, and community services	Community equity and recreational opportunities	City program to enhance recreational opportunities for community.	Yes	Safety & Security	General Fund, bonds, FEMA BRIC, FDOT RAISE Grant and other grant programs.
Harden shoreline and elevate seawall/bulkhead	Coastal flooding	Public works project to enhance coastal defenses including both gray and green solutions for social and environmental benefits.	Yes	Safety & Security	General Fund, bonds, FDEP Resilient Florida Grant Program, FEMA BRIC, National Fish and Wildlife Foundation and National Oceanic and Atmospheric Administration Coastal Grants.
Enhance stormwater management system	Stormwater flooding	Public works project to upgrade stormwater management infrastructure to meet higher design standards and improved performance.	Yes	Water Systems	Utility fees, General Fund, bonds, FDEP Resilient Florida Grant Program, FEMA BRIC, FDOT RAISE Grant and

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Action	Need/Issues Addressed	Type of Intervention (Policy, Infrastructure Project, Coordination with Community Service Provider/Lifeline)	Alignment with City Goals & Objectives	Associated FEMA Community Lifeline	Potential Funding Sources
					other grant programs.
Create Resilience Hub	Community vulnerability	Public facility and services & partnership with community leaders to support and address neighborhood needs.	Yes	Safety & Security	General Fund, bonds, FDEP Resilient Florida Grant Program, 3 <sup>rd</sup> party (partner) funding and other grant programs.