

### 3.6 The City of Cape Canaveral: From Vulnerability to Viability, Pioneering Climate Resilience in Coastal Cities

The City of Cape Canaveral, located on a barrier island along the coast of Brevard County, Florida, is no stranger to the challenges posed by climate change. The city embarked on a resilience planning journey in 2018, thanks to a grant from the Florida Coastal Management Program and the National Oceanic and Atmospheric Administration. The grant enabled the city to assess its vulnerabilities to natural hazards and develop strategies to protect local residents and businesses. The city's efforts were spurred on by external legislative requirements that mandated resilience planning. The planning effort was in compliance with the "Peril of Flood" Act (Florida State Senate Bill 1094), and also considered the designation of Adaptation Action Areas as allowed by the Community Planning Act (Florida House Bill 7207).

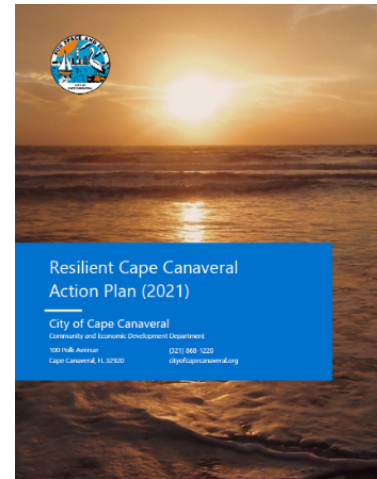


Figure 27: Cover of the Resilient Cape Canaveral Action Plan

#### How the plans were developed

The Resilient Cape Canaveral Plan ("the Assessment Plan"), published in August 2019, provides a comprehensive analysis of the city's coastal vulnerabilities to coastal flooding, sea level rise, storm surge, and their combined effects, along with recommendations to mitigate impacts. The Assessment Plan was developed over the course of a year in partnership with the East Central Florida Regional Planning Council (ECFRPC), leveraging their expertise in environmental planning, resilience, and emergency management. The ECFRPC undertook the vulnerability and economic impact analyses and played an active role in community engagement.

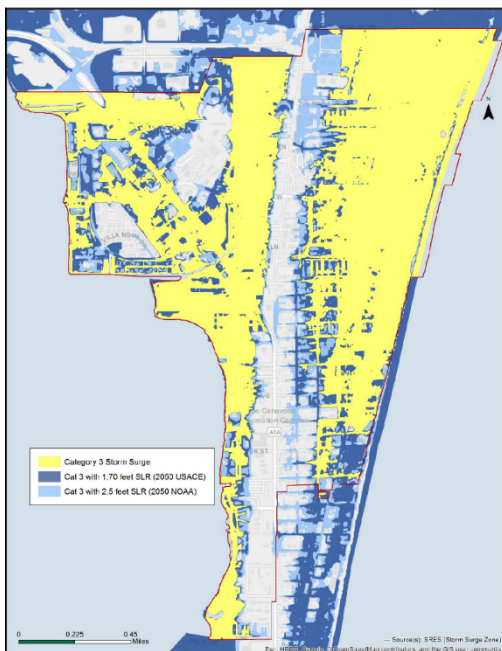


Figure 29: Storm Surge Areas in Cape Canaveral

Resident involvement was crucial as it helped planners understand the community's priorities in terms of resilience investments. This was achieved through outreach sessions, online updates via the city's website, social media, public surveys, and two workshops held during the drafting process. A city-wide online survey was conducted for three months, during which 239 residents identified and ranked their top three vulnerabilities in terms of importance. An initial workshop focused on defining resilience and identifying pressing vulnerabilities. A second workshop presented the impacts of sea level rise on storm surge and the results from the survey. The city's engagement efforts and the findings from these activities were then incorporated into the Assessment Plan.

In an effort to address the vulnerabilities identified in the Assessment Plan, Cape Canaveral proceeded with the development of the Resilient Cape Canaveral Action Plan ("the Action Plan"), developed in 2021. The Action Plan turned the recommendations of the Assessment Plan into actionable and defined targets.

It took two years to complete, due in part to the impact of COVID-19. City staff assumed a leading role for the development of the Action Plan, while the ECFRPC served more as an advisory body. The city researched the resilience planning efforts of other communities in order to source best practices and leverage existing templates. The Action Plan included 56 distinct preparedness targets, each falling under one of 8 action categories. These targets, each with its own implementation timeline and completion date, were treated as mandates from the City Council.

### 8 Action Categories

1. Green and Resilient Economy
2. Natural Systems
3. Transportation
4. Energy
5. Built Environment
6. Equity and Quality of Life
7. Waste and Consumption
8. Storm Readiness and Sea Level



Figure 30: Community Engagement

### How the plans will improve resilience

In June 2021, the City Council unanimously adopted the Action Plan, paving the way for city staff to begin implementing the preparedness targets. The Action Plan is considered a living document, designed to be updated every five years. Each update (the next one planned for 2027) will aim to address successes and failures of previous efforts and ensure that performance targets remain relevant and feasible. This ensures that Cape Canaveral’s resilience strategies remain effective and up to date. The process of updating the targets involves a continuous dialogue with the public. Workshops are held to review the Assessment Plan’s progress, successes, and areas for improvement. This approach holds city staff accountable for implementing the actions outlined in the document.

The Community & Economic Development Department’s Resilience Division serves as the central hub for plan implementation, fostering collaboration among various city departments. The department has effectively incorporated resilience planning into their regular operations. Zachary Eichholz, Chief Resilience Manager of the City of Cape Canaveral commented:

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*“Achieving the preparedness targets necessitates a multi-departmental implementation approach and the involvement of external stakeholders. So, it’s an ‘all hands-on deck’ kind of plan that needs collaborative efforts.”*

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A basic but effective internal tracking system has been introduced to monitor and oversee the implementation process. Primarily utilizing Excel worksheets, document lists, and photo folders, this system documents the city's progress. Key metrics such as utility bills, weather and climate data, solar generation at city-owned facilities, and carbon emissions from the fleet are regularly tracked. All of this is designed to maintain visibility and keep city staff focused on driving progress.

### Plan Highlights

Cape Canaveral's action plan has a strong focus on leveraging infrastructure as a resilience tool. Some of the innovative ways the plan does this include:

- **Resilience in Buildings.** In compliance with the "Peril of Flood" Act, the city is revising its Comprehensive Plan: a legal document that Florida's municipal governments are required to evaluate at least once every seven years. One of the key initiatives is to elevate structures by raising the residential height limit to 35 feet, allowing for a raised first floor with a breakaway floor beneath. The northwest quadrant bordering Port Canaveral, a prosperous yet vulnerable area housing most of the city's hotels, businesses, housing developments, and the city's Water Reclamation Facility, is particularly susceptible to storm surge, sea level rise, and flooding. Accordingly, developers in this area will be subject to more stringent building codes to mitigate the impacts of future flooding. The specifics of these enhanced codes will be determined after the Comprehensive Plan's approval, with potential assistance from the University of Florida's Institute of Architecture and Design.
- **Solar-Powered Resilience Hub at the Community Center.** The City of Cape Canaveral Community Center (C5) marked the city's first foray into municipal rooftop solar, which has received positive attention and has proven to be successful (see Figure 31). Zachary Eichholz describes the process of implementing the solar system as follows:

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*"Initially, the building was not designed to support a rooftop solar array. However, recognizing an opportunity, we modified the design to accommodate this feature. The roof was reinforced to bear the weight of the system. Conduit was pre-installed to the utility room for easy wiring, and additional breaker space and wall room were allocated for the inverters."*

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The public can see the solar power being generated through a dashboard in the lobby. Analysis shows that the array is offsetting about 54% of the 24,000 square foot building's energy consumption, saving the city roughly \$12,000 each year. This success of the solar system has sparked the city's interest in transforming the C5 into a Resilience Hub. This hub would serve as a community resource during and in recovery from disasters, providing essential services like clean water, food, power, and communication to local residents. The second phase of the project will implement a battery energy storage system to keep power available in the hub during utility grid outages. In addition, the C5 is set to have flood barriers installed across the doors and windows, with provisions for this already included in this year's budget.



*Figure 31: The City of Cape Canaveral Community Center (C5)*

- **Grid-independent Electric Vehicle (EV) stations and alternative fuel vehicles.** The city has two ambitious plans for a resilient transportation transition. The first plan involves modifying all city-based EV charging stations to operate on renewable energy, primarily solar power, and achieve grid independence through battery storage systems. The second plan is to transition all city vehicles to alternative fuels over the next 15 years. The city's membership in the Climate Mayors Electric Vehicle Purchasing Collaborative will facilitate the acquisition of new electric vehicles at reduced costs.

### **Moving forward**

While Cape Canaveral is a small municipality, it has been able to develop and implement its resilience plans flexibly and efficiently. But it faces staff capacity and bandwidth constraints as it seeks to pursue its plans' many diverse actions. Funding is another key challenge, as the city often needs to outsource work that staff cannot implement within current budgets. The COVID-19 pandemic also led to supply chain issues, causing delays in some projects.

Looking ahead, as the city learns from its resilience planning experience, staff say they would consider several modifications. One key change would be to strengthen the targets in the Action Plan. Initially, the city adopted a cautious approach, but given the significant progress and community support, there's an opportunity to bolster these goals and expedite their implementation. The city would also like to place more emphasis on greenhouse gas emission reductions. While the current plans touch on this, it is not a primary focus. Furthermore, the city plans to address longer-term issues related to sea level rise beyond 2050. While current plans are oriented towards 2050, the city recognizes the need to extend this horizon as infrastructure projects being built today could very well live beyond that point. This might involve strategies like relocating critical infrastructure, such as the city's wastewater utility, currently situated in a highly vulnerable location.

An enhanced vulnerability assessment is in progress to comply with state mandates. To be completed in the next two years, it will include the latest sea level rise and flood projections, rainfall calculations, and potentially expand its scope to address issues such as extreme heat and island isolation. The Florida Department of Environmental Protection has provided a grant of \$225,000 to fund this project. For this

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expanded assessment, Cape Canaveral plans to expand stakeholder and expert engagement, including organizations such as Stetson University's Institute for Water and Environmental Resilience, the Space Coast Transportation Planning Organization, and the Florida Department of Environmental Protection, among others.

### **What can we learn from the City of Cape Canaveral resilience planning effort?**

Review of the plan documents and discussions with city staff make it evident that the city's proactive and comprehensive approach has been instrumental in its success. Three core principles stand out: (1) identifying vulnerabilities by collaborating with external experts, (2) fostering community involvement through active engagement, and (3) converting plans into actionable steps to provide a clear implementation blueprint.

Moreover, the city's resilience planning effort showcases the advantages of leveraging external legislative drivers and funding opportunities. The city's adherence to state mandates emphasizes the importance of aligning local initiatives with state resilience and related policy objectives. This approach demonstrates the value of harnessing all available resources in the pursuit of building a climate-resilient future. It enables relatively small communities to make big strides toward protecting their citizens and their systems from climate impacts.