

# Consultant Report

2022

## Community Risk Assessment and Standards of Cover



**Charlotte County Fire and Emergency Medical Services  
Punta Gorda, Florida**

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## INTRODUCTION

The following document functions as Charlotte County Fire and Emergency Medical Services (CCFEMS) All-Hazard Community Risk Assessment and Standards of Cover statement. The Commission on Fire Accreditation International (CFAI) defines the process, known as “deployment analysis,” as a written procedure which determines the distribution and concentration of fixed and mobile resources of an organization. The purpose of completing such a document is to assist the Department in ensuring a safe and effective response force for fire suppression, emergency medical services (EMS), hazardous materials incidents, and technical rescues, and in facilitating activities for domestic preparedness, emergency planning, and disaster response.

Creating a Standards of Cover (SOC) document requires the research, study, and evaluation of a considerable array of community features. The following report will begin with a descriptive overview of CCFEMS and the area that it serves. Following this overview, an all-hazards risk assessment provides an analysis of potential risks and describes activities the Department employs to mitigate those risks. Current deployment and performance were assessed to determine the capabilities and capacities that are available. Benchmark statements and baseline performance support CCFEMS ability to meet distribution and concentration metrics. The report concludes with plans for maintaining and improving capabilities, as well as policy recommendations to address gaps in performance or desired outcomes.

### Core Competency or Performance Indicator

Description of the core competency or performance indicator with the most important phrases or words underlined for emphasis.

Throughout the document several “accreditation building blocks” will be highlighted, drawing a direct link between the community risk assessment-standards of coverage and the requirements of the fire department accreditation process as administered through CFAI.

This SOC is demonstrative of CCFEMS continued commitment to regular community risk assessment (CRA). The Department has adopted a formal process of reviewing and assessing risk as an annual process. CCFEMS anticipates that regularly revisiting and revising the SOC and CRA will allow the Department to stay on top of changes in the community as well as enable staff to efficiently distribute and plan for resources allocated throughout the jurisdiction.

Charlotte County Fire and Emergency Medical Services would like to thank all members for their continued dedication to the citizens, visitors and for the commitment to continuous improvement embodied by the accreditation process.

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# EXECUTIVE SUMMARY

## Standards of Cover Process

A Fire Departments Standards of Cover (SOC) document is defined by the Commission on Fire Accreditation International (CFAI) as the “adopted written policies and procedures that determine the distribution, concentration, and reliability of fixed and mobile response forces for fire, emergency medical services, hazardous materials and other technical types of responses.” For the elected body and department administrators to have confidence that their department is meeting the needs of the community, a complete assessment of the risks must be honestly undertaken. Only after the application of a proven and consistent risk assessment model is made can a Fire/EMS Department develop a SOC performance contract.

It is the responsibility of the Department's decision makers to provide an educated calculation of the expected risk, what resources are available to respond to that risk, and what outcomes can be expected. All of these factors play a role in providing the community's emergency services. It is best practice that communities set response standards based on the identified risks within their jurisdictions. Departments that do not apply a valid risk assessment model to their community are not able to adequately educate their community leaders on their true needs. The application of a tested risk assessment model allows the Department and elected officials to make educated decisions about the level of emergency service they desire.

## Section A- Documentation of Area Characteristics

Charlotte County Fire and Emergency Medical Services operates from 19 stations across the 693 square miles of the county, which has a population of nearly 200,000 residents. Charlotte County is ideally situated on Southwest Florida's Gulf Coast.

Charlotte County's 693 square miles include 165 miles of canals, 219 miles of shoreline, 70 parks and recreation areas, and 12.5 miles of Gulf Coast beaches. Amenities include shopping/dining in downtown Punta Gorda or Port Charlotte, spring baseball at Charlotte Sports Park (Tampa Rays), and multiple shopping venues throughout the county. Punta Gorda Airport is located centrally within the county allowing for travel versatility. Outdoor activities include over 4,000 acres of environmental parks and preserves to explore, kayak, and enjoy.

## Section B- Description of Agency Programs and Services

Charlotte County comprises the Punta Gorda, FL, Metropolitan Statistical Area, which is included in the North Port-Sarasota, FL, Combined Statistical Area. Charlotte County Fire and EMS (CCFEMS) is a combined fire and ALS transport agency. CCFEMS serves a full-time population of nearly 200,000 and protects an area of 693 sq. miles of land and 129 sq. miles of water from 14 Fire Rescue stations and 5 EMS only stations. CCFEMS ran over 35,000 calls for service in 2021.

CCFEMS is a growing department and offers many opportunities for professional development and career advancement. Along with fire suppression and ALS transport, CCFEMS offers multiple specialties to better serve the community. Specialties include Marine Operations, Special Operations (hazmat, confined space, high angle rescue, trench rescue, and structural collapse), ARFF (Airport Rescue Firefighting), SWAT Medic, and Paramedic Field Trainer. Charlotte County Fire & Rescue is a part of Charlotte County Public Safety. Other public safety departments include Emergency Management, Animal Control, and Radio Management.

Charlotte County Fire and Emergency Medical Services utilizes a tiered strategy to organize response areas into geographical planning zones. This is based on a first due area. These areas have specific resource allocation strategies based on measured risks.

### **Section C- All-Hazard Risk Assessment of the Community**

A comprehensive risk assessment analyzed the physical, economic, sociologic, and demographic aspects of the jurisdiction. The factors that drive the service needs were examined in a precise and scientific manner to determine the capabilities necessary to adequately address the risks that are present.

Each of the major natural and human-made risks evaluated received a clearly defined probability and consequence ranking. Service areas that either had little quantitative data or did not require that level of analysis, were evaluated through both retrospective analysis as well as structured interviews with Department staff members. Final call types were classified into the program areas of EMS, Fire, Hazmat, Other, and Technical Rescue based on Department leadership decisions and were assigned a risk classification based on the Department's leadership criteria.

### **Section D- Community Feedback**

As CCFEMS embarked on the strategic planning journey, focused was placed on where the organization was going in the next five years to ensure that the program goals and objectives aligned with the desired outcomes identified by not only our internal personnel but the communities that are served by CCFEMS.

With the guiding principle of inclusion in place and a clear plan for multi-faceted engagement, the organization was able to incorporate many voices in the creation of the refreshed Mission, Vision and Values. This alignment facilitated the creation of strong and action-oriented goals, objectives, and critical tasks. The input gleaned from community members was invaluable in shaping the next several years of work for CCFEMS.

### **Section E- Program Goals and Objectives**

The major programmatic goals and objectives for CCFEMS have been captured in the latest strategic plan, which covers 2023-2026. The goals, objectives, and associated sub-tasks have been organized into five main categories: Emergency Response, Fire and Life Safety Services, People and Culture, Business

Practices, Facilities, and Equipment.

The goals will be reviewed and addressed by goal owners in regular leadership reviews, including a quarterly review conducted with the executive leadership team. Annually, a documented report out will be created by the Fire Chief to share with the Commissioners. The annual reviews will identify any gaps in current capabilities, capacity, and the level of service provided within each service delivery area.

### **Section F- Current Deployment and Performance**

This section analyzed the emergency response history of the Department, taking a systems level view of current performance, established formal benchmark (what CCFEMS strives to attain) performance measures, and analyzed actual (baseline) performance. Projected growth of the emergency call volume was also evaluated, along with an in-depth look at each first due fire station area to identify areas of concern with elevated risks and lagging performance.

Simultaneous calls (call concurrency), Distribution (first unit on scene), Concentration (arrival of the full Effective Response Force), Reliability (how often a unit can answer its own calls), and several other measures were used

to paint a clear picture of CCFEMS emergency response performance as balanced against community risk and internally developed response time goals.

### **Section G- Evaluation of Current Deployment and Performance**

It is imperative that the Department continuously evaluate its actual performance (baseline performance) versus its established goals (benchmark performance). This section takes a detailed look at the gaps where performance could be improved (noted in red) or is currently exceeding established goals (in green). Important trends can be discerned based on the risk level (low, moderate, high,

extreme) or where the incidents are occurring (urban or rural). The majority of performance gaps were minor in nature, allowing further refinement of the response system to achieve CCFEMS response time goals. Other areas, such as low-risk fire suppression incidents or high-risk EMS incidents, showed bigger gaps, highlighting areas of opportunity for the organization.

### **Section H- Plan for Maintaining and Improving Response Capabilities**

A strategic plan, on paper, is a commitment to action. A commitment to action requires an execution strategy. CCFEMS does this by including the development of specific, measurable, attainable, relevant, and time-bound goals in the strategic plan. The strategic plan was developed to provide an inclusive continuous improvement framework to address existing gaps and variations for each functional area of the Department.

Sustaining the work is a critical step in the implementation of a strategic plan. The plan is a living document that supports continuous improvement rather than a static document that sits on the shelf. Meeting quarterly, the planning team will assess progress and report out in a similar manner to what is shown here; areas of focus, objectives, goals, and tasks are examined to see if the target is still relevant, if more resources need to be allocated, or if adjustments to the strategy need to be undertaken; all in an effort to address existing gaps and variations between baseline and benchmark performance.

### **Section I- Conclusion and Recommendations**

Charlotte County Fire and Emergency Medical Services is an organization with a total authorized staff of 301 personnel who are committed to saving lives, protecting property, safeguarding the environment, and taking care of their people. This is accomplished by providing a full spectrum of emergency and non-emergency services that align with the risks present in the community. Population growth, continued expansion of building construction, and significant changes to human-made hazards made this an ideal

time to undertake a comprehensive standards of cover process (SOC) and assess the organization's benchmark and baseline performance.

A succinct list of strengths, weaknesses, opportunities, threats, and recommendations can be found in this section, further aiding CCFEMS in charting a path toward continuous improvement. Finally,

observations and recommendations regarding station locations, Advanced Life Support (ALS) unit deployment, Basic Life Support (BLS) unit deployment, workload, resource allocation, and commensurate staffing strategies. Primary recommendations are presented in this section.

### **Appendices**

- Data Analysis Report
- GIS Report

- Risk Assessment Report

**SECTION A – DOCUMENTATION OF AREA  
CHARACTERISTICS**



**Description of Community Served  
&  
Description of Area Served**

## Description of Community Served

This section provides legal and historical background pertinent to the delivery of emergency service within the jurisdiction of Charlotte County Fire and Emergency Medical Services (CCFEMS). Included in this section are reviews of the legal and governmental structure, an overview of the demographics and physical environment, and characteristics of particular areas for which CCFEMS provides service.

### Introduction

Charlotte County is ideally situated on Southwest Florida's Gulf Coast. Charlotte County's 693 square miles include 165 miles of canals, 219 miles of shoreline, 70 parks and recreation areas, and 12.5 miles of Gulf Coast beaches. Amenities include shopping/dining in downtown Punta Gorda or Port Charlotte, spring baseball at Charlotte Sports Park (Tampa Rays), and multiple shopping venues throughout the county.

Documentation of Area Characteristics as it relates to Criterion 2A.

The agency collects and analyzes data specific to the distinct characteristics of its legally defined service area(s) and applies the findings to organizational services and services development.

Punta Gorda Airport is located centrally within the county allowing for travel versatility. Outdoor activities include over 4,000 acres of environmental parks and preserves to explore, kayak, and enjoy.

Charlotte County comprises the Punta Gorda, FL, Metropolitan Statistical Area, which is included in the North Port-Sarasota, FL, Combined Statistical Area. Charlotte County Fire and EMS (CCFEMS) is a combined fire and ALS transport agency. CCFEMS serves a full-time population of nearly 200,000 and protects an area of 693 sq. miles of land and 129 sq. miles of water with 14 Fire Rescue stations and 5 EMS only stations.

CCFEMS ran over 35,000 calls for service in 2021. CCFEMS is a growing department and offers many opportunities for professional development and career advancement. Along with fire suppression and ALS transport, CCFEMS offers multiple specialties to better serve the community. Specialties include Marine Operations, Special Operations (hazmat, confined space, high angle rescue, trench rescue, and structural collapse), ARFF (Airport Rescue Firefighting), SWAT Medic, and Paramedic Field Trainer.

### Charlotte County History

Charlotte County was created on April 23, 1921, from DeSoto County. The county seat is Punta Gorda, Florida. This county is named from a version of the name of the Calusa, a group of Native Americans from the area. The county is named for the Bay of Charlotte Harbor. "Charlotte" came from "Carlos" (English) or "Calos" (Calusa Indian). Charlotte County is located close to the center of Florida. Charlotte Harbor Estuary is an important natural preserve and one of the most productive in Florida.

## Legal Basis

### History of the Department

Charlotte County Fire and Emergency Medical Services has a history of consolidations and partnerships. In 1994, the merger of two different but intertwined fields, the fire service and emergency medical services, was the beginning of the Department we know today.

#### Performance Indicator 2A.1

Service area boundaries for the agency are identified, documented, and legally adopted by the authority having jurisdiction.

The Charlotte County Fire Service, one of two county-operated fire departments, was created in 1981 with the consolidation of the East Charlotte Fire Control District and the Alligator Creek Fire District. The other county department, the El Jobean Fire Control District, served West Charlotte County until a 1986 consolidation of both county departments and two state fire districts, the Port Charlotte-Charlotte Harbor Fire Control District and Charlotte South Fire Control District, gave birth to the Charlotte County Fire Rescue Department. In 1994, the final consolidation combined the fire service with emergency medical services to create Charlotte County Fire & EMS.

Until the early '80s, the Charlotte County Sheriff's Office provided emergency medical services in our county. Armed deputies staffed ambulances serving as emergency medical technicians. Between medical calls, the deputies carried out the law enforcement duties like patrolling the county and writing traffic tickets from their ambulance. At night they would take their ambulance home. If a call came in, they would respond alone, and hopefully, another deputy would be available to help. The public was also relied upon heavily for assistance.

As the county grew, the need for designated EMS services also increased. Charlotte County Commissioners recognized this need and, in October 1981, created the Charlotte County Emergency Medical Services.

Charlotte County Emergency Medical Services provided basic life support from the Myakka River to the Lee County line with a fleet of three ambulances. In 1983, the county expanded ambulance coverage from the Myakka River to the Sarasota County line, becoming the first county-wide emergency service provider. With the geographical expansions, they added three more ambulances to their fleet.

The 1994 consolidation of the Charlotte County Fire Rescue and Charlotte County Emergency Medical Services meant staff from both sides had to expand their knowledge and skills. The EMS personnel were accustomed to removing themselves and their patients from danger. They had to become certified firefighters and get used to running into burning buildings. The firefighters had to obtain an EMS certification and adjust to the idea of caring for the sick and injured with more advanced procedures.

From humble beginnings, the Department evolved into a full-service career department, providing fire suppression, rescue operations, and pre-hospital emergency medical care and transport. Specialty units within the Department include hazmat and technical rescue, marine operations, swat medics, and Aircraft Rescue Fire Fighting (ARFF).

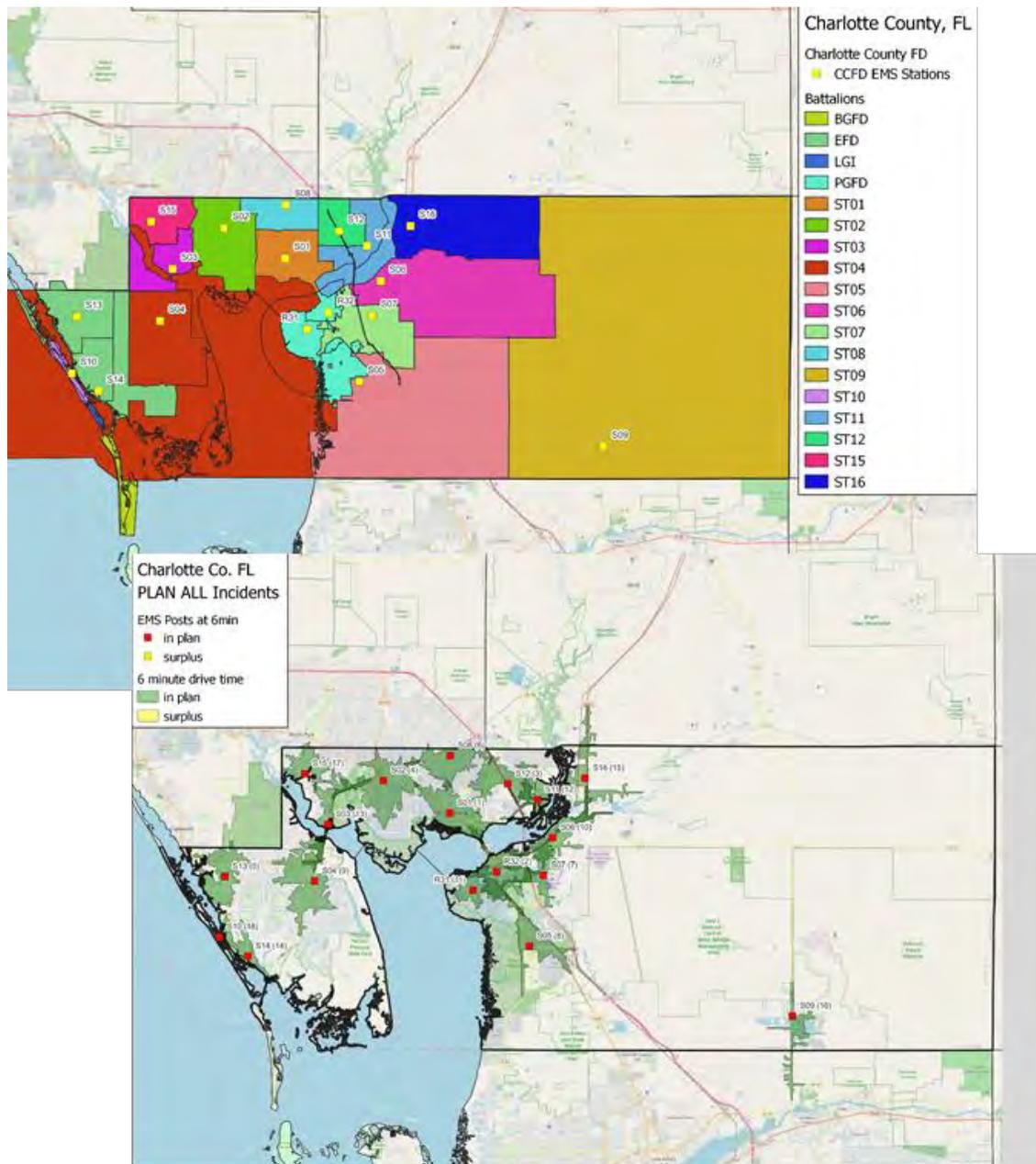
### Jurisdiction

Charlotte County Fire and Emergency Medical Services utilizes a tiered strategy to organize response areas into geographical planning zones. The first, is at the first due area. These zones have specific resource allocation strategies based on measured risks.

**Core Competency 2A.3**

The agency has a documented and adopted methodology for organizing the response area(s) into geographical planning zones.

Charlotte County Fire & EMS Overall Jurisdictional Map



# Population Overview

## Population and Density

Fire Rescue serves a population of nearly 194,843 according to current U.S. Census Bureau data<sup>2</sup>. CCFEMS protects an area of 693 sq. miles of land and 129 sq. miles of water from 14 Fire Rescue stations and 5 EMS only stations. CCFEMS ran over 35,000 calls for service in 2021. The County has observed manageable growth over the years, experiencing a 4.3% increase in population since the last U.S. Census, dated April 1, 2020. Over the approximate 859 combined square miles, the population density within the county ranges from 274.3 up to 681 people per square mile.<sup>1</sup>

**Core Competency 2A.4**

The agency assesses the community by planning zone and considers the population density within planning zones and population areas, as applicable, for the purpose of developing total response time standards.

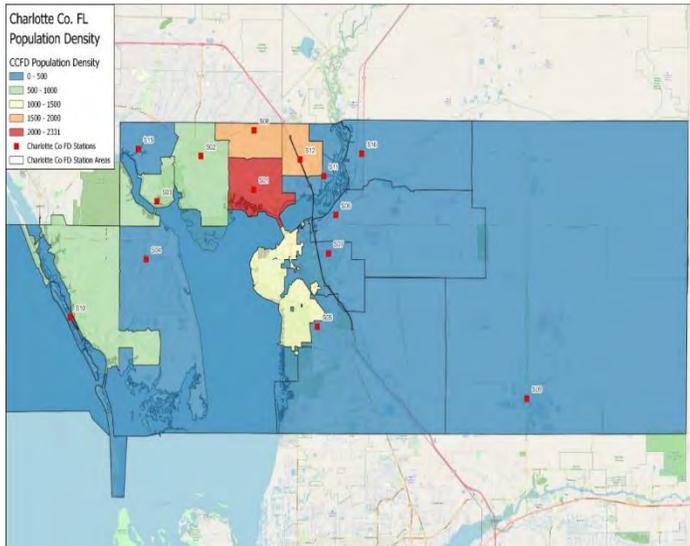
**Performance Indicator 2A.5**

Data that include property, life, injury, environmental and other associated losses, as well as the human and physical assets preserved and/or saved, are recorded for a minimum of three (initial accreditation agencies) to five (currently accredited agencies) immediately previous years.

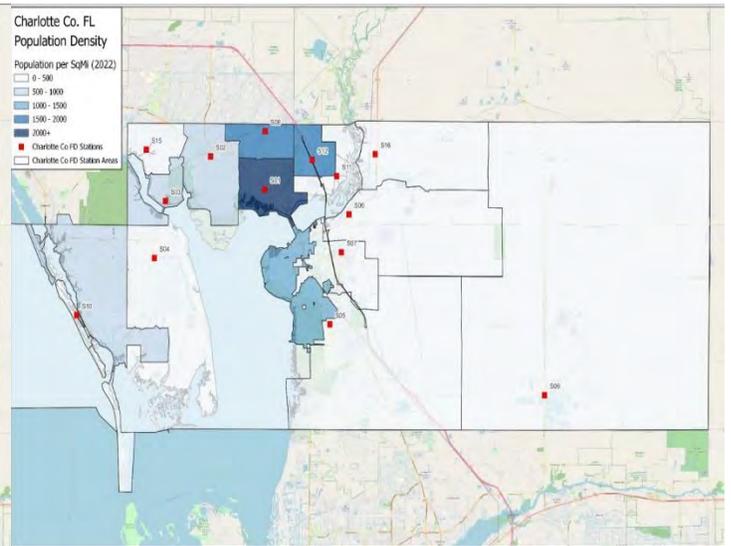
### Charlotte County Population Summary

Population	
Population Estimates, July 1 2021, (V2021)	194,843
Population estimates base, April 1, 2020, (V2021)	186,847
Population, percent change - April 1, 2020 (estimates base) to July 1, 2021, (V2021)	4.3%
Population, Census, April 1, 2020	186,847
Population, Census, April 1, 2010	159,978
Age and Sex	
Persons under 5 years, percent	2.8%
Persons under 18 years, percent	11.8%
Persons 65 years and over, percent	40.5%
Female persons, percent	50.9%

Charlotte County Population Density by Response Zone



Charlotte County Fire and EMS Population Density by Sq. Mile



<sup>1</sup> <https://www.census.gov/quickfacts/charlottecountyflorida>

## Data Overview

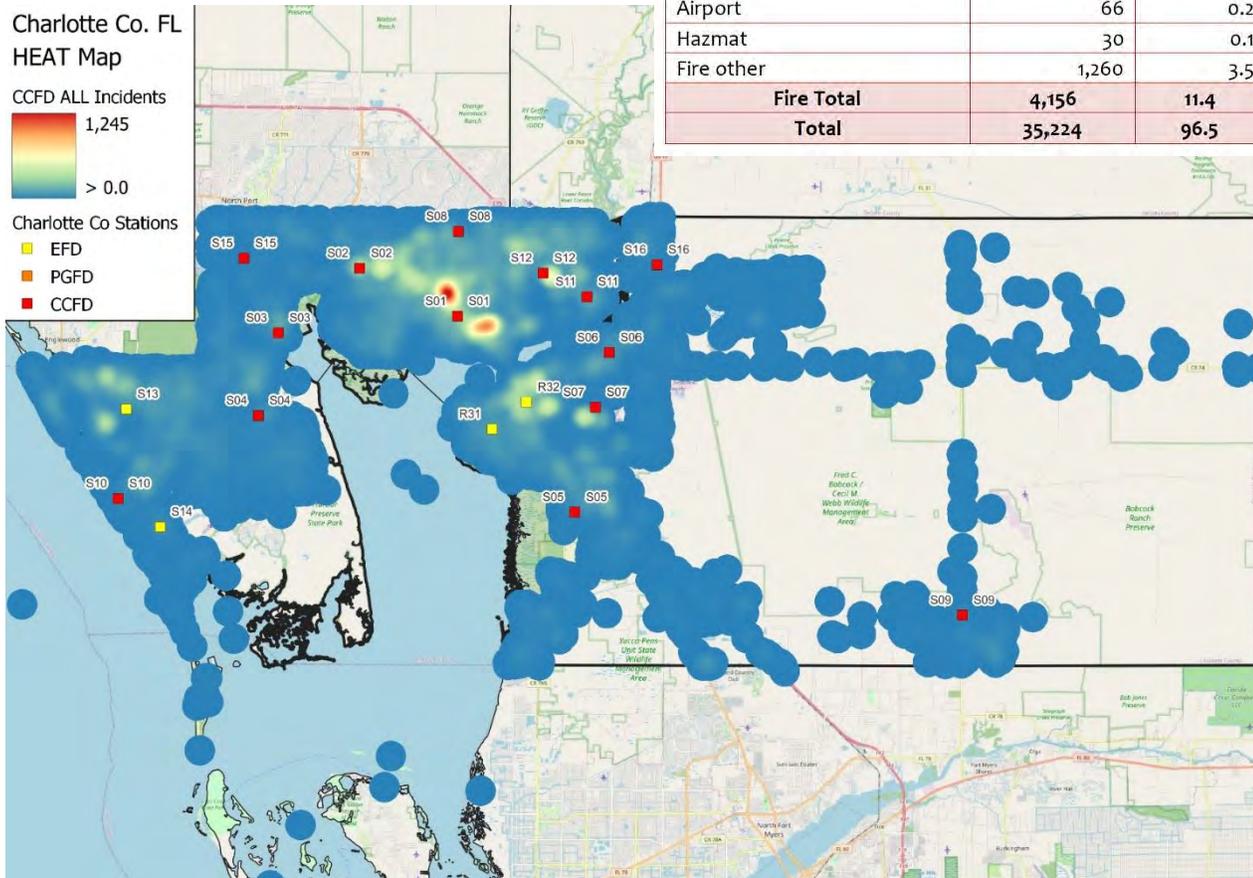
### Distribution of Demand by Program Areas

Heat maps were created to identify the concentration of the historical demand for services overall and by program area (i.e., EMS, Fire, Hazmat, and Rescue). The blue areas have the lowest concentration of demand, and the dark red areas have the highest concentration of demand.

### 2021 CCFEMS Incident Demand

Call Category	Number of Calls	Calls per Day	Call Percentage
Cardiac and stroke	3,105	8.5	8.8%
Seizure and unconsciousness	2,208	6.0	6.3%
Breathing difficulty	2,125	5.8	6.0%
Overdose and psychiatric	221	0.6	0.6%
Accident	1,652	4.5	4.7%
Fall and injury	6,312	17.3	17.9%
Illness and other	7,039	19.3	20.0%
Medical No ProQA	3,962	10.9	11.2%
Interfacility transfer	4,444	12.2	12.6%
<b>EMS Total</b>	<b>31,068</b>	<b>85.1</b>	<b>88.2%</b>
Structure fire	228	0.6	0.6%
Outside fire	226	0.6	0.6%
Vehicle fire	118	0.3	0.3%
Alarm	857	2.3	2.4%
Public service	1,371	3.8	3.9%
Airport	66	0.2	0.2%
Hazmat	30	0.1	0.1%
Fire other	1,260	3.5	3.6%
<b>Fire Total</b>	<b>4,156</b>	<b>11.4</b>	<b>11.8%</b>
<b>Total</b>	<b>35,224</b>	<b>96.5</b>	<b>100.0%</b>

2021 CCFEMS All Incident Demand Heat Map



# Description of Area Served

## Florida Geography

### Geography

Florida is a geologically young, low-lying plain, mostly less than 100 feet (30 meters) above sea level. The highest point is near the Alabama border in Walton County, a mere 345 feet (105 meters) above sea level.

Sedimentary deposits of sand and limestone cover most of the state, with areas of peat and muck marking locations where freshwater bodies once stood. The contemporary topography has been largely molded by running water, waves, ocean currents, winds, changes in sea level, and the wearing away of limestone rocks by solution.



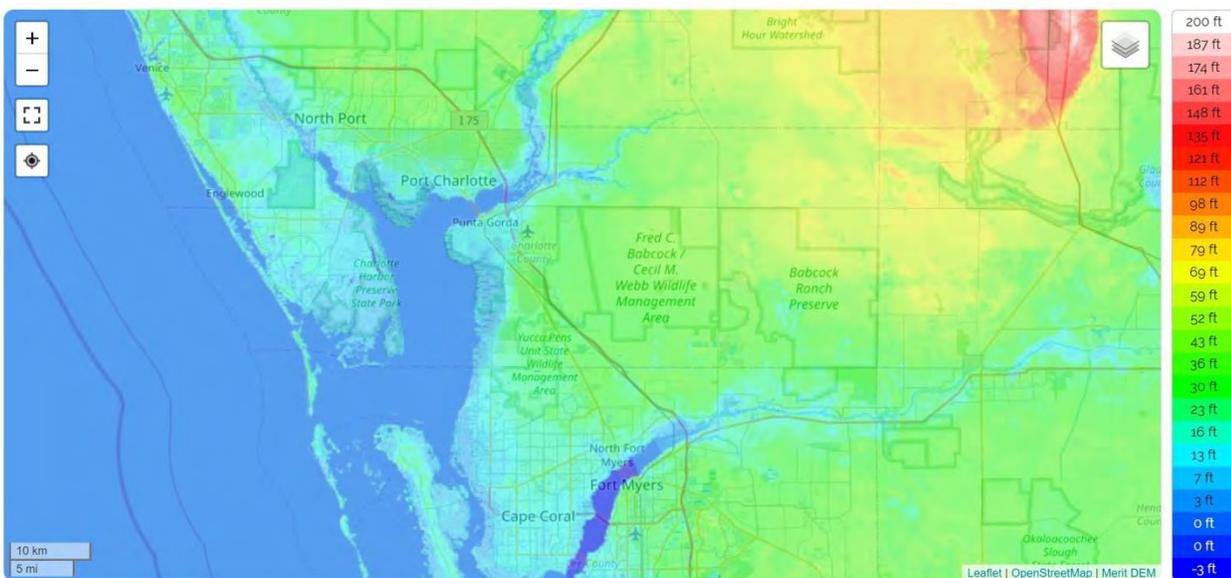
### Topography

The topography is coastal lowlands which occupy roughly three-fourths of the surface and vary in width from about 10 to 100 miles (16 to 160 km). Generally, the region is exceedingly flat and is often less than 25 feet (8 meters) above sea level.

#### Performance Indicator 2A.6

The agency utilizes its adopted planning zone methodology to identify response area characteristics such as population, transportation systems, area land use, topography, geography, geology, physiography, climate, hazards, risks, and service provision capability demands.

### Florida Topography

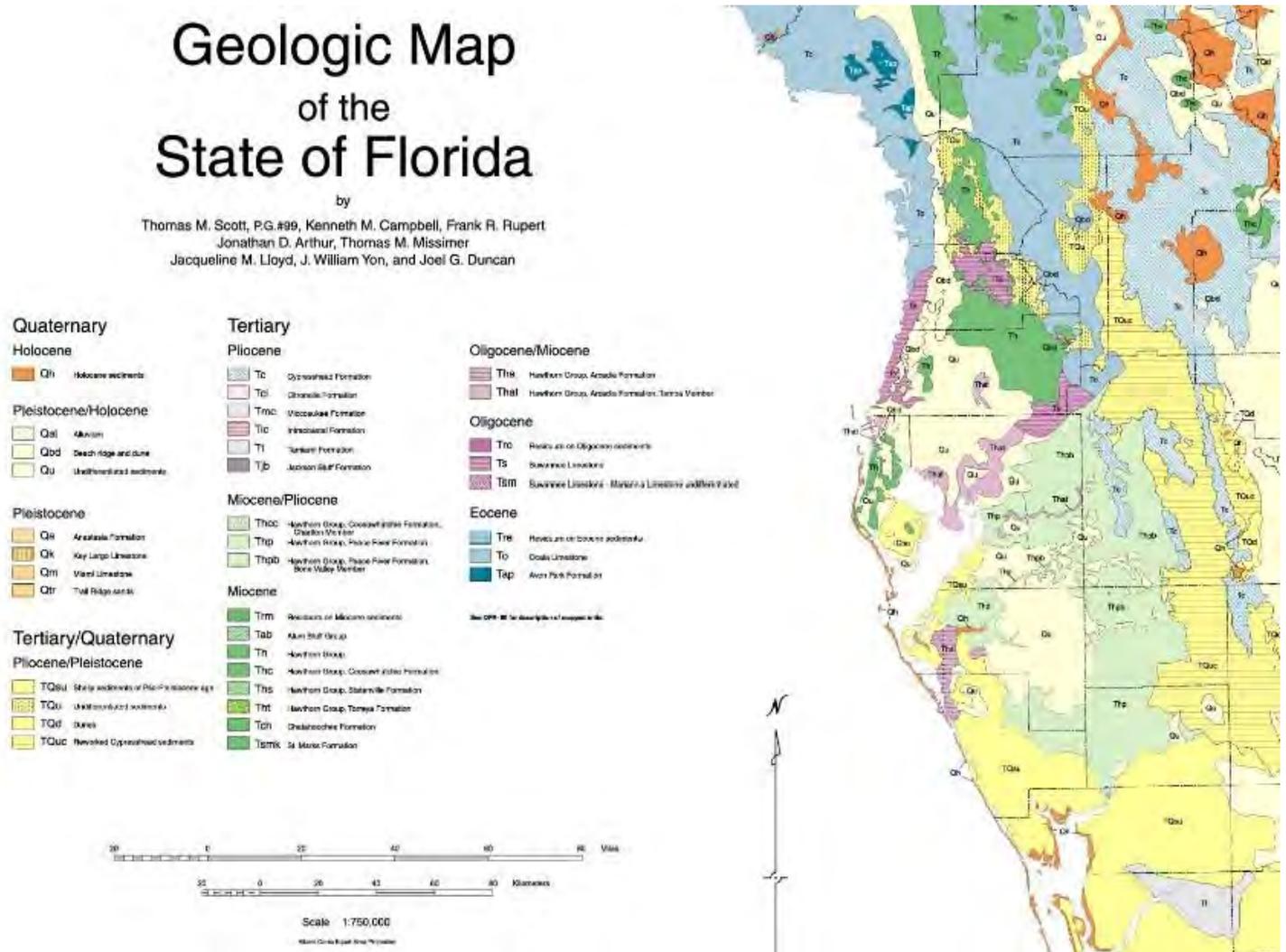


Charlotte County, Florida, United States (26.90133 -81.91568)

Geology

The geologic units in Charlotte County, FL are shelly sediments of Plio-Pleistocene age (Pliocene/Pleistocene) at surface, which covers 93 % of this area Tertiary-Quaternary Fossiliferous Sediments of Southern Florida - Mollusk bearing sediments of southern Florida contain some of the most abundant and diverse fossil faunas in the world.

Geological map of Charlotte County, FL



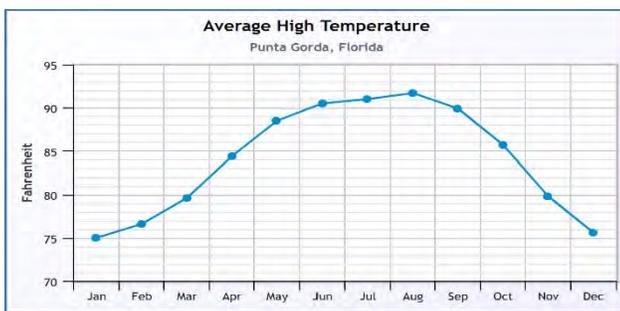
USGS-Florida-lg.jpg (2919x2909) (nbbd.com)

**Climate**

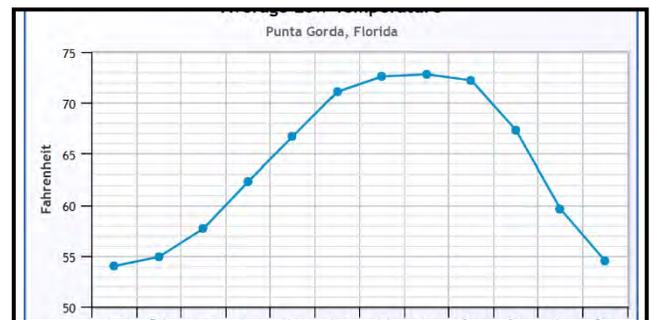
Charlotte County, FL has experienced a variety of weather since 1900, impacting people, communities, and geographies. The county has a humid subtropical climate with warm, humid summers and cool winters. The average summer temperatures range from 71.1 to 89.1 degrees Fahrenheit with the peak temperature taking place during the month of August. The coldest month of the year is January with average temperatures of 65 degrees Fahrenheit.

<b>Hottest Month</b>	August (84 °F avg)
<b>Coldest Month</b>	January (65 °F avg)
<b>Wettest Month</b>	August (6.06" avg)
<b>Windiest Month</b>	March (7 mph avg)
<b>Annual precip.</b>	25.98" (per year)

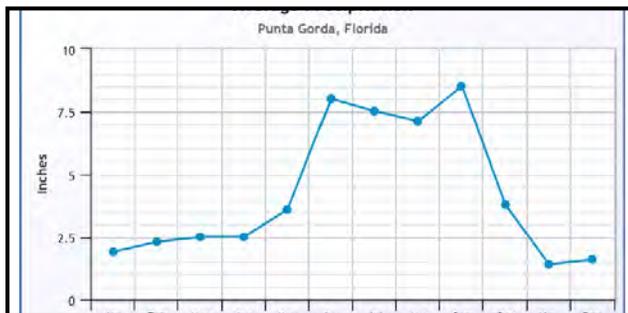
**Average Annual High Temperatures  
Punta Gorda, FL**



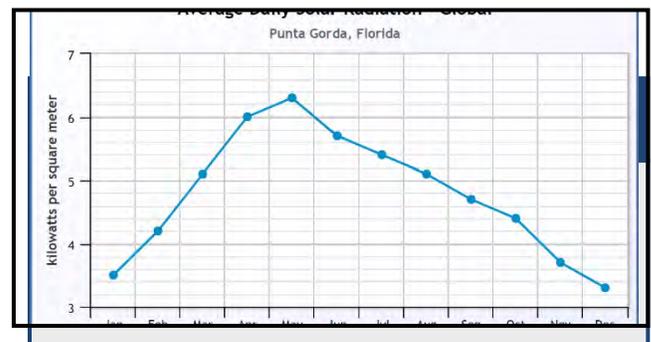
**Average Annual Low Temperatures  
Punta Gorda, FL**



**Average Annual Precipitation Punta Gorda, FL**



**Average Annual Solar Radiation—  
Global Punta Gorda, FL**



Charlotte County is prone to thunderstorms during the summer and flooding amid heavy rainfall. August is the month that typically brings the most rainfall, averaging 7.8 inches, while November is the driest month, averaging 6.6 inches of precipitation. The average annual rainfall per year is 25.98 inches.

4 Weather information from [www.weatherbase.com](http://www.weatherbase.com)

## Physiography/Disaster Potentials

Charlotte County is vulnerable to natural hazards of fires, thunderstorms, floods, droughts, tornadoes, hurricanes, and various weather events. The county-wide risk index is a useful guide but cannot predict the probability of all events with 100% accuracy, as evidenced by Hurricane Charlie that occurred in 2004 along the length of the county. A snapshot of the overall hazard probability is referenced in the table below. These specific hazards are discussed in detail in the Community Characteristics of Risk section.

**Charlotte County Risk Probability**

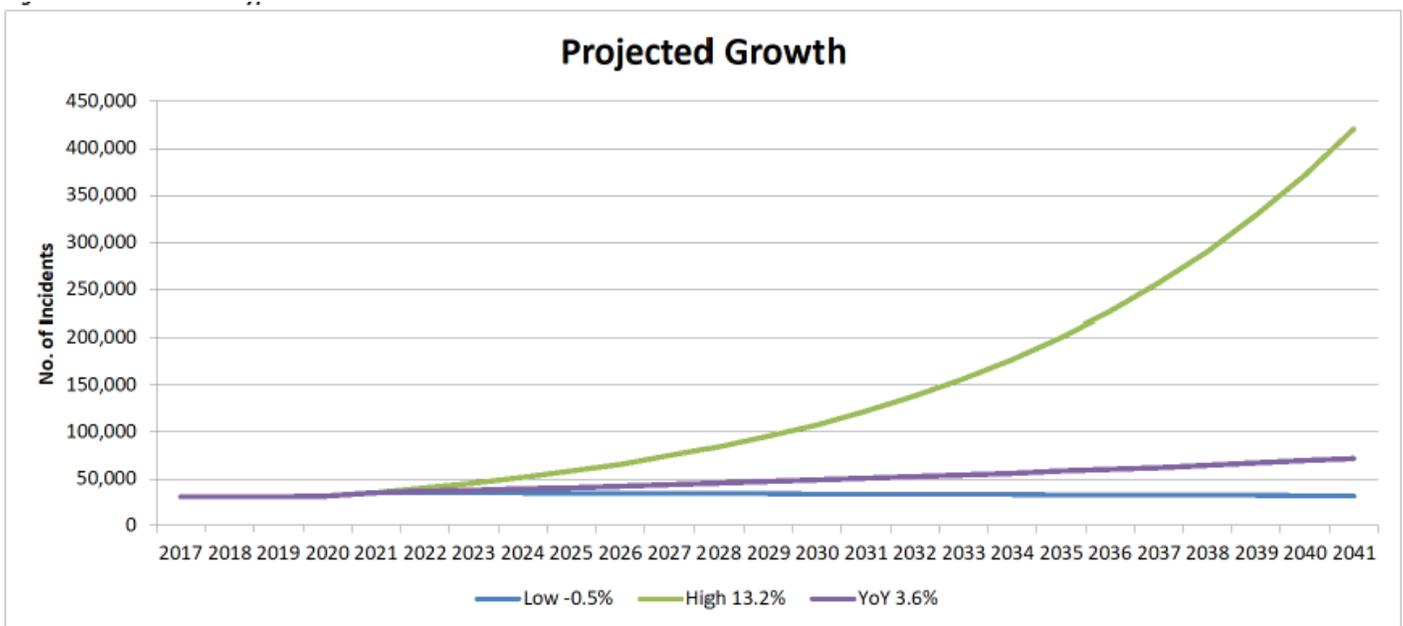
Type	Hazard	Probability	Impact	Frequency	Distribution
Natural	Coastal Erosion	Medium	Moderate	Annually	Coastal areas and barrier islands
	Drought	Medium	Major	5-10 Years	County-wide
	Earthquakes	Low	Minor	500 Years	County-wide
	Exotic Pests	Low	Minor	Continuous	County-wide
	Extreme Heat	High	Minor	Annually	County-wide
	Flooding	Medium	Major	1-2 Years	Localized
	Freeze	Medium	Minor	5-10 Years	County-wide
	High Wind Event	High	High	1-2 Years	County-wide
	Sinkholes	Low	Minor	30+ Years	Localized
	Tornado	Medium	Moderate	Several Per Year	County-wide
	Tropical Cyclone*	Medium	Major-Catastrophic	2-3 Years	Coastal areas and barrier islands
	Tsunami	Low	Major	500 Years	Coastal areas and barrier islands
	Wildfire	High	Moderate	Several per Year	County-wide
Technological	Dam Failure	Low	Minor	N/A	Three parcels in northwest corner of county
	Hazardous Materials	Medium	Minor	Several per Year	County-wide
	Terrorism	Low	Major-Catastrophic	N/A	County-wide
	Critical Infrastructure Disruption	High	Moderate	Several per Year	County-wide
	Cyber Incident	High	Major-Catastrophic	Daily	County-wide

# Human Related Characteristics

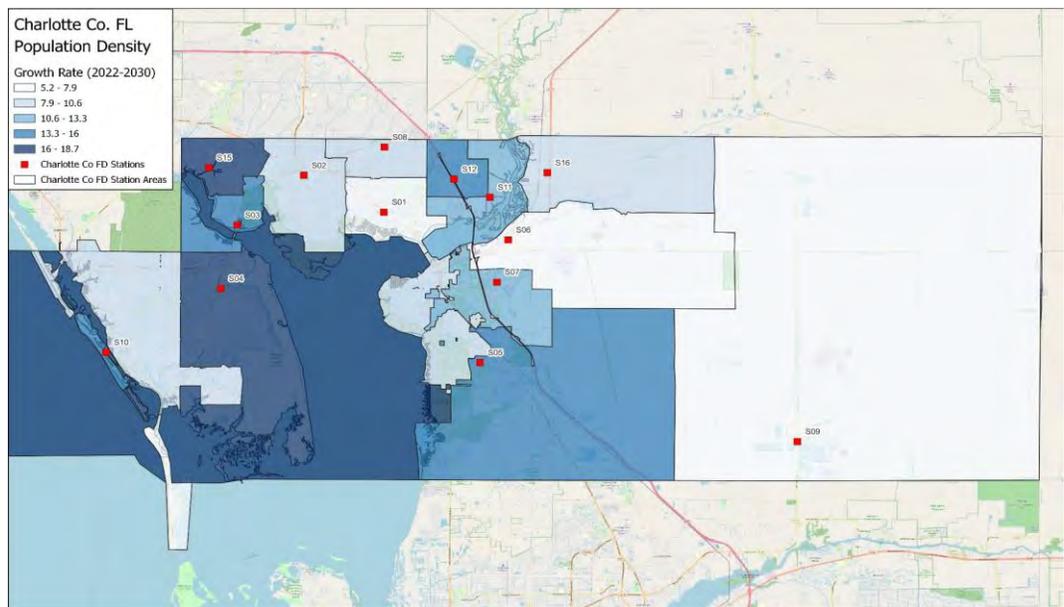
## Population Analysis

The available data set included five reporting periods of data, representing FY 2017 - 2021. From FY 2017 to FY 2021, calls for CCFEMS services increased from 30,801 to 35,224, with an average growth rate of 3.6% per year. The figure below depicts observed call volume during the last five-year reporting periods and various hypothetical growth scenarios for the next 20 years. These projections should be used with caution due to the variability in growth observed across prior calendar years. In all cases, data should be reviewed annually to ensure timely updates to projections and utilize a five-year rolling average.

Charlotte County Potential Demand Growth by Year



Potential Growth by Response Zone

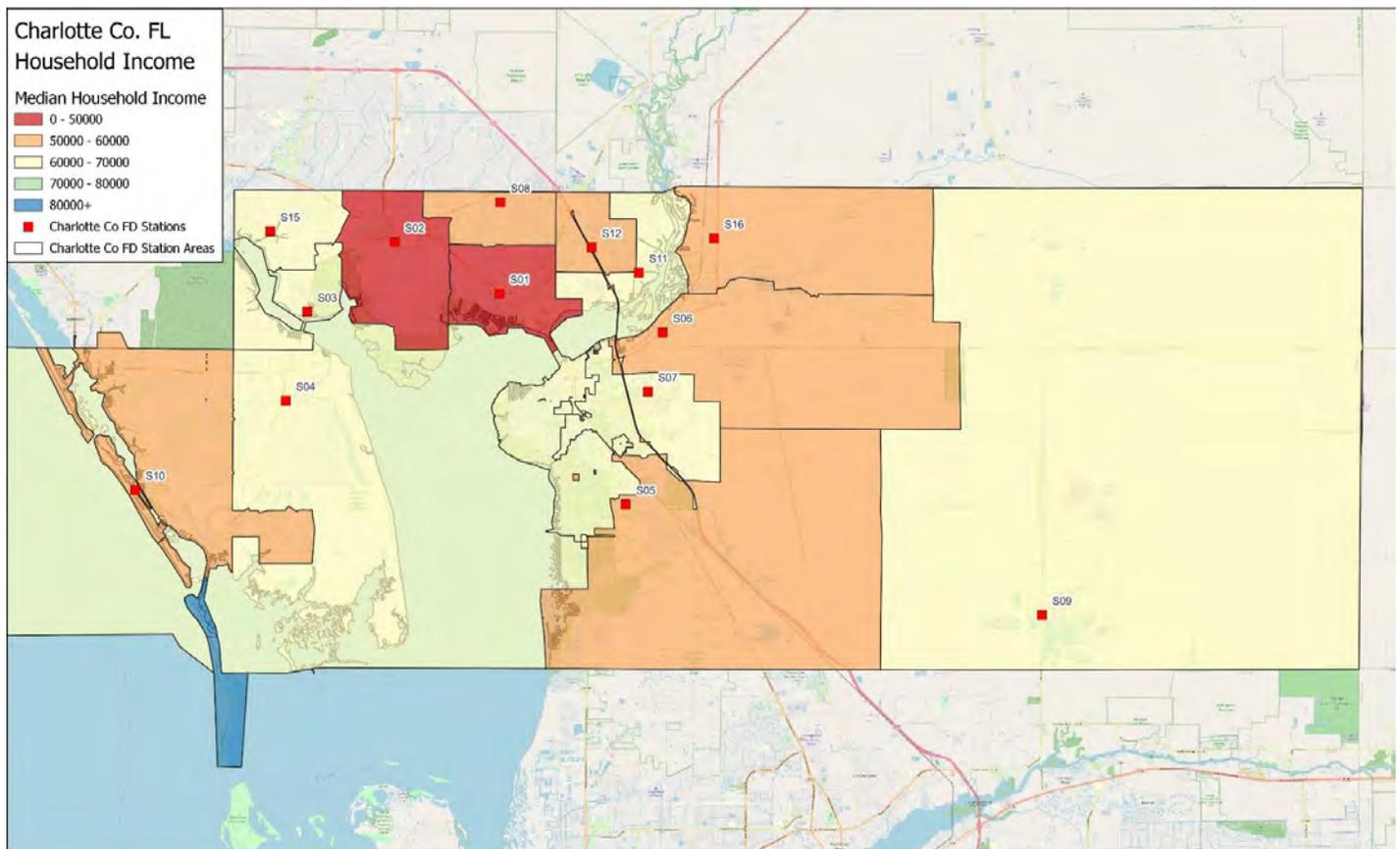


### Socioeconomic Characteristics

Finally, population alone is not the sole variable that influences demand for services, as socioeconomic and demographic factors can ultimately have a greater influence over demand. Median household income was evaluated to determine the degree to which the community had underprivileged populations.

According to the U.S. Census Bureau, the 2020 (i.e., most recent data available) national median household income is reported at \$52,724 for Charlotte County, FL, with approximately 9.8% of inhabitants being at or below poverty levels<sup>8</sup>. Visualization of median household income also provides a perspective of where economic disparities may exist within the jurisdiction.

#### Charlotte County Jurisdictional Median Household Income



## Demographic Characteristics

### Diversity

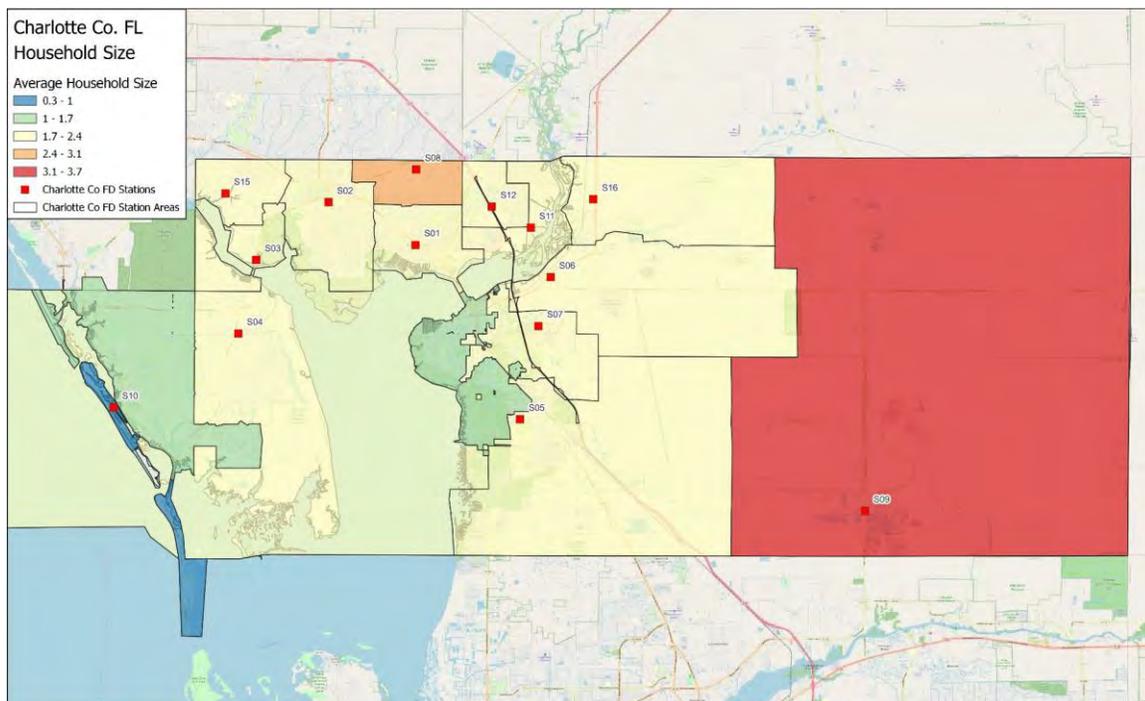
Charlotte County is 90.3% White, 6% African American, 0.4% American Indian, 1.5% Asian, 8.2% Hispanic or Latino, and 0.1% Pacific Islander. In 2020, there were 15.4 times more White (Non-Hispanic) residents (155k people) in Charlotte County, FL, than any other race or ethnicity. There were 10.1k White (Hispanic) and 9.86k Black or African American (Non-Hispanic) residents, the second and third most common ethnic groups. 7.53% of the people in Charlotte County, FL, are Hispanic (14k people).

### Charlotte County Race and Hispanic Origin

Race and Hispanic Origin	
White alone, percent	90.3%
Black or African American alone, percent (a)	6.0%
American Indian and Alaska Native alone, percent (a)	0.4%
Asian alone, percent (a)	1.5%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.1%
Two or More Races, percent	1.8%
Hispanic or Latino, percent (b)	8.2%
White alone, not Hispanic or Latino, percent	83.1%

### Household Size

Household size is another socioeconomic factor, with more densely populated and inhabited areas often posing more life safety risks during certain types of emergencies.



<sup>7</sup>U.S. Census. (2020). Quick Facts for Charlotte County, FL. Retrieved from <https://www.census.gov/quickfacts/charlottecountyflorida>

### Area Economics<sup>8</sup>

Median household income in Charlotte County, FL is \$52,724. In 2020, the tract with the highest median household income in Charlotte County, FL, was Census Tract 104.01, with a value of \$85,819, followed by Census Tract 304.02 and Census Tract 205.02, with respective values of \$80,972 and \$77,396.

Males in Florida have an average income that is 1.34 times higher than the average income of females, which is \$46,958. The income inequality in Florida (measured using the Gini index) is 0.473, which is lower than the national average.

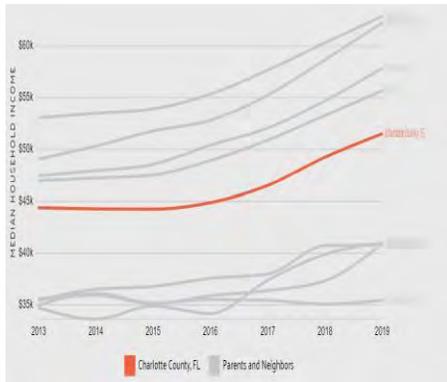
The economy of Charlotte County, FL, employs 62.3k people. The largest industries in Charlotte County, FL, are Retail Trade (10,853 people), Health Care & Social Assistance (8,965 people), and Construction (6,165 people), and the highest paying industries are Utilities (\$55,265), Finance & Insurance (\$52,172), and Mining,

Quarrying, & Oil & Gas Extraction (\$50,417).

Households in Charlotte County, FL have a median annual income of \$51,499, which is less than the median annual income of \$65,712 across the entire United States.

This is in comparison to a median income of \$49,225 in 2018, which represents a 4.62% annual growth.

The following chart shows how the median household income in Charlotte County, FL compares to that of its neighboring and parent geographies.



**Performance Indicator 2A.7**

Significant socioeconomic and demographic characteristics for the response area are identified, such as key employment types and centers, assessed values, blighted areas, and population earning characteristics.

### Key Transportation and Freight Facilities

Key Transportation and Freight Facilities		
STRATEGIC INTERMODAL SYSTEM (SIS) HIGHWAYS		I-75, US 17
SIS RAILROADS		Seminole Gulf Railway
SIS AIRPORTS		Southwest Florida International Airport
SEAPORTS		Port of Manatee
NON SIS STATE HIGHWAYS		US 41, SR 31, SR 776
GENERAL AVIATION AIRPORTS		Punta Gorda Airport, Shell Creek Airport

Top Imports		Top Exports	
INBOUND FREIGHT	TRUCK TONNAGE	OUTBOUND FREIGHT	TRUCK TONNAGE
1. Nonmetallic Minerals	383,641	1. Nonmetallic Minerals	1,381,687
2. Bulk Movement in Boxcars	345,377	2. Clay, Concrete, Glass or Stone	216,846
3. Clay, Concrete, Glass or Stone	175,538	3. Farm Products	136,797
4. Petroleum or Coal Products	132,765	4. Petroleum or Coal Products	114,095
5. Food or Kindred Products	91,217	5. Primary Metal Products	25,943

Source: IHS Global Inc.'s Transearch, 2011

Top Trading Partners		Top Trading Partners	
IMPORTS	TRUCK TONNAGE	EXPORTS	TRUCK TONNAGE
Lee County, FL	337,031	Lee County, FL	784,654
Miami-Dade County, FL	167,585	Sarasota County, FL	655,795
Hillsborough County, FL	112,511	Collier County, FL	114,370
Polk County, FL	105,580	Hillsborough County, FL	49,602
Broward County, FL	89,524	Pinellas County, FL	37,586

Source: IHS Global Inc.'s Transearch, 2011

**General Policy Statements:**

1.) The Charlotte Board of County Commissioners realize that it is essential for governments to maintain adequate levels of fund balance to mitigate current and future risks such as revenue shortfalls, natural disasters, unanticipated expenditures, and to ensure stable tax rates; and other unforeseen situations after exhausting all other funding options.

2.) Charlotte County's reserve policies are based on sound fiscal principles designed to allow the County to maintain continuity of operations in adverse conditions while being mindful of our fiduciary responsibility to taxpayers, both current and future generations.

3.) The County realizes that adequate fund balance levels are an essential component of the County's overall financial management strategy and a key factor in external agencies' measurement of the County's financial strength.

2020 CCFEMS Financial Summary

**Public Safety:** To maintain a safe and healthy community in which to live.

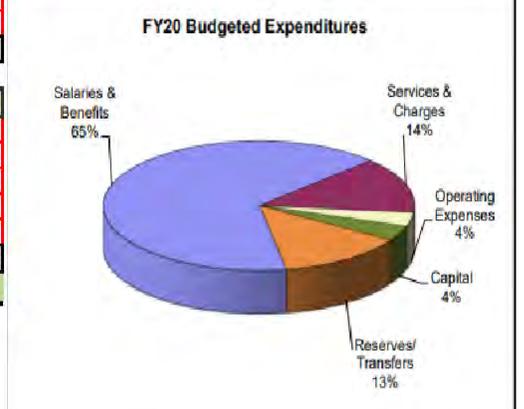
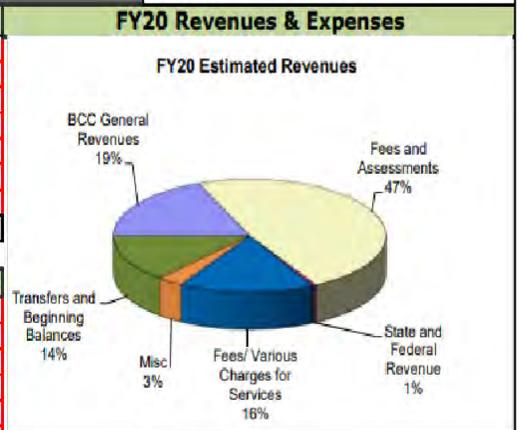
Department Overview	FY 20 - First Year
<p><b>Animal Control Division ---</b> Protect the safety and welfare of the citizens and animals of this community; Enforce the county ordinances and statutes pertaining to animals; Assist the public in resolving animal issues; Educate the public in public safety and humane issues regarding animals.</p>	<p><b>2.0%</b>    <b>\$1,139,764</b></p>
<p><b>Emergency Management Division ---</b> To prepare for, respond to, recover from, and mitigate against the loss of life, injuries, and damage caused by both natural and technological hazards that would adversely affect the residents and visitors of Charlotte County.</p>	<p><b>1.0%</b>    <b>\$607,990</b></p>
<p><b>Emergency Medical Services Division ---</b> The Fire/Emergency Medical Services Divisions provide fire, rescue, emergency medical and non-emergency services to the citizens of Charlotte County. Through this service we protect the lives, property and environment of our community while ensuring the highest commitment to safety, professionalism, integrity and care.</p>	<p><b>32.0%</b>    <b>\$17,035,775</b></p>
<p><b>Fire Rescue Division ---</b> The Fire/Emergency Medical Services Division provides fire, rescue, emergency medical and non-emergency services to the citizens of Charlotte County. Through this service we protect the lives, property and environment of our community while ensuring the highest commitment to safety, professionalism, integrity and care.</p>	<p><b>59.0%</b>    <b>\$31,272,610</b></p>
<p><b>Radio Communications Division ---</b> To provide the highest quality communications to all system users by managing the overall system and maintaining the day-to-day operations of the 800 MHz network radio system infrastructure.</p>	<p><b>6.0%</b>    <b>\$2,899,812</b></p>
	<p><b>100.0%</b>    <b>\$52,955,950</b></p>

Revenues by Category	FY 18 Actual	FY 19	FY 20	FY 21
BCC General Revenues	\$ 9,279,838	\$ 10,360,310	\$ 10,024,474	\$ 10,028,102
Taxes	-	-	-	-
Fees and Assessments	22,740,941	24,292,286	25,416,444	26,433,102
State and Federal Revenue	400,148	262,339	256,807	256,807
Fees/ Various Charges for Services	8,037,237	8,082,200	8,438,900	8,762,170
Misc	1,561,808	1,444,181	1,619,972	1,625,124
Transfers and Beginning Balances	123,963	5,524,494	7,199,353	5,679,110
<b>Total</b>	<b>\$ 42,143,934</b>	<b>\$ 49,965,810</b>	<b>\$ 52,955,950</b>	<b>\$ 52,784,415</b>

Expenses by Category	FY 18 Actual	FY 19	FY 20	FY 21
Salaries & Benefits	\$ 33,441,513	\$ 34,613,502	\$ 34,684,226	\$ 35,431,805
Services & Charges	6,877,192	7,310,883	7,392,427	7,393,859
Operating Expenses	1,617,145	1,625,249	1,857,741	1,853,117
Capital	651,770	955,000	1,964,750	1,362,000
Other	4,439	-	-	-
Debt	-	-	-	-
Reserves/ Transfers	5,712	5,461,176	7,056,807	6,743,635
<b>Total</b>	<b>\$ 42,597,771</b>	<b>\$ 49,965,810</b>	<b>\$ 52,955,950</b>	<b>\$ 52,784,415</b>

Positions	FY 18 Actual	FY 19	FY 20	FY 21
Full Time	277	293	293	293
Part Time	1	1	1	1
<b>Total</b>	<b>278</b>	<b>294</b>	<b>294</b>	<b>294</b>

**Notes:**  
The following pages contain variance analysis for each division of Public Safety.



# Human-Made Characteristics

## Development

Charlotte County’s general policy plan has established several goals for land use through the 2050 Comprehensive Plan because it coordinates the central themes and information found in all of the plan’s elements. Also, the Future Land Use (FLU) Data and Analysis outlines the citizens’ vision for the County’s future and how we intend to get there. The goals, objectives, and policies of all of the elements are meant to support the vision.

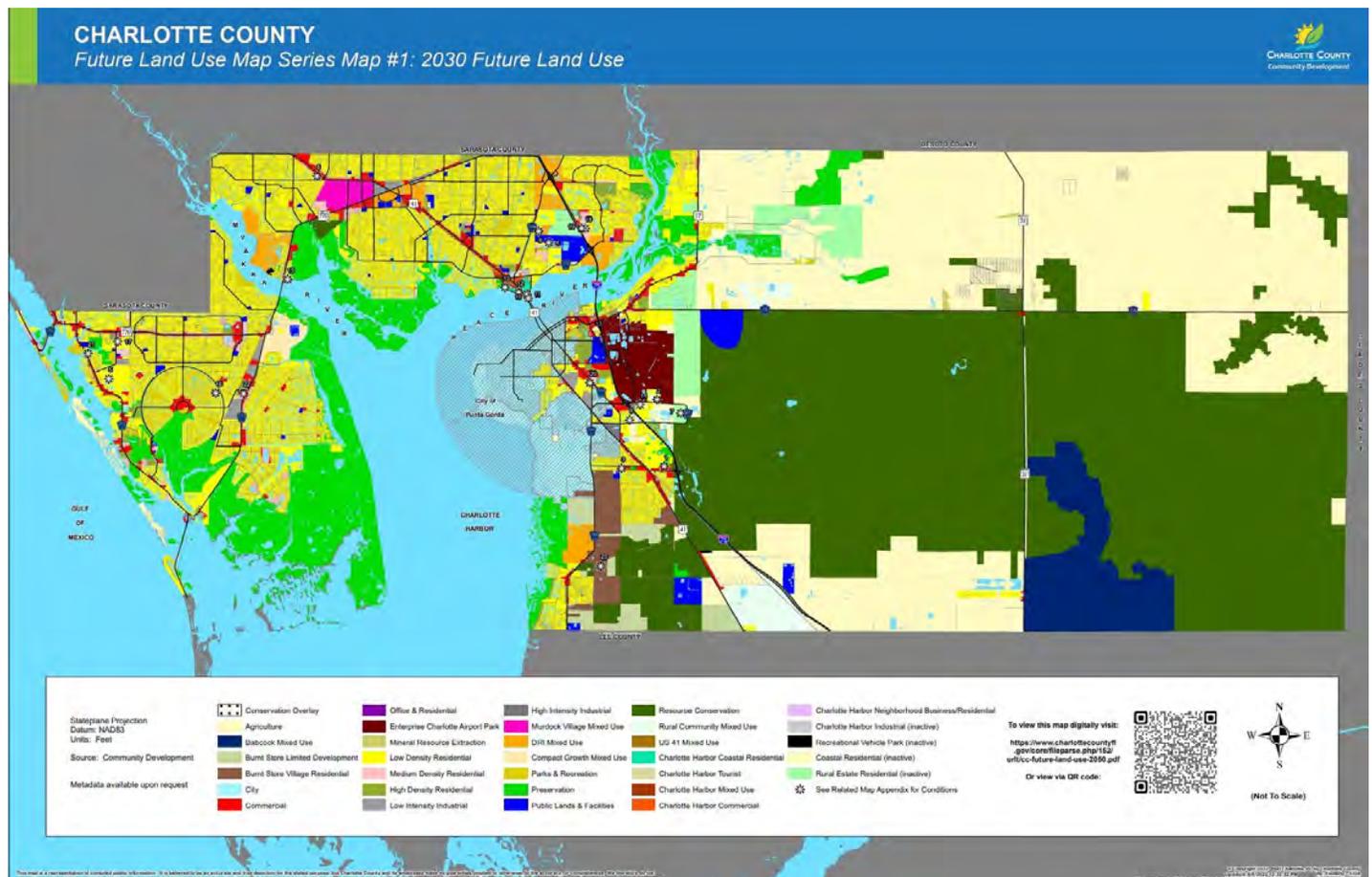
The purpose of the FLU Element is to define areas within Charlotte County that are suitable for various land use activities up to the year 2030. The FLU Element decrees where, when, and at what intensity development will occur, thereby indicating where infrastructure and services are needed.

The FLU Element establishes all the types and locations of land uses allowed in the County and the policies to guide those land uses. "Future land use" is different from "zoning." Future land use designations establish general ranges of uses that are permitted in each district, while zoning districts include a specific list of permitted uses. Future land use designations also establish a range of densities (amount of residential

development per acre) and intensities (amount of non-residential development per acre) for each land use category, but do not guarantee that the maximum amount of development allowed within the district will be permitted on a specific site.

### Map of Charlotte County, FL Future Land Use

Future Land Use | Charlotte County, FL (charlottecountyfl.gov) cc-future-land-use-2050.pdf (charlottecountyfl.gov)

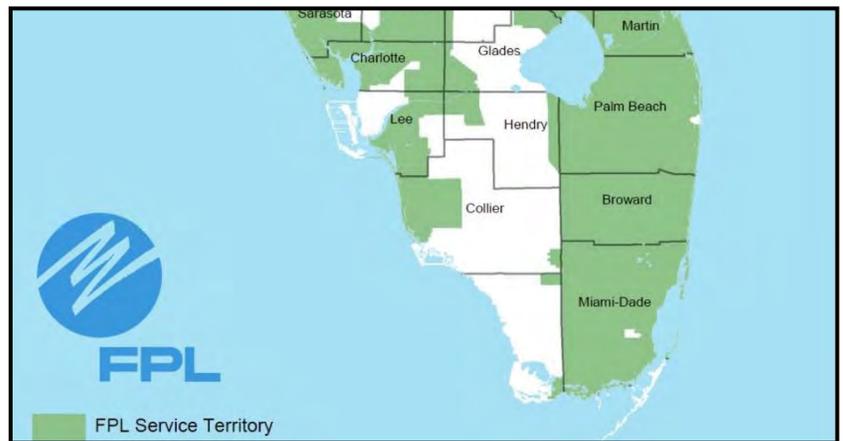


## Infrastructure

**Electric<sup>11</sup>**

Florida Power & Light (FPL) is the largest electricity supplier in Charlotte County when calculated by megawatt hours sold.

The average residential electricity price for Port Charlotte CDP is around 11.94 cents per kilowatt hour. Thankfully, this is 3.80% lower than Florida's average rate of 12.41 cents, which ranks the city 90th best for average electricity rate out of 960 cities in Florida. FPL has an estimated 13,292 residential customers, more than all other electricity suppliers in the city.



The consumption of electricity in Port Charlotte CDP accounts for 273,820,646.85 kilograms of CO2 emissions, which is the 61st highest in the state out of 960 cities. A better measurement of pollution is the CO2 levels per person in the city, which is 4,516.63 kilograms of CO2 emissions per person per year.

Using this calculation, Port Charlotte CDP is the 88th highest polluting city in the state. The city has zero power producing plants.

**Water**

The Utilities Department provides potable water, wastewater treatment and disposal and reclaimed water for irrigation, serving over 60,000 homes and businesses throughout unincorporated Charlotte County.

Water has historically been a readily available and cheap commodity in Florida. In many areas that situation is changing. Population increases, combined with a prolonged Southwest Florida



Water Management District (SWFWMD)-wide drought, have placed greater strain on the resource. The issues of water conservation and irrigation efficiency are essential considerations when planning to meet the expanding demands on the resource. Charlotte County has limited potable surface and groundwater resources.

<sup>11</sup> Electric Information from [https://www.snopud.com/Site/Content/Documents/custpubs/QuickFacts\\_521.pdf](https://www.snopud.com/Site/Content/Documents/custpubs/QuickFacts_521.pdf)

## Transportation

### Airports

Punta Gorda Airport (PGD) began as a World War II combat training base for Army pilots and served primarily as a general aviation airport in the decades that followed. The Charlotte County Development Authority was created as a public agency by the State of Florida in 1965 to operate and manage the Charlotte County Airport and surrounding commerce park. At that time, it was an independent special district with taxing authority.

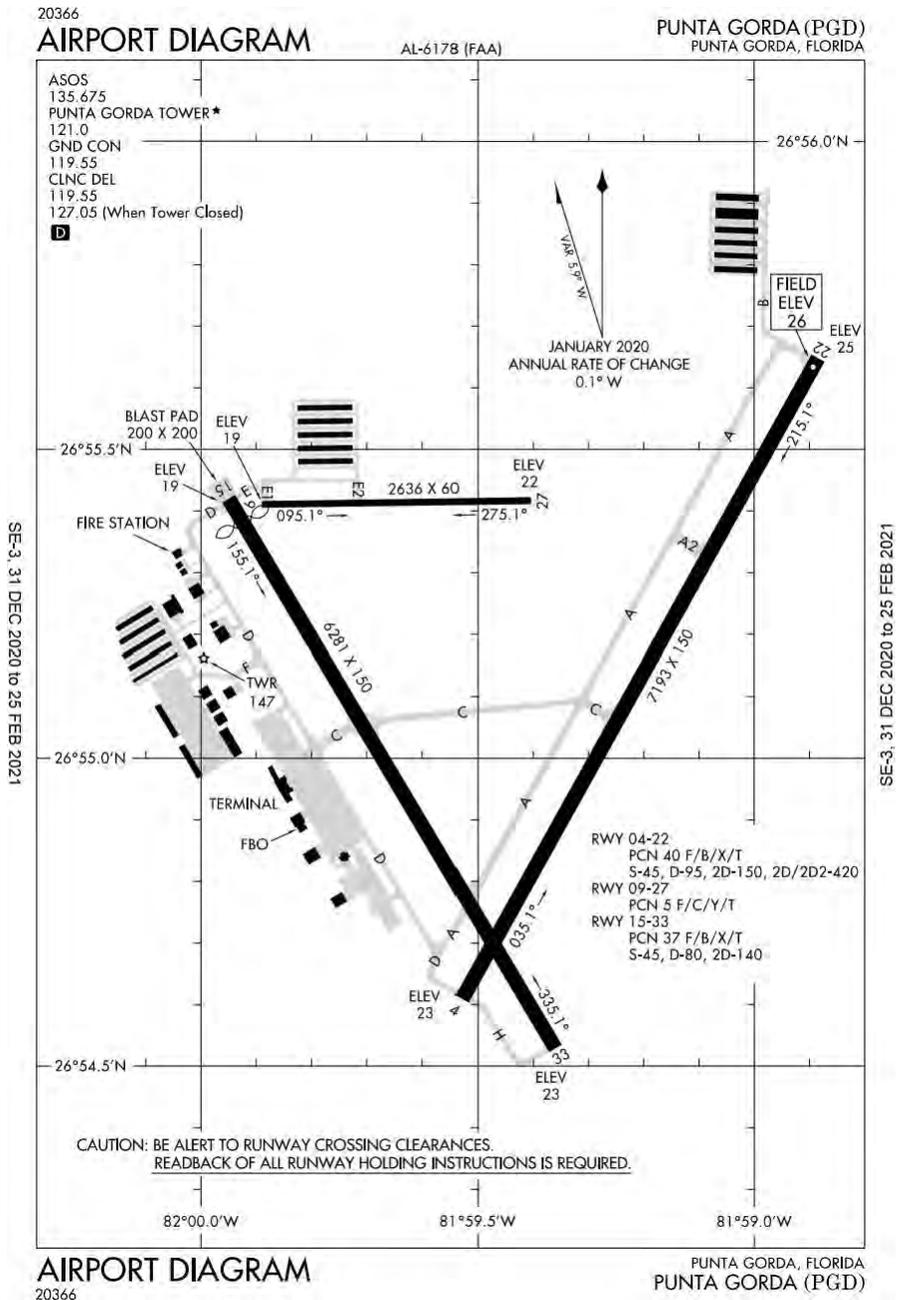
The Enabling Legislation was amended several times over the years, and in 1993 the taxing authority was revoked. In 1998, the legislation was re-codified, and the name was changed to the Charlotte County Airport Authority.

During July 2010, the Authority approved a name change of the airport facility (not the Authority itself) to Punta Gorda Airport. In 2011, legislation was re-codified again that allowed for the Airport Authority to change the name of the airport from the Charlotte County Airport to the Punta Gorda Airport. Effective on June 21, 2011, the Authority amended Chapter 98-508, Laws of Florida, via Chapter 2011-263, Laws of Florida, by expanding the purpose of the Authority to include any airports within the boundaries of Charlotte County and all facilities, real estate and commerce parks within the Authority’s boundaries.

The Airport Authority is an independent special district pursuant to chapter 189, Florida Statutes, and operates in accordance with FAA requirements and guidelines. Chapters 2011-263 and 2013-254 of the Florida State Statutes contain the full text of the Enabling Legislation for the Charlotte County Airport Authority, an independent special district with no taxing authority.

After Hurricane Charley wrought destruction in 2004, the Charlotte County Airport Authority, the independent special district that owns and operates PGD, rebuilt with a focus on attracting

low-cost commercial air service. After experiencing double-digit passenger growth, the Bailey Terminal was expanded in 2015 to its current 60,000 sq. ft. footprint.



## Transportation—Public

Charlotte County Transit is a shared ride curb-to-curb transit service provided to the general public throughout Charlotte County. The service area consists of all of Charlotte County and includes the Charlotte County portion of Englewood, Port Charlotte, Punta Gorda and the surrounding areas, including Lake Suzy area in DeSoto County.

### Where Can You Go? Punta Gorda Public Transport Van

- Airport
- Bank
- Beach
- College
- Doctor appointments
- Libraries
- Market
- Meal sites
- Recreation Centers
- Restaurants
- Shopping
- Work



## Mission

The mission of Charlotte County Transit Division (CCT) is to provide safe, high quality, convenient, efficient, and affordable transportation to the public in Charlotte County.

## Service Hours

Monday-Friday: 6:30 a.m.-5 p.m.

Saturday: 9 a.m.- 5 p.m. \*restricted to a limited-service area.

### Major Transportation Features<sup>13</sup>

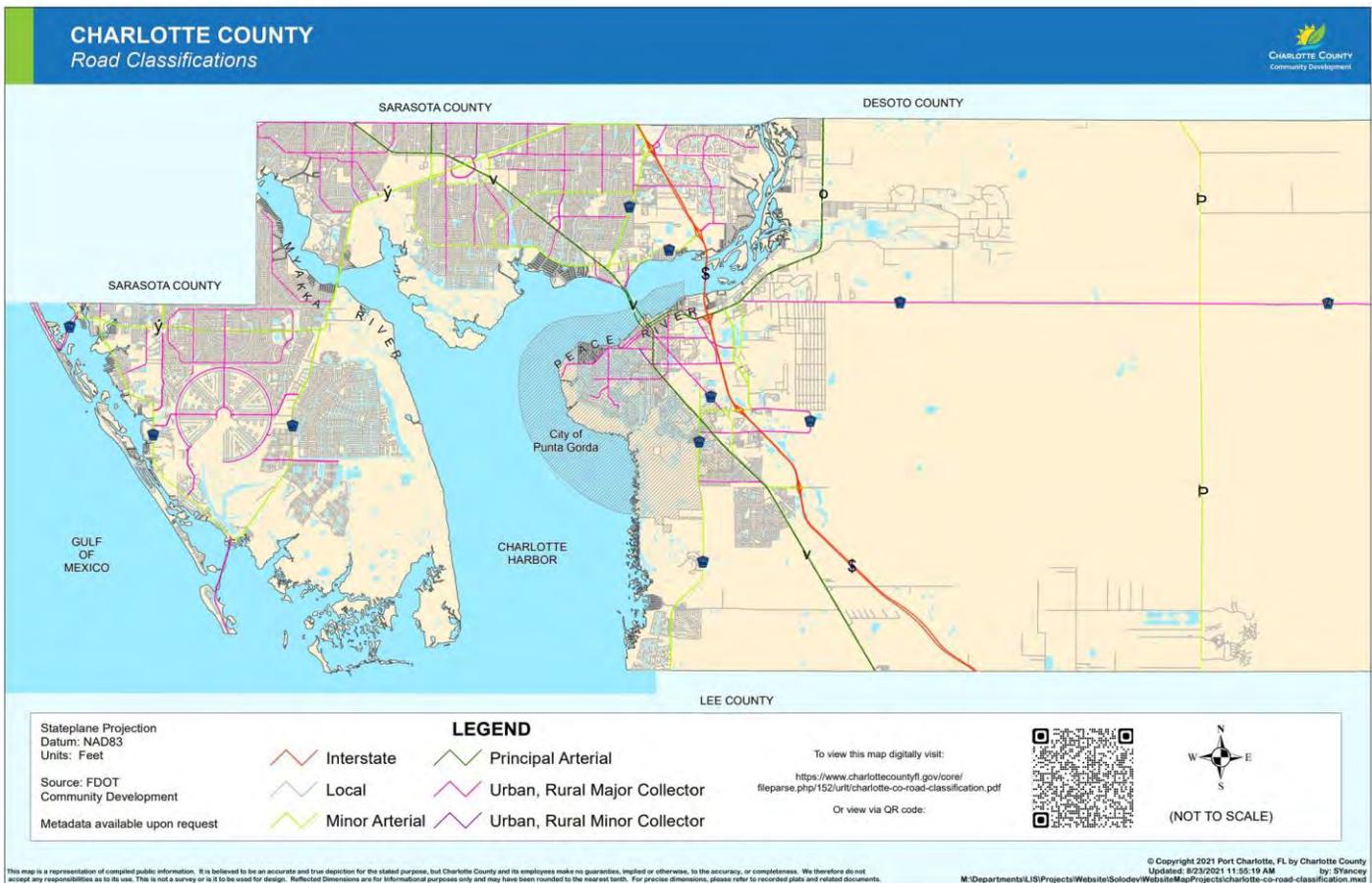
Charlotte County, in part of its 2050 plan, has developed a Transportation Element. The purpose of the Transportation Element is to develop a multimodal system built around the existing street and highway system. The Element continues to provide for the assessment of current and future transportation system needs and now also enhances the community’s transportation system by improving the interconnectedness of different modes of transportation, improving corridor management, and improving connections between neighborhoods and neighboring counties, and it offers modifications in public transportation and pedestrian/bicycle facilities, achieving greater multimodal connectivity.

**Performance Indicator 2A.9**

The agency defines and identifies infrastructure that is considered critical within each planning zone.

Currently, US 41, I75, and Hwy 17, County Road 771,775,776 are all major roadways connecting the Department’s bedroom communities to key employers (Fed Ex, Amazon, etc.)

Map of Charlotte County Road Classifications



<https://www.charlottecountyfl.gov/core/fileparse.php/376/urlt/09-TRA-GOP.pdf>

**SECTION B - DESCRIPTION OF AGENCY PROGRAMS AND SERVICES**

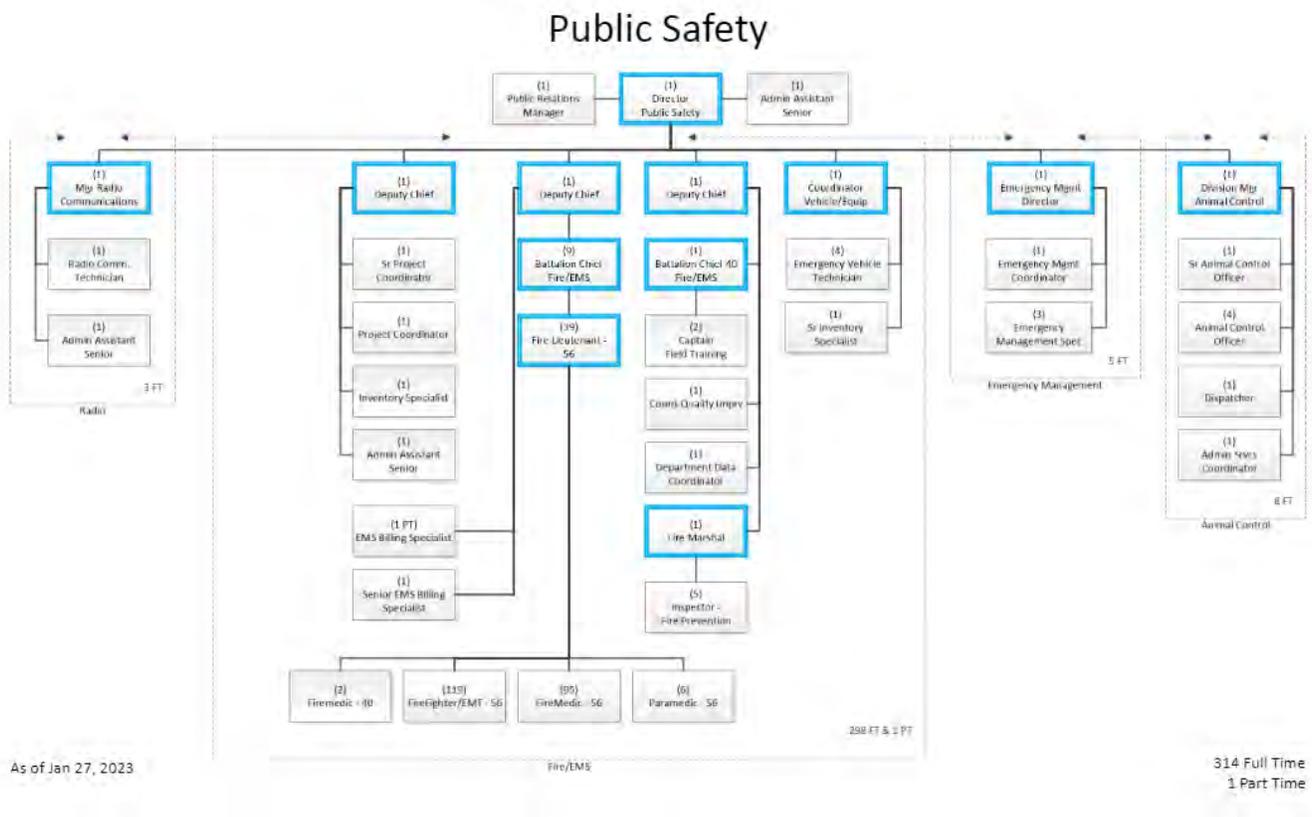


**Organizational Overview**  
**Service Delivery Programs**

## Organizational Overview

Charlotte County Fire and Emergency Medical Services provides high quality fire suppression, emergency medical, technical rescue, and hazardous materials services from 19 fire stations. Additionally, the organization delivers a full spectrum of fire and life safety services supported by administrative staff and training officers to ensure the first responders are well prepared for any hazard or situation they may face.

## Human Resources



The Department’s organizational structure reflects a fairly typical, paramilitary organization. The Administrative Staff is comprised of 9 senior personnel, including the Director of Public Safety, 3 Deputy Chiefs, a Fire Marshal, Emergency Management Director, Vehicle Equipment Coordinator, Division Manager of Animal Control, and a Radio Communication Manager.

## Organizational Overview

### Station 1

3631 Tamiami Trail,  
Port Charlotte, FL 33952



### Station 2

1493 Collingswood Blvd.  
Port Charlotte, FL 33948



### Station 3

4322 El Jobean Road  
Port Charlotte, FL 33953



**Station 4**

13600 Marathon Blvd.  
Gulf Cove, FL 33981



**Station 5**

26287 Notre Dame Blvd.  
Punta Gorda, FL 33955



**Station 6**

27589 Disston Ave.  
Punta Gorda, FL 33982



**Station 7**

27437 Mooney St.  
Punta Gorda, FL 33982



**Station 8**

21500 Clinton Ave.,  
Port Charlotte, FL 33954



**Station 9**

42915 Lake Babcock Dr,  
Punta Gorda, FL.



**Station 10**

71 Gasparilla Way  
Englewood, FL 34224



**Station 11**

27055 Rushmore Ave., Punta  
Gorda, FL 33983



**Station 12**

2001 Luther Road  
Punta Gorda, FL 33983



**Station 13**

6868 San Casa Road,  
Englewood, FL 34224



**Station 14**

9495 Placida Road  
Placida, FL 33946



**Station 15**

13190 Eisenhower Drive  
Port Charlotte, FL 33953



**Station 16**

29400 Palm Shores Blvd.  
Punta Gorda, FL 33982



**Rescue 31**

**City of Punta Gorda Station 3**

1623 Aquí Esta Drive,  
Punta Gorda, FL 33950



**Rescue 32**

**City of Punta Gorda Station 1**

1410 Tamiami Trail  
Punta Gorda, FL 33950



## Physical Resources-Apparatus



### Battalion Chief

There is a Battalion Chief on duty each shift. In addition to emergency responses and personnel management, they also supervise many non-emergency programs.



### Engine

A piece of fire apparatus that carries water, medical equipment and tools to the scene of an emergency. The primary function of this crew at fires is to establish a water supply, search for people in the interior of a structure and apply water with hose lines to extinguish the fire.



### Squad

This apparatus carries various tools and accessories needed for Special Operations. The apparatus responds from Station 12.



### **Ambulance**

Ambulances contain the equipment needed to stabilize and provide ALS services to someone who is ill or injured and to get them to hospital. The equipment includes stretchers, defibrillators, spine boards, oxygen and oxygen masks, cervical (neck) collars, splints, bandages and a range of drugs and intravenous fluids.



### **Tanker**

A piece of fire apparatus that carries water, medical equipment and tools to the scene of an emergency. The primary function of this crew at fires is to provide a mobile water supply.



### **Aerial Water Tower**

This fire apparatus extends to approximately 70 plus feet in the air and is capable of providing an elevated stream of water. The apparatus responds from Station 1.

## Service Delivery Programs

**Mission:** Ensuring the health and safety of our community by delivering exceptional fire and EMS services.

**Vision:** To be a metric driven, innovative, and community focused fire and EMS service.

Charlotte County Fire and Emergency Medical Services is a full-service career department that provides fire suppression and rescue operations and pre-hospital emergency medical care and transport. Specialty units within our department include Special Operations (Hazmat and Technical Rescue), Marine Operations, and Aircraft Rescue Fire Fighting (ARFF).

Charlotte County Fire and Emergency Medical Services operates from 19 stations across the 693 square miles of the county, which has a population of nearly 200,000 residents. Our highly trained firefighters, emergency medical technicians (EMTs), or paramedics work 24-hour shifts beginning at 8:00 a.m., followed by 48 hours off duty.

Charlotte County Fire and Emergency Medical Services is a part of Charlotte County Public Safety. Other public safety departments include Emergency Management, Animal Control, and Radio Management.

### Fire Prevention Division

The Mission of the Fire Prevention Division is to provide a safe environment for the citizens of Charlotte County through education and enforcement of the Florida Fire Prevention Code.

Fire Prevention works with the County's Building Department and area fire departments to ensure code compliance and provide technical support pertaining to the application, enforcement and interpretation of the Florida Fire Prevention Code/Standards, county ordinance and state laws.

The Fire Prevention Division is staffed by Fire Marshal Scott Morris and 4 fire inspectors. Their duties include:

- Review of building plans for new construction in the county excluding the City of Punta Gorda
- New construction inspection
- Plan reviews and inspections for special event, fireworks, tents, etc.
- Inspections for existing occupancies - schools (public/private), hospitals, day cares, assisted living facilities, clinics, group homes, assemblies, restaurants, etc.
- Fire drills
- Fire extinguisher classes

### Life Safety Division- Fire Prevention

The goal of the Life Safety Division is to provide a safe community, both for our residents and firefighters. The Life Safety Division consists of five members for a growing population of nearly 200,000 people. A safe environment is provided through fire investigations, new construction plan reviews and inspections, inspecting new businesses, providing limited public education, and complaint-based referral inspections.

Life Safety staff also provides new construction plan review and inspection services to cities and the county within the response area. This service verifies that the fire department has safe access to and within buildings of all occupancies.

## Fire and EMS Operations

Charlotte County Fire and Emergency Medical Services operates from 19 fire stations within its service area and, through a unique Intergovernmental Agreement, also provides service to Punta Gorda Fire Department through Ambulances 31 and 32. Each station includes an engine company that is an Advanced Life Support unit and has a trained firefighter/paramedic assigned to the crew.

## Training

Charlotte County Firefighters fill many different roles to protect the community. Firefighters are cross-trained in emergency medicine, including advanced life support paramedics, auto extrication techniques, rescue disciplines, fire control and suppression, and many other techniques in order to meet the needs of the community.

## Emergency Preparedness

Mission: To prepare for, respond to, recover from, and mitigate against the loss of life, injuries, and damage caused by both natural and technological hazards that would adversely affect the residents and visitors to Charlotte County.

Current Activation Levels:

**LEVEL 1:** Full Scale Activation of the Emergency Operations Center (EOC) is staffed by Emergency Management and all departments and agencies.

**LEVEL 2:** Partial Activation of the EOC. Limited staffing in EOC based on size and type of emergency.

**LEVEL 3:** Monitoring Operational Readiness to activate the EOC as required. Maintained on a daily basis.

## Community Emergency Response Team (CERT)

The Charlotte County Community Emergency Response Team (CERT) Program educates people about disaster preparedness for hazards that may impact their area. CERT members learn to assist others in their neighborhood or workplace following an event when professional responders are not immediately available to help. CERT members also are encouraged to support emergency response agencies by taking a more active role in emergency preparedness projects in their community.

## Community Support

The Red Dot Program is a way for you to share your medical history with emergency responders before an emergency occurs. When you dial 911, firefighters, paramedics, and law enforcement arrive and begin providing emergency care. They also start asking you or your family members what seems like a tremendous number of questions.

- What is your Medical History?



- What Medications do you take?
  - Amount or dose?
  - When?
- Do you have any Allergies?
- Do you have a Do Not Resuscitate Order (DNRO) or Advanced Directives?
- Who are your Emergency Contacts?

During an emergency, you may not be able to communicate or remember all of your information. Emergency responders need this important information to care for you as quickly and efficiently as possible.

Charlotte County Fire & Rescue, Punta Gorda Fire Department, Englewood Fire Department, Charlotte County Sheriff's Office, and the Punta Gorda Police Department recognize this problem, and it is why the Red Dot Medical Information Program was created. This quick and easy Red Dot Medical Information Form is filled out before an emergency occurs. Red Dot packets can be picked up at the headquarters of all partnering agencies listed above.

### **Smoke Detector Program**

Smoke detectors are essential for every home. The average time to safely exit a home filling with smoke is two minutes. Smoke detectors will help alert you to danger, providing a valuable early warning for you to get out of your home and call 911.

- As a community service, Charlotte County Fire and Emergency Medical Services have a smoke detector Checking smoke detectors to identify if the detectors are in working order.
- Replacing 9-volt batteries in existing, in date, working smoke detectors.
- Assisting residents with the installation of a non-electric, ten-year battery-operated detectors, provided by the resident.
- Educating residents on the proper care of smoke detectors and providing fire safety and fire extinguisher information program in which firefighters will assist residents.

### **Public Safety Training Center**

Our communities depend on people with the skills and knowledge to respond quickly and effectively to hazardous situations. Charlotte County Public Safety is proud to offer a wide variety of courses and specialized training opportunities to meet emergency responder needs. We provide an array of education and hands-on skills training from our state-of-the-art facility. Our training grounds encompass over 10 acres of facilities, props, classrooms, and simulators providing the opportunity for safe and realistic training to Fire, EMS, Law Enforcement, Emergency Management, and other response personnel. We are conveniently located in beautiful Punta Gorda, Florida near I-75. First responders worldwide have the ability to learn, develop, and practice the skills required for success.

## Special Operations Command (SOCOM)



Special Operations Command (SOCOM) works closely with Operations and Training to coordinate the oversight of 78 specialty trained personnel within CCFEMS Medicine, Airport Rescue Firefighting (ARFF) and all associated disciplines that fall within those functions.

In addition to these day-to-day operational activities, SOCOM is also responsible for the management and coordination of the state supported Regional TRT Type II Team (II-634) and Regional Hazardous Materials Team (HM6-D). The Department also provides support to other regional agencies by way of mutual and automatic aid. Further, we are available to assist the state through outside of region deployments and support for the Type II Urban Search and Rescue Team Florida Task Force 6 (FL-TF-6).

SOCOM also assists in coordinating and managing special events by acting as a liaison for public safety with all agencies the county may work with on special projects and events.

The amount of training that SOCOM teams engage in is quite impressive. The teams stay prepared through continuous intensive training and drills. The teams also stay proficient by training the rest of the department on vital skills that will prepare others in the event they arrive on scene before the specialty team. Furthermore, the team participates in drills with other local agencies and specialized teams. All while still performing the training, duties, and emergency response of a standard fire station.

There are five fire stations within Charlotte County that are responsible for not only daily fire and EMS response but also specialty response and mitigation of technical/specialty rescue situations for the entire county. These stations are supported by an array of apparatus, including ARFF Trucks, Engines, Rescues, Specialty Trucks, Marine Nautical Units, Command Units, and a Ladder Truck.

Charlotte County Fire and Emergency Medical Services holds its employees to high standards. These standards lead to exceptionally well-trained professionals responding to specialized rescue incidents throughout the county.

### Special Operations

The CCFEMS Special Operations Team was established in 1999 to respond to and mitigate hazardous material and specialty rescue incidents. The team is trained in many disciplines to provide specialty responses to those incidents outside of normal day-to-day fire and medical incidents. These specialty functions include hazardous materials response, rope rescue, confined space rescue, trench rescue, structural collapse/emergency shoring, and heavy vehicle/machinery extrication. There are 25 full-time members across all three shifts who continually train to keep Charlotte County safe in the most ominous of circumstances.

Probably the most recognizable and difficult aspect of Special Operations is hazardous materials response. A hazmat team is an organized group of professionals who are specially trained to handle hazardous materials or dangerous goods, including combustible substances, explosives, corrosive liquids, dangerous cargo, oxidizing



agents, radioactive materials, biohazards, toxic substances, pathogenic or allergenic materials, and more.

Hazardous conditions may also include container leaks or the explosion of compressed gases, liquids, hot materials, chemicals, and acts of terrorism. CCFEMS personnel are trained in working within encapsulated suits, identifying and monitoring hazardous substances, and containing leaks or spills, among other needs.

CCFEMS is prepared to perform rope rescue (both high and low angle). These calls refer to people stuck and often injured below grade or above ground. The most technical responses include tower cranes, the side of high-rise buildings, or below grade lifting operations returning to ground level. Rope Rescue skills are comprised of the operations and technician levels and involve equipment used in mountaineering, climbing, and descent. Equipment is meticulously inspected and maintained to ensure the ultimate safety of heavy loads on rope and hardware used for emergency situations.

Both above and below ground, Special Operations personnel perform technical rescues involving trenches, confined spaces, and rescue from structural collapse. These infrequent incidents often require a technical response to ensure the safety of personnel and patients from toxic gas or blunt trauma, in addition to an underlying illness or injury. These calls are labor and equipment intensive, requiring knowledge of engineering and Occupational Safety and Health Administration standards.

Auto extrication is one of the most performed rescue functions of fire rescue. Personnel need to be prepared for not only passenger vehicle accidents but large commercial vehicles and sometimes heavy machinery disentanglement. These difficult incidents present unique circumstances for responders to operate under while also requiring larger specialized equipment not carried on typical apparatus.

The team provides services from Fire Station 12 located at 2001 Luther Road, Punta Gorda, FL 33983, and houses 6 personnel responding on Engine 12, Truck 12, Squad 12, Hazmat 12, and Tech 12. Fire Station 11 at 27055 Rushmore Ave, Harbour Heights, FL 33983, serves as the Special Operations back up station.

## **Marine Operations Team**

As a result of the ocean, rivers, canals, lakes, ponds, and waterways within Charlotte County, the Marine Operations Team was created. Approximately 30 members of CCFEMS are trained in shipboard firefighting and water rescue to provide services on and around our bodies of water. The primary response uses are search and rescue, boat and shore fires, and also dive operations.

Two Marine units are used to provide safety to the residents and visitors of Charlotte County. Fire Station 6 at 2758 Disston Ave., Punta Gorda, FL 33982, and Fire Station 4 at 13600 Marathon Blvd., Port Charlotte, 33981, provide an adaptive response to nearby housing of our two Marine units. These vessels have a full complement of equipment as required by NFPA 1925 and can be deployed with paramedics to provide medical attention as well.

## **Swiftwater Response Team**

The CCFEMS Swiftwater Rescue Program was implemented with the realization that the region had the potential for risk while operating in flood waters. Incidents are generally located in our rural areas of the county with long response times where resources are slim. With so many rivers, lakes, and ponds in the county, the Swiftwater Response Team responds to a large number of water related emergencies. Even just a few inches of water have the power to lift a vehicle off the road and carry it downstream.

The Department has a robust Swiftwater Rescue component with vessels and specialty equipment, including inflatable boats, small motors, aluminum boats, haul line equipment, patient rescue packaging equipment, and more. Assets are trailered and ready for response throughout the county and state as needed. Our Swiftwater Rescue Team has been deployed on multiple occasions to outside jurisdictions to assist with floodwater response by way of rescuing and evacuating victims within floodwater areas.

Specially trained personnel are strategically located throughout the county to ensure a quick response time to the swift water incident. Personnel take multiple courses in swift water training to ensure their own safety during these complex rescue situations. The team is composed of members from the Marine Operations Team and Special Operations Team. The extensive training in which our personnel participate in makes Charlotte County one of the premier Rescue Teams in the state.

## **Airport Rescue Firefighting (ARFF)**

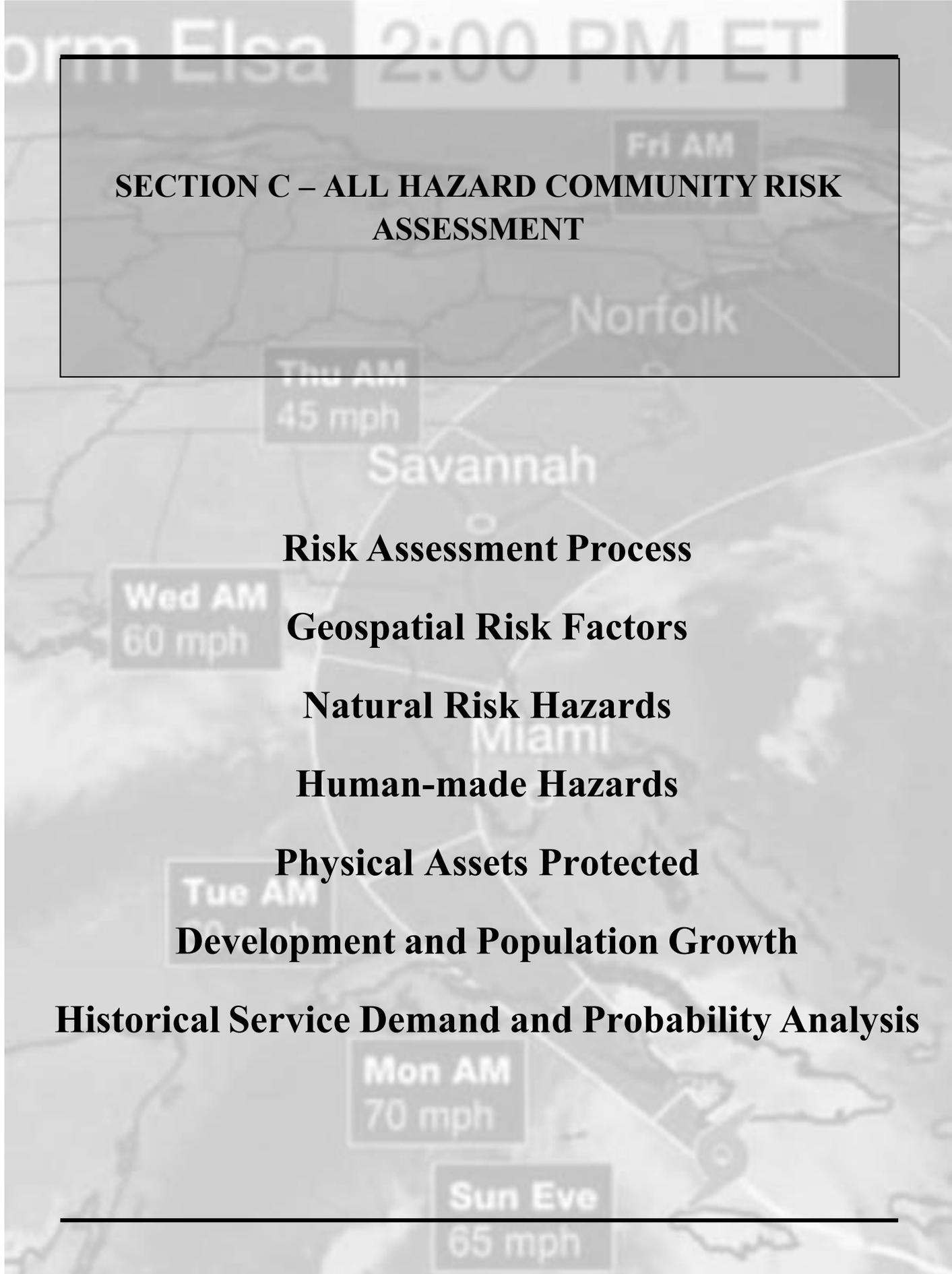
Due to the mass casualty potential of an aviation emergency, the speed with which emergency response equipment and personnel arrive at the scene is of paramount importance. Their arrival and initial mission to secure the aircraft against all hazards, particularly fire, increases the survivability of the passengers and crew on board. Airport firefighters have advanced training in the application of firefighting foams, dry chemical and clean agents used to extinguish burning aviation fuel in and around an aircraft in order to maintain a path for evacuating passengers to exit the fire hazard area. Further, should fire either be encountered in the cabin or

extend there from an external fire, the ARFF responders must work to control/extinguish these fires as well.

The ARFF Team for CCFEMS is responsible for protecting life and property at the Punta Gorda Airport and works in agreement with the Charlotte County Airport Authority. Service is provided via Fire Station 7 located at 27437 Mooney Ave, Punta Gorda FL, 33982. It is staffed with certified ARFF specialists that respond to both the airport and surrounding areas providing fire and medical emergency response.

A total of 20 personnel across three shifts have received training in Aircraft Rescue Firefighting. Each person participates in monthly training sessions, which include but are not limited to topics outlined by the FAA. All

personnel participate in monthly continuing education ARFF refresher courses and assist in various tasks to the Airport, as necessary. These personnel operate specialized fire apparatus and equipment. The design of which is predicated on many factors but primarily: speed, water-carrying capacity, off-road performance, and agent discharge rates. Since an accident could occur anywhere on or off airport property, sufficient water and other agents must be carried to contain the fire to allow for the best possibility of extinguishment, maximum possibility for evacuation and/or until additional resources arrive on the scene.



**SECTION C – ALL HAZARD COMMUNITY RISK  
ASSESSMENT**

**Risk Assessment Process**

**Geospatial Risk Factors**

**Natural Risk Hazards**

**Human-made Hazards**

**Physical Assets Protected**

**Development and Population Growth**

**Historical Service Demand and Probability Analysis**

## Risk Assessment Process

The purpose of this section is to describe the process used in performing an analysis of the community served and its potential risks using real world factors that are both physical and theoretical. To perform a comprehensive risk assessment, it was necessary to analyze physical, economic, sociologic and demographic aspects of the area served. The factors that drive the service needs are examined in a precise and scientific manner to determine the capabilities necessary to adequately address the risks that are present. The assessment of risk is critical for the determination of the number and placement of resources and the mitigation measures that are required by the community.

The risks that the department faces can be natural or human-made and fall in various locations on the consequence, probability, and impact matrix. Where these risks are located on the matrix has a direct impact on how resources are located around the jurisdiction (distribution) and the overall number of resources required to mitigate the incident (concentration) effectively through the use of the staffing and deployment model.

Each of the major natural and human-made risks evaluated received a clearly defined probability and consequence ranking. Service areas that either had little quantitative data or did not require that level of analysis were evaluated through both retrospective analysis as well as structured interviews with Department staff members.

“Call Type” variable entries from the 2017-2021 data file from CCFEMS were classified into the program areas of EMS, fire, hazmat, rescue, and aviation based on departmental leadership decisions, and records were additionally assigned a risk classification based on departmental leadership criteria depending upon available data. Risk classifications were assigned based on the determinant, when available, and based on critical tasking when the determinant was not the primary filter.

**All-Hazard Risk Assessment and Response Strategies as it relates to Criterion 2B:**

The agency identifies and assesses the nature and magnitude of all hazards and risks within its jurisdiction. Risk categorization and deployment impact considers such factors as cultural, economic, historical, and environmental values, and operational characteristics.

**Core Competency 2B.1**

The agency has a documented and adopted methodology for identifying, assessing, categorizing and classifying all risks (fire and non-fire) throughout the community or area of responsibility.

**Core Competency 2B.4**

The agency’s risk identification, analysis, categorization, and classification methodology has been utilized to determine and document the different categories and classes of risks within each planning zone.

MPDS Determinant Risk Classification

Determinant	Risk Classification
A	Low
B	Moderate
C	Moderate
D	High
E	High

Table 3: Number of Incidents by Reporting Period, Program, and Risk Rating – 2017-2021

Reporting Period <sup>2</sup>	Program	Number of Incidents					Percentage of Incidents <sup>1</sup>				
		Risk Rating					Risk Rating				
		Low	Moderate	High	Maximum	Total	Low	Moderate	High	Maximum	Total
2017	EMS	10,810	10,176	5,779	30	26,795	40.3	38.0	21.6	0.1	100.0
	Fire	3,661	242	15	0	3,918	93.4	6.2	0.4	0.0	100.0
	Hazmat	4	1	0	0	5	80.0	20.0	0.0	0.0	100.0
	Rescue	18	25	0	0	43	41.9	58.1	0.0	0.0	100.0
	Airport	40	0	0	0	40	100.0	0.0	0.0	0.0	100.0
	<b>Total</b>	<b>14,533</b>	<b>10,444</b>	<b>5,794</b>	<b>30</b>	<b>30,801</b>	<b>47.2</b>	<b>33.9</b>	<b>18.8</b>	<b>0.1</b>	<b>100</b>
2018	EMS	10,652	10,618	5,982	15	27,267	39.1	38.9	21.9	0.1	100.0
	Fire	3,266	252	9	1	3,528	92.6	7.1	0.3	0.0	100.0
	Hazmat	7	0	1	0	8	87.5	0.0	12.5	0.0	100.0
	Rescue	17	24	1	0	42	40.5	57.1	2.4	0.0	100.0
	Airport	50	0	0	0	50	100.0	0.0	0.0	0.0	100.0
	<b>Total</b>	<b>13,992</b>	<b>10,894</b>	<b>5,993</b>	<b>16</b>	<b>30,895</b>	<b>45.3</b>	<b>35.3</b>	<b>19.4</b>	<b>0.1</b>	<b>100</b>
2019	EMS	10,630	10,888	5,968	10	27,496	38.7	39.6	21.7	0.0	100.0
	Fire	2,888	225	6	0	3,119	92.6	7.2	0.2	0.0	100.0
	Hazmat	16	0	0	0	16	100.0	0.0	0.0	0.0	100.0
	Rescue	12	27	1	0	40	30.0	67.5	2.5	0.0	100.0
	Airport	64	0	0	0	64	100.0	0.0	0.0	0.0	100.0
	<b>Total</b>	<b>13,610</b>	<b>11,140</b>	<b>5,975</b>	<b>10</b>	<b>30,735</b>	<b>44.3</b>	<b>36.2</b>	<b>19.4</b>	<b>0.0</b>	<b>100</b>
2020	EMS	10,288	11,192	6,013	22	27,515	37.4	40.7	21.9	0.1	100.0
	Fire	3,263	258	11	4	3,536	92.3	7.3	0.3	0.1	100.0
	Hazmat	32	1	0	0	33	97.0	3.0	0.0	0.0	100.0
	Rescue	21	32	0	0	53	39.6	60.4	0.0	0.0	100.0
	Airport	53	1	0	0	54	98.1	1.9	0.0	0.0	100.0
	<b>Total</b>	<b>13,657</b>	<b>11,484</b>	<b>6,024</b>	<b>26</b>	<b>31,191</b>	<b>43.8</b>	<b>36.8</b>	<b>19.3</b>	<b>0.1</b>	<b>100</b>
2021	EMS	12,140	12,206	6,837	31	31,214	38.9	39.1	21.9	0.1	100.0
	Fire	3,588	256	7	0	3,851	93.2	6.6	0.2	0.0	100.0
	Hazmat	29	1	0	0	30	96.7	3.3	0.0	0.0	100.0
	Rescue	22	41	0	0	63	34.9	65.1	0.0	0.0	100.0
	Airport	66	0	0	0	66	100.0	0.0	0.0	0.0	100.0
	<b>Total</b>	<b>15,845</b>	<b>12,504</b>	<b>6,844</b>	<b>31</b>	<b>35,224</b>	<b>45.0</b>	<b>35.5</b>	<b>19.4</b>	<b>0.1</b>	<b>100</b>
All	EMS	54,520	55,080	30,579	108	140,287	38.9	39.3	21.8	0.1	100.0
	Fire	16,666	1,233	48	5	17,952	92.8	6.9	0.3	0.0	100.0
	Hazmat	88	3	1	0	92	95.7	3.3	1.1	0.0	100.0
	Rescue	90	149	2	0	241	37.3	61.8	0.8	0.0	100.0
	Airport	273	1	0	0	274	99.6	0.4	0.0	0.0	100.0
	<b>Total</b>	<b>71,637</b>	<b>56,466</b>	<b>30,630</b>	<b>113</b>	<b>158,846</b>	<b>45.1</b>	<b>35.5</b>	<b>19.3</b>	<b>0.1</b>	<b>100</b>

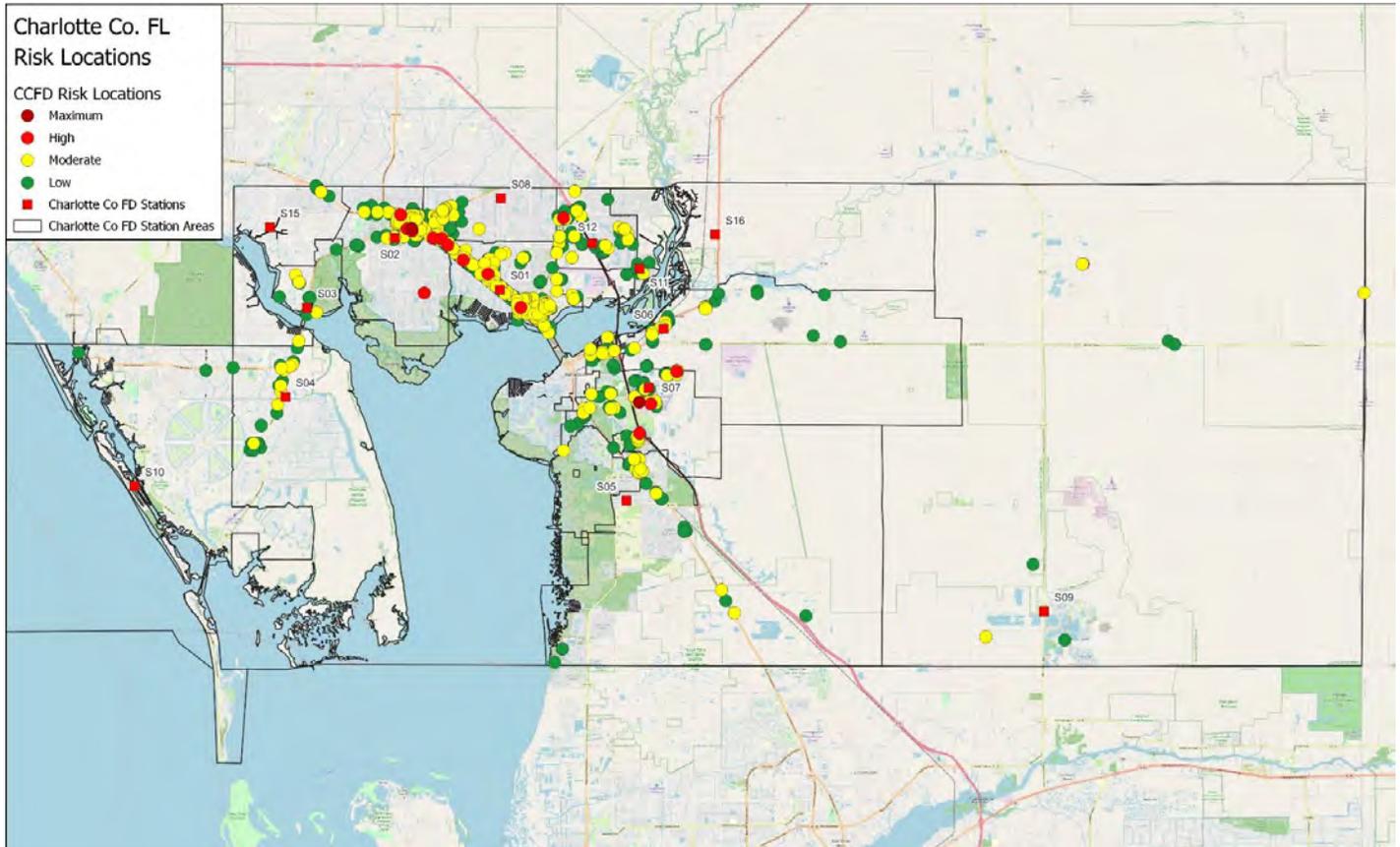
<sup>1</sup>“Percentage of Incidents” values reflect percentages within each program row, using the number of incidents per relevant risk rating category as the numerator and the total number of incidents in the corresponding program row as the denominator.

<sup>2</sup>Reporting periods reflect calendar years spanning January 1 to December 31 of each respective reporting period.

### Physical Assets Protected

Sufficient data was available from the internal inspection records that provided specific building occupancy information. Individual buildings were rated by multiple variables such as the number of stories, location, stories be- low grade, construction class, and the **presence of automatic sprinklers**. Although this information was utilized throughout the risk assessment process and calculations, the map below shows specific locations of rated occupancies and the respective risk severity.

Performance Indicator 2B.5  
Fire protection and detection systems are incorporated into the risk analysis.



## First Due Station Area Summary Risk Rating

Viewing risk at multiple levels is a best practice within the fire service. Much of the risk in this section is viewed at a jurisdictional level and then moving to first due zones as the main lens, turning to the most granular view; individual risk ratings for buildings located within a community.

Below is the first due zone ratings for CCFEMS, indicating the stations that have low, moderate, high and maximum risk based on the following factors:

- Population density
- Median household income
- Unemployment rate
- Square miles
- Median age
- Percentage of homes greater than 50 years old
- Number of moderate/high-risk occupancies
- Community demand
- Call concurrency rate

First Due Station	Component Risk Scores for Census Variables									2017-2021 Call Data				Final Scoring		
	Population Density	Square Miles	Median Age of Residents	Median Household Income	Unemployment Rate	Percentage of Homes > 50 Years Old	Number of Moderate-, High-, and Maximum-Risk Structures	Census Average Value	Census Average Value Risk Score	Total Number of Calls	Average Number of Calls per Period	Demand Risk Score	Call Concurrency Rate	Call Concurrency Rate Risk Score	Final Risk Score	Final Risk Level
ST01	5	2	6	6	4	10	10	6.14	6	40,351	8,070.2	10	45.1	10	92.74	High
EFD	2	4	7	5	6	4	1	4.14	4	20,529	4,105.8	10	32.0	10	81.24	High
ST02	2	2	6	6	7	1	10	4.86	4	20,014	4,002.8	9	28.7	10	74.15	High
PGFD	3	2	7	3	7	4	1	3.86	3	15,319	3,063.8	7	23.0	8	45.57	High
ST12	4	1	6	5	4	1	1	3.14	3	14,070	2,814.0	7	22.1	8	45.57	High
ST08	4	1	6	4	3	2	2	3.14	3	10,960	2,192.0	5	16.1	6	26.92	Moderate
ST07	1	2	6	3	3	4	4	3.29	3	8,252	1,650.4	4	13.3	5	19.61	Moderate
ST05	1	8	6	4	4	2	2	3.86	3	6,408	1,281.6	3	12.4	5	16.29	Moderate
ST04	1	10	7	3	3	1	2	3.86	3	5,244	1,048.8	3	10.7	4	13.58	Moderate
ST06	1	5	6	5	8	5	2	4.57	4	3,843	768.6	2	6.2	3	11.05	Low
ST09	1	10	5	2	8	5	1	4.57	4	1,640	328.0	1	6.7	3	9.19	Low
ST03	2	1	7	3	4	1	1	2.71	3	3,671	734.2	2	8.1	3	8.75	Low
ST11	1	2	6	3	7	3	3	3.57	3	3,976	795.2	2	7.0	3	8.75	Low
ST16	1	4	6	5	7	10	1	4.86	4	1,629	325.8	1	3.6	2	6.48	Low
ST15	1	1	6	2	3	1	1	2.14	2	2,238	447.6	1	4.7	2	3.46	Low
ST10	1	1	7	4	1	5	1	2.86	3	305	61.0	1	1.6	1	3.08	Low

## Community Risk Input Factors

Risk factors in the community were analyzed with historical and statistical data, and trending was established based on the type of call and location of the incident. General categories of risk included overall geospatial characteristics of the community, natural hazards and human-made hazards.

### Geospatial Risk Factors

- Political Boundaries
- Growth Boundaries
- Construction Limitations
- Topography and Response Barriers
- Critical Infrastructure
- Rural Interface

#### Core Competency 2B.6

The agency assesses critical infrastructure within the planning zones for capabilities and capacities to meet the demands posed by the risks.

#### Core Competency 2B.4

The agency’s risk identification, analysis, categorization, and classification methodology has been utilized to determine and document the different categories and classes of risks within each planning zone.

### Natural Hazards

- Coastal Erosion
- Flood
- Severe Weather
- Contagious Diseases
- Wildfire

### Hazard Events for Charlotte County

Type	Hazard	Probability	Impact	Frequency	Distribution
Natural	Coastal Erosion	Medium	Moderate	Annually	Coastal areas and barrier islands
	Drought	Medium	Major	5-10 Years	County-wide
	Earthquakes	Low	Minor	500 Years	County-wide
	Exotic Pests	Low	Minor	Continuous	County-wide
	Extreme Heat	High	Minor	Annually	County-wide
	Flooding	Medium	Major	1-2 Years	Localized
	Freeze	Medium	Minor	5-10 Years	County-wide
	High Wind Event	High	High	1-2 Years	County-wide
	Sinkholes	Low	Minor	30+ Years	Localized
	Tornado	Medium	Moderate	Several Per Year	County-wide
	Tropical Cyclone*	Medium	Major-Catastrophic	2-3 Years	Coastal areas and barrier islands
	Tsunami	Low	Major	500 Years	Coastal areas and barrier islands
Technological	Wildfire	High	Moderate	Several per Year	County-wide
	Dam Failure	Low	Minor	N/A	Three parcels in northwest corner of county
	Hazardous Materials	Medium	Minor	Several per Year	County-wide
	Terrorism	Low	Major-Catastrophic	N/A	County-wide
	Critical Infrastructure Disruption	High	Moderate	Several per Year	County-wide
Cyber Incident	High	Major-Catastrophic	Daily	County-wide	

### Human-made Risk Hazards

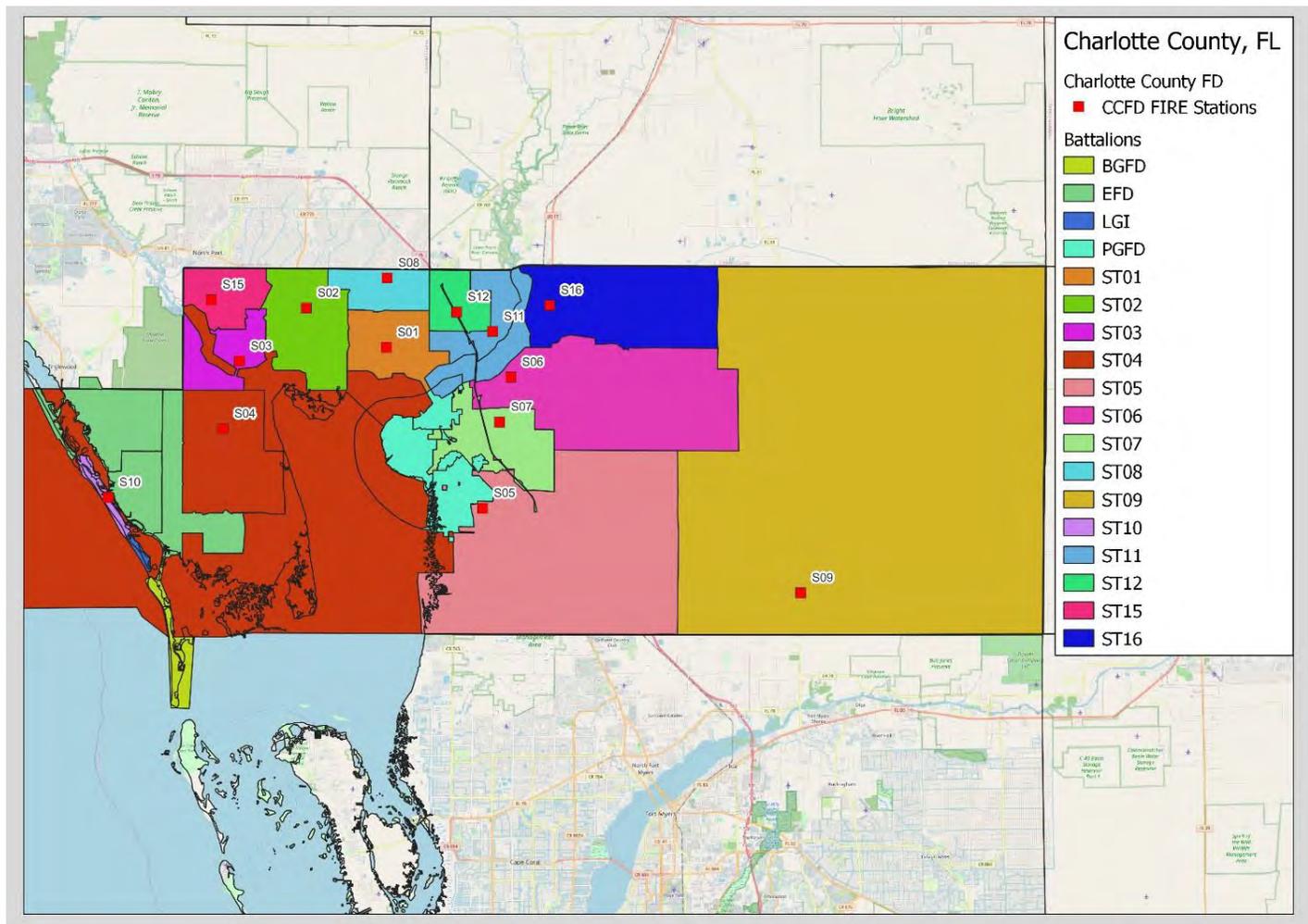
- Airport
- Passenger and Freight Rail Lines
- Road Networks
- Fires
- EMS
- Hazardous Materials
- Technical Rescue

# Geospatial Risk Factors

<p><b>Low Risk</b></p> <p><b>Low Probability</b></p> <p><b>Low Consequence</b></p>	<h2>Political and Growth Boundaries</h2>
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The County boundaries are not expected to change significantly other than through mergers or regional consolidation efforts. From this perspective, increases in population density may only serve to eventually require a greater concentration of resources to meet the demand rather than expanding the distribution model. In other words, if the County does not anticipate creating a larger geographic coverage area through annexations, the likely result of population growth will require additional resources within the existing distribution model rather than by expanding the number of stations.

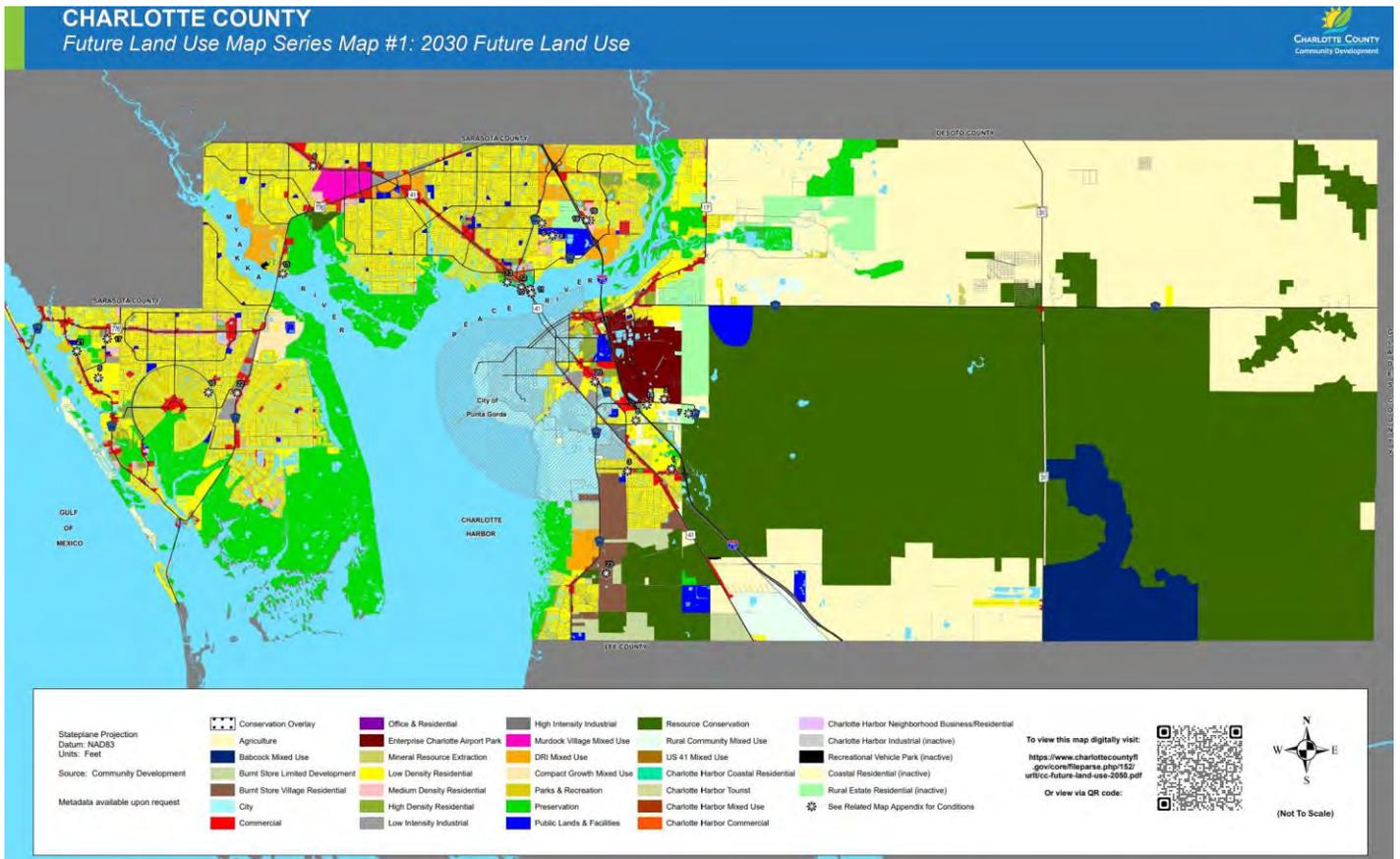
**Charlotte County Boundaries Map**



<p style="text-align: center; font-weight: bold; font-size: 1.2em;">Low Risk</p> <p style="text-align: center; font-weight: bold; font-size: 1.1em;">Low Probability</p> <p style="text-align: center; font-weight: bold; font-size: 1.1em;">Low Consequence</p>	<h1 style="font-size: 2.5em; margin: 0;">Construction Limitations</h1>
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The future land use map demonstrates that limitations have been accounted for, and that generally new growth is occurring at a moderate rate within the County.

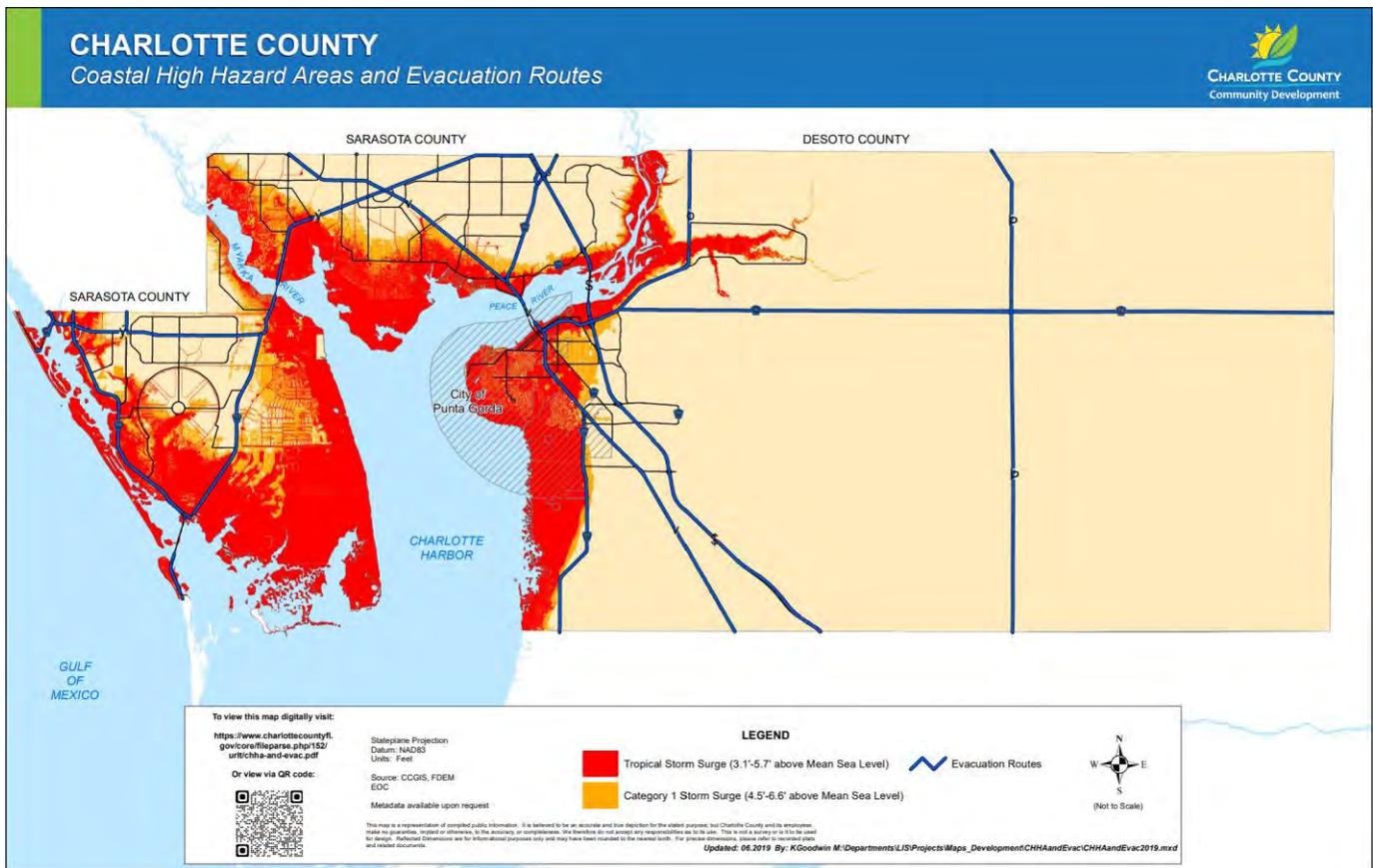
## Future Land Use Map Charlotte County



<p><b><u>High Risk</u></b>  <b>High Probability</b>  <b>High Consequence</b></p>	<h1>Topography – Response Barriers</h1>
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Primarily response barriers are associated with interaction with coastal areas, water ways, and barrier islands that may be inhibited during secondary events such as severe weather, flooding, and storm surge. Much of the County is low-lying coastal area with an elevation ranging from 3-10 feet above sea level.

### Charlotte County Topography

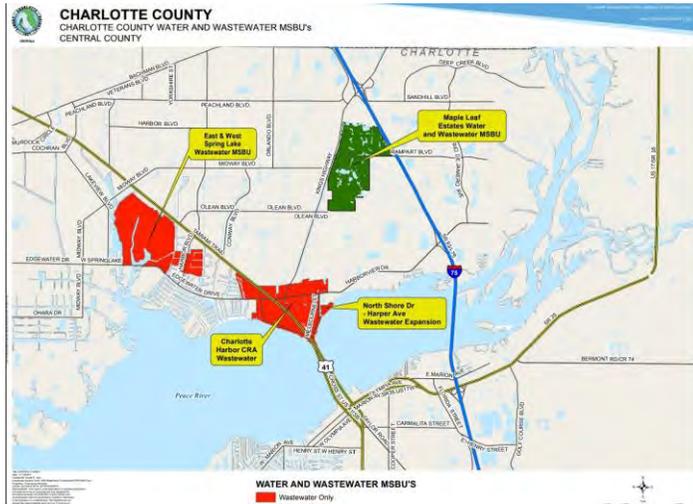


**Moderate Risk**  
**Low Probability**  
**High Consequence**

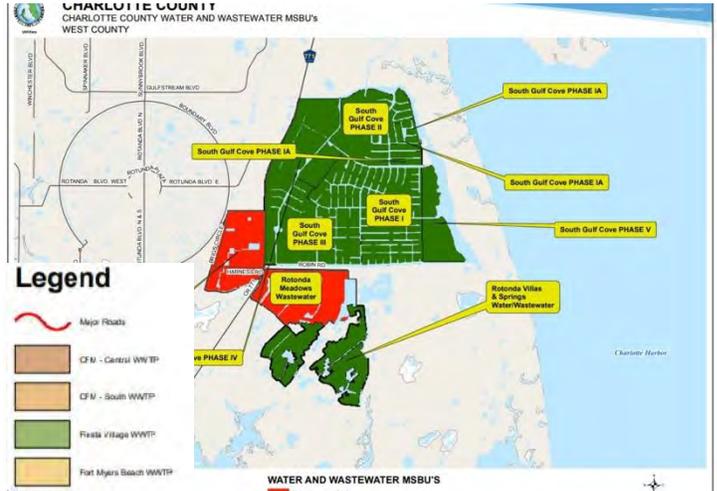
# Critical Infrastructure and Facilities

Failure of critical public or private utility infrastructure can result in a temporary loss of essential functions and/or services that last from just a few minutes to days or more at a time. Public and private utility infrastructure provides essential life supporting services such as electric power, natural gas, heating and air conditioning, water, sewage disposal and treatment, storm drainage, communications, and transportation.

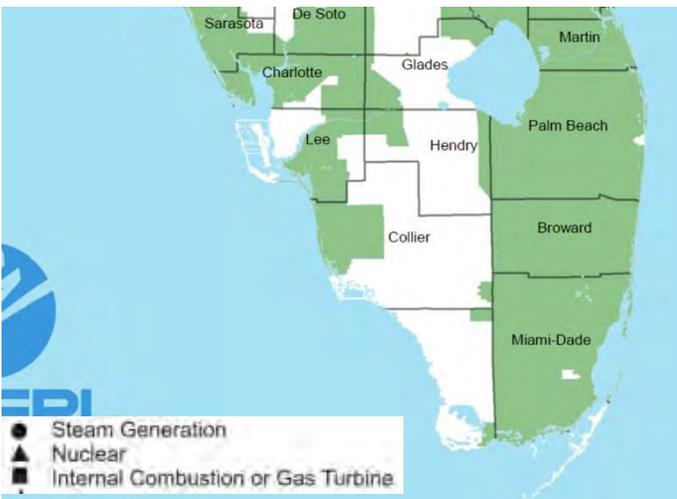
**Water Distribution**



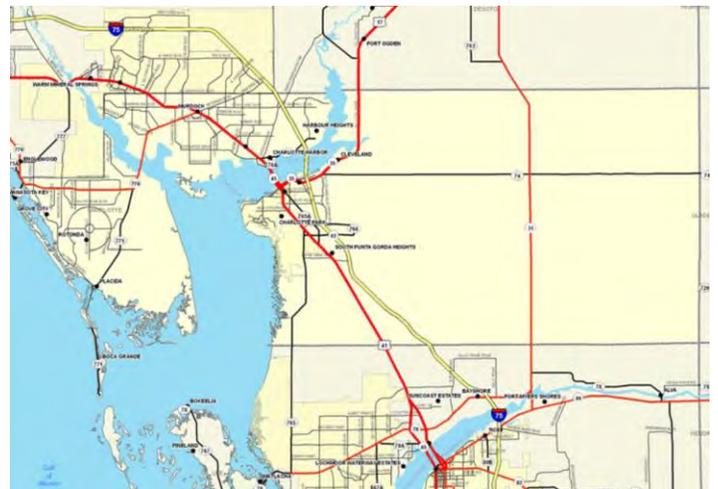
**Water Treatment**



**FPL Electric Service**



**Transportation—Major Road**



<p><b><u>Moderate Risk</u></b>  <b>Low Probability</b>  <b>High Consequence</b></p>	<h2>Electrical Power Grid</h2>
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The County falls within the Florida Power and Light (FPL) Service area but could be impacted by surrounding electrical services provided by the Lee County Electric Cooperative. FPL maintains a better than 99% service electrical service reliability. Charlotte County, FL: 2 Electric Providers (findenergy.com)

**FPL Service Area**



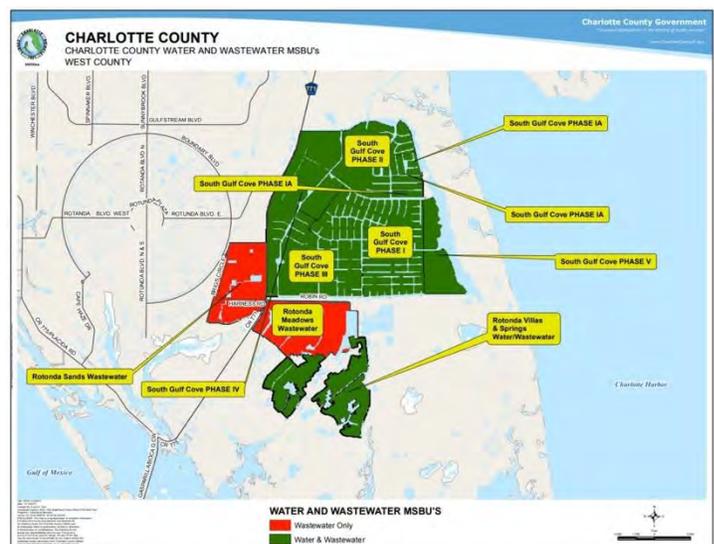
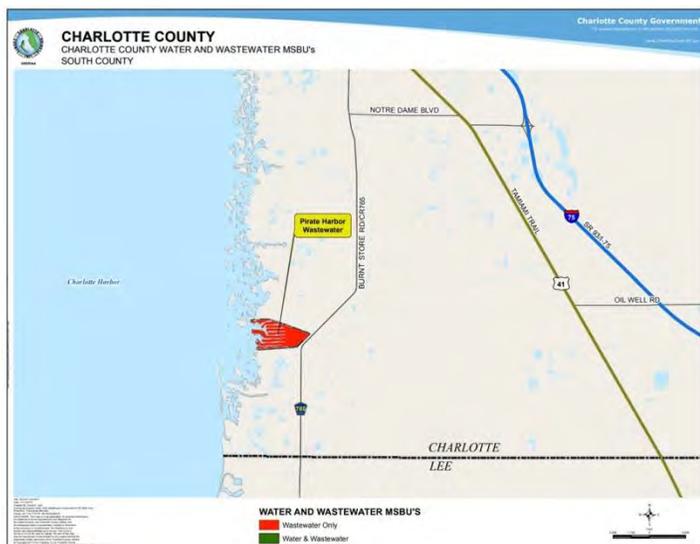
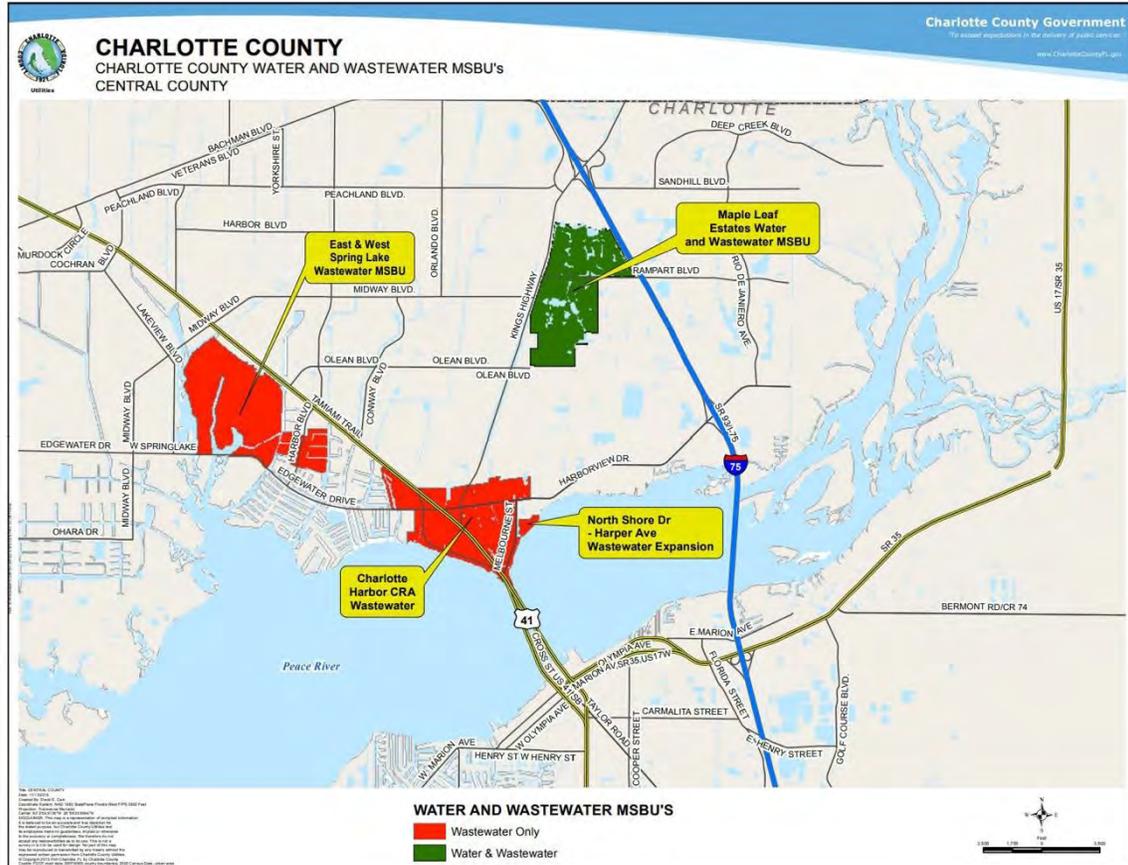
**Charlotte County, Florida Overview**

- 💡 As the 64th largest generator of solar power in the country out of 3221, Charlotte County generates 323,202 megawatt hours from solar.
- 💡 The county is the 997th highest producer of electricity in the country out of 3221 counties, producing 327,436 megawatt hours.
- 💡 Charlotte County is the 39 largest producer of megawatt hours per capita out of 67 counties in Florida, with a population of 186,847 and recent annual megawatt hour production of 327,436.
- 💡 Residents in Charlotte County face an average of 1.35 outages lasting 84.47 minutes each year, compared to the nationwide averages of 1.21 outages at 122.99 minutes per outage.
- 💡 During the course of the previous year, there has been a 6.83% drop in the use of non-renewable fuel sources for electricity production in Charlotte County.
- 💡 Florida Power & Light is the largest electricity supplier in Charlotte County when calculated by megawatt hours sold.

**Moderate Risk**  
**Low Probability**  
**High Consequence**

# Water Systems

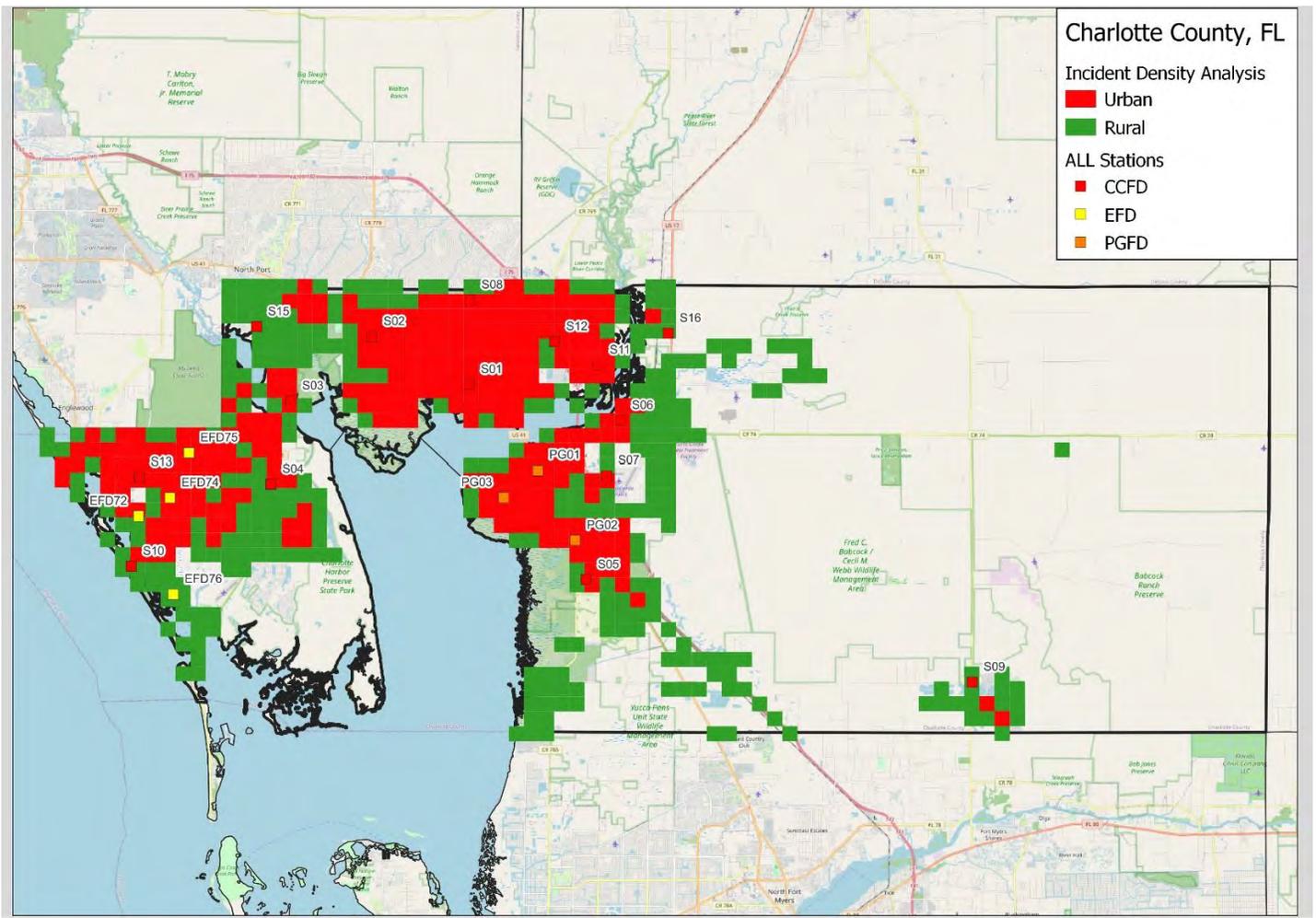
## Charlotte County Water Distribution and Treatment Plants



<p><b>Low Risk</b></p> <p><b>Low Probability</b></p> <p><b>Low Consequence</b></p>	<h1>Rural Interface</h1>
--	--------------------------

Wild, or undeveloped, lands and any surrounding urban areas (WUI - wildland urban interface) are most at risk of fires. Potential risks include the destruction of land, property, and structures as well as injuries and loss of life. Although rare, deaths and injuries usually occur at the beginning stages of wildfires when sudden flare-ups occur from high wind conditions. In most situations, however, people have the opportunity to evacuate the area and avoid bodily harm. Financial losses related to wildfires include destroyed or damaged houses, private facilities and equipment, loss of commercial timber supplies, and local and state costs for response and recovery. An assessment of the rural interface risk is provided below.

### Charlotte County Wildland Urban Interface



3 Retrieved from: [https://www.leegov.com/publicsafety/Documents/Emergency%20Management/FINAL\\_LeeCounty\\_LMS2017.pdf](https://www.leegov.com/publicsafety/Documents/Emergency%20Management/FINAL_LeeCounty_LMS2017.pdf)

## Natural Risk Hazards

### **Moderate Risk**

**Moderate Probability**

**Moderate Consequence**

## Coastal Erosion

In the United States, coastal erosion is responsible for roughly \$500 million per year in coastal property loss, including damage to structures and loss of land. To mitigate coastal erosion, the federal government spends an average of \$150 million every year on beach nourishment and other shoreline erosion control measures.

Sea levels continue to rise, with potentially devastating effects due to beach erosion, storm surge, flooding, saltwater intrusion, infrastructure damage, and many other factors that affect tourism, businesses, and real estate along the coast in Charlotte County and throughout the state. The University of Florida has been conducting intensive research into the nature and extent of the damage sea-level rise can cause and what communities need to do to plan more resilient communities. Florida Sea Grant and UF/IFAS Extension are collaborating with the Southwest Florida Regional Planning Council, the Charlotte Harbor National Estuary Program, county government and local businesses to provide technical assistance to help Charlotte County adapt to rising sea levels. The county has planned shoreline restoration for sand to be deposited north of the Stump Pass State Park to Sarasota County's Blind Pass Beach in the past as Manasota Key is primarily the area sensitive to coastal erosion.

### Charlotte County Critical Coastal Erosion

Charlotte County - (ufl.edu)

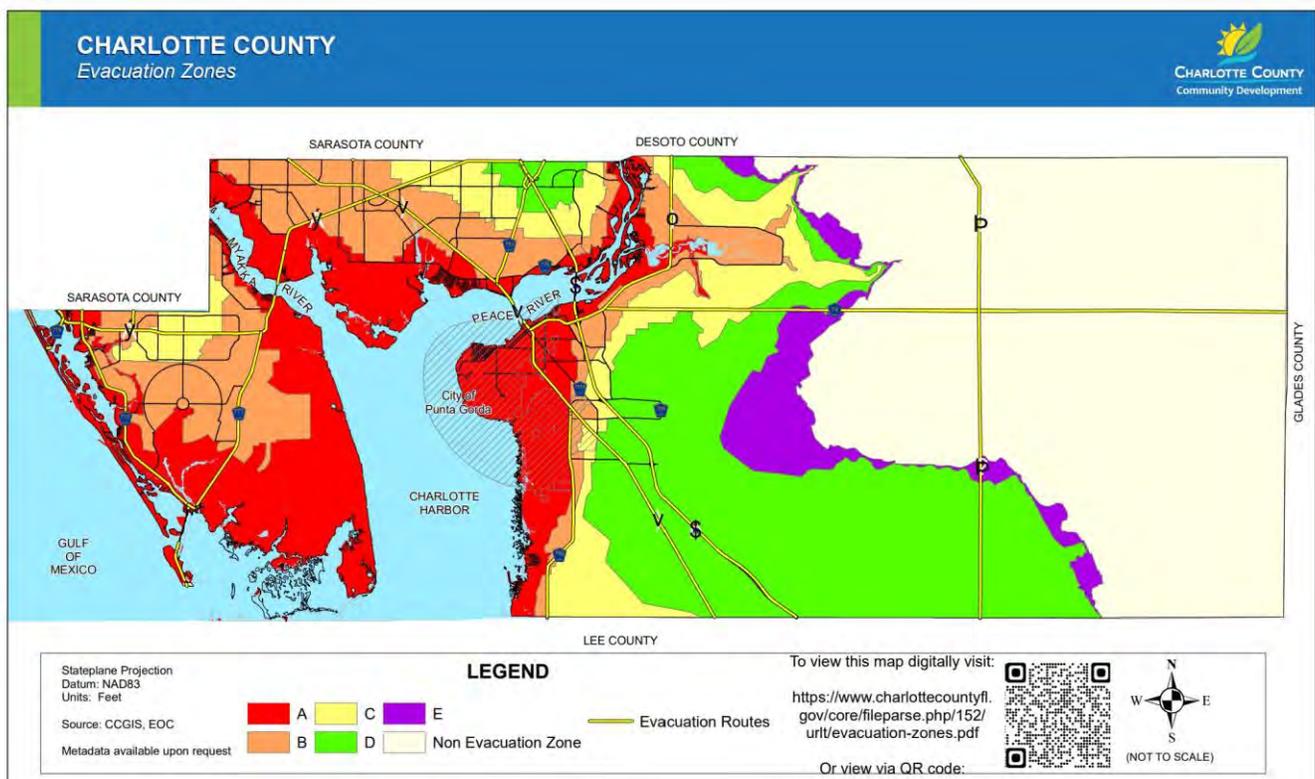


<p style="text-align: center;"><b><u>High Risk</u></b></p> <p style="text-align: center;"><b>High Probability</b></p> <p style="text-align: center;"><b>High Consequence</b></p>	<h1 style="margin: 0;">Flooding Event</h1>
--	--

Floods are the most common natural disaster, damaging public health and safety, as well as economic prosperity. Between 1980 and 2013, the United States suffered more than \$260 billion in flood-related damages, according to FEMA. Storm surges, heavy downpours, extensive development, and even sea-level rise in coastal areas can increase the risk of flooding.

Charlotte is a coastal county making it more vulnerable to the storms that come from the Gulf. This includes tropical cyclones and high-wind events. Damage from high winds, storm surge, and rain-induced flooding can impact all structures and utilities. The structures most susceptible to damage are older buildings, dilapidated housing, and other less hardened properties such as mobile homes. Widespread electrical outage is probable, as well as water and sewage backup in flooded areas. Depending on the intensity of the event, economic and environmental impacts can be severe. All populations may be impacted by these events, but those at highest risk are the elderly, the disabled, lower income, and the homeless. Charlotte County has 47,961 homes built before the code change in 1992 and 11,848 mobile homes. This would make 60% of the homes in Charlotte County vulnerable to tropical cyclones.

**Figure 9: Charlotte County Flood Zone Map<sup>5</sup>**



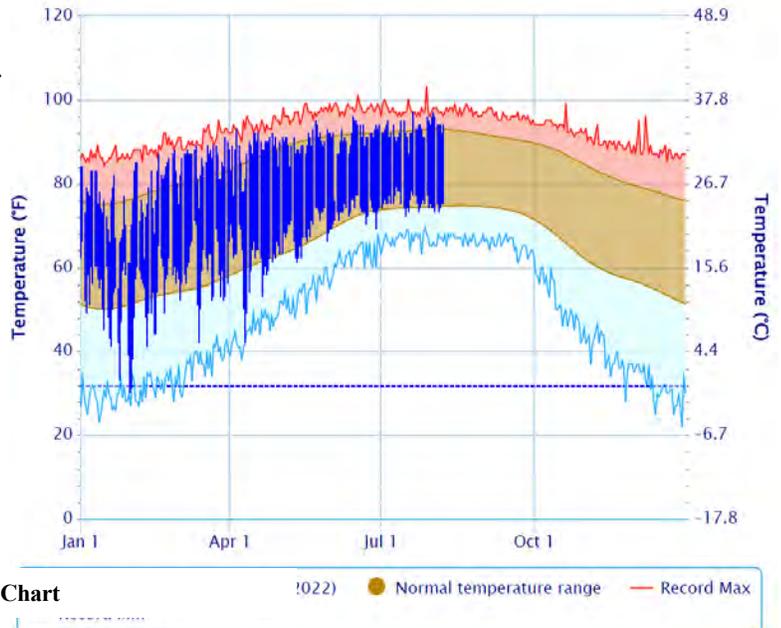
<https://www.charlottecountyfl.gov/core/fileparse.php/152/urlt/evacuation-zones.pdf>

<p><b><u>High Risk</u></b>  <b>High Probability</b>  <b>High Consequence</b></p>	<h2 style="margin: 0;">Severe Weather</h2>
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Residents of the County are familiar with severe weather. High winds and torrential rains with tropical cyclones, or just daily tropical thunderstorms, are a regular occurrence. They can cause millions of dollars in property damage and sometimes even take lives. Storms not only knock out electricity, they also often leave live power lines across roadways and topple trees into homes. The most vulnerable populations include the elderly and people living with life-threatening medical conditions.

The County is also vulnerable to temperature extremes. Extreme heat is a summer phenomenon that usually involves temperatures over 100°F for a period of several days. The “heat index” or “apparent temperature” is often used to measure how hot the air “feels” based on temperature and humidity. The index can be used as an indicator of potential health effects. Extreme heat events have normally occurred in early summer. The impact of these events can affect the local population, tourism industry, and agricultural industry.

Daily Temperature Data – Punta Gorda Area, FL (ThreadEx)



NWS Heat Index Chart

furnished by National Weather Service Gray, ME by ACIS

		Relative Humidity (%)												
		40	45	50	55	60	65	70	75	80	85	90	95	100
Air Temperature	110	136												
	108	130	137											
	106	124	130	137										
	104	119	124	131	137									
	102	114	119	124	130	137								
	100	109	114	118	124	129	136							
	98	105	109	113	117	123	128	134						
	96	101	104	108	112	116	121	126	132					
	94	97	100	103	106	110	114	119	124	129	135			
	92	94	96	99	101	105	108	112	116	121	126	131		
	90	91	93	95	97	100	103	106	109	113	117	122	127	132
	88	88	89	91	93	95	98	100	103	106	110	113	117	121
	86	85	87	88	89	91	93	95	97	100	102	105	108	112
84	83	84	85	86	88	89	90	92	94	96	98	100	103	
82	81	82	83	84	84	85	86	88	89	90	91	93	95	
80	80	80	81	81	82	82	83	84	84	85	86	86	87	

**With Prolonged Exposure and/or Physical Activity**

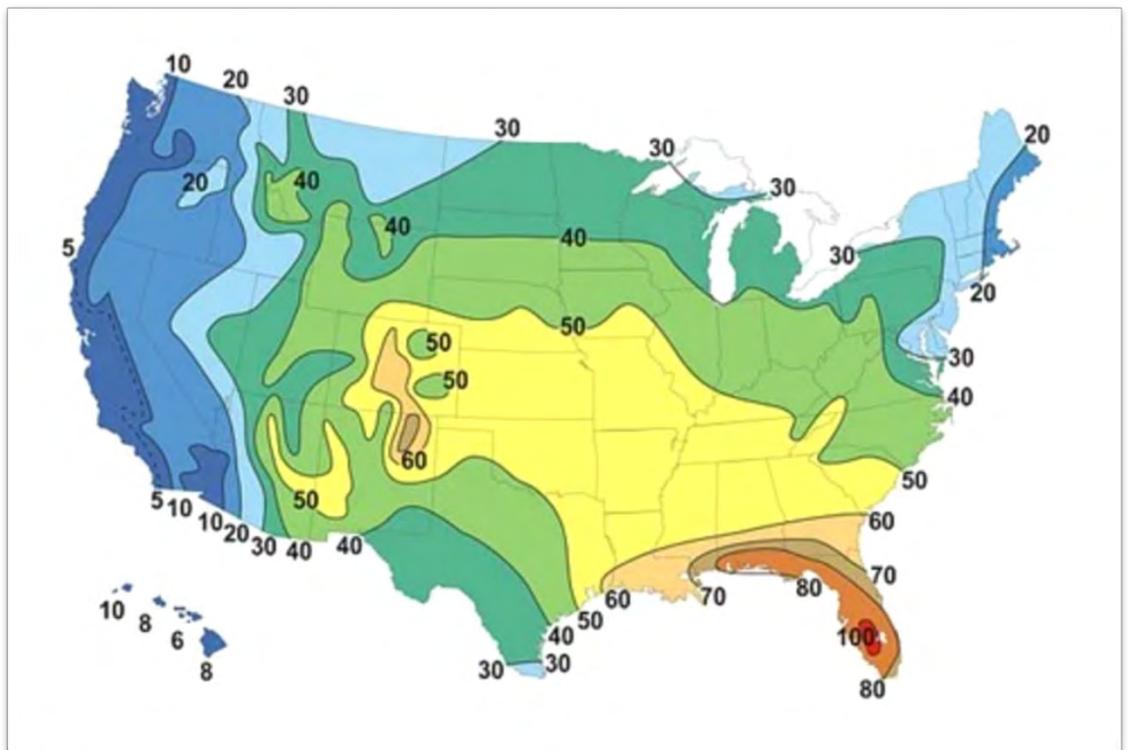
<b>Extreme Danger</b>
Heat stroke or sunstroke highly likely
<b>Danger</b>
Sunstroke, muscle cramps, and/or heat exhaustion likely
<b>Extreme Caution</b>
Sunstroke, muscle cramps, and/or heat exhaustion possible
<b>Caution</b>
Fatigue possible

**Moderate Risk****High Probability****Low Consequence****Lightning/Thunderstorms****Lightning**

Lightning occurs with every thunderstorm, and, on average, Florida sees around 70-100 days a year with at least one thunderstorm in the state. Because of Florida's vulnerability to thunderstorms and lightning, lightning is one of the deadliest weather hazards in the Sunshine State. In the United States, there are an estimated 25 million lightning flashes each year. In an average year, Florida sees around 1.4 million lightning strikes. This makes Florida the "Lightning Capital of the United States."

**Thunderstorms**

Of the estimated 100,000 thunderstorms that occur each year in the United States, about 10% are classified as severe. The National Weather Service considers a thunderstorm severe if it produces hail the size of a U.S. quarter or larger or winds of 58 mph or stronger. Severe thunderstorms are known to cause significant damage to well-built structures or cause bodily harm.



These strong storms can also produce frequent and dangerous lightning, flooding, and tornadoes. On average, the interior sections of central Florida receive the most thunderstorms, with nearly 100 plus days per year. However, thunderstorms are also frequent along coastal areas, which average 80 to 90 days per year.

7 Retrieved from: <https://www.floridadisaster.org/hazards/thunderstorms/>

**High Risk****High Probability****High Consequence****Hurricanes**

Hurricanes are among nature's most powerful and destructive phenomena. On average, 12 tropical storms, 6 of which become hurricanes, form over the Atlantic Ocean, Caribbean Sea, or Gulf of Mexico during the hurricane season which runs from June 1 to November 30 each year. Over a typical 2-year period, the U.S. coastline is struck by an average of three (3) hurricanes, one of which is classified as a major hurricane (winds of 111 mph or greater). The dangers associated with hurricanes are vast and listed below:

- **STORM SURGE** - A hurricane can produce a destructive storm surge, which is water that is pushed toward the shore by the force of the winds. This advancing surge combines with the normal tides to inundate normally dry land in feet of water. The stronger the storm, the higher the storm surge.
- **INLAND FLOODING** - In the last 30 years, inland flooding has been responsible for more than half the deaths associated with tropical cyclones in the United States.
- **HIGH WINDS** - Hurricane-force winds can destroy poorly constructed buildings and mobile homes. Debris such as signs, roofing material, and small items left outside, become flying missiles in hurricanes.
- **TORNADOES** - Hurricanes can produce tornadoes that add to the storm's destructive power. Tornadoes are most likely to occur in the right-front quadrant of the hurricane.

Based on historical data from the NCEI Storm Events Database, 9 events were reported between 04/01/2021 and 04/30/2022 (395 days)

**Recent notable storms include:**

September 24, 2017, Hurricane Irma:

Estimated \$5 to 6 million in damage to private and public resources caused by this powerful hurricane hitting Charlotte County as well as the majority of the state.

August 13, 2004, Hurricane Charley:

Hurricane Charley, a powerful but compact Category 4

Hurricane made landfall on August 13th. The center of Charley crossed the barrier islands of Cayo Costa and Gasparilla Island, then moved up Charlotte Harbor before making landfall at Mangrove Point, just southwest of Punta Gorda. The airport in Punta Gorda recorded sustained winds of 87 mph with gusts to 112 mph before the wind equipment blew apart. No storm surge was reported, but Charlotte Harbor reported a four-foot drop in the water level. Hurricane Charley caused 4 direct fatalities, over \$5.4 billion (2004 USD) in damages, and damaged/destroyed over 16,000 homes and 656 commercial buildings.



Storm Events Database | National Centers for Environmental Information (noaa.gov)

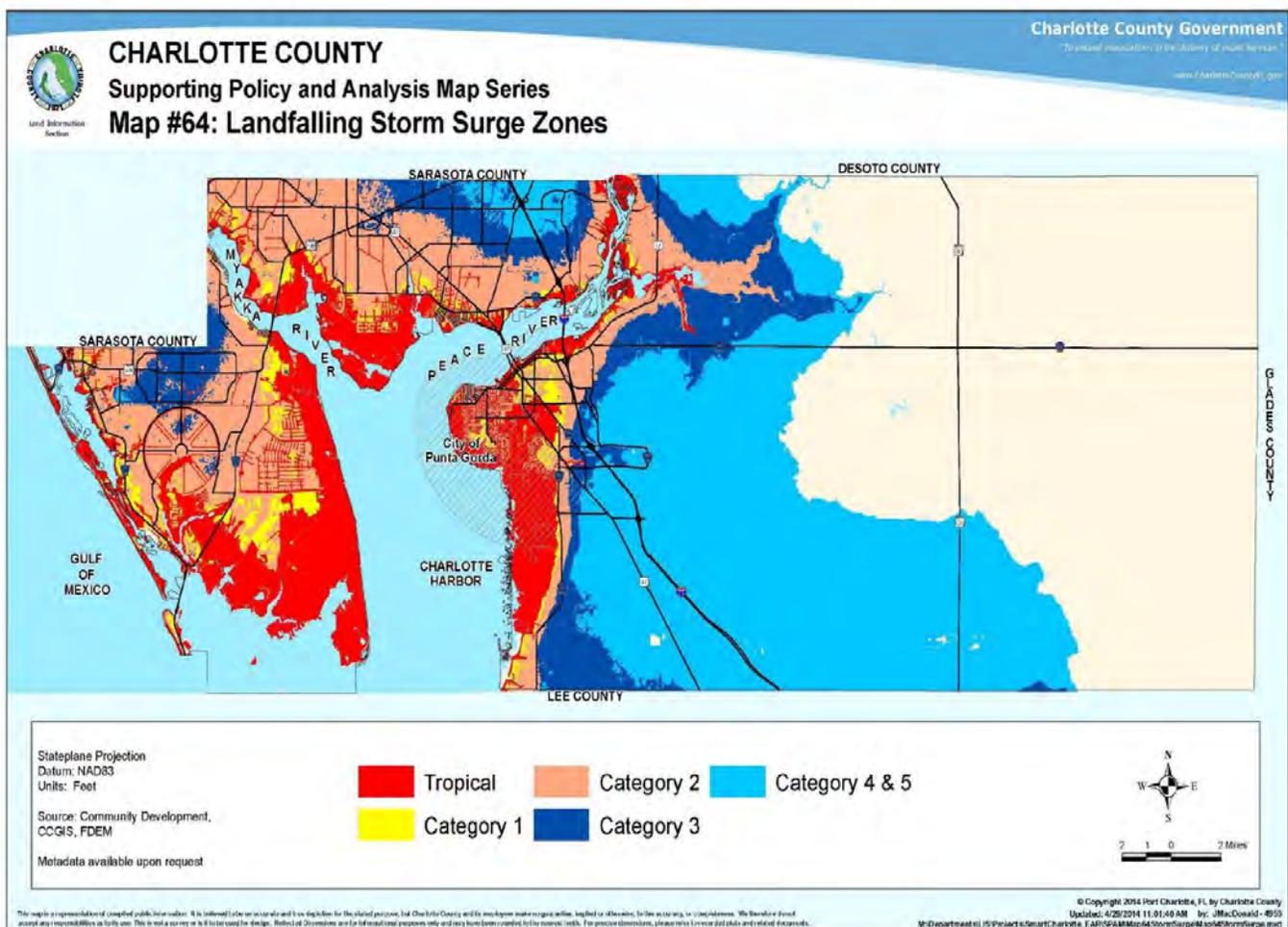
<p style="text-align: center;"><b><u>High Risk</u></b></p> <p style="text-align: center;"><b>High Probability</b></p> <p style="text-align: center;"><b>High Consequence</b></p>	<h1 style="margin: 0;">Storm Surges</h1>
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Coastal flooding associated with tropical storms and hurricanes is the result of storm surge, water (not waves) that is pushed toward the shore by the force of the storm winds. Storm surge inundation zone data is available from two sources: (1) SLOSH surge maps are developed in conjunction with the preparation of regional hurricane evacuation studies, and (2) TAOS surge maps are provided to Florida counties.

These 2 sources use different models for predicting storm surge flooding.

The regional hurricane evacuation study maps are based on the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model developed by the National Weather Service. The boundaries of the evacuation zones are based on the surge zones but modified to facilitate ready identification of zone boundaries.

### Storm Surge Inundation Zones by Hurricane Category



Microsoft Word - Charlotte County 2020 LMS Revised (charlottecountyfl.gov)

**High Risk****High Probability****High Consequence****Tornadoes**

Tornadoes in Florida can form in a variety of ways and in all seasons. However, many of Florida's tornadoes occur in the Spring and Summer months. Summer season tornadoes (June-September) typically occur along strong sea breeze boundary collisions, as well as from tropical cyclones. Spring season tornadoes (February-May) can be more powerful and deadly as they are spawned from severe supercells along a squall line ahead of a cold front. These types of tornadoes are also possible in the Fall and Winter months (October-January). Florida tornado climatology shows us that strong to violent tornadoes are just as likely to occur after midnight as they are in the afternoon.

There is no recorded history of a tornado with a classification greater than F2 striking in Charlotte County. Of the tornado events that have occurred in Charlotte County, 80% of them were F0 tornadoes, and 12% of them were classified as F1 tornadoes. This means that the majority of the tornado events that occur in Charlotte County are events that cause only moderate damage. Since tornadoes are unpredictable, this makes Charlotte County vulnerable to all 6 categories of tornadoes.

**NWS confirms EF-1 tornado touchdown in Charlotte County**

<https://www.mysuncoast.com/2022/01/16/nws-confirms-tornado-touchdown-charlotte-county/>

<p><b>Maximum Risk</b> <b>Low Probability</b> <b>High Consequence</b></p>	<h2>Contagious and Communicable Diseases</h2>
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**Contagious Disease**

The Florida Department of Health in Charlotte County (DOH-Charlotte) is one of 67 Public Health Departments under the governance of the integrated Florida Department of Health (DOH). Although DOH- Charlotte is a state agency, it maintains a very strong partnership with Charlotte County Government. DOH- Charlotte is organized into a number of program areas that focus on the surveillance, prevention, detection and treatment of the most significant health and environmental issues within the county. The major services provided by DOH-Charlotte include Infectious Disease Services, which provides for HIV/AIDS Surveillance, Prevention and Patient Care, Sexually Transmitted Diseases (STD), Tuberculosis Control (TB), Epidemiology and Disease Control, Rabies Control and Hepatitis. Most notably, these efforts have included the surveillance and response to the COVID-19 pandemic.

To ensure the health and safety of the community, when a contagious disease is confirmed in a place where people are in close contact (such as schools, daycares, and nursing homes), DOH-Charlotte follows up with the people who might be exposed to the disease as a result.

Thanks to vaccines, medical care, clean water, and safe food sources and handling, deadly diseases are rarer in the County than ever before. However, the County has not avoided the impact of the COVID-19 pandemic. As of August 2022, Charlotte County had recorded more than 397 cases of COVID-19 and 11 deaths. New diseases also pose a threat, as they can develop and spread rapidly.

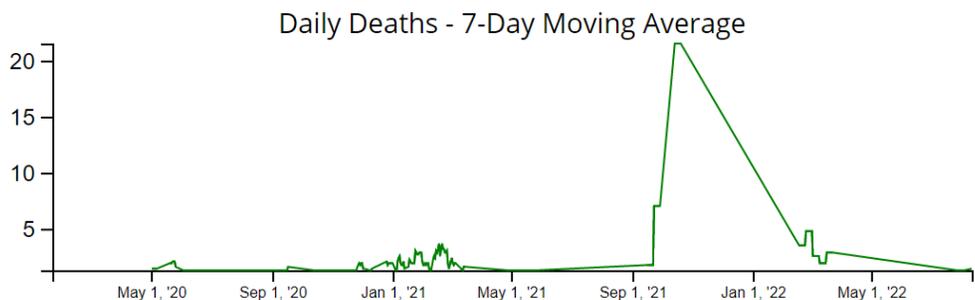
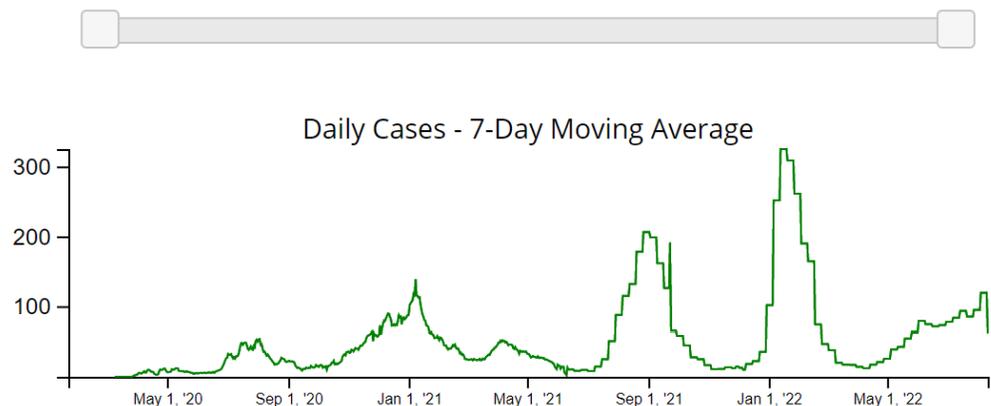
**Chronic Disease**

Chronic diseases, including heart disease, stroke, cancer, and diabetes, rank among the most common, costly, and preventable of all health problems throughout the United States. In 2021,

**COVID-19 Cases and Deaths in Charlotte County**

Tue, Jan 21st 2020 - Thu, Aug 11th 2022

Use slider to update time series chart



Charlotte County was ranked 11th out of the 67 counties in Florida for Health Outcomes and 18th for Health Factors. The five leading causes of death in Lee County, Florida were: 1) Cancer, 2) Heart Disease, 3) Unintentional Injury/Accidental, 4) Respiratory Disease, and 5) Stroke.<sup>12</sup>

Retrieved from: <https://covid.cdc.gov/covid-data-tracker/#county-view>.

**High Risk****Moderate Probability****Moderate Consequence****Wildfires**

Each year, thousands of acres of wildland and many homes are destroyed by fires that can erupt at any time of the year from a variety of causes, including arson, lightning, and debris burning. Adding to the fire hazard is the growing number of people living in new communities built in areas that were once wildland. This growth places even greater pressure on the state's wildland firefighters. As a result of this growth, fire protection becomes everyone's responsibility. Drought conditions and other natural disasters increase the probability of wildfires by producing fuel in both urban and rural settings.

Wildfires are nature's way of managing wild plant life and regenerating growth, but they also can be the result of other factors. Wildfires can be caused by lightning, campfires, uncontrolled burns, smoking, vehicles, trains, equipment use, and arsonists. People start more than four out of every five wildfires, usually as debris burns, arson, or carelessness. Lightning strikes are the next leading cause of wildfires (FEMA).

Wildfire behavior is based on three primary factors: fuel, topography, and weather. The type and amount of fuel, as well as its burning qualities and level of moisture affect wildfire potential and behavior. The continuity of fuels, expressed in both horizontal and vertical components, is also a factor in that it expresses the pattern of vegetative growth and open areas. Topography is important because it affects the movement of air (and thus the fire) over the ground surface. The slope and terrain can change the rate of speed at which fire travels. Weather affects the probability of wildfire and has a significant effect on its behavior. Temperature, humidity, and wind (both short and long-term) affect the severity and duration of wildfires (FEMA guidebook).

According to the Florida Forest Service, there has been a total of 8 wild/forest fire events officially reported in Charlotte County since 2019. These events resulted in no deaths and 1 injury. However, they did burn over 2,500 acres with over \$250,000 in property damage.

**Charlotte County Wildfire 2022**

FFS

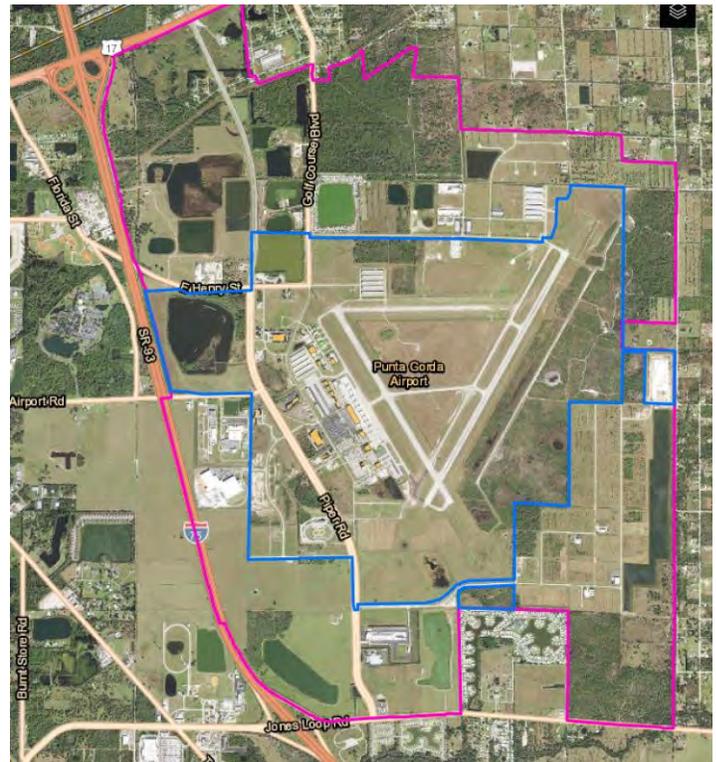
Myakka on Twitter: "130 acres 30%, Wildfire is now on the ##MyakkaRiverForest. Will update <https://t.co/IQ9UwklAv8>" / Twitter

# Human-made Risk Hazards

<p><b><u>Moderate Risk</u></b></p> <p><b>High Probability</b></p> <p><b>Low Consequence</b></p>	<h2>Transportation Network</h2>
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### Aviation

The Charlotte County Airport Authority (CCAA), governed by five elected commissioners, owns and operates the Punta Gorda Airport (PGD), located at 28000 Airport Road, five minutes off I-75, exits 161 and 164. PGD provides quick and easy access to Southwest Florida and is home to commercial air service, air charters, medical transport services, aircraft maintenance and avionics repair, as well as flight schools, distributors, and manufacturers. CCAA is a nontaxing entity and operates as an enterprise fund, totally supported by revenue generated from its operations, including rental car concession, parking, fuel sales and hangar, building, and land leases on its 2,000-acre property. The CCAA is an independent special district pursuant to chapter 189, Florida Statutes, and operates in accordance with FAA requirements and guidelines. A 2018 economic impact study by the FDOT estimated that PGD is responsible for 12,392 jobs and \$1.275 billion in total economic output.

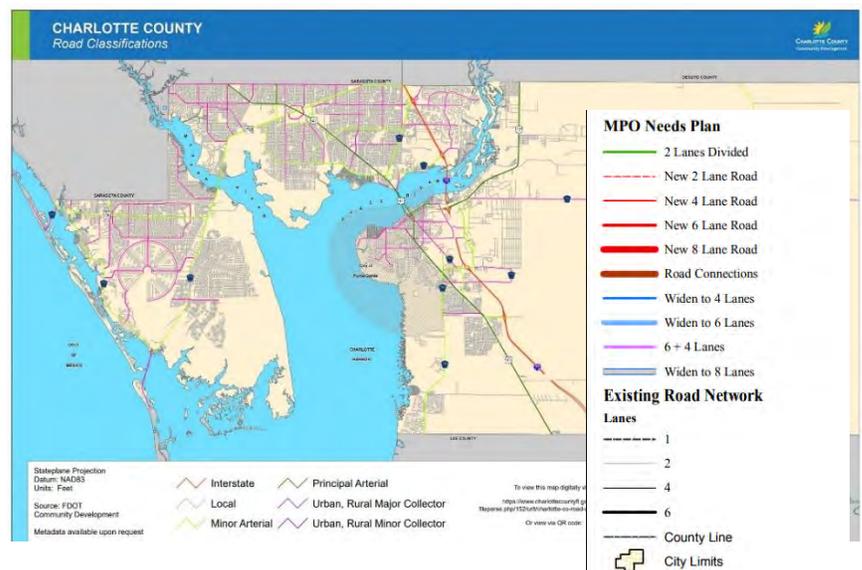


### Railroad

There is limited railroad transit within the County.

### Roadway

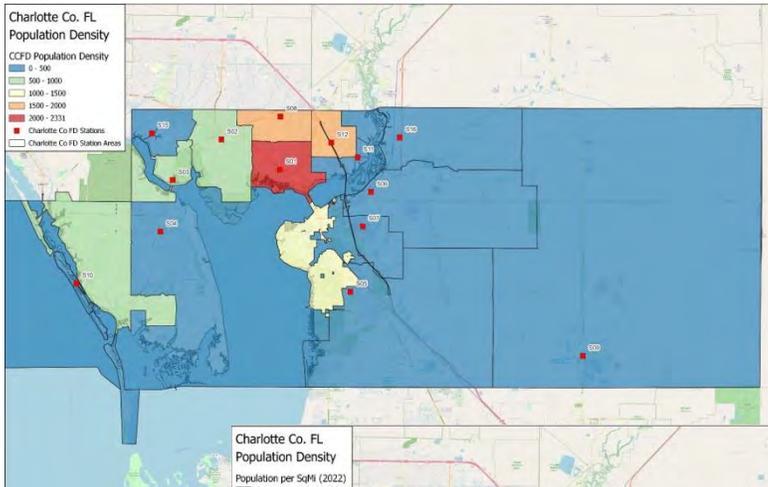
As of July 19, 2021, the FY21 Road and Bridge Paving Program officially started. This year's program is focused on maintaining Charlotte County's roadway systems in the following districts: Greater Port Charlotte, Northwest Port Charlotte, Manasota Key, unincorporated Punta Gorda, and Quesada Avenue.



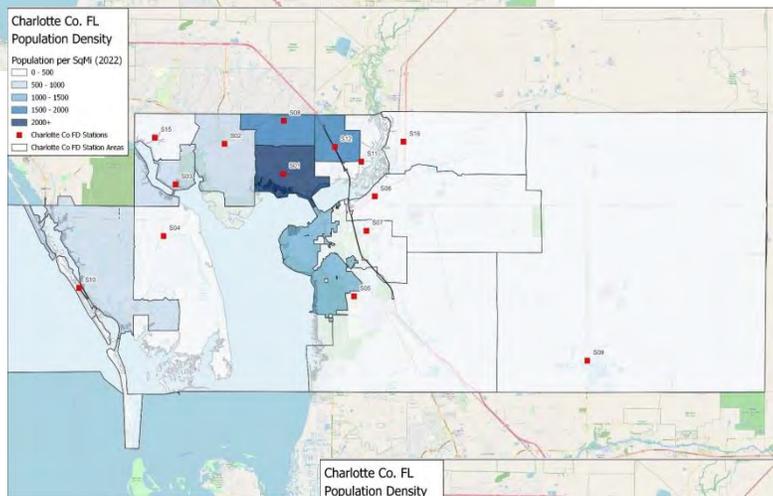
<https://www.flypgd.com/launch-interactive-map/>

**Moderate Risk**  
**High Probability**  
**Low Consequence**

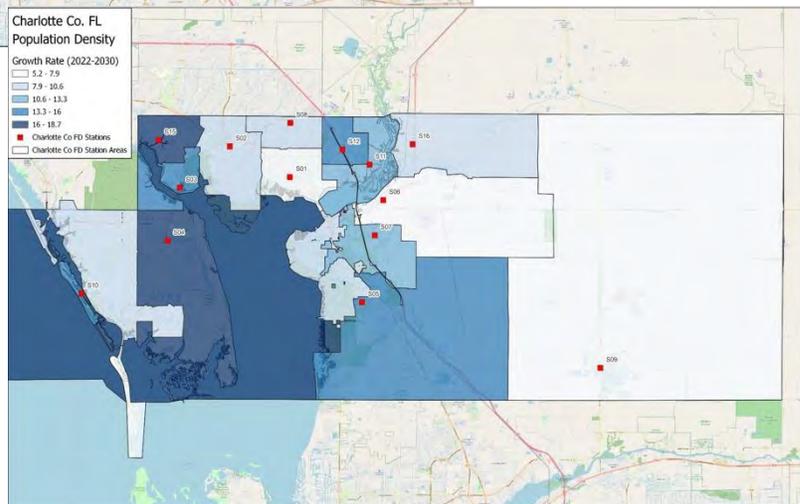
# Population Growth



**Population Density by Jurisdictional Zones**



**Population Density by Square Mile**



**Population Density by Jurisdictional Zones with Growth Rate**

The majority of census block areas in the district have population densities of up to 3,000 people per square mile, a critical factor to watch as population numbers continue to rise.

## Critical Tasking Methodology for Fire, EMS, Hazmat and Technical Rescue

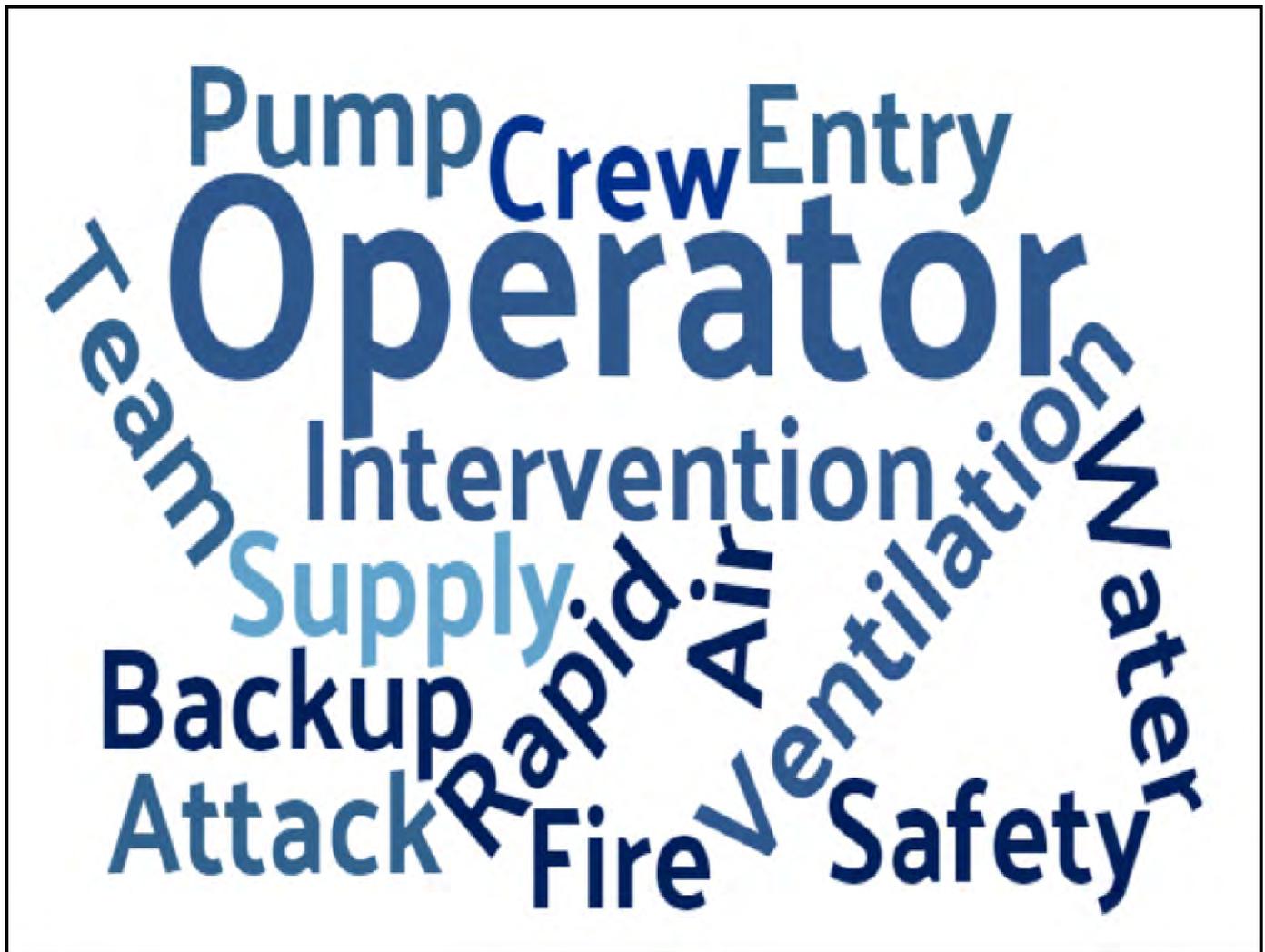
The department utilizes annual risk assessment and critical tasking review meetings for the fire, EMS, hazardous materials, and technical rescue programs to determine and document categories and classes of risks throughout the Department.

These meetings are also used to assess whether the current effective response force (ERF) can perform the critical tasking necessary to mitigate the hazards associated with each hazard and risk level. The department uses after-action reviews for structure fires, technical rescues, and hazardous material incidents to evaluate the effectiveness of first due and initial assignments in achieving incident goals.

The EMS program evaluates hands-on training activities for critical tasking and monitors metrics such as return of spontaneous circulation (ROSC) to assess the effectiveness of initial assignments for cardiac arrest incidents. Changes to critical tasking and ERFs are documented in annual updates to the Standards of Cover.

### Core Competency 2C.4

A critical task analysis of each risk category and risk class has been conducted to determine first due and effective response force capabilities and a process is in place to validate and document the results.

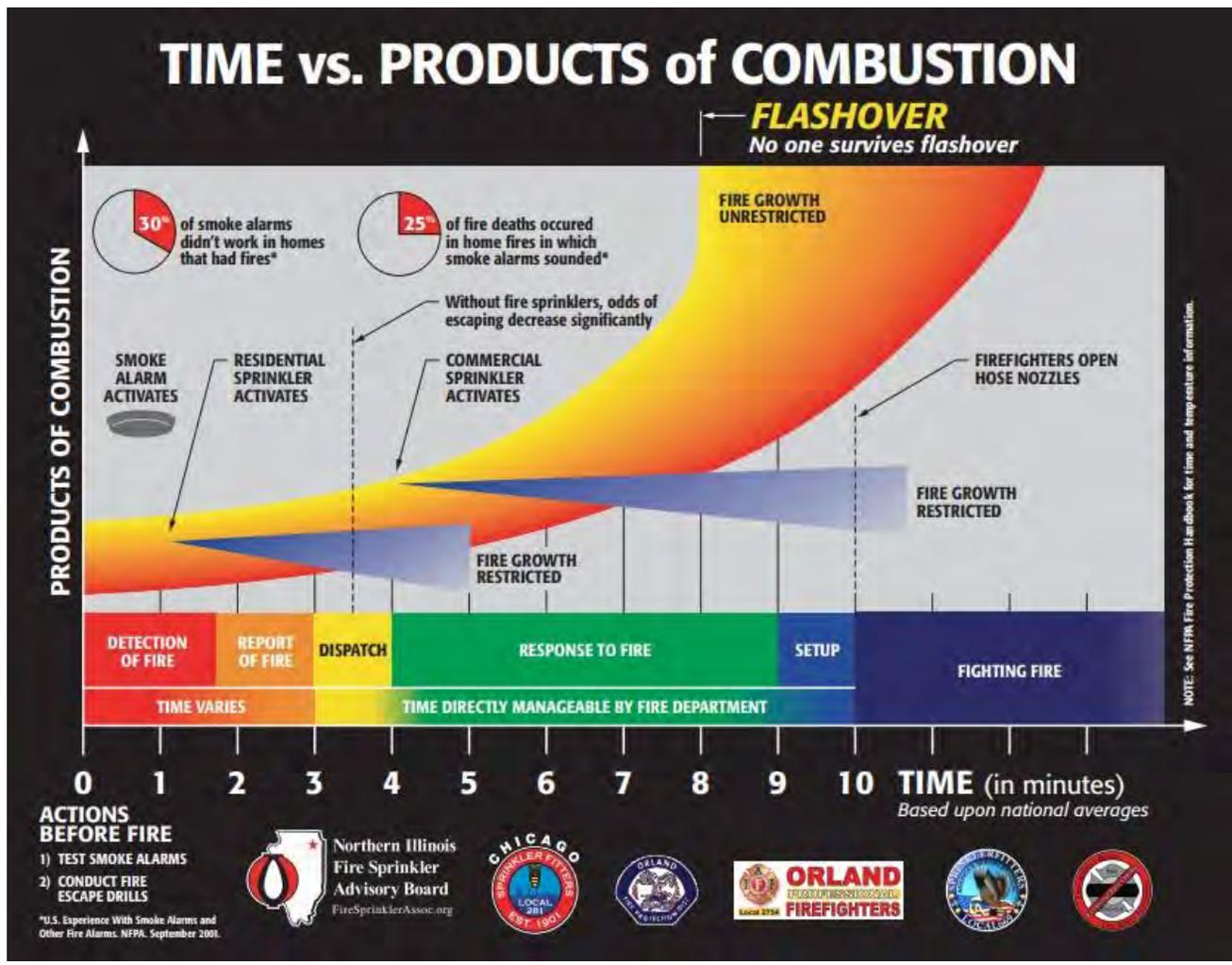


<p style="text-align: center;"><b><u>High Risk</u></b></p> <p style="text-align: center;"><b>High Probability</b></p> <p style="text-align: center;"><b>High Consequence</b></p>	<h1>Fire Suppression</h1>
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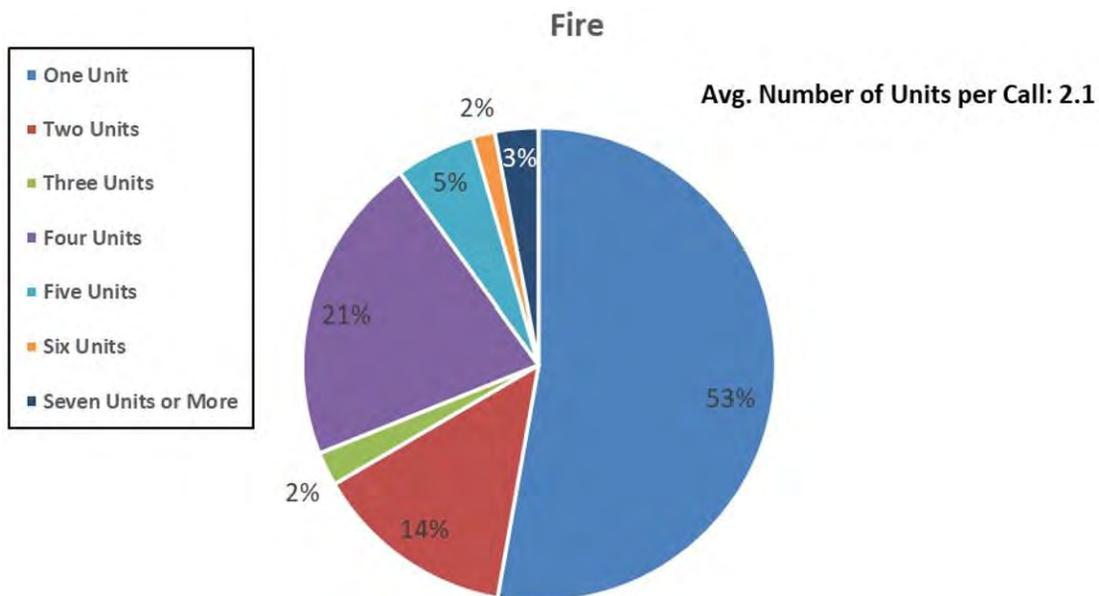
Fire suppression is one of the most visible response services that a fire department provides, and at the very core of our existence. As evidenced by the flashover curve and exacerbated by modern furnishings and construction methods, fires are an extremely time sensitive emergency.

The agency has classified the risk of fires into 4 main categories: low, moderate, high, and maximum. These rankings are applied to individual occupancies and to areas of like-type buildings.

Recent studies by Underwriter’s Laboratories (UL) have found that in compartment fires such as structure fires, flashover occurs within four minutes in modern fire environment. In addition, the UL research has identified an updated time temperature curve due to fires being ventilation-controlled rather than fuel- controlled as represented in the traditional time temperature curve. While this ventilation-controlled environment continues to provide a high risk to unprotected occupants to smoke and high heat, it does provide some advantage to property conservation efforts, as water may be applied to the fire prior to ventilation and the subsequent flashover.

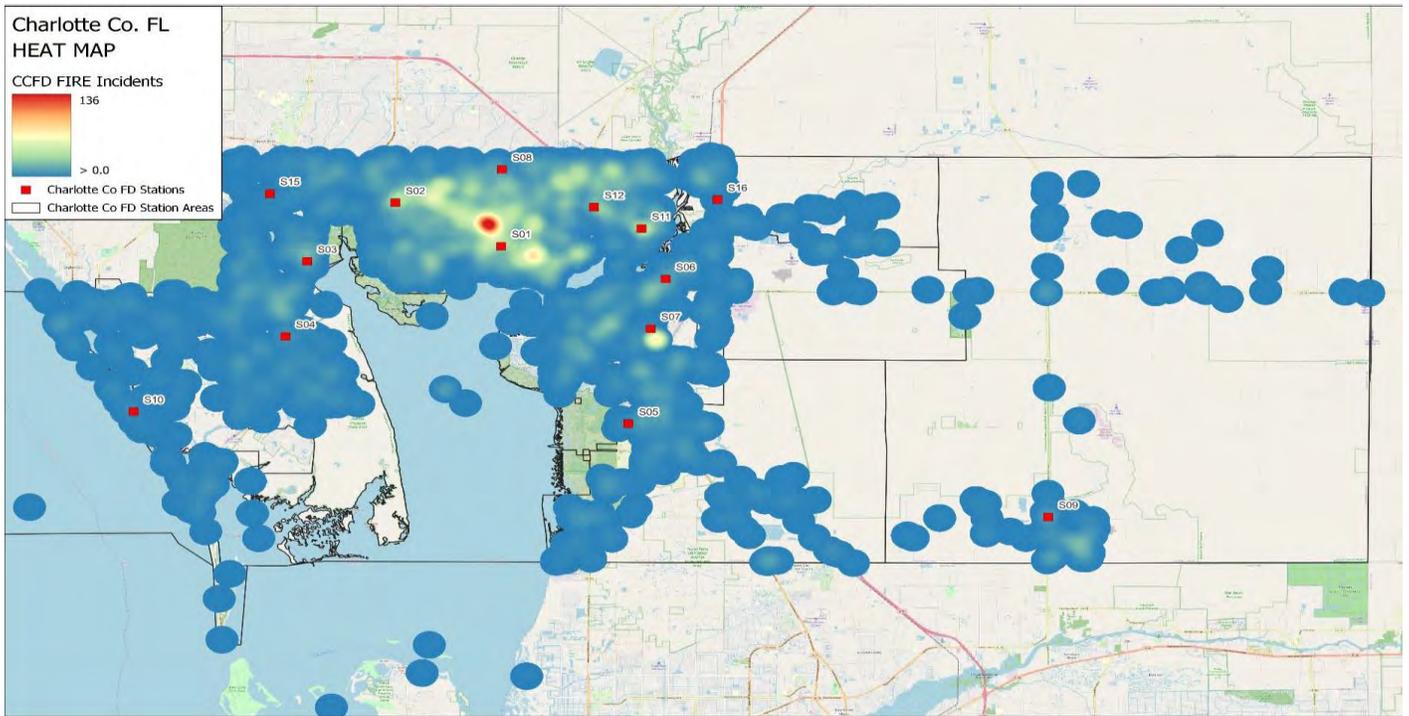


Hour of Day				Day of Week			
Hour of Day	Number of Calls	Calls per Day	Call Percentage	Day of Week	Number of Calls	Calls per Day	Call Percentage
0	98	0.27	2.5	Sunday	493	9.5	12.8
1	90	0.25	2.3	Monday	514	9.9	13.3
2	68	0.19	1.8	Tuesday	641	12.3	16.6
3	80	0.22	2.1	Wednesday	546	10.5	14.2
4	71	0.19	1.8	Thursday	566	10.9	14.7
5	102	0.28	2.6	Friday	553	10.4	14.4
6	99	0.27	2.6	Saturday	538	10.3	14.0
7	139	0.38	3.6	<b>Total</b>	<b>3,851</b>	<b>10.6</b>	<b>100</b>
8	193	0.53	5.0	Month			
9	242	0.66	6.3	Month	Number of Calls	Calls per Day	Call Percentage
10	201	0.55	5.2	January	279	9.0	7.2
11	216	0.59	5.6	February	294	10.5	7.6
12	211	0.58	5.5	March	325	10.5	8.4
13	202	0.55	5.2	April	350	11.7	9.1
14	229	0.63	5.9	May	405	13.1	10.5
15	195	0.53	5.1	June	314	10.5	8.2
16	229	0.63	5.9	July	332	10.7	8.6
17	221	0.61	5.7	August	297	9.6	7.7
18	216	0.59	5.6	September	238	7.9	6.2
19	189	0.52	4.9	October	331	10.7	8.6
20	171	0.47	4.4	November	296	9.9	7.7
21	133	0.36	3.5	December	390	12.6	10.1
22	144	0.39	3.7	<b>Total</b>	<b>3,851</b>	<b>10.6</b>	<b>100</b>
23	112	0.31	2.9				
<b>Total</b>	<b>3,851</b>	<b>10.6</b>	<b>100</b>				



Overall Avg. Number of Units per Call: 1.4

The distribution and concentration of fire related incidents are provided in the heat map presented below.



### Critical Tasking and Effective Response Forces for Fire Incidents

**General Description** - The agency approaches response to fires in a tiered fashion. Below is the description of what a low, moderate, or high response is, with corresponding critical tasking in the Effective Response Force for Fires table.

**Low** – This type of fire is a low-risk/value incident such as a dumpster, car, or simple mulch fire and other investigative incidents. It requires a single unit with pumping capability and a minimum of 2 personnel to effectively respond and mitigate.

**Moderate** – This is a moderate level fire response that includes brush fires and commercial fire alarms, typically responded to with two engines and a Battalion Chief for a minimum of 5 personnel.

**High** – High-risk fire incidents include calls such as single-family structure fires requiring additional personnel to accomplish multiple simultaneous tasks for high acuity incidents. This type of response calls for six apparatus: typically, three engines, one ladder truck, one rescue, and a Battalion Chief for a minimum of 12 personnel.

**Maximum** – Maximum-risk fire incidents include calls such as commercial fires, garden apartments, and other buildings requiring additional personnel to accomplish multiple simultaneous tasks for the highest acuity incidents. This type of response calls for eleven apparatus, typically four engines, two ladder trucks, two rescues, two Battalion Chiefs, and a Deputy Chief for a minimum of 20 personnel.

Effective Response Force for Fire Incidents				
Task	Maximum	High	Moderate	Low
Command	2	1	1	1
Driver/Pump	2	1	1	0.5
Fire Attack Line 1	2	2	2	0.5
Safety	1	1	1	
Water Supply	1	0.5		
Rapid Intervention Team	2	2		
Ventilation	1	0.5		
Search	4	2		
Ladders	2	1		
Medical	1	1		
Fire Attack Line 2	2			
<b>ERF Personnel</b>	<b>20</b>	<b>12</b>	<b>5</b>	<b>2</b>
<b>ERF Unit Assignments</b>	<b>11</b>	<b>6</b>	<b>3</b>	<b>1</b>

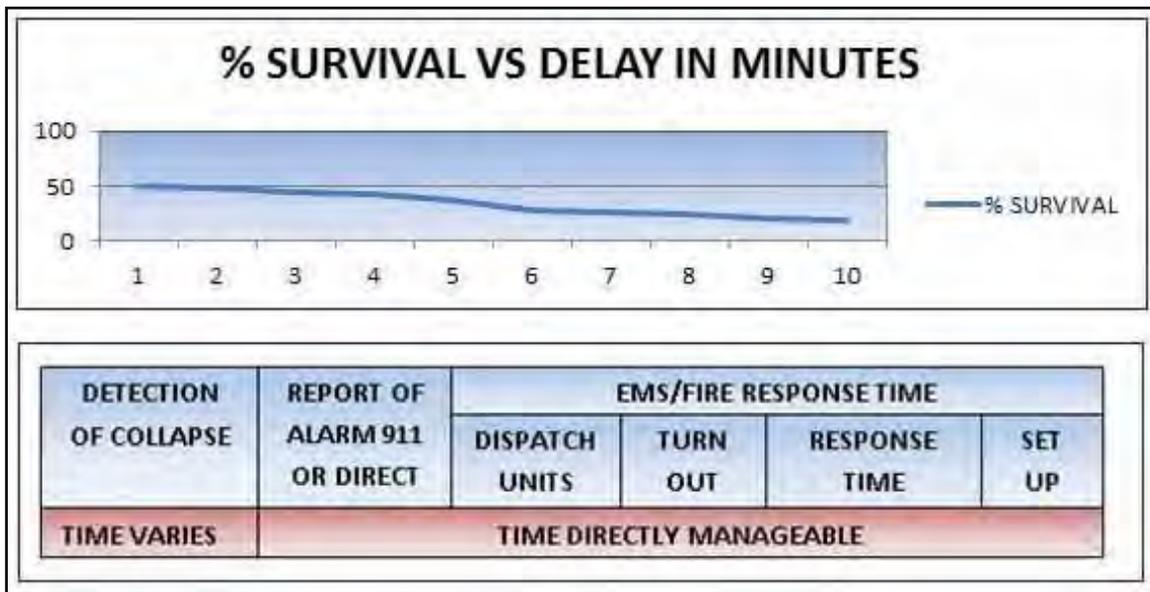
Critical tasks that are shared by a single person, or transient, are identified as half positions.

<p><b><u>Moderate Risk</u></b>  <b>High Probability</b>  <b>Low Consequence</b></p>	<h2 style="margin: 0;">Emergency Medical Services</h2>
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Time is a critical element when responding to true medical emergencies, with the chance of survival for a cardiac arrest dropping precipitously with every passing minute.

The potential survival rate for cardiac arrests, which is one of the most serious medical emergencies an individual can experience, is only about 50% by the time a fire apparatus leaves the station, making prevention efforts a crucial piece of achieving positive patient outcomes.

When evaluating the steady rise in emergency medical calls over the last few decades, it is readily apparent that the workload demand for these calls will continue to rise. The agency is actively collaborating with community partners to reduce or eliminate many of the lower risk/severity calls for help by channeling the patient into a more appropriate method of care.



### EMS Incident Data

EMD Determinant	Number of Calls	Number of Responses	Average Responses per Call	Total Busy Hours	Avg. Busy Minutes per Response	Percent of Calls
<b>Alpha</b>	6,851	8,729	1.3	5,372	36.9	21.9%
<b>Bravo</b>	4,077	6,372	1.6	2,644	24.9	13.1%
<b>Charlie</b>	6,993	11,486	1.6	6,211	32.4	22.4%
<b>Delta</b>	6,232	11,535	1.9	6,105	31.8	20.0%
<b>Echo</b>	45	93	2.1	40	25.5	0.1%
<b>Omega</b>	122	165	1.4	90	32.9	0.4%
<b>NA</b>	6,894	12,902	1.9	4,872	22.7	22.1%
<b>Total</b>	<b>31,214</b>	<b>51,282</b>	<b>1.6</b>	<b>25,334</b>	<b>29.6</b>	<b>100%</b>

Hour of Day	Number of Calls	Calls per Day	Call Percentage
0	722	1.98	2.3
1	701	1.92	2.2
2	582	1.59	1.9
3	587	1.61	1.9
4	551	1.51	1.8
5	615	1.68	2.0
6	750	2.05	2.4
7	1,115	3.05	3.6
8	1,533	4.20	4.9
9	1,895	5.19	6.1
10	1,917	5.25	6.1
11	1,931	5.29	6.2
12	1,895	5.19	6.1
13	1,872	5.13	6.0
14	1,846	5.06	5.9
15	1,774	4.86	5.7
16	1,728	4.73	5.5
17	1,618	4.43	5.2
18	1,633	4.47	5.2
19	1,537	4.21	4.9
20	1,346	3.69	4.3
21	1,152	3.16	3.7
22	1,117	3.06	3.6
23	797	2.18	2.6
<b>Total</b>	<b>31,214</b>	<b>85.5</b>	<b>100</b>

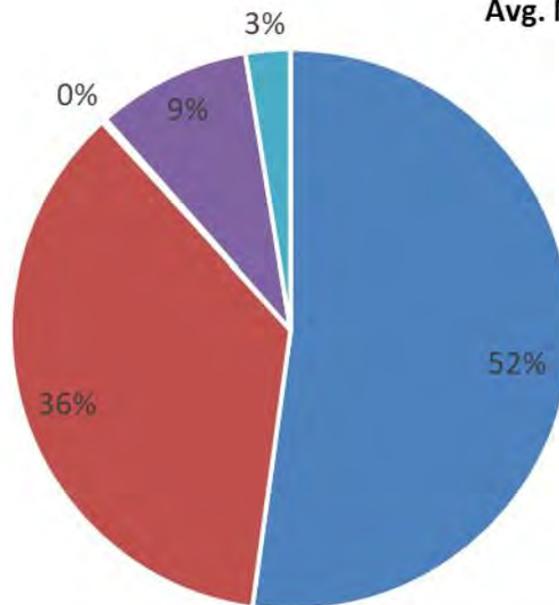
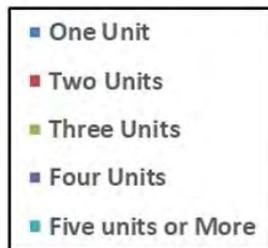
Day of Week	Number of Calls	Calls per Day	Call Percentage
Sunday	4,058	78.0	13.0
Monday	4,564	87.8	14.6
Tuesday	4,521	86.9	14.5
Wednesday	4,447	85.5	14.2
Thursday	4,629	89.0	14.8
Friday	4,825	91.0	15.5
Saturday	4,170	80.2	13.4
<b>Total</b>	<b>31,214</b>	<b>85.5</b>	<b>100</b>

Month	Number of Calls	Calls per Day	Call Percentage
January	2,732	88.1	8.8
February	2,585	92.3	8.3
March	2,684	86.6	8.6
April	2,645	88.2	8.5
May	2,544	82.1	8.2
June	2,304	76.8	7.4
July	2,648	85.4	8.5
August	2,864	92.4	9.2
September	2,585	86.2	8.3
October	2,454	79.2	7.9
November	2,496	83.2	8.0
December	2,673	86.2	8.6
<b>Total</b>	<b>31,214</b>	<b>85.5</b>	<b>100</b>

EMS

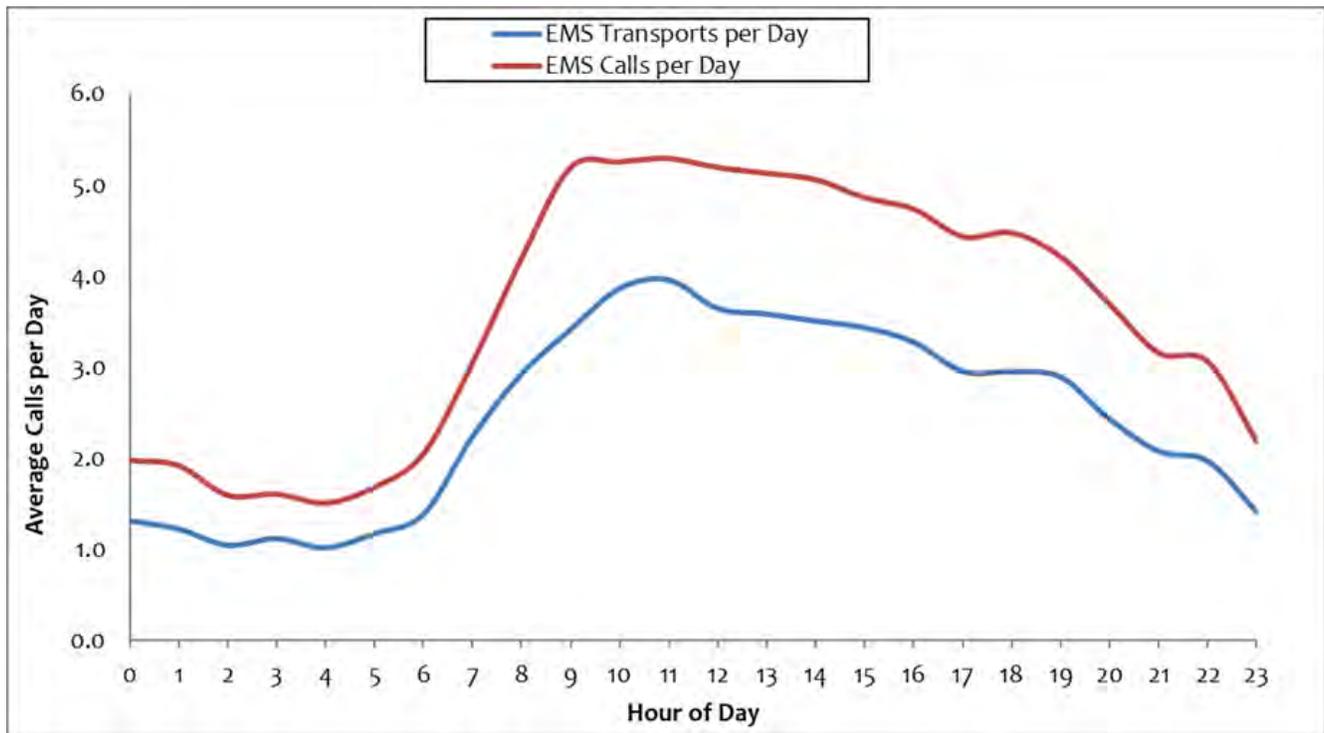
Avg. Number of Units per Call: 1.6



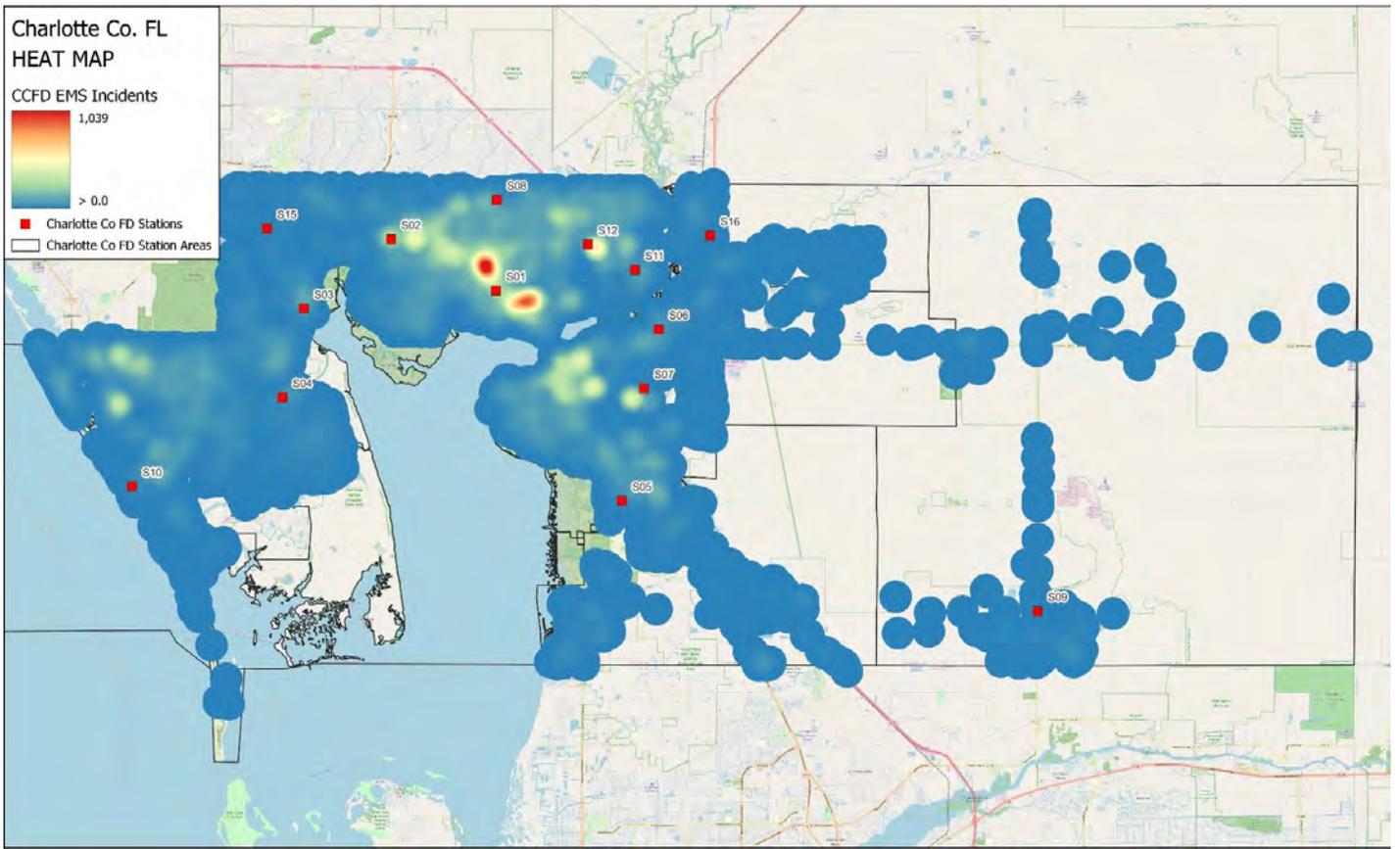
Overall Avg. Number of Units per Call: 1.8

In 2021, units from Charlotte County public safety department responded to 35,224 incidents. EMS service requests totaled 31,214, accounting for 88.6% of the total number of incidents. The number of fire calls was 3,851, which accounted for 10.9% of the total incidents. The number of individual unit responses will be more reflective of total department workload since 48 percent of the calls resulted in multiple units dispatched.

Breathing difficulty	2,125	5.8	6.0%
Overdose and psychiatric	221	0.6	0.6%
Accident	1,652	4.5	4.7%
Fall and injury	6,312	17.3	17.9%
Illness and other	7,185	19.7	20.4%
Medical No ProQA	3,962	10.9	11.2%
Interfacility transfer	4,444	12.2	12.6%
<b>EMS Total</b>	<b>31,214</b>	<b>85.5</b>	<b>88.6%</b>



The distribution and concentration of EMS related incidents are provided in the heat map presented below.



**Critical Tasking and Effective Response Forces for EMS Incidents**

**General Description** - The agency approaches an emergency medical incident in a tiered fashion. Below is the description of what a low, moderate, or high response is, with corresponding critical tasking in the Effective Response Force for EMS table. Risk classifications were determined from the Medical Priority Dispatch System (MPDS) call determinants within the internationally researched call triage process.

**Low – Incidents within the Alpha level of risk.** This type of medical incident constitutes the vast majority of responses and consists of a rescue responding with 2 personnel.

**Moderate – Incidents within the Bravo or Charlie level of risk.** At least two units respond to this type of incident to accomplish the critical tasks needed in a timely manner. Responding units include one rescue and one engine for a minimum of 3 personnel.

**High – Incidents within the Delta or Echo level of risk.** Three units respond to this type of incident to accomplish the critical tasks needed in a timely manner. The response includes a rescue, engine, and a Battalion Chief, for a minimum of 4 personnel.

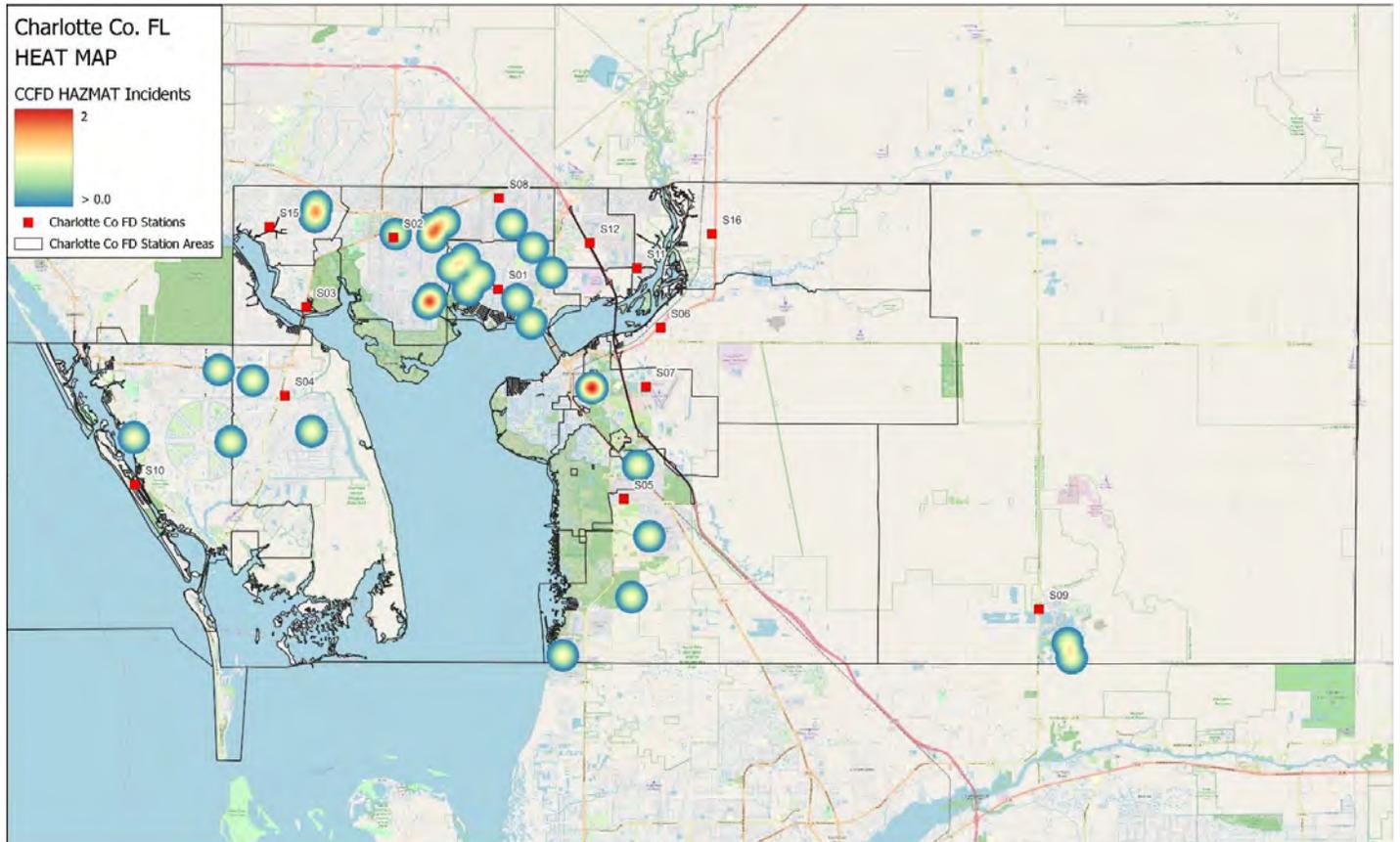
**Maximum** – Maximum-risk incidents would include mass casualty incidents, active assailants, or high occupancy vehicle crashes. This type of response calls for six apparatus or a total of 8 personnel.

Effective Response Force for EMS Incidents				
Task	Maximum	High	Moderate	Low
Triage/Treatment	2	2	2	1
Transport	1	1	1	1
Command	1	1		
Medical Branch Leader	1			
RTF	3			
ERF Personnel	8	4	3	2
ERF Assigned Units	6	3	2	1

Critical tasks that are shared by a single person, or transient, are identified as half positions.

**Maximum Risk****Low Probability****High Consequence****Hazardous Materials**

The potential release of hazardous materials exists wherever that material may be located. A higher potential for release coincides with storage sites at fixed facilities and along transportation routes, such as major roadways and rail lines. Hazardous materials are chemical substances which, if released or misused, can pose a threat to people, property, or the environment. These chemicals are used in industry, agriculture, medicine, research, and consumer goods.



As many as 500,000 products pose physical or health hazards and can be defined as "hazardous chemicals." Each year, over 1,000 new synthetic chemicals are introduced. Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released as a result of transportation accidents or because of chemical accidents in manufacturing plants. Hazardous materials are contained and used at fixed sites and are shipped by all modes of transportation, including transmission pipelines.

### Critical Tasking and Effective Response Forces for Hazmat Incidents

**General Description** - The agency approaches a hazardous materials response in a tiered fashion. Below is the description of what a low, moderate, or high response is, with corresponding critical tasking in the Effective Response Force table.

**Low** – Low-risk hazardous materials events can be mitigated by equipment normally carried on a first due engine company. This is responded to by a single engine with a minimum of 2 personnel.

**Moderate** – Moderate-risk hazardous materials events can be handled by a combination of five apparatus with a minimum of 9 personnel. The response includes two engines, one rescue, one squad, and one Battalion Chief.

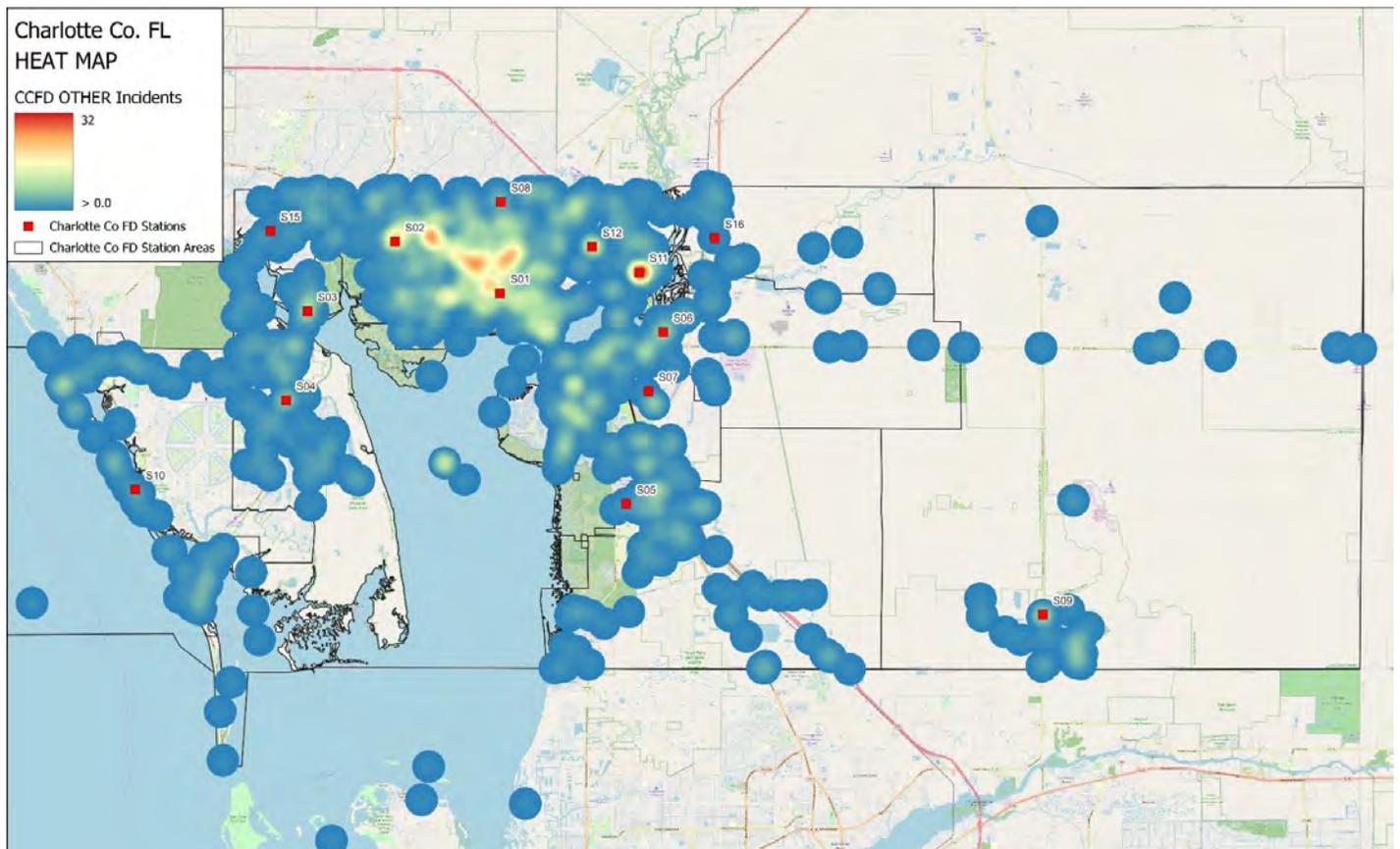
**High** – High-risk hazardous materials events can be handled by a combination of five apparatus with a minimum of 11 personnel. The response includes two engines, one rescue, one squad, and one Battalion Chief. Within the high-risk responses, the Squad includes 5 personnel.

**Maximum** – Maximum-risk hazardous materials events can be handled by a combination of seven apparatus with a minimum of 19 personnel. The response includes three engines, one rescue, one squad, one Battalion Chief, and a mutual-aid hazardous materials team with 5 personnel.

Effective Response Force for Hazmat Incidents				
Task	Maximum	High	Moderate	Low
Command	1	1	1	1
Hazard Mitigation	4	4	2	1
RIT/Decon	4	2	2	
Research	1	1	1	
Medical	2	2	2	
Safety/Operations	2	1		
Containment	2			
Rehab	2			
Hazmat Branch Manager	1			
<b>ERF Personnel</b>	<b>19</b>	<b>11</b>	<b>9</b>	<b>2</b>
<b>ERF Assigned Units</b>	<b>7</b>	<b>5</b>	<b>5</b>	<b>1</b>

<p><b>Maximum Risk</b></p> <p><b>Low Probability</b></p> <p><b>High Consequence</b></p>	<h2>Technical Rescue</h2> <p>Collapse, Confined Space, High Angle, Trench, Water Rescue</p>
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Technical rescue is a relatively broad term and includes responses to a wide variety of incidents such as water rescue, confined space rescue, high angle rescues, and structural collapse. Similar to the analyses for hazardous materials, the demand for technical rescue services is low in relation to fire or EMS calls within the service area.



**Critical Tasking and Effective Response Forces for Rescue Incidents**

**General Description** - The agency approaches technical response incidents in a tiered fashion. Below is the description of what a low, moderate, or high response is, with corresponding critical tasking in the Effective Response Force table.

**Low** – Low-risk incidents may include elevator rescues and vehicle extrications. This is responded to by a single engine with 3 personnel.

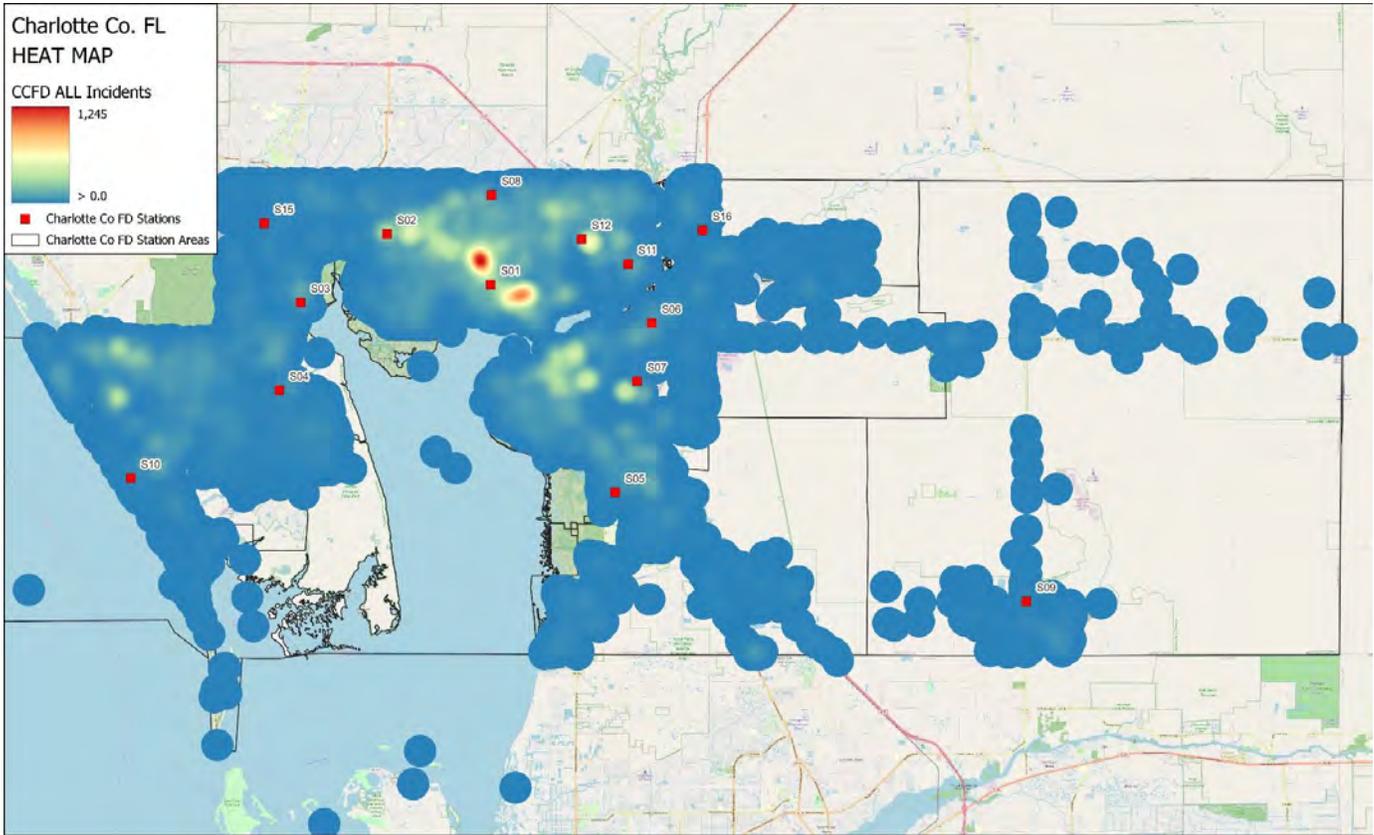
**Moderate** – Moderate-risk incidents may include heavy extrications and railroad incidents. This is responded to by 6 personnel spread among a single engine, a rescue, a squad, and a Battalion Chief.

**High** – High-risk incidents are incidents that require a response of seven vehicles and a minimum of 16 personnel. Resources include three engines, a rescue, a squad, a Battalion Chief, and a Deputy Chief.

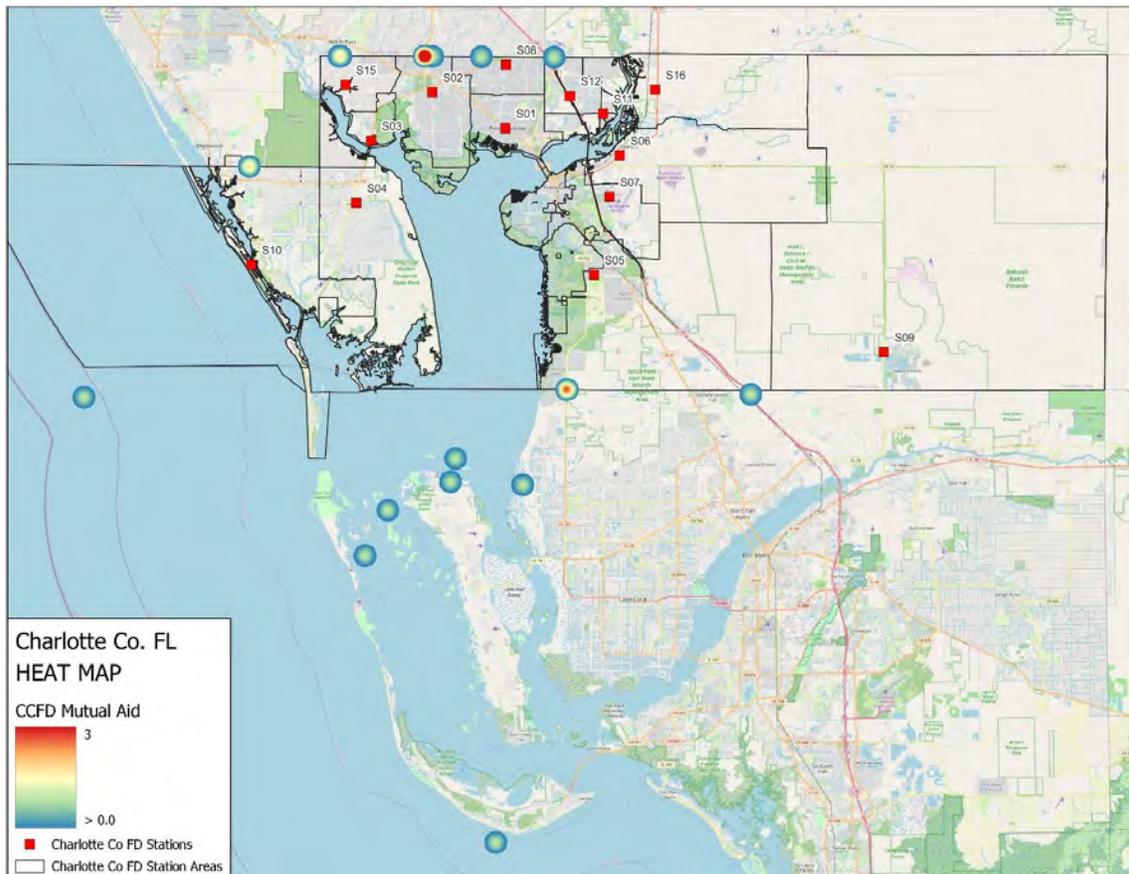
**Maximum** – Maximum- risk incidents are incidents that require a response of eight vehicles and a minimum of 19 personnel. Resources include three engines, a rescue, a squad, a Battalion Chief, and a Deputy Chief. In addition, maximum-risk incidents require a regional mutual-aid TRT response with a minimum of 3 personnel.

Effective Response Force for Rescue Incidents				
Task	Maximum	High	Moderate	Low
Command	1	1	1	1
Mitigation Team	6	6	4	2
Suppression Line	1	1	1	
Safety	1	1		
Operations	1	1		
Medical	2	2		
Support	4	4		
Technician	3			
<b>ERF Personnel</b>	<b>19</b>	<b>16</b>	<b>6</b>	<b>3</b>
<b>ERF Units Assigned</b>	<b>8</b>	<b>7</b>	<b>4</b>	<b>1</b>

The distribution and concentration of all incidents are provided in the heat map presented below.



The distribution and concentration of mutual-aid incidents are provided in the heat map presented below.



**Maximum Risk****Low Probability****High Consequence****Aviation**

The Charlotte County Airport Authority (CCAA), governed by five elected commissioners, owns and operates the Punta Gorda Airport (PGD), located at 28000 Airport Road, five minutes off I-75, exits 161 and 164. PGD provides quick and easy access to Southwest Florida and is home to commercial air service, air charters, medical transport services, aircraft maintenance and avionics repair, as well as flight schools, distributors, and manufacturers.

A 2018 economic impact study by the FDOT estimated that PGD is responsible for 12,392 jobs and \$1.275 billion in total economic output. In 2021, nearly 1,600,000 passengers utilized the Punta Gorda Airport.

Between January 1, 2022, and October 31, 2022, the overall passenger utilization has seen a greater than 40% increase in patrons.



**Critical Tasking and Effective Response Forces for Aviation Incidents**

**General Description** - The agency approaches technical response incidents in a tiered fashion. Below is the description of what a low, moderate, or high response is, with corresponding critical tasking in the Effective Response Force table.

**Low** – Low-risk incidents may include Alert 1s. This is responded to by one Battalion Chief, one engine, and two ARFF vehicles for a total of 5 personnel.

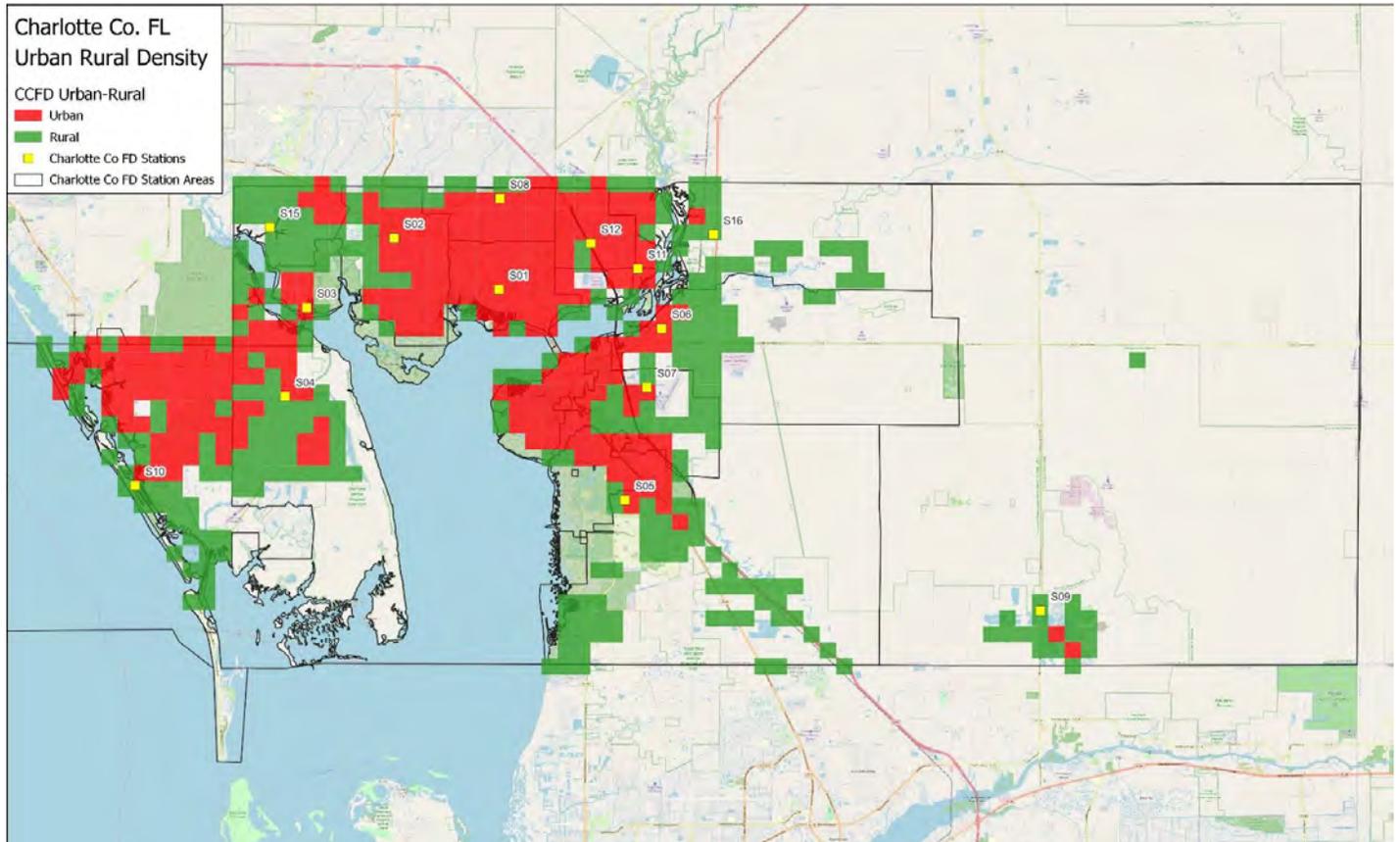
**Moderate** – Moderate risk incidents may include Alert 2s. This is responded to by one Battalion Chief, two engines, two ARFF vehicles, and two rescues for a total of 12 personnel.

**High** – High-risk incidents may include Alert 3s for general aviation. This is responded to by one Battalion Chief, two engines, two ARFF vehicles, two rescues, and one squad for a total of 17 personnel.

**Maximum** – Maximum-risk incidents may include Alert 3s for commercial. This is responded to by one Battalion Chief, six engines, two ARFF vehicles, six rescues, one truck, one squad, and one Deputy Chief for a total of 38 personnel.

Effective Response Force for ARFF Rescue Incidents				
Task	Maximum	High	Moderate	Low
Command	1	1	1	1
Fire Attack	2	2	2	2
Water Supply	2	1	1	1
Support	4	2	2	1
Medical	10	2	2	
Evacuation	2	2	2	
Triage	6	2	2	
Hazmat	5	5		
Medical Branch	1			
Operations	1			
Safety	1			
Accountability	1			
RIT	2			
<b>ERF Personnel</b>	<b>38</b>	<b>17</b>	<b>12</b>	<b>5</b>
<b>ERF Units Assigned</b>	<b>18</b>	<b>8</b>	<b>7</b>	<b>4</b>

Additionally, call density was calculated on the relative concentration of incidents based on approximately 0.5-mile geographic areas as well as the adjacent 0.5-mile areas. The results demonstrate an urban and rural designation based on call density for services and not based on population. The red areas are designated as urban service areas, and the green areas are designated as rural service areas. Any area that is not colored has less than one call every six months in the 0.5- mile area and the adjacent areas.



## SECTION D – COMMUNITY FEEDBACK

# Charlotte County Fire and EMS FY24-FY26 Strategic Plan



## Strategic Planning Process

As CCFEMS embarked on the strategic planning journey, focused was placed on where the Department was going in the next three years, to ensure that the program goals and objectives aligned with the desired outcomes identified by not only our internal personnel, but the communities that are served by CCFEMS. The process began with a set of guiding principles; a place to come back to when or if the process inadvertently took a detour along the way. One of the guiding principles, inclusion, required CCFEMS to carefully consider the team and balance the size of the group making decisions, including a much broader constituency of engaged individuals providing input than in the past. With the guiding principles in place, and a clear plan for multi - faceted engagement, the organization was able to incorporate many voices in the creation of the refreshed Mission, Vision, and Values. This alignment facilitated the creation of strong and action-oriented goals, objectives, and critical tasks. As seen below, engagement took place with several groups, including the community leadership advisory committee on several occasions throughout the process. The input gleaned from the community members was invaluable in shaping the next several years of work for CCFEMS.

**Performance Indicator 2B.7**

The agency engages other disciplines or groups within its community to compare and contrast risk assessments in order to identify gaps or future threats and risks.



**Mission**

Ensuring the health and safety of our community by delivering exceptional fire and EMS services

FITCH

**Vision**

We will be a metric driven, innovative, and community focused fire and EMS service

FITCH

**Values**

- Accountability
- Professionalism
- Respect
- Integrity
- Leadership

FITCH

### Community Members

The Fire Chief has worked to develop a team of external stakeholders to provide community input and feedback on our proposed strategic plan. The group’s feedback proved valuable insights to better understand the needs of the community and to assure that our district’s mission, vision, values, goals, and objectives aligned with the expectation of our community members.

**Performance Indicator 2D.10**

The agency interacts with external stakeholders and the AHJ at least once every three years to determine the stakeholders’ and AHJ’s expectations for types and levels of services provided by the agency.



## Community Luncheon

- Burnt Store Lakes POA
- Charlotte County Chamber of Commerce
- Charlotte County Health Dept
- Charlotte County Foundation
- Charlotte County Sheriff’s Office
- Englewood (City) Fire
- Englewood Community Hospital
- Fawcett Hospital
- Florida Forest Service
- King’s Gate HOA
- Punta Gorda (City) Fire
- Punta Gorda Airport
- Shorepoint Health Port Charlotte
- Shorepoint Health Punta Gorda
- South Gulf Cove HOA
- Water View POA
- Windmill Village HOA

## Strategic Planning Workshop February 6-8, 2023

- Pillars
- Community Luncheon
- Document Review
- SWOT Analysis
- Values
- Mission
- Vision
- Strategies
- Goals
- Tasks
- Managing for Daily Improvement



### Community Feedback Results

The Community Stakeholder team met to discuss the strengths, weaknesses, opportunities, and threats experienced by the community. Feedback was provided live through a facilitated brainstorming session. The aggregated data was brought back to the strategic planning steering committee to review and incorporate into the plan. The primary task was to ensure that the mission, vision, and values of CCFEMS aligned with the expectations of the Community Stakeholder group. After the alignment check, the SWOT feedback was incorporated into the goals and objectives section of the strategic plan. Connection with the Community Stakeholders Group assures us that the plan aligns with both our internal stakeholders and the citizens they serve.

**Core Competency 3B.3**  
 The agency solicits feedback and direct participation from internal and external stakeholders in the development, implementation and evaluation of the agency's goals and objectives.



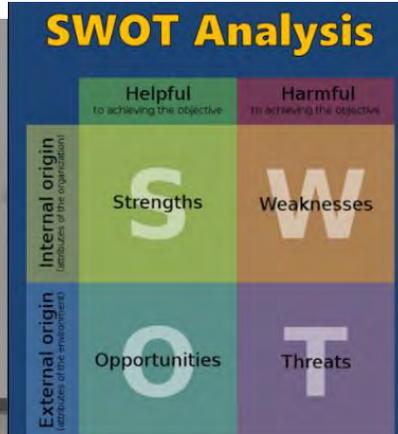
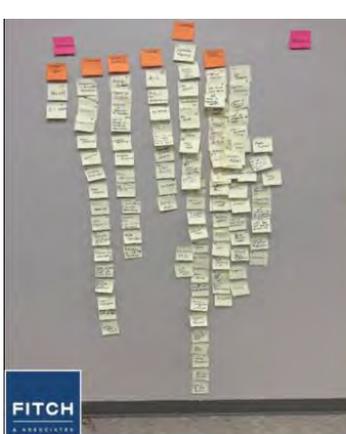
**Strengths**

- Training
- Equipment
- Maintenance
- Support
- Leadership
- Employees
- Services
- Pay



**Opportunities**

- Funding
- Community
- Communication
- Outreach
- Service Management
- Staffing



**Threats**

- Growth
- Political Uncertainty
- Economy
- Dispatch
- Labor Force

# SECTION E – PROGRAM GOALS AND OBJECTIVES

Mission  
Vision  
Values



	FY20 - FY22 Strategic Plan	Mission Deliver the best and safest care possible to all emergency medical service patients.	Values Integrity, Service, Teamwork, Accountability, and Safety	Strategic Objectives Improve Patient Care Improve Operational Efficiency Improve Financial Performance	Performance Measures Patient Satisfaction Operational Efficiency Financial Performance
Overall	Improve patient care	Improve patient care	Improve patient care	Improve patient care	Improve patient care
Operational	Improve patient care	Improve patient care	Improve patient care	Improve patient care	Improve patient care
Financial	Improve patient care	Improve patient care	Improve patient care	Improve patient care	Improve patient care
Human Resources	Improve patient care	Improve patient care	Improve patient care	Improve patient care	Improve patient care
Information Technology	Improve patient care	Improve patient care	Improve patient care	Improve patient care	Improve patient care
Community Relations	Improve patient care	Improve patient care	Improve patient care	Improve patient care	Improve patient care
Public Safety	Improve patient care	Improve patient care	Improve patient care	Improve patient care	Improve patient care

Strategic  
Plan

# Strategic Plan

A strategic plan, on paper, is a commitment to action. A commitment to action requires an execution strategy. CCFEMS does this by including the development of specific, measurable, attainable, relevant, and time-bound goals in the strategic plan. The goals are grouped into five functional areas including Community Risk Reduction, Administration, Training, Operations, Logistics. Included are Desired Outcomes, and yearly strategies to accomplish.

The strategic plan was developed to provide an inclusive continuous improvement framework to address existing gaps and variations for each functional area of the Department.

**Core Competency 2D.1**

The agency has a documented and adopted methodology for assessing performance adequacy, consistency, reliability, resiliency and opportunities for improvement for the total response area.

**Performance Indicator 2D.2**

The agency continuously monitors, assesses, and internally reports at least quarterly, on the ability of the existing delivery system to meet expected outcomes and identifies and prioritizes remedial actions.

**Core Competency 2D.3**

The performance monitoring methodology identifies, at least annually, future external influences, altering conditions, growth and development trends, and new or evolving risks, for purposes of analyzing the balance of service capabilities with new conditions or demands.

	<b>FY24 - FY26 Strategic Plan</b>		<b>Mission</b> Ensuring the health and safety of our community by delivering exceptional fire and EMS services	<b>Vision</b> We will be a metric driven, innovative, and community focused fire and EMS service	<b>Values</b> Accountability Professionalism Respect Integrity Leadership	Facilitators Dr. Brad Brown Ian Womack Bill Sturgeon	
	<b>Pillar</b>	<b>CRR</b>	<b>Administration</b>	<b>Training</b>	<b>Operations</b>	<b>Logistics</b>	
	<b>Lead Backup</b>	Burke Stadel	Styza McCollum	Miller Tuttle	McElroy Kelly	Lippel Finkelstein	
	<b>Desired Outcome</b>	To support and educate the community we serve	Effectively develop and support personnel and policy ethically and responsibly	Preparing for future challenges by delivery quality training today	Providing innovative emergency response services of exceptional quality for the community	To provide the essential equipment, supplies, and maintenance necessary to fulfill the core mission of the department	
	<b>FY24 Strategy</b>	Marketing and Community Engagement	Values Based Policy	Training Division Expansion	Labor/Management Relationship	Improve Productivity and Efficiency	
	<b>FY25 Strategy</b>	Community Mental Health	Personnel Development	Personnel Development	Unit Hour Utilization Reduction	Revitalize Vehicle and Equipment Plan	
	<b>FY26 Strategy</b>	Risk Reduction Education	Staffing	Training Grounds Enhancement	Staffing Level Increase	Facility Improvements	
	<b>Horizon Issues</b>	Targeted Outreach	Incentives Ancillary Services	Assessment Process Evaluation Process	Telestaff Management	Hurricane Plan Uniforms	
	<b>Pillar Team Members</b>	Dunn Hornborg Fair Thomas	McCarty Otto Davis	Carr Verne	Maddams Goodwin	Molenda Lopez Morazes	

Strategic Plan by Fitch and Associates, LLC

## **SECTION F – CURRENT DEPLOYMENT AND PERFORMANCE**

**Community Response History**

**Review of System Performance**

**Baseline and Benchmark Analysis**

**Projected Growth**

**First Due and Geographic Planning Zone Analysis**



# Community Response History

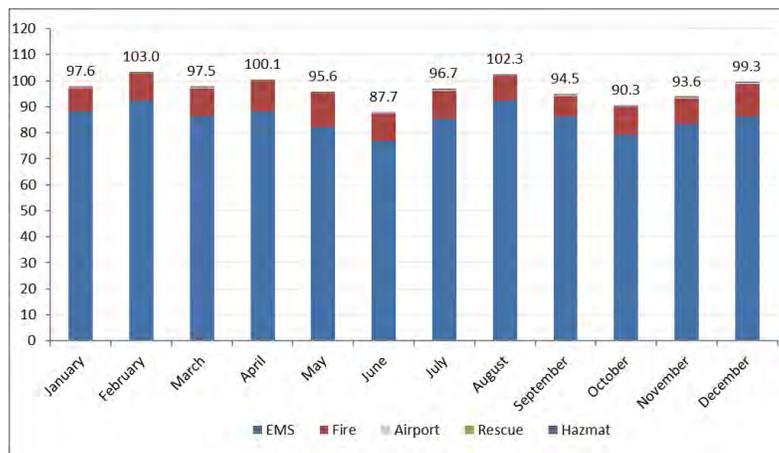
Program	Number of Calls	Calls per Day	Call Percentage
EMS	31,214	85.5	88.6
Fire	3,851	10.6	10.9
Airport	66	0.2	0.2
Hazmat	30	0.1	0.1
Rescue	63	0.2	0.2
<b>Total</b>	<b>35,224</b>	<b>96.5</b>	<b>100</b>

**Performance Indicator 2B.2**

The historical emergency and nonemergency service demands frequency for a minimum of three immediately previous years and the future probability of emergency and nonemergency service demands, by service type, have been identified and documented by planning zone.

**Current Deployment and Performance as it relates to Criterion 2C:**

The agency identifies and documents the nature and magnitude of the service and deployment demands within its jurisdiction. Based on risk categorization and service impact considerations, the agency’s deployment practices are consistent with jurisdictional expectations and with industry research. Efficiency and effectiveness are documented through quality response measurements that consider overall response, consistency, reliability, resiliency, and outcomes throughout all services areas. The agency develops procedures, practices, and programs to appropriately guide its resource deployment.



Weekday	Number of Calls					Total
	EMS	Fire	Airport	Rescue	Hazmat	
Sunday	4,058	493	14	3	4	4,572
Monday	4,564	514	10	10	5	5,103
Tuesday	4,521	641	4	14	7	5,187
Wednesday	4,447	546	8	12	6	5,019
Thursday	4,629	566	14	10	2	5,221
Friday	4,825	553	6	6	2	5,392
Saturday	4,170	538	10	8	4	4,730
<b>Total</b>	<b>31,214</b>	<b>3,851</b>	<b>66</b>	<b>63</b>	<b>30</b>	<b>35,224</b>

Weekday	Calls per Day					Total
	EMS	Fire	Airport	Rescue	Hazmat	
Sunday	78.0	9.5	0.3	0.1	0.1	87.9
Monday	87.8	9.9	0.2	0.2	0.1	98.1
Tuesday	86.9	12.3	0.1	0.3	0.1	99.8
Wednesday	85.5	10.5	0.2	0.2	0.1	96.5
Thursday	89.0	10.9	0.3	0.2	0.0	100.4
Friday	92.8	10.6	0.1	0.1	0.0	103.7
Saturday	78.7	10.2	0.2	0.2	0.1	89.2
<b>Total</b>	<b>85.5</b>	<b>10.6</b>	<b>0.2</b>	<b>0.2</b>	<b>0.1</b>	<b>96.5</b>

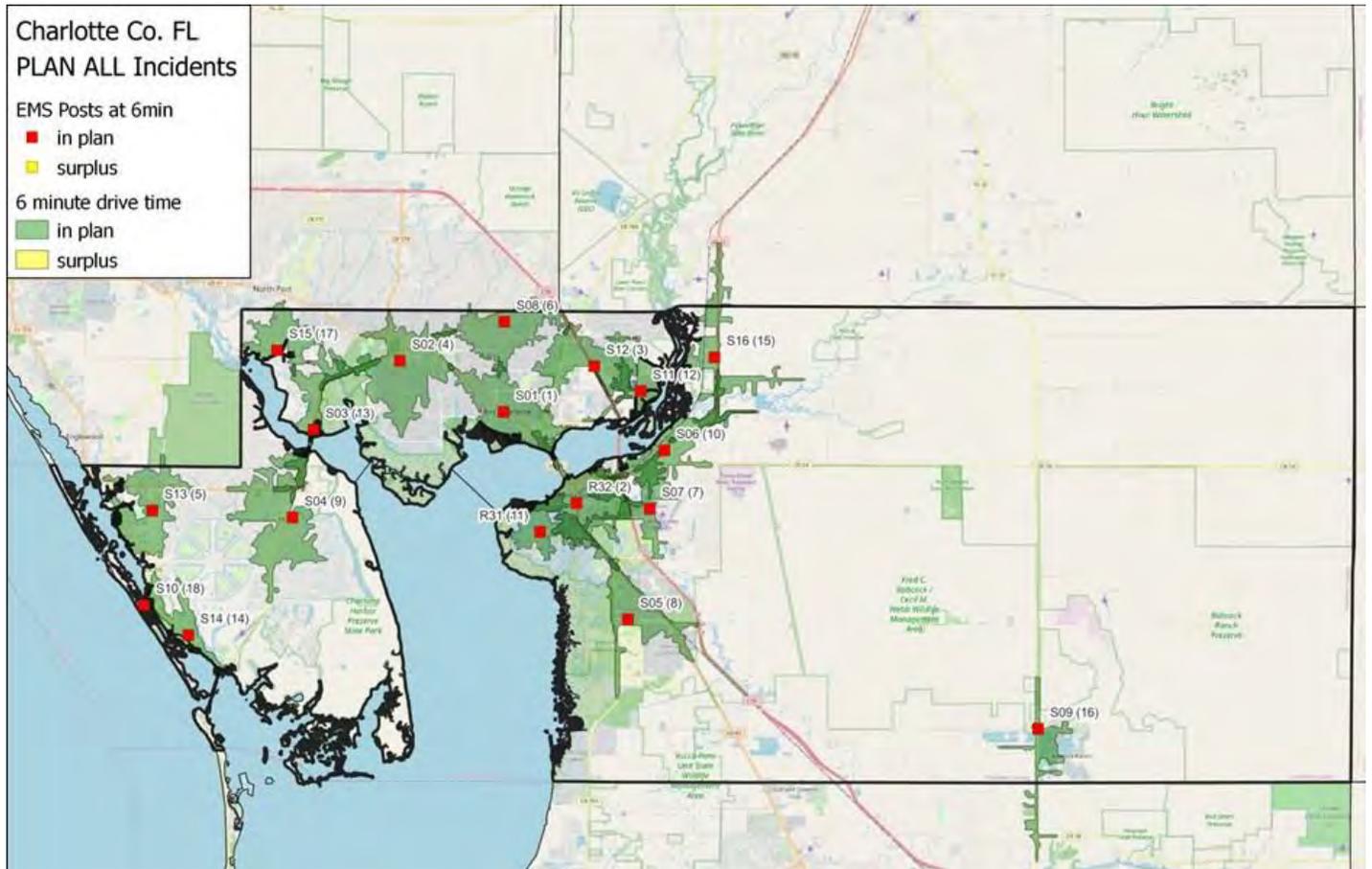
**Core Competency 2C.1**

Given the levels of risks, area or responsibility, demographics, and socioeconomic factors, the agency has determined, documented, and adopted a methodology for the consistent provision of service levels in all service program areas through response coverage strategies.

## Community Response History Discussion

CCFEMS answers approximately 35,224 emergency calls per year, with a fairly even dispersion with regards to type of call and month or year. Sundays are the lowest call volume day for fires, EMS, and other calls.

**Distribution – Geographical Drive Time Analysis** shows a 6-minute drive time (in green) and surplus (in yellow), giving a good visual depiction of who can get to where within a specified amount of time.

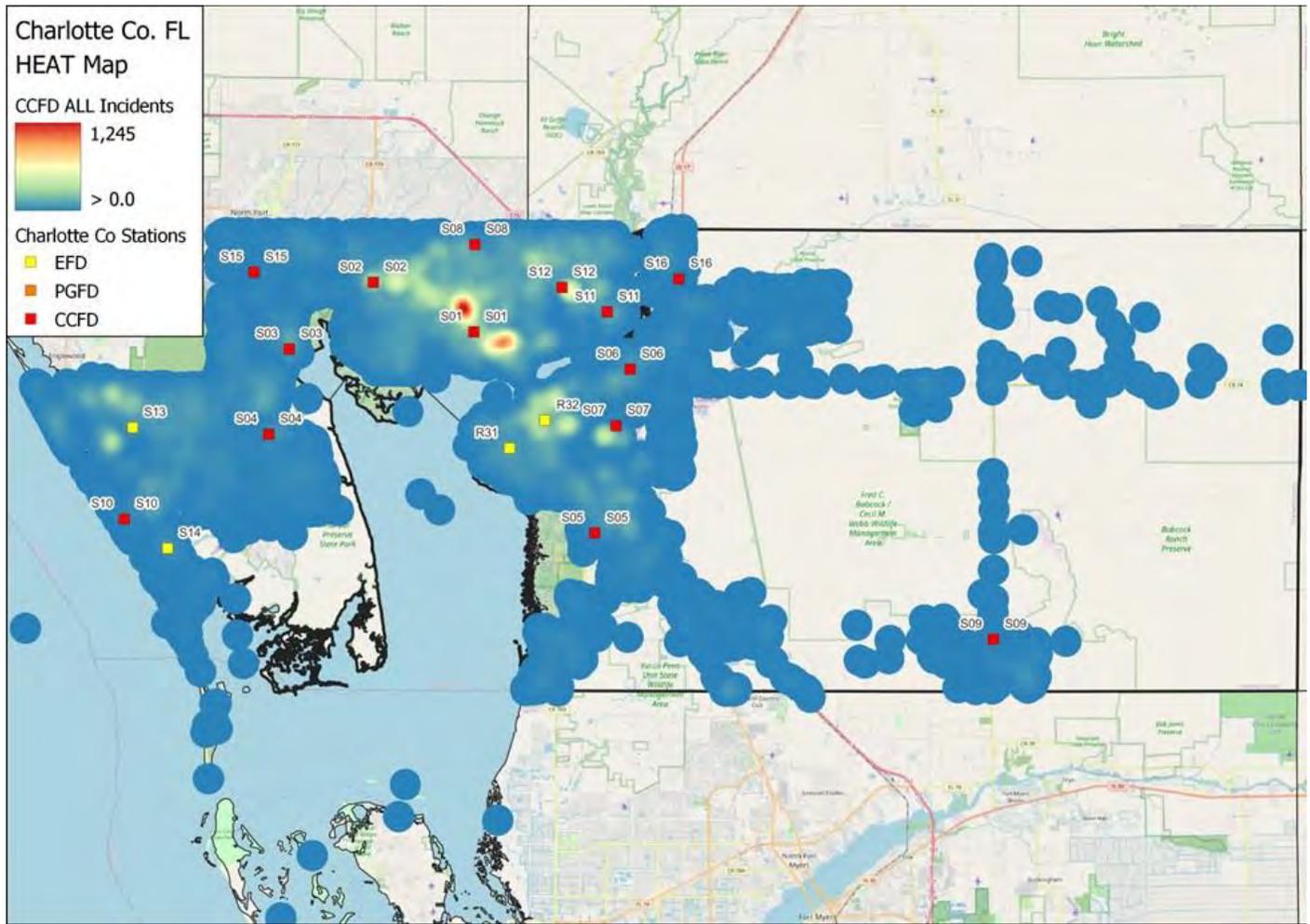


**Distribution –**

Percent of Incidents Captured by Station

Rank	Station	Travel Time	Station Capture	Total Capture	Percent Capture
1	S01	6	6,711	6,711	19.05%
2	R32	6	3,230	9,941	28.22%
3	S12	6	2,673	12,614	35.81%
4	S02	6	2,588	15,202	43.16%
5	S13	6	1,544	16,746	47.54%
6	S08	6	1,517	18,263	51.85%
7	S07	6	794	19,057	54.10%
8	S05	6	718	19,775	56.14%
9	S04	6	710	20,485	58.16%
10	S06	6	421	20,906	59.35%
11	R31	6	403	21,309	60.50%
12	S11	6	394	21,703	61.61%
13	S03	6	363	22,066	62.64%
14	S14	6	234	22,300	63.31%
15	S16	6	208	22,508	63.90%
16	S09	6	129	22,637	64.27%
17	S15	6	111	22,748	64.58%
18	S10	6	6	22,754	64.60%

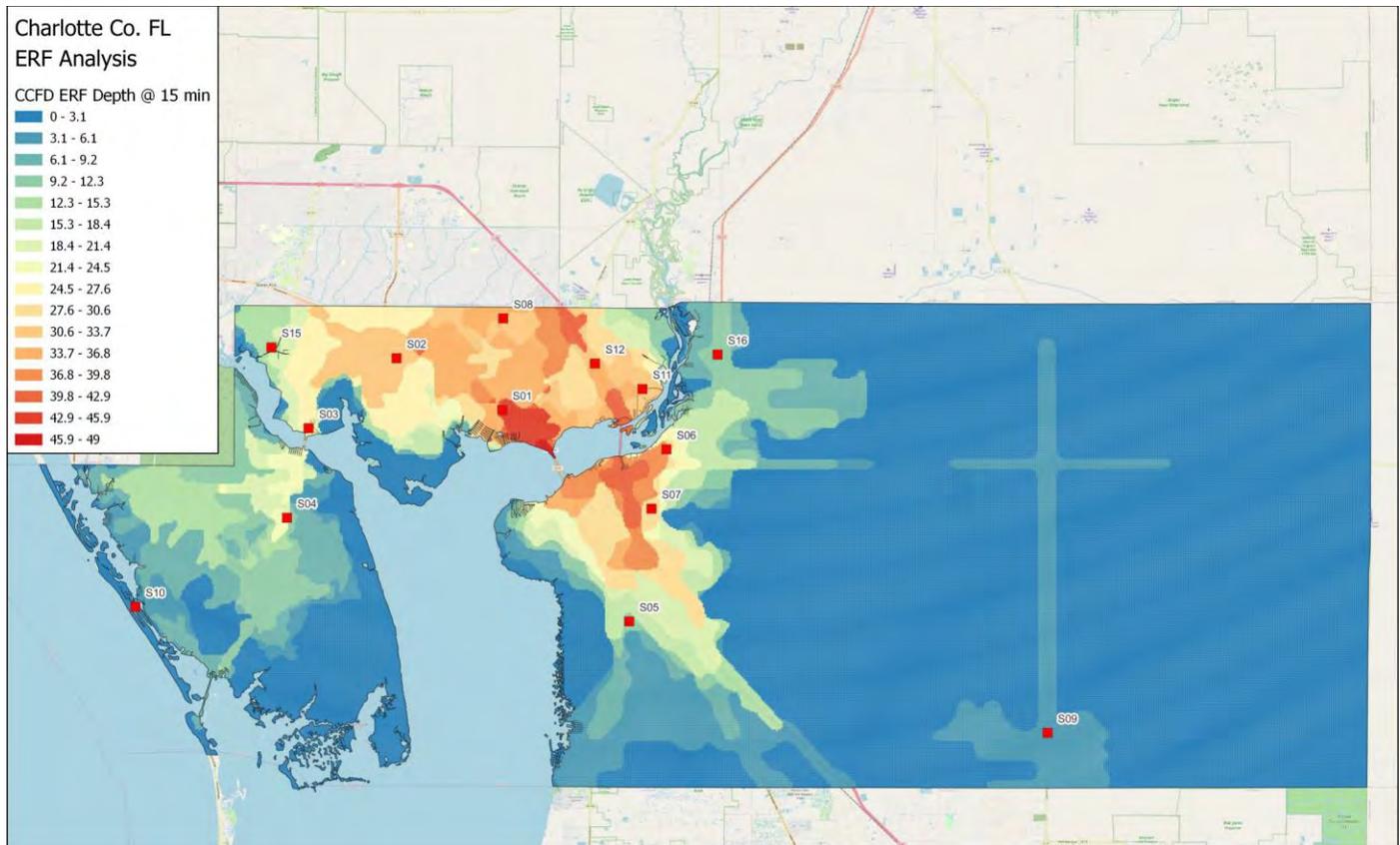
**Distribution – Heat Map Analysis Indicating Increased Frequency of Incidents.** Station 1,2,3,4 have the most density of emergency incidents as compared to neighboring districts.



### Concentration (Effective Response Force Analysis)

Time Increments	ERF-5	ERF-12	ERF-20
8-Minutes	18.4%	3.88%	0.27%
10-Minutes	24.96 %	8.86%	2.74%
12-Minutes	29.32 %	12.53 %	7.52%
16-Minutes	34.46 %	21.02 %	15.07%
20-Minutes	40.21 %	28.66 %	22.24%

These analyses are modeled using GIS data in order to assess capabilities more accurately. The tabular data demonstrates the saturation for ERF at various travels times and geographic areas. The mapping is representative of the concentration of personnel within 15-minutes.

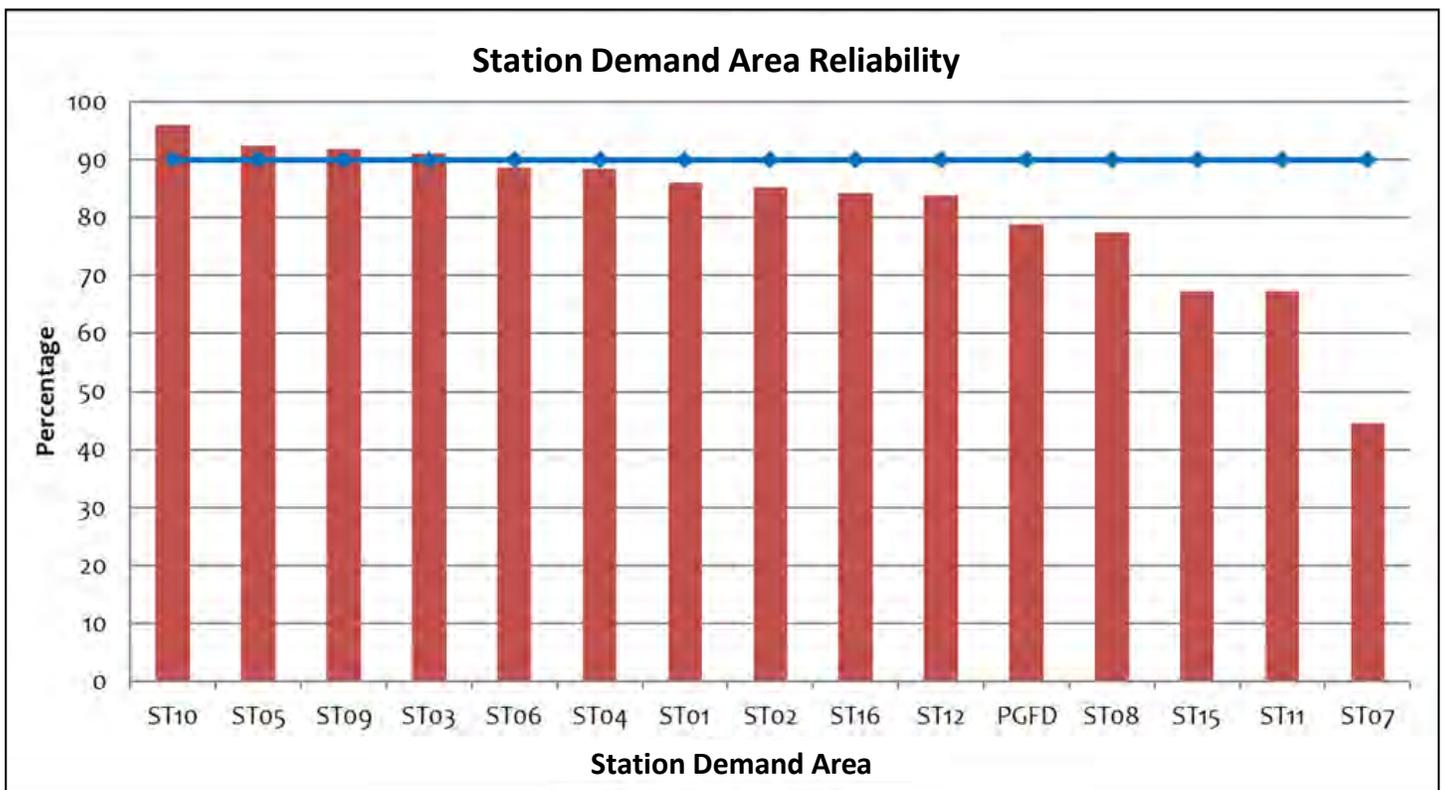


## Reliability Analysis -Department Wide

The first step in assessing the reliability of the deployment model or system performance is to understand the Department’s availability to manage the requests for service that occur within the jurisdiction.

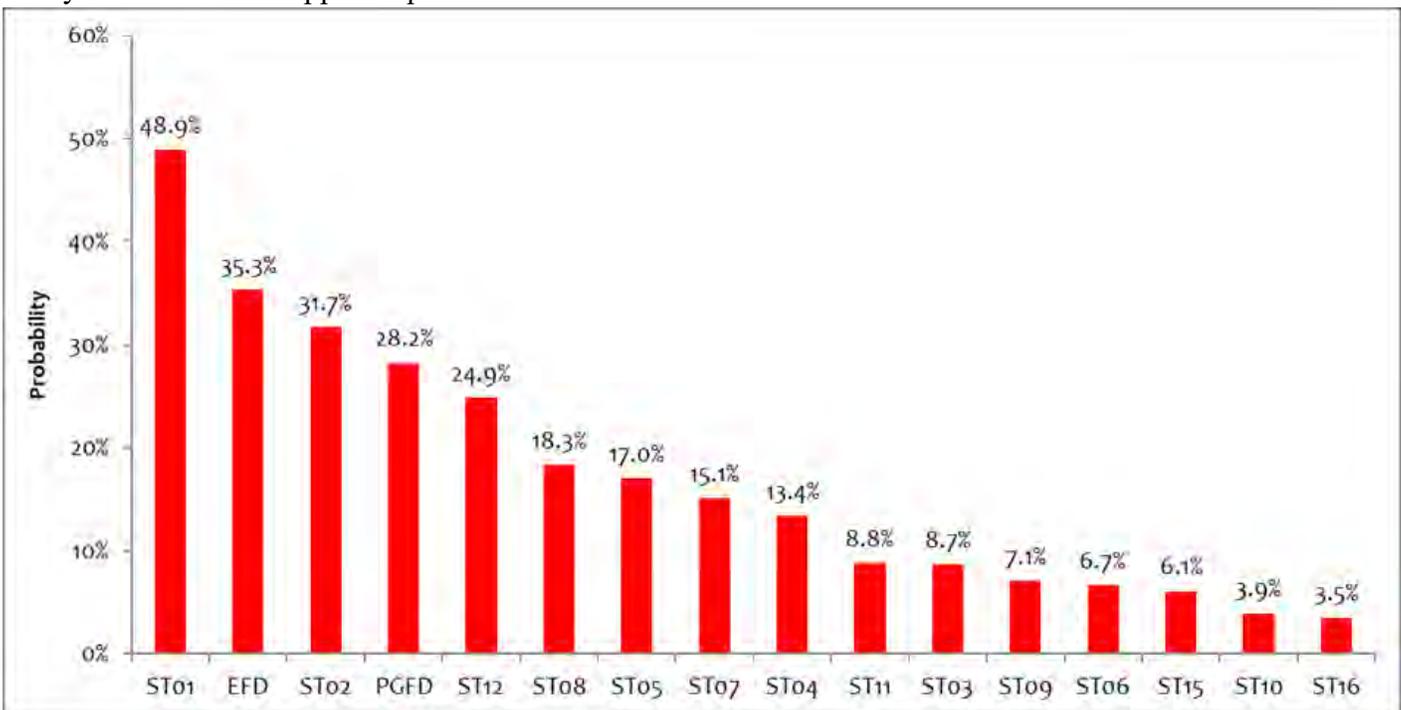
### Reliability Analysis –First Due Area

The reliability of the distribution model is a factor of how often the response model is available and able to respond to the call within the assigned demand zone. If at least one unit from the first due zone is able to respond to a call, we consider the station is able to respond to the call within the assigned demand zone. Utilizing the department’s Fire Station Demand Zones (FDZ), analyses reveal that stations 10, 5, 9 and 3 are capable of meeting their demand for services at the 90<sup>th</sup> percentile. In other words, when request for service is received FDZ 10, 5, 9 and 3 are available to answer the call 9 out of 10 times. Station 07 and 11 had the lowest reliability. It is considered both best practice and the most reliable measure to perform at the 90<sup>th</sup> percentile as indicated by the “blue” line in the figure below. This analysis utilized all dispatched calls within the jurisdiction and the performance included all assigned units to the specific FDZ. Please note we assumed unit stations 13 and 14 were assigned to calls in first due stations 15 and 16.



## Reliability Analysis –First Due Area Cont.

Overlapped calls are defined as the rate at which another call was received for the same first due zone while there were one or more ongoing calls in the same first due zone. For example, if there is one call in station 1's zone, before the call was cleared, another request in station 1's zone occurred, then the second call would be captured as an overlapped call. If there is a long structure fire call ongoing, all calls occurred after the structure fire started, but before the structure fire call was cleared would be counted as overlapped calls. Understanding the probability of overlapped calls occurring will help to determine the number of units to staff for each station. In general, the larger the call volume a first due zone has, it is more likely to have overlapped or simultaneous calls. The distribution of the demand throughout the day will impact the chance of having overlapped or simultaneous calls. The duration of a call will also have major influence, since the longer time it takes to clear a request, the more likely to have an overlapped request.



Station 1 has the most demand, and the duration of calls lasted at 35 minutes, thus it has the highest probability of having overlapped calls at 48.9%. This means that during the period of an active station 1 call, there is a 48.9% chance that another incident in station 1 will occur. Calls in EFD and ST02 had the second and third highest probability of overlapped calls occurring since they had the 2<sup>nd</sup> and 3<sup>rd</sup> most call volume. Results are presented below.

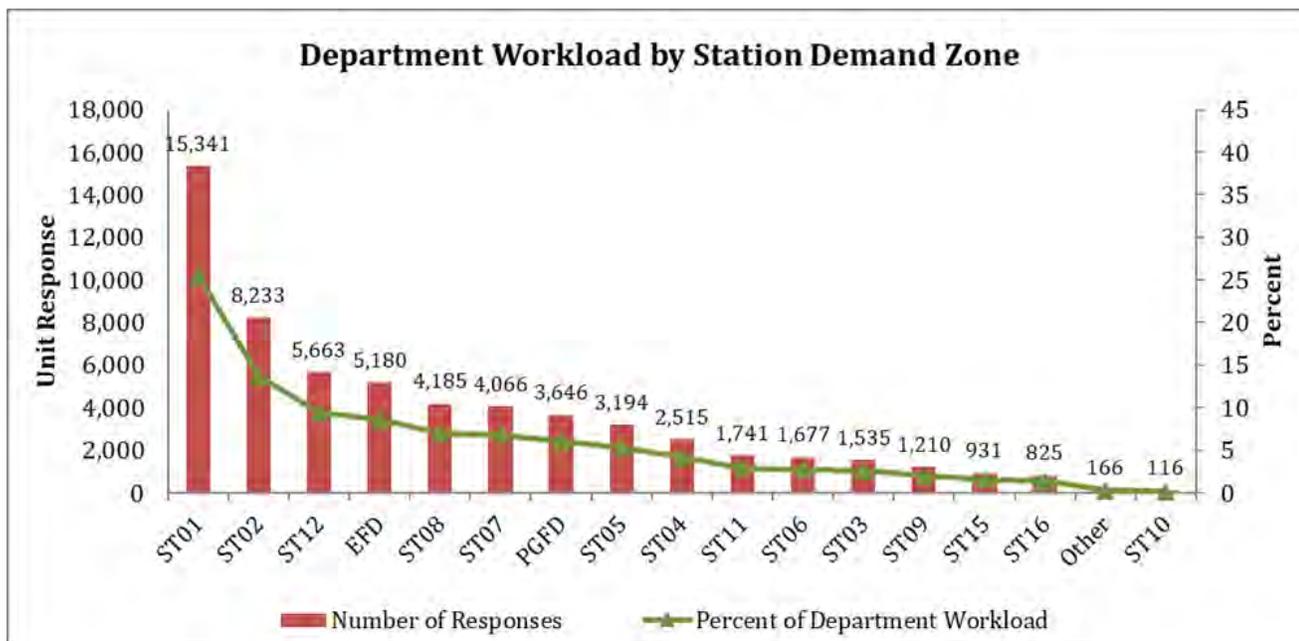
First Due Station	Overlapped Calls	Total Calls	Probability of Overlapped Calls Occurring	Duration (Minutes)
ST01	4,117	8,413	48.9%	35.0
EFD	1,598	4,524	35.3%	43.0
ST02	1,346	4,243	31.7%	36.9
PGFD	937	3,320	28.2%	38.4
ST12	769	3,093	24.9%	40.4
ST08	433	2,362	18.3%	35.6
ST05	272	1,596	17.0%	47.3
ST07	336	2,221	15.1%	31.8
ST04	171	1,278	13.4%	44.0
ST11	85	971	8.8%	41.4
ST03	74	850	8.7%	43.0
ST09	37	523	7.1%	53.2
ST06	57	854	6.7%	39.1
ST15	28	462	6.1%	41.1
ST10	2	51	3.9%	45.7
ST16	14	401	3.5%	44.2
<b>Grand Total</b>	<b>10,276</b>	<b>35,162</b>	<b>29.2%</b>	<b>38.7</b>

**Workload Demand**

First Due Station	Number of Responses	Percent of Department Workload	Cumulative Percent of Department Workload
ST01	15,341	25.5	25.5
ST02	8,233	13.7	39.1
ST12	5,663	9.4	48.5
EFD	5,180	8.6	57.1
ST08	4,185	6.9	64.1
ST07	4,066	6.8	70.8
PGFD	3,646	6.1	76.9
ST05	3,194	5.3	82.2
ST04	2,515	4.2	86.4
ST11	1,741	2.9	89.3
ST06	1,677	2.8	92.1
ST03	1,535	2.5	94.6
ST09	1,210	2.0	96.6
ST15	931	1.5	98.2
ST16	825	1.4	99.5
Other	166	0.3	99.8
ST10	116	0.2	100.0
<b>Total</b>	<b>60,224</b>	<b>100.0</b>	<b>100.0</b>

Another method of assessing the effectiveness of the distribution model is to analyze the demand for services across the distribution model. Workload is assessed at the station demand zone level and at the individual unit level.

Analyses illustrate that Station Demand Zones ST01, ST02 and ST12 each accounted for 25.5%, 13.7% and 9.4% of the total requests for services. Collectively these three demand zones accounted for 48.5% of the department’s total workload.

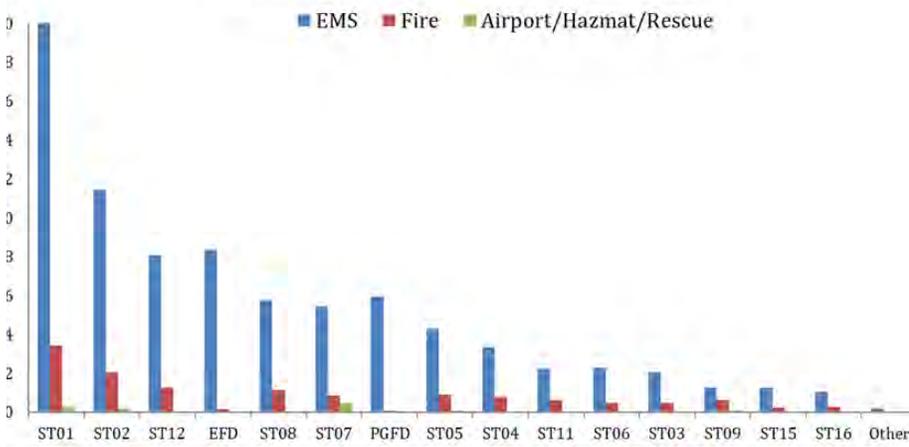


**Workload Demand**

First Due Station	EMS	Fire	Airport/Hazmat/Rescue	Total Unit Responses
ST01	13,143	2,059	139	15,341
ST02	6,877	1,241	115	8,233
ST12	4,870	769	24	5,663
EFD	5,044	110	26	5,180
ST08	3,475	689	21	4,185
ST07	3,268	519	279	4,066
PGFD	3,593	49	4	3,646
ST05	2,602	541	51	3,194
ST04	2,025	472	18	2,515
ST11	1,359	382	0	1,741
ST06	1,383	282	12	1,677
ST03	1,229	290	16	1,535
ST09	769	393	48	1,210
ST15	765	141	25	931
ST16	645	180	0	825
Other	134	32	0	166
ST10	101	15	0	116
<b>Total</b>	<b>51,282</b>	<b>8,164</b>	<b>778</b>	<b>60,224</b>

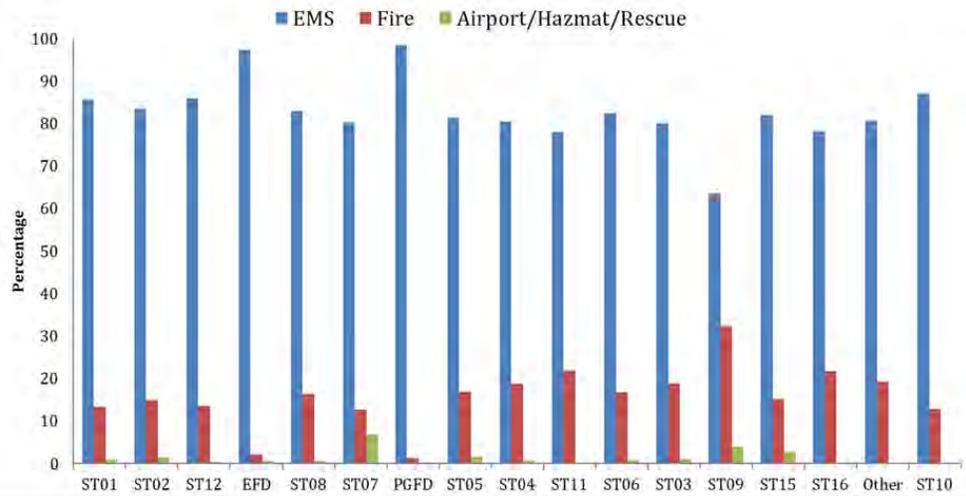
As with most organizations, the majority of emergency responses are EMS related (85%) calls for help.

**Distribution of Department Workload by Type**



EMS is by far the highest workload.

**Within Station Proportion of Workload by Call Type**



Stations 9,11,16 have the highest within first-due area proportion of fire-related calls.

## Apparatus Deployed Hours

All units of the department made 60,224 responses and were busy on calls for a total of 28,545 hours in 2021. Overall, the average busy minutes per response was 28.4 minutes, and the average number of responses per call was 1.7.

Program	Number of Calls	Number of Responses	Average Responses per Call	Total Busy Hours	Avg. Busy Minutes per Response	Average Calls per Day	Avg. Responses per Day	Avg. Busy Hours per Day
EMS	31,214	51,282	1.6	25,334	29.6	85.5	140.5	69.4
Fire	3,851	8,164	2.1	2,831	20.8	10.6	22.4	7.8
Airport	66	261	4.0	92	21.3	0.2	0.7	0.3
Hazmat	30	161	5.4	53	19.7	0.1	0.4	0.1
Rescue	63	356	5.7	235	39.6	0.2	1.0	0.6
<b>Total</b>	<b>35,224</b>	<b>60,224</b>	<b>1.7</b>	<b>28,545</b>	<b>28.4</b>	<b>96.5</b>	<b>165.0</b>	<b>78.2</b>

## Number of Responding Units

We analyzed the number of responding units by program. Overall, a total of 52.0% of calls were responded to by one unit, and 33.5% were responded to by two units. The average number of units responding to a call was 1.7.

Program	Number of Charlotte Units									Total
	1	2	3	4	5	6	7	8	9 or more	
EMS	16,291	11,254	79	2,779	583	157	33	24	14	31,214
Fire	2,033	532	89	812	211	59	38	46	31	3,851
Airport	1	4	1	12	32	15	1	0	0	66
Hazmat	0	4	11	2	1	5	5	1	1	30
Rescue	2	6	24	1	2	11	9	5	3	63
<b>Total</b>	<b>18,327</b>	<b>11,800</b>	<b>204</b>	<b>3,606</b>	<b>829</b>	<b>247</b>	<b>86</b>	<b>76</b>	<b>49</b>	<b>35,224</b>
<b>Percentage</b>	<b>52.0%</b>	<b>33.5%</b>	<b>0.6%</b>	<b>10.2%</b>	<b>2.4%</b>	<b>0.7%</b>	<b>0.2%</b>	<b>0.2%</b>	<b>0.1%</b>	<b>100%</b>

## Workload by Station and Unit

The station-level demand is more reflective for deployment decisions, and the unit-level workload will help evaluate the utilization of physical apparatus and assist with apparatus procurement or maintenance decisions.

Overall, all units made a total of 60,224 responses, and the total busy hours were 28,546 hours. Stations 1, 2 and 12 were the top three busiest stations. EN01, CR10, CR01, CR32 and CR02 were the top five utilized units, and each made more than 3,000 responses in a year.

Station	Avg Busy		
	Minutes per Run	Total Busy Hours	Number of Runs
1	22.9	5,789	15,166
2	24.5	2,724	6,665
12	26.6	2,665	6,003
8	26.2	1,956	4,481
PG St. 1	35.8	1,882	3,157
13	37.3	1,919	3,085
4	34.7	1,749	3,028
5	37.1	1,868	3,018
7	16.7	803	2,892
6	31.9	1,514	2,845
11	33.1	1,515	2,748
3	33.3	1,342	2,419
14	38.5	1,064	1,657
PG St. 3	39.6	977	1,480
9	42.9	547	764
HQ	13.8	167	728
10	26.2	25	58
16	90.9	35	23
15	44.5	5	7
<b>Total</b>	<b>28.4</b>	<b>28,546</b>	<b>60,224</b>

Unit Station	Unit Id	Avg Busy Minutes per Run	Total Busy Hours	Number of Runs
1	BAT02	12.5	518	2,480
	CR01	32	2,096	3,929
	CR10	31.7	2,135	4,044
	EN01	12.9	1,013	4,703
	SUP01	162.2	27	10
	<b>Station 1 Total</b>	<b>22.9</b>	<b>5,789</b>	<b>15,166</b>
2	CR02	37.3	1,923	3,092
	EN02	14.2	682	2,886
	TK02	10.3	118	687
	<b>Station 2 Total</b>	<b>24.5</b>	<b>2,724</b>	<b>6,665</b>
3	CR03	43	1,084	1,511
	EN03	17.1	258	908
	<b>Station 3 Total</b>	<b>33.3</b>	<b>1,342</b>	<b>2,419</b>
4	CR04	42.5	1,342	1,896
	EN04	20.4	336	987
	MR01	36.6	62	101
	MR03	13.1	10	44
	<b>Station 4 Total</b>	<b>34.7</b>	<b>1,749</b>	<b>3,028</b>
5	BR05	89.2	34	23
	CR05	46.2	1,398	1,815
	EN05	22.2	436	1,180
	<b>Station 5 Total</b>	<b>37.1</b>	<b>1,868</b>	<b>3,018</b>
6	CR06	39.1	1,040	1,595
	EN06	20	362	1,086
	MR02	36.9	44	72
	MR04	14.5	10	41
	TA06	69.1	59	51
	<b>Station 6 Total</b>	<b>31.9</b>	<b>1,514</b>	<b>2,845</b>
7	ARF71	18.8	40	127
	ARF72	17.5	35	118
	BAT01	15.4	366	1,427
	EN07	17.8	363	1,220
	<b>Station 7 Total</b>	<b>16.7</b>	<b>803</b>	<b>2,892</b>
8	BR08	117	12	6
	CR08	36.6	1,496	2,451
	EN08	13.3	448	2,024
	<b>Station 8 Total</b>	<b>26.2</b>	<b>1,956</b>	<b>4,481</b>
9	CR09	57.1	348	366
	EN09	29.9	199	398

	<b>Station 9 Total</b>	<b>42.9</b>	<b>547</b>	<b>764</b>
<b>10</b>	EN10	20.1	4	11
	PU10	27.6	22	47
	<b>Station 10 Total</b>	<b>26.2</b>	<b>25</b>	<b>58</b>
<b>11</b>	CR11	43.9	1,198	1,638
	EN11	17.1	317	1,110
	<b>Station 11 Total</b>	<b>33.1</b>	<b>1,515</b>	<b>2,748</b>
<b>12</b>	CR12	39.1	1,824	2,797
	EN12	14.7	600	2,449
	SQD12	39	124	191
	TECH12	58.8	10	10
	TK12	11.6	108	556
	<b>Station 12 Total</b>	<b>26.6</b>	<b>2,665</b>	<b>6,003</b>
<b>13</b>	CR13	40.2	1,758	2,624
	EN15	21	161	461
	<b>Station 13 Total</b>	<b>37.3</b>	<b>1,919</b>	<b>3,085</b>
<b>14</b>	CR14	44.5	866	1,169
	EN16	24.2	197	488
	<b>Station 14 Total</b>	<b>38.5</b>	<b>1,064</b>	<b>1,657</b>
<b>15</b>	BR03	43.5	4	6
	BR15	50.6	1	1
	<b>Station 15 Total</b>	<b>44.5</b>	<b>5</b>	<b>7</b>
<b>16</b>	BR16	90.9	35	23
	<b>Station 16 Total</b>	<b>90.9</b>	<b>35</b>	<b>23</b>
<b>HQ</b>	BAT01A	8.7	3	17
	BAT01B	26.7	4	8
	BAT01C	2.4	0	4
	BAT02A	3.1	0	6
	BAT02B	5.7	10	100
	BAT02C	9.1	6	39
	BAT04	9.8	1	5
	CAPT01	41.2	9	13
	CAPT02	53.5	17	19
	CNTY01	55.9	7	7
	CNTY02	0.2	0	1
	CR23	52.4	6	7
	CR24	24.4	14	35
	CR25	6.9	1	4
	CR30	5.8	8	87
	DC01	30.6	2	4
	DC02	27.5	12	26
	DC03	97.4	5	3

	FP01	99.4	60	36
	FP03	2.4	0	9
	FP04	3	1	12
	MD01	52.1	1	1
	PIO01	26.6	2	5
	TRN30	0.2	0	143
	TRN31	0.1	0	137
	<b>HQ Total</b>	<b>13.8</b>	<b>167</b>	<b>728</b>
<b>PG St. 1</b>	CR32	35.8	1,882	3,157
<b>PG St. 3</b>	CR31	39.6	977	1,480
	<b>Agency Total</b>	<b>28.4</b>	<b>28,546</b>	<b>60,224</b>

### Unit Hour Utilization

The number of calls responded to primarily address the wear and tear on the apparatus. Another measure, time on task, is necessary to evaluate best practices in efficient system delivery and consider the impact workload has on personnel. Unit Hour Utilization (UHU) determinants were developed by a mathematical model. This model includes both the proportion of calls handled in each major service area (Fire and EMS) and the total unit time on task for these service categories in 2021. The resulting UHU's represent the percentage of the work period (24 hours) that is utilized responding to requests for service. The International Association of Fire Fighters (IAFF) recommends that 24-hour units do not surpass a 0.25, or 25% workload threshold. Similarly, the International Association of Fire Chiefs (IAFC) recommends 24-hour units do not surpass a 0.30, or 30% threshold. In other words, best practice would not have units and personnel exceeding 30% of their workday responding to calls. This would equate to approximately 8 hours of the 24-hour period. These thresholds take into consideration the necessity to accomplish non-emergency activities such as training, health and wellness, public education, and fire inspections.

Overall, the department is performing at approximately 0.10, or 10%, utilization of 33 fully staffed units. The most utilized unit is the CR10 in Station 1, at 0.24. CR01 is the second most utilized at 24%. At the current workload utilization rates, the department should have a limited impact on its level of readiness or system performance.

Station	Unit ID	Total Busy HoursUHU	IAFC	
1	CR10	2,135	0.24	0.30
1	CR01	2,096	0.24	0.30
2	CR02	1,923	0.22	0.30
PG St. 1	CR32	1,882	0.21	0.30
12	CR12	1,824	0.21	0.30
13	CR13	1,758	0.20	0.30
8	CR08	1,496	0.17	0.30
5	CR05	1,398	0.16	0.30
4	CR04	1,342	0.15	0.30
11	CR11	1,198	0.14	0.30
3	CR03	1,084	0.12	0.30
6	CR06	1,040	0.12	0.30
1	EN01	1,013	0.12	0.30
PG St. 3	CR31	977	0.11	0.30
14	CR14	866	0.10	0.30
2	EN02	682	0.08	0.30
12	EN12	600	0.07	0.30
1	BAT02	518	0.06	0.30
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5	EN05	436	0.05	0.30
7	BAT01	366	0.04	0.30
7	EN07	363	0.04	0.30
6	EN06	362	0.04	0.30
9	CR09	348	0.04	0.30
4	EN04	336	0.04	0.30
11	EN11	317	0.04	0.30
3	EN03	258	0.03	0.30
9	EN09	199	0.02	0.30
14	EN16	197	0.02	0.30
13	EN15	161	0.02	0.30
12	SQD12	124	0.01	0.30
2	TK02	118	0.01	0.30
12	TK12	108	0.01	0.30
4	MR01	62	0.01	0.30
HQ	FP01	60	0.01	0.30
6	TA06	59	0.01	0.30
6	MR02	44	0.01	0.30
7	ARF71	40	0.00	0.30
16	BR16	35	0.00	0.30
7	ARF72	35	0.00	0.30
5	BR05	34	0.00	0.30

## Workload by Demand Zone-First Due Area

Another method of assessing the effectiveness of the distribution model is to analyze the demand for services across the distribution model. The workload is assessed at the station demand zone level and at the individual unit level. Analyses illustrate that Station Demand Zones ST01, ST02, and ST12 each accounted for 25.5%, 13.7%, and 9.4% of the total requests for services. Collectively these three demand zones accounted for 48.5% of the department's total workload.

First Due Station	Number of Responses	Percent of Department Workload	Cumulative Percent Department Workload
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ST04	2,515	4.2	86.4
ST11	1,741	2.9	89.3
ST06	1,677	2.8	92.1
ST03	1,535	2.5	94.6
ST09	1,210	2.0	96.6
ST15	931	1.5	98.2
ST16	825	1.4	99.5
Other	166	0.3	99.8
ST10	116	0.2	100.0
<b>Total</b>	<b>60,224</b>	<b>100.0</b>	<b>100.0</b>

Workload was also analyzed by demand zone (first due zone) and incident type.

First Due Station	EMS	Fire	Airport/Hazmat/Rescue	Total Unit Responses
ST01	13,143	2,059	139	15,341
ST02	6,877	1,241	115	8,233
ST12	4,870	769	24	5,663
EFD	5,044	110	26	5,180
ST08	3,475	689	21	4,185
ST07	3,268	519	279	4,066
PGFD	3,593	49	4	3,646
ST05	2,602	541	51	3,194
ST04	2,025	472	18	2,515
ST11	1,359	382	0	1,741
ST06	1,383	282	12	1,677
ST03	1,229	290	16	1,535
ST09	769	393	48	1,210
ST15	765	141	25	931
ST16	645	180	0	825
Other	134	32	0	166
ST10	101	15	0	116
<b>Total</b>	<b>51,282</b>	<b>8,164</b>	<b>778</b>	<b>60,224</b>

## Event Outcomes

Outcome measures tell us if our ultimate goals of public safety have been reached by documenting changes in fire, EMS, hazmat, technical rescue, or community risk reduction efforts. As this is CCFEMS's first formal

Standards of Cover, many of the outcome's measures are still in process. The Department utilized *CRR Outcomes: A guide for measuring success*, published by Vision 20/20 and the Center for Public Safety Excellence as a guide to identifying core measures in each major program area. Refinement of the data to ensure accuracy is in process and will be finalized as of the first annual compliance report, providing a solid view of the Department's outcomes.

### Performance Indicator 2B.3

Event outputs and outcomes are assessed for three (initial accrediting agencies) to five (currently accredited agencies) immediately previous years.

#### Fire

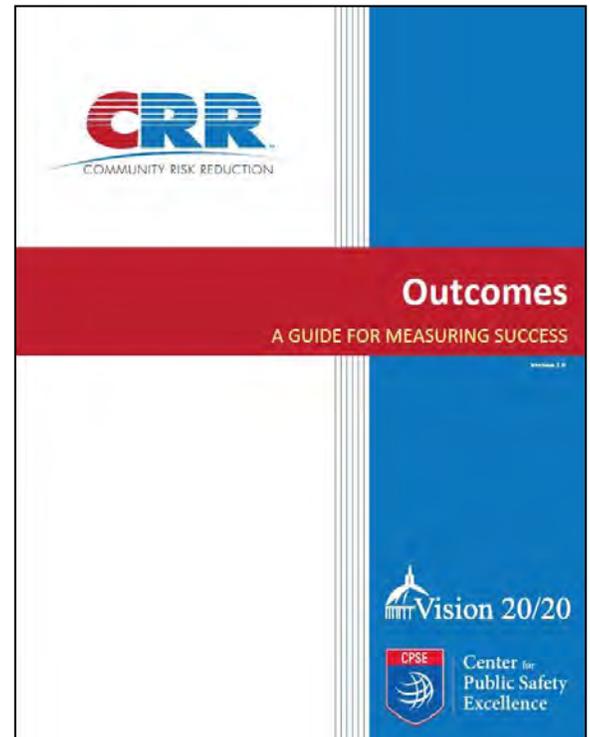
One of the most visible outcomes of a fire and rescue service is the percentage of property and contents saved during the course of a structural fire. CCFEMS is analyzing fire data for the past three years including property and contents lost, property and contents saved, and over-all save rate percentage.

#### EMS

Many factors contribute to the survival of out-of-hospital cardiac arrest including EMS response time, experience/case volume of the paramedic, layperson CPR, age/health of patient, type of rhythm encountered, etc. However, one outcome has generally been accepted as a positive marker of EMS system performance; Return of Spontaneous Circulation (ROSC). Global rates of ROSC for out of hospital arrests hover just under 30%.

#### Hazmat

Fortunately, hazardous materials incidents are generally a relatively rare occurrence, although when they do occur, the impacts can be devastating to not only the people involved but the environment as well. CCFEMS responded to 778 hazardous materials events over the last year. CCFEMS is currently analyzing the gallons of product that were successfully stopped from exiting their containers or entering storm drains.



#### Technical Rescue

Much like hazardous materials incidents, fortunately, technical rescue incidents are rare as compared to EMS or Fire calls, but usually people's lives are on the line during these low frequency, high-risk events.

#### Community Risk Reduction

There is not a single CRR measure that defines program success, but the number and severity of fires (including dollar loss as measured above in the Fire outcome area), and injuries or deaths are the ultimate outcomes of a program. CCFEMS is actively analyzing several measures for code compliance, FLS Education, plan review, and fire investigation programs from page 8-9 from the Outcome guide.

## Benchmark and Baseline Statements and Tables

The agency has established benchmark performance objectives and baseline measurements for the major categories of emergency responses, including fires, emergency medical services, hazardous materials, and technical rescue incidents. These objectives and measures are also tailored by risk level classification for low, moderate, high, and maximum risks, including the amount of personnel required (Effective Response Force) to perform the required critical tasking that aligns with both the needs of the incident and County policies and standard operating guidelines.

**Core Competency 2C.5**

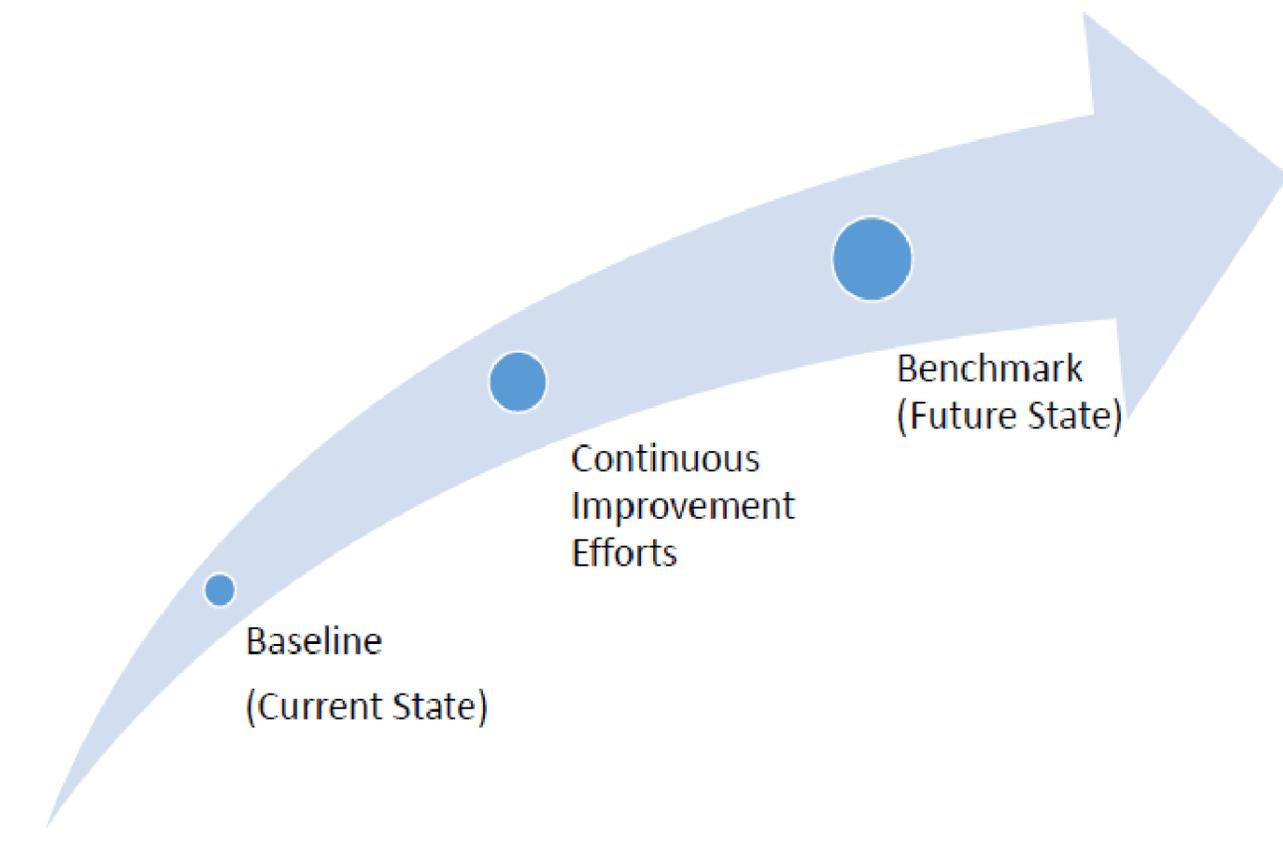
The agency has identified the total response time components for delivery of services in each service program area and found those services consistent and dependable within the entire response area.

In simple terms, the benchmark is the desired level of performance, and the baseline is the current level of performance. Rather than using averages for response times, these goals are measured against 90% fractals, aligning with best practices in the fire industry for both the Center for Public Safety Excellence and National Fire Protection Association standards. This measurement style affords a much more accurate view of performance.

**Performance Indicator 2C.7**

The agency has identified the total response time components for delivery of services in each service program area and assessed those services in each planning zone.

The benchmark statements and baseline charts all reflect current Department practices. Historic data presented in the baseline charts represent actual incident data from 2017-2021. Automatic Baseline data is only available for certain risk levels for each of the major program areas due to some risk levels not happening frequently enough to produce valid data. These are clearly noted within each table and the corresponding baseline statements.



## Performance Statements - Fires

### Benchmark Statements

For **low-risk fire incidents**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of two firefighters, shall be 12 minutes and 14 seconds (urban) or 15 minutes and 39 seconds (rural). The first due unit shall be capable of establishing command, sizing up the incident, utilizing appropriate tactics in accordance with standard operating guidelines, developing an initial action plan, extending an appropriate hose line, and begin initial fire attack or rescue.

For **moderate-risk fires**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of five firefighters, shall be 36 minutes and 25 seconds (urban) or 59 minutes and 35 seconds (rural). The ERF shall have the capability to establish command, provide an uninterrupted water supply, advance an attack line and backup line for fire control, establish a rapid intervention crew, complete forcible entry, ventilation, conduct primary and secondary searches, control utilities and perform salvage and overhaul operations. These critical tasks shall be done in a safe manner in accordance with department standard operating guidelines.

For **high-risk fires**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 12 personnel, shall be 39 minutes and 23 seconds (urban) or 73 minutes and 44 seconds.

(rural). The ERF shall have the capability to establish command, provide an uninterrupted water supply, advance an attack line and backup line for fire control, place elevated streams into service, establish a rapid intervention crew, complete forcible entry and ventilation, conduct primary and secondary searches, control utilities and perform salvage and overhaul operations. These critical tasks shall be done in a safe manner in accordance with department standard operating guidelines.

For **maximum-risk fires**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 20 personnel, shall be 45 minutes (urban) or 80 minutes (rural). The ERF shall have the capability to establish command, provide an uninterrupted water supply, advance multiple attack lines and backup lines for fire control, place elevated streams into service, establish a rapid intervention crew, complete multiple forcible entry and ventilation procedures, conduct primary and secondary searches, control utilities, perform occupant evacuation, and perform salvage and overhaul operations. These critical tasks shall be done in a safe manner in accordance with department standard operating guidelines.

Performance Statements – Fires

**Baseline Statements**

For **low-risk fires**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of two firefighters, was 13 minutes and 35 seconds (urban) and 17 minutes and 23 seconds (rural). The first due unit is capable of establishing command, sizing up the incident, utilizing

Low-Risk Fire – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	3:51	4:01	3:40	3:46	3:57	3:47
		Rural	3:48	3:50	3:29	4:01	3:43	3:57
Turnout Time	Turnout Time 1 <sup>st</sup> Unit	Urban	2:48	2:48	2:48	2:51	2:46	2:46
		Rural	3:12	3:09	3:00	3:04	3:20	3:26
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	8:48	9:25	8:25	8:17	8:34	9:05
		Rural	12:12	13:03	11:44	12:13	11:21	12:45
	Travel Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	13:35	14:16	13:03	13:15	13:31	13:44
			n = 10,410	n = 2,494	n = 2,295	n = 2,023	n = 1,614	n = 1,984
		Rural	17:23	18:21	16:40	17:29	16:04	17:40
			n = 2,186	n = 512	n = 473	n = 363	n = 425	n = 413
	Total Response Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A

appropriate tactics in accordance with standard operating guidelines, developing an initial action plan, extending an appropriate hose line, and beginning an initial fire attack or rescue.

For **moderate-risk fires**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 5 personnel (3 units), was 40 minutes and 27 seconds (urban) and 65 minutes and 34 seconds (rural). The ERF has the capability to establish command, provide an uninterrupted water supply, advance an attack line and backup

Moderate-Risk Fire – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	3:48	6:22	6:29	3:41	3:10	3:09
		Rural	4:28	6:06	7:51	4:17	3:47	3:13
Turnout Time	Turnout Time 1 <sup>st</sup> Unit	Urban	3:05	2:53	2:36	3:19	3:08	2:59
		Rural	3:27	3:18	3:24	3:27	3:38	3:20
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	7:21	8:27	7:02	7:30	7:00	7:28
		Rural	13:20	21:16	13:43	12:05	11:51	13:08
	Travel Time ERF Concentration	Urban	20:08	17:36	22:14	16:37	12:57	22:35
		Rural	38:24	55:31	31:13	53:27	29:55	33:14
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	11:54	15:01	14:03	11:38	11:27	11:37
			n = 2,243	n = 189	n = 157	n = 280	n = 818	n = 799
		Rural	19:09	3:45	22:08	17:03	16:15	17:33
			n = 819	n = 96	n = 116	n = 115	n = 282	n = 210
	Total Response Time ERF Concentration	Urban	40:27	43:53	32:29	31:26	40:27	41:28
		Rural	65:34	83:16	66:13	63:14	48:26	49:04

line for fire control, establish a rapid intervention crew, complete forcible entry and ventilation, conduct primary and secondary searches, control utilities and perform salvage and overhaul operations. These critical tasks are done in a safe manner in accordance with department standard operating guidelines.

Performance Statements – Fires

Baseline Statements

For **high-risk fires**, the 90th percentile of total response time for the arrival of the effective response force, consisting of 12 personnel (6 units), was 44 minutes and 1 seconds (Urban) and 81 minutes and 54 seconds (Rural) where the ERF was assembled. ERF has the capability to establish command, provide an uninterrupted water supply, advance an attack

High-Risk Fire – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	3:10	3:50	3:10	3:06	2:52	2:46
		Rural	6:22	8:13	5:04	4:35	8:01	5:04
Turnout Time	Turnout Time	Urban	3:01	3:06	3:05	3:13	2:44	2:50
	1 <sup>st</sup> Unit	Rural	3:24	2:58	3:28	3:21	3:31	3:26
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	5:59	6:04	6:03	5:37	5:50	6:34
		Rural	17:43	22:16	21:31	11:35	17:07	15:22
	Travel Time ERF Concentration	Urban	18:25	39:52	16:33	10:15	13:53	19:52
		Rural	77:47	52:17	95:24	16:48	49:49	91:02
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	10:09	10:28	10:40	9:22	9:38	10:11
			n = 704	n = 143	n = 144	n = 141	n = 143	n = 133
		Rural	23:41	1:46	0:53	20:34	23:53	21:58
	Total Response Time ERF Concentration	Urban	44:01	51:50	55:38	28:04	31:46	57:18
			n = 100	n = 16	n = 15	n = 21	n = 26	n = 22
		Rural	81:54	56:44	96:59	61:18	73:19	102:16
		n = 46	n = 7	n = 9	n = 8	n = 12	n = 10	

line and backup line for fire control, place elevated streams into service, establish a rapid intervention crew, complete forcible entry and ventilation, conduct primary and secondary searches, control utilities, and perform salvage and overhaul operations. These critical tasks are done in a safe manner in accordance with department standard operating guidelines.

For **maximum-risk fires**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 20 personnel (11 units), was not statistically relevant due a sample size of less than 10 where the ERF was assembled. The ERF has the capability to establish command, provide an uninterrupted water supply, advance multiple

Maximum-Risk Fire – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	4:52	N/A	N/A	N/A	1:43	N/A
		Rural	11:24	N/A	3:24	N/A	4:18	N/A
Turnout Time	Turnout Time	Urban	3:24	N/A	N/A	N/A	2:20	N/A
	1 <sup>st</sup> Unit	Rural	4:08	N/A	5:07	N/A	4:08	N/A
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	5:03	N/A	N/A	N/A	4:37	N/A
		Rural	16:43	N/A	9:33	N/A	15:03	N/A
	Travel Time ERF Concentration	Urban	72:09	N/A	N/A	N/A	72:09	10:42
		Rural	39:51	N/A	39:51	N/A	36:18	0:00
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	13:16	N/A	N/A	N/A	8:24	N/A
			n = 41	N/A	N/A	N/A	n = 11	N/A
		Rural	23:07	N/A	14:39	N/A	18:22	N/A
	Total Response Time ERF Concentration	Urban	86:46	N/A	N/A	N/A	86:46	44:47
			n = 7	N/A	N/A	N/A	n = 5	n = 2
		Rural	64:14	N/A	64:14	N/A	54:60	45:41
		n = 5	N/A	n = 2	N/A	n = 2	n = 1	

attack lines and backup lines for fire control, place elevated streams into service, establish a rapid intervention crew, complete multiple forcible entry and ventilation procedures, and conduct primary and secondary searches. These critical tasks are done in a safe manner in accordance with department standard operating guidelines.

## Performance Statements - Emergency Medical Services (EMS)

### Benchmark Statements

For all **low-risk medical services incidents**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of two firefighters, shall be 10 minutes and 6 seconds (urban) and 15 minutes and 5 seconds (rural). The first due unit shall be capable of establishing command, sizing up the incident, conducting an initial patient assessment, obtaining vitals and patient medical history, initiating basic life support measures in accordance with standard operating guidelines and transport to an appropriate health care facility.

For **moderate-risk EMS incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of three personnel, shall be 12 minutes and 57 seconds (urban) and 20 minutes and 2 seconds (rural). The units shall be capable of establishing command, sizing up the incident, conducting an initial patient assessment, obtaining vitals and patient medical history, initiating advanced life support efforts in accordance with standard operating guidelines and transport to an appropriate health care facility.

For **high-risk EMS incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of four personnel, shall be 20 minutes and 31 seconds (urban) and 32 minutes and 58 seconds (rural). The units shall be capable of establishing command, sizing up the incident, conducting initial patient assessments for multiple patients, obtaining vitals and patient medical history, initiating advanced life support efforts in accordance with standard operating guidelines transporting several patients to an appropriate health care facility.

For **maximum-risk EMS incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of eight personnel, shall be 40 minutes and 47 seconds (urban) and 45 minutes and 34 seconds (rural). The units shall be capable of establishing command, sizing up the incident, triaging multiple patients simultaneously, conducting initial patient assessments for multiple patients, obtaining vitals and patient medical history, initiating basic and advanced life support measures in accordance with standard operating guidelines, setting up an onsite treatment and triage location, and transporting multiple patients simultaneously to multiple health care facilities.

Performance Statements - Emergency Medical Services (EMS)

Baseline Statements

For **low-risk emergency medical services (EMS) incidents**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of two firefighters, was 12 minutes and 3 seconds. (urban) and 16 minutes and 46 seconds (rural). The first due unit shall be capable of establishing command, sizing up the incident, conducting an initial patient assessment, obtaining vitals and patient medical history, initiating basic life support measures in accordance with standard operating guidelines and transport to an appropriate health care facility.

Low-Risk EMS – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	3:56	4:02	3:49	3:52	4:12	3:47
		Rural	4:07	4:08	4:08	4:11	4:18	3:51
Turnout Time	Turnout Time 1 <sup>st</sup> Unit	Urban	2:20	2:17	2:19	2:19	2:27	2:16
		Rural	2:34	2:32	2:41	2:23	2:46	2:30
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	7:35	7:41	7:34	7:15	7:33	7:53
		Rural	11:57	12:33	11:46	11:47	12:04	11:53
	Travel Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Total Response Time	Total Response Time 1 <sup>st</sup> Unit on Scene Distribution	Urban	12:03	12:14	11:58	11:43	12:16	12:07
			n = 41,207	n = 7,915	n = 7,950	n = 8,267	n = 7,764	n = 9,311
		Rural	16:46	17:23	16:42	16:29	16:55	16:34
		n = 4,144	n = 781	n = 805	n = 795	n = 824	n = 939	
	Total Response Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
			N/A	N/A	N/A	N/A	N/A	N/A
Rural		N/A	N/A	N/A	N/A	N/A	N/A	

For **moderate-risk EMS incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of three personnel (2 units), was 14 minutes and 23 seconds (urban) and 22 minutes and 16 seconds (rural) The units shall be capable of establishing command, sizing up the incident, conducting as initial patient assessment,

Moderate-Risk EMS – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	4:09	4:15	4:02	4:06	4:19	4:02
		Rural	4:17	4:15	4:09	4:16	4:32	4:07
Turnout Time	Turnout Time 1 <sup>st</sup> Unit	Urban	2:20	2:17	2:19	2:21	2:25	2:18
		Rural	2:40	2:37	2:40	2:41	2:45	2:33
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	7:13	7:03	7:06	6:53	7:18	7:37
		Rural	11:39	12:07	11:31	11:02	11:25	11:56
	Travel Time ERF Concentration	Urban	8:48	9:16	8:53	7:57	8:31	9:08
		Rural	15:59	16:20	17:08	15:25	15:08	15:44
Total Response Time	Total Response Time 1 <sup>st</sup> Unit on Scene Distribution	Urban	11:59	11:55	11:46	11:39	12:19	12:09
			n = 49,331	n = 9,092	n = 9,555	n = 9,831	n = 10,061	n = 10,792
		Rural	16:44	17:21	16:43	16:03	16:45	16:45
		n = 5,791	n = 1,019	n = 1,074	n = 1,195	n = 1,211	n = 1,292	
	Total Response Time ERF Concentration	Urban	14:23	14:39	14:23	13:31	14:31	14:40
			n = 16,478	n = 3,237	n = 3,139	n = 3,174	n = 3,328	n = 3,600
Rural		22:16	22:48	23:21	22:22	21:05	22:03	
	n = 2,661	n = 504	n = 475	n = 540	n = 514	n = 628		

obtaining vitals and patient medical history, initiating advanced life support efforts in accordance with standard operating guidelines and transport to an appropriate health care facility.

**Performance Statements - Emergency Medical Services (EMS)**

**Baseline Statements**

For **high-risk EMS incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of four personnel (3 units), was 22 minutes and 47 seconds (urban) and 36 minutes and 37 seconds (rural). The units shall be capable of establishing

High-Risk EMS – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
<b>Alarm Handling</b>	Pick-up to Dispatch	Urban	3:51	4:01	3:47	3:50	3:55	3:38
		Rural	3:52	3:55	3:58	4:00	3:51	3:43
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	Urban	2:22	2:21	2:24	2:22	2:25	2:21
		Rural	2:49	2:49	2:50	2:46	2:54	2:49
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	7:02	7:04	7:02	6:49	7:02	7:09
		Rural	11:33	12:08	11:48	10:57	10:58	11:52
	Travel Time ERF Concentration	Urban	10:42	11:51	10:42	9:43	10:10	10:50
		Rural	23:26	22:28	23:21	2:40	23:26	21:19
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit on Scene Distribution	Urban	11:28	11:32	11:18	11:16	11:41	11:27
			n = 28,469	n = 5,367	n = 5,455	n = 5,560	n = 5,534	n = 6,553
		Rural	16:05	16:40	16:18	15:18	15:59	16:02
			n = 4,736	n = 856	n = 922	n = 892	n = 991	n = 1,075
	Total Response Time ERF Concentration	Urban	22:47	25:36	22:59	21:18	23:13	22:02
		n = 1,433	n = 190	n = 254	n = 374	n = 288	n = 327	
Rural	36:37	38:25	35:33	37:37	34:08	33:41		
n = 399	n = 60	n = 71	n = 96	n = 92	n = 80			

command, sizing up the incident conducting initial patient assessments for multiple patients, obtaining vitals and patient medical history, initiating advanced life support efforts in accordance with standard operating guidelines transporting several patients to an appropriate health care facility.

For **Maximum-risk EMS incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of eight personnel (6 units), was 45 minutes and 19 seconds (urban) and 51 minutes and 44 seconds (rural). The units shall be capable of establishing command, sizing up the incident, conducting as initial patient assessment,

Maximum-Risk EMS – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
<b>Alarm Handling</b>	Pick-up to Dispatch	Urban	7:03	10:43	4:23	6:46	8:10	5:33
		Rural	14:51	8:17	21:08	7:13	13:39	10:50
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	Urban	3:30	3:08	2:57	3:45	3:28	4:03
		Rural	6:15	10:54	3:31	4:15	19:59	2:49
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	8:47	12:18	7:08	6:10	10:53	7:29
		Rural	17:29	13:13	20:33	20:02	13:46	13:49
	Travel Time ERF Concentration	Urban	1:17	18:34	4:45	9:39	20:11	21:13
		Rural	4:29	1:26		18:39	4:29	23:29
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit on Scene Distribution	Urban	16:47	19:25	16:47	10:08	3:32	14:24
			n = 237	n = 43	n = 47	n = 44	n = 45	n = 58
		Rural	8:45	0:34	11:14	11:00	6:53	11:02
			n = 141	n = 23	n = 32	n = 22	n = 30	n = 34
	Total Response Time ERF Concentration	Urban	45:19	45:19	40:41	37:30	61:48	26:32
		n = 32	n = 5	n = 2	n = 6	n = 12	n = 7	
Rural	51:44	51:03	0:00	54:41	47:25	51:44		
n = 12	n = 1	0:00	n = 5	n = 4	n = 2			

obtaining vitals and patient medical history, initiating advanced life support efforts in accordance with Department standard operating guidelines, and transport to an appropriate health care facility.

## Performance Statements - Hazardous Materials

### Benchmark Statements

For **low-risk hazardous materials incidents**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of two firefighters, shall be 12 minutes and 39 seconds (urban) or 16 minutes and 19 seconds (rural). The first due unit shall be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with standard operating guidelines, isolating the hazard, and calling for appropriate assistance if needed.

For **moderate risk hazardous materials incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of nine personnel, shall be 15 minutes and 32 seconds (urban) or 18 minutes (rural). The units will be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with Department standard operating guidelines, isolating the hazard, initiating mitigation efforts - including containment and/or offloading of common hydrocarbon materials, and calling for appropriate assistance if needed.

For **high-risk hazardous materials incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 11 personnel shall be 44 minutes and 10 seconds (urban) or 55 minutes (rural). The units will be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with standard operating guidelines, researching the hazard, isolating the hazard, initiating mitigation efforts, establishing decontamination actions, and acting as a liaison with other agencies and private sector businesses or residents involved.

For **extreme-risk hazardous materials incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 19 personnel shall be 50 minutes (urban) or 60 minutes (rural). The units will be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with Department standard operating guidelines, researching the hazard, isolating the hazard, initiating mitigation efforts, establishing decontamination actions, and acting as a liaison with other agencies and private sector businesses or residents involved.

**Performance Statements -Hazardous Materials**

**Baseline Statements**

For **low-risk hazardous materials incidents**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of two firefighters, was 14 minutes and 3 seconds (urban) and 18 minutes and 7 seconds (rural). The first due unit is capable of establishing command, sizing up the incident, developing an incident action plan in accordance

Low-Risk Hazmat – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
<b>Alarm Handling</b>	Pick-up to Dispatch	Urban	3:53	3:10	0:11	3:19	5:29	3:53
		Rural	6:13	N/A	N/A	N/A	3:05	6:13
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	Urban	3:25	3:10	0:11	3:19	5:29	3:53
		Rural	4:58	N/A	N/A	N/A	3:05	6:13
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	7:48	3:10	0:11	3:19	5:29	3:53
		Rural	6:56	N/A	N/A	N/A	3:05	6:13
	Travel Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit on Scene Distribution	Urban	14:03	11:26	21:40	11:48	14:03	12:28
			n = 15	n = 2	n = 1	n = 2	n = 4	n = 6
		Rural	18:07	N/A	N/A	N/A	9:40	18:07
			n = 2	N/A	N/A	N/A	n = 1	n = 1
	Total Response Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A

with standard operating guidelines, isolating the hazard, and calling for additional resources if needed.

For **moderate-risk hazardous materials incidents**, the 90<sup>th</sup> percentile of total response time for the arrival of the Effective Response Force, consisting of nine personnel (5 units), was 17 minutes and 16 seconds (urban) and rural was not statistically measurable. The units are capable of establishing command, sizing up the incident, developing an incident action plan in accordance

Moderate-Risk Hazmat – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
<b>Alarm Handling</b>	Pick-up to Dispatch	Urban	8:14	N/A	4:11	7:34	8:14	9:03
		Rural	6:12	3:13	N/A	6:12	N/A	3:11
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	Urban	4:41	N/A	2:45	4:06	5:00	3:47
		Rural	2:58	2:26	N/A	N/A	N/A	N/A
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	7:12	N/A	3:15	7:12	7:30	7:02
		Rural	22:53	22:53	N/A	5:34	N/A	6:52
	Travel Time ERF Concentration	Urban	9:04	N/A	N/A	9:04	5:59	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit on Scene Distribution	Urban	14:41	N/A	10:11	14:41	12:18	15:26
			n = 16	N/A	n = 1	n = 4	n = 7	n = 4
		Rural	14:12	4:32	N/A	14:12	N/A	13:01
			n = 3	n = 1	N/A	n = 1	N/A	n = 1
	Total Response Time ERF Concentration	Urban	17:16	N/A	N/A	17:16	15:37	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A

with standard operating guidelines, isolating the hazard, initiating mitigation efforts - including containment and/or offloading of common hydrocarbon materials, and calling for additional resources if needed.

**Performance Statements -Hazardous Materials**

**Baseline Statements**

For **high-risk hazardous materials incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force consisting of 11 personnel (6 units), was 49 minutes and 4 seconds (urban) and was not statistically relevant due to less than 10 incidents where the ERF was assembled over five years. The units are capable of establishing command, sizing up the

High-Risk Hazmat – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
<b>Alarm Handling</b>	Pick-up to Dispatch	Urban	6:10	N/A	6:22	6:53	4:38	6:08
		Rural	3:58	N/A	N/A	0:41	3:58	2:58
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	Urban	4:28	N/A	2:52	5:16	4:28	4:53
		Rural	5:27	N/A	N/A	N/A	N/A	N/A
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	6:28	N/A	7:05	4:42	8:41	6:28
		Rural	10:54	N/A	N/A	7:33	9:02	10:54
	Travel Time ERF Concentration	Urban	42:31	N/A	N/A	20:00	42:31	N/A
		Rural	23:21	N/A	N/A	N/A	23:21	N/A
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit on Scene Distribution	Urban	14:26	N/A	13:29	14:09	15:55	15:10
			n = 25	N/A	n = 4	n = 4	n = 9	n = 8
		Rural	15:57	N/A	N/A	9:51	14:09	15:57
			n = 8	N/A	N/A	n = 2	n = 3	n = 3
	Total Response Time ERF Concentration	Urban	49:04	N/A	N/A	32:54	49:04	N/A
		n = 8	N/A	N/A	n = 1	n = 7	N/A	
Rural	5:06	N/A	N/A	N/A	5:06	N/A		
n = 1	N/A	N/A	N/A	n = 1	N/A			

incident, developing an incident action plan in accordance with standard operating guidelines, researching the hazard, isolating the hazard, initiating mitigation efforts, establishing decontamination actions, and acting as a liaison with other agencies and private sector businesses or residents involved.

For **maximum-risk hazardous materials incidents**, the 90<sup>th</sup> percentile of total response time for the arrival of the Effective Response Force, consisting of 19 personnel (7 units), was 15 minutes and 8 seconds, but was not statistically relevant due to the fact that there was only one incident occurred where the ERF was assembled. The units are capable of establishing command, sizing up the

Maximum-Risk Hazmat – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
<b>Alarm Handling</b>	Pick-up to Dispatch	Urban	5:39	3:17	5:19	7:08	5:39	4:31
		Rural	9:15	N/A	3:31	N/A	9:15	0:11
<b>Turnout Time</b>	Turnout Time 1 <sup>st</sup> Unit	Urban	2:38	1:03	0:03	2:38	2:24	2:53
		Rural	4:30	N/A	1:09	N/A	N/A	N/A
<b>Travel Time</b>	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	6:44	4:03	4:21	6:44	7:20	5:47
		Rural	21:02	N/A	10:05	N/A	6:43	21:02
	Travel Time ERF Concentration	Urban	79:34	N/A	79:34	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total Response Time</b>	Total Response Time 1 <sup>st</sup> Unit on Scene Distribution	Urban	13:52	7:41	9:43	13:52	14:24	10:44
			n = 16	n = 2	n = 1	n = 2	n = 6	n = 5
		Rural	1:43	N/A	14:45	N/A	10:59	1:43
			n = 4	N/A	n = 1	N/A	n = 2	n = 1
	Total Response Time ERF Concentration	Urban	15:08	N/A	15:08	N/A	N/A	N/A
		n = 1	N/A	n = 1	N/A	N/A	N/A	
Rural	N/A	N/A	N/A	N/A	N/A	N/A		
N/A	N/A	N/A	N/A	N/A	N/A			

incident, developing an incident action plan in accordance with standard operating guidelines, researching the hazard -including initial monitoring, and calling for appropriate assistance from both the CCFEMS and outside agencies if needed.

## Performance Statements - Technical Rescue

### Benchmark Statements

For **low-risk technical rescue incidents**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of three firefighters, shall be 16 minutes and 52 seconds (urban) or 19 minutes and 2 seconds (rural). The first due unit shall be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with standard operating guidelines, denying access to bystanders, and calling for appropriate assistance from outside agencies if needed.

For **moderate-risk technical rescue incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of six personnel, shall be 33 minutes and 5 seconds (urban) or 47 minutes and 29 seconds (rural). The units will be capable of establishing command, performing an assessment of the incident, and initiating mitigation activities such as isolating the hazard, de-energizing equipment, conducting lockout/tag-out procedures, and denying access to bystanders.

For **high-risk technical rescue incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 16 personnel, shall be 40 minutes (urban) or 50 minutes (rural). The units will be capable of establishing command, performing an assessment of the incident, and initiating mitigation activities such as isolating the hazard, deploying primary and belay rope systems, stabilizing the trench and/or structure, and setting up a safe operating zone to perform patient assessment and treatment.

For **maximum-risk technical rescue incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 19 personnel, shall be 50 minutes (urban) or 60 minutes (rural). The units will be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with standard operating guidelines, researching the hazard, isolating the hazard, initiating mitigation efforts, performing technical rescue operations, triage/treat patients, and liaise with external agencies.

**Performance Statements - Technical Rescue**

**Baseline Statement**

For **low-risk technical rescue incidents**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of three firefighters was 18 minutes and 44 seconds (urban) and 21 minutes and 9 seconds (rural). The first due unit shall be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with standard operating guidelines, denying access to bystanders, and calling for appropriate assistance from outside agencies if needed.

Low-Risk Rescue – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	5:59	13:50	6:16	3:41	4:10	5:02
		Rural	11:58	N/A	N/A	N/A	2:27	11:58
Turnout Time	Turnout Time 1 <sup>st</sup> Unit	Urban	4:20	2:06	2:54	6:51	7:06	2:28
		Rural	2:19	N/A	N/A	N/A	2:19	1:02
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	10:47	10:47	13:36	5:44	9:39	6:20
		Rural	11:13	N/A	N/A	N/A	6:18	11:13
	Travel Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Total Response Time	Total Response Time 1 <sup>st</sup> Unit on Scene Distribution	Urban	18:44 n = 27	18:44 n = 3	22:46 n = 7	16:16 n = 3	18:26 n = 7	10:30 n = 7
		Rural	21:09 n = 4	N/A	N/A	N/A	9:25 n = 2	21:09 n = 2
			Urban	N/A	N/A	N/A	N/A	N/A
	Total Response Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
			N/A	N/A	N/A	N/A	N/A	N/A

For **moderate-risk technical rescue incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of six responders (4 units) was 36 minutes and 46 seconds (urban) and 52 minutes and 46 seconds (rural). The units will be capable of establishing command, performing an assessment of the incident, and initiating mitigation activities such as isolating the hazard, de-energizing equipment, conducting lockout/tag-out procedures, and denying access to bystanders.

Moderate-Risk Rescue – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	4:41	4:22	7:57	6:38	5:26	4:25
		Rural	5:17	4:06	0:13	0:48	5:53	2:51
Turnout Time	Turnout Time 1 <sup>st</sup> Unit	Urban	3:54	3:08	3:32	4:34	4:31	3:14
		Rural	3:13	3:38	2:29	0:54	2:48	3:13
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	8:03	9:13	10:09	5:56	7:20	7:07
		Rural	19:19	9:20	21:15	3:52	11:56	19:19
	Travel Time ERF Concentration	Urban	24:51	8:29	1:14	10:03	2:52	0:51
		Rural	49:55	23:57	N/A	6:48	16:13	1:55
Total Response Time	Total Response Time 1 <sup>st</sup> Unit on Scene Distribution	Urban	14:17 n = 102	14:32 n = 22	16:57 n = 15	11:39 n = 16	14:26 n = 16	12:45 n = 33
		Rural	23:57 n = 12	15:47 n = 2	23:57 n = 1	5:34 n = 1	20:03 n = 4	23:58 n = 4
			Urban	36:46 n = 39	23:17 n = 2	43:51 n = 4	24:27 n = 7	56:52 n = 8
	Total Response Time ERF Concentration	Rural	52:46 n = 4	29:29 n = 1	N/A N/A	10:03 n = 1	21:02 n = 1	52:46 n = 1

**Performance Statements - Technical Rescue**

**Baseline Statement**

For **high-risk technical rescue incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 16 responders (7 units), was 27 minutes and 15 seconds (urban), but was not statistically relevant due to the fact that less than 10 incidents occurred (urban and rural) where the ERF was assembled.

High-Risk Rescue – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	5:39	4:11	4:06	6:21	3:52	7:12
		Rural	5:30	N/A	N/A	5:30	2:54	4:13
Turnout Time	Turnout Time	Urban	3:07	3:23	2:51	3:16	3:40	3:07
	1 <sup>st</sup> Unit	Rural	4:07	N/A	N/A	4:07	2:55	2:57
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	6:02	8:33	4:31	6:08	6:36	4:47
		Rural	20:50	N/A	N/A	10:21	8:22	20:50
	Travel Time ERF Concentration	Urban	14:26	N/A	9:17	0:04	14:26	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	12:23 n = 40	13:28 n = 6	9:48 n = 10	12:31 n = 8	12:23 n = 10	8:59 n = 6
		Rural	1:11 n = 6	N/A N/A	N/A N/A	14:47 n = 2	14:11 n = 1	1:11 n = 3
			Urban	27:15 n = 3	N/A N/A	16:07 n = 1	27:15 n = 1	20:11 n = 1
	Total Response Time ERF Concentration	Rural	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
		Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A

The units will be capable of establishing command, performing an assessment of the incident, and initiating mitigation activities such as isolating the hazard, deploying primary and belay rope systems, stabilizing the trench and/or structure, and setting up a safe operating zone to perform patient assessment and treatment.

For **maximum-risk technical rescue incidents**, the 90th percentile of total response time for the arrival of the effective response force, consisting of 19 personnel (8 units) was 53 minutes and 46 seconds (urban), but was not statistically relevant due to the fact less than 10 incidents occurred where the ERF was assembled.

Maximum-Risk Rescue – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	5:08	4:13	10:46	5:08	3:51	5:26
		Rural	4:24	4:24	2:05	3:00	3:41	N/A
Turnout Time	Turnout Time	Urban	3:10	4:32	4:01	2:56	4:22	2:46
	1 <sup>st</sup> Unit	Rural	3:09	1:56	2:42	1:44	3:09	N/A
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	7:08	4:12	12:55	6:30	7:30	5:32
		Rural	10:12	6:07	0:00	3:30	10:12	N/A
	Travel Time ERF Concentration	Urban	41:05	N/A	N/A	7:12	11:29	17:05
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	11:08 n = 34	10:54 n = 4	20:15 n = 7	11:13 n = 7	10:41 n = 8	9:48 n = 8
		Rural	14:29 n = 6	11:00 n = 2	4:47 n = 1	8:14 n = 1	14:29 n = 2	N/A N/A
			Urban	53:46 n = 5	N/A N/A	N/A N/A	50:47 n = 2	53:46 n = 2
	Total Response Time ERF Concentration	Rural	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
		Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A

The units will be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with standard operating guidelines, researching the hazard, isolating the hazard, initiating mitigation efforts, perform technical rescue operations, triage/treat patients, and liaise with external agencies.

## Performance Statements - Aviation Emergencies

### Benchmark Statements

For **all low-risk aviation incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, staffed with a minimum of five firefighters, shall be 10 minutes (urban) or 15 minutes (rural). The Effective Response Force shall be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with standard operating guidelines, denying access to by-standers, and calling for appropriate assistance from outside agencies if needed.

For **moderate-risk aviation incidents**, the 90th percentile of total response time for the arrival of the effective response force, consisting of 12 personnel (7 units), shall be 30 minutes (urban) or 45 minutes (rural). The units will be capable of establishing command, performing an assessment of the incident, and initiating mitigation activities such as isolating the hazard, de-energizing equipment, conducting lockout/ tag-out procedures, and denying access to bystanders.

For **high-risk aviation incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 17 personnel, shall be 40 minutes (urban) or 50 minutes (rural). The units will be capable of establishing command, performing an assessment of the incident, and initiating mitigation activities such as isolating the hazard, deploying primary and belay rope systems, stabilizing the trench and/or structure, and setting up a safe operating zone to perform patient assessment and treatment.

For **maximum-risk aviation incidents**, the 90th percentile of total response time for the arrival of the effective response force, consisting of 38 personnel, shall be 50 minutes (urban) or 60 minutes (rural). The units will be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with standard operating guidelines, researching the hazard, isolating the hazard, initiating mitigation efforts, performing technical rescue operations, triage/treat patients, and liaise with external agencies.

## Performance Statements - Aviation Emergencies

### Baseline Statement

For **low-risk airport rescue incidents**, the 90th percentile of total response time for the arrival an Effective Response Force with a minimum of five firefighters (4 units), was 25 minutes and 29 seconds (urban) and the rural analyses could not be completed because of insufficient data.

The first alarm shall be capable of establishing command, sizing up the incident, developing an

incident action plan in accordance with standard operating guidelines, providing rescue, fire suppression, and calling for appropriate assistance.

Low-Risk Aviation – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	2:46	4:29	3:56	2:39	2:30	2:41
		Rural	2:24	2:24	0:55	N/A	N/A	0:14
Turnout Time	Turnout Time 1 <sup>st</sup> Unit	Urban	2:51	2:51	2:09	3:30	3:37	2:08
		Rural	4:10	2:10	4:10	N/A	N/A	2:12
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	4:38	9:59	6:59	2:51	4:38	2:39
		Rural	8:55	8:55	7:27	N/A	N/A	1:02
	Travel Time ERF Concentration	Urban	16:45	9:52	7:14	11:02	9:11	24:38
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	10:13	18:06	9:53	9:03	13:58	4:39
			n = 161	n = 15	n = 24	n = 44	n = 33	n = 45
		Rural	12:32	11:39	12:32	N/A	N/A	3:28
	Total Response Time ERF Concentration	Urban	25:29	14:49	15:48	14:41	12:12	39:23
			n = 55	n = 1	n = 2	n = 21	n = 13	n = 18
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	

For **moderate-risk airport rescue incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 10 responders (7 units), was not statistically relevant due to insufficient observed data.

The units will be capable of establishing command, performing an assessment of the incident, and initiating mitigation activities such as rescue, fire suppression, and calling for appropriate assistance.

Moderate-Risk Aviation – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	4:37	4:48	4:49	1:41	2:12	5:02
		Rural	10:41	0:00	N/A	10:41	N/A	2:19
Turnout Time	Turnout Time 1 <sup>st</sup> Unit	Urban	3:21	2:04	3:20	3:05	3:21	3:34
		Rural	1:46	0:00	N/A	1:46	N/A	0:47
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	6:11	11:24	4:16	3:23	3:05	6:10
		Rural	13:03	0:00	N/A	13:03	N/A	1:39
	Travel Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	9:33	17:39	9:33	5:06	7:32	20:27
			n = 67	n = 14	n = 15	n = 12	n = 12	n = 14
		Rural	23:44	0:00	N/A	23:44	N/A	4:38
	Total Response Time ERF Concentration	Urban	6:11	11:24	4:16	3:23	3:05	6:10
			6:11	11:24	4:16	3:23	3:05	6:10
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	

## Performance Statements – Aviation Emergencies

### Baseline Statement

For **high-risk airport rescue incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 12 responders (8 units), was not statistically relevant due to the fact that zero incidents occurred (urban or rural) where the ERF was assembled.

The units will be capable of establishing command, performing an assessment of the incident, and initiating mitigation activities such as isolating the hazard, deploying primary and belay rope systems, stabilizing the trench and/or structure, and setting up a safe operating zone to perform patient assessment and treatment.

For **maximum risk airport rescue incidents**, the 90th percentile of total response time for the arrival of the Effective Response Force, consisting of 24 personnel (18 units) was not statistically relevant due to the fact that no incidents occurred where the ERF was assembled.

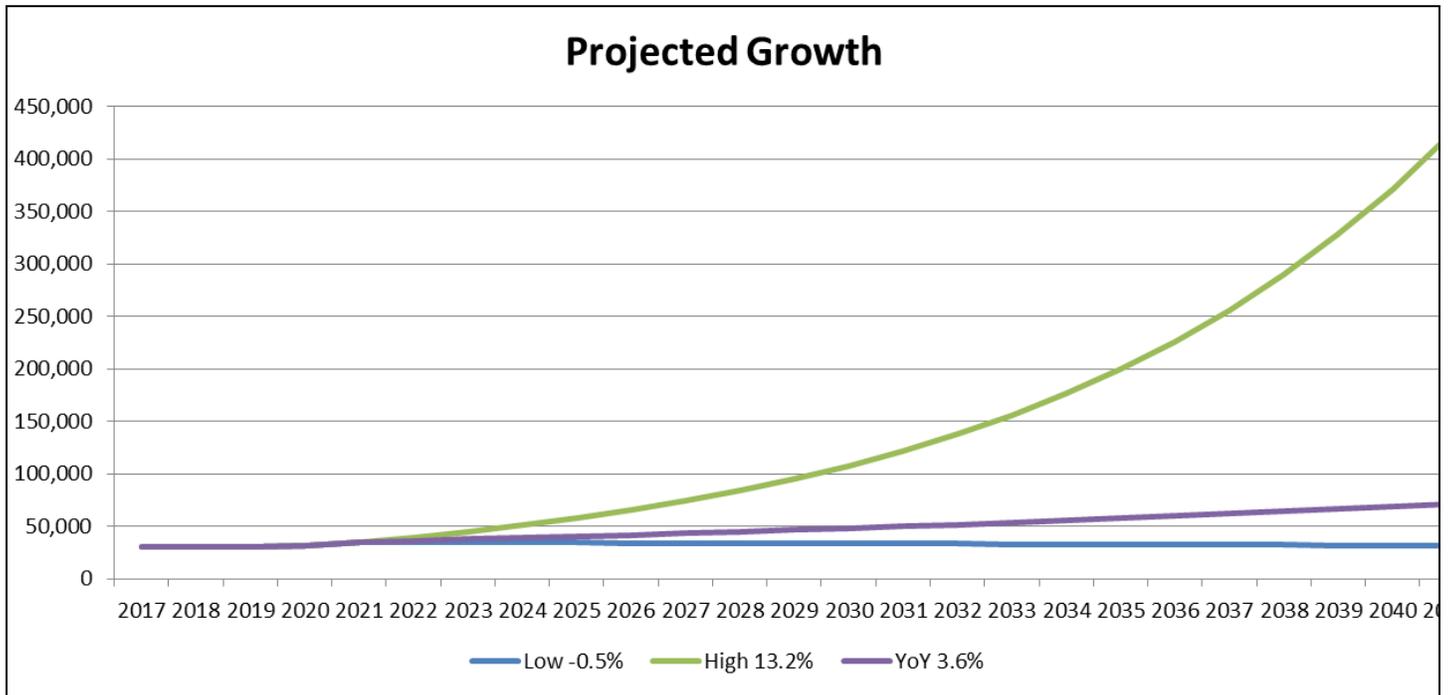
The units will be capable of establishing command, sizing up the incident, developing an incident action plan in accordance with standard operating guidelines, researching the hazard, isolating the hazard, initiating mitigation efforts, performing technical rescue operations, triage/treat patients, and liaise with external agencies.

High-Risk Aviation – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	2:50	2:31	0:59	0:00	2:50	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Turnout Time	Turnout Time 1 <sup>st</sup> Unit	Urban	6:11	0:00	6:11	1:44	1:12	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	5:04	0:00	0:00	5:04	4:07	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
	Travel Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	7:10 n = 6	2:31 n = 1	7:10 n = 1	6:48 n = 1	6:33 n = 3	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
	Total Response Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A

Maximum-Risk Aviation – 90 <sup>th</sup> Percentile Times – Baseline Performance			2017-2021	2017	2018	2019	2020	2021
Alarm Handling	Pick-up to Dispatch	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Turnout Time	Turnout Time 1 <sup>st</sup> Unit	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Travel Time	Travel Time 1 <sup>st</sup> Unit Distribution	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
	Travel Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
Total Response Time	Total Response Time 1st Unit on Scene Distribution	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
	Total Response Time ERF Concentration	Urban	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A
		Rural	N/A	N/A	N/A	N/A	N/A	N/A

## Projected Growth

The available data set included five reporting periods of data, representing FY 2017 - 2021. From FY 2017 to FY 2021, calls for CCFEMS services increased from 30,801 to 35,224, with an average growth rate of 3.6% per year. The figure below depicts observed call volume during the last five-year reporting periods and various hypothetical growth scenarios for the next 20 years. These projections should be used with caution due to the variability in growth observed across prior calendar years. In all cases, data should be reviewed annually to ensure timely updates to projections and utilize a five-year rolling average.



# SECTION F - CURRENT DEPLOYMENT AND PERFORMANCE AT THE FIRST DUE STATION AREA



# First Due Station Area Analysis

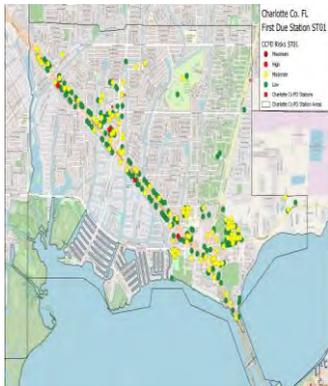
Taking a more granular approach, each of CCFEMS stations received a comprehensive analysis including exclusive pages of maps and data to highlight the planning zones, risk, and past performance on all types of emergency incidents. Below is a master legend to assist in navigating the large amount of analysis on the following pages.

**Core Competency 2C.7**

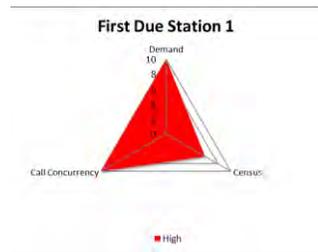
The agency has identified the total response time components for delivery of services in each service program area and assessed those services in each planning zone.



**First Due Station Area** - This page contains a basic overview of the first due area and contains a map which shows the stations in relation to the organization’s boundaries, units based out of the station with full or cross staffing, and an overall station risk rating based upon risk, demand, and call concurrency.



**Geographical Risk Assessment** - Geographic Planning Zones (GPZ) for the Department are defined, along with their respective risk classifications, in addition to risk rankings of specific structures within the first due station area. Charlotte County has elected to utilize the First Due Station Areas as their respective geographic planning zones.

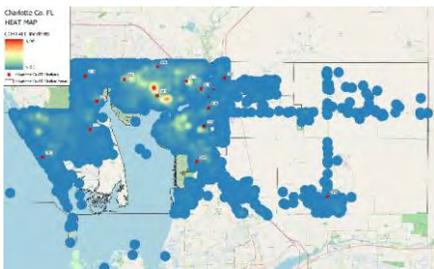


**3D Risk Assessment** - Risk for each first due station area was evaluated by incident type (fire, EMS, hazmat, and technical rescue) and by demand, call concurrency, and risk; providing a comprehensive and visual way to ascertain the risk of certain incident types within the first due station areas. The 3D model graphically shows the event probability, the consequences to the community, and the impact on the department.

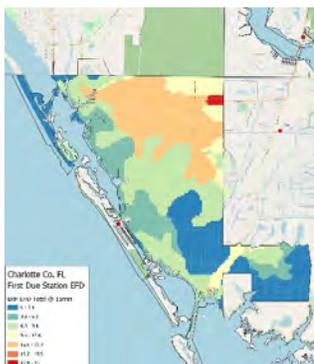
### Station-Level Analysis cont'd

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>6,998</b>	<b>7,229</b>	<b>7,251</b>	<b>6,843</b>	<b>7,352</b>
Cardiac and stroke	574	633	604	524	599
Seizure and unconsciousness	394	356	352	391	444
Breathing difficulty	509	452	453	306	465
Overdose and psychiatric	97	38	25	48	58
Accident	252	277	262	231	317
Fall and injury	1247	1395	1464	1291	1439
Illness and other	1426	1466	1456	1653	1596
Medical No ProQA	791	722	756	784	707
Interfacility transfer	1708	1890	1879	1615	1727
<b>Fire</b>	<b>940</b>	<b>948</b>	<b>798</b>	<b>870</b>	<b>1040</b>
Structure fire	57	42	51	60	59
Outside fire	31	23	19	30	19
Vehicle fire	15	20	13	13	14
Alarm	211	210	183	212	211
Public service	362	424	366	342	448
Fire other	264	229	166	213	289
<b>Hazmat</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>8</b>	<b>8</b>
Hazmat	2	2	4	8	8
<b>Rescue</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>9</b>	<b>13</b>
Rescue	11	11	11	9	13
<b>Airport</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>
Airport	0	2	0	1	0
<b>Total</b>	<b>7,951</b>	<b>8,192</b>	<b>8,064</b>	<b>7,731</b>	<b>8,413</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>21.8</b>	<b>22.4</b>	<b>22.1</b>	<b>21.1</b>	<b>23.0</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>3.03%</b>	<b>-1.56%</b>	<b>-4.39%</b>	<b>9.12%</b>

**Historical Data Analysis** - Five years of data for CCFEMS was evaluated by station, including number of incidents, number of unit responses, and baseline response times.

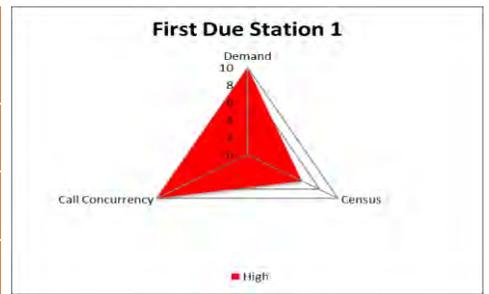


**Response Data** - This heat map of incidents shows the historical incident volume across the first due station area. Five distinct heat maps show relative frequency and geospatial intensity of the incidents for all calls, fire, EMS, hazmat, and other (which includes technical rescue).

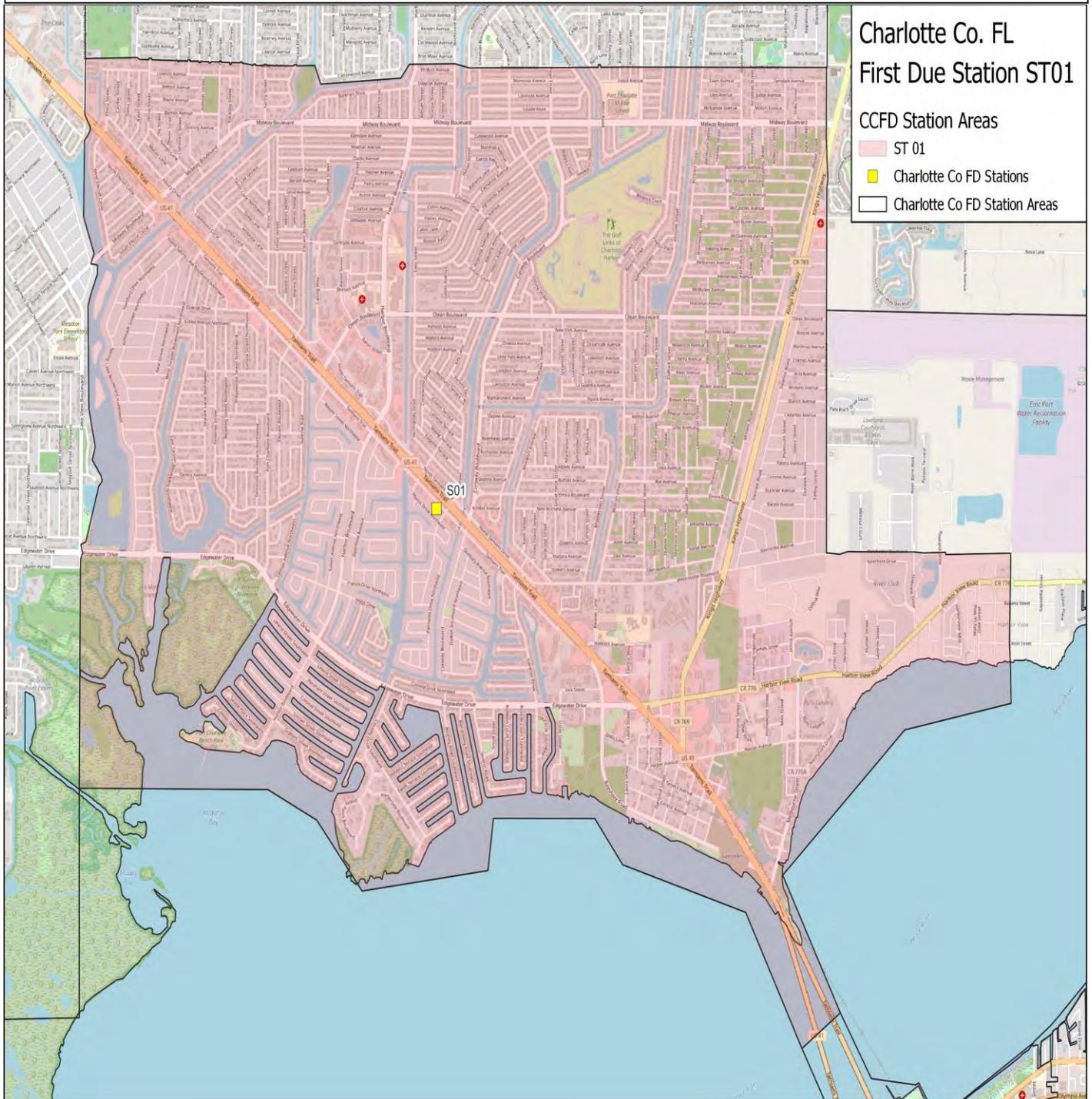


**Concentration** - This map shows the ability to assemble an Effective Response Force (ERF) within an eighteen-minute travel time in the first due station areas.

Station 1	Unit ID	Unit Type	Personnel
	E1	Engine	3
	R1	Rescue	2
	R10	Rescue	2
	BN2	Battalion	1

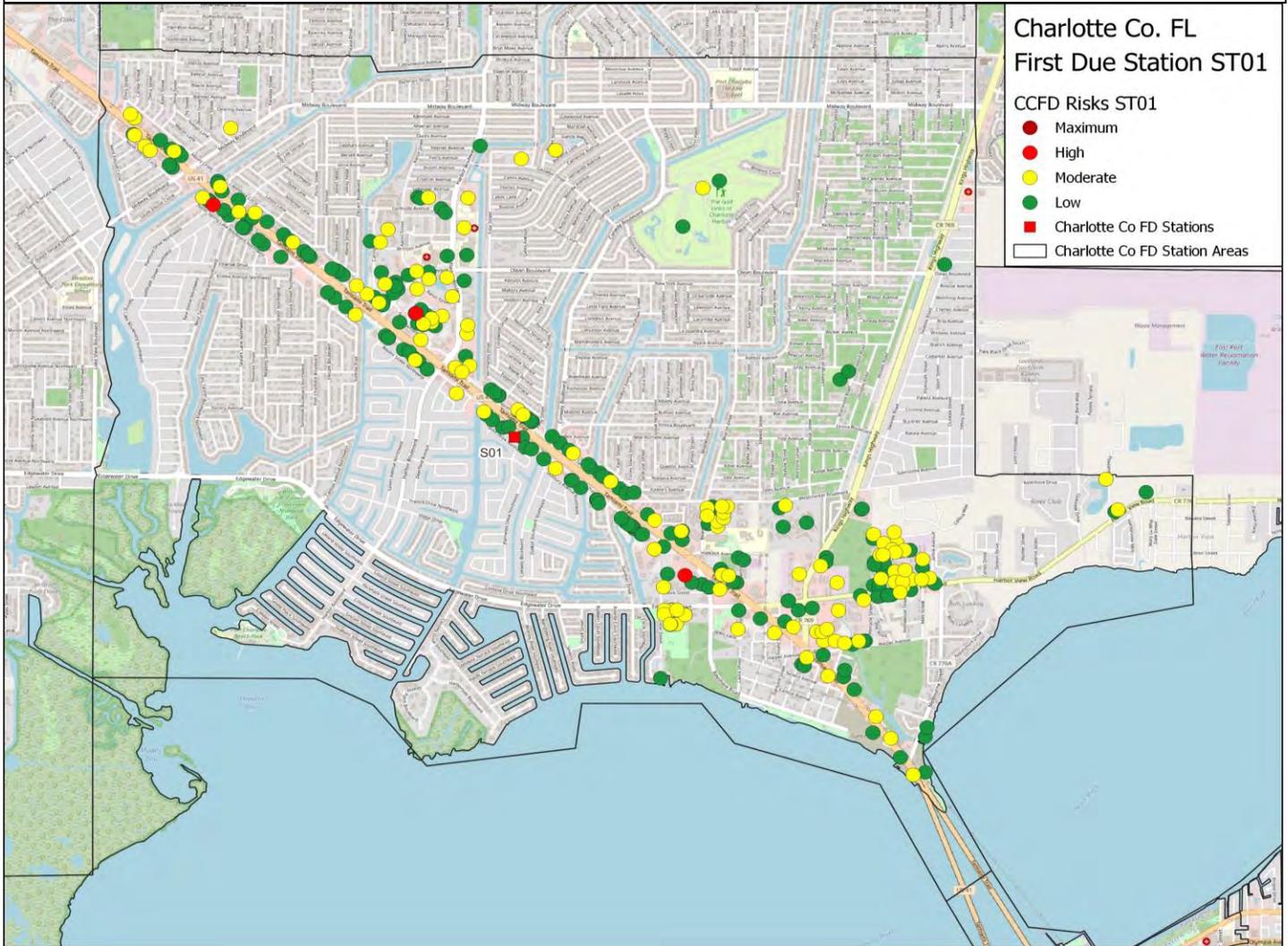


Station 1 is a high-risk station and staffs four primary units; Engine, two Rescues, plus a Battalion Chief.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. There are high-risk buildings located throughout the first due station area.



## Station 1 First Due Area Historical Data Analysis

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>6,998</b>	<b>7,229</b>	<b>7,251</b>	<b>6,843</b>	<b>7,352</b>
Cardiac and stroke	574	633	604	524	599
Seizure and unconsciousness	394	356	352	391	444
Breathing difficulty	509	452	453	306	465
Overdose and psychiatric	97	38	25	48	58
Accident	252	277	262	231	317
Fall and injury	1247	1395	1464	1291	1439
Illness and other	1426	1466	1456	1653	1596
Medical No ProQA	791	722	756	784	707
Interfacility transfer	1708	1890	1879	1615	1727
<b>Fire</b>	<b>940</b>	<b>948</b>	<b>798</b>	<b>870</b>	<b>1040</b>
Structure fire	57	42	51	60	59
Outside fire	31	23	19	30	19
Vehicle fire	15	20	13	13	14
Alarm	211	210	183	212	211
Public service	362	424	366	342	448
Fire other	264	229	166	213	289
<b>Hazmat</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>8</b>	<b>8</b>
Hazmat	2	2	4	8	8
<b>Rescue</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>9</b>	<b>13</b>
Rescue	11	11	11	9	13
<b>Airport</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>
Airport	0	2	0	1	0
<b>Total</b>	<b>7,951</b>	<b>8,192</b>	<b>8,064</b>	<b>7,731</b>	<b>8,413</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>21.8</b>	<b>22.4</b>	<b>22.1</b>	<b>21.1</b>	<b>23.0</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>3.03%</b>	<b>-1.56%</b>	<b>-4.39%</b>	<b>9.12%</b>

## Historical Data Analysis

Station 1's profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials, technical rescue, and aviation occur with much less frequency.

The year-over-year growth has varied between a 5% decrease and a 9% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
1	EN01	3949	4109	4131	4190	4703
	CR10	4119	4011	3967	3848	4044
	CR01	4080	4026	3931	3741	3929
	BAT02	1995	1516	1672	2292	2480
	SUP01	12	25	10	17	10
	<b>Total</b>	<b>14,155</b>	<b>13,687</b>	<b>13,711</b>	<b>14,088</b>	<b>15,166</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>38.8</b>	<b>37.5</b>	<b>37.6</b>	<b>38.5</b>	<b>41.6</b>

Station 1 First Due Area Historical Performance

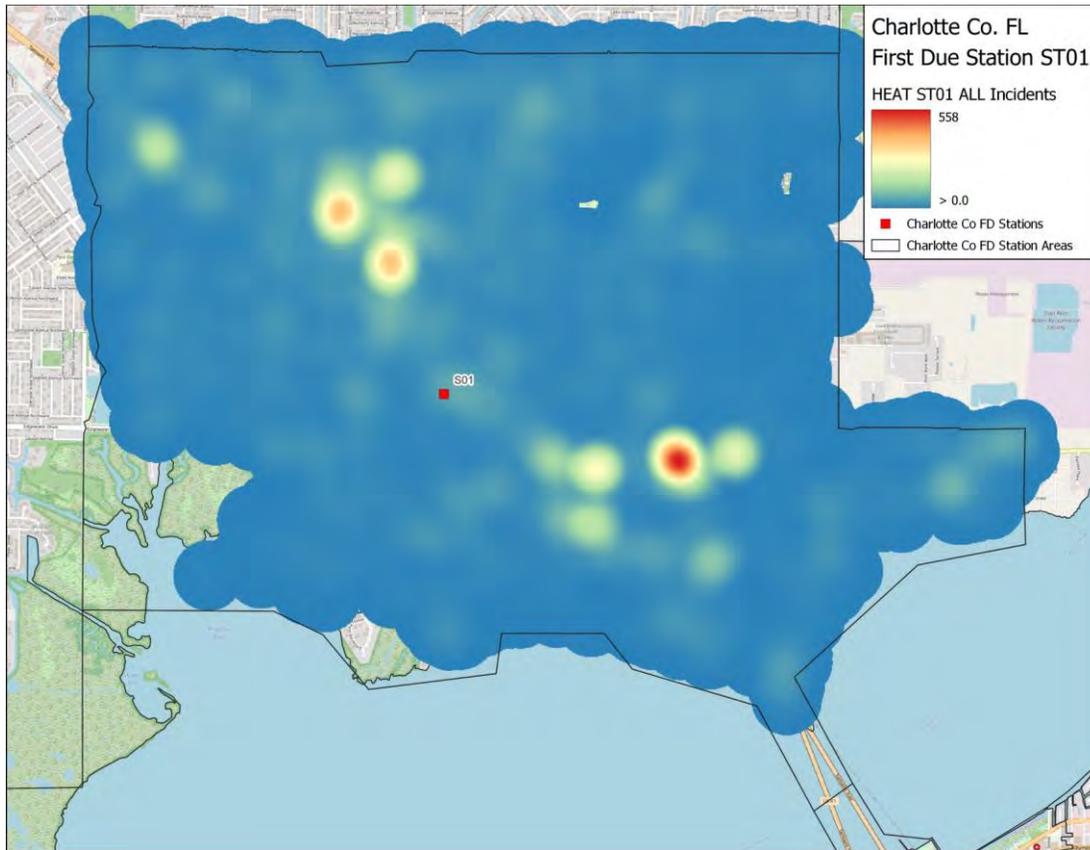
Unit ID	Reporting Period	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)	Sample Size <sup>1</sup>
EN01	2017	4.2	2.3	6	10.7	2,288
	2018	3.9	2.4	6	10.5	2,379
	2019	3.9	2.5	6.1	10.8	2,316
	2020	3.9	2.5	6.5	11.1	2,220
	2021	3.7	2.5	6.8	11.3	2,428
	<b>All</b>	<b>3.9</b>	<b>2.4</b>	<b>6.3</b>	<b>10.9</b>	<b>11,631</b>
CR10	2017	4.4	2.1	6.2	10.9	2,192
	2018	4	2.1	5.7	10.3	2,351
	2019	4.1	2.3	5.7	10.5	2,435
	2020	4.5	2.5	6.1	11.3	2,235
	2021	4	2.3	6.6	11.4	2,356
	<b>All</b>	<b>4.2</b>	<b>2.3</b>	<b>6.1</b>	<b>10.9</b>	<b>11,569</b>
CR01	2017	4.4	1.9	6.2	10.9	2,251
	2018	4.1	2.1	6	10.4	2,355
	2019	4.1	2.1	5.9	10.4	2,455
	2020	4.5	2.4	6.1	11	2,287
	2021	4.1	2.1	6.4	11.1	2,435
	<b>All</b>	<b>4.3</b>	<b>2.1</b>	<b>6.1</b>	<b>10.8</b>	<b>11,783</b>
BAT02	2017	11.4	2.7	5.1	14	46
	2018	6.2	4	5.1	9.7	94
	2019	6.4	4.2	5.8	10.5	149
	2020	5.2	2.7	5.5	12	143
	2021	5.5	2.2	6.2	11.1	135
	<b>All</b>	<b>6.2</b>	<b>3.1</b>	<b>5.7</b>	<b>10.7</b>	<b>567</b>

First Due Station	Reporting Period	Number of Overlapped Calls	Total Number of Calls	Percentage of Overlapped Calls
ST01	2017	3561	7,951	44.8
	2018	3621	8,192	44.2
	2019	3510	8,064	43.5
	2020	3384	7,731	43.8
	2021	4118	8,413	48.9
	<b>All</b>	<b>18,194</b>	<b>40,351</b>	<b>45.1</b>

First Due Station ST01:								2017-2021	2017-2021
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	Benchmark	Compliance
<b>Alarm Handling</b>		4:09	4:18	4:04	4:03	4:19	4:00	3:37	83.2
<b>Turnout Time</b>		2:18	2:10	2:13	2:19	2:26	2:20	2:13	88.6
<b>Travel Time</b>	Urban	6:06	6:05	6:00	5:45	6:14	6:25	6:41	92.7
	Rural	8:15	11:08	6:28	7:01	7:53	9:27	10:43	96.6
<b>Total Response Time</b>	Urban	10:48	10:49	10:30	10:28	11:04	11:02	10:50	90.1
		n = 38,693	n = 7,526	n = 7,814	n = 7,831	n = 7,419	n = 8,103		
	Rural	12:59	15:15	11:31	11:19	13:25	12:56	15:14	95.1
		n = 205	n = 26	n = 41	n = 41	n = 56	n = 41		

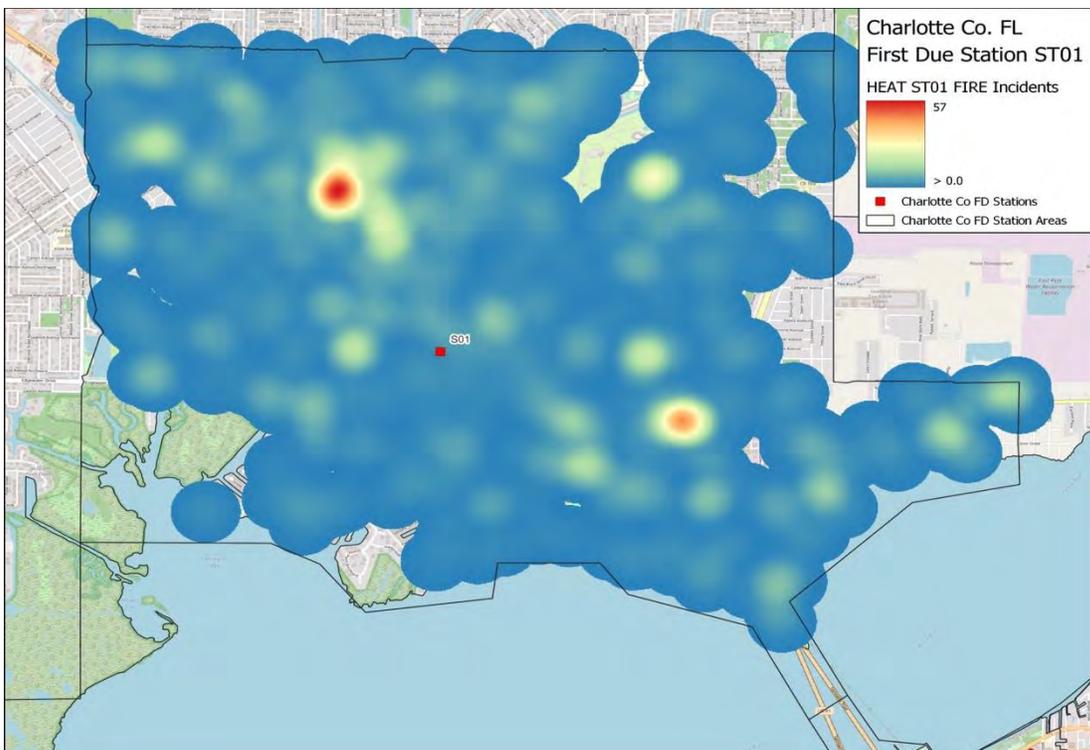
### Overall Hot Spot Map

Shows the most call volume in the north parts of the first due station area.



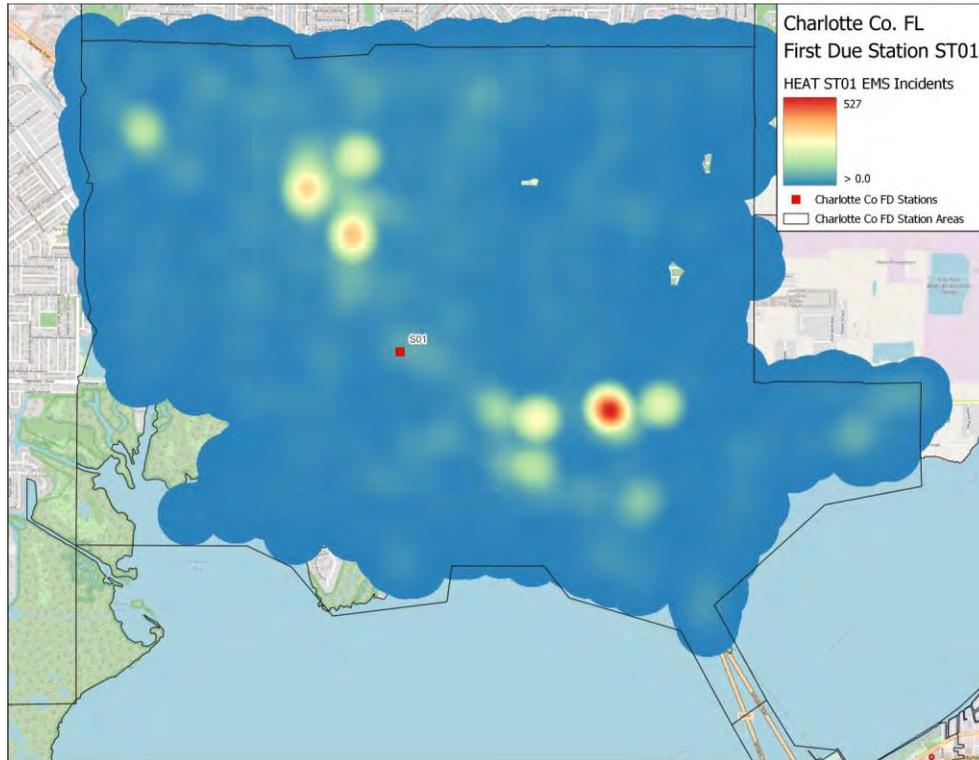
### Fire Hot Spot Map

Most of the call volume for fire related calls is in close proximity to Station 1.



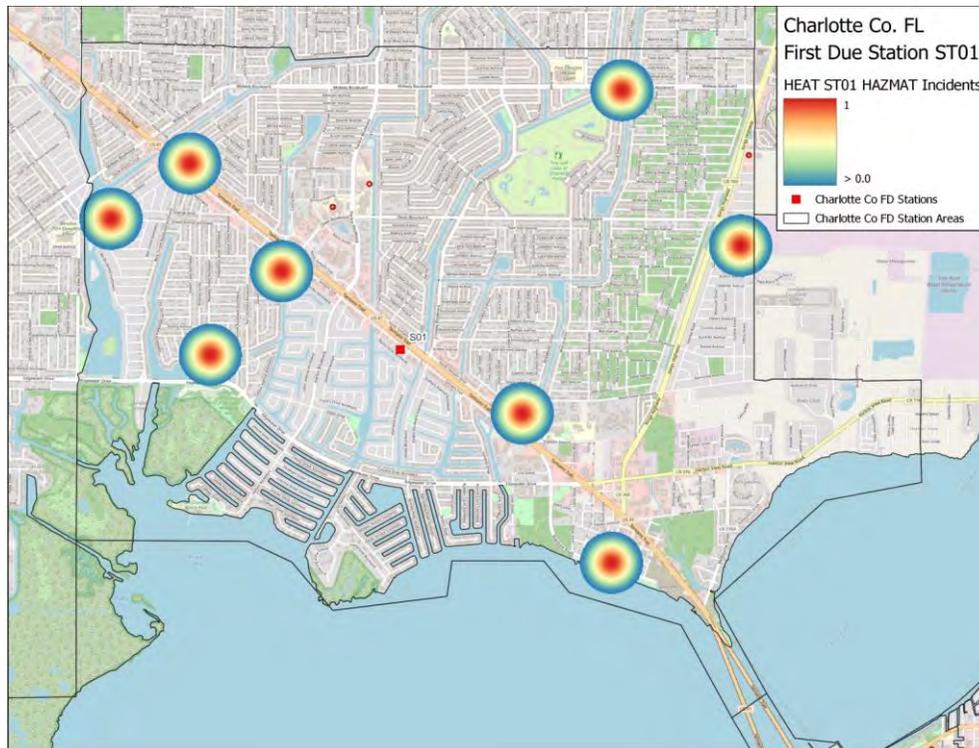
### EMS Hot Spot Map

Shows the highest call volume for EMS related calls surrounding the physical location of Station 1. Calls spread out in a fairly even fashion over the rest of the first due station area.



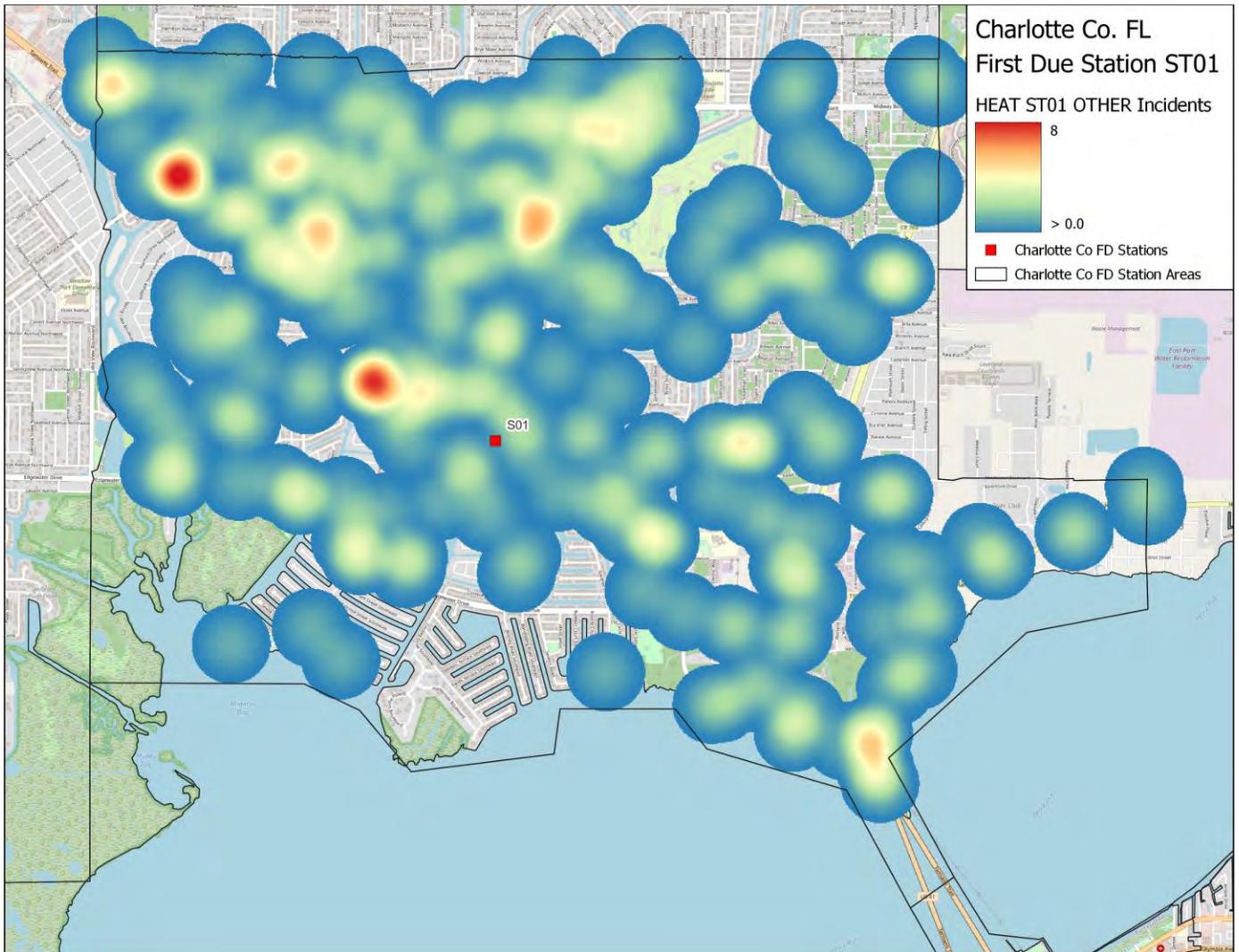
### Hazmat Hot Spot Map

Like fire and EMS, the hot spot map for Station 1 shows the greatest call volume surrounding the station near US 41 with some incidents stretching near the borders of other station areas.



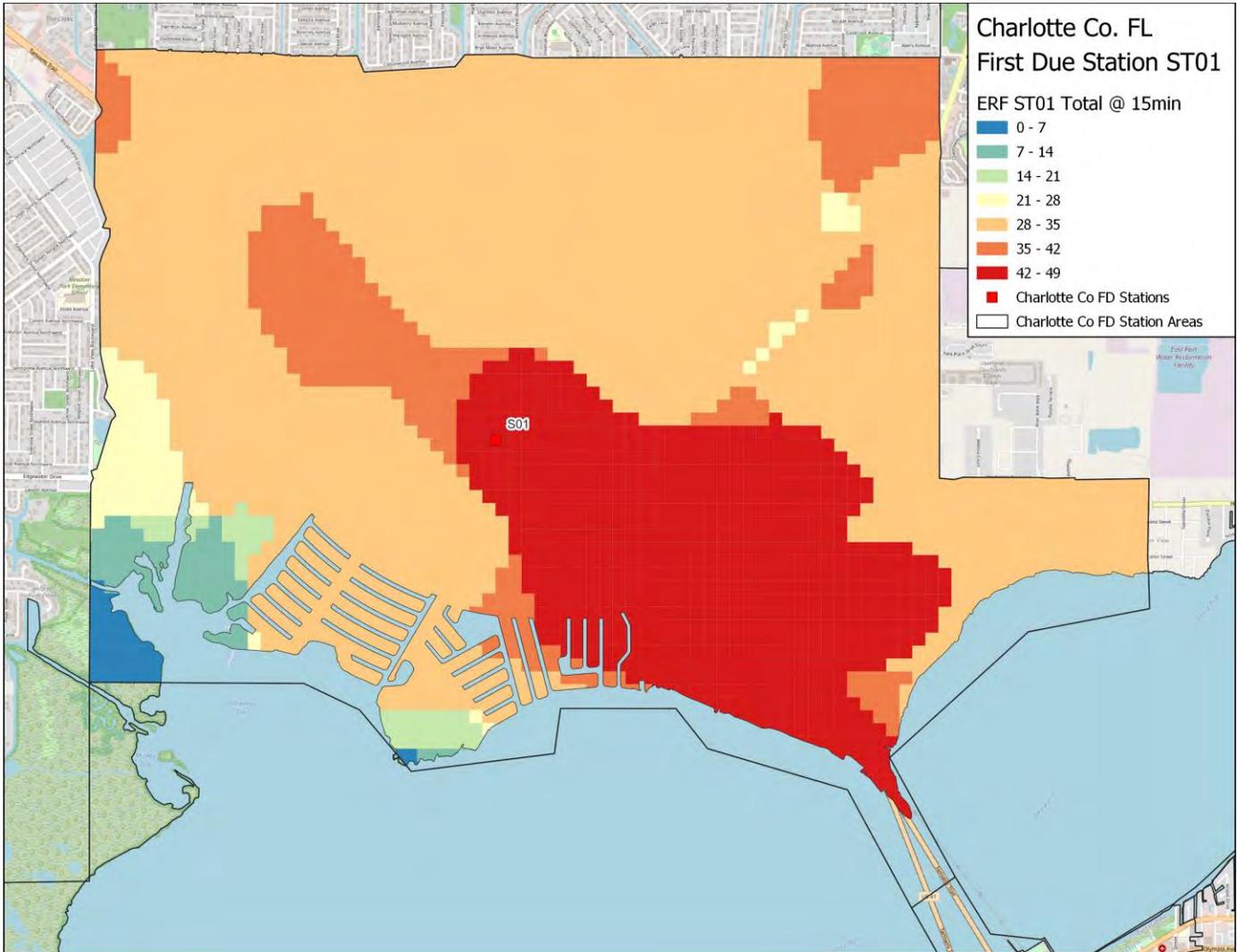
### Other Hot Spot Map

Other related calls appear in close proximity to Station 1. Several calls occur in the area of the first due station area.

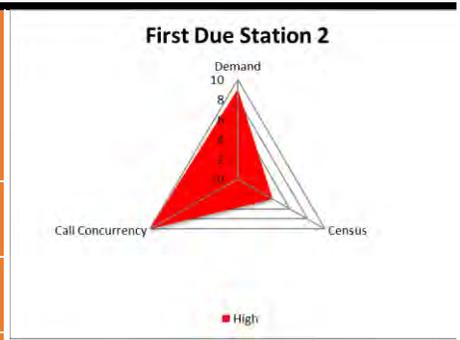


### Concentration—Effective Response Force Capabilities

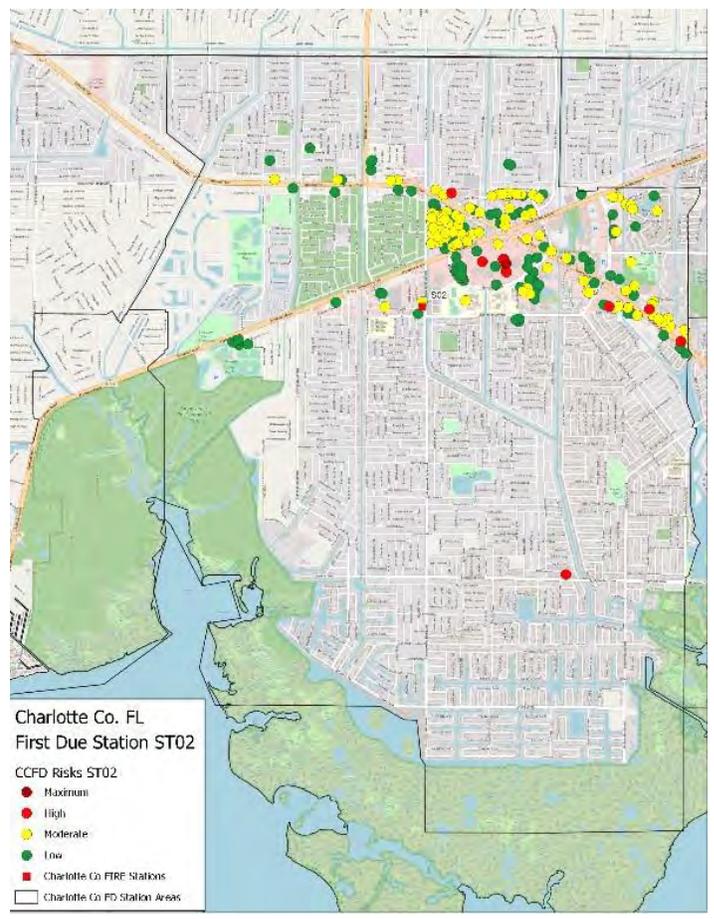
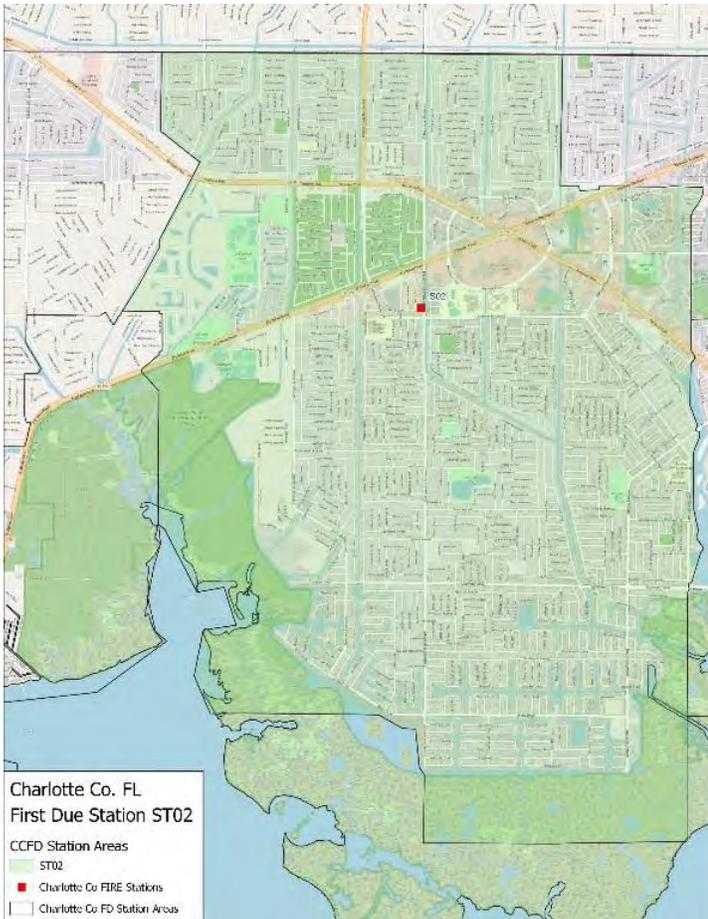
Station 1's area is analyzed by the number of personnel that can assemble within 15 minutes.



Station 2	Unit ID	Unit Type	Personnel
	E2	Engine	3
	R2	Rescue	2
	TK2	Ladder	2



Station 2 is a high-risk station and is adjacent to Station 1. Station 2 staffs three primary vehicles. The occupancy level risk analysis below shows the highest concentrations of risk is located in the central part of Station 2’s first due station area. The buildings are predominantly of moderate risk.



## Station 2 First Due Area Historical Data Analysis

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>3,367</b>	<b>3,446</b>	<b>3,406</b>	<b>3,330</b>	<b>3,647</b>
Cardiac and stroke	362	372	349	336	408
Seizure and unconsciousness	283	272	254	249	273
Breathing difficulty	251	222	201	215	265
Overdose and psychiatric	53	22	10	21	34
Accident	250	230	183	183	270
Fall and injury	603	644	644	636	639
Illness and other	714	750	736	768	795
Medical No ProQA	405	507	476	393	441
Interfacility transfer	446	427	553	529	522
<b>Fire</b>	<b>555</b>	<b>559</b>	<b>508</b>	<b>557</b>	<b>576</b>
Structure fire	39	43	29	21	19
Outside fire	33	44	40	53	29
Vehicle fire	15	15	19	14	21
Alarm	171	155	143	171	158
Public service	132	141	150	137	168
Fire other	165	161	127	161	181
<b>Hazmat</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>6</b>
Hazmat	1	4	2	6	6
<b>Rescue</b>	<b>8</b>	<b>7</b>	<b>5</b>	<b>10</b>	<b>14</b>
Rescue	8	7	5	10	14
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport	0	0	0	0	0
<b>Total</b>	<b>3,931</b>	<b>4,016</b>	<b>3,921</b>	<b>3,903</b>	<b>4,243</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>10.8</b>	<b>11.0</b>	<b>10.7</b>	<b>10.7</b>	<b>11.6</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>2.16%</b>	<b>-2.37%</b>	<b>-0.73%</b>	<b>9.01%</b>

**Historical Data Analysis**

Station 2's profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials, technical rescue, and aviation occur with much less frequency.

The year over year growth has varied between a 2.4% decrease and a 9% increase.

Unit ID	Reporting Period	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size <sup>1</sup>
		(Minutes)	(Minutes)	(Minutes)	(Minutes)	
CR02	2017	4.0	2.1	7.4	11.9	1,754
	2018	3.8	2.2	7.3	11.6	1,779
	2019	4.2	2.0	7.0	11.3	1,652
	2020	4.2	2.1	7.4	12.2	1,814
	2021	3.8	2.1	7.7	12.2	1,863
	<b>All</b>	<b>4.0</b>	<b>2.1</b>	<b>7.4</b>	<b>11.8</b>	<b>8,862</b>
EN02	2017	4.0	2.2	7.3	11.5	1,560
	2018	3.7	2.1	7.4	11.4	1,500
	2019	3.9	2.2	7.1	11.4	1,406
	2020	4.0	2.4	7.2	11.6	1,490
	2021	3.7	2.2	7.6	11.7	1,773
	<b>All</b>	<b>3.8</b>	<b>2.2</b>	<b>7.3</b>	<b>11.5</b>	<b>7,729</b>
TK02	2017	4.8	2.3	7.0	12.3	204
	2018	4.6	2.0	8.2	12.4	140
	2019	5.0	2.1	7.0	11.5	98
	2020	4.4	2.3	7.0	11.8	141
	2021	4.6	2.5	7.3	12.2	181
	<b>All</b>	<b>4.8</b>	<b>2.3</b>	<b>7.3</b>	<b>12.2</b>	<b>764</b>

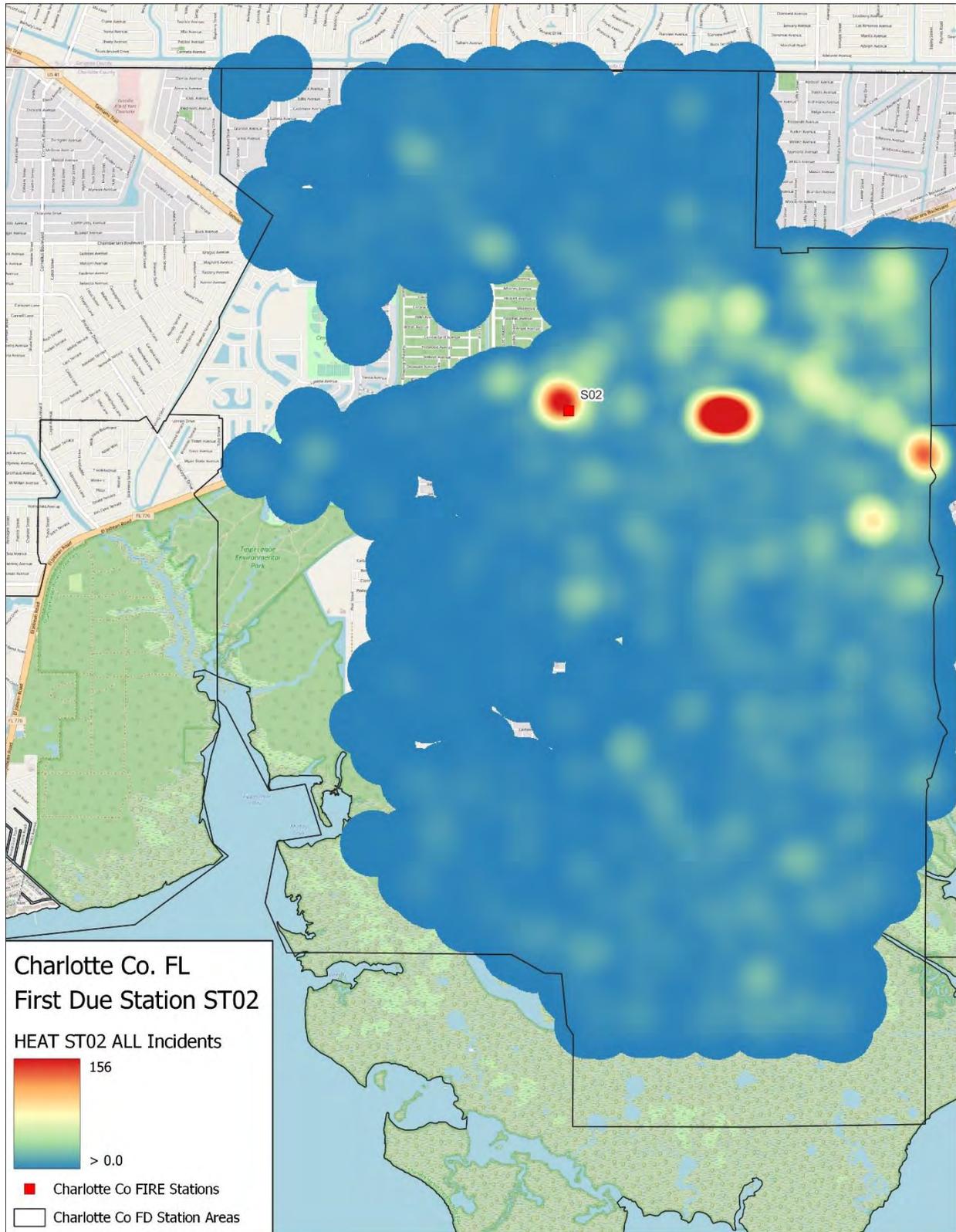
Station 2 First Due Area Historical Performance

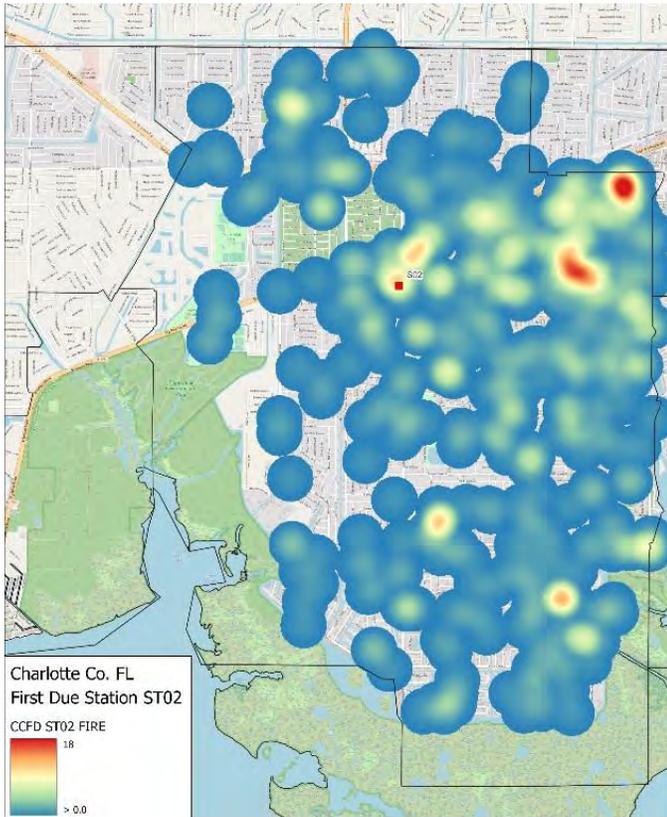
First Due Station	Reporting Period	Number of Overlapped Calls	Total Number of Calls	Percentage of Overlapped Calls
ST02	2017	1165	3,931	29.6
	2018	1103	4,016	27.5
	2019	1056	3,921	26.9
	2020	1072	3,903	27.5
	2021	1347	4,243	31.7
	<b>All</b>		<b>5,743</b>	<b>20,014</b>

First Due Station ST02:		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
1 <sup>st</sup> Arriving Baseline									
<b>Alarm Handling</b>		3:59	4:07	3:49	4:07	4:05	3:47	3:37	85.2
<b>Turnout Time</b>		2:09	2:11	2:07	2:04	2:15	2:09	2:13	91.3
<b>Travel Time</b>	Urban	7:23	7:22	7:22	7:06	7:17	7:49	6:41	84.4
	Rural	7:44	7:33	7:53	7:34	8:00	7:45	10:43	97.8
<b>Total Response Time</b>	Urban	11:44	11:50	11:30	11:30	11:52	11:59	10:50	84.0
		n = 17,863	n = 3,454	n = 3,554	n = 3,487	n = 3,477	n = 3,891		
	Rural	12:16	12:00	12:03	11:42	12:39	12:34	15:14	97.2
		n = 1,377	n = 248	n = 294	n = 325	n = 286	n = 224		

### Overall Hot Spot Map

Trends indicate the majority of call volume immediately surrounding the station and West, with the most call volume Southwest of the station.



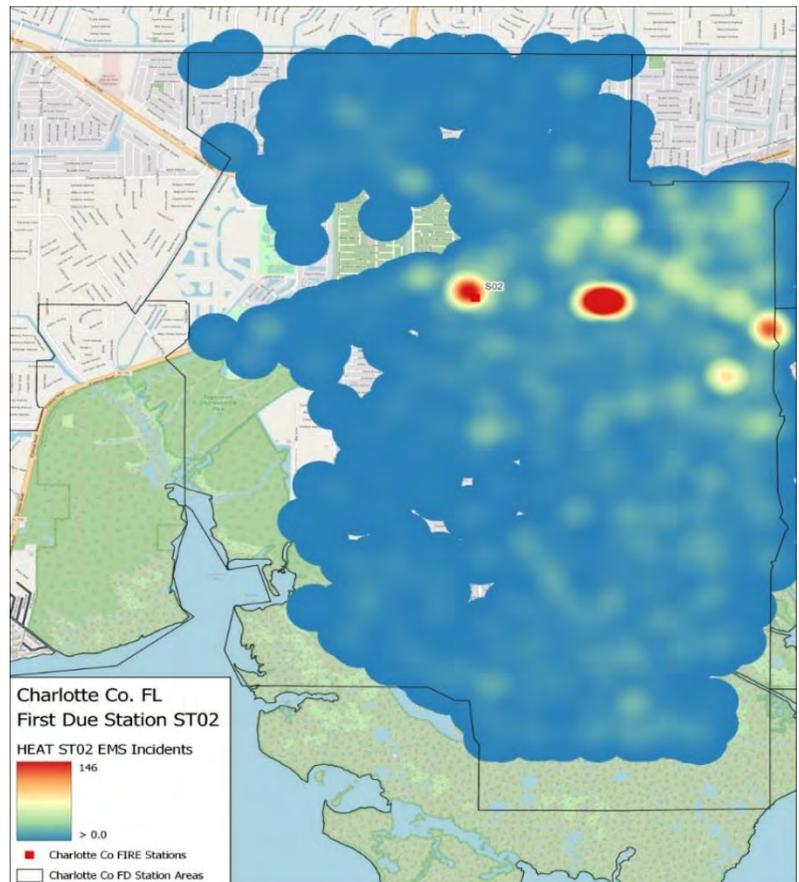


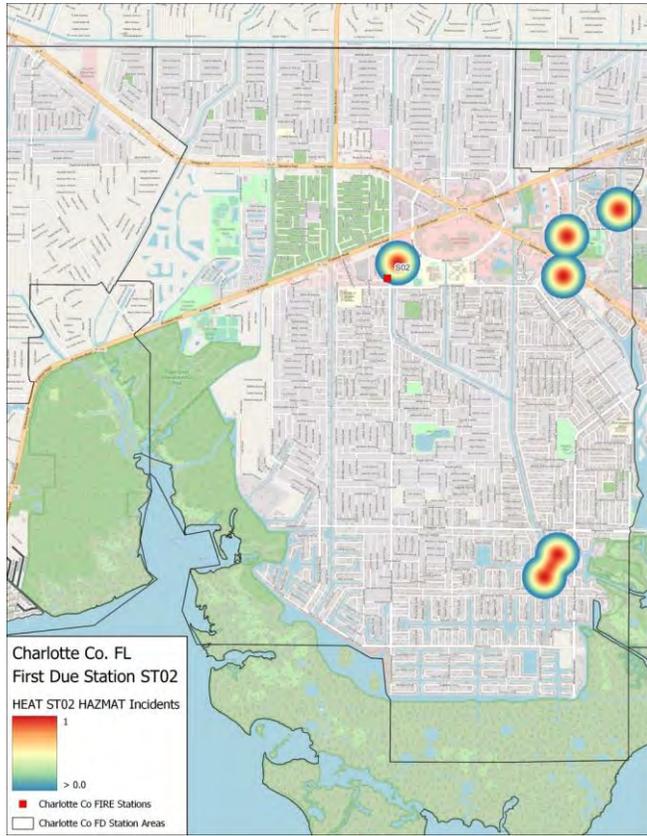
### Fire Hot Spot Map

This map indicates a fairly even distribution of fire calls with most located Northeast of Station 2.

### EMS Hot Spot Map

Indicates a reasonably even distribution of EMS calls with hot spots near North-east central of Station 2.



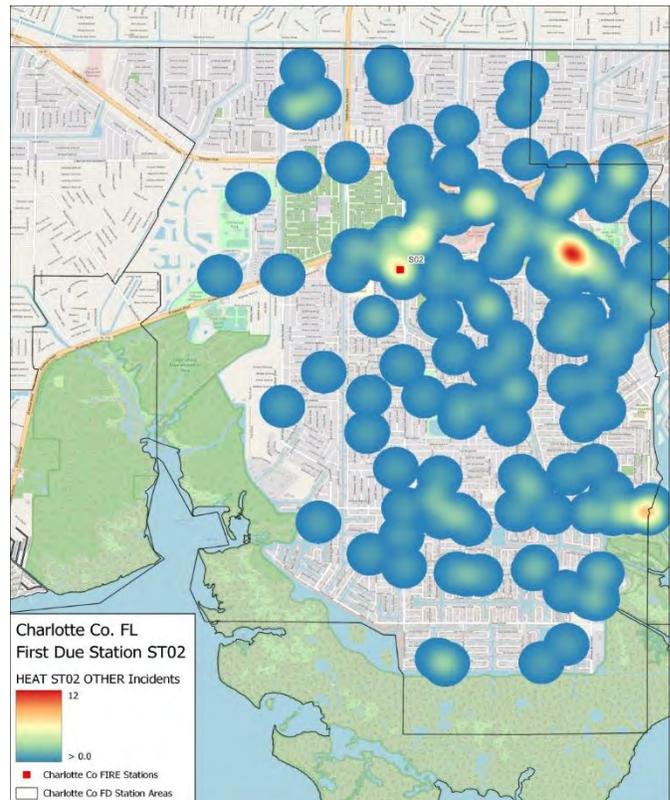


### Hazmat Hot Spot Map

This map indicates a fairly even distribution of hazmat calls with most located Northeast of Station 2.

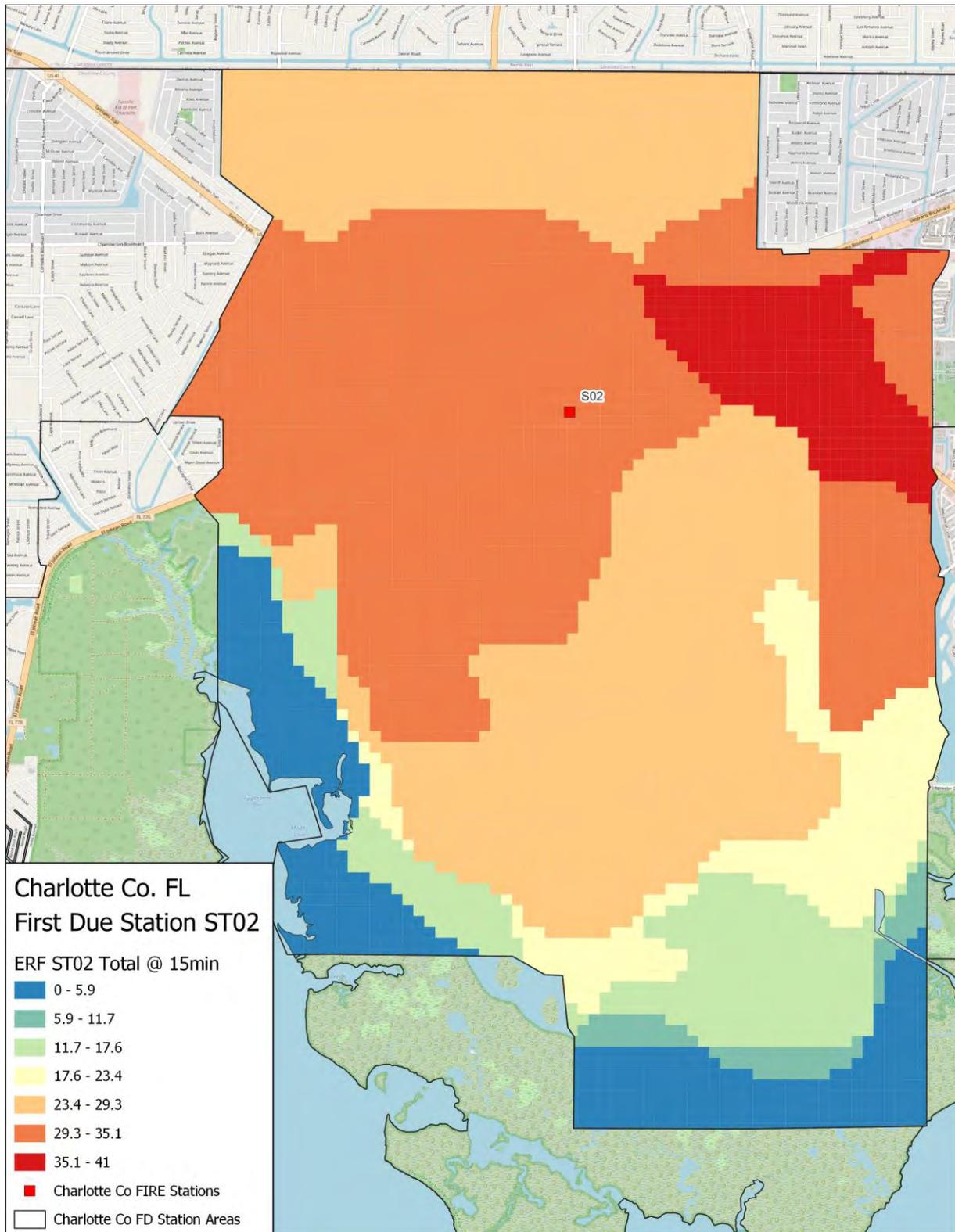
### Other Hot Spot Map

Indicates an even distribution of other calls with the most located in the Northeast portion of Station 2's first due area.



### Concentration—Effective Response Force Capabilities

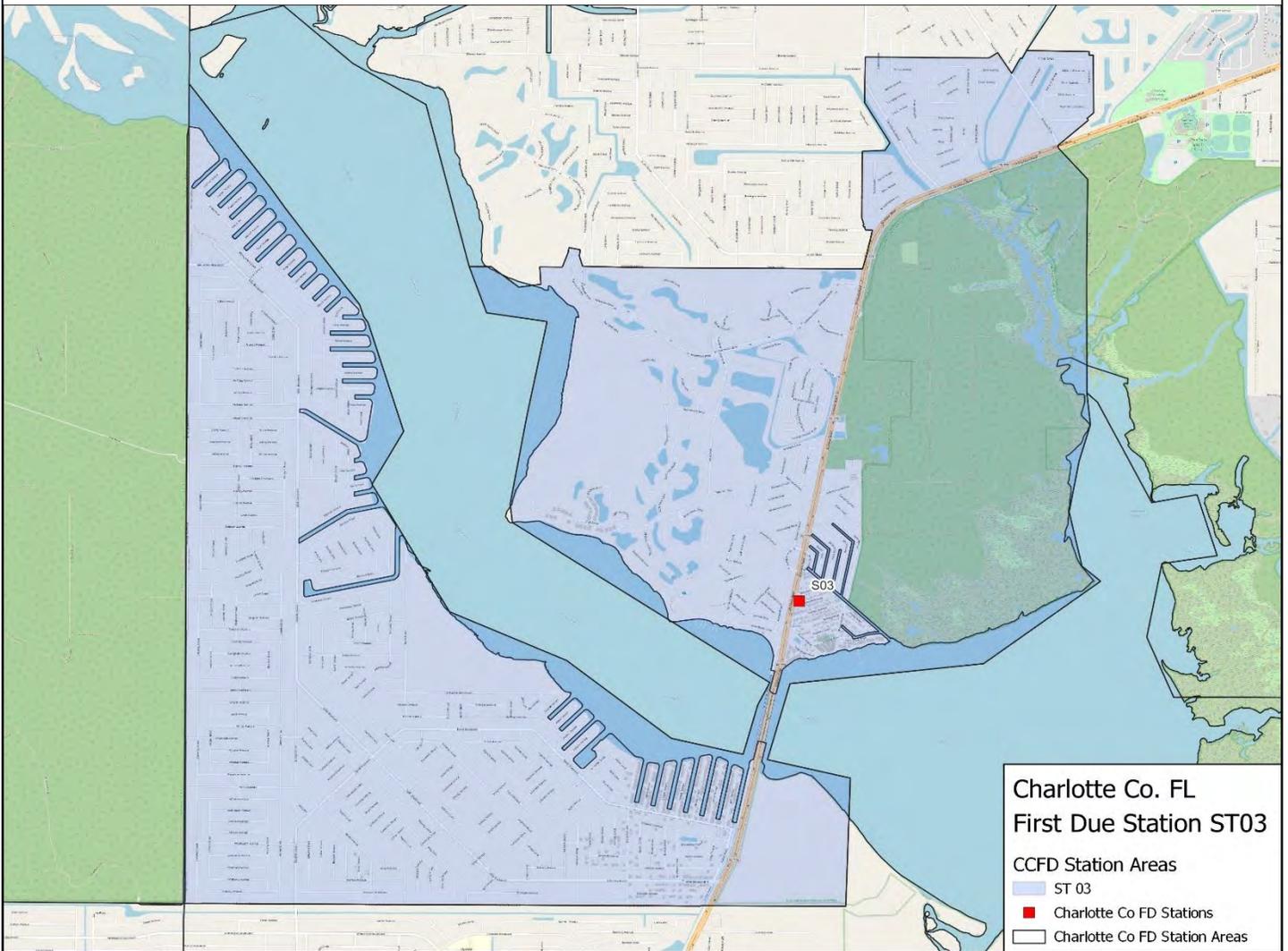
Station 2's area is analyzed by the number of personnel that can assemble within 15 minutes.



Station 3	Unit ID	Unit Type	Personnel
	E3	Engine	2
	R3	Rescue	2

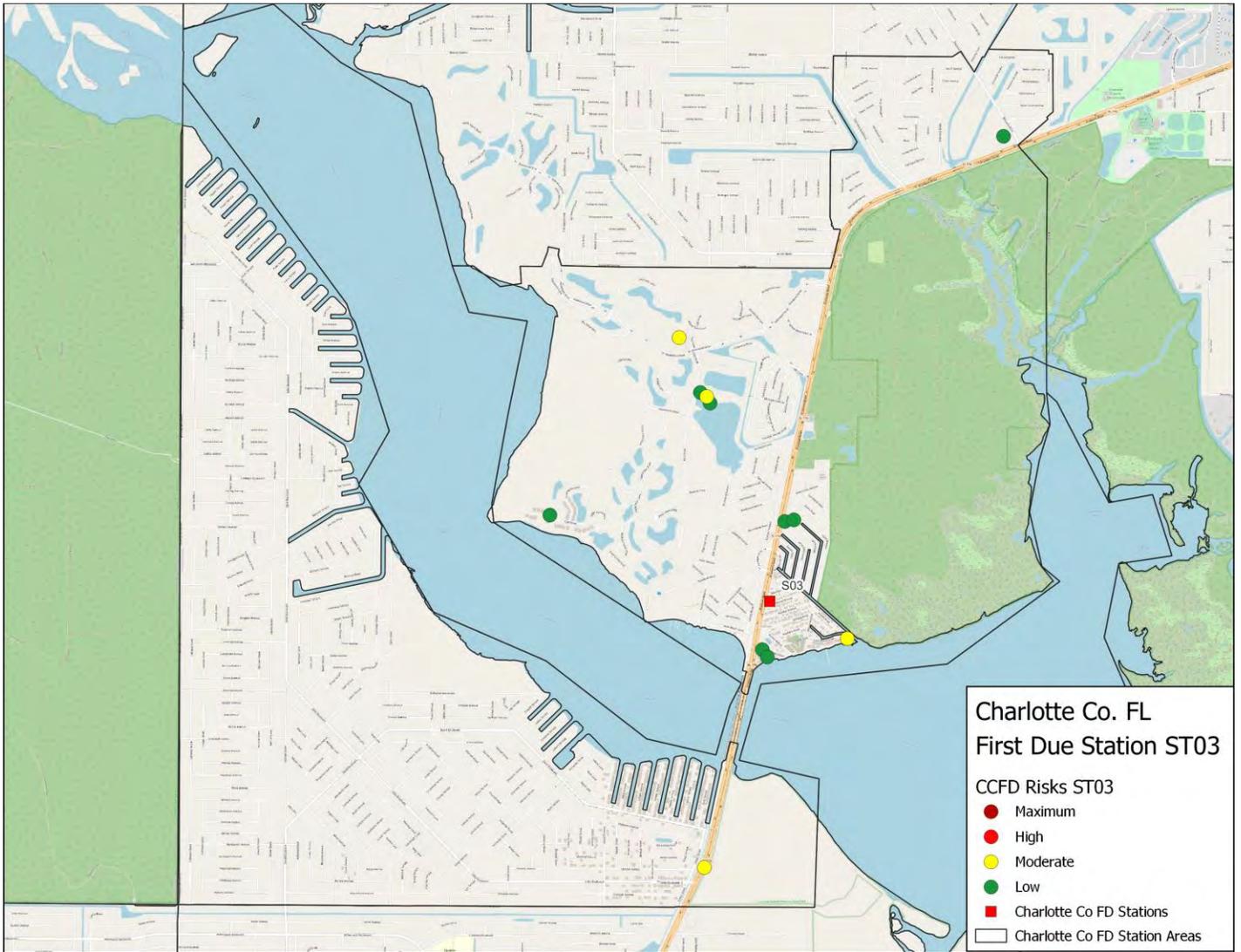


Station 3 is a low-risk station and staffs an Engine and Rescue.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. Risk is also evaluated by geographic planning zone using the same shading criteria. The majority of Station 3's first due area is low risk, with a concentration of buildings adjacent of the station.



## Station 3 First Due Area Historical Data Analysis

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>565</b>	<b>548</b>	<b>523</b>	<b>667</b>	<b>706</b>
Cardiac and stroke	80	89	71	89	99
Seizure and unconsciousness	38	44	29	54	61
Breathing difficulty	59	48	49	44	59
Overdose and psychiatric	5	2	6	3	5
Accident	31	27	26	38	38
Fall and injury	117	132	137	159	162
Illness and other	173	145	145	193	197
Medical No ProQA	58	55	55	81	77
Interfacility transfer	4	6	5	6	8
<b>Fire</b>	<b>120</b>	<b>178</b>	<b>95</b>	<b>123</b>	<b>141</b>
Structure fire	7	5	4	4	7
Outside fire	6	18	10	14	11
Vehicle fire	1	3	3	2	2
Alarm	15	22	21	21	30
Public service	55	81	34	49	57
Fire other	36	49	23	33	34
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Hazmat	0	0	0	0	0
<b>Rescue</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>
Rescue	0	0	1	1	3
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport	0	0	0	0	0
<b>Total</b>	<b>685</b>	<b>726</b>	<b>619</b>	<b>791</b>	<b>850</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>1.9</b>	<b>2.0</b>	<b>1.7</b>	<b>2.2</b>	<b>2.3</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>5.99%</b>	<b>-14.74%</b>	<b>27.44%</b>	<b>7.75%</b>

## Historical Data Analysis

Station 3's profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials, technical rescue, only had one incident over the 5- year rating period.

The year-over-year growth has varied between a 14% decrease and a 27% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
3	CR03	1269	1176	1110	1338	1511
	EN03	688	725	643	845	908
	<b>Total</b>	<b>1,957</b>	<b>1,901</b>	<b>1,753</b>	<b>2,183</b>	<b>2,419</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>5.4</b>	<b>5.2</b>	<b>4.8</b>	<b>6.0</b>	<b>6.6</b>

Station 3 First Due Area Historical Performance

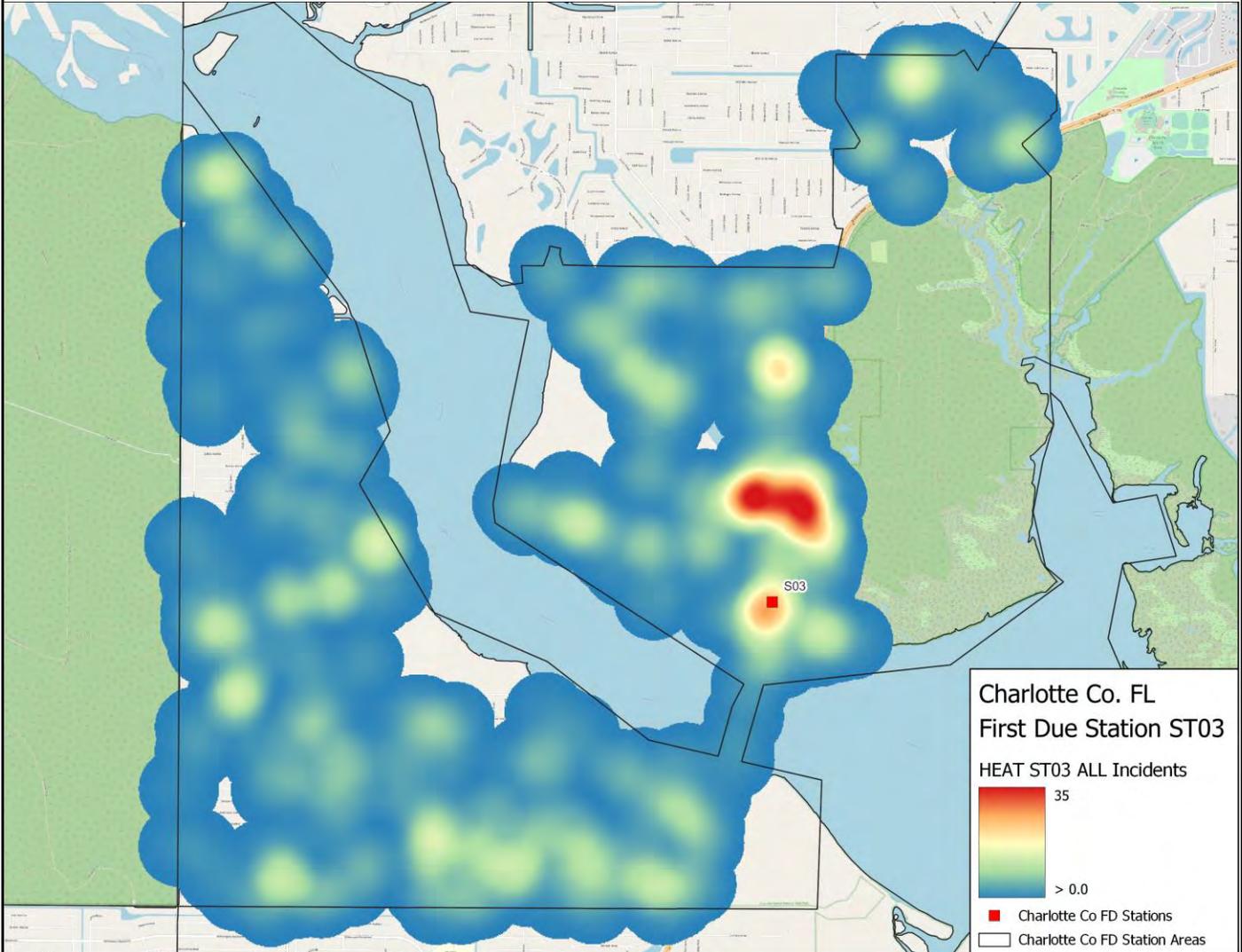
Unit ID	Reporting Period	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)	Sample Size <sup>1</sup>
CR03	2017	4.3	2.3	9.6	14.2	650
	2018	4.0	2.2	8.8	13.3	615
	2019	4.0	2.2	8.9	13.4	608
	2020	4.2	2.2	8.8	13.3	721
	2021	3.8	2.1	9.4	13.7	752
	<b>All</b>	<b>4.0</b>	<b>2.2</b>	<b>9.1</b>	<b>13.5</b>	<b>3,346</b>
EN03	2017	4.1	2.8	8.4	13.0	328
	2018	3.9	2.5	8.1	12.3	389
	2019	3.8	2.4	8.8	13.4	279
	2020	4.1	2.6	9.0	13.5	406
	2021	3.6	2.5	8.9	13.1	480
	<b>All</b>	<b>3.9</b>	<b>2.5</b>	<b>8.6</b>	<b>13.0</b>	<b>1,882</b>

First Due Station	Reporting Period	Number of Overlapped Calls	Total Number of Calls	Percentage of Overlapped Calls
ST03	2017	56	685	8.2
	2018	57	726	7.9
	2019	37	619	6.0
	2020	75	791	9.5
	2021	74	850	8.7
	<b>All</b>	<b>299</b>	<b>3,671</b>	<b>8.1</b>

First Due Station ST03:							2017-2021		2017-2021	
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	Benchmark	Compliance	
<b>Alarm Handling</b>		3:54	3:57	3:48	3:55	4:10	3:43	3:37	86.3	
<b>Turnout Time</b>		2:24	2:27	2:20	2:24	2:23	2:26	2:13	86.7	
<b>Travel Time</b>	Urban	7:16	7:30	6:55	7:04	6:58	7:37	6:41	85.1	
	Rural	9:39	9:38	8:58	9:26	10:13	9:41	10:43	95.1	
<b>Total Response Time</b>	Urban	11:43	12:13	11:11	11:30	11:49	12:05	10:50	82.8	
		n = 2,577	n = 471	n = 502	n = 445	n = 541	n = 618			
	Rural	14:20	14:23	13:54	14:22	14:54	13:55	15:14	94.3	
		n = 945	n = 173	n = 180	n = 156	n = 223	n = 213			

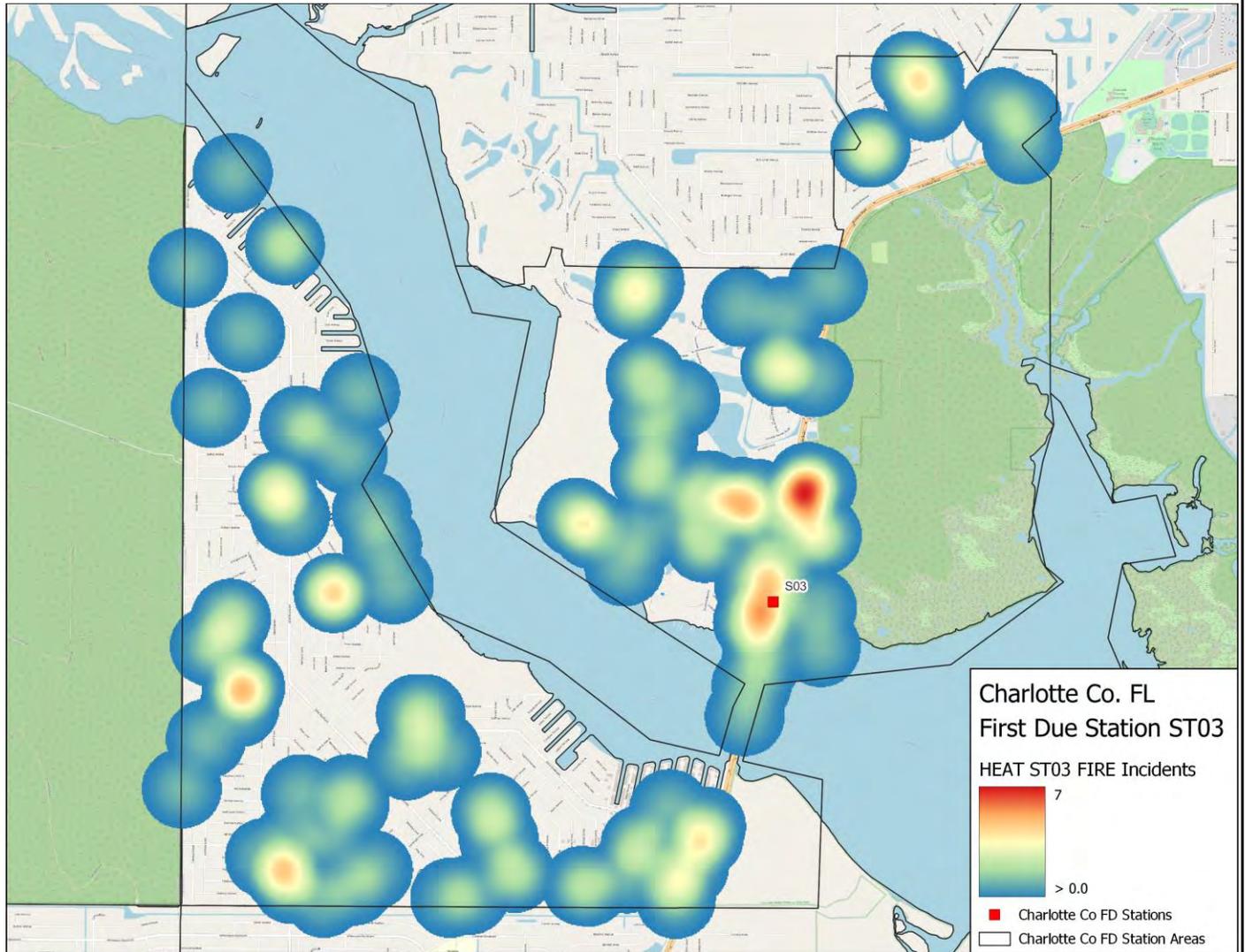
### Overall Hot Spot Map

Trends show the majority of call volume immediately surrounding the station, with a fairly even spread of calls throughout the rest of Station 3's first due area.



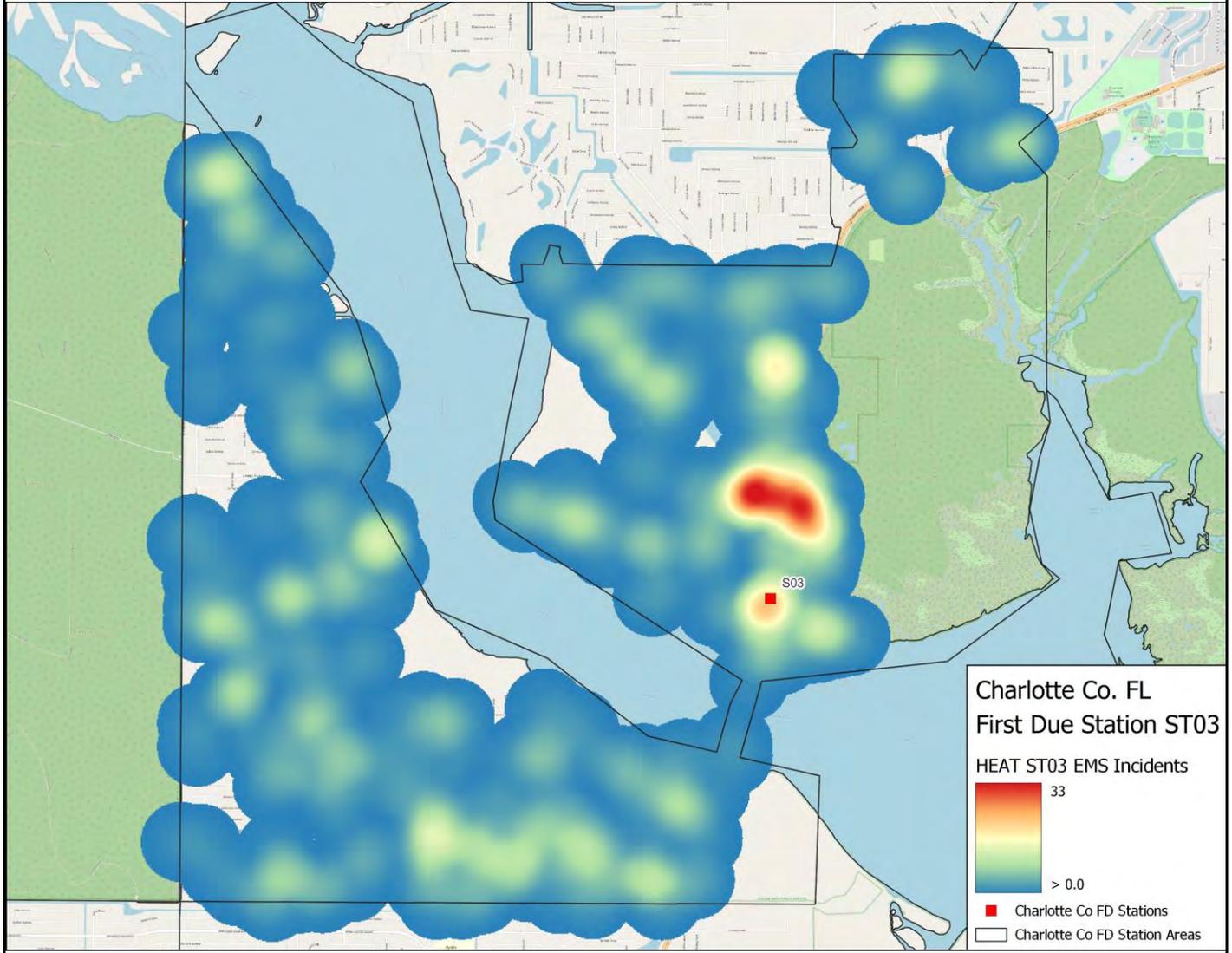
### Fire Hot Spot Map

This map indicates the highest concentration of fire calls are highest in and around Station 3.



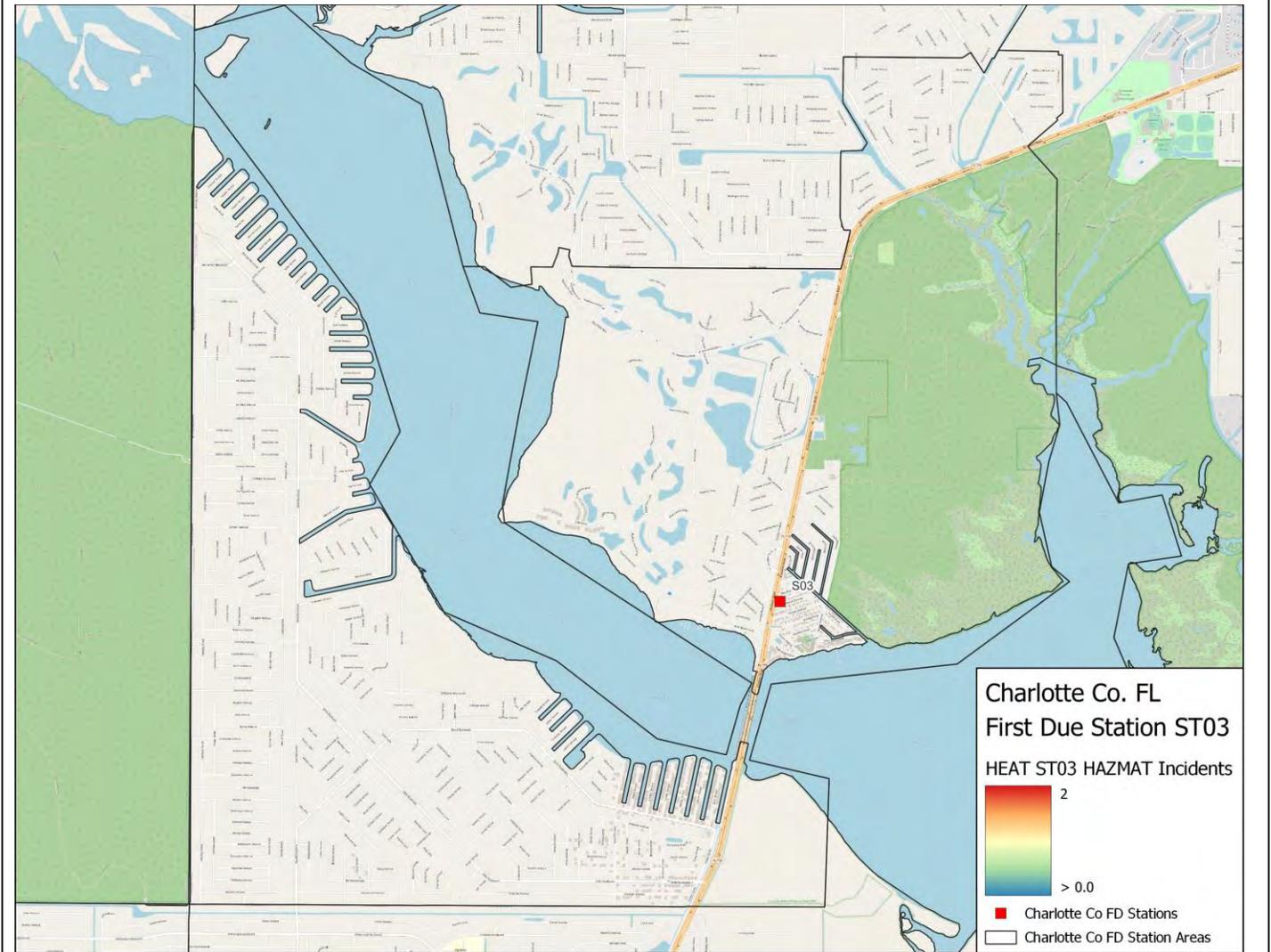
### EMS Hot Spot Map

This map shows an even distribution of EMS calls throughout the first due area. Most of the concentration is located in close proximity to the station. There is a single moderate hot spot just North of Station 3.



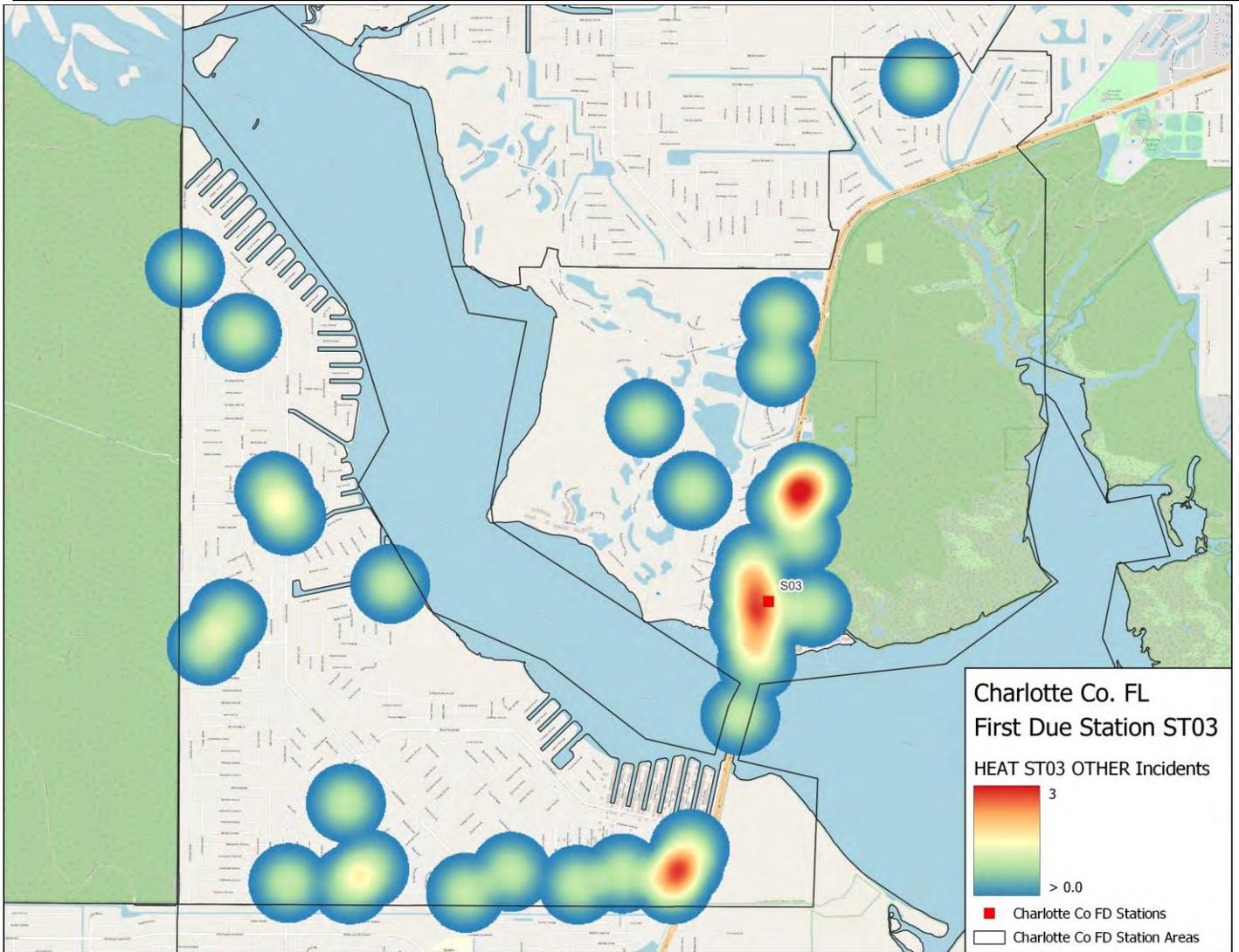
### Hazmat Hot Spot Map

There is a little to no volume of hazardous materials calls in the first due area of Station 3.



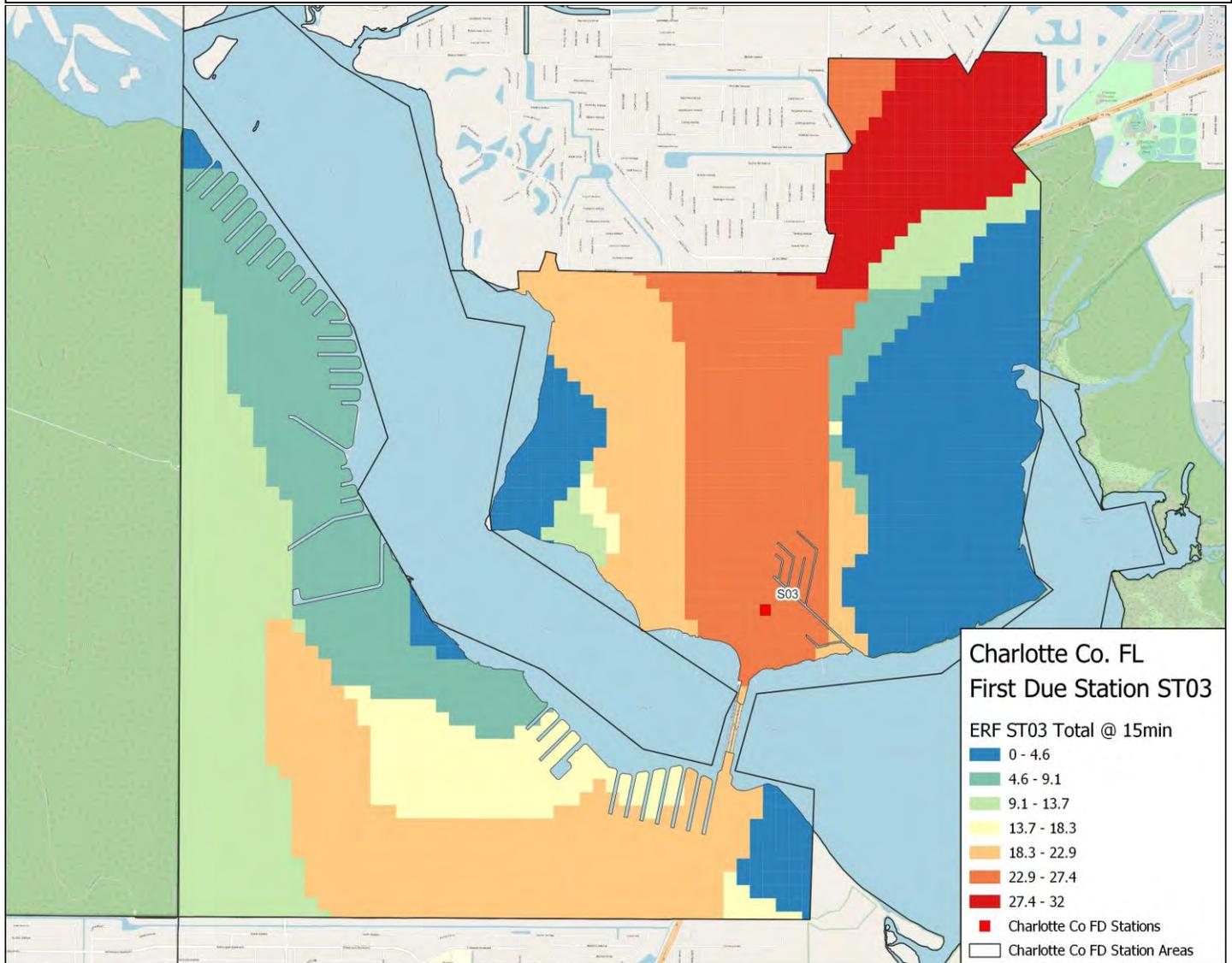
### Other Hot Spot Map

This call type shows the most call volume in close proximity to Station 3.

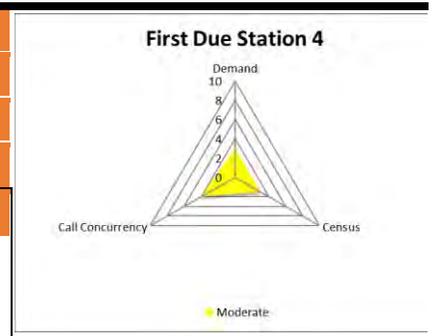


### Concentration—Effective Response Force Capabilities

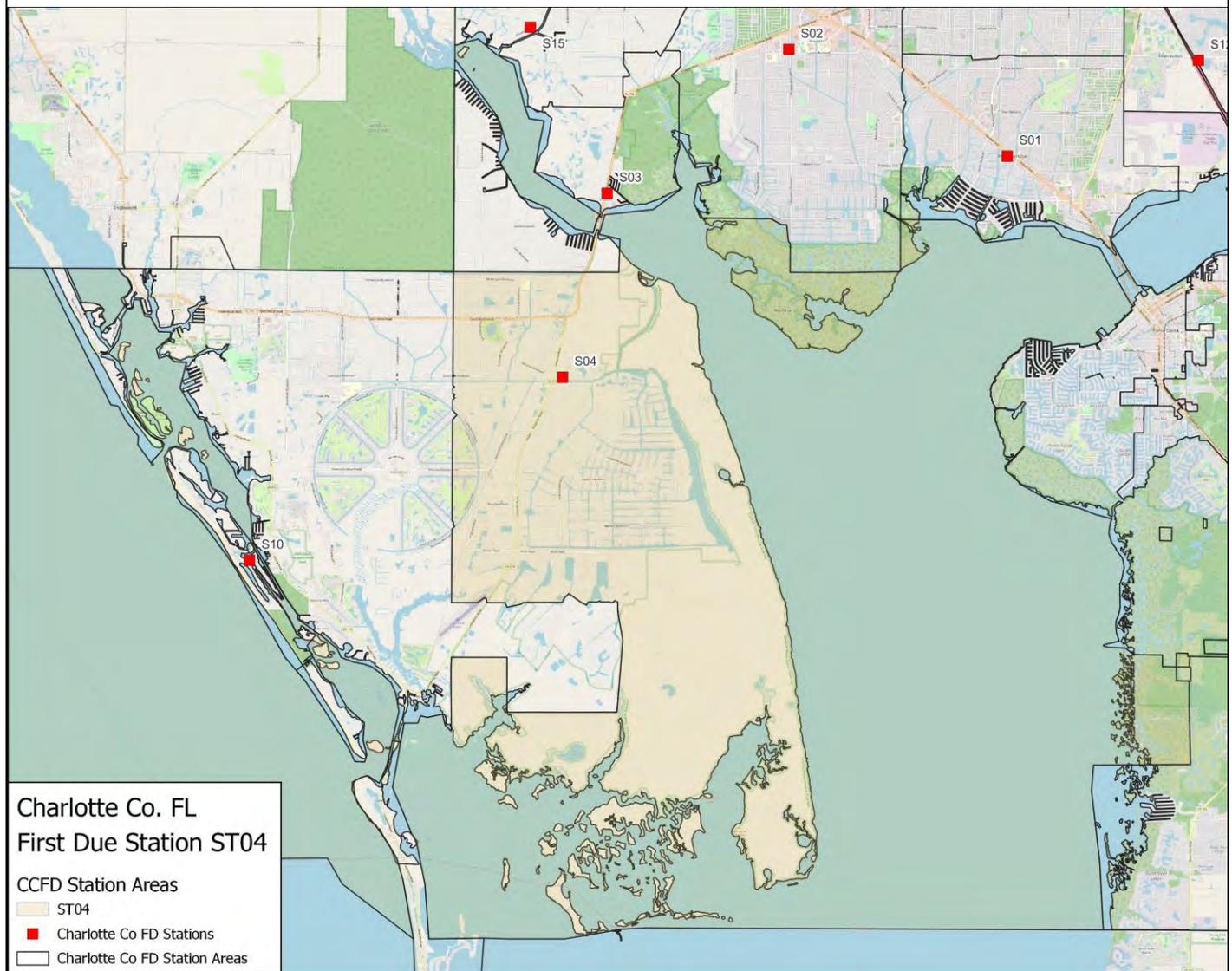
Station 3's area is analyzed by the number of personnel that can assemble within 15 minutes.



	Unit ID	Unit Type	Personnel
Station 4	E4	Engine	3
	R4	Rescue	2
	M1/3	Marine	
	M03	Marine	

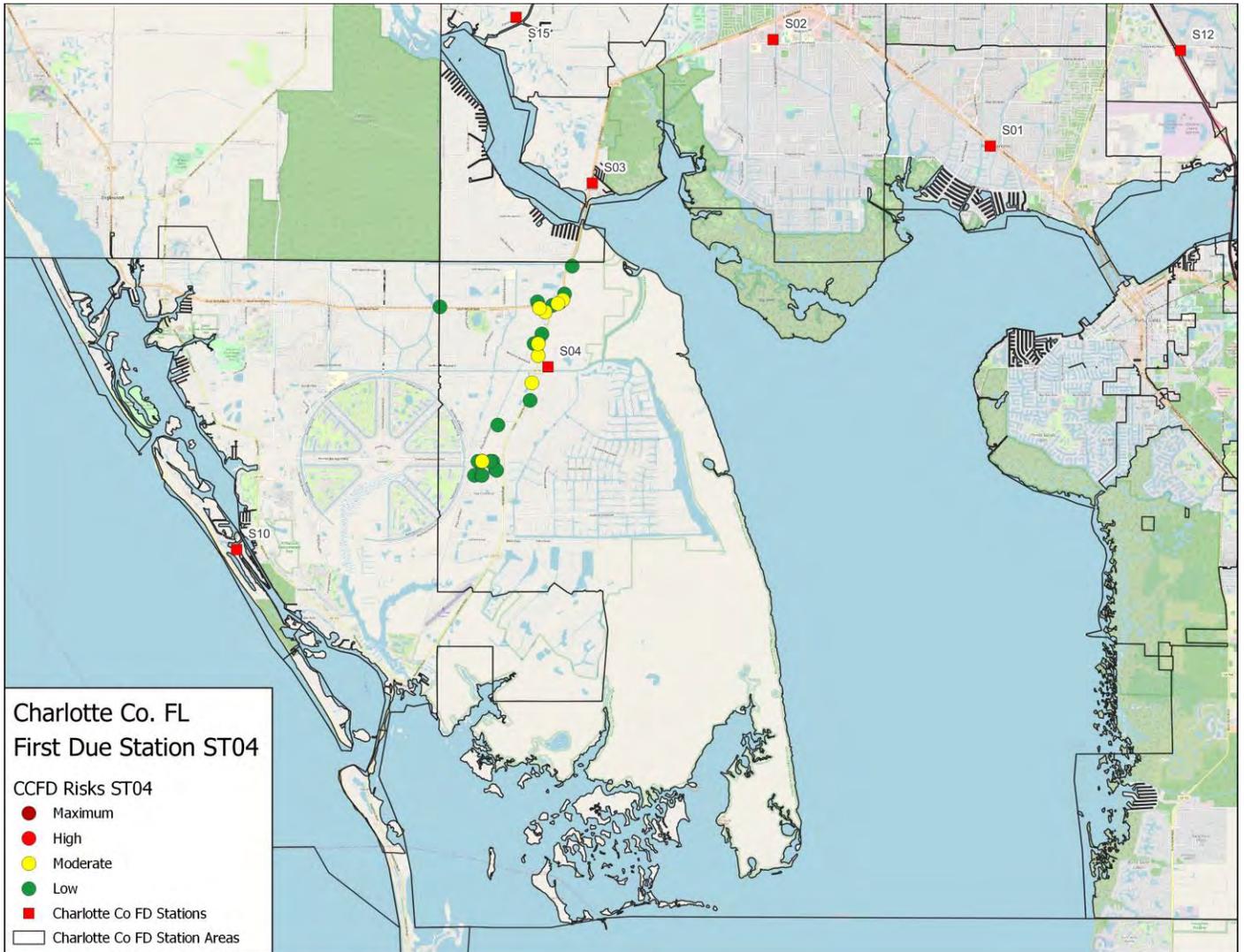


Station 4 staffs two primary units, an Engine and Rescue, and cross staffs Marine units when needed. The station has a moderate overall jurisdictional risk profile.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. There is a concentration of lower to moderate risk buildings along the major travel corridor of the station area that warrants additional attention. Station 4's first due area is low to moderate risk.



Station 4 First Due Area Historical Data Analysis

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>813</b>	<b>694</b>	<b>794</b>	<b>975</b>	<b>1,061</b>
Cardiac and stroke	100	102	99	126	126
Seizure and unconsciousness	57	47	59	77	91
Breathing difficulty	51	72	64	81	89
Overdose and psychiatric	14	5	7	5	6
Accident	55	43	50	64	63
Fall and injury	174	157	196	225	266
Illness and other	257	199	216	298	315
Medical No ProQA	101	67	91	94	97
Interfacility transfer	4	2	12	5	8
<b>Fire</b>	<b>161</b>	<b>146</b>	<b>154</b>	<b>217</b>	<b>213</b>
Structure fire	3	11	9	6	8
Outside fire	31	23	21	47	17
Vehicle fire	2	4	4	2	4
Alarm	25	26	38	50	74
Public service	32	32	34	51	59
Fire other	68	50	48	61	51
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>
Hazmat	0	0	2	0	2
<b>Rescue</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>3</b>	<b>2</b>
Rescue	2	4	0	3	2
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Airport	0	0	1	0	0
<b>Total</b>	<b>976</b>	<b>844</b>	<b>951</b>	<b>1,195</b>	<b>1,278</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>2.7</b>	<b>2.3</b>	<b>2.6</b>	<b>3.3</b>	<b>3.5</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>-13.52%</b>	<b>12.68%</b>	<b>25.31%</b>	<b>7.24%</b>

**Historical Data Analysis**

Station 4’s profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials, technical rescue had few incidents during the 5-year rating period.

The year over year growth has varied between a 13% decrease and a 25% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
4	CR04	1622	1464	1613	1727	1896
	EN04	784	698	744	908	987
	MR01	114	87	71	109	101
	MR03	51	29	27	37	44
	<b>Total</b>	<b>2,571</b>	<b>2,278</b>	<b>2,455</b>	<b>2,781</b>	<b>3,028</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>7.0</b>	<b>6.2</b>	<b>6.7</b>	<b>7.6</b>	<b>8.3</b>

## Station 4 First Due Area Historical Performance

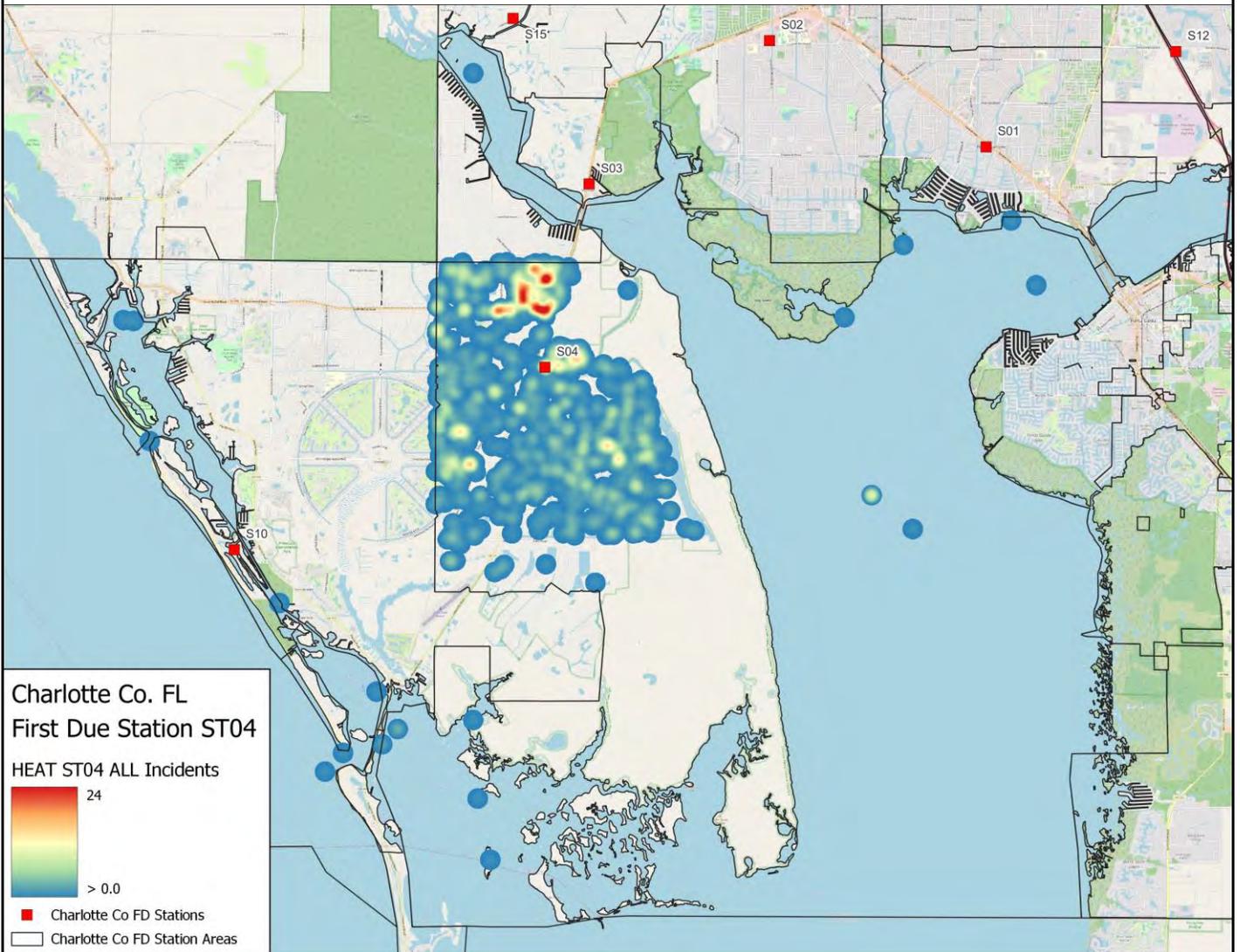
Unit ID	Reporting Period	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size <sup>1</sup>
		(Minutes)	(Minutes)	(Minutes)	(Minutes)	
CR04	2017	4.2	2.5	10.9	15.3	1,189
	2018	3.8	2.4	10.4	15.1	1,094
	2019	4.0	2.4	9.9	14.3	1,262
	2020	4.0	2.4	10.0	14.6	1,303
	2021	3.9	2.2	10.4	14.4	1,428
	<b>All</b>	<b>4.0</b>	<b>2.4</b>	<b>10.3</b>	<b>14.7</b>	<b>6,276</b>
EN04	2017	4.7	2.7	8.8	13.8	387
	2018	4.0	2.8	9.0	14.1	360
	2019	4.2	2.8	7.7	12.9	397
	2020	3.8	3.2	8.2	13.1	477
	2021	3.6	2.9	8.2	13.0	550
	<b>All</b>	<b>4.0</b>	<b>2.9</b>	<b>8.3</b>	<b>13.4</b>	<b>2,171</b>
MR01	2017	27.1	17.3	13.1	36.2	7
	2018	44.6	22.8	21.8	61.8	5
	2019	32.0	19.4	18.2	38.1	6
	2020	7.0	30.4	8.9	31.6	11
	2021	5.4	26.8	10.0	30.9	10
	<b>All</b>	<b>24.6</b>	<b>26.8</b>	<b>18.2</b>	<b>38.1</b>	<b>39</b>
MR03	2017	--	--	--	--	--
	2018	0.9	0.6	24.6	26	1
	2019	34.3	0	11.7	34.3	2
	2020	--	--	--	--	--
	2021	--	--	--	--	--
	<b>All</b>	<b>34.3</b>	<b>0.6</b>	<b>24.6</b>	<b>34.3</b>	<b>3</b>

First Due Station	Reporting Period	Number of Overlapped Calls	Total Number of Calls	Percentage of Overlapped Calls
ST04	2017	101	976	10.3
	2018	70	844	8.3
	2019	83	951	8.7
	2020	134	1,195	11.2
	2021	171	1,278	13.4
	<b>All</b>	<b>559</b>	<b>5,244</b>	<b>10.7</b>

First Due Station ST04:								2017-2021	2017-2021
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	Benchmark	Compliance
<b>Alarm Handling</b>		4:00	4:17	3:50	4:01	4:08	3:51	3:37	85.4
<b>Turnout Time</b>		2:40	2:36	2:37	2:40	2:55	2:34	2:13	80.7
<b>Travel Time</b>	Urban	7:25	7:33	6:59	6:46	7:14	8:02	6:41	84.6
	Rural	9:01	9:39	9:12	8:54	9:11	8:43	10:43	94.4
<b>Total Response Time</b>	Urban	12:9	12:20	11:32	11:46	12:22	12:17	10:50	81.1
		n = 3,057	n = 572	n = 500	n = 565	n = 660	n = 760		
	Rural	14:07	14:43	15:09	13:32	14:40	13:29	15:14	92.5
		n = 1,914	n = 320	n = 298	n = 354	n = 479	n = 463		

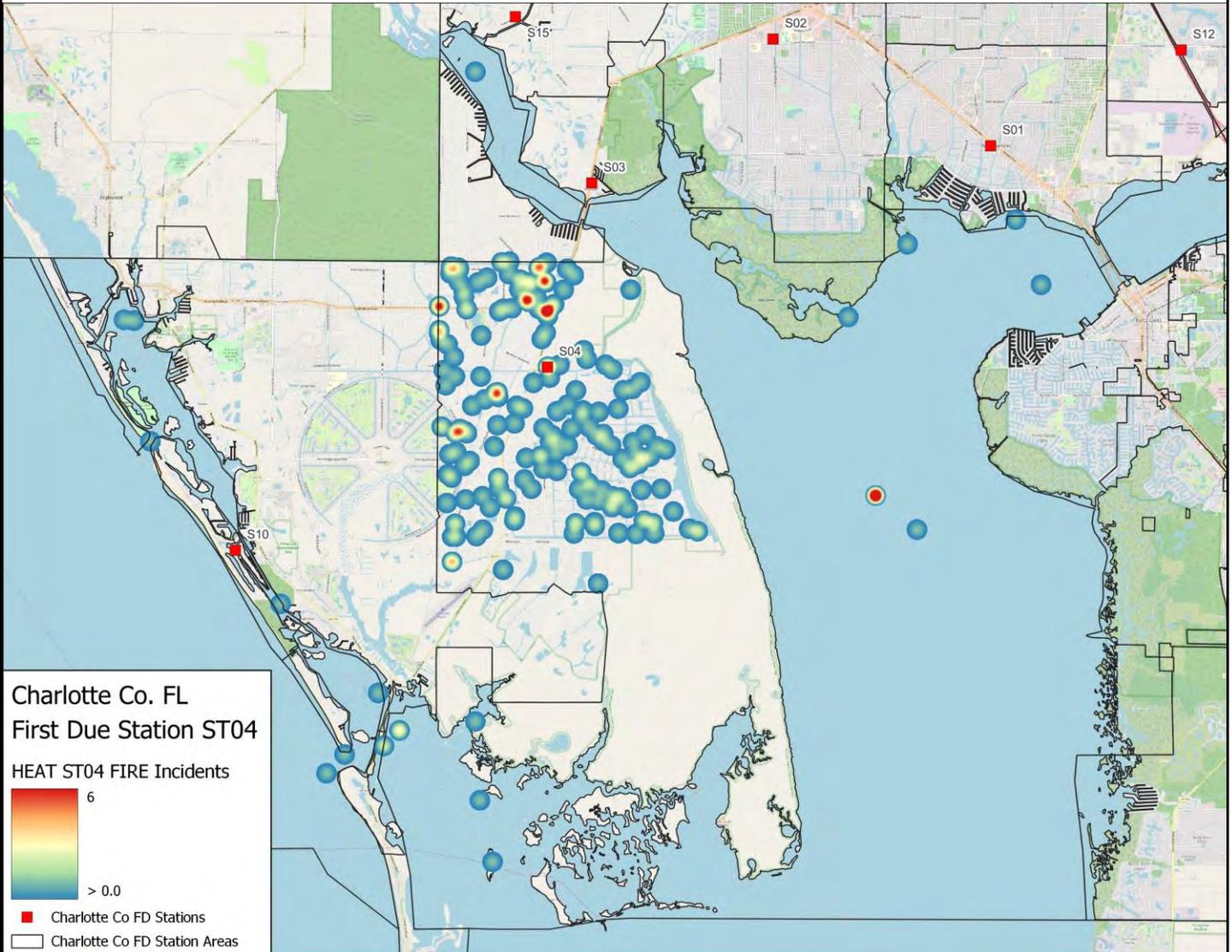
### Overall Hot Spot Map

Trends show the majority of call volume immediately surrounding the station and directly to the North, with lower call volume and even spread throughout Station 4's area.



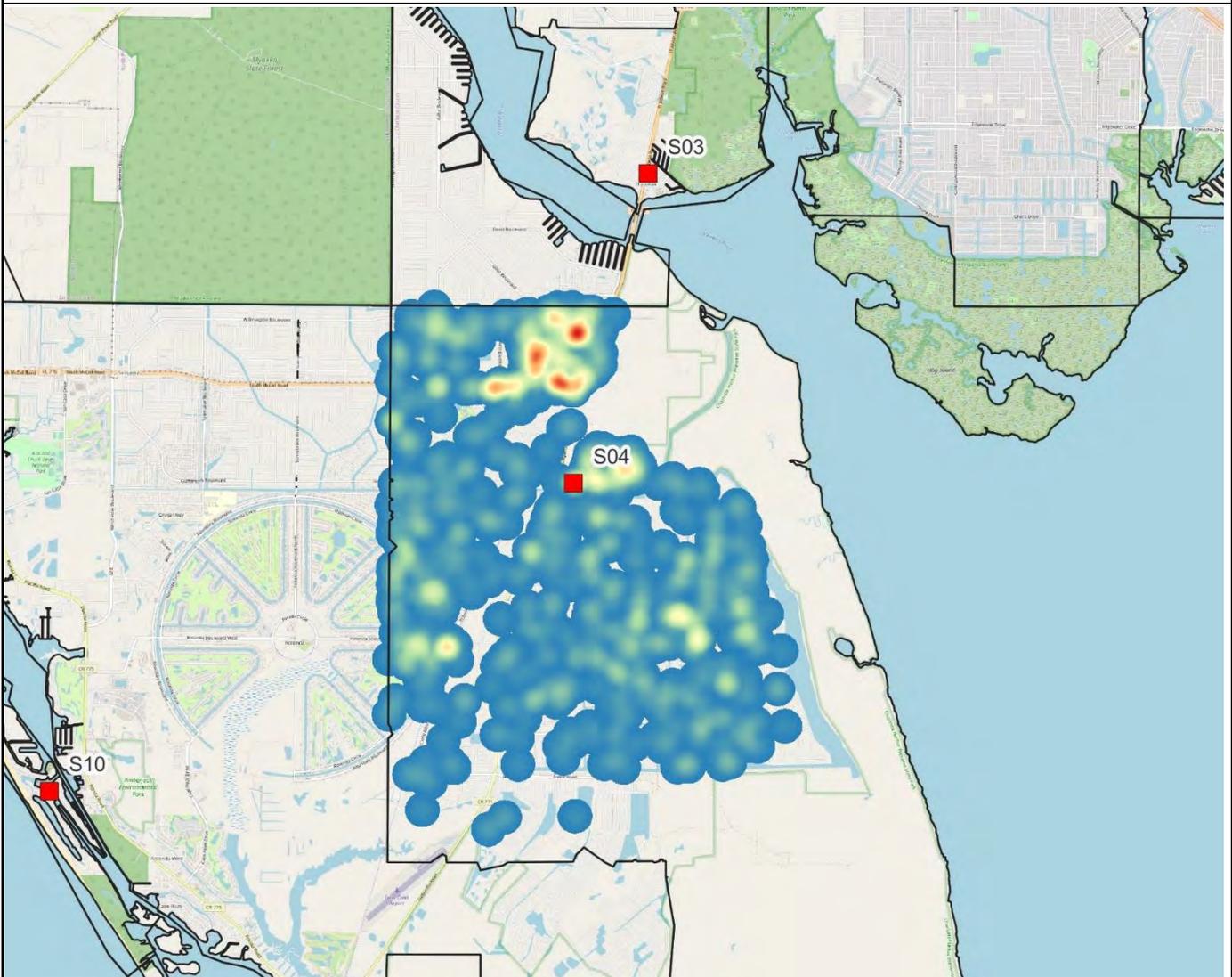
### Fire Hot Spot Map

This analysis indicates the highest concentration of fire calls is in closer proximity to Station 4, with the highest fire call volume directly north of the station.



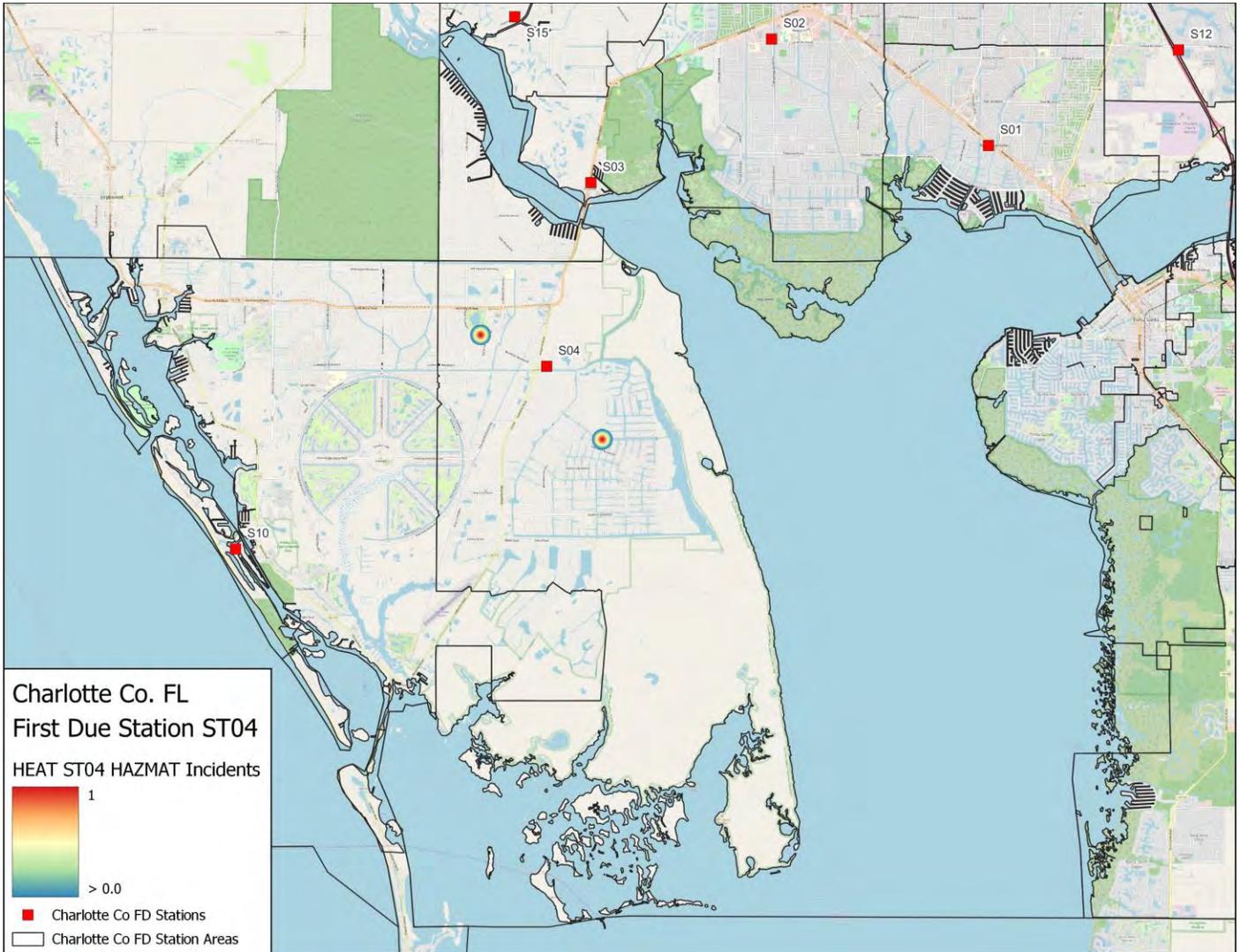
### EMS Hot Spot Map

Indicates the highest concentration of EMS calls is directly North of the station similar to the largest hotspots for fire calls. This area would be a great place to focus community risk reduction efforts.



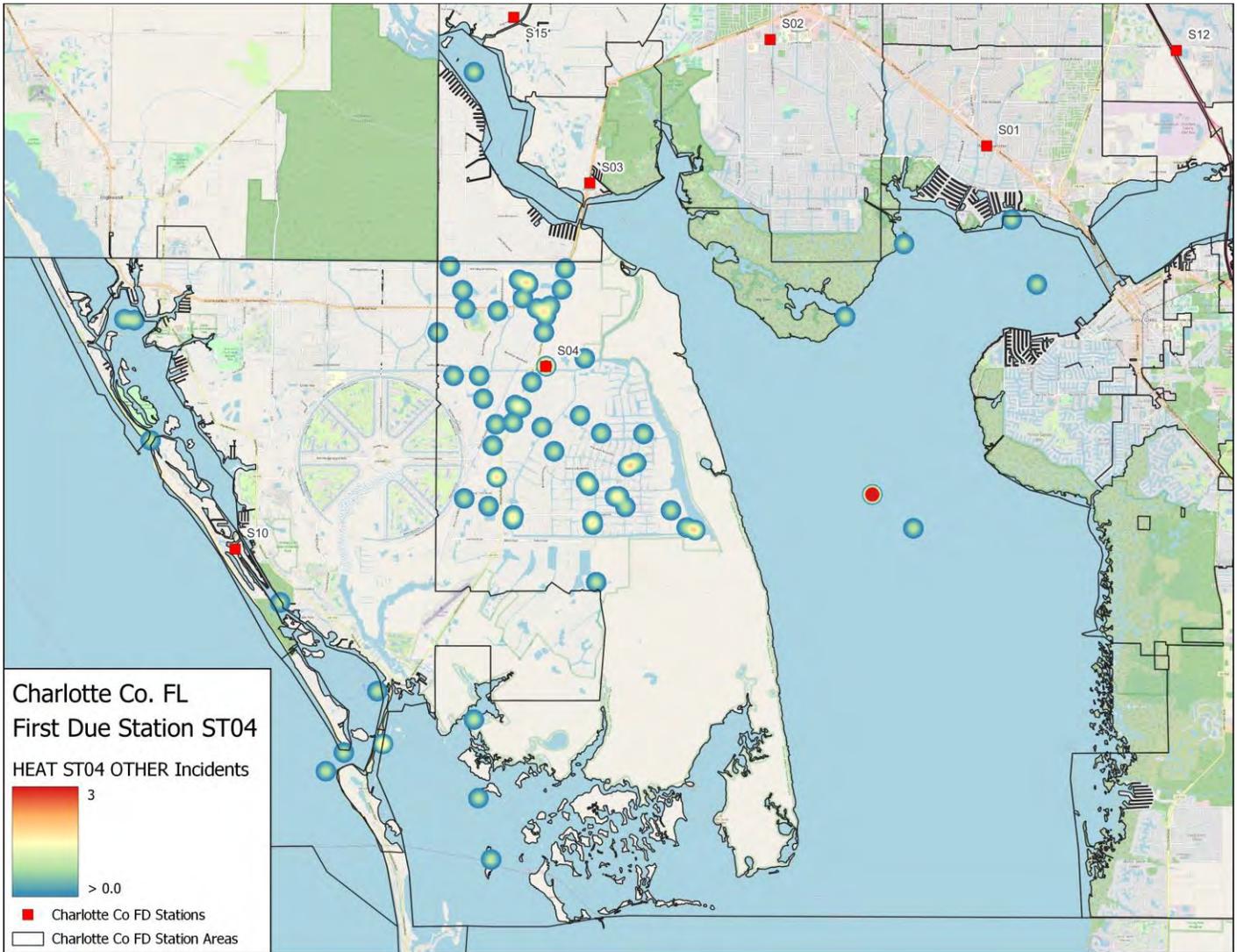
### Hazmat Hot Spot Map

Station 4 experienced a relatively low volume of hazardous material incidents that throughout the first due station area.



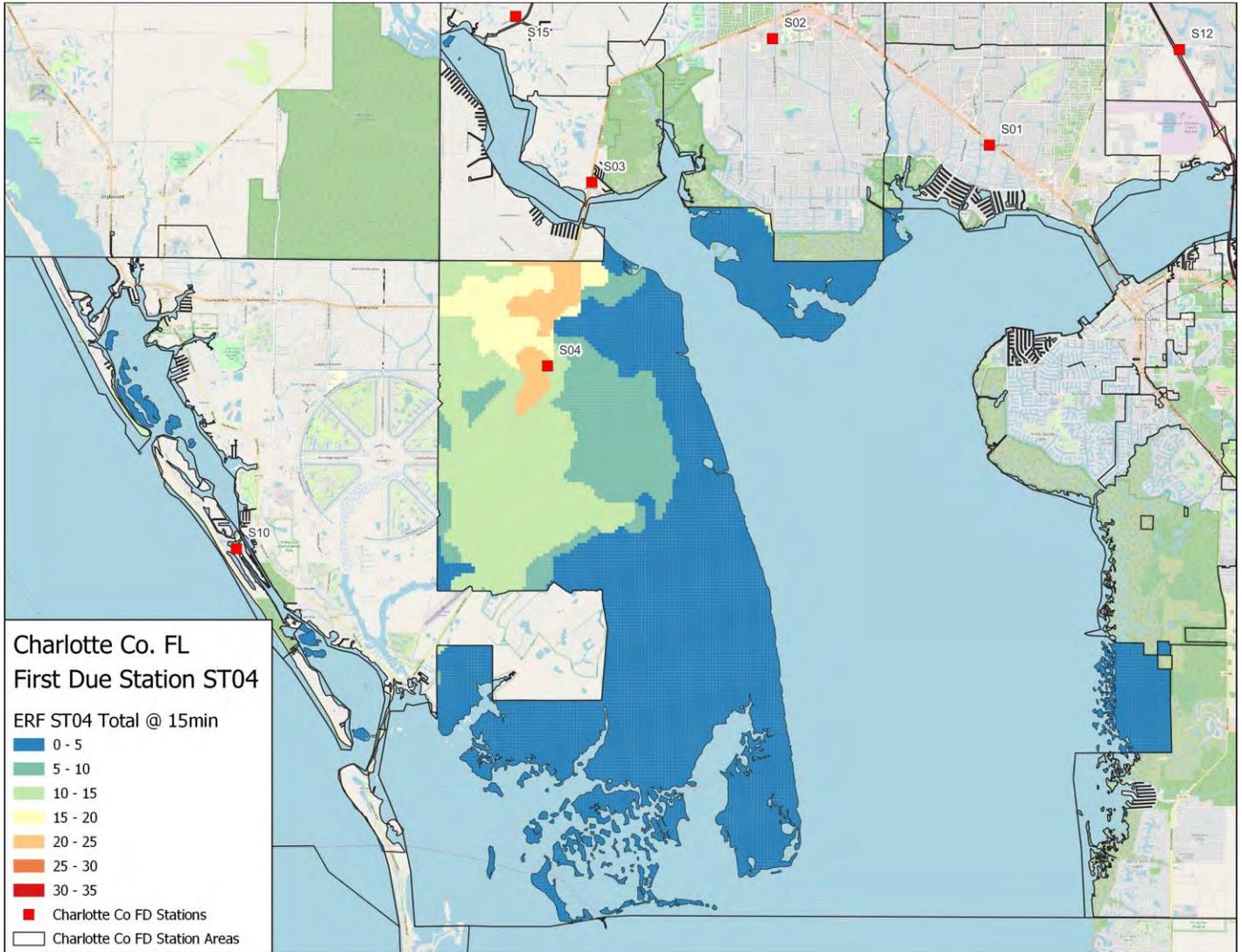
### Other Hot Spot Map

Station 4 experienced a dispersed set of other type incidents within their first due station area, with hot spots occurring consistently throughout the station area.

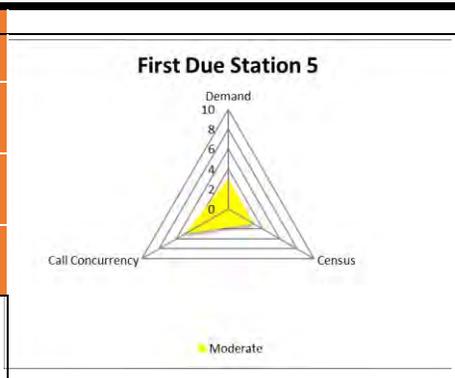


### Concentration—Effective Response Force Capabilities

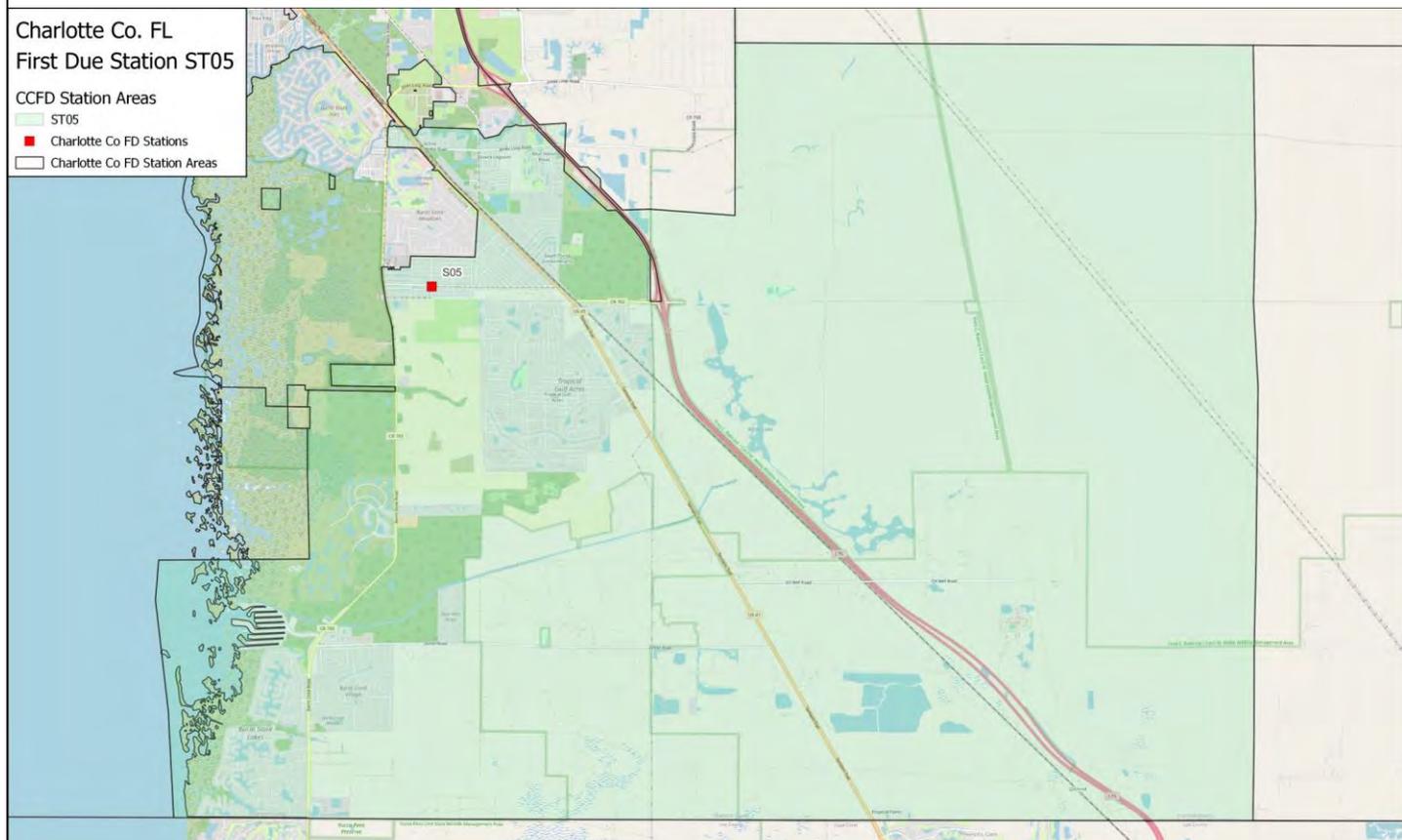
Station 4's area is analyzed by the number of personnel that can assemble within 15 minutes.



	Unit ID	Unit Type	Personnel
Station 5	E5	Engine	2
	R5	Rescue	2
	BR5	Brush	

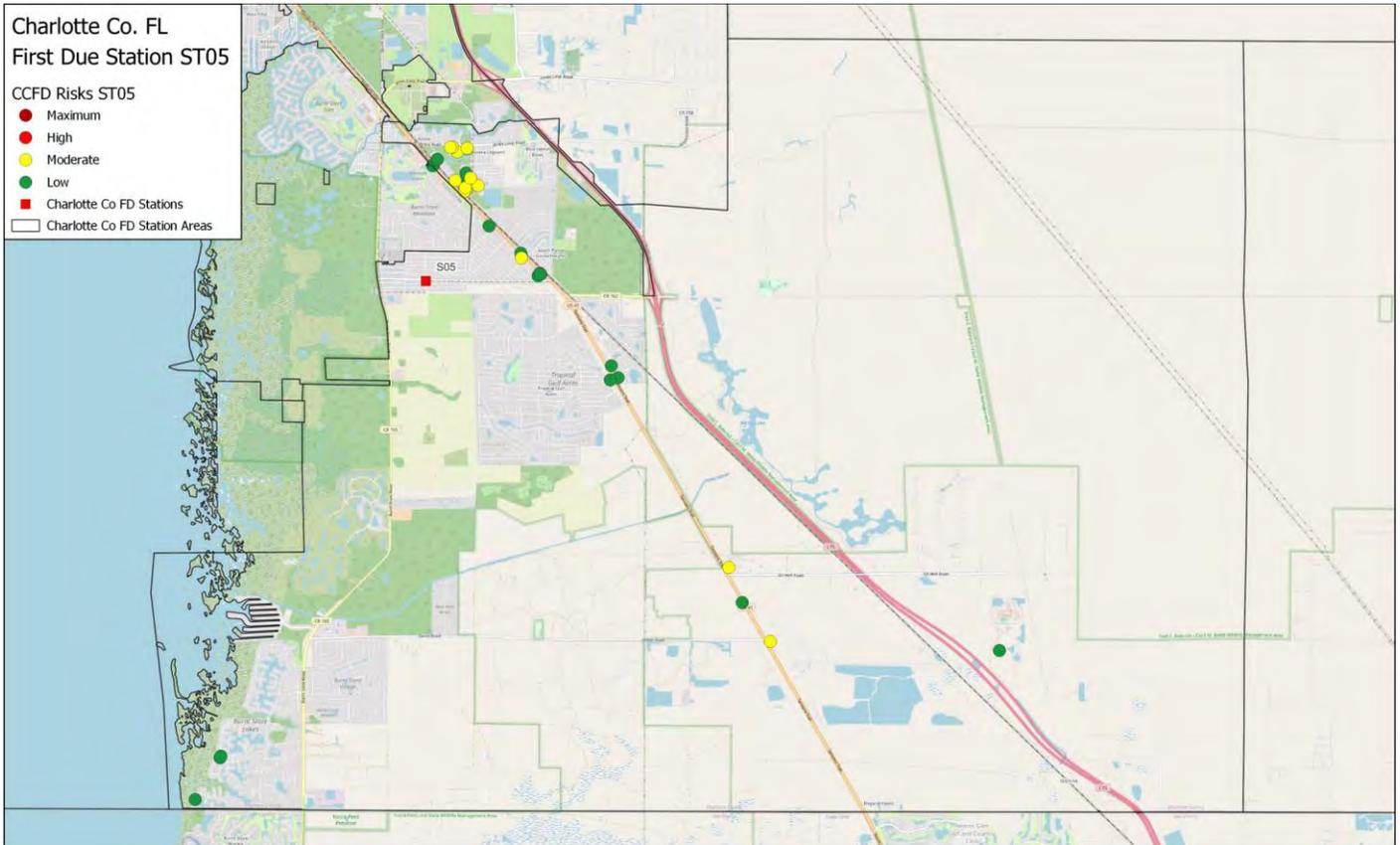


Station 5 is a moderate risk station and staffs two primary units and cross staffs a brush truck when needed.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. There is a concentration of lower to moderate risk buildings located directly East of the station. The majority of Station 5's first due area is low to moderate risk.



Station 5 First Due Area Historical Data Analysis

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>909</b>	<b>981</b>	<b>982</b>	<b>1,029</b>	<b>1,367</b>
Cardiac and stroke	121	139	134	103	159
Seizure and unconsciousness	63	59	68	68	87
Breathing difficulty	83	79	80	75	123
Overdose and psychiatric	18	8	8	11	9
Accident	106	119	100	116	163
Fall and injury	151	185	230	214	246
Illness and other	205	232	213	300	369
Medical No ProQA	140	129	123	120	180
Interfacility transfer	22	31	26	22	31
<b>Fire</b>	<b>247</b>	<b>217</b>	<b>204</b>	<b>232</b>	<b>221</b>
Structure fire	9	11	12	17	15
Outside fire	70	48	28	57	29
Vehicle fire	22	32	27	13	20
Alarm	17	13	22	25	30
Public service	23	40	51	40	43
Fire other	106	73	64	80	84
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>
Hazmat	0	0	0	2	4
<b>Rescue</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>
Rescue	1	2	3	3	4
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport	0	0	0	0	0
<b>Total</b>	<b>1,157</b>	<b>1,200</b>	<b>1,189</b>	<b>1,266</b>	<b>1,596</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>3.2</b>	<b>3.3</b>	<b>3.3</b>	<b>3.5</b>	<b>4.4</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>3.72%</b>	<b>-0.92%</b>	<b>6.19%</b>	<b>26.41%</b>

**Historical Data Analysis**

Station 5’s profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials, technical rescue had few incidents during the 5-year rating period.

The year-over-year growth has varied between a 1% decrease and a 4% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
5	CR05	1440	1500	1436	1553	1815
	EN05	954	918	928	969	1180
	BR05	27	12	11	22	23
	<b>Total</b>	<b>2,421</b>	<b>2,430</b>	<b>2,375</b>	<b>2,544</b>	<b>3,018</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>6.6</b>	<b>6.7</b>	<b>6.5</b>	<b>7.0</b>	<b>8.3</b>

Station 5 First Due Area Historical Performance

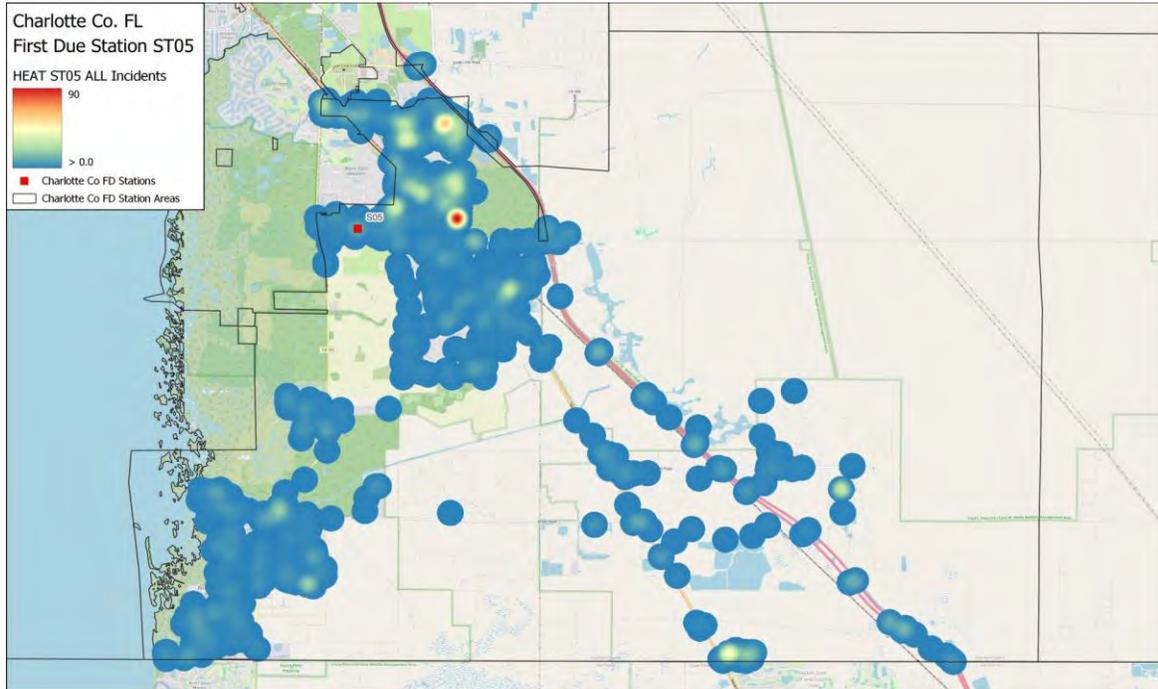
Unit ID	Reporting Period	Dispatch Time (Minutes )	Turnout Time (Minutes )	Travel Time (Minutes )	Response Time (Minutes )	Sample Size <sup>1</sup>
CR05	2017	3.9	2.5	10.8	15.3	917
	2018	3.7	2.5	10.7	14.9	1,002
	2019	4.0	2.6	10.0	14.7	894
	2020	4.3	2.8	10.7	15.6	1,050
	2021	3.9	2.9	11.2	15.8	1,192
	<b>All</b>	<b>3.9</b>	<b>2.7</b>	<b>10.8</b>	<b>15.3</b>	<b>5,055</b>
EN05	2017	4.0	2.6	11.4	16.2	522
	2018	3.8	2.6	10.8	15.5	503
	2019	4.1	2.8	11.0	15.6	569
	2020	4.0	3.0	11.5	16.5	560
	2021	3.9	3.1	11.8	16.2	708
	<b>All</b>	<b>3.9</b>	<b>2.9</b>	<b>11.4</b>	<b>16.1</b>	<b>2,862</b>
BR05	2017	--	--	--	--	--
	2018	--	--	--	--	--
	2019	--	--	--	--	--
	2020	0.9	0.0	0.0	0.9	1
	2021	--	--	--	--	--
	<b>All</b>	<b>0.9</b>	<b>0.0</b>	<b>0.0</b>	<b>0.9</b>	<b>1</b>

First Due Station	Reporting Period	Number of Overlapped Calls	Total Number of Calls	Percentage of Overlapped Calls
ST05	2017	145	1,157	12.5
	2018	133	1,200	11.1
	2019	113	1,189	9.5
	2020	129	1,266	10.2
	2021	272	1,596	17.0
	<b>All</b>	<b>792</b>	<b>6,408</b>	<b>12.4</b>

First Due Station ST05:		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
<b>1<sup>st</sup> Arriving Baseline Performance</b>									
<b>Alarm Handling</b>		4:03	4:07	3:55	4:08	4:16	3:53	3:37	84.7
<b>Turnout Time</b>		2:48	2:36	2:35	2:42	2:56	3:01	2:13	76.5
<b>Travel Time</b>	Urban	7:58	8:08	7:51	7:09	8:03	8:21	6:41	81.5
	Rural	13:17	12:50	13:12	12:42	13:35	14:09	10:43	72.1
<b>Total Response Time</b>	Urban	12:39	12:25	12:25	11:56	12:59	12:53	10:50	76.6
		n = 3,031	n = 481	n = 557	n = 596	n = 610	n = 787		
	Rural	18:18	17:30	18:13	17:38	19:23	18:43	15:14	71.5
		n = 2,924	n = 562	n = 557	n = 529	n = 572	n = 704		

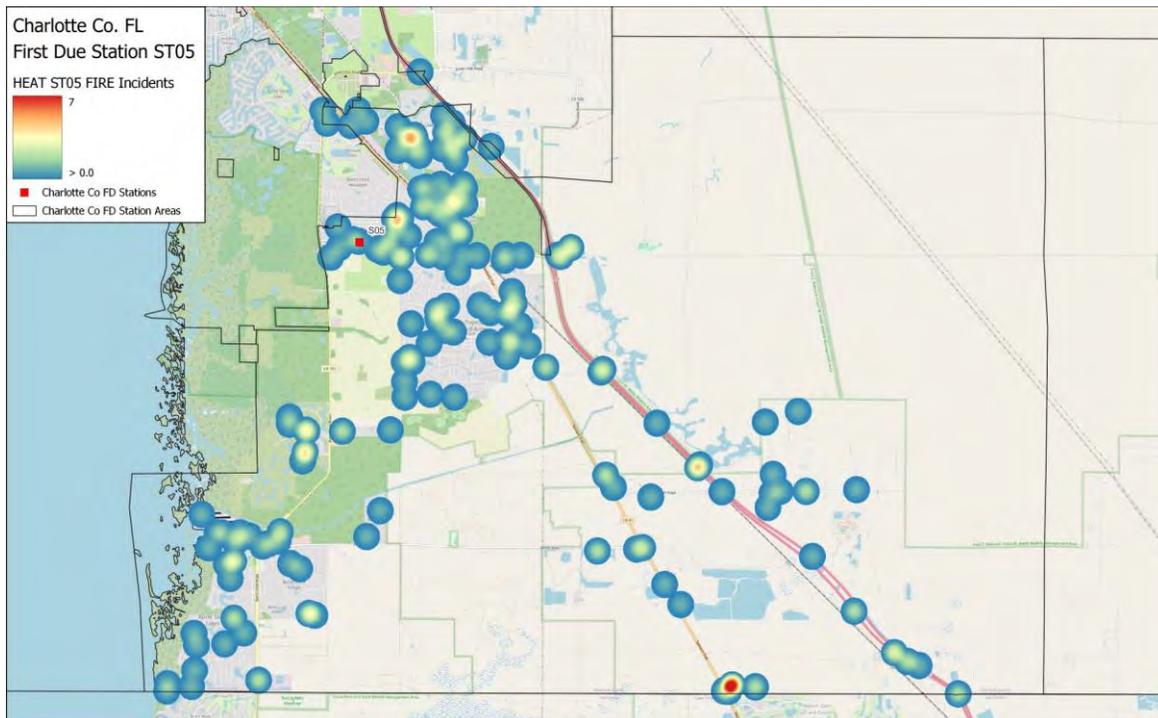
### Overall Hot Spot Map

Trends show Station 5 has a fairly high call volume Northeast and Southwest of the station, with additional volume located Southeast near the major arteries of the first due area.



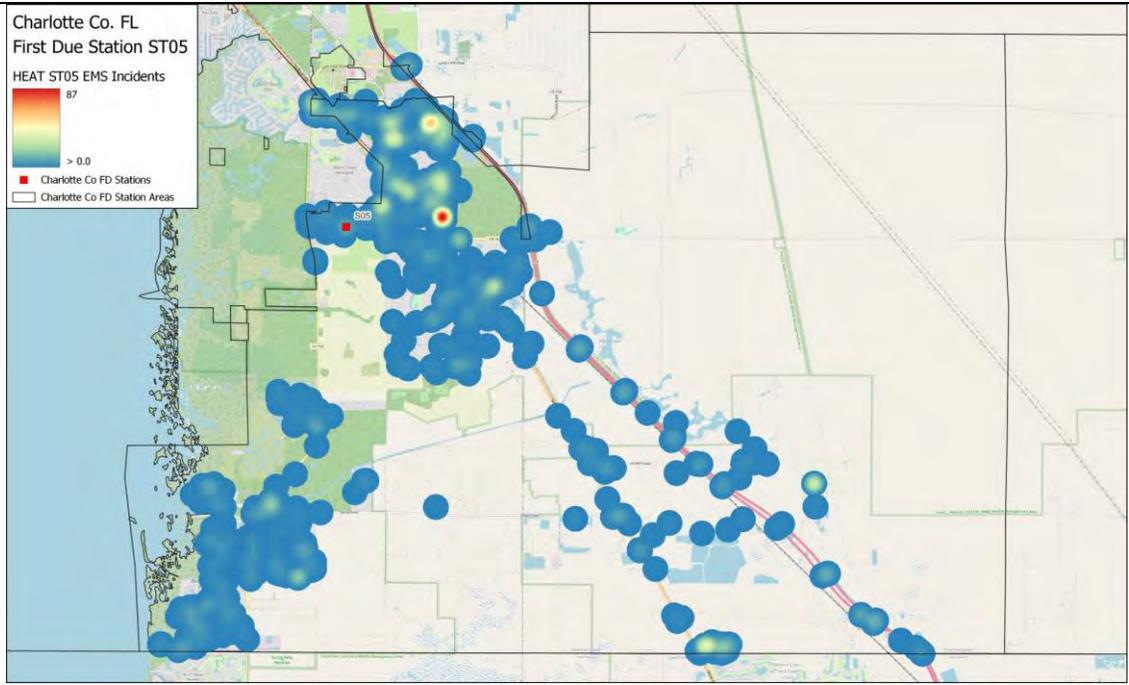
### Fire Hot Spot Map

Indicates the highest concentration of fire calls is located Northeast of the station, with a moderate amount located along the major arteries and travel routes of the first due area.



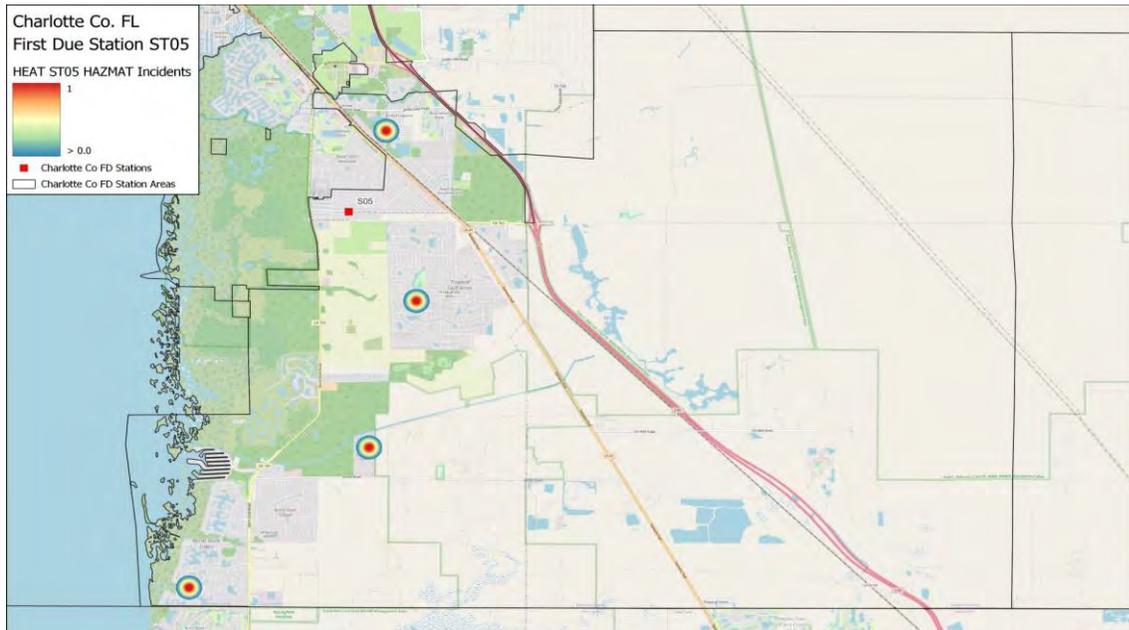
### EMS Hot Spot Map

Indicates the highest concentration of EMS calls is located adjacent and near the major travel routes of the Stations area.



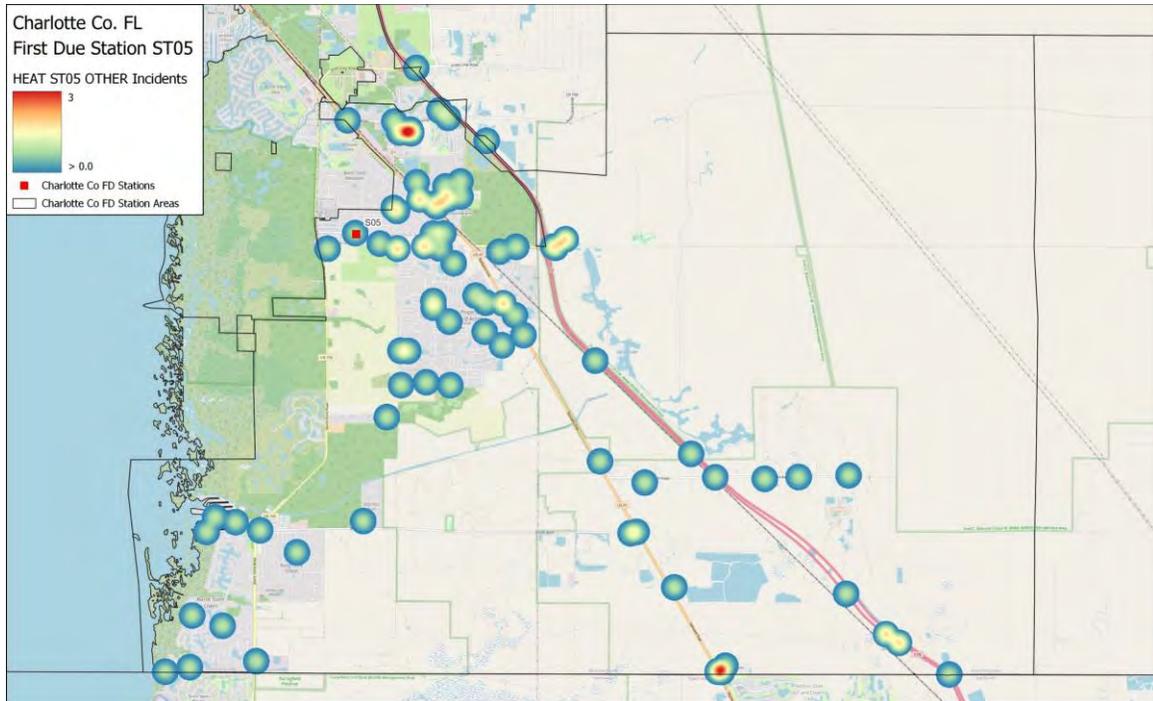
### Hazmat Hot Spot Map

Indicates a level of dispersion across the station first due area for hazardous materials calls with a hot spot located in 4 separate areas of the first due area.



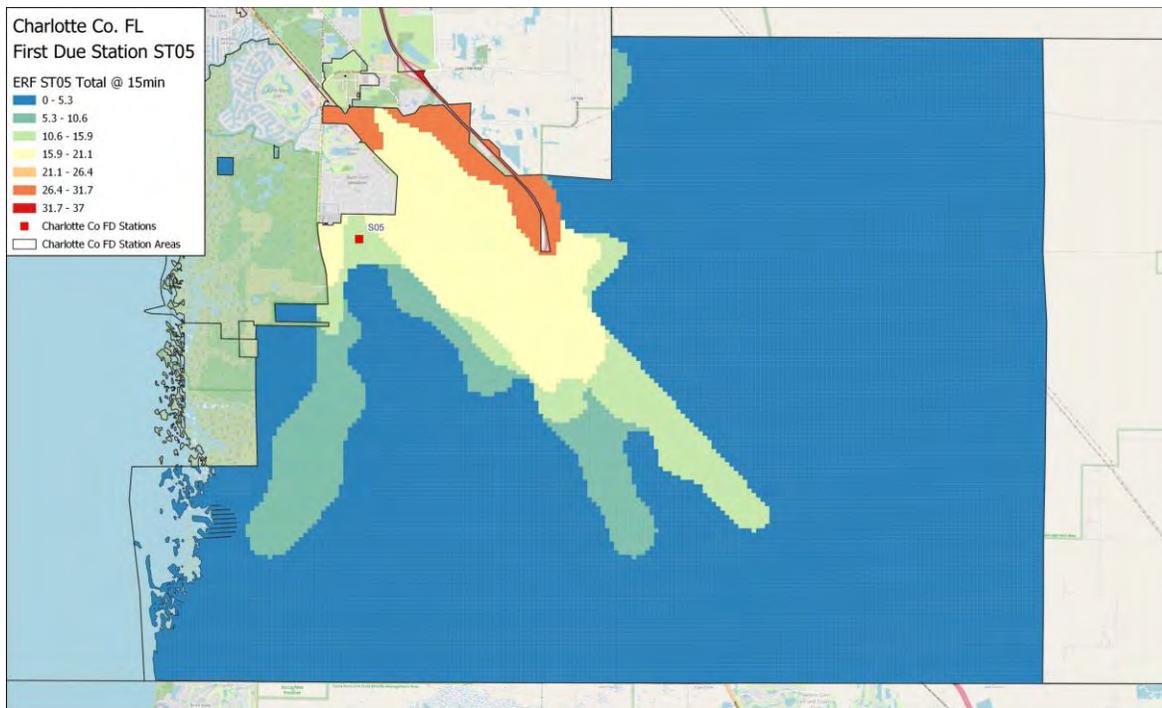
### Other Hot Spot Map

Station 5 experienced a wide dispersal of other calls throughout their first due station area with several hot spots located just East of the station, North of the station near the border, and Southeast and Southwest of the station, again near the border.

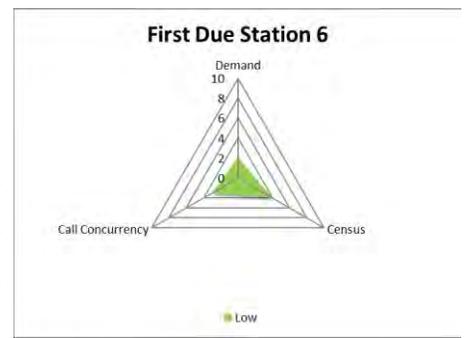


### Concentration—Effective Response Force Capabilities

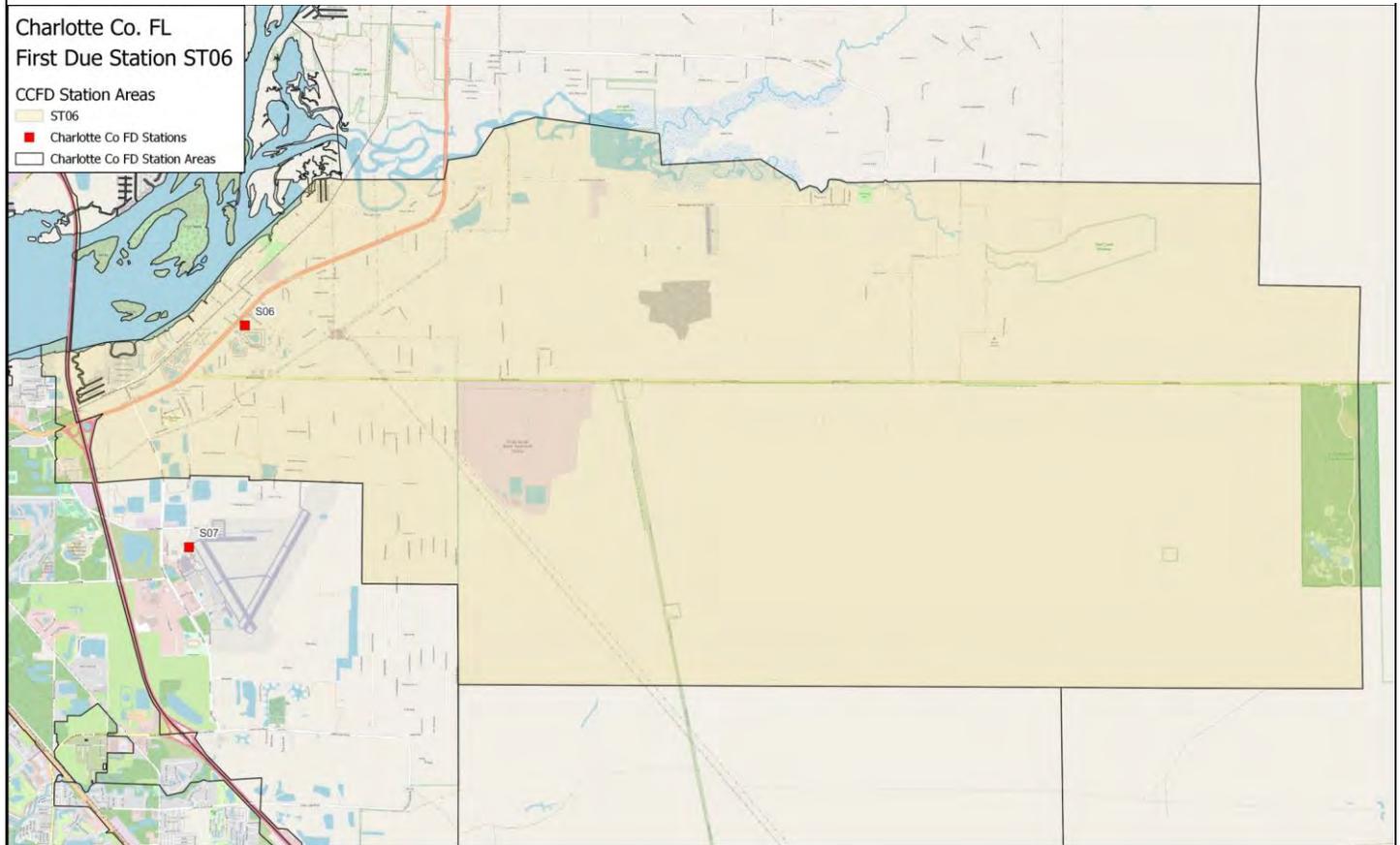
Station 5’s area is analyzed by the number of personnel that can assemble within 15 minutes.



	Unit ID	Unit Type	Personnel
Station 6	E6	Engine	3
	R6	Rescue	2
	TNK1	Tanker	
	MRN2	Marine	

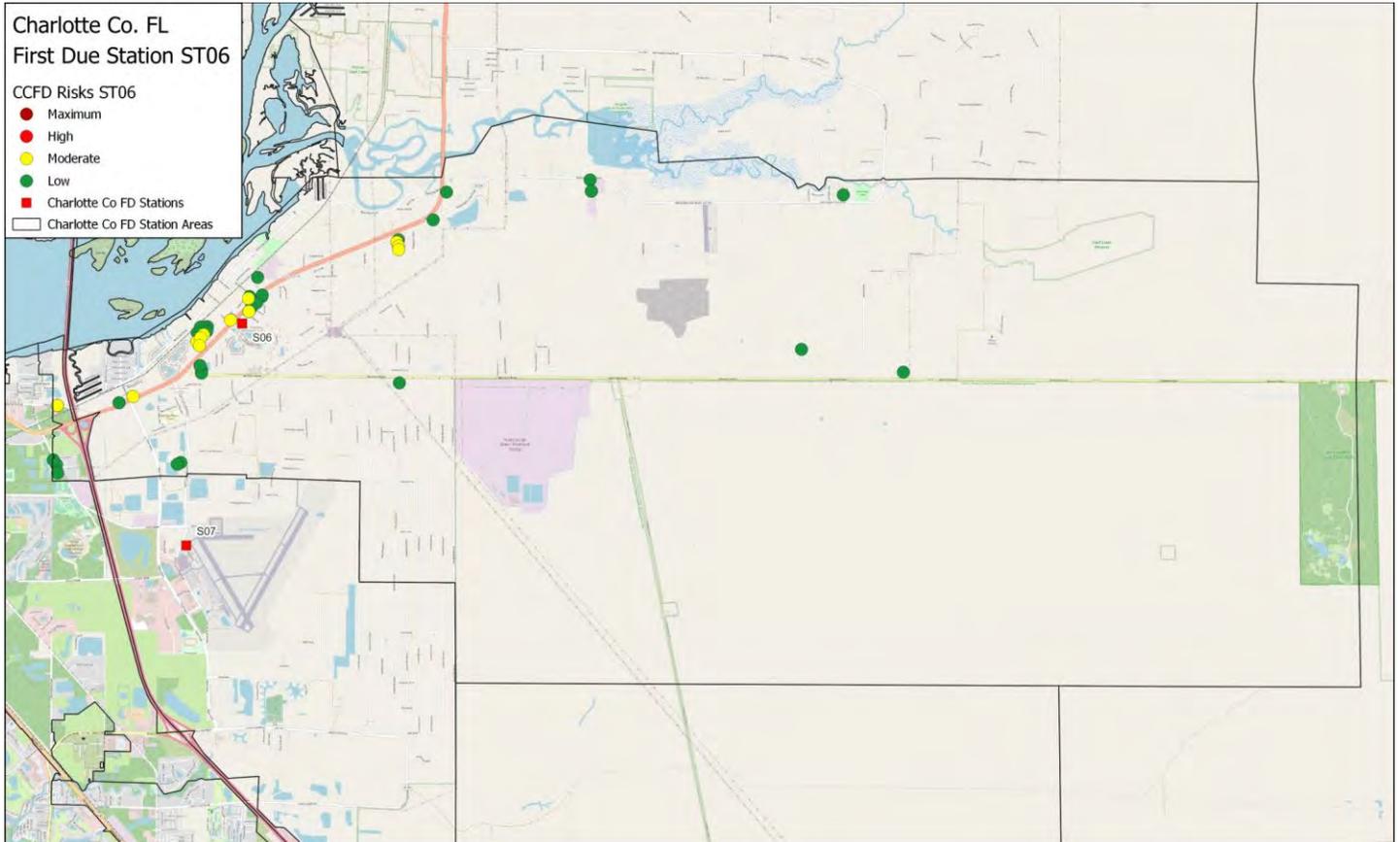


Station 6 staffs two primary units, and houses one of the two marine operations teams. Station 6 has a lower overall jurisdictional risk level.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. Most buildings that warrant special attention are located along a major travel corridor in the station first due area. Most of the Station 6’s first due area is of a lower risk, with the area immediately adjacent to the station being high risk.



Station 6 First Due Area Historical Data Analysis

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>601</b>	<b>573</b>	<b>595</b>	<b>648</b>	<b>717</b>
Cardiac and stroke	81	74	74	86	96
Seizure and unconsciousness	45	48	45	40	65
Breathing difficulty	46	44	40	43	48
Overdose and psychiatric	17	8	4	12	9
Accident	74	69	58	52	69
Fall and injury	102	110	132	156	155
Illness and other	139	157	149	199	173
Medical No ProQA	96	58	87	58	97
Interfacility transfer	1	5	6	2	5
<b>Fire</b>	<b>140</b>	<b>130</b>	<b>111</b>	<b>181</b>	<b>135</b>
Structure fire	4	8	6	12	8
Outside fire	29	21	18	24	15
Vehicle fire	13	10	8	5	8
Alarm	5	10	10	18	15
Public service	25	23	25	34	43
Fire other	64	58	44	88	46
<b>Hazmat</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
Hazmat	0	1	1	0	0
<b>Rescue</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>
Rescue	5	0	1	1	2
<b>Airport</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport	0	1	0	0	0
<b>Total</b>	<b>746</b>	<b>705</b>	<b>708</b>	<b>830</b>	<b>854</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>2.0</b>	<b>1.9</b>	<b>1.9</b>	<b>2.3</b>	<b>2.3</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>-5.50%</b>	<b>0.43%</b>	<b>16.91%</b>	<b>3.17%</b>

Historical Data Analysis

Station 6’s profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials, technical rescue had few incidents during the 5-year rating period.

The year over year growth has varied between a 5% decrease and a 16% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
6	CR06	1444	1340	1275	1314	1595
	EN06	834	762	745	937	1086
	MR02	84	59	62	62	72
	TA06	35	28	23	47	51
	MR04	--	--	--	1	41
	<b>Total</b>	<b>2,397</b>	<b>2,189</b>	<b>2,105</b>	<b>2,361</b>	<b>2,845</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>6.6</b>	<b>6.0</b>	<b>5.8</b>	<b>6.5</b>	<b>7.8</b>

## Station 6 First Due Area Historical Performance

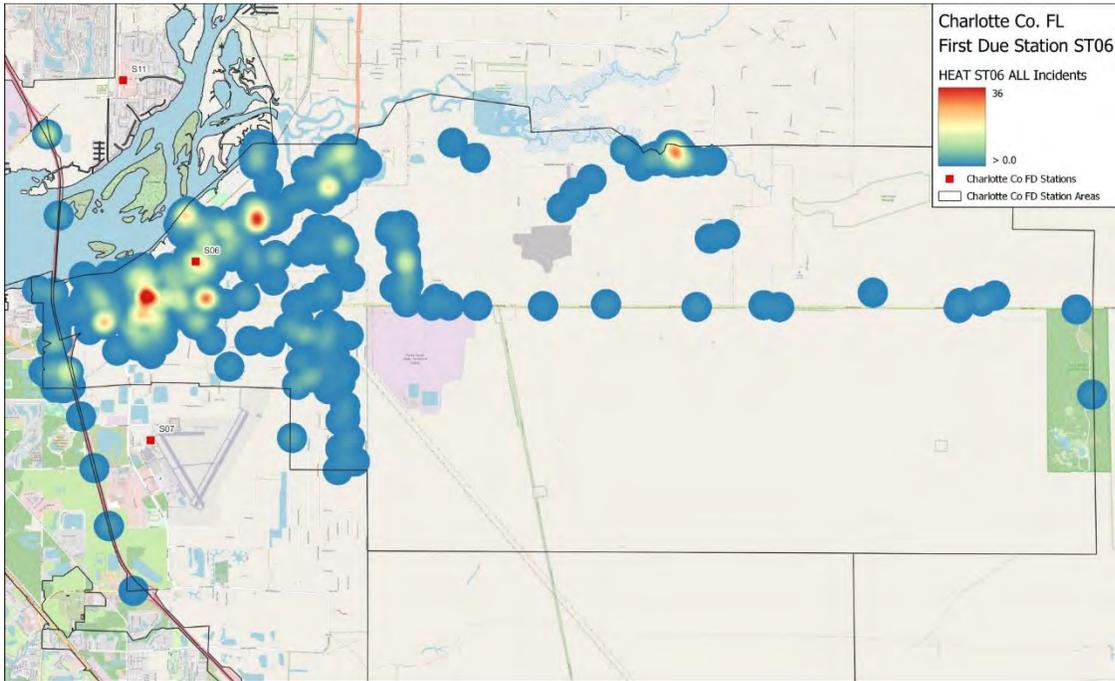
Unit ID	Reporting Period	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size <sup>1</sup>
		(Minutes)	(Minutes)	(Minutes)	(Minutes)	
CR06	2017	4.2	2.5	11.8	16.6	621
	2018	4.2	2.9	10.7	15.8	609
	2019	4.0	2.7	10.3	14.7	553
	2020	4.4	2.8	9.4	14.1	677
	2021	4.2	2.4	9.6	13.9	850
	<b>All</b>	<b>4.2</b>	<b>2.6</b>	<b>10.1</b>	<b>15.0</b>	<b>3,310</b>
EN06	2017	3.9	2.8	10.5	15.2	329
	2018	4.5	2.9	8.8	13.4	263
	2019	4.0	2.9	9.7	14.1	300
	2020	4.0	2.9	10.5	15.5	365
	2021	3.6	2.8	9.6	14.5	392
	<b>All</b>	<b>4.0</b>	<b>2.8</b>	<b>9.9</b>	<b>14.7</b>	<b>1,649</b>
MR02	2017	3.5	16.6	33.6	53.7	3
	2018	4.2	18.7	25.5	41.5	5
	2019	28.8	9.1	27.4	28.8	4
	2020	5.3	13.9	15.9	33.4	4
	2021	45.1	62.3	5.6	107.4	4
	<b>All</b>	<b>6.6</b>	<b>26.9</b>	<b>25.5</b>	<b>41.5</b>	<b>20</b>
TA06	2017	1.4	0	21.4	22.8	1
	2018	2.5	7.3	6.7	16.4	1
	2019	4.9	0	0	4.9	1
	2020	1.4	0	0	1.4	3
	2021	--	--	--	--	--
	<b>All</b>	<b>4.9</b>	<b>7.3</b>	<b>21.4</b>	<b>22.8</b>	<b>6</b>

First Due Station	Reporting Period	Number of Overlapped Calls	Total Number of Calls	Percentage of Overlapped Calls
ST06	2017	46	746	6.2
	2018	39	705	5.5
	2019	43	708	6.1
	2020	53	830	6.4
	2021	57	854	6.7
	<b>All</b>	<b>238</b>	<b>3,843</b>	<b>6.2</b>

First Due Station ST06:									
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
<b>Alarm Handling</b>		4:08	4:11	4:31	4:00	4:13	3:51	3:37	83.7
<b>Turnout Time</b>		2:48	2:40	3:00	2:50	2:57	2:39	2:13	77.9
<b>Travel Time</b>	Urban	6:15	6:30	6:21	5:52	6:00	6:19	6:41	91.8
	Rural	11:00	11:11	10:54	10:50	10:56	11:13	10:43	89.1
<b>Total Response Time</b>	Urban	11:04	11:17	11:00	10:44	11:06	10:41	10:50	88.8
		n = 2,154	n = 409	n = 395	n = 390	n = 455	n = 505		
	Rural	15:58	16:04	15:58	16:04	15:38	16:06	15:14	87.6
		n = 1,449	n = 268	n = 252	n = 280	n = 341	n = 308		

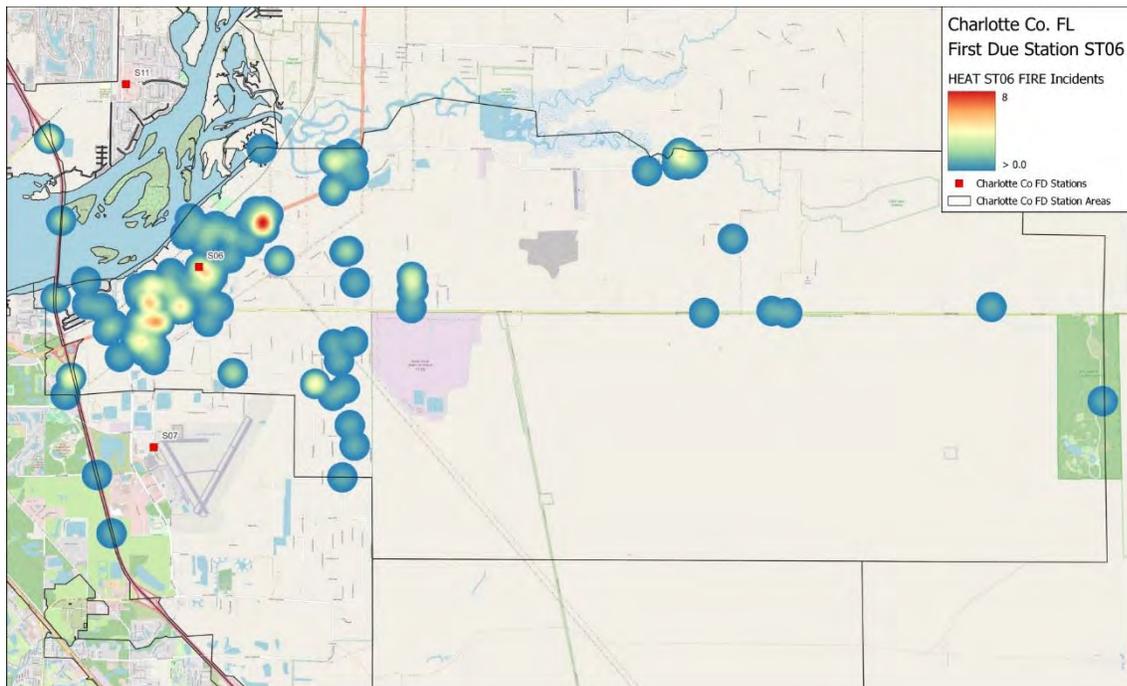
### Overall Hot Spot Map

Trends show Station 6 has a call volume that is adjacent to the station and corresponds with major transportation routes.



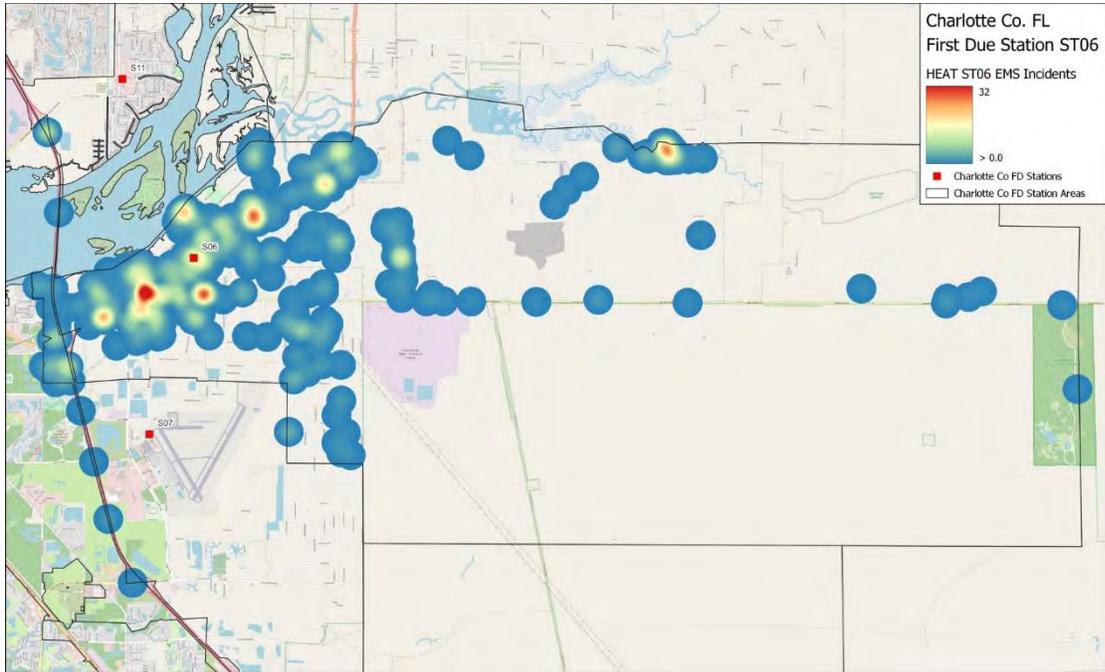
### Fire Hot Spot Map

Station 6's fire calls are concentrated adjacent in close proximity of the station.



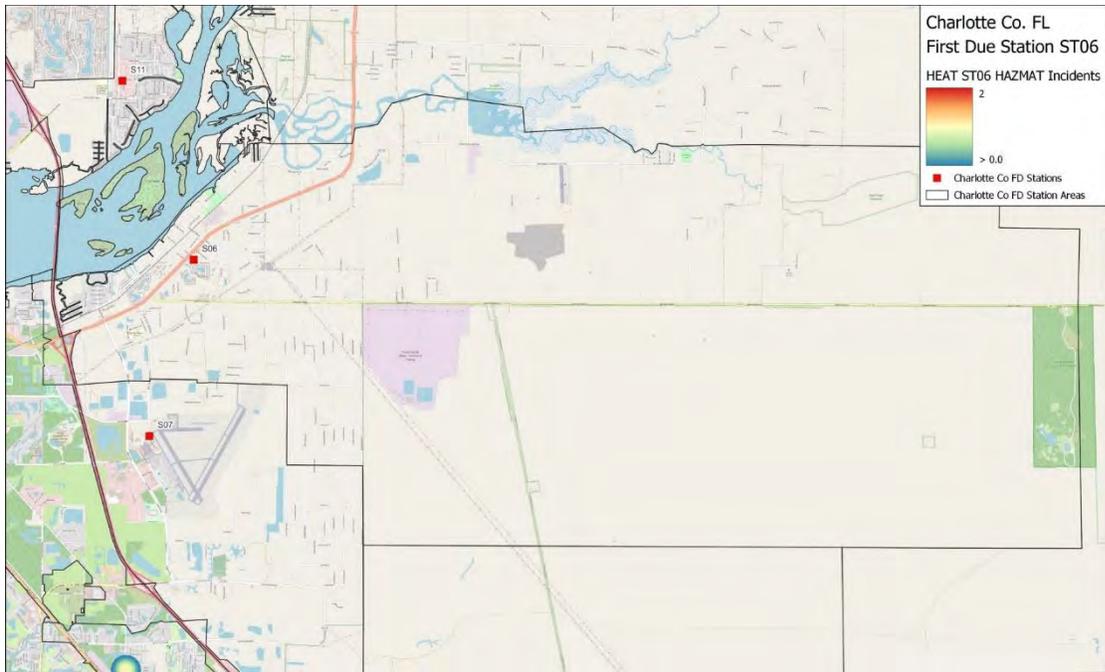
### EMS Hot Spot Map

Much like the overall and fire hot spot map, Station 6 has a call volume that is adjacent to the station and corresponds with major transportation routes.



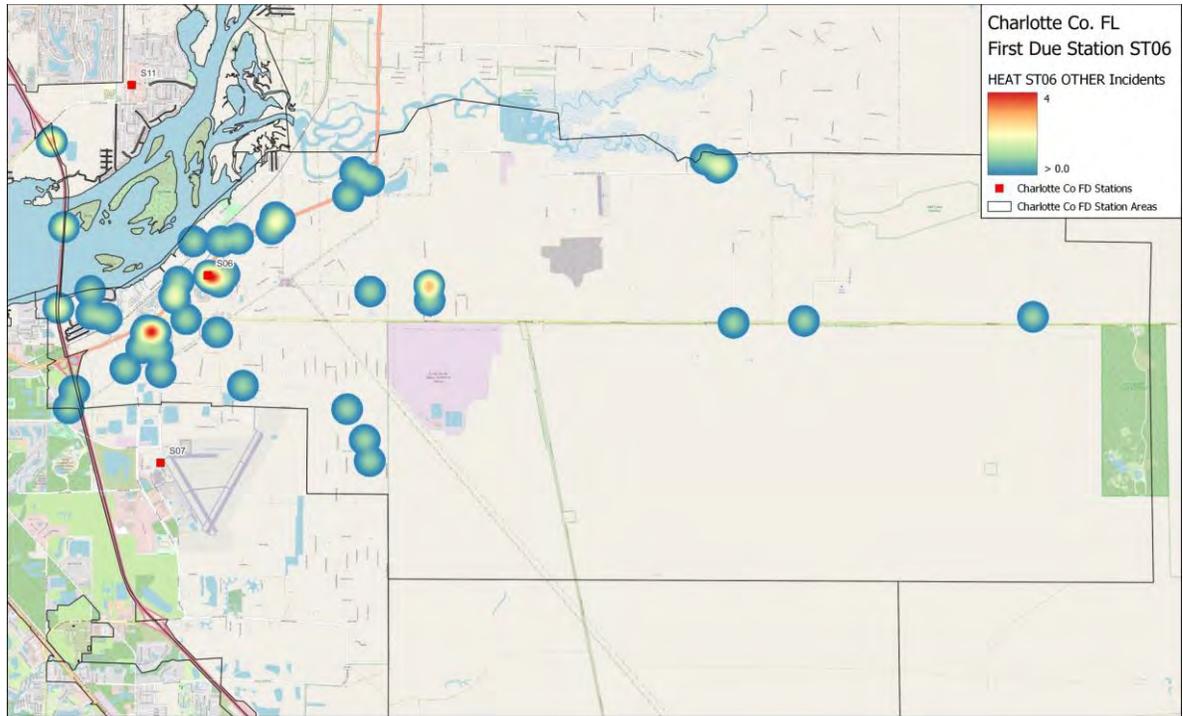
### Hazmat Hot Spot Map

A low hazardous materials call volume is dispersed evenly throughout Station 6's first due area.



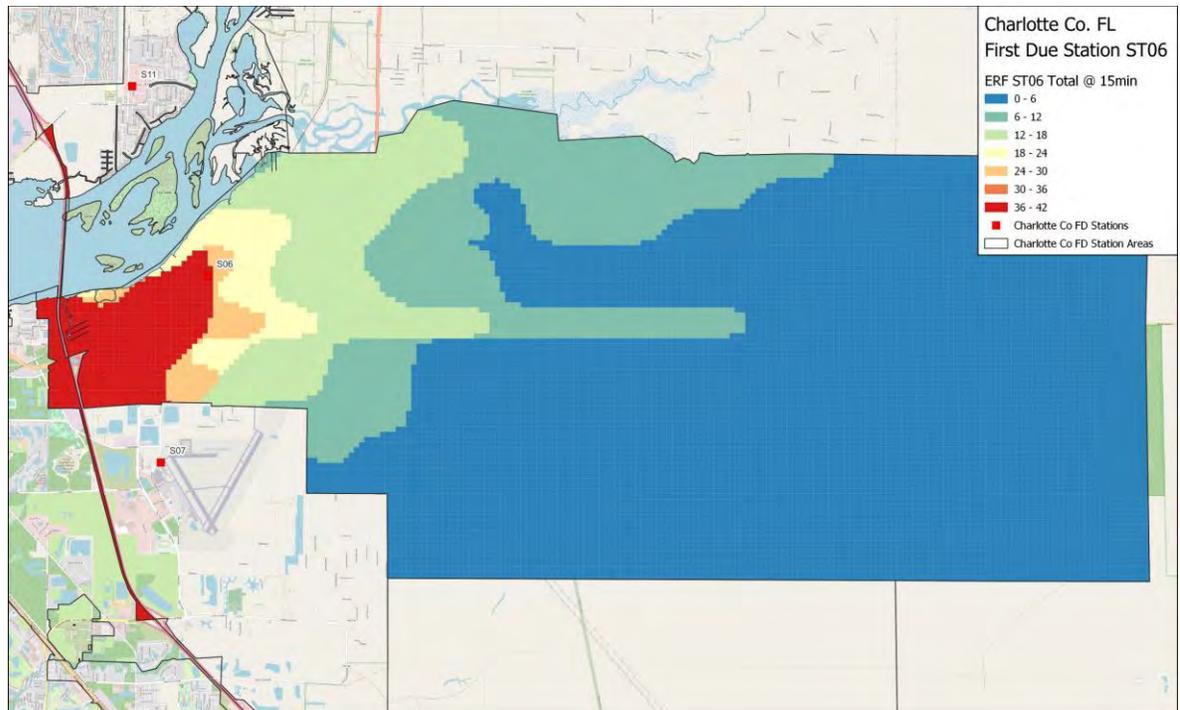
### Other Hot Spot Map

Station 6 has a higher concentration of other calls adjacent to the station.



### Concentration—Effective Response Force Capabilities

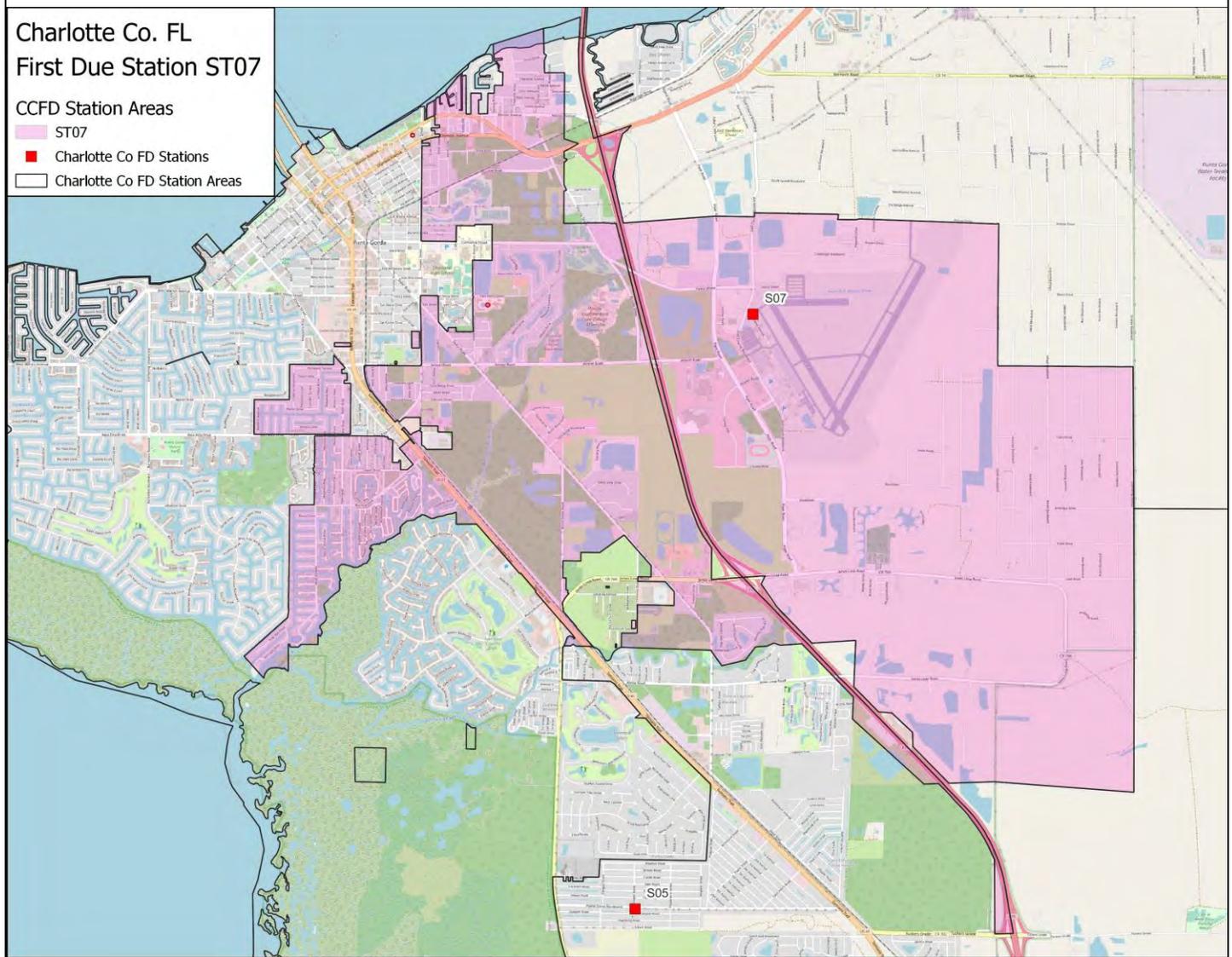
Station 6's area is analyzed by the number of personnel that can assemble within 15 minutes.



Station 7	Unit ID	Unit Type	Personnel
	E7	Engine	2
	ARFF 71/72	Aircraft	2
	BN1	Battalion	1

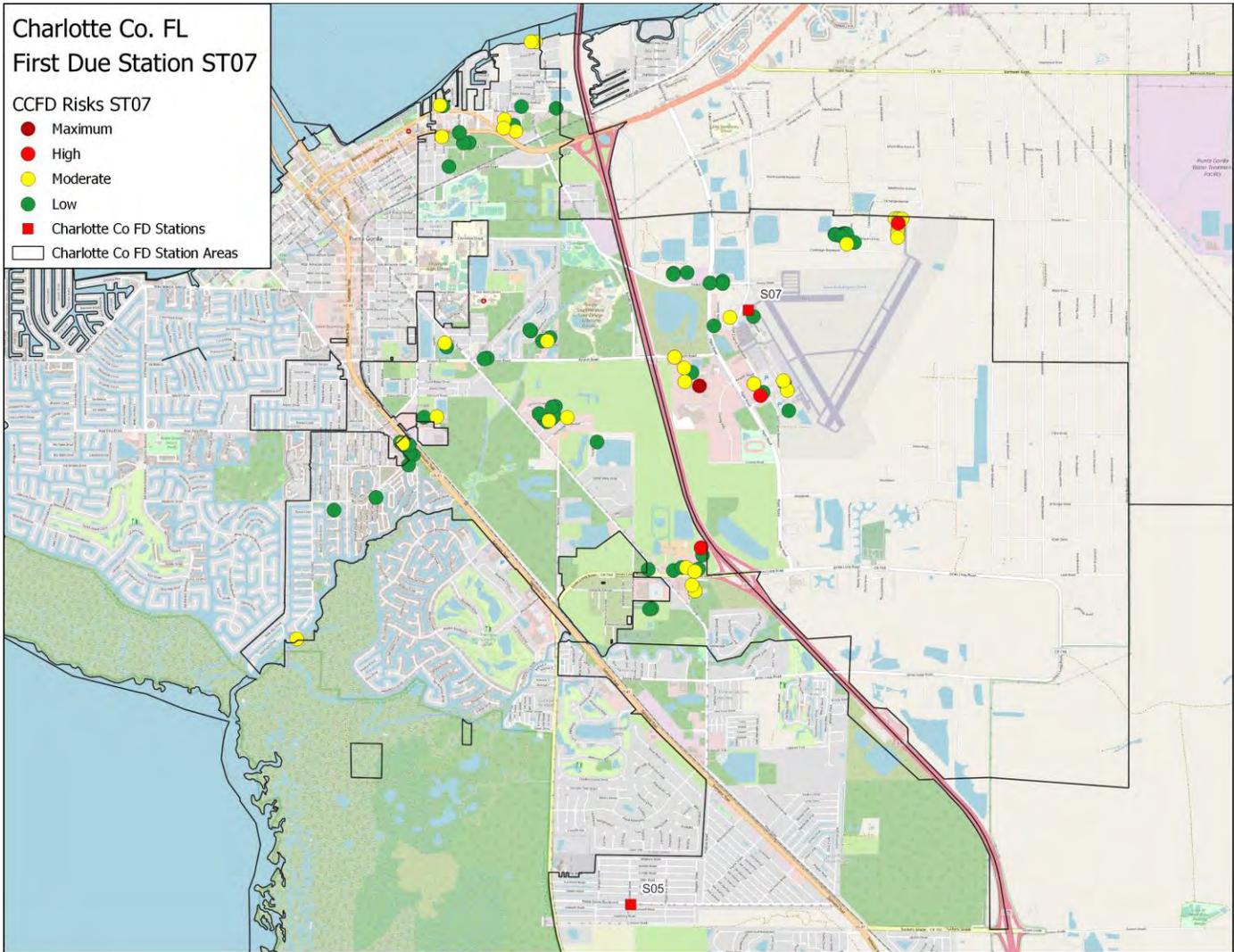


Station 7 staffs three units and has a moderate overall jurisdictional risk level.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. There is a concentration of lower to moderate risk buildings located throughout the Station’s area. With higher risk in the immediate vicinity of the Station.



## Station 7 First Due Area Historical Data Analysis

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>1,225</b>	<b>1,313</b>	<b>1,201</b>	<b>1,328</b>	<b>1,929</b>
Cardiac and stroke	125	146	108	112	149
Seizure and unconsciousness	77	87	80	99	87
Breathing difficulty	83	88	102	75	92
Overdose and psychiatric	15	8	6	2	11
Accident	88	88	80	96	94
Fall and injury	185	197	204	225	263
Illness and other	239	257	236	313	326
Medical No ProQA	258	251	258	241	620
Interfacility transfer	155	191	127	165	287
<b>Fire</b>	<b>226</b>	<b>157</b>	<b>172</b>	<b>199</b>	<b>224</b>
Structure fire	11	9	7	9	15
Outside fire	21	12	15	11	11
Vehicle fire	14	10	12	8	13
Alarm	49	44	47	63	56
Public service	56	26	38	47	52
Fire other	75	56	53	61	77
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Hazmat	0	0	0	0	0
<b>Rescue</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>3</b>
Rescue	3	1	4	3	3
<b>Airport</b>	<b>38</b>	<b>47</b>	<b>62</b>	<b>52</b>	<b>65</b>
Airport	38	47	62	52	65
<b>Total</b>	<b>1,492</b>	<b>1,518</b>	<b>1,439</b>	<b>1,582</b>	<b>2,221</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>4.1</b>	<b>4.2</b>	<b>3.9</b>	<b>4.3</b>	<b>6.1</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>1.74%</b>	<b>-5.20%</b>	<b>9.64%</b>	<b>40.78%</b>

## Historical Data Analysis

Station 7's profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials, technical rescue had few incidents during the 5-year rating period.

The year over year growth has varied between a 5% decrease and a 41% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
7	BAT01	1267	1074	1027	1271	1427
	EN07	913	942	899	984	1220
	ARF71	95	108	145	83	127
	ARF72	68	106	140	78	118
	ARF70	26	19	--	--	--
	<b>Total</b>	<b>2,369</b>	<b>2,249</b>	<b>2,211</b>	<b>2,416</b>	<b>2,892</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>6.5</b>	<b>6.2</b>	<b>6.1</b>	<b>6.6</b>	<b>7.9</b>

Station 7 First Due Area Historical Performance

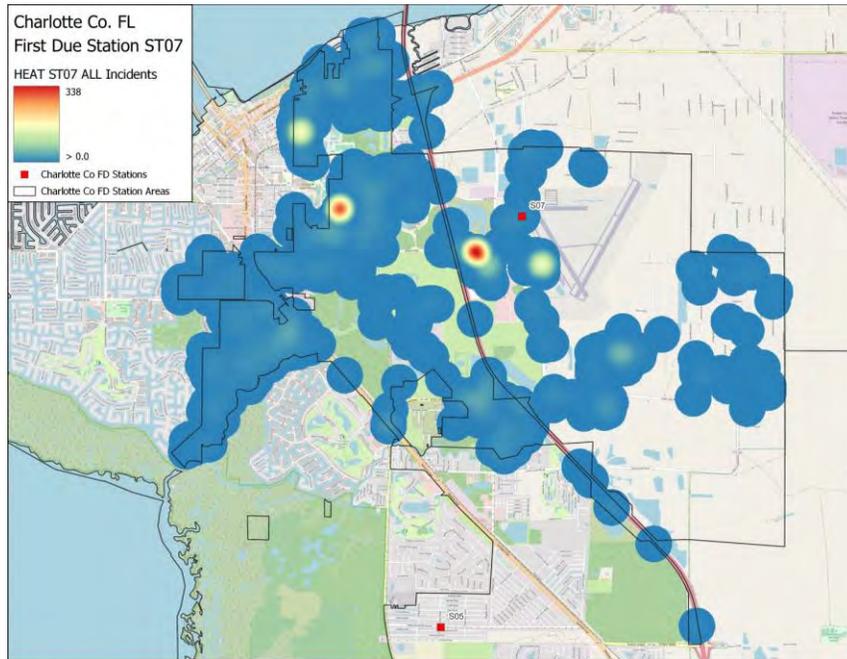
Unit ID	Reporting Period	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size <sup>1</sup>
		(Minutes)	(Minutes)	(Minutes)	(Minutes)	
EN07	2017	4.0	2.8	10.0	14.6	366
	2018	4.1	2.6	10.0	14.8	386
	2019	3.9	2.8	9.9	14.4	367
	2020	3.9	3.0	10.0	15.2	383
	2021	4.2	2.8	11.0	15.9	473
	<b>All</b>	<b>4.0</b>	<b>2.8</b>	<b>10.2</b>	<b>14.8</b>	<b>1,975</b>
BAT01	2017	9.1	2.6	12.8	18.6	112
	2018	6.2	3.4	9.7	16.0	138
	2019	6.4	3.8	8.5	13.5	148
	2020	6.2	4.0	9.7	16.7	130
	2021	5.5	3.6	11.9	18.4	128
	<b>All</b>	<b>6.3</b>	<b>3.8</b>	<b>10.1</b>	<b>16.7</b>	<b>656</b>
ARF71	2017	11.1	0.0	2.1	11.1	15
	2018	3.8	2.9	1.6	5.7	22
	2019	2.6	3.1	1.3	5.3	51
	2020	3.4	5.7	1.0	9.4	20
	2021	2.6	2.2	2.7	5.3	35
	<b>All</b>	<b>3.3</b>	<b>3.3</b>	<b>2.0</b>	<b>6.0</b>	<b>143</b>
ARF72	2017	0	0	0	0	1
	2018	3.7	0	4.9	7.1	5
	2019	2.3	1.3	2.7	5.3	12
	2020	5	2.4	3.4	7.1	11
	2021	3	2.3	2.8	6.4	21
	<b>All</b>	<b>3</b>	<b>2.3</b>	<b>2.8</b>	<b>7</b>	<b>50</b>

First Due Station	Reporting Period	Number of Over-lapped Calls	Total Number of Calls	Percentage of Over-lapped Calls
ST07	2017	201	1,492	13.5
	2018	193	1,518	12.7
	2019	179	1,439	12.4
	2020	191	1,582	12.1
	2021	336	2,221	15.1
	<b>All</b>	<b>1,100</b>	<b>8,252</b>	<b>13.3</b>

First Due Station ST07: 1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
<b>Alarm Handling</b>		4:01	4:05	4:02	4:05	4:08	3:48	3:37	85.7
<b>Turnout Time</b>		2:41	2:44	2:42	2:41	2:48	2:35	2:13	81.8
<b>Travel Time</b>	Urban	7:43	8:24	7:48	7:11	7:30	7:42	6:41	83.1
	Rural	11:51	12:39	11:53	10:57	11:36	12:30	10:43	83.8
<b>Total Response Time</b>	Urban	12:41	13:23	12:38	12:07	12:49	12:32	10:50	78.5
		n = 6,768	n = 1,179	n = 1,236	n = 1,179	n = 1,263	n = 1,911		
	Rural	16:50	16:55	17:22	15:41	17:04	17:21	15:14	83.3
		n = 1,053	n = 198	n = 194	n = 206	n = 243	n = 212		

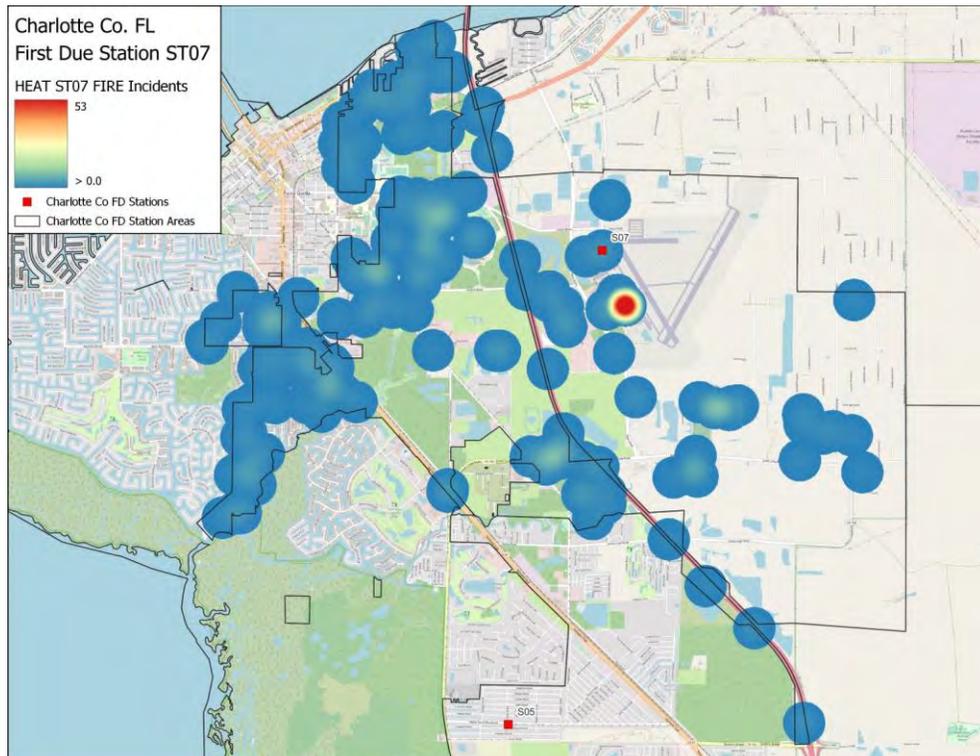
### Overall Hot Spot Map

Trends show Station 7 has a call volume that encompasses virtually their entire first due station, with the largest volume of calls just West of the station.



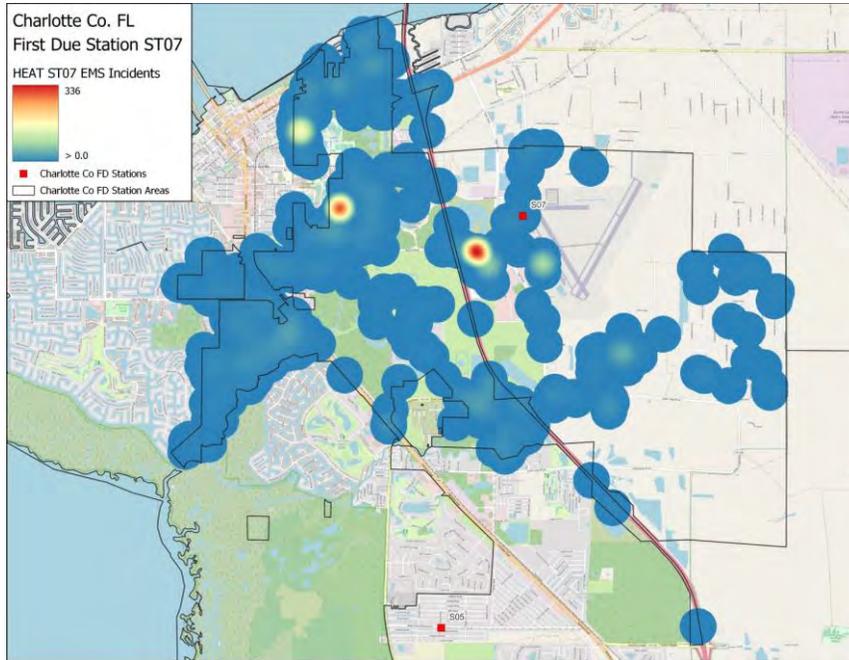
### Fire Hot Spot Map

Station 7's fire calls are concentrated in close proximity to the fire station.



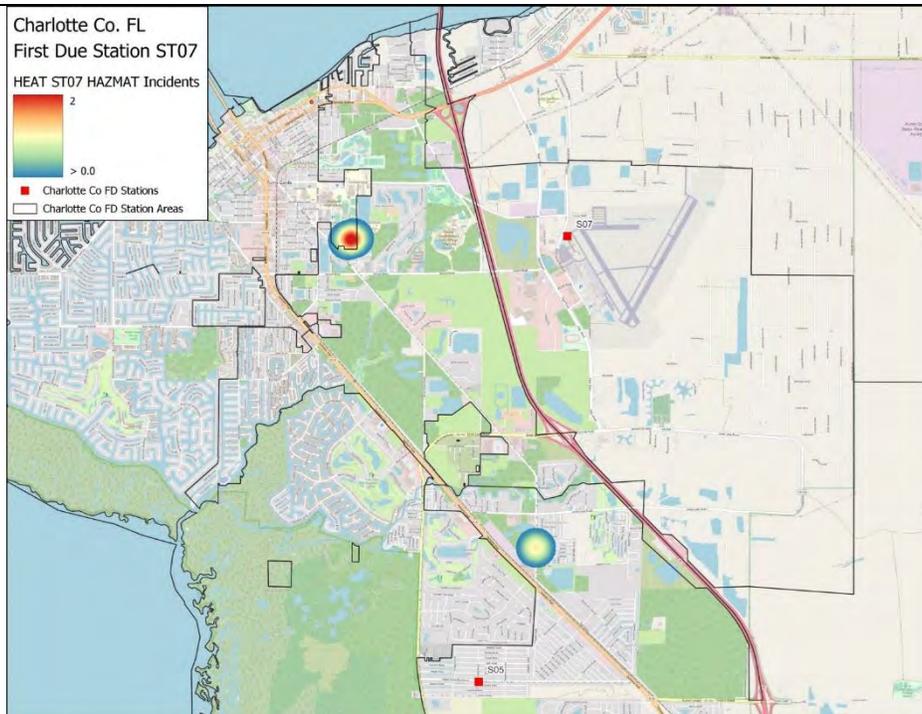
### EMS Hot Spot Map

Station 7's EMS calls are concentrated just West of the station, with other moderate hot spots near the border of the station area.



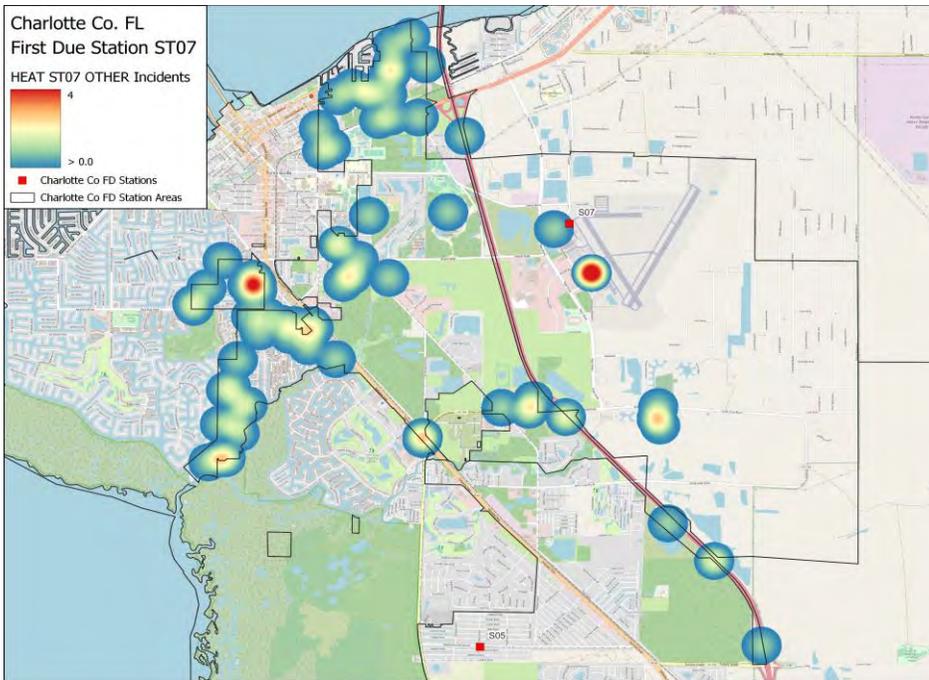
### Hazmat Hot Spot Map

The station experienced a higher amount of hazmat calls compared to other first due areas, with the highest volume located to the South and West of the station's first due area.



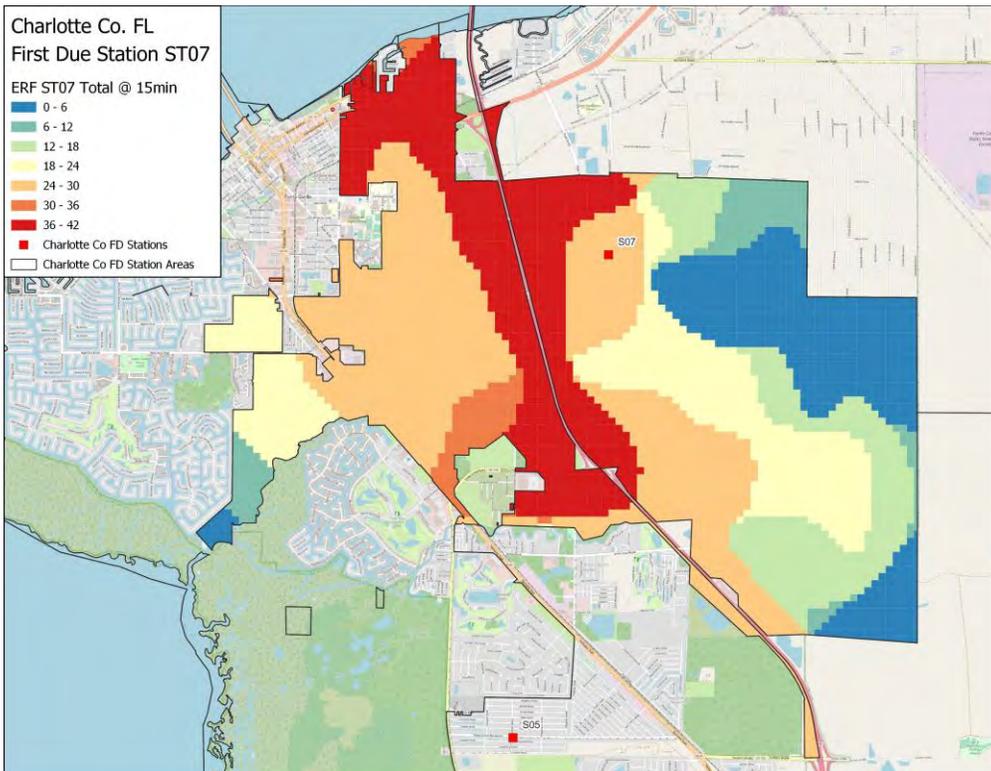
### Other Hot Spot Map

The largest concentration of other type incidents is located at the Airport and then around major transportation routes throughout the Station’s area.



### Concentration—Effective Response Force Capabilities

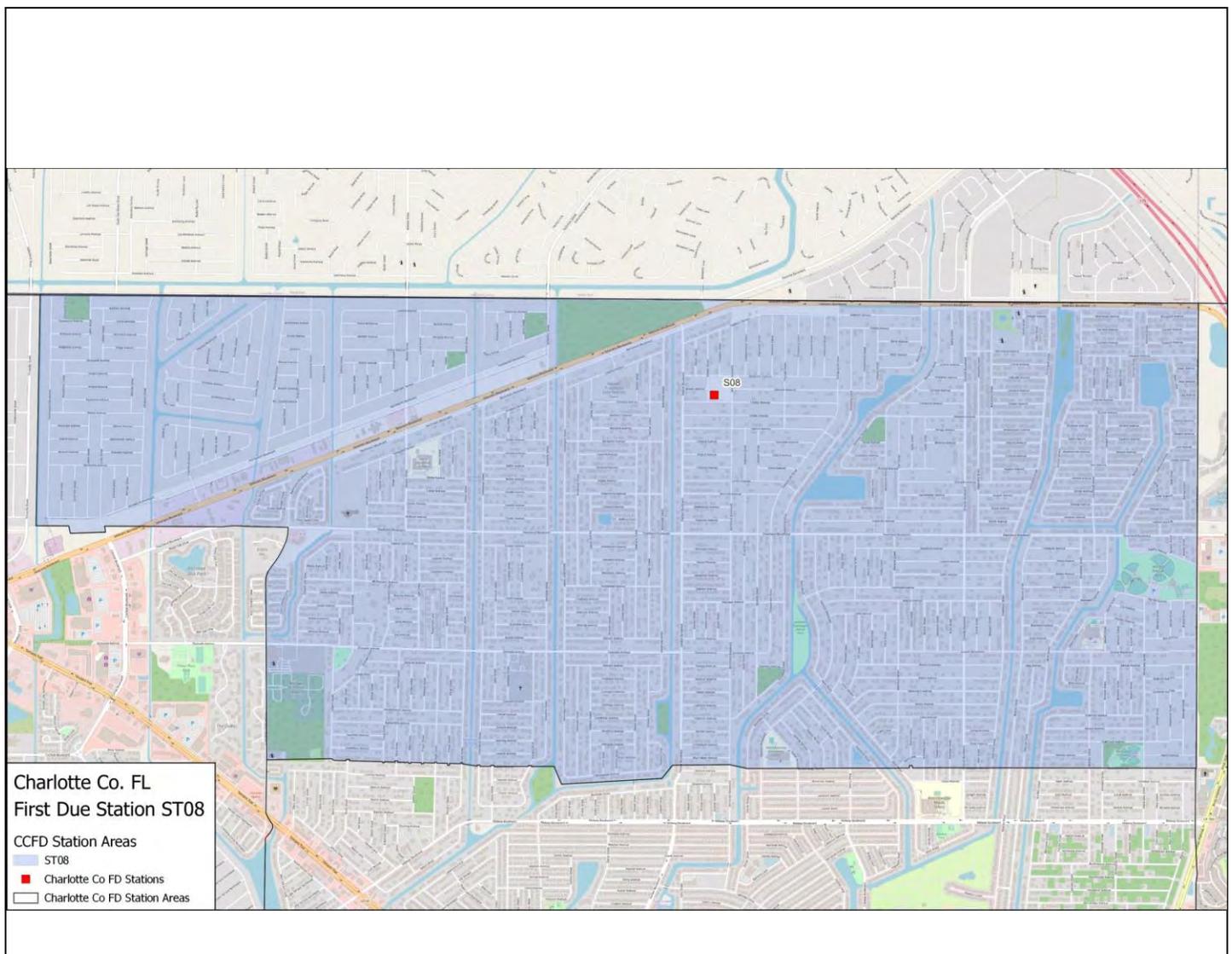
Station 7’s area is analyzed by the number of personnel that can assemble within 15 minutes.



Station 8	Unit ID	Unit Type	Personnel
	E8	Engine	2
	R8	Rescue	2
	BR8	Brush	



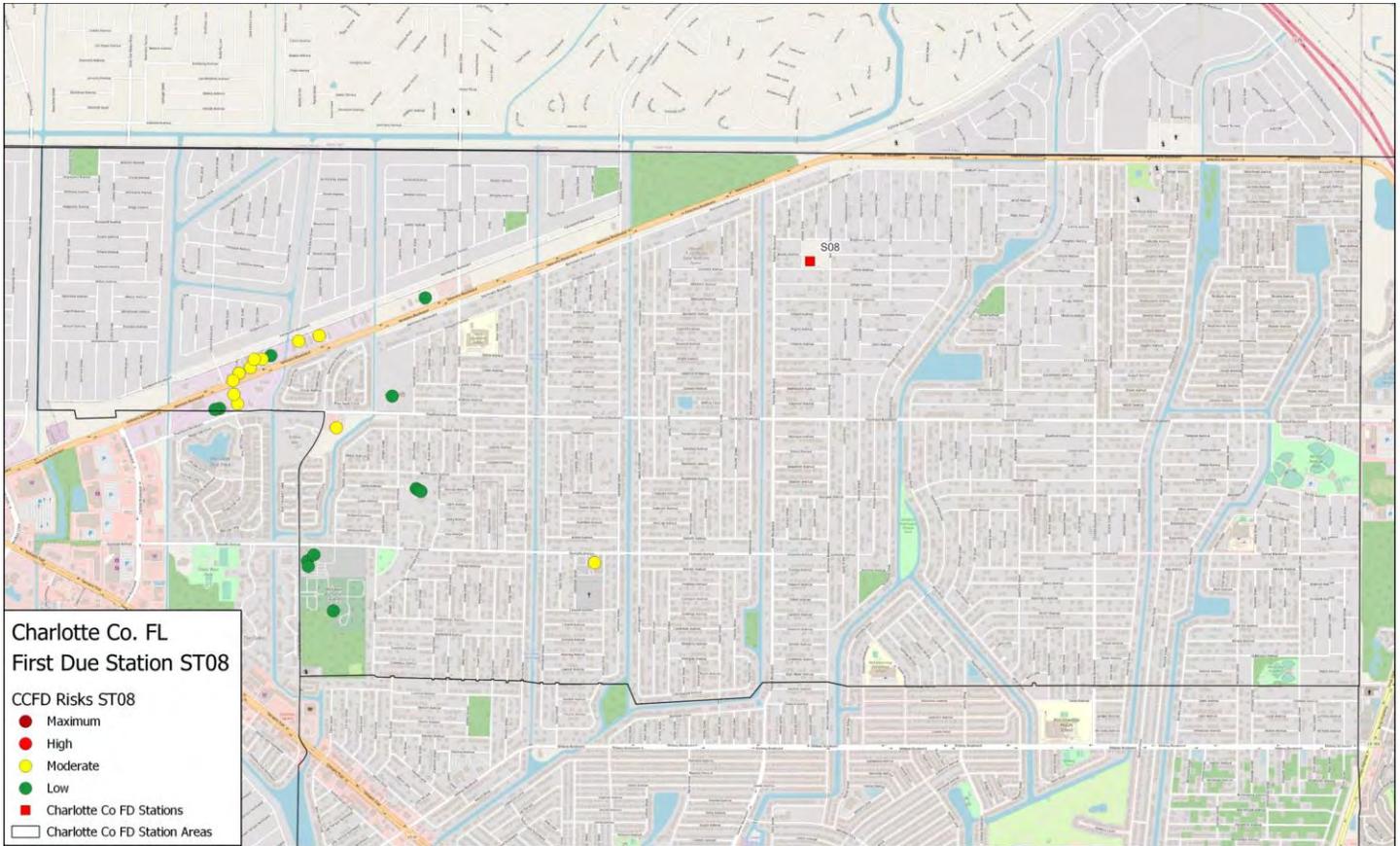
Station 8 staffs two primary units and has a moderate overall jurisdictional risk profile. A brush unit is cross staffed when needed.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level.

There is a concentration of lower to moderate risk buildings located West of the Station's area.



## Station 8 First Due Area Historical Data Analysis

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>1,791</b>	<b>1,696</b>	<b>1,919</b>	<b>1,858</b>	<b>2,024</b>
Cardiac and stroke	207	189	230	202	224
Seizure and unconsciousness	111	121	115	140	147
Breathing difficulty	142	160	172	107	184
Overdose and psychiatric	29	6	11	15	20
Accident	89	73	81	74	83
Fall and injury	324	370	400	379	435
Illness and other	402	382	463	568	570
Medical No ProQA	160	144	169	175	185
Interfacility transfer	327	251	278	198	176
<b>Fire</b>	<b>379</b>	<b>318</b>	<b>318</b>	<b>309</b>	<b>334</b>
Structure fire	15	20	20	18	15
Outside fire	19	13	21	25	25
Vehicle fire	2	7	10	9	1
Alarm	46	55	48	78	89
Public service	183	149	149	86	116
Fire other	114	74	70	93	88
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>
Hazmat	0	0	1	2	1
<b>Rescue</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>
Rescue	1	2	2	2	3
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport	0	0	0	0	0
<b>Total</b>	<b>2,171</b>	<b>2,016</b>	<b>2,240</b>	<b>2,171</b>	<b>2,362</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>5.9</b>	<b>5.5</b>	<b>6.1</b>	<b>5.9</b>	<b>6.5</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>-7.14%</b>	<b>11.11%</b>	<b>-3.35%</b>	<b>9.10%</b>

**Historical Data Analysis**

Station 8's profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials, technical rescue had few incidents during the 5-year rating period.

The year-over-year growth has varied between a 7% decrease and a 11% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
8	CR08	2273	2071	2150	2140	2451
	EN08	1758	1603	1740	1783	2024
	BR08	28	19	11	27	6
	<b>Total</b>	<b>4,059</b>	<b>3,693</b>	<b>3,901</b>	<b>3,950</b>	<b>4,481</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>11.1</b>	<b>10.1</b>	<b>10.7</b>	<b>10.8</b>	<b>12.3</b>

### Station 8 First Due Area Historical Performance

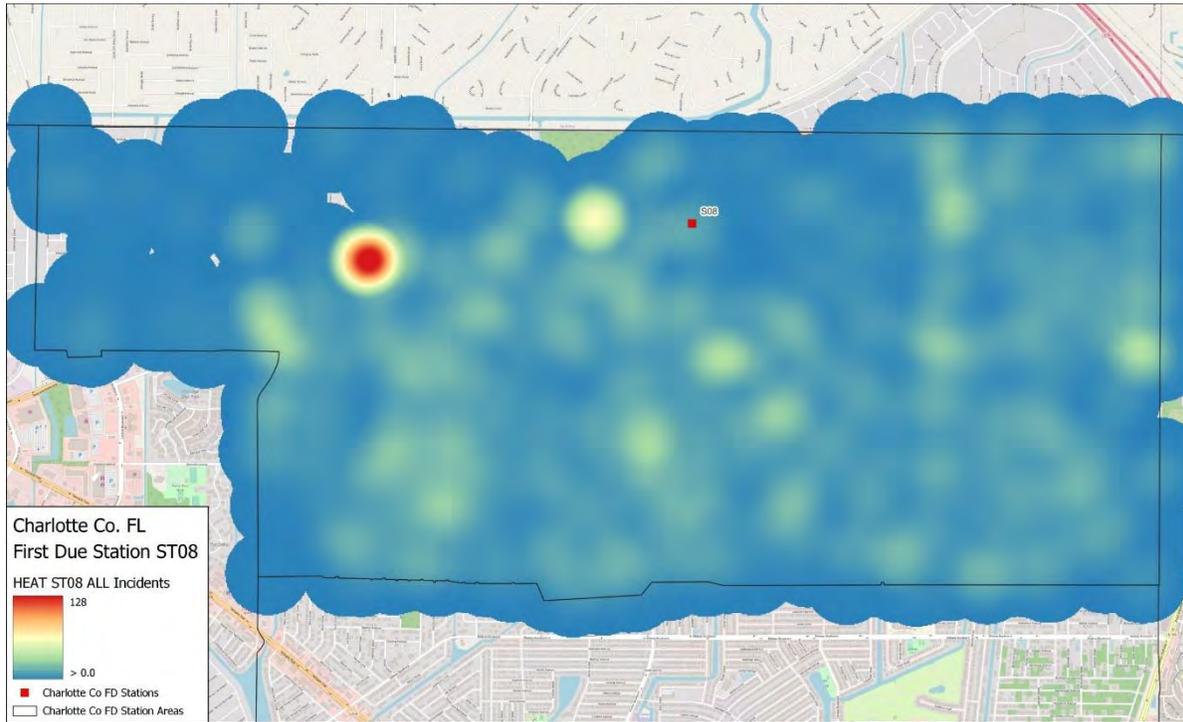
Unit ID	Reporting Period	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)	Sample Size <sup>1</sup>
CR08	2017	4.1	2.1	6.9	11.4	1,219
	2018	3.9	2.4	7.3	11.9	1,181
	2019	3.9	2.4	6.8	11.5	1,265
	2020	4.2	2.4	6.9	11.8	1,290
	2021	4.0	2.3	7.2	11.6	1,420
	<b>All</b>	<b>4.0</b>	<b>2.3</b>	<b>7.0</b>	<b>11.7</b>	<b>6,375</b>
EN08	2017	3.9	2.3	6.9	11.4	901
	2018	3.6	2.3	6.8	11.1	810
	2019	3.9	2.3	6.7	11.0	887
	2020	3.9	2.4	6.6	10.9	803
	2021	3.6	2.4	7.1	11.6	952
	<b>All</b>	<b>3.8</b>	<b>2.3</b>	<b>6.8</b>	<b>11.2</b>	<b>4,353</b>
BR08	2017	--	--	--	--	--
	2018	--	--	--	--	--
	2019	3.4	2.4	193.4	199.2	1
	2020	1.5	145.6	0.0	147.1	2
	2021	--	--	--	--	--
	<b>All</b>	<b>3.4</b>	<b>145.6</b>	<b>193.4</b>	<b>199.2</b>	<b>3</b>

First Due Station	Reporting Period	Number of Overlapped Calls	Total Number of Calls	Percentage of Overlapped Calls
ST08	2017	364	2,171	16.8
	2018	303	2,016	15.0
	2019	357	2,240	15.9
	2020	312	2,171	14.4
	2021	433	2,362	18.3
	<b>All</b>	<b>1,769</b>	<b>10,960</b>	<b>16.1</b>

First Due Station ST08:								2017-2021	2017-2021
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	Benchmark	Compliance
<b>Alarm Handling</b>		3:54	4:04	3:46	3:51	4:05	3:47	3:37	86.1
<b>Turnout Time</b>		2:22	2:13	2:24	2:26	2:26	2:22	2:13	86.9
<b>Travel Time</b>	Urban	6:39	6:31	6:36	6:31	6:32	6:58	6:41	90.4
	Rural	7:41	8:32	8:11	6:49	6:10	8:44	10:43	98.7
<b>Total Response Time</b>	Urban	11:15	11:11	11:07	11:09	11:21	11:27	10:50	87.1
		n = 10,271	n = 1,979	n = 1,852	n = 2,137	n = 2,065	n = 2,238		
	Rural	11:31	12:19	12:28	10:49	10:30	12:33	15:14	97.7
		n = 299	n = 54	n = 88	n = 51	n = 51	n = 55		

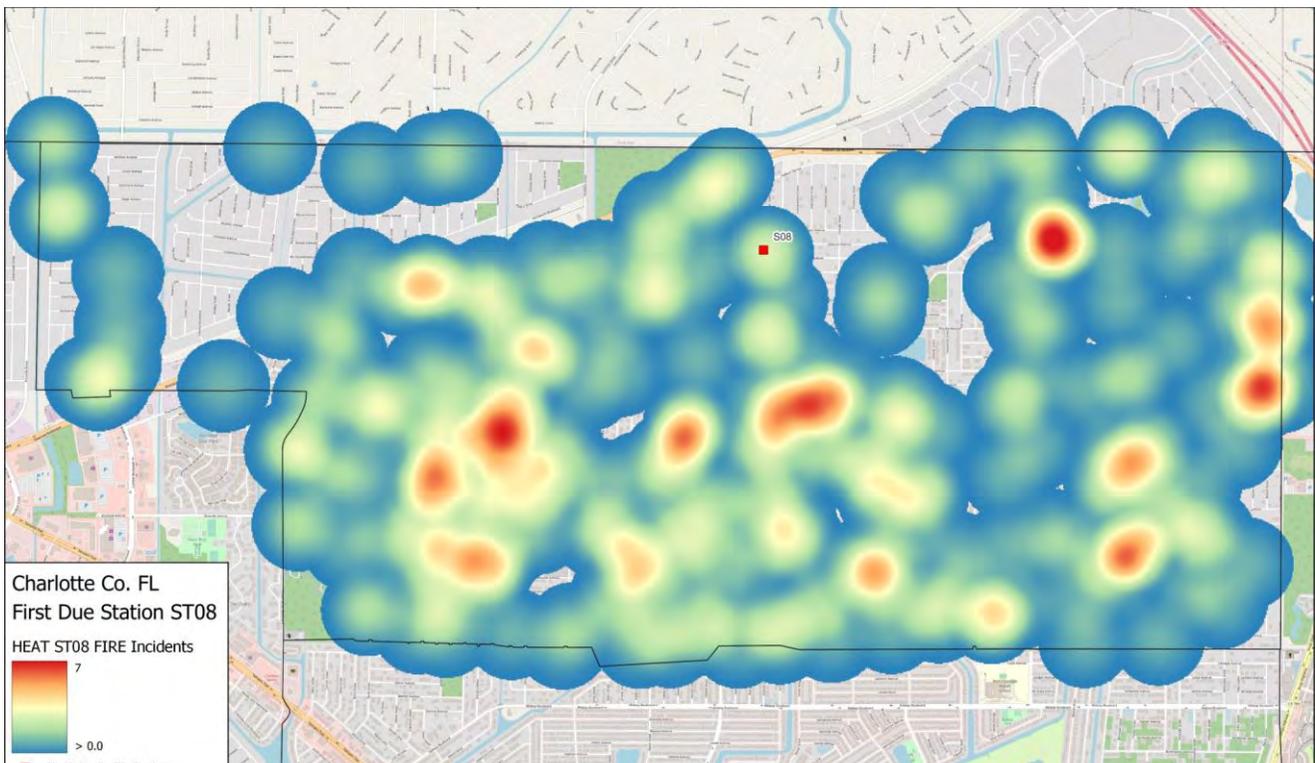
### Overall Hot Spot Map

Station 8 has a moderate distribution of incidents, with the highest concentration located directly West of the station.



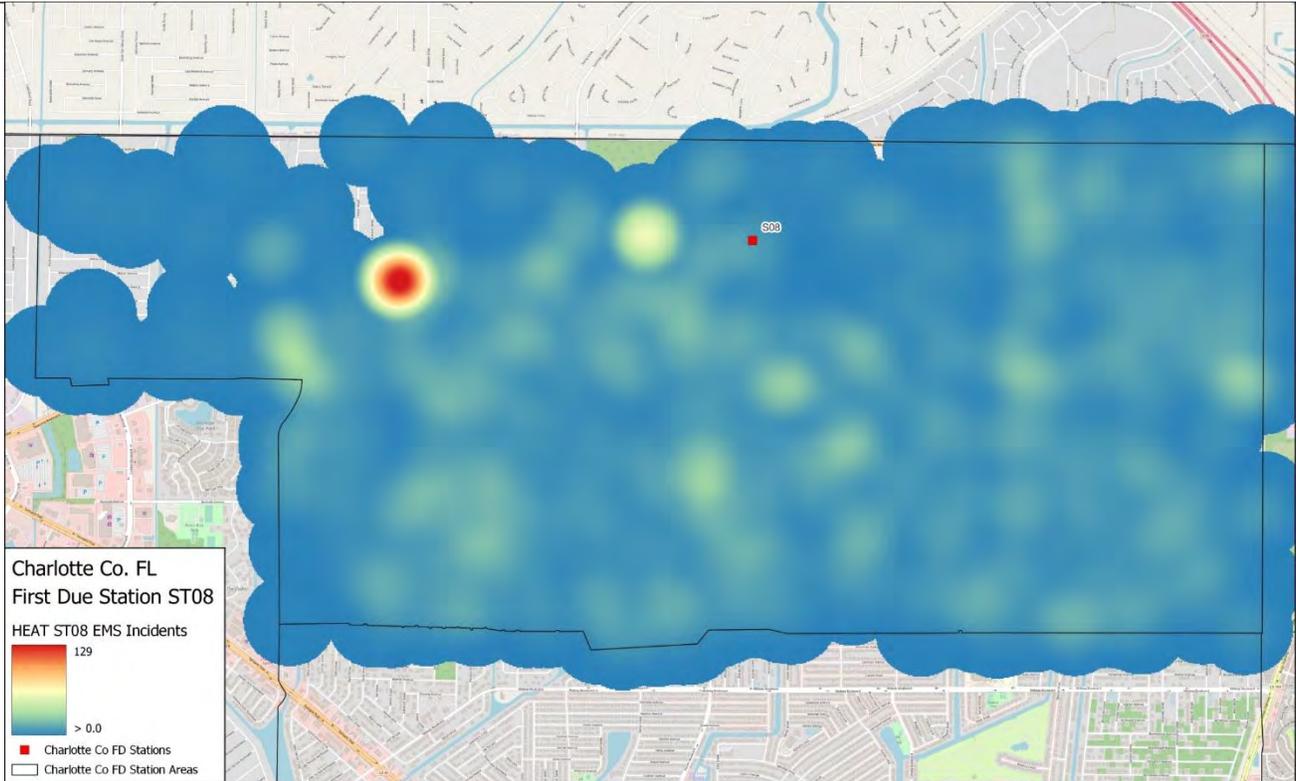
### Fire Hot Spot Map

The highest concentration of fire calls has an even distribution throughout the Station 8's area.



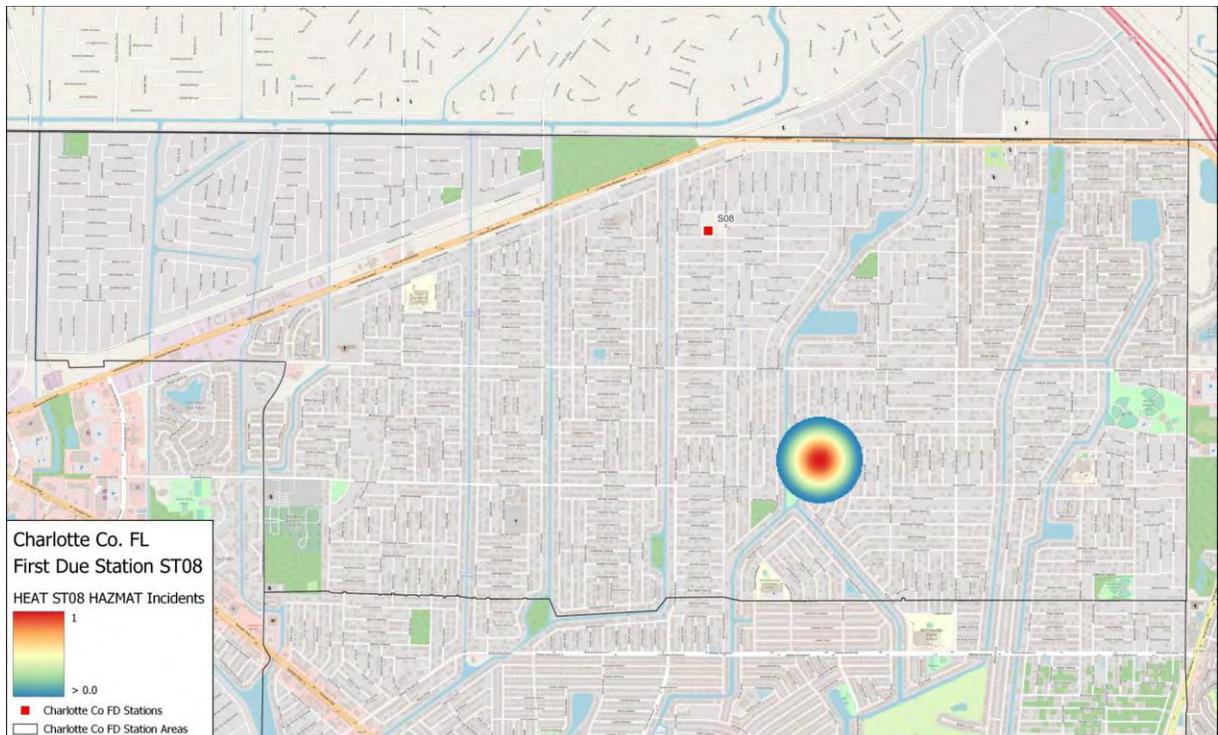
### EMS Hot Spot Map

Station 8 has a higher call volume of EMS incidents West of the Station.



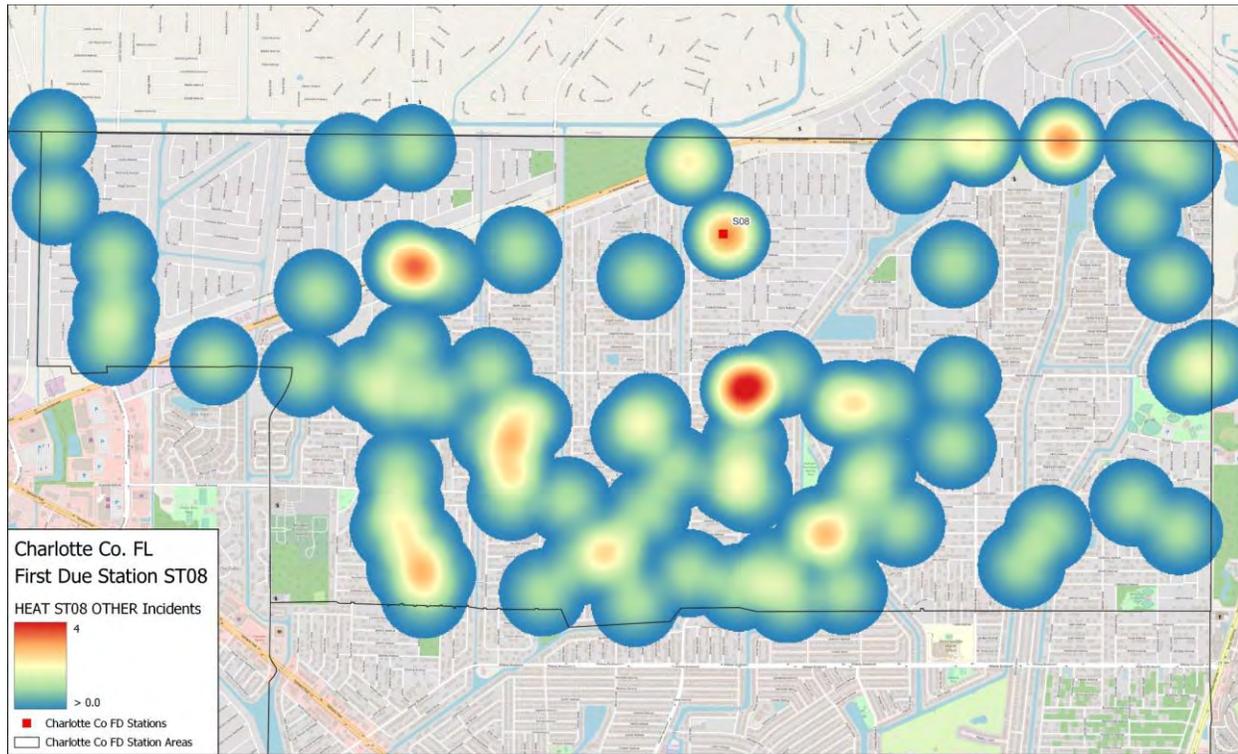
### Hazmat Hot Spot Map

There is a low volume of hazmat calls with a hot spot just South of Station 8.



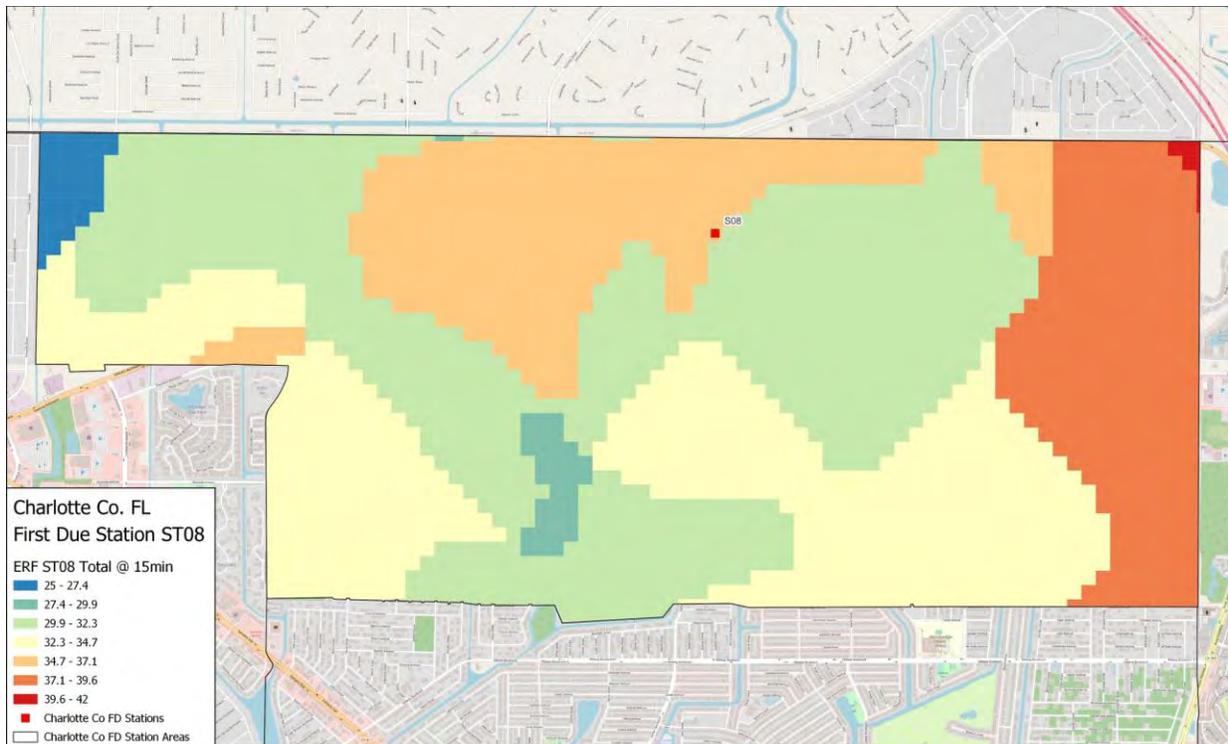
### Other Hot Spot Map

Other calls are fairly even throughout the station area.



### Concentration—Effective Response Force Capabilities

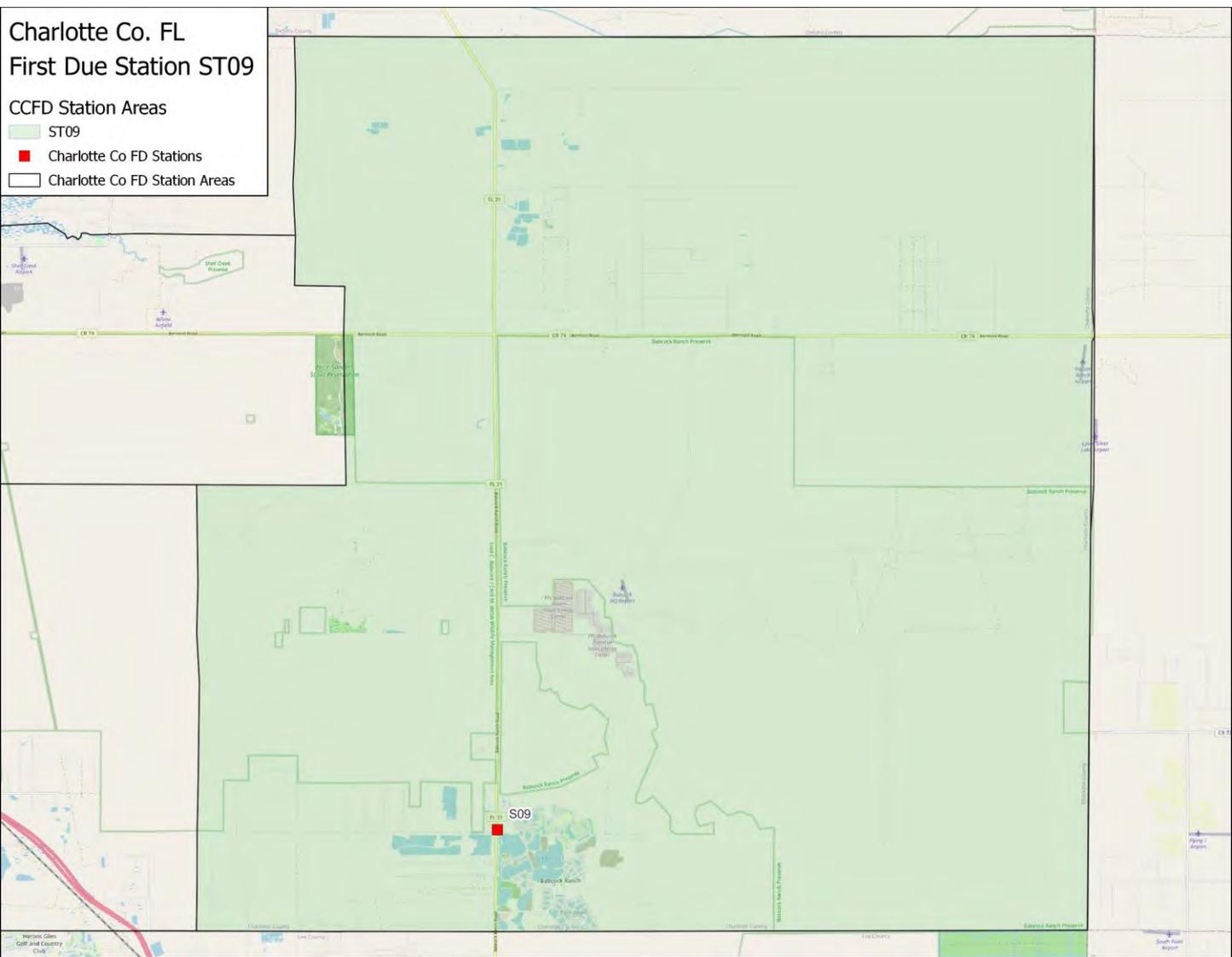
Station 8's area is analyzed by the number of personnel that can assemble within 15 minutes.



Station 9	Unit ID	Unit Type	Personnel
	E9	Engine	2
	R9	Rescue	2

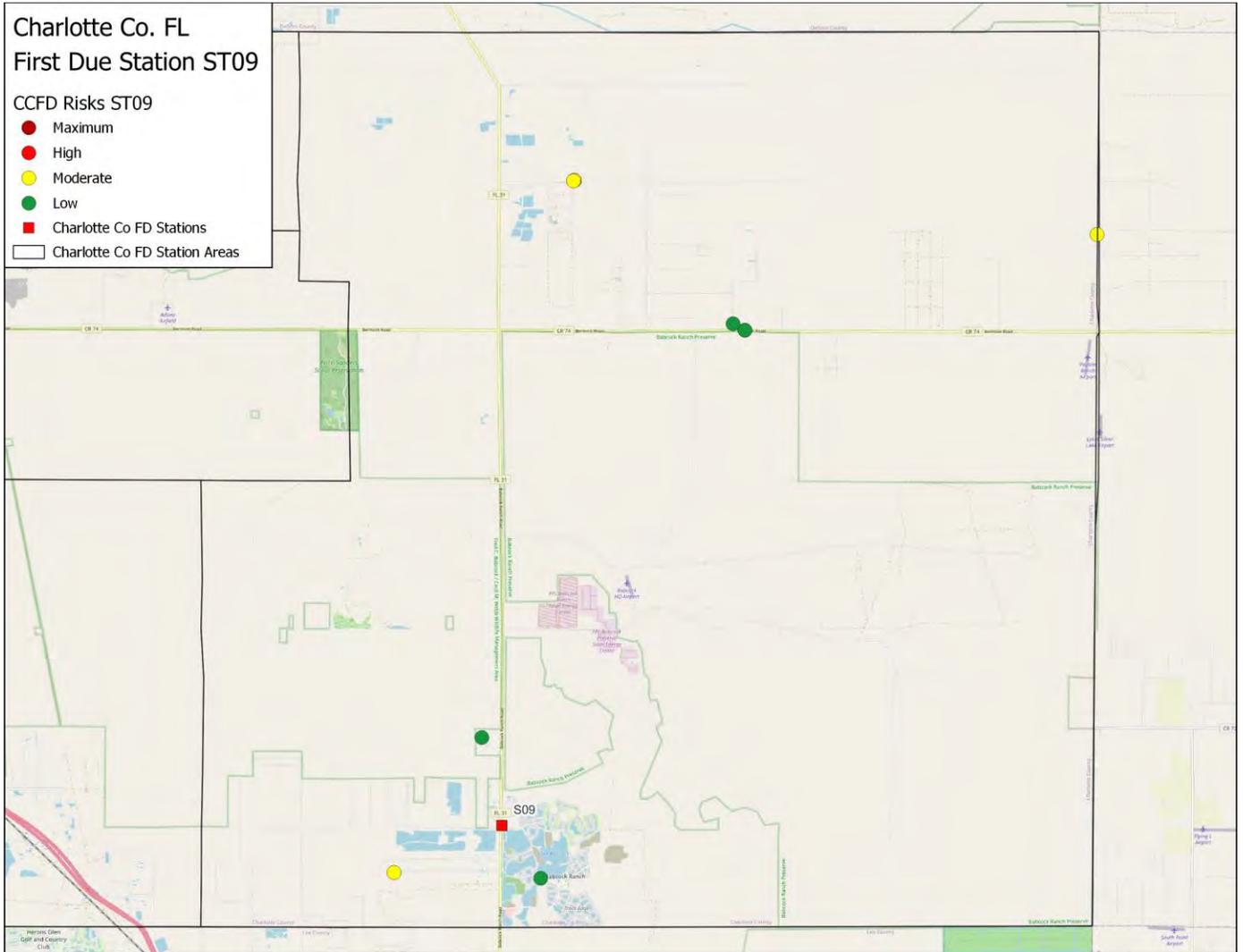


Station 9 staffs two units and has a low overall jurisdictional risk profile.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. There is a concentration of lower to moderate risk buildings located in close proximity to the station, with a few outlying buildings with risk profiles. The vast majority of Station 9’s first due area is of lower risk.



Station 9 First Due Area Historical Data Analysis

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>169</b>	<b>174</b>	<b>210</b>	<b>238</b>	<b>372</b>
Cardiac and stroke	7	15	16	25	42
Seizure and unconsciousness	11	15	12	17	21
Breathing difficulty	7	3	6	11	28
Overdose and psychiatric	1	0	2	2	1
Accident	48	46	40	39	56
Fall and injury	30	31	46	40	69
Illness and other	14	16	33	47	67
Medical No ProQA	51	47	46	54	82
Interfacility transfer	0	1	9	3	6
<b>Fire</b>	<b>86</b>	<b>78</b>	<b>61</b>	<b>89</b>	<b>143</b>
Structure fire	3	5	3	4	6
Outside fire	36	31	15	29	31
Vehicle fire	8	5	9	8	10
Alarm	11	16	16	25	44
Public service	3	0	3	3	11
Fire other	25	21	15	20	41
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>
Hazmat	0	0	0	4	2
<b>Rescue</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
Rescue	0	1	2	4	5
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>
Airport	0	0	1	0	1
<b>Total</b>	<b>255</b>	<b>253</b>	<b>274</b>	<b>335</b>	<b>523</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>0.7</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.4</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>-0.78%</b>	<b>8.30%</b>	<b>21.93%</b>	<b>56.55%</b>

Historical Data Analysis

Station 9’s profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials, technical rescue had few incidents during the 5-year rating period.

The year-over-year growth has varied between a 1% decrease and a 57% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
9	EN09	231	237	257	255	398
	CR09	--	--	--	197	366
	<b>Total</b>	<b>231</b>	<b>237</b>	<b>257</b>	<b>452</b>	<b>764</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>1.2</b>	<b>2.1</b>

Station 9 First Due Area Historical Performance

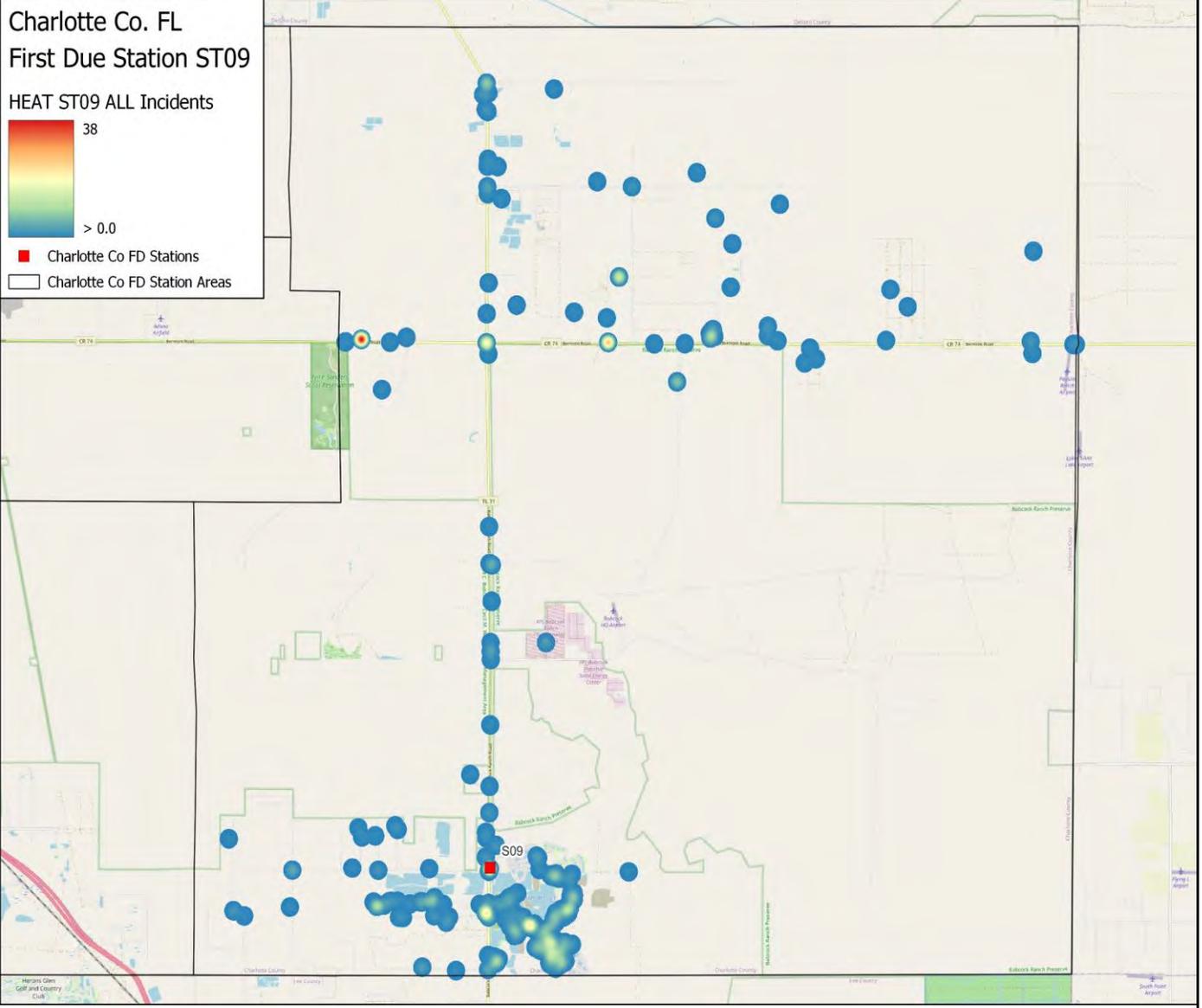
Unit ID	Reporting Period	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)	Sample Size <sup>1</sup>
EN09	2017	3.9	3.7	22.7	27.5	161
	2018	4.2	3.8	22.3	28.3	178
	2019	4.1	4.1	18.6	24.2	208
	2020	4.8	4.0	19.4	25.1	155
	2021	3.6	3.6	16.9	21.7	224
	<b>All</b>	<b>4.0</b>	<b>3.8</b>	<b>19.8</b>	<b>24.9</b>	<b>926</b>
CR09	2017	--	--	--	--	--
	2018	--	--	--	--	--
	2019	--	--	--	--	--
	2020	4.2	3.0	16.5	21.4	117
	2021	4.2	2.9	15.1	19.0	207
	<b>All</b>	<b>4.2</b>	<b>2.9</b>	<b>16.1</b>	<b>20.6</b>	<b>324</b>

First Due Station	Reporting Period	Number of Over-lapped Calls	Total Number of Calls	Percentage of Over-lapped Calls
ST09	2017	22	255	8.6
	2018	17	253	6.7
	2019	13	274	4.7
	2020	21	335	6.3
	2021	37	523	7.1
	<b>All</b>	<b>110</b>	<b>1,640</b>	<b>6.7</b>

First Due Station ST09:								2017-2021	2017-2021
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	Benchmark	Compliance
<b>Alarm Handling</b>		4:13	4:26	4:22	4:23	4:13	4:02	3:37	83.6
<b>Turnout Time</b>		3:36	3:39	3:50	3:57	3:31	3:13	2:13	57.8
<b>Travel Time</b>	Urban	7:59	7:54	10:33	7:45	8:47	7:00	6:41	77.2
	Rural	20:32	23:07	0:10	19:26	19:23	17:22	10:43	51.4
<b>Total Response Time</b>	Urban	13:26	13:19	15:32	14:01	13:56	11:28	10:50	68.0
		n = 259	n = 17	n = 19	n = 49	n = 76	n = 98		
	Rural	1:39	5:00	5:54	0:31	0:01	22:14	15:14	50.2
		n = 1,228	n = 197	n = 196	n = 213	n = 234	n = 388		

### Overall Hot Spot Map

Trends show Station 9 has a call volume is higher in close proximity to the station, with another larger area directly North and in conjunction with transportation routes.

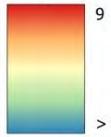


### Fire Hot Spot Map

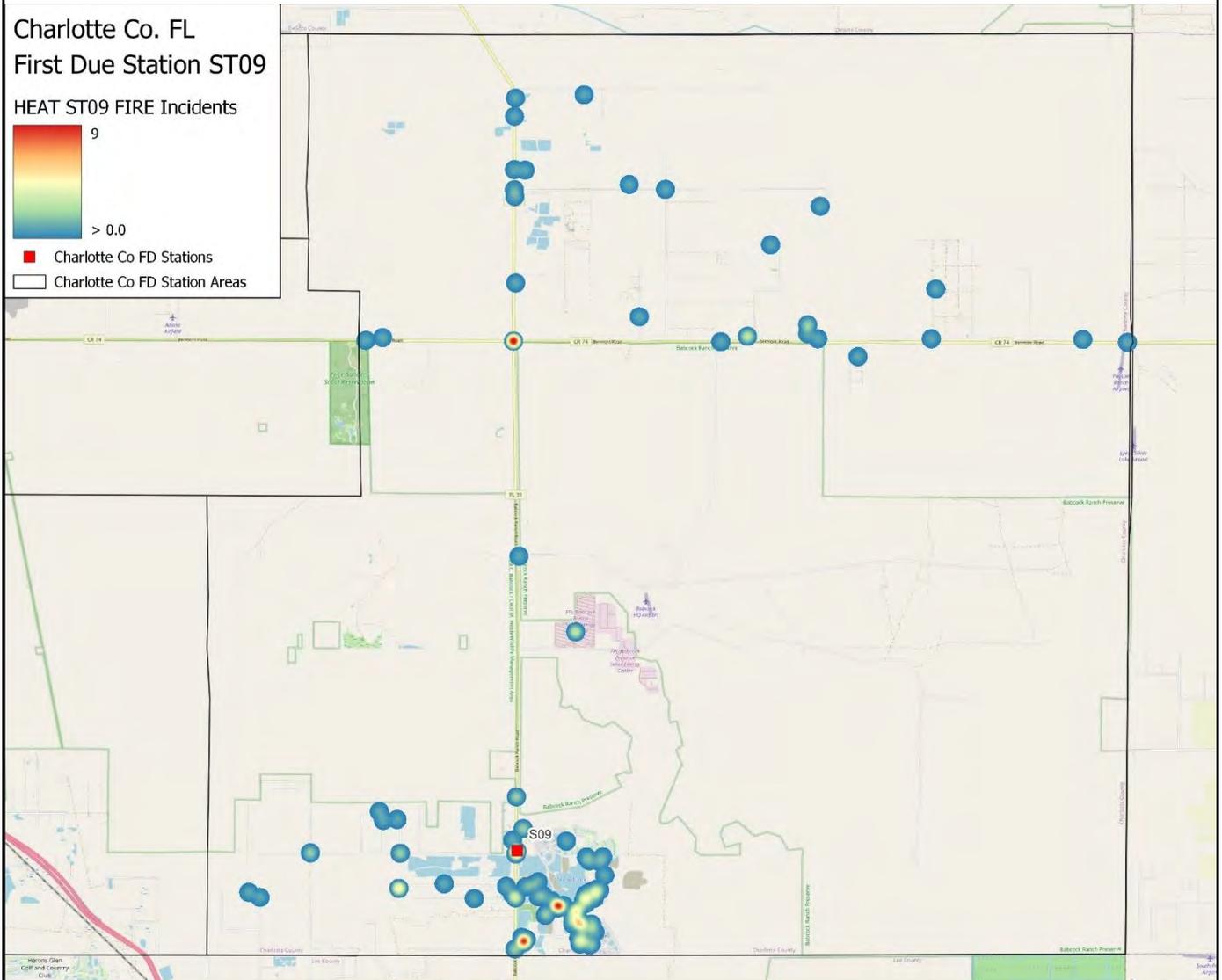
Station 9's fire calls are more concentrated in close proximity to the fire station, with an additional higher volume area North of Station 9.

Charlotte Co. FL  
First Due Station ST09

HEAT ST09 FIRE Incidents

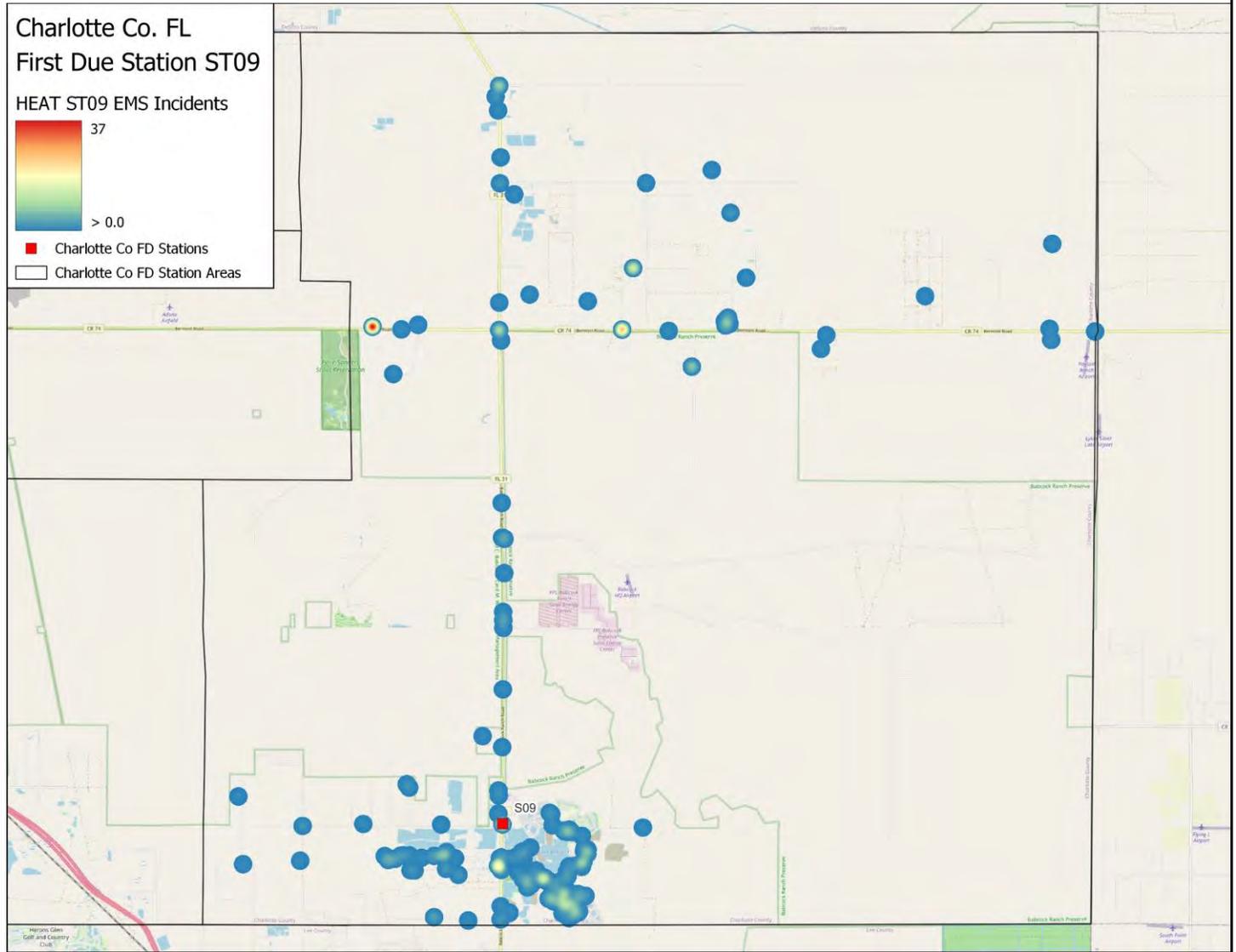


- Charlotte Co FD Stations
- Charlotte Co FD Station Areas



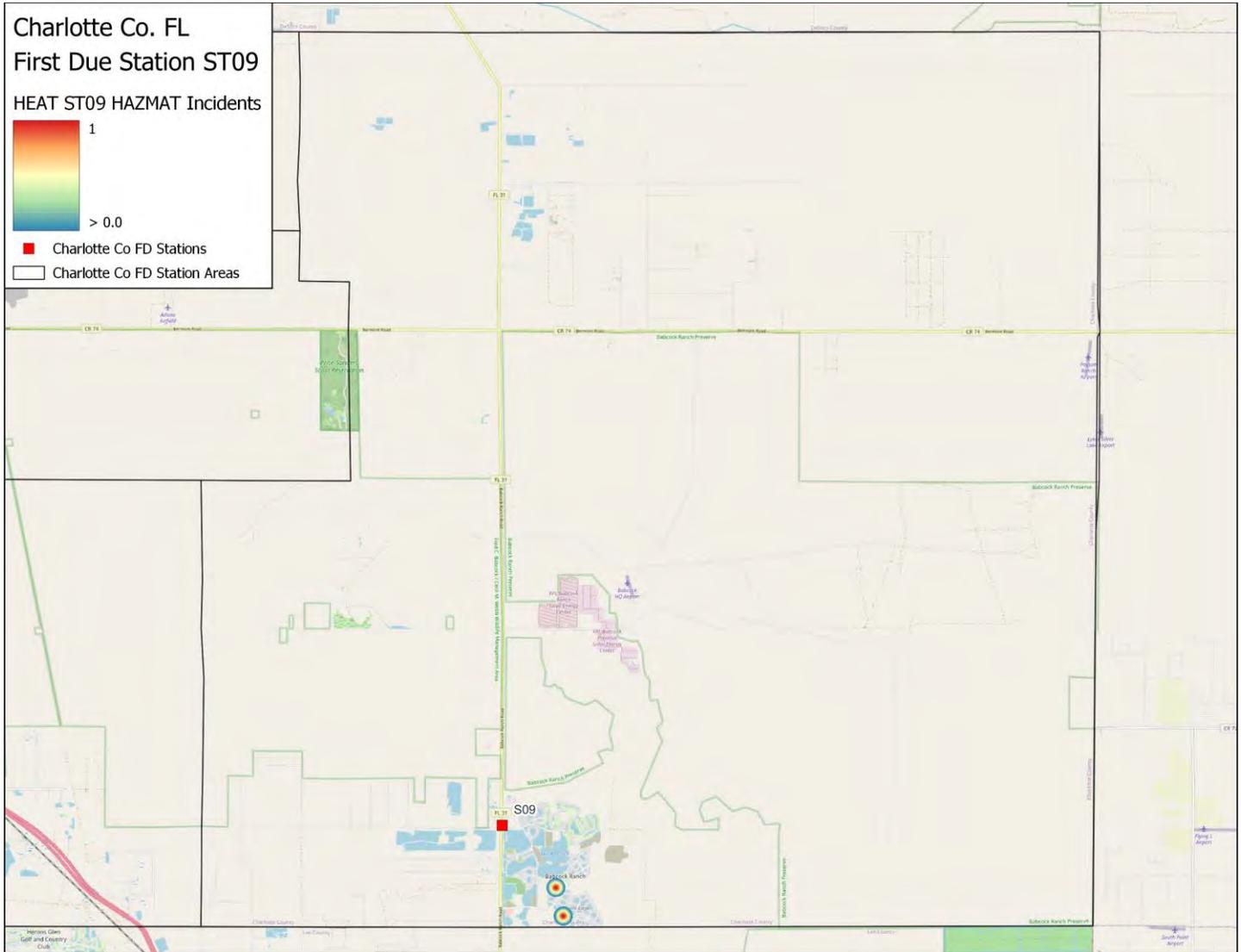
### EMS Hot Spot Map

Station 9's EMS calls are more concentrated in close proximity to the fire station, with an additional higher volume area North of Station 9.



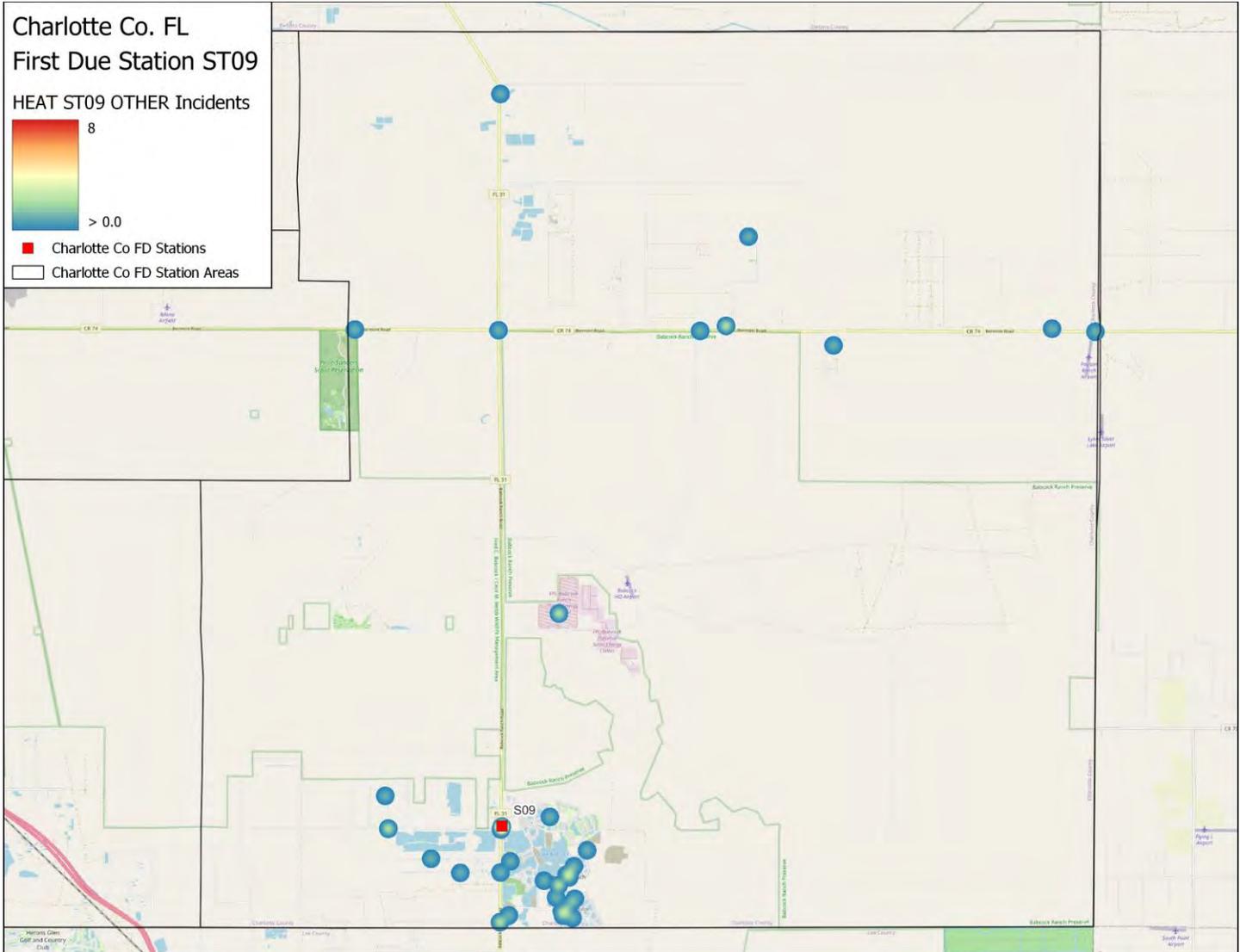
### Hazmat Hot Spot Map

As with most other stations, a relatively low volume of hazardous materials calls makes it difficult to discern trends with the exception of a hot spot South of the Station.



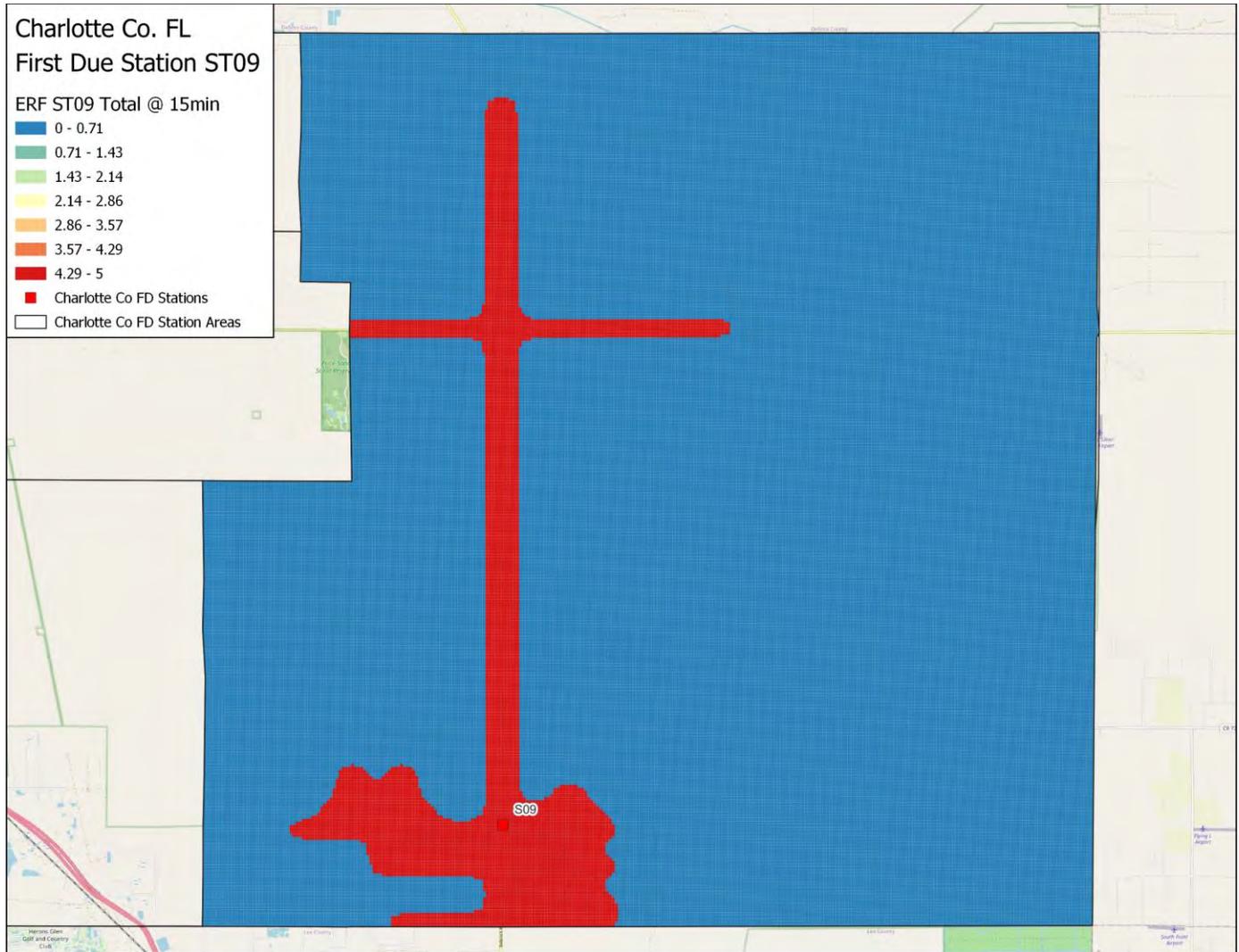
### Other Hot Spot Map

Station 9’s other calls are concentrated in close proximity to the fire station, with other hot spots directly North of the station.



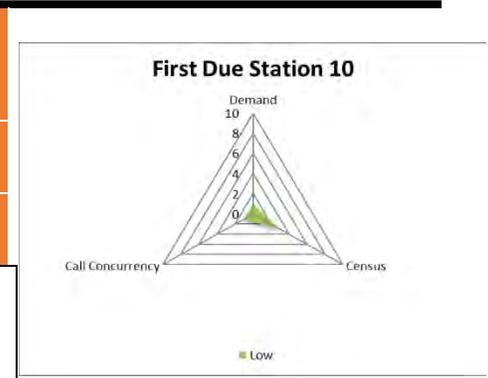
### Concentration—Effective Response Force Capabilities

Station 9's area is analyzed by the number of personnel that can assemble within 15 minutes.



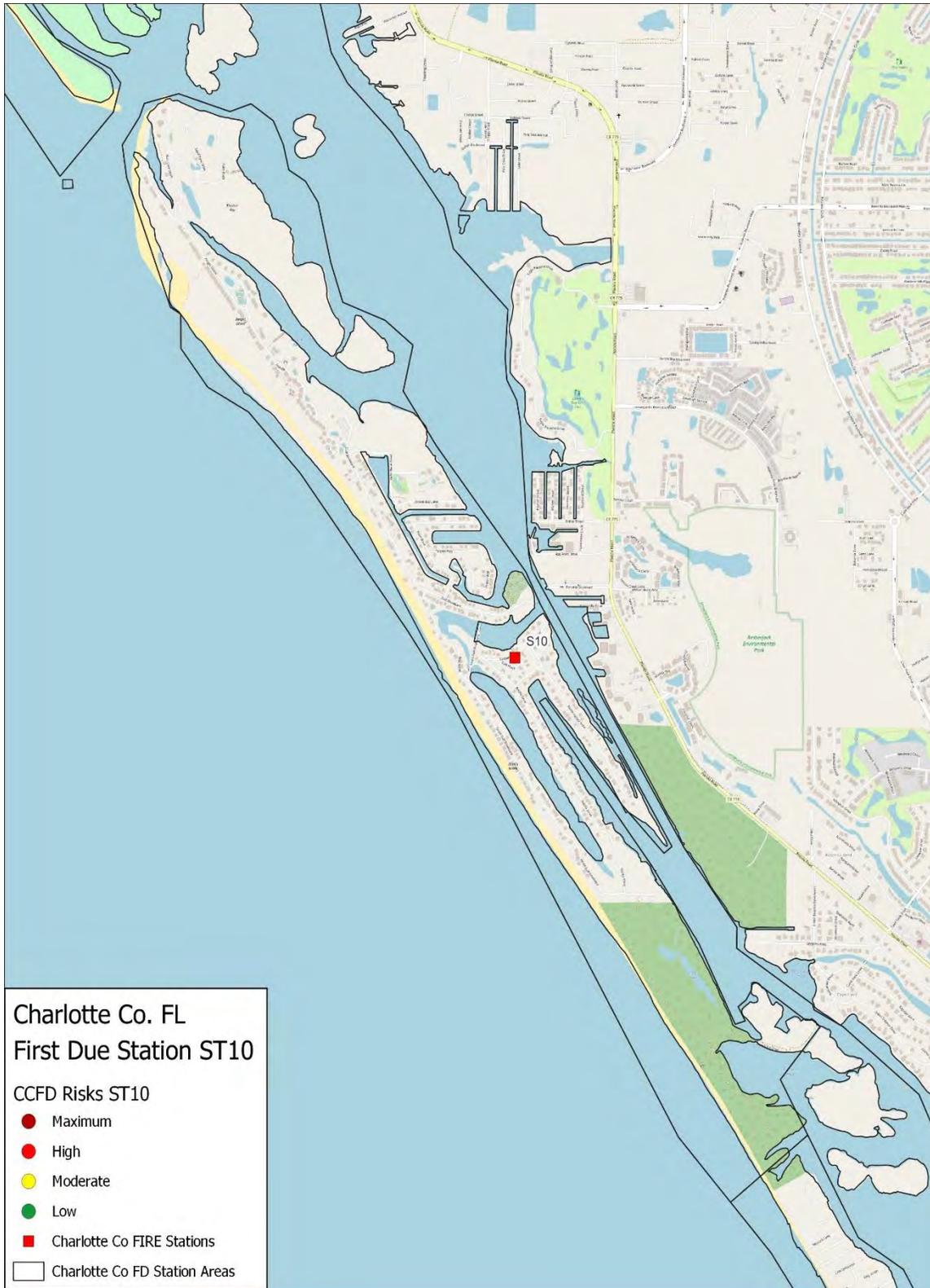
Station 10	Unit ID	Unit Type	Personnel
	E10	Engine	2
	TK 10	Tanker	

Station 10 cross-staffs two apparatus and has a lower overall jurisdictional risk profile.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. There is no concentration of lower or moderate risk buildings located in the station area. The vast majority of Station 10's first due area is lower risk.



**Station 10 First Due Area Historical Data Analysis**

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>41</b>	<b>42</b>	<b>42</b>	<b>52</b>	<b>43</b>
Cardiac and stroke	6	3	6	6	7
Seizure and unconsciousness	3	6	4	7	5
Breathing difficulty	0	6	1	2	1
Overdose and psychiatric	0	0	0	0	0
Accident	0	1	1	0	0
Fall and injury	10	9	15	10	13
Illness and other	13	9	9	18	12
Medical No ProQA	9	8	6	9	5
Interfacility transfer	0	0	0	0	0
<b>Fire</b>	<b>21</b>	<b>22</b>	<b>13</b>	<b>21</b>	<b>8</b>
Structure fire	1	0	1	1	0
Outside fire	1	1	2	7	0
Vehicle fire	2	0	1	1	0
Alarm	7	5	0	2	2
Public service	2	3	3	0	0
Fire other	8	13	6	10	6
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Hazmat	0	0	0	0	0
<b>Rescue</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Rescue	0	0	0	0	0
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Airport	0
<b>Total</b>	<b>62</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>0.2</b>
<b>YoY Growth</b>	<b>N/A</b>

**Historical Data Analysis**

Station 10's profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials and technical rescue had zero-incidents during the 5-year rating period.

The year-over-year growth has varied between a 29% decrease and a 32% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
10	EN10	51	46	60	47	11
	PU10	21	26	16	42	47
	TA10	5	3	2	3	--
	<b>Total</b>	<b>77</b>	<b>75</b>	<b>78</b>	<b>92</b>	<b>58</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.2</b>

## Station 10 First Due Area Historical Performance

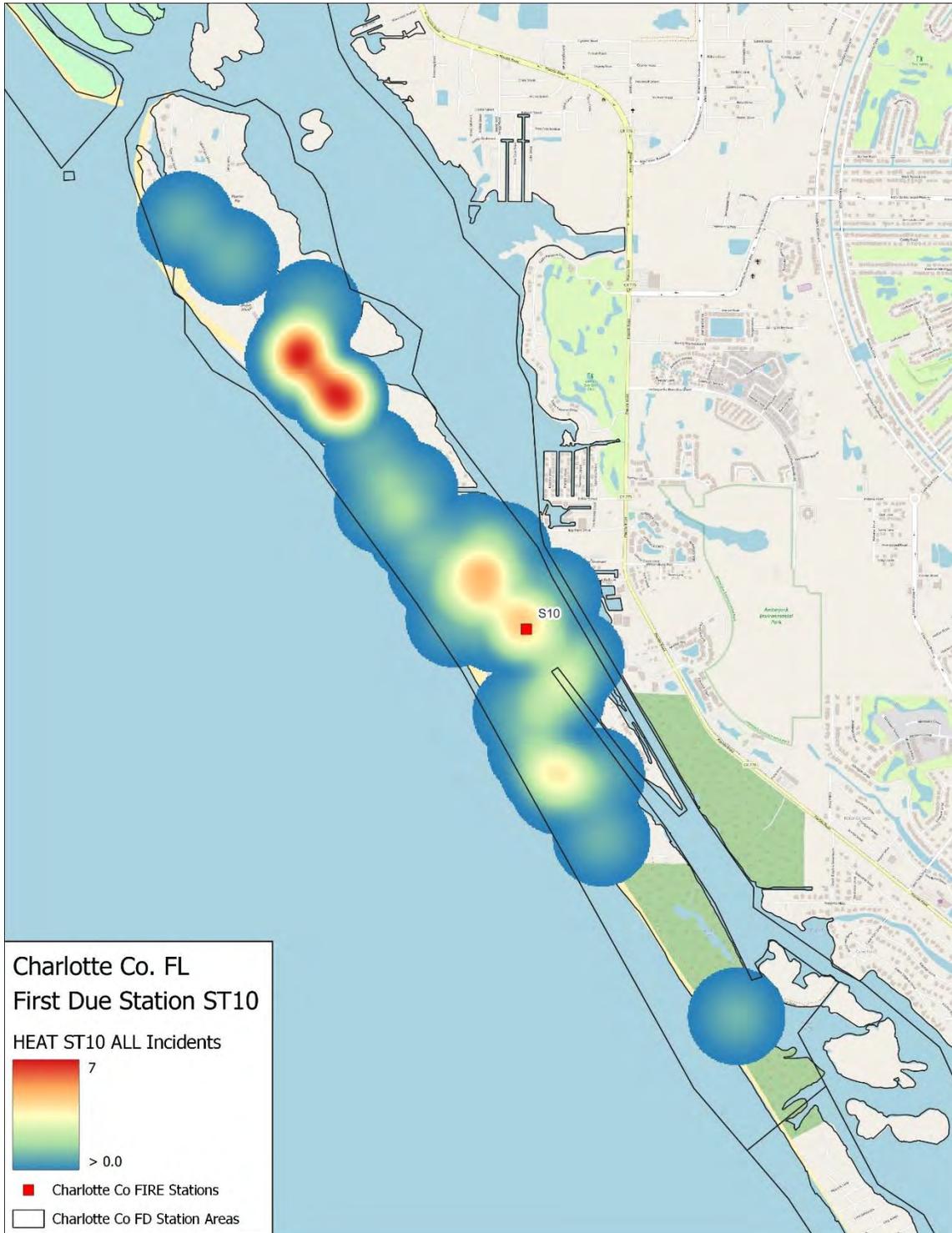
Unit ID	Reporting Period	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)	Sample Size <sup>1</sup>
EN10	2017	4.0	4.0	7.4	13.9	22
	2018	4.3	4.7	9.2	15.1	32
	2019	5.6	4.6	6.0	13.8	38
	2020	5.4	5.2	7.3	15.5	30
	2021	5.6	2.6	9.9	16.0	3
	<b>All</b>	<b>5.1</b>	<b>4.6</b>	<b>8.9</b>	<b>15.1</b>	<b>125</b>
PU10	2017	28.5	1.9	7.2	28.5	7
	2018	13.7	4.0	3.3	13.7	9
	2019	8.9	2.5	7.1	12.8	8
	2020	7.2	8.6	9.9	16.6	29
	2021	4.7	2.9	7.4	13.6	41
	<b>All</b>	<b>8.7</b>	<b>6.0</b>	<b>7.2</b>	<b>15.6</b>	<b>94</b>
TA10	2017	23.2	0.0	20.5	43.7	3
	2018	0.0	0.0	0.0	0.0	1
	2019	10.7	0.1	0.0	10.8	1
	2020	--	--	--	--	--
	2021	--	--	--	--	--
	<b>All</b>	<b>23.2</b>	<b>0.1</b>	<b>20.5</b>	<b>43.7</b>	<b>5</b>

First Due Station	Reporting Period	Number of Overlapped Calls	Total Number of Calls	Percentage of Overlapped Calls
ST10	2017	1	62	1.6
	2018	0	64	0.0
	2019	0	55	0.0
	2020	2	73	2.7
	2021	2	51	3.9
	<b>All</b>	<b>5</b>	<b>305</b>	<b>1.6</b>

First Due Station ST10:									
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
<b>Alarm Handling</b>		6:00	6:32	4:54	7:53	6:00	5:38	3:37	72.8
<b>Turnout Time</b>		4:37	3:48	4:40	4:02	6:30	2:55	2:13	54.9
<b>Travel Time</b>	Urban	2:28	N/A	2:28	N/A	1:34	N/A	6:41	100.0
	Rural	12:12	17:38	13:34	12:59	10:46	7:28	10:43	84.6
<b>Total Response Time</b>	Urban	10:07	N/A	10:07	N/A	8:02	N/A	10:50	100.0
		n = 2	N/A	n = 1	N/A	n = 1	N/A		
	Rural	18:16	22:05	1:56	18:16	17:16	16:00	15:14	79.3
		n = 266	n = 48	n = 56	n = 52	n = 66	n = 44		

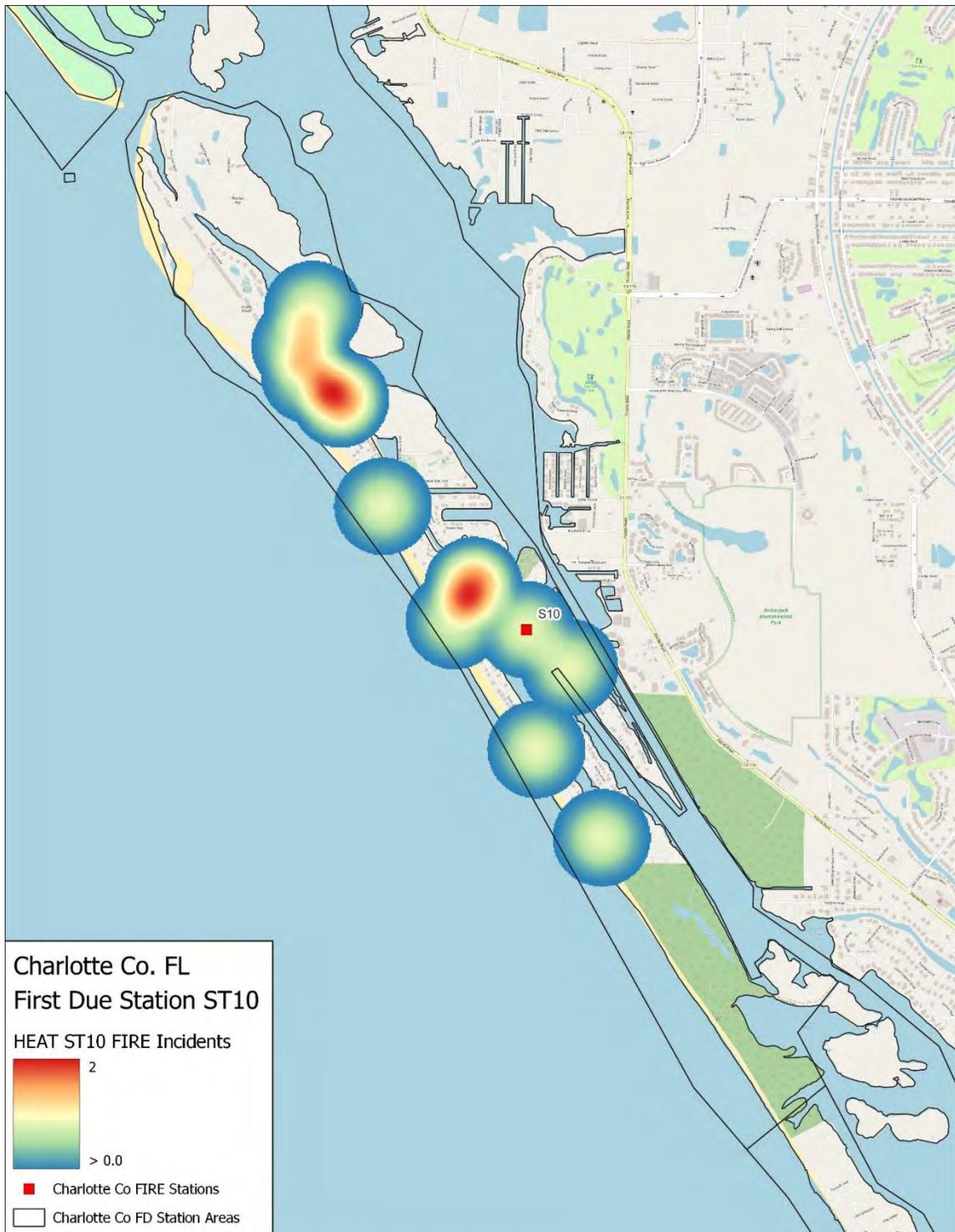
### Overall Hot Spot Map

Trends show Station 10 has an evenly dispersed call volume in their first due area, with the largest volume of calls just Northwest of the station.



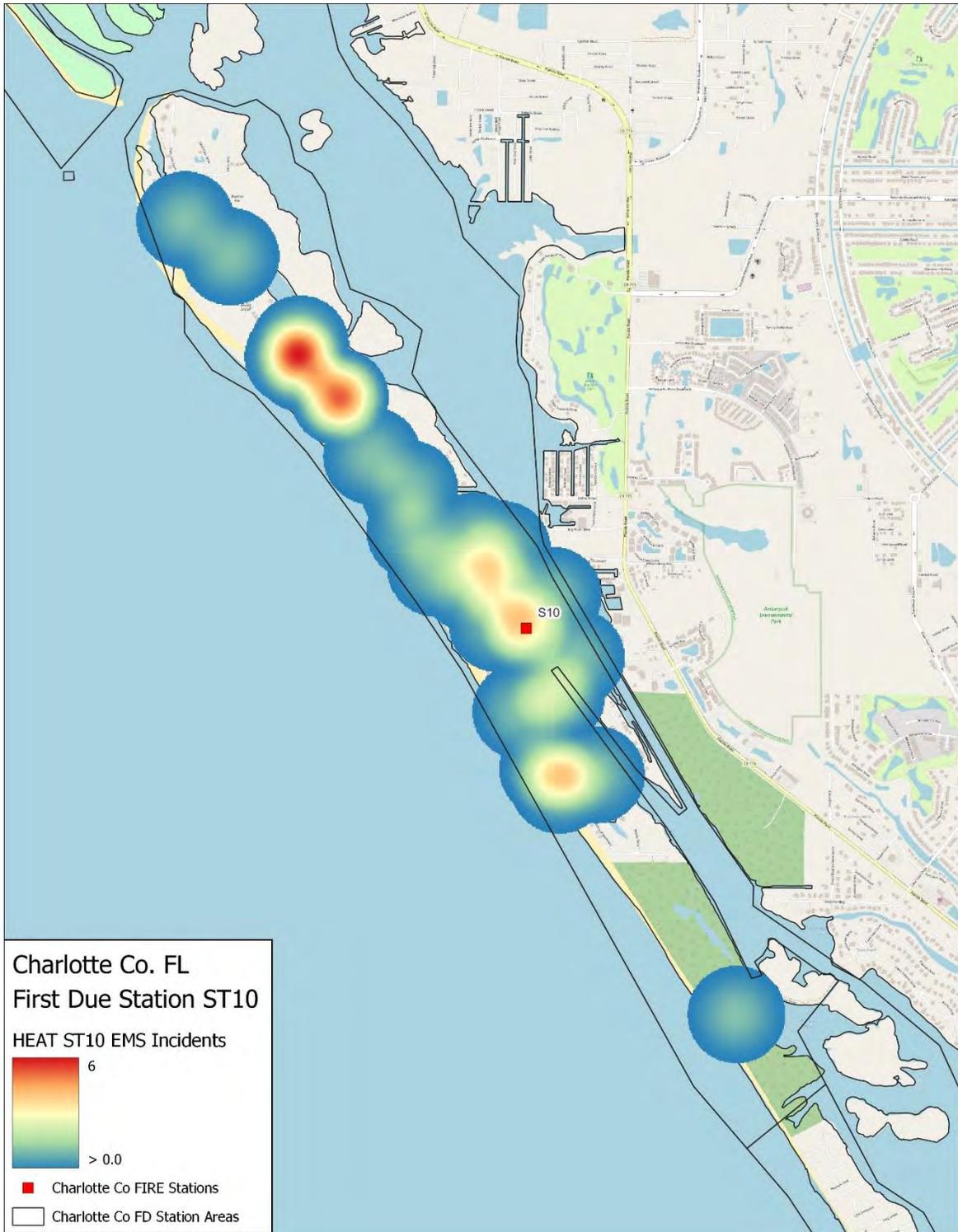
### Fire Hot Spot Map

Station 10's fire calls are concentrated in close proximity to the fire station, with the highest volume located just Northwest of the station.



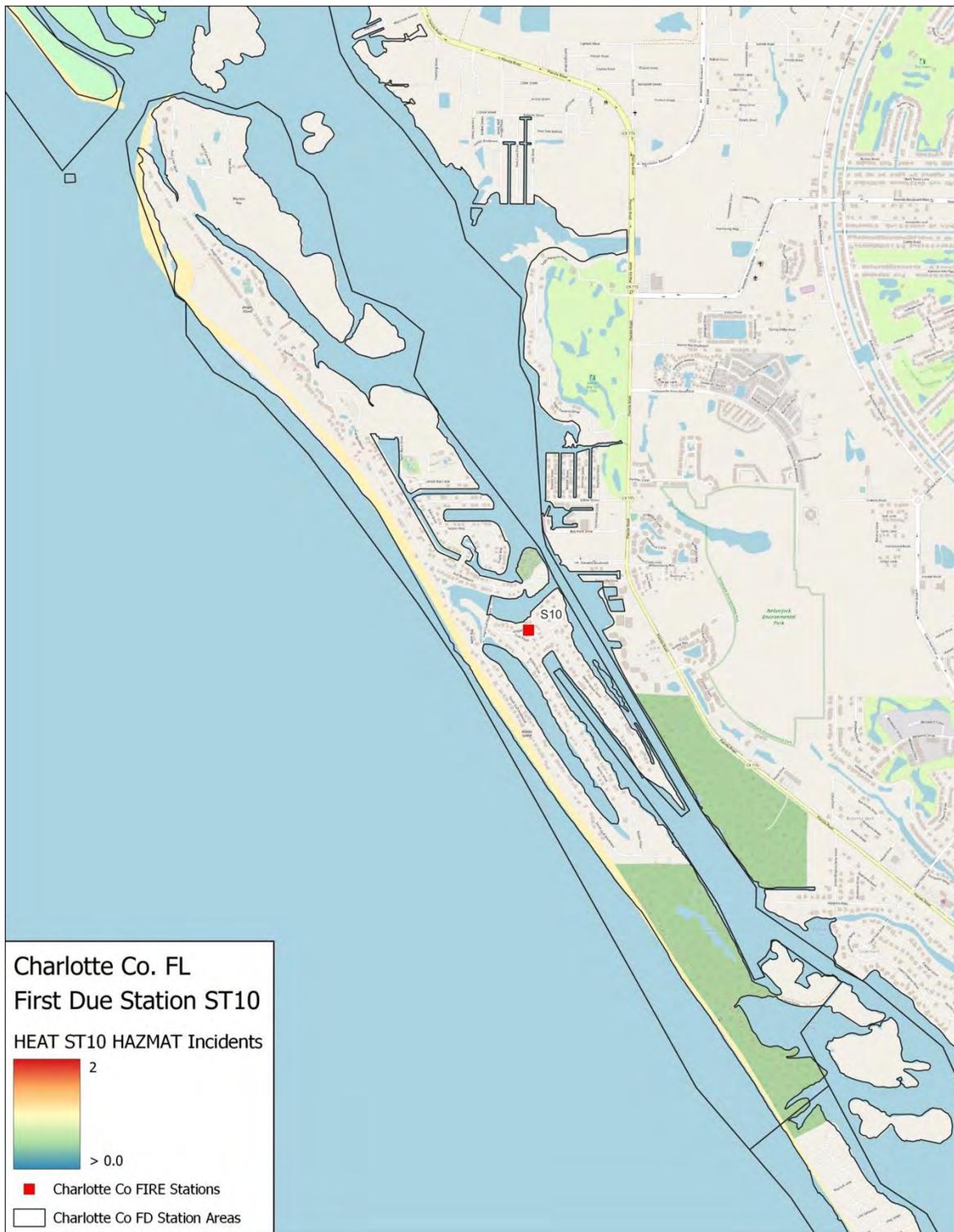
### EMS Hot Spot Map

Station 10's EMS calls spread evenly throughout the first due station area with the exception of a moderate to high amount located North and West of the station.



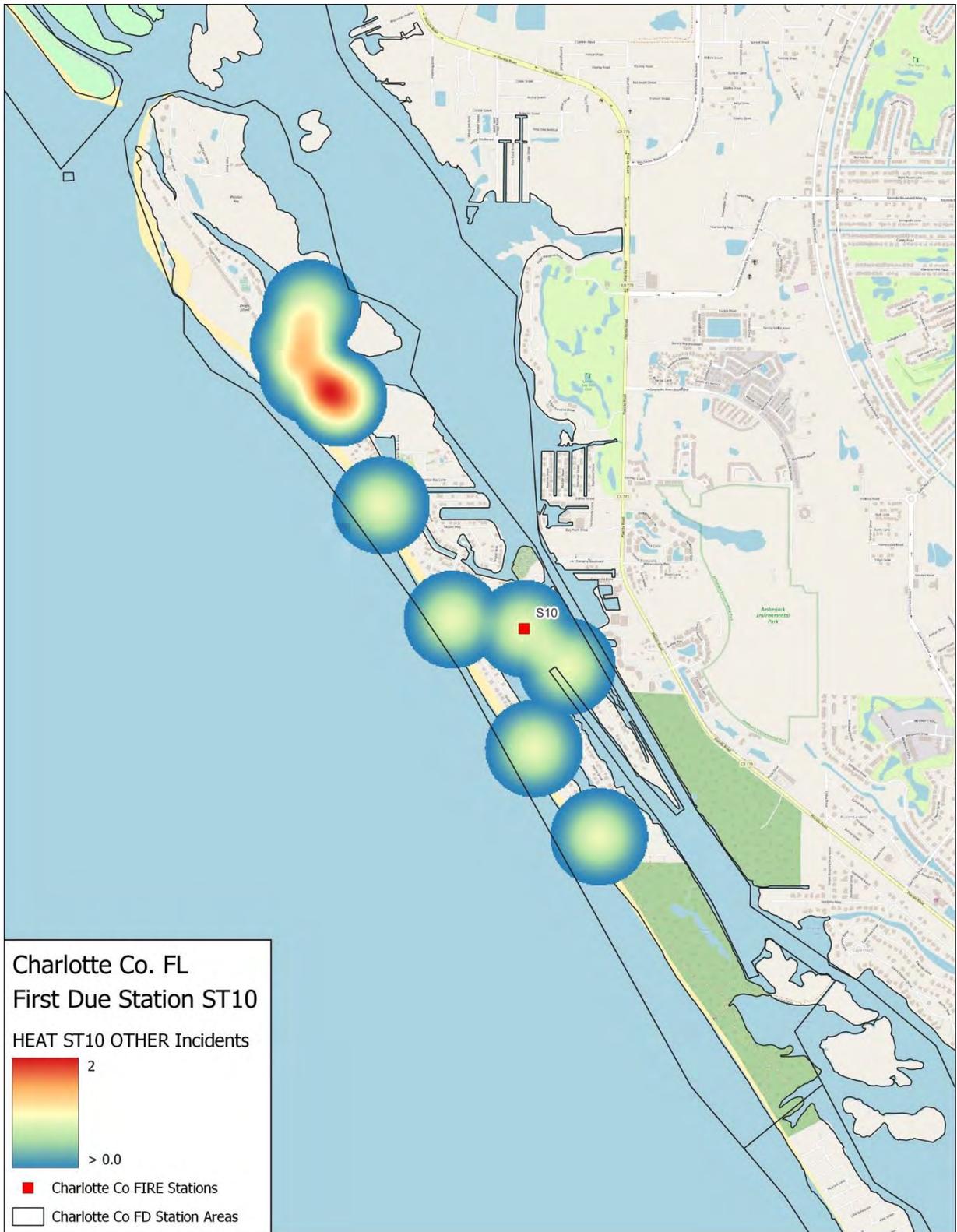
### Hazmat Hot Spot Map

Station 10 has no distribution of hazardous materials calls throughout the first due station area.



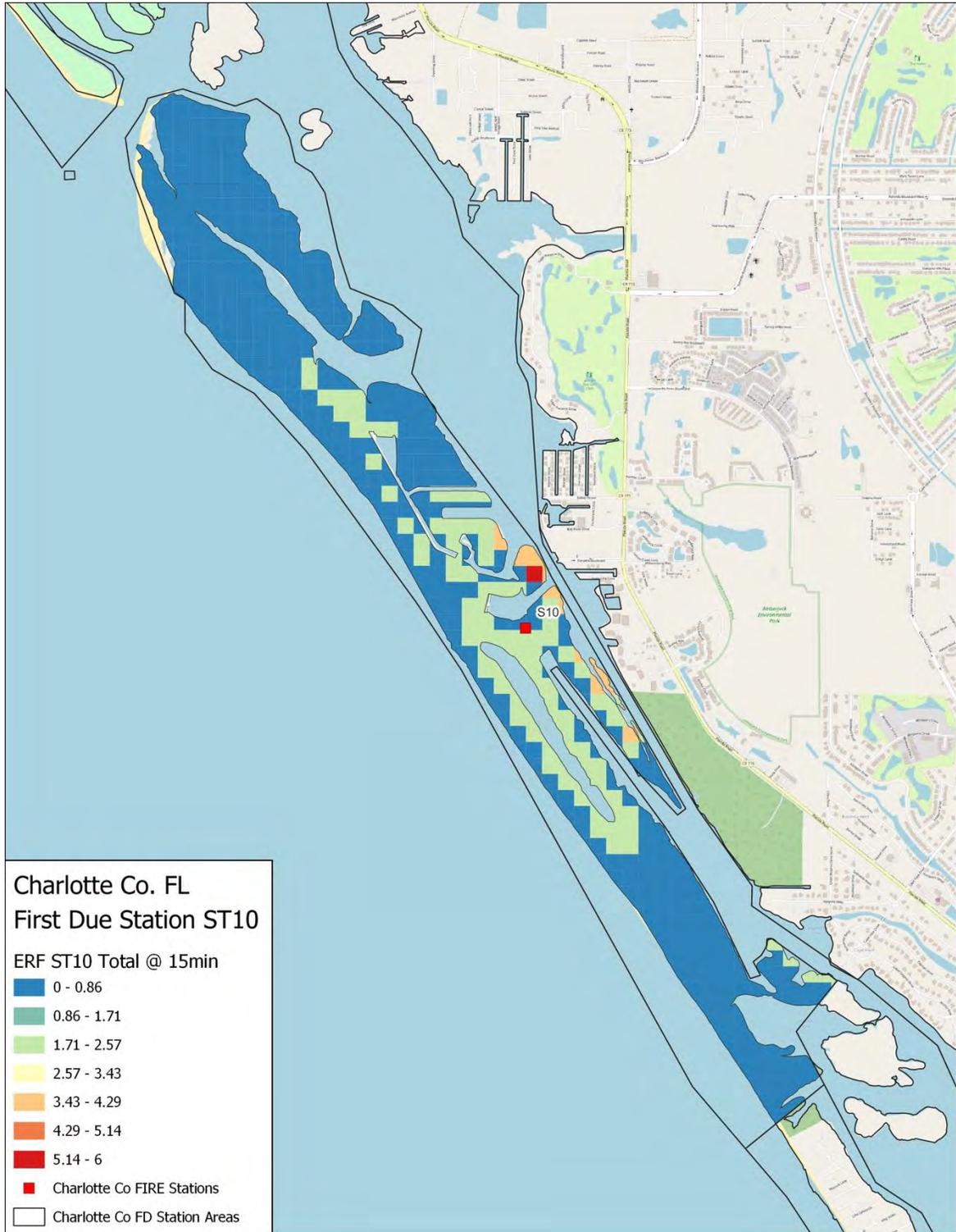
### Other Hot Spot Map

Station 10's other calls are concentrated in close proximity to the fire station, with a hot spot to the North-west.



### Concentration—Effective Response Force Capabilities

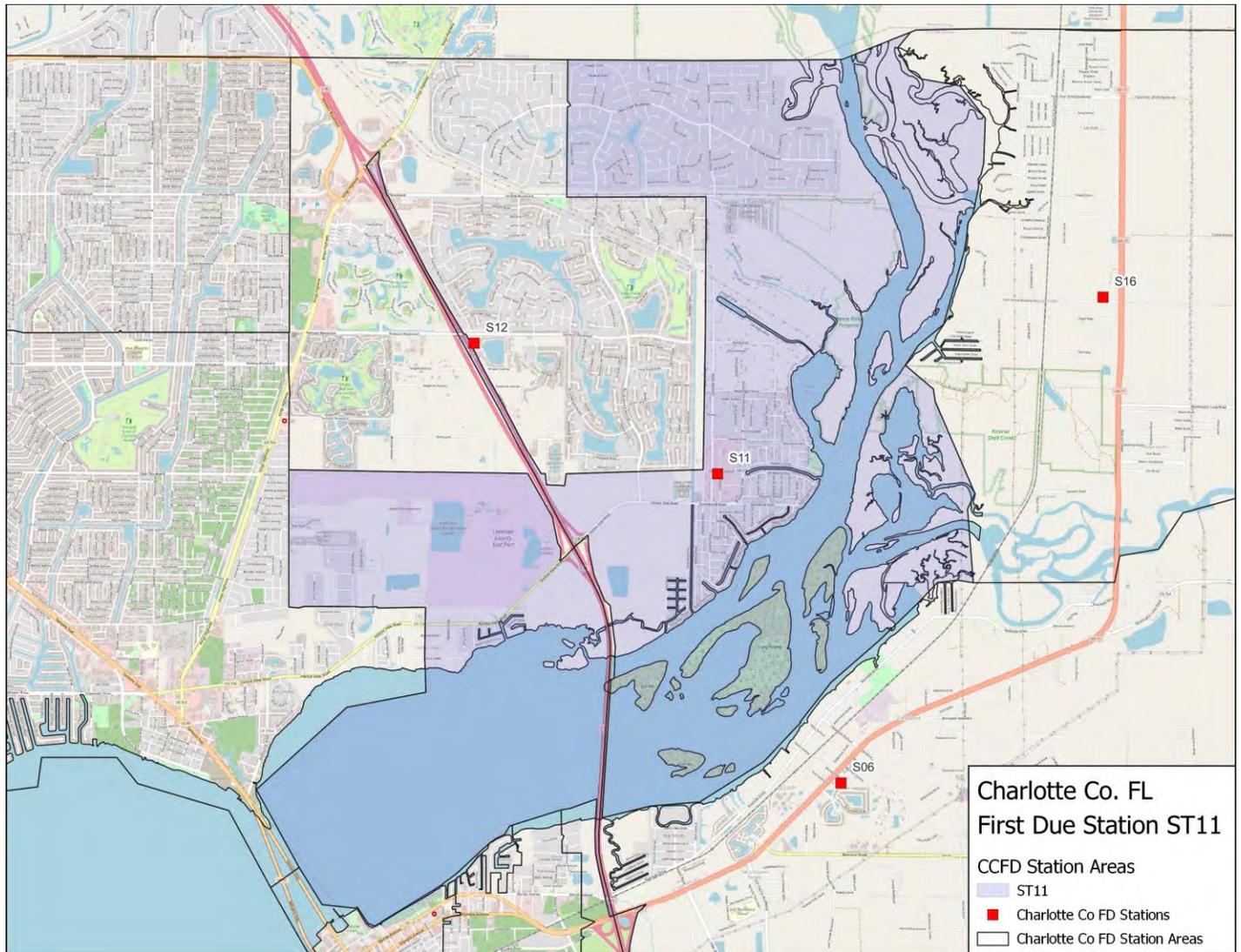
Station 10's area is analyzed by the number of personnel that can assemble within 15 minutes.



	Unit ID	Unit Type	Personnel
Station 11	E11	Engine	2
	R11	Rescue	2

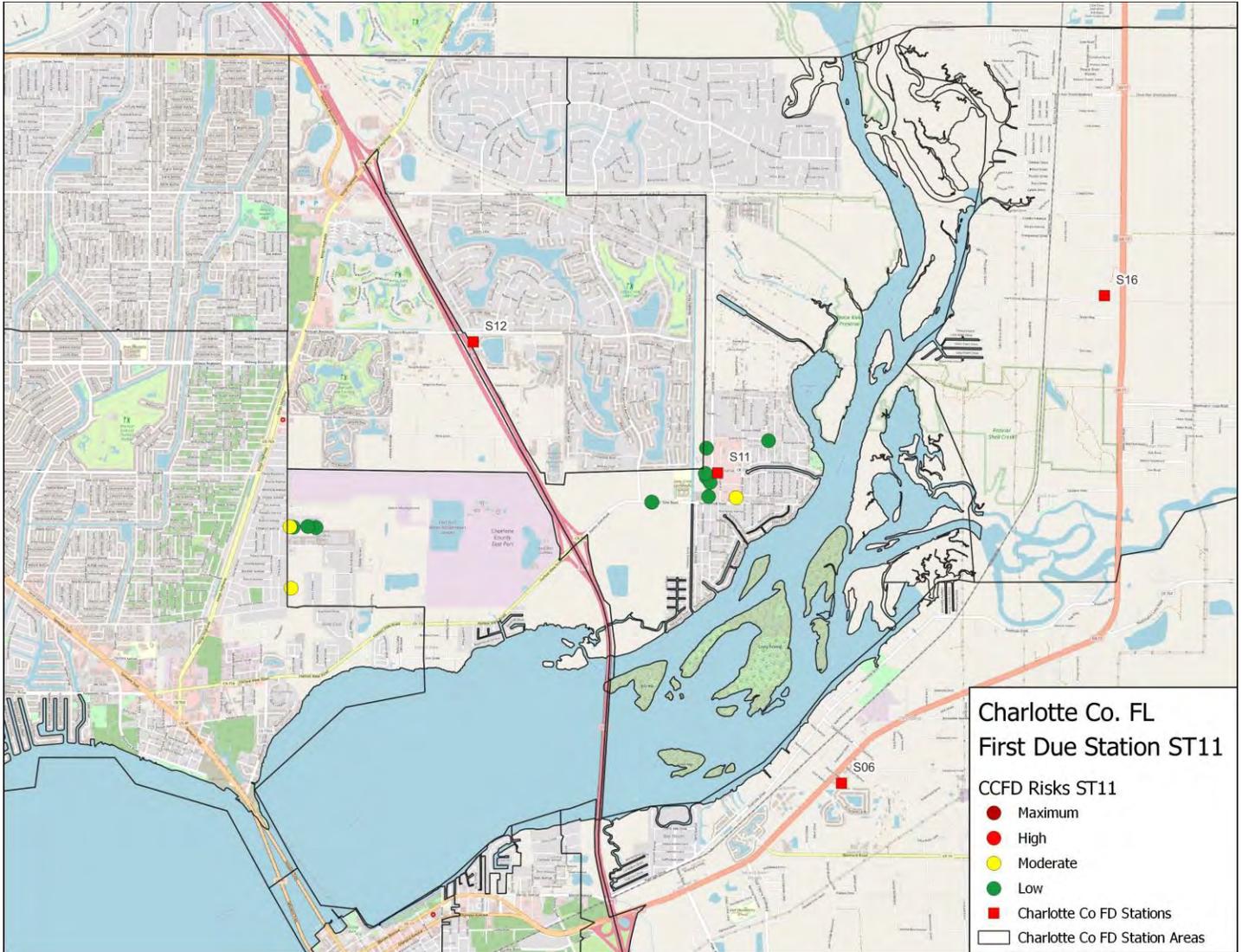


Station 11 staffs 2 units and has a lower overall jurisdictional risk level.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. There is a sparse amount of moderate risk buildings spread throughout the station's first due area. The vast majority of Station 11's first due area is low in regard to risk.



**Station 11 First Due Area Historical Data Analysis**

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>614</b>	<b>628</b>	<b>672</b>	<b>601</b>	<b>759</b>
Cardiac and stroke	79	107	86	57	90
Seizure and unconsciousness	52	51	61	37	57
Breathing difficulty	68	53	69	48	66
Overdose and psychiatric	12	5	5	3	3
Accident	41	35	36	34	42
Fall and injury	140	158	147	158	187
Illness and other	160	173	202	199	226
Medical No ProQA	56	43	59	60	74
Interfacility transfer	6	3	7	5	14
<b>Fire</b>	<b>122</b>	<b>101</b>	<b>124</b>	<b>137</b>	<b>212</b>
Structure fire	7	7	3	7	8
Outside fire	7	10	6	9	7
Vehicle fire	7	6	8	6	3
Alarm	15	17	33	24	29
Public service	54	39	42	49	110
Fire other	32	22	32	42	55
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>
Hazmat	0	0	0	2	0
<b>Rescue</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>
Rescue	2	0	2	0	0
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport	0	0	0	0	0
<b>Total</b>	<b>738</b>	<b>729</b>	<b>798</b>	<b>740</b>	<b>971</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>2.0</b>	<b>2.0</b>	<b>2.2</b>	<b>2.0</b>	<b>2.7</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>-1.22%</b>	<b>9.47%</b>	<b>-7.52%</b>	<b>31.58%</b>

**Historical Data Analysis**

Station 11's profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials and technical rescue had only a few incidents during the 5-year rating period.

Year-over-year growth has varied between an 8% decrease and a 32% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
11	CR11	458	1,261	1,255	1,251	1,638
	EN11	915	822	885	951	1,110
	<b>Total</b>	<b>1,373</b>	<b>2,083</b>	<b>2,140</b>	<b>2,202</b>	<b>2,748</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>3.8</b>	<b>5.7</b>	<b>5.9</b>	<b>6.0</b>	<b>7.5</b>

**Station 11 First Due Area Historical Performance**

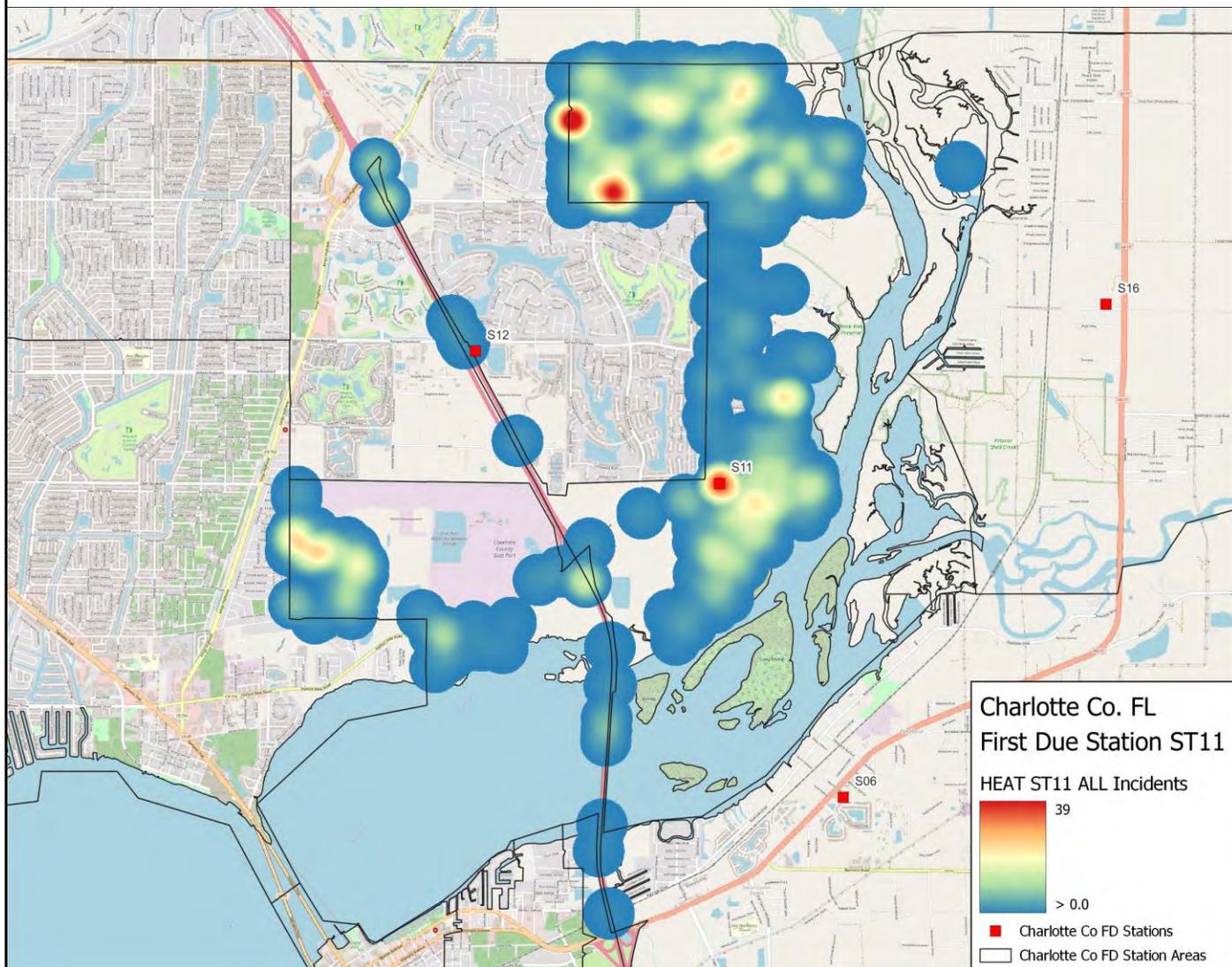
Unit ID	Reporting Period	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)	Sample Size <sup>1</sup>
CR11	2017	4.1	2.6	8.6	13.2	212
	2018	4.0	2.6	7.9	12.7	657
	2019	4.0	2.5	7.8	12.5	626
	2020	4.1	2.5	8.1	13.0	647
	2021	4.0	2.3	8.3	12.7	937
	<b>All</b>	<b>4.0</b>	<b>2.5</b>	<b>8.1</b>	<b>12.8</b>	<b>3,079</b>
EN11	2017	4.1	2.9	7.6	12.5	495
	2018	4.1	2.5	7.6	12.0	419
	2019	3.9	2.5	7.3	11.6	509
	2020	4.3	2.4	7.6	12.3	449
	2021	3.7	2.6	8.0	12.3	567
	<b>All</b>	<b>4.0</b>	<b>2.6</b>	<b>7.6</b>	<b>12.1</b>	<b>2,439</b>

First Due Station	Reporting Period	Number of Over-lapped Calls	Total Number of Calls	Percentage of Over-lapped Calls
ST11	2017	47	738	6.4
	2018	50	729	6.9
	2019	52	798	6.5
	2020	43	740	5.8
	2021	85	971	8.8
	<b>All</b>		<b>277</b>	<b>3,976</b>

First Due Station ST11:									
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
<b>Alarm Handling</b>		4:02	4:17	4:03	3:50	4:01	3:56	3:37	84.5
<b>Turnout Time</b>		2:48	2:44	2:59	2:46	2:40	2:51	2:13	78.8
<b>Travel Time</b>	Urban	8:23	8:37	7:54	8:12	8:23	8:30	6:41	72.2
	Rural	8:51	8:32	9:59	8:38	8:51	8:46	10:43	95.7
<b>Total Response Time</b>	Urban	13:20	13:31	13:07	13:09	13:19	13:26	10:50	67.5
		n = 3,260	n = 593	n = 593	n = 632	n = 629	n = 813		
	Rural	13:51	13:48	15:16	13:00	14:19	13:37	15:14	94.6
		n = 515	n = 91	n = 94	n = 129	n = 81	n = 120		

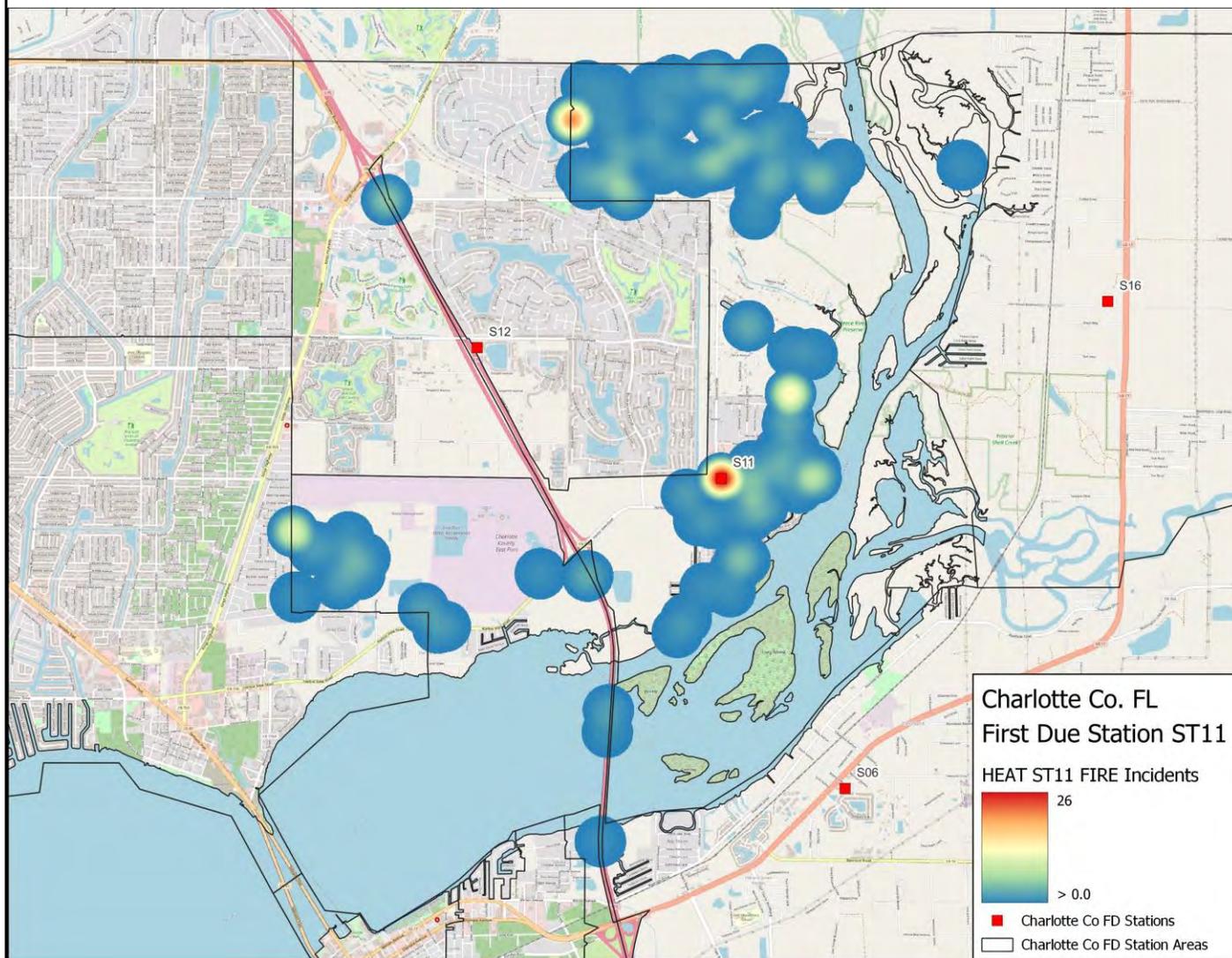
### Overall Hot Spot Map

Trends show Station 11 has hot spots in close proximity of the Station, but two additional hot spots are in the Northwest of their jurisdictional zone which borders Station 12's area.



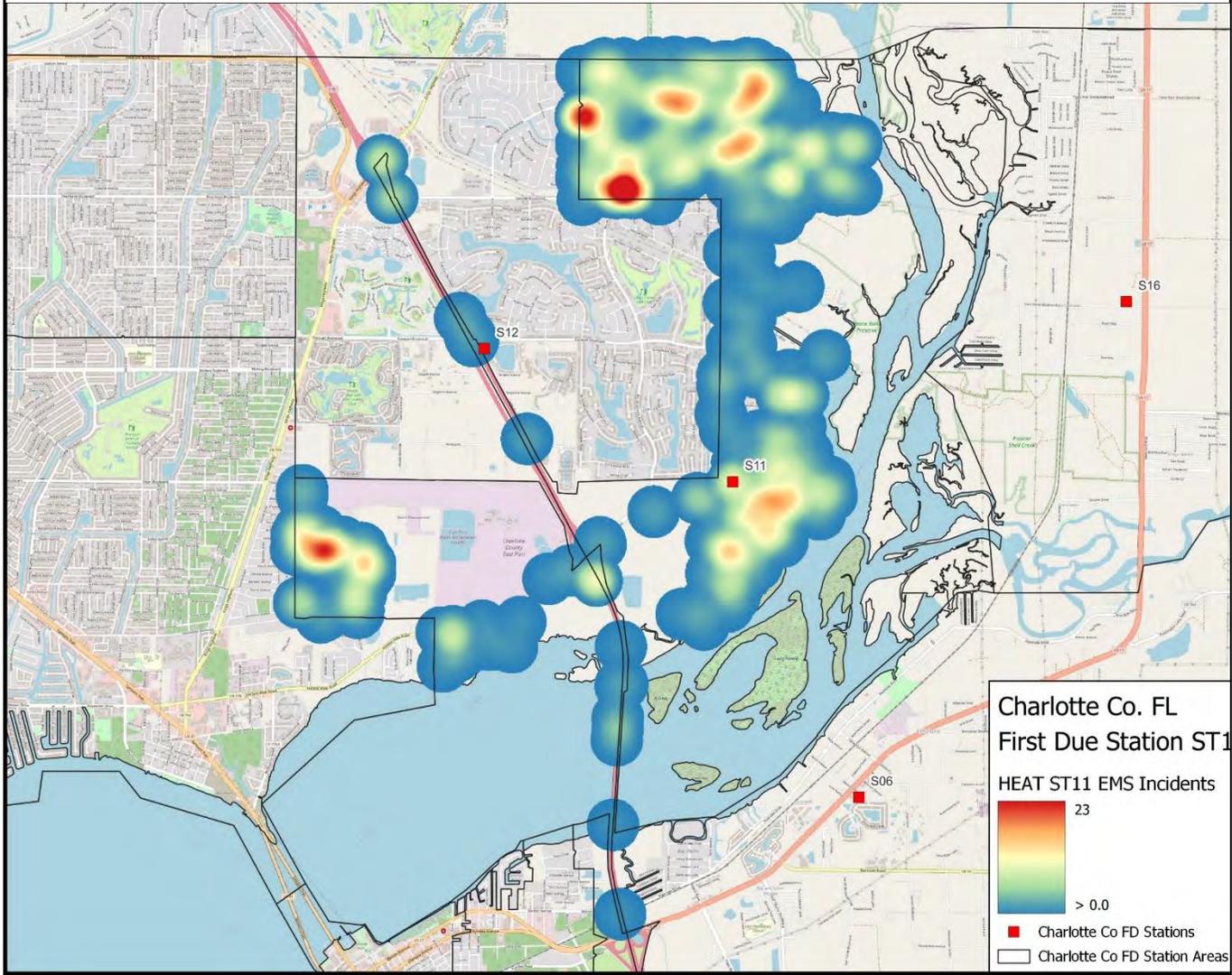
### Fire Hot Spot Map

Station 11's fire calls are concentrated in close proximity to the fire station, with additional volume located just Northwest of the station.



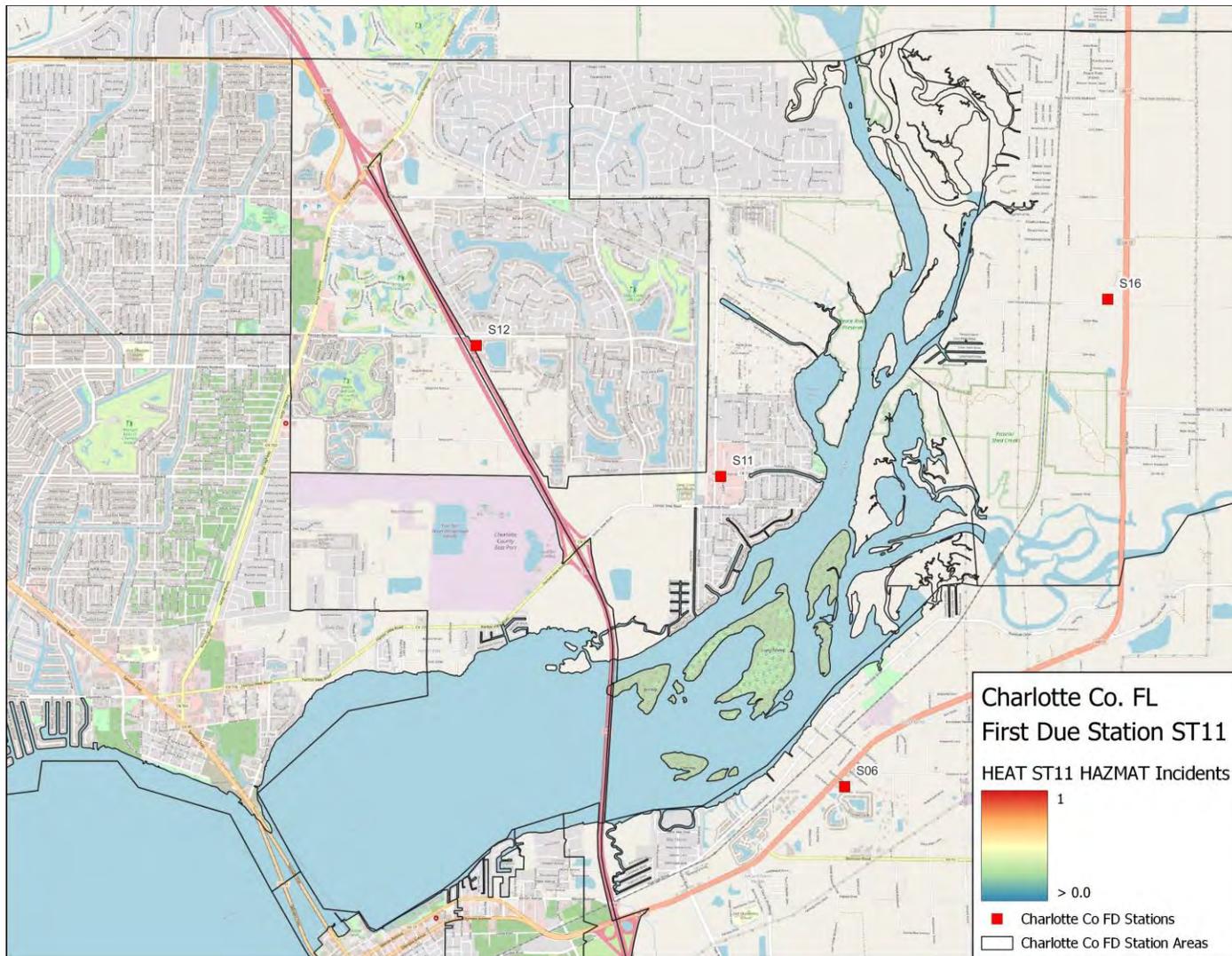
### EMS Hot Spot Map

Station 11's EMS calls spread evenly throughout the first due station area with the exception of a moderate to high amount located North and West of the station.



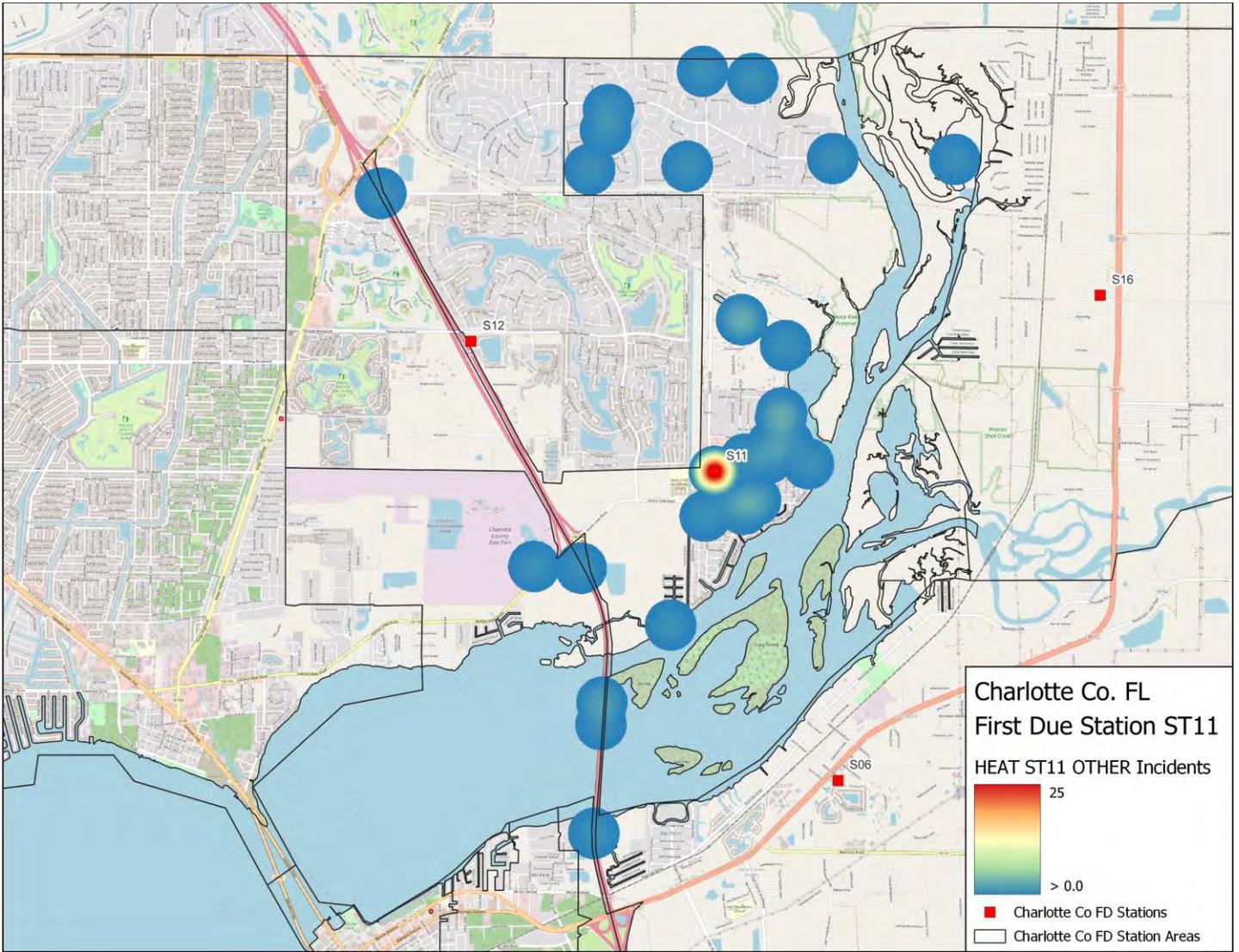
### Hazmat Hot Spot Map

Station 11 has no distribution of hazardous materials calls throughout the first due station area.



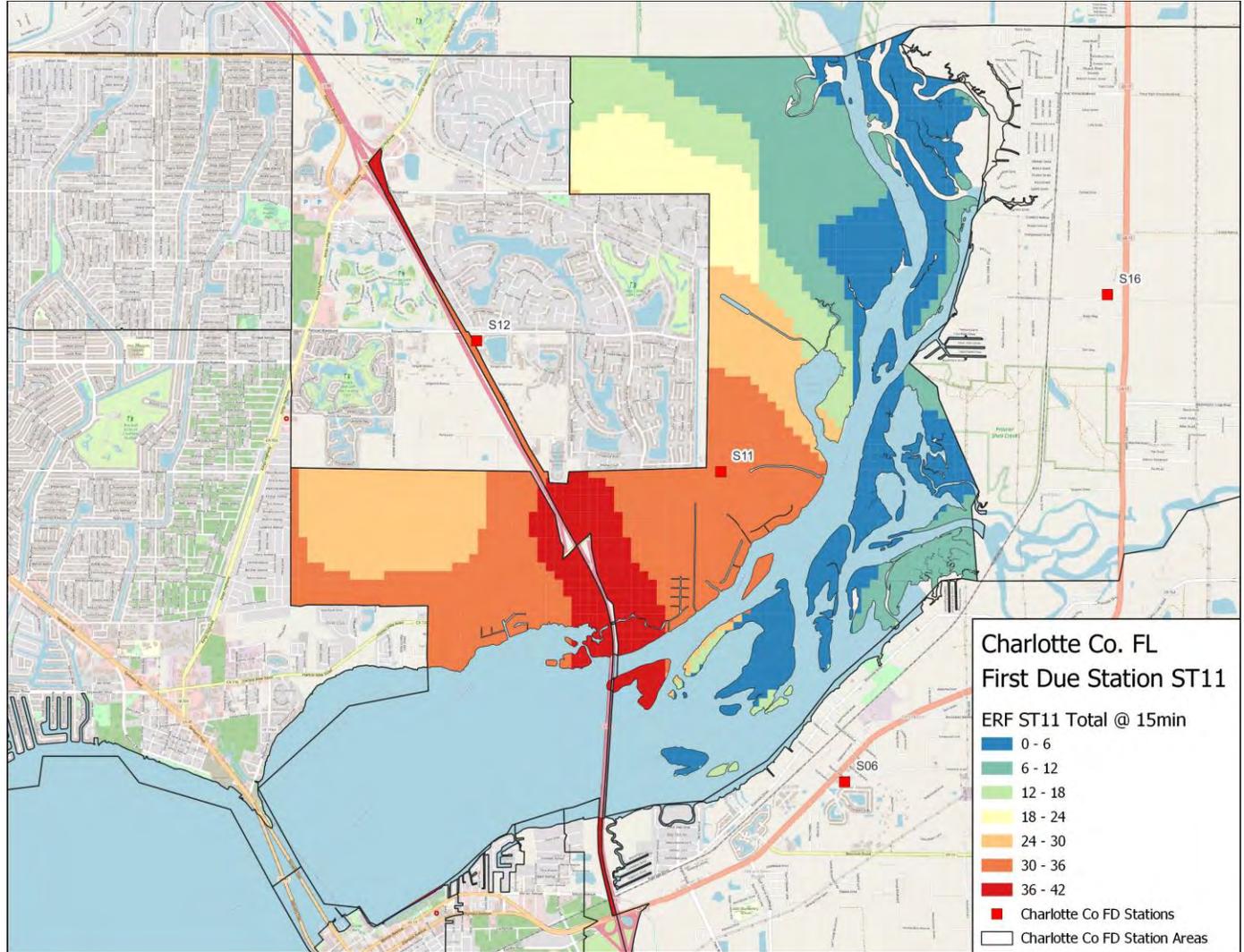
### Other Hot Spot Map

Station 11's other calls are concentrated in close proximity to the fire station.

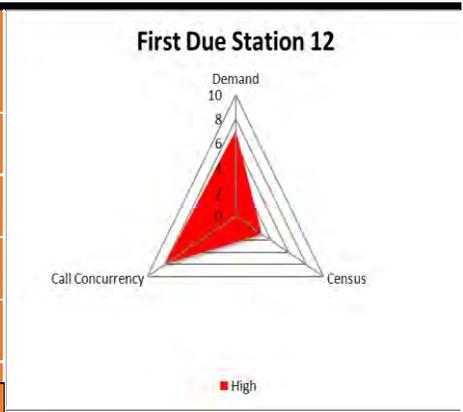


### Concentration—Effective Response Force Capabilities

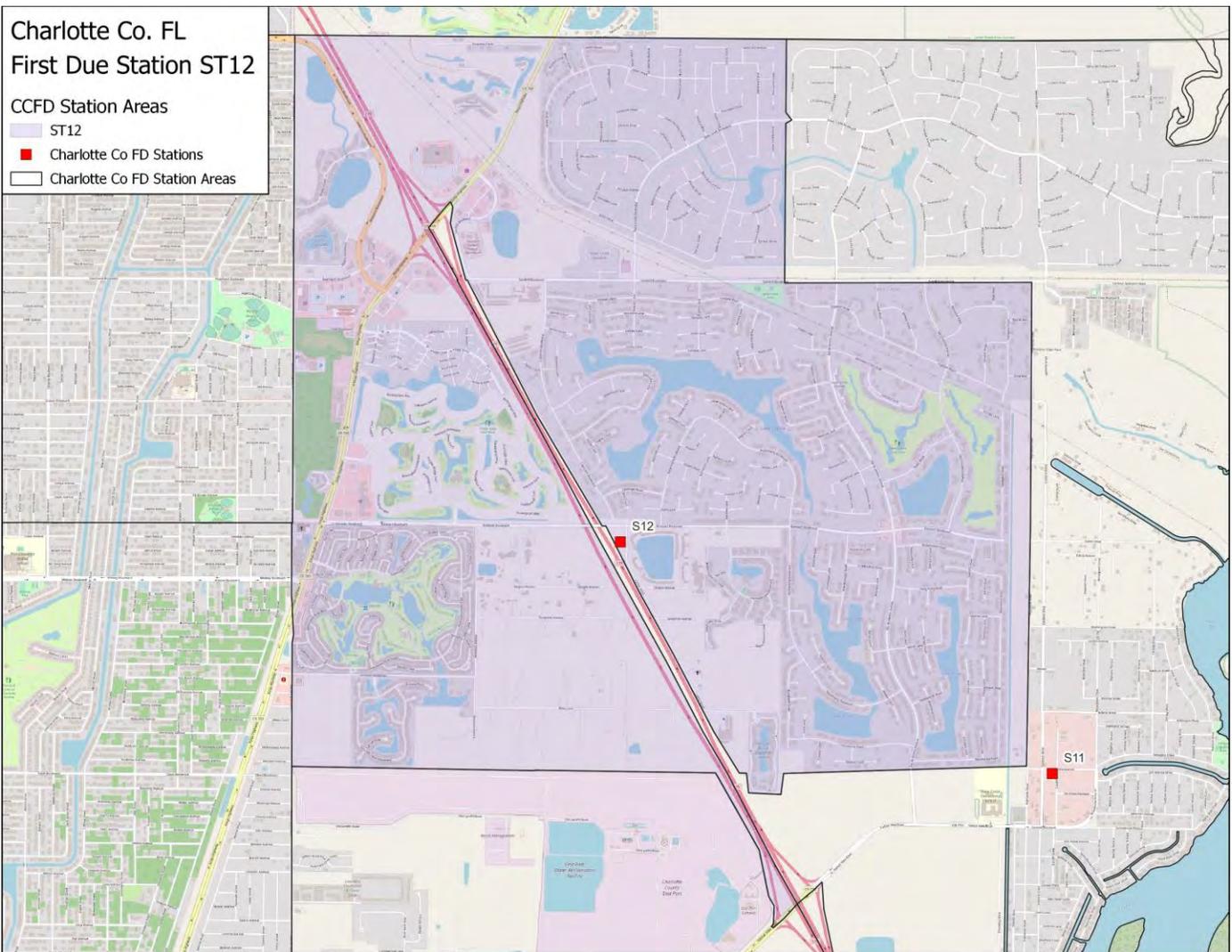
Station 11's area is analyzed by the number of personnel that can assemble within 15 minutes.



Station 12	Unit ID	Unit Type	Personnel
	E12	Engine	3
	R12	Rescue	2
	TRK 12	Ladder	2
	SQ 12	Hazmat	
	TECH 12	Hazmat	
	HZM 12	Hazmat	

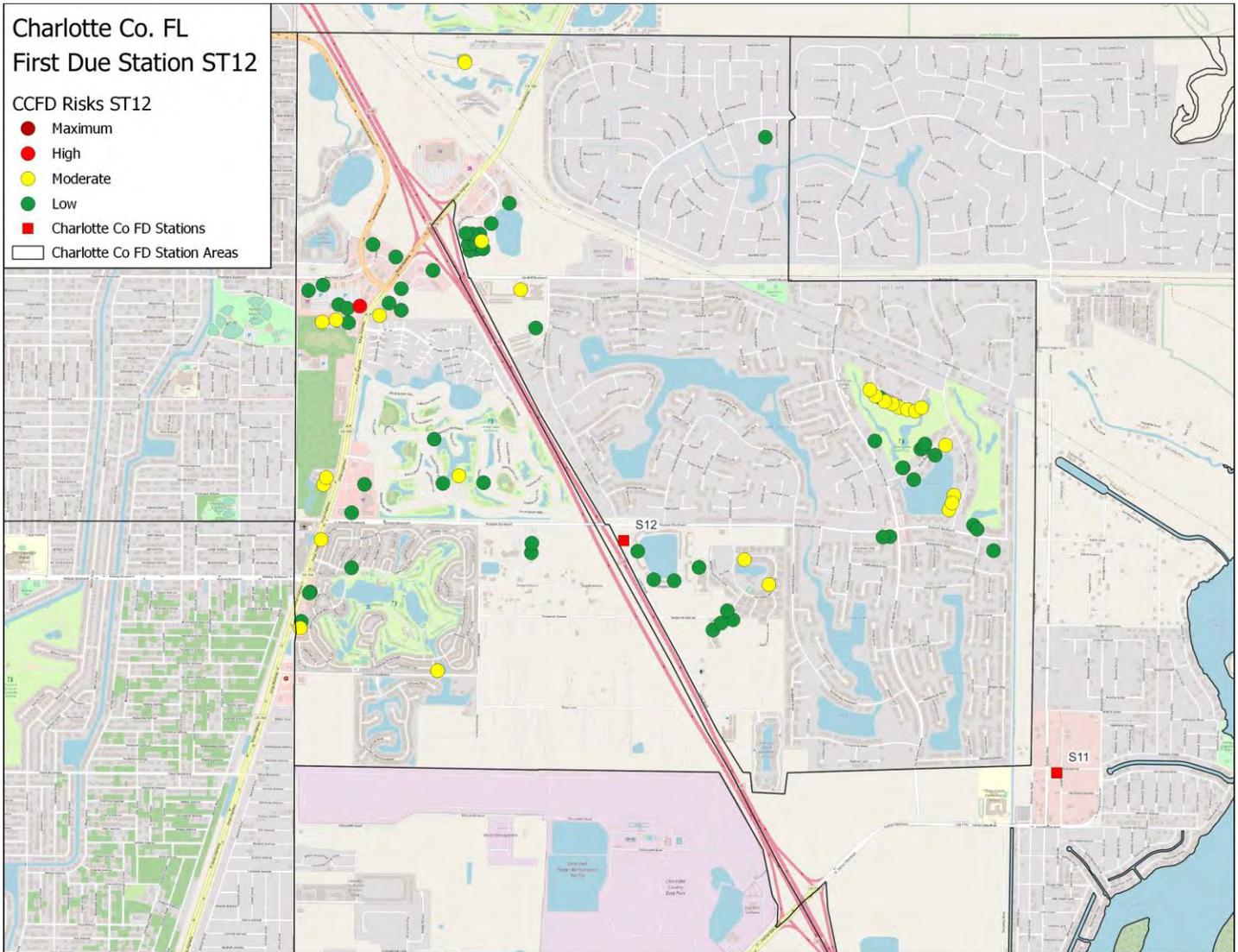


Station 12 staffs three primary units, has a high overall jurisdictional risk level, and is adjacent to Station 11.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. There is a large concentration of lower to moderate risk buildings located in close proximity to the station. The vast majority of Station 12's first due area is a higher risk due to call concurrency and demand.



**Station 12 First Due Area Historical Data Analysis**

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>2,445</b>	<b>2,391</b>	<b>2,335</b>	<b>2,456</b>	<b>2,746</b>
Cardiac and stroke	278	259	240	215	271
Seizure and unconsciousness	154	151	158	166	187
Breathing difficulty	180	138	173	121	165
Overdose and psychiatric	21	8	3	11	12
Accident	113	87	81	112	138
Fall and injury	456	446	462	474	531
Illness and other	515	597	584	616	614
Medical No ProQA	204	180	190	234	233
Interfacility transfer	524	525	444	507	595
<b>Fire</b>	<b>338</b>	<b>304</b>	<b>336</b>	<b>344</b>	<b>343</b>
Structure fire	17	24	20	18	17
Outside fire	7	15	6	16	4
Vehicle fire	10	11	11	10	16
Alarm	88	76	96	106	101
Public service	157	118	136	138	148
Fire other	59	60	67	56	57
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>
Hazmat	0	0	2	2	0
<b>Rescue</b>	<b>6</b>	<b>7</b>	<b>6</b>	<b>4</b>	<b>4</b>
Rescue	6	7	6	4	4
<b>Airport</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport	1	0	0	0	0
<b>Total</b>	<b>2,790</b>	<b>2,702</b>	<b>2,679</b>	<b>2,806</b>	<b>3,093</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>7.6</b>	<b>7.4</b>	<b>7.3</b>	<b>7.7</b>	<b>8.5</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>-3.15%</b>	<b>-0.85%</b>	<b>4.45%</b>	<b>10.53%</b>

**Historical Data Analysis**

Station 12's profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials and technical rescue had only a few incidents during the 5-year rating period.

The year-over-year growth has varied between a 3% decrease and an 11% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
12	CR12	2725	2493	2493	2511	2797
	EN12	2160	1987	2073	2184	2449
	TK12	433	399	422	434	556
	SQD12	137	135	159	151	191
	TECH12	13	4	6	11	10
	HZM12	6	9	6	4	0
	<b>Total</b>	<b>5,474</b>	<b>5,027</b>	<b>5,159</b>	<b>5,295</b>	<b>6,003</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>15.0</b>	<b>13.8</b>	<b>14.1</b>	<b>14.5</b>	<b>16.4</b>

**Station 12 First Due Area Historical Performance**

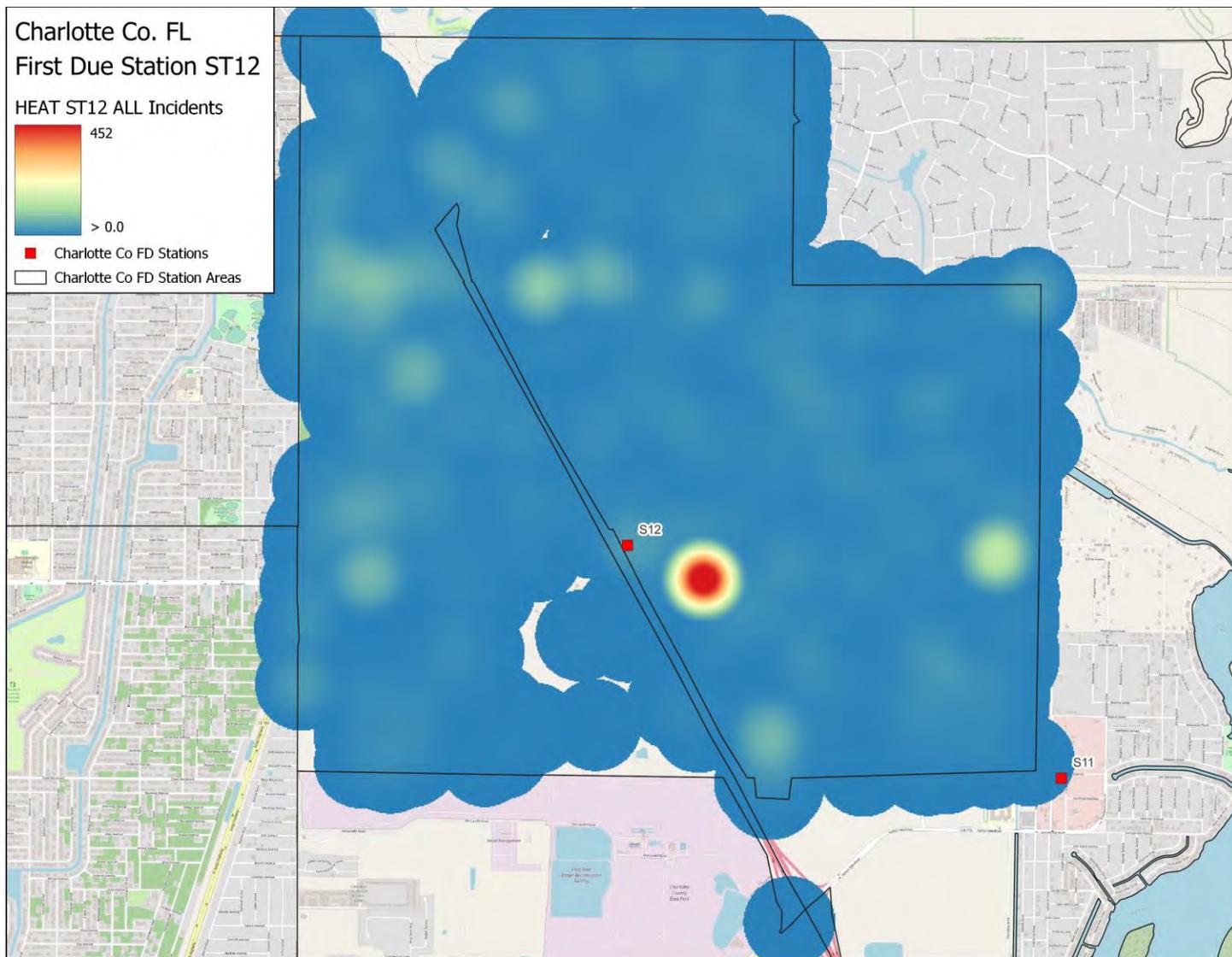
Unit ID	Reporting Period	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size <sup>1</sup>
		(Minutes)	(Minutes)	(Minutes)	(Minutes)	
CR12	2017	3.9	2.6	7.3	12.0	1,741
	2018	3.8	2.9	7.4	12.1	1,692
	2019	3.8	3.0	6.8	11.8	1,597
	2020	4.1	2.8	7.1	12.3	1,658
	2021	3.8	2.7	7.3	12.1	1,821
	<b>All</b>	<b>3.9</b>	<b>2.8</b>	<b>7.2</b>	<b>12.1</b>	<b>8,509</b>
EN12	2017	4.1	3.2	7.4	12.5	1,085
	2018	3.9	3.3	7.5	12.7	954
	2019	3.8	3.2	7.1	12.2	1,102
	2020	4.1	3.1	7.3	12.2	1,110
	2021	3.8	2.9	7.6	12.4	1,215
	<b>All</b>	<b>4.0</b>	<b>3.2</b>	<b>7.4</b>	<b>12.4</b>	<b>5,466</b>
TK12	2017	4.6	3.0	6.5	12.3	141
	2018	5.0	2.9	6.0	12.3	102
	2019	5.4	2.6	6.8	12.9	121
	2020	6.2	3.2	7.4	14.1	102
	2021	5.8	3.0	7.7	13.5	145
	<b>All</b>	<b>5.3</b>	<b>3.0</b>	<b>6.9</b>	<b>13.1</b>	<b>611</b>
SQD12	2017	5.5	5.4	17.9	23.4	3
	2018	8.2	13.1	16.4	31.3	2
	2019	7.3	8.1	11	26.4	2
	2020	5.4	5	5.9	11.1	4
	2021	2.6	1.6	8.3	12.2	4
	<b>All</b>	<b>7.3</b>	<b>8.1</b>	<b>16.4</b>	<b>26.4</b>	<b>15</b>

First Due Station	Reporting Period	Number of Over-lapped Calls	Total Number of Calls	Percentage of Over-lapped Calls
ST12	2017	630	2,790	22.6
	2018	554	2,702	20.5
	2019	551	2,679	20.6
	2020	601	2,806	21.4
	2021	769	3,093	24.9
	<b>All</b>		<b>3,105</b>	<b>14,070</b>

First Due Station ST12:									
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
<b>Alarm Handling</b>		4:00	4:01	3:49	3:54	4:15	3:56	3:37	85.1
<b>Turnout Time</b>		2:53	2:53	2:59	3:02	2:55	2:41	2:13	76.8
<b>Travel Time</b>	Urban	6:55	6:48	6:55	6:35	6:57	7:13	6:41	88.6
	Rural	9:20	9:21	9:35	8:36	9:21	9:00	10:43	96.4
<b>Total Response Time</b>	Urban	11:55	11:52	11:41	11:42	12:11	11:58	10:50	83.0
		n = 13,284	n = 2,594	n = 2,524	n = 2,552	n = 2,672	n = 2,942		
	Rural	14:45	14:45	14:52	14:20	15:02	12:56	15:14	92.7
		n = 275	n = 62	n = 71	n = 51	n = 36	n = 55		

### Overall Hot Spot Map

Trends show Station 12 has an evenly dispersed call volume in their first due area, with the largest volume of calls in close proximity of the station.

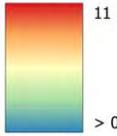


### Fire Hot Spot Map

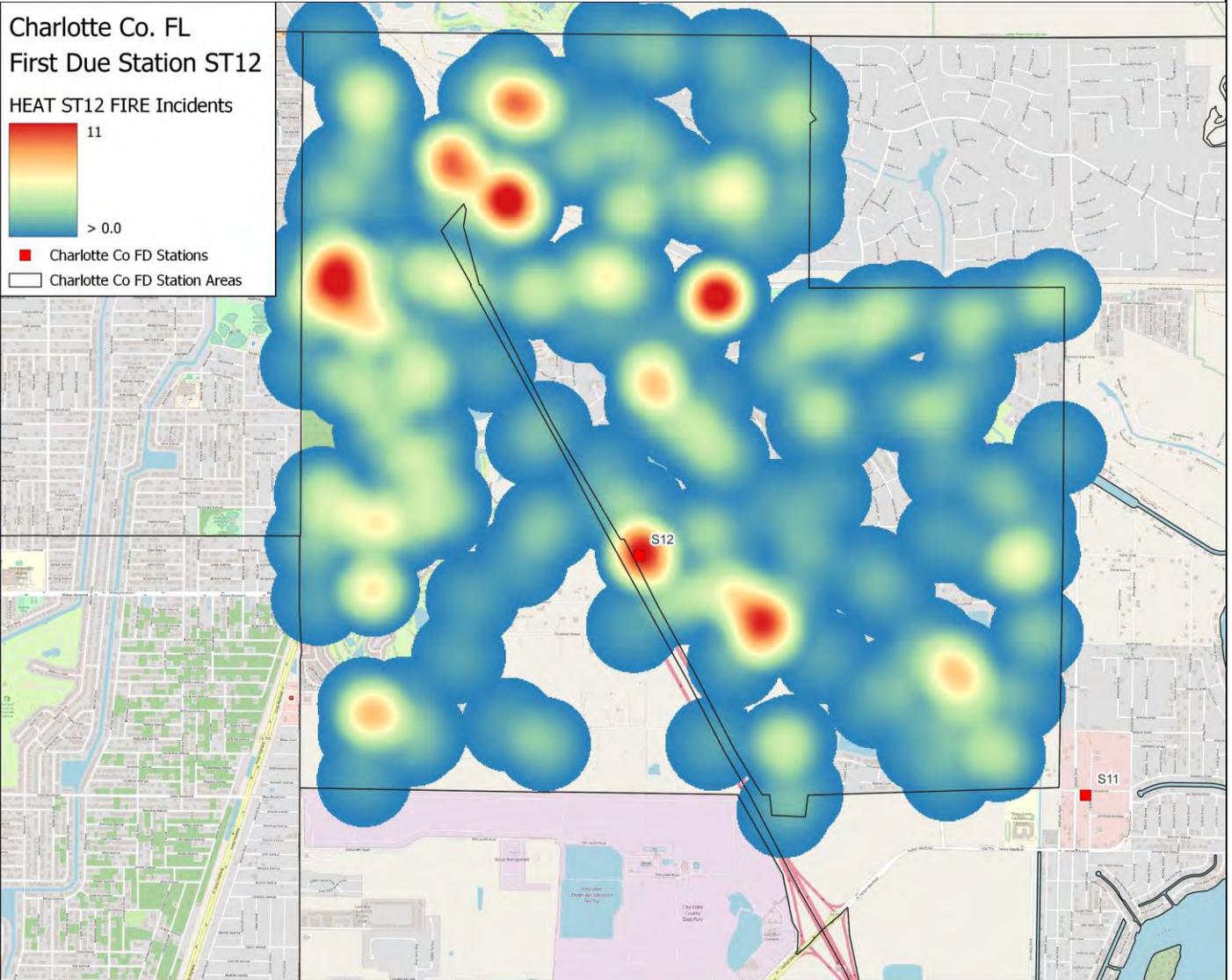
Station 12's fire calls are concentrated in close proximity to the fire station, with the highest volume located all throughout the station area.

Charlotte Co. FL  
First Due Station ST12

HEAT ST12 FIRE Incidents

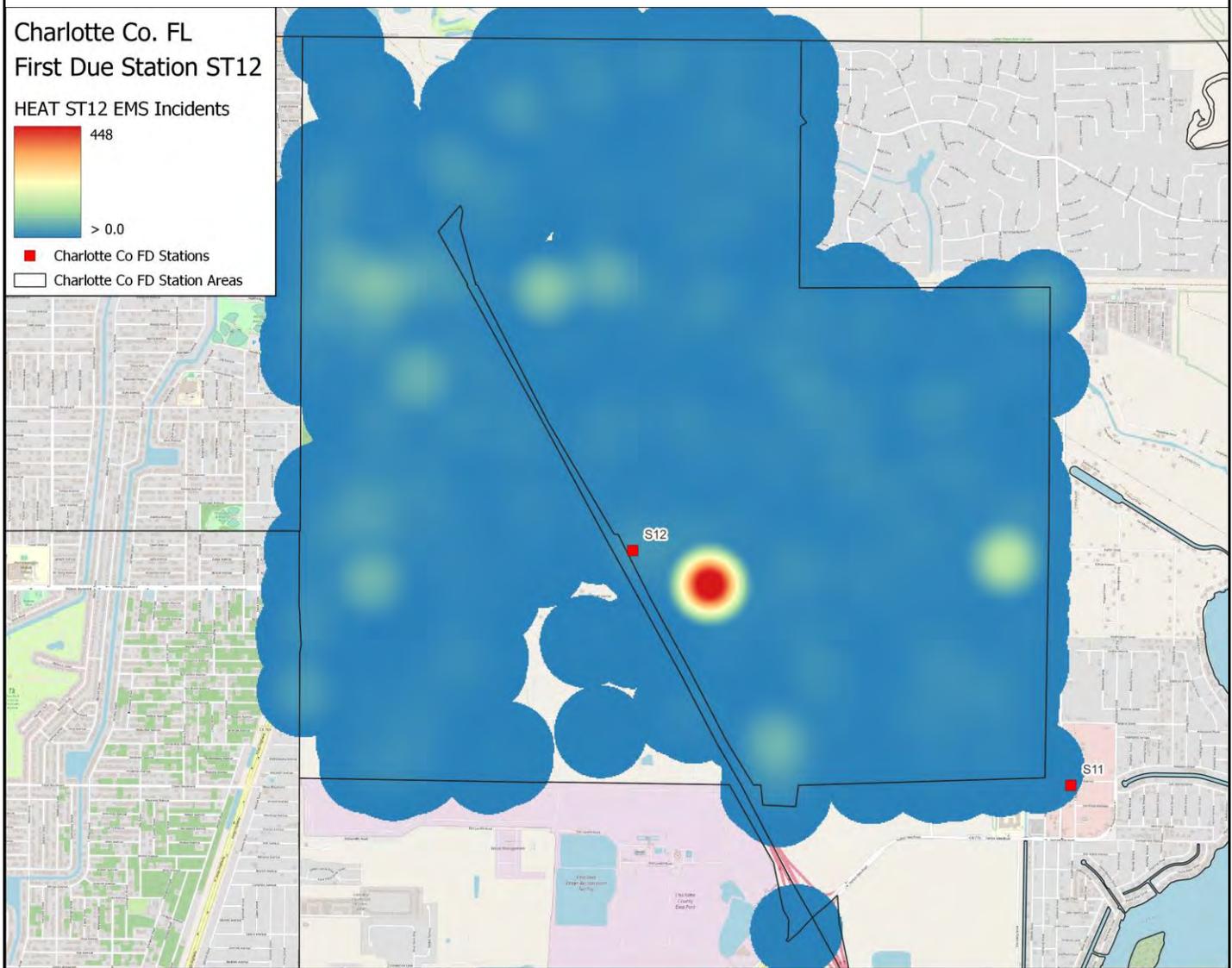


- Charlotte Co FD Stations
- Charlotte Co FD Station Areas



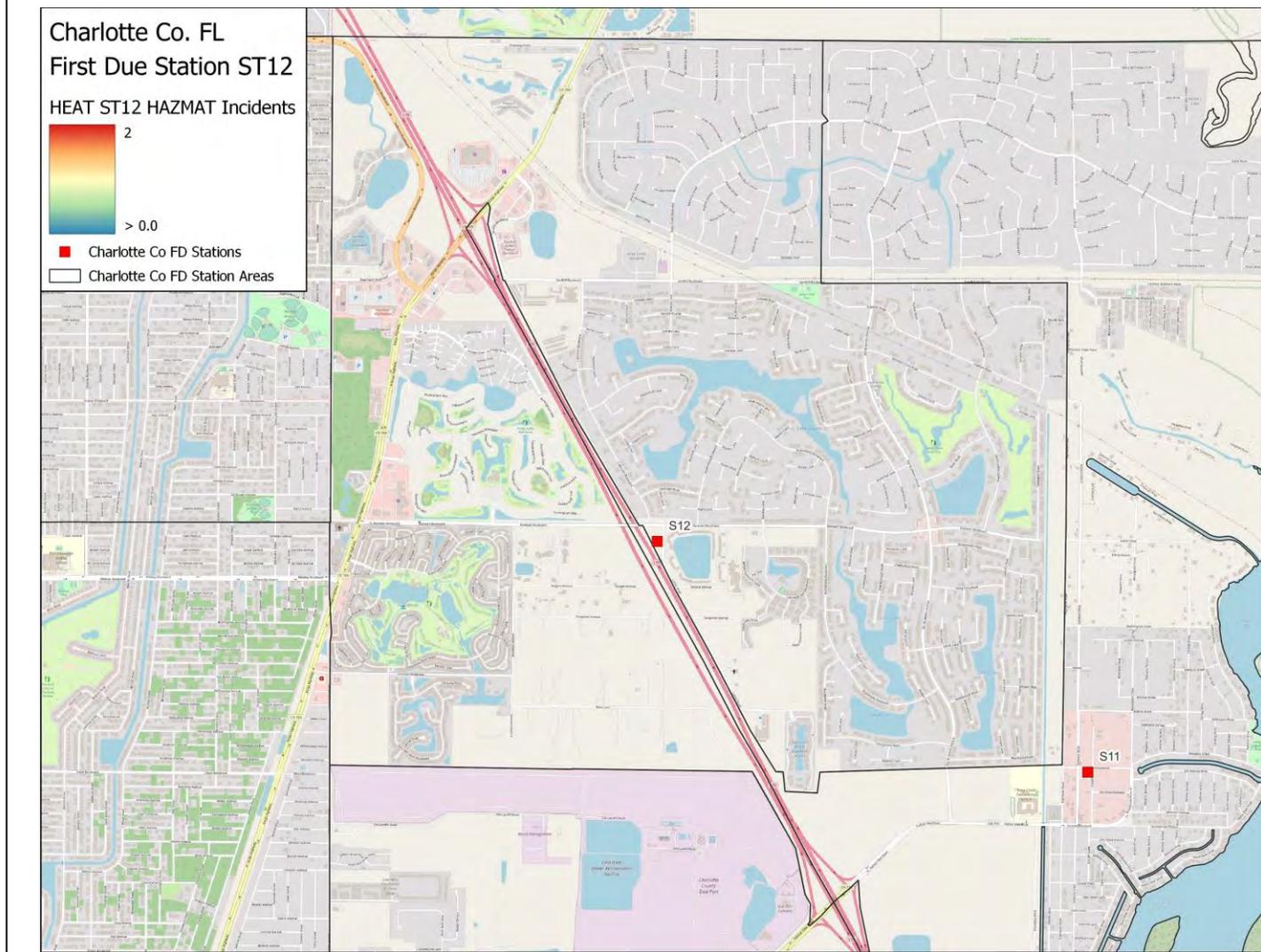
### EMS Hot Spot Map

Station 12's EMS calls spread evenly throughout the first due station area with the exception of a moderate to high amount located in close proximity of the station.



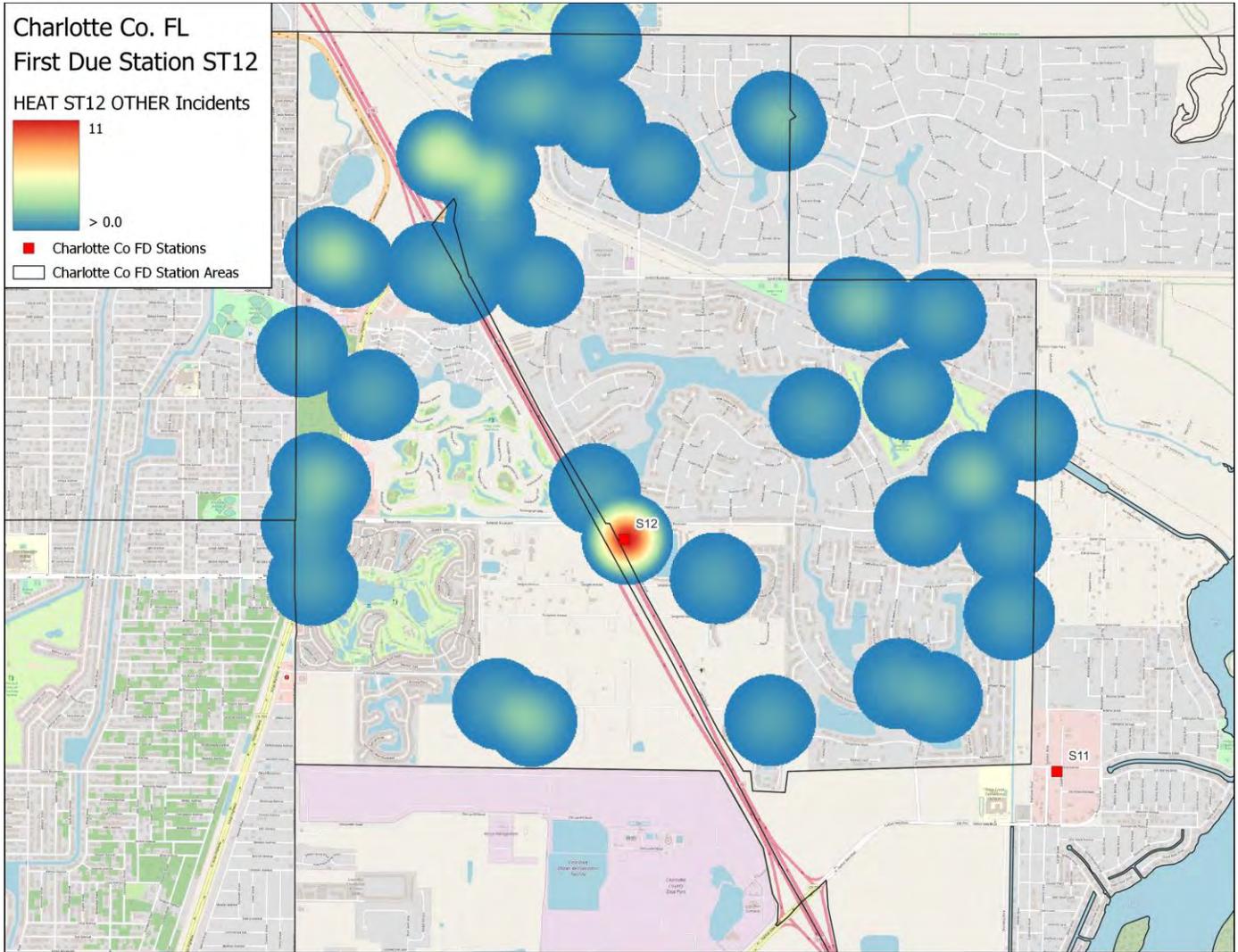
### Hazmat Hot Spot Map

Station 12 has no distribution of hazardous materials calls throughout the first due station area.



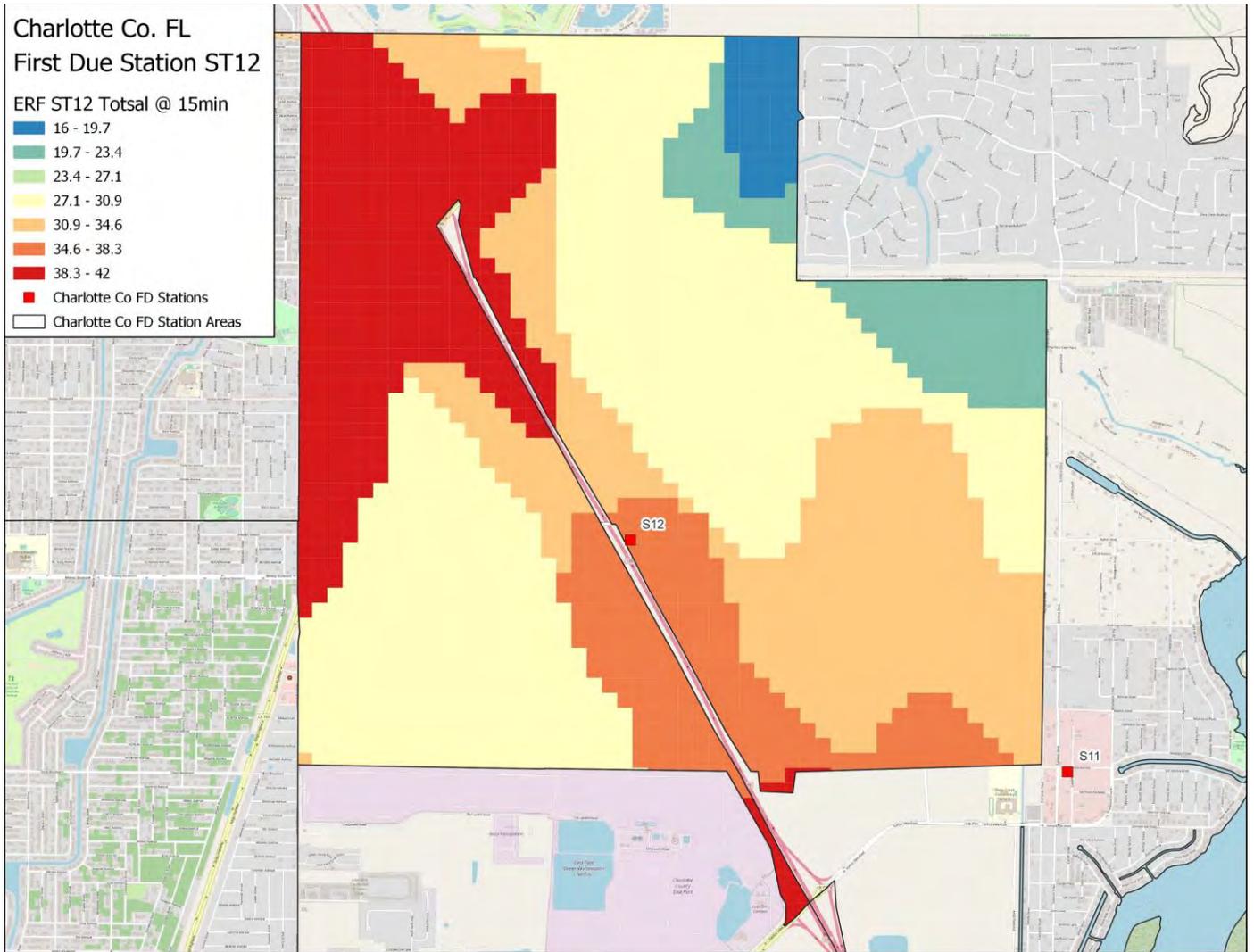
### Other Hot Spot Map

Station 12's other calls are concentrated in close proximity to the fire station, with a hot spot to the North- west.



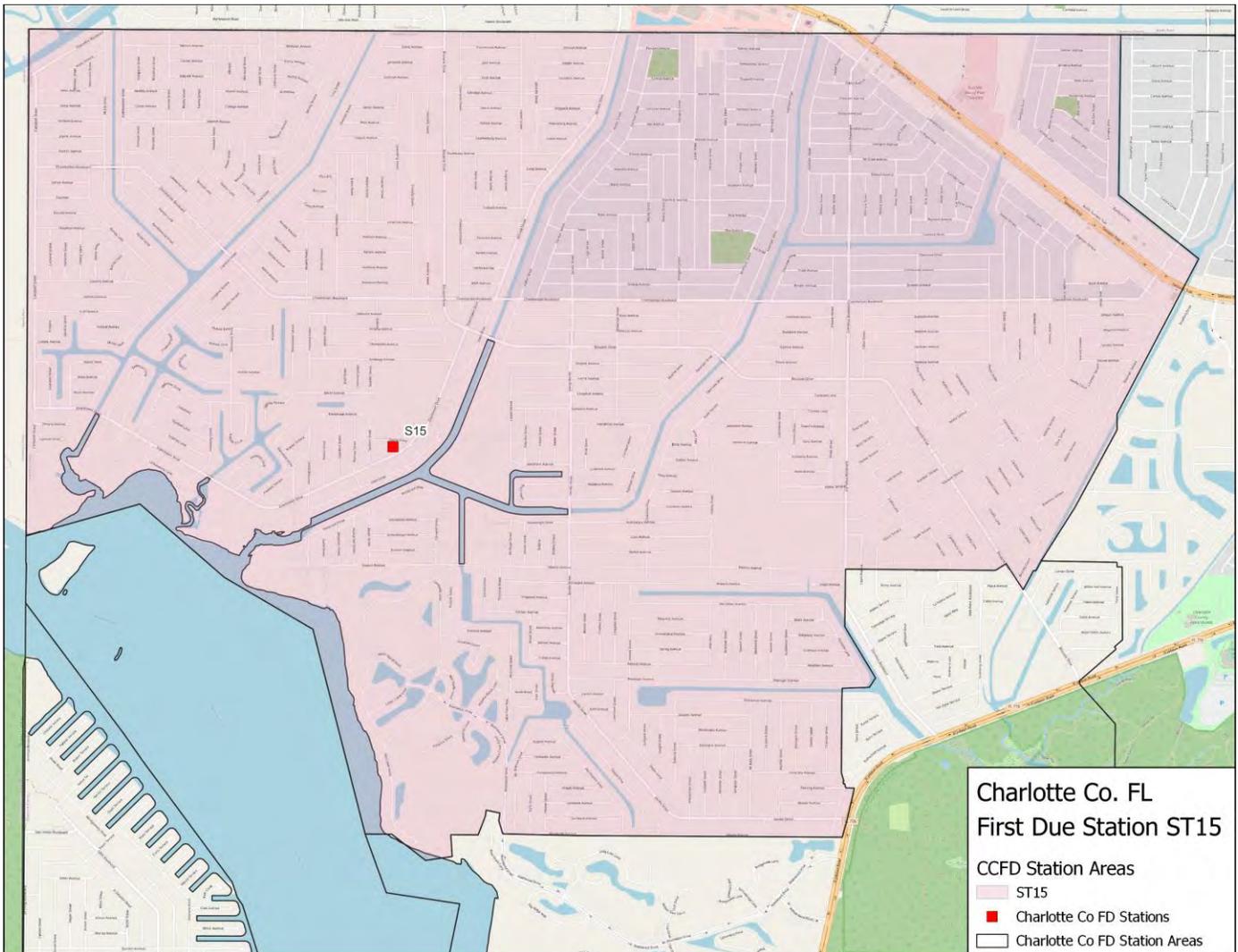
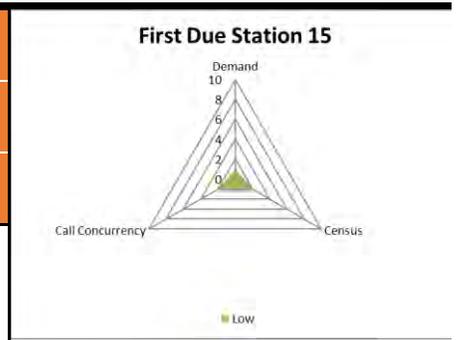
### Concentration—Effective Response Force Capabilities

Station 12's area is analyzed by the number of personnel that can assemble within 15 minutes.



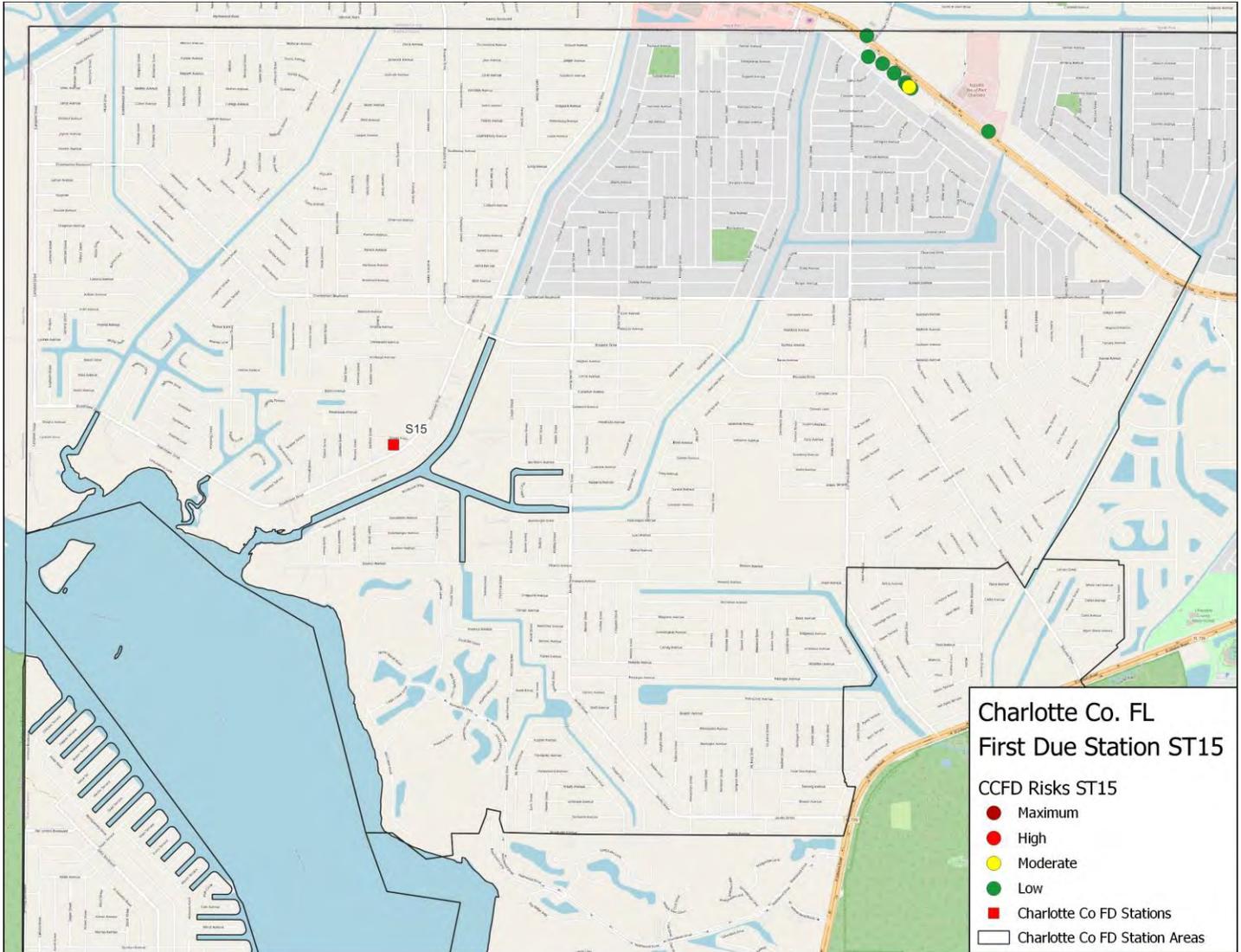
	Unit ID	Unit Type	Personnel
Station 15	E 15	Engine	2
	BR 15	Brush	

Station 15 cross staffs two units and is classified as a low-risk station.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. There is a small concentration of lower to moderate risk buildings located to the Northeast of the station.



**Station 15 First Due Area Historical Data Analysis**

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>342</b>	<b>336</b>	<b>324</b>	<b>441</b>	<b>381</b>
Cardiac and stroke	59	49	49	54	50
Seizure and unconsciousness	28	30	15	29	33
Breathing difficulty	26	32	25	35	22
Overdose and psychiatric	7	2	1	3	3
Accident	29	30	30	32	39
Fall and injury	63	71	73	83	81
Illness and other	95	84	89	133	100
Medical No ProQA	34	37	32	63	45
Interfacility transfer	1	1	10	9	8
<b>Fire</b>	<b>75</b>	<b>82</b>	<b>73</b>	<b>96</b>	<b>77</b>
Structure fire	8	5	3	1	3
Outside fire	10	20	10	20	12
Vehicle fire	2	2	3	2	1
Alarm	14	16	18	15	7
Public service	15	5	21	28	26
Fire other	26	34	18	30	28
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>
Hazmat	0	0	0	2	2
<b>Rescue</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>2</b>
Rescue	1	1	0	3	2
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport	0	0	0	0	0
<b>Total</b>	<b>418</b>	<b>419</b>	<b>397</b>	<b>542</b>	<b>462</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.5</b>	<b>1.3</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>0.24%</b>	<b>-5.25%</b>	<b>36.15%</b>	<b>-14.53%</b>

**Historical Data Analysis**

Station 15's profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials and technical rescue had only a few incidents during the 5-year rating period.

The year-over-year growth has varied between a 14% decrease and an 36% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
15	BR15	24	6	2	9	1
	BR03	0	0	0	0	6
	<b>Total</b>	<b>24</b>	<b>6</b>	<b>2</b>	<b>9</b>	<b>7</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>17.3</b>	<b>18.6</b>	<b>17.4</b>	<b>16.7</b>	<b>17.9</b>

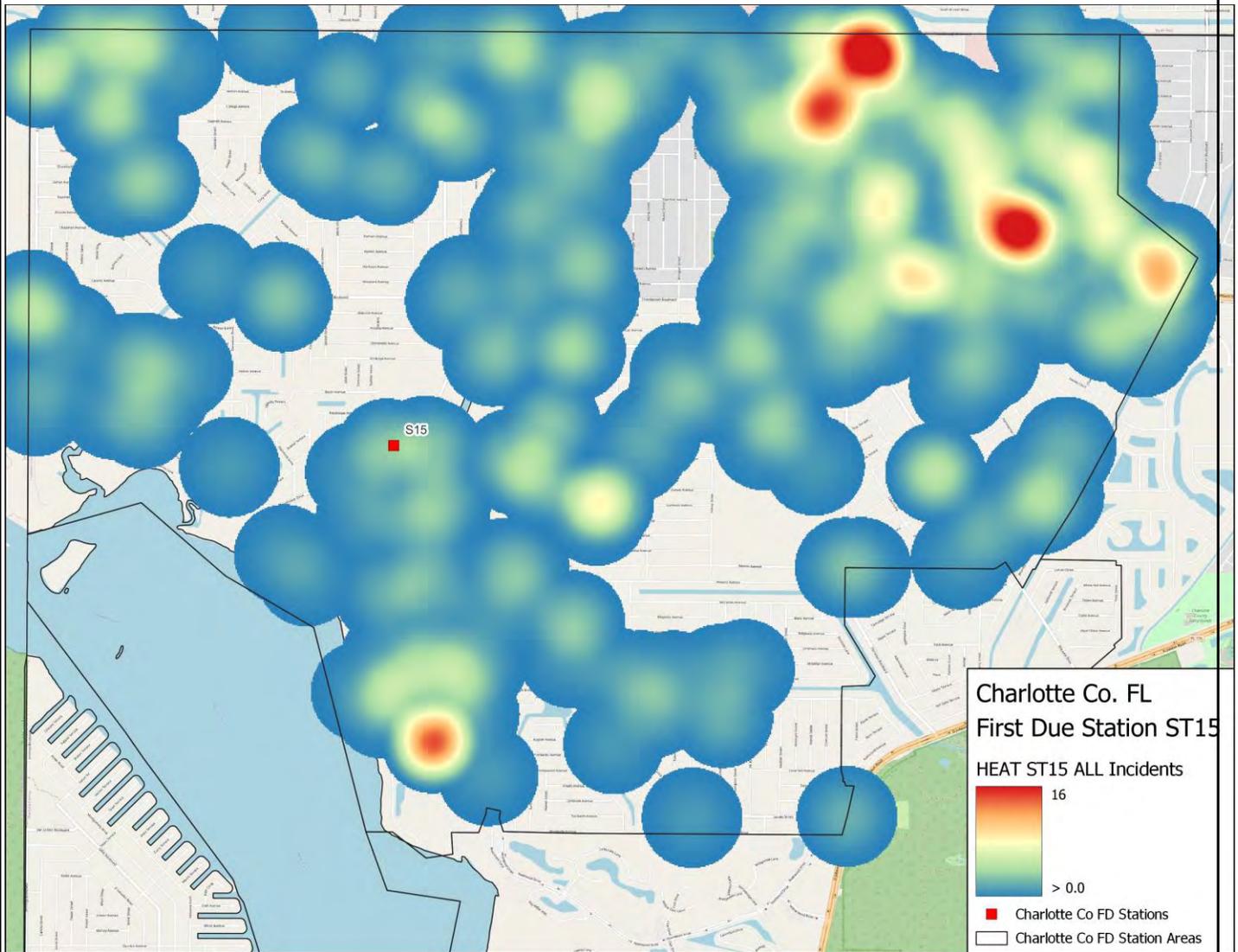
**Station 15 First Due Area Historical Performance**

First Due Station	Reporting Period	Number of Over-lapped Calls	Total Number of Calls	Percentage of Over-lapped Calls
ST15	2017	17	418	4.1
	2018	18	419	4.3
	2019	16	397	4.0
	2020	26	542	4.8
	2021	28	462	6.1
	<b>All</b>		<b>105</b>	<b>2,238</b>

First Due Station ST15:									
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
<b>Alarm Handling</b>		4:06	4:12	4:01	3:54	4:26	3:50	3:37	83.5
<b>Turnout Time</b>		2:55	3:07	2:49	2:48	2:53	3:09	2:13	74.6
<b>Travel Time</b>	Urban	8:06	7:57	7:40	8:06	8:09	8:13	6:41	70.0
	Rural	8:36	8:12	8:37	8:06	8:58	8:44	10:43	96.3
<b>Total Response Time</b>	Urban	12:51	12:39	12:23	12:44	13:18	12:45	10:50	63.4
		n = 942	n = 158	n = 171	n = 175	n = 242	n = 196		
	Rural	13:21	12:46	13:05	12:54	14:02	13:41	15:14	95.8
		n = 1,200	n = 238	n = 236	n = 201	n = 276	n = 249		

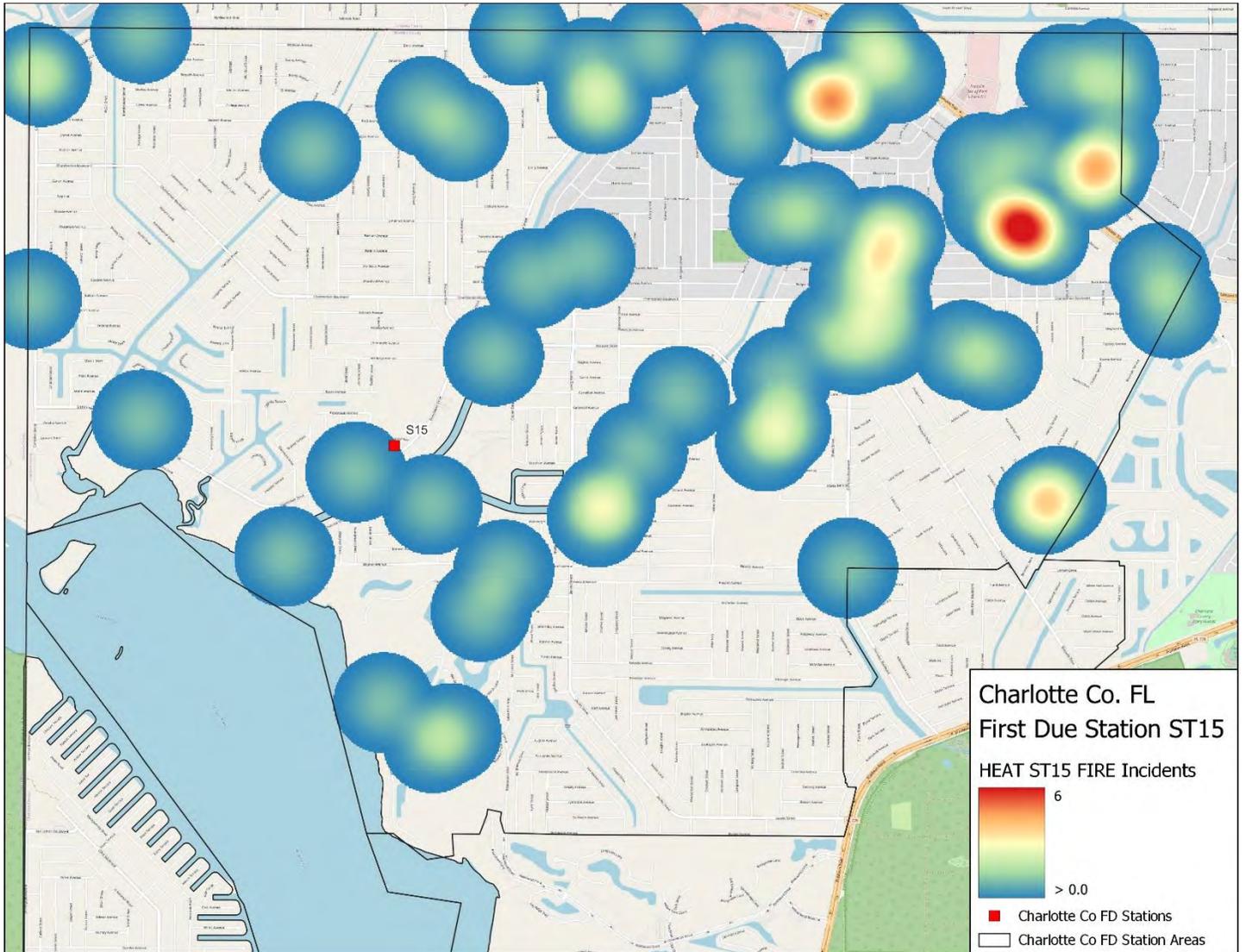
### Overall Hot Spot Map

Trends show Station 15 has a heavy dispersion primarily to the Northeast but has an additional hot spot to the South.



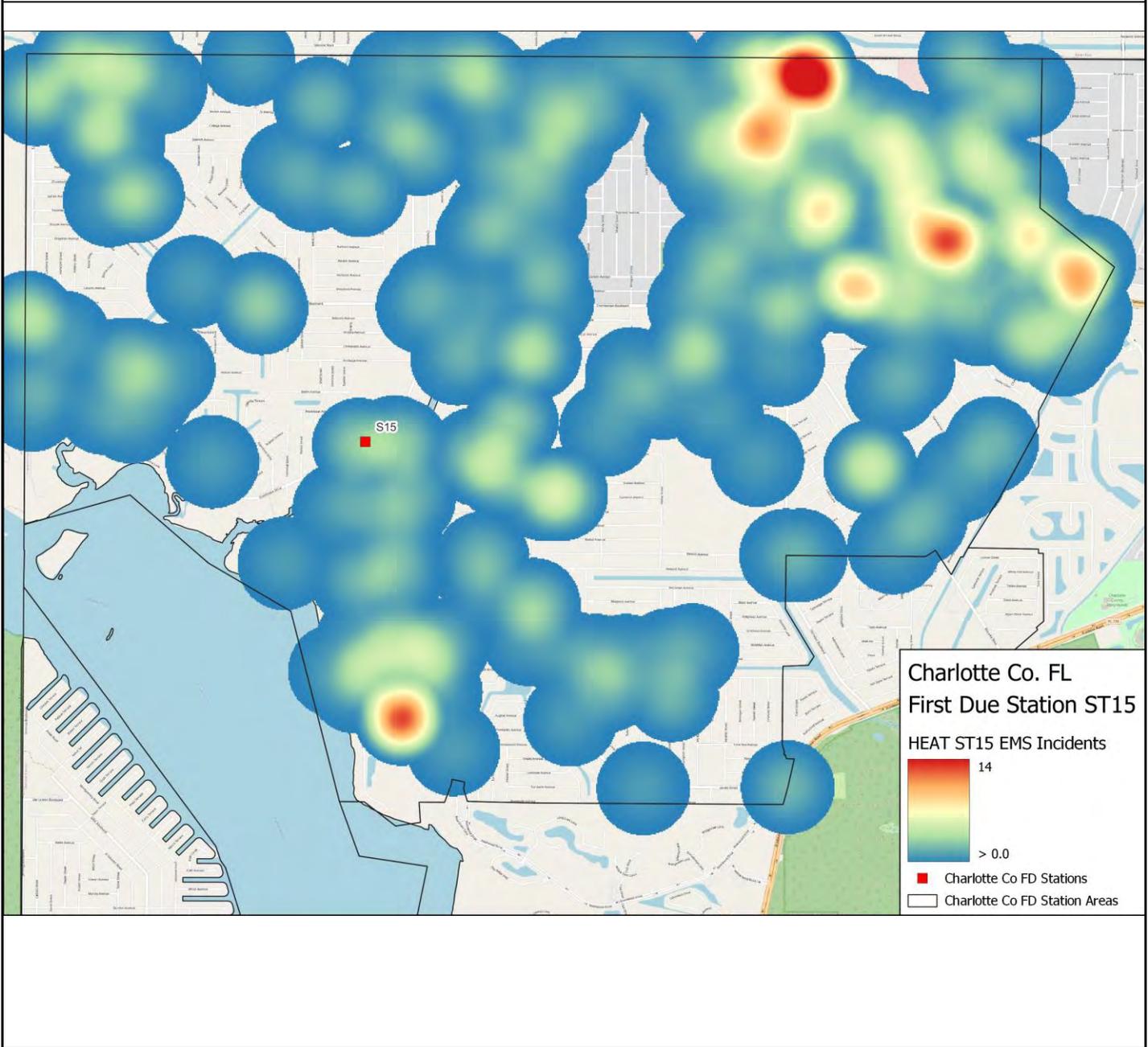
### Fire Hot Spot Map

Station 15's fire calls are concentrated Northeast of the fire station.



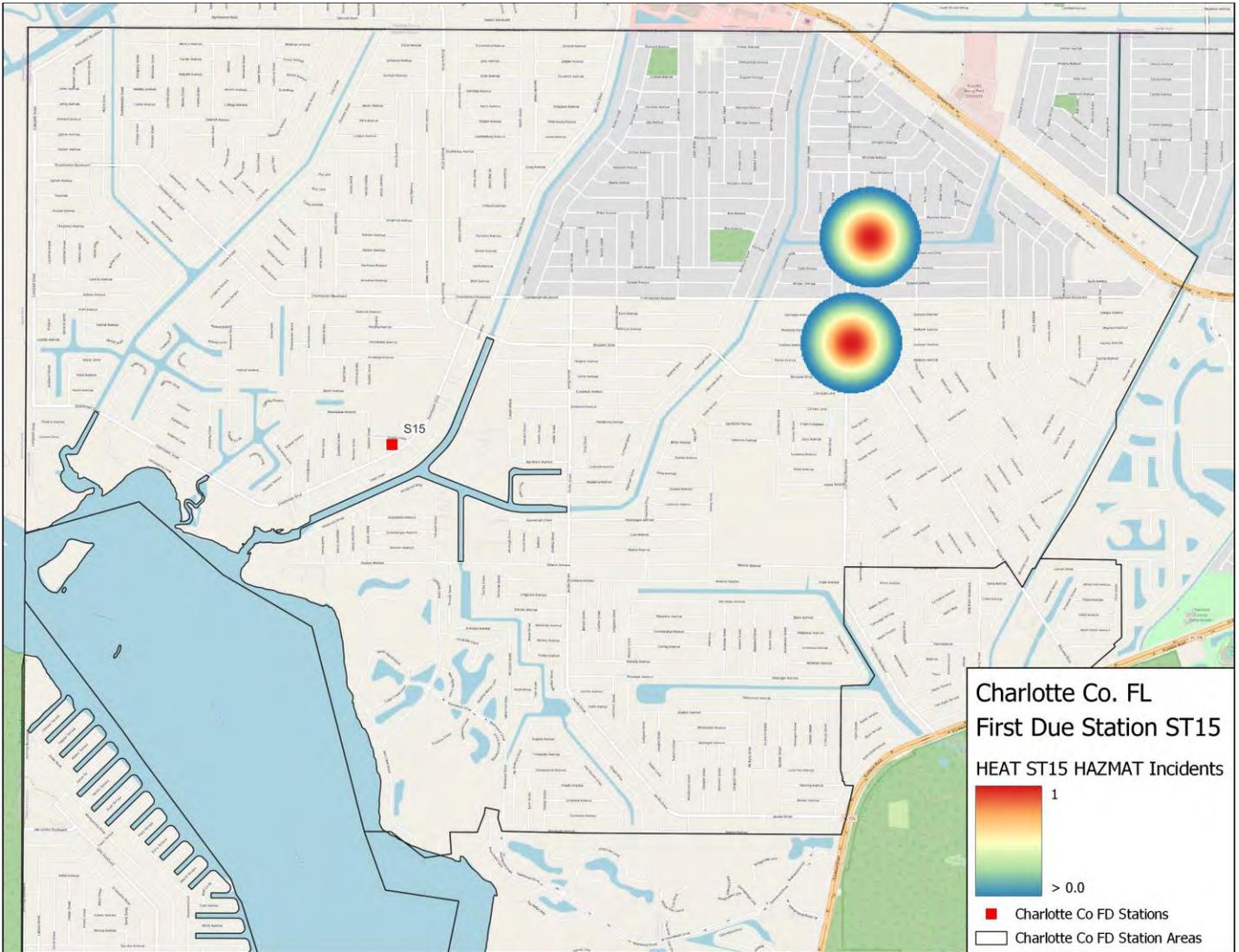
### EMS Hot Spot Map

Station 15's EMS calls spread somewhat evenly throughout the first due station area with the exception of a moderate to high amount located Northeast and to the South of the station.



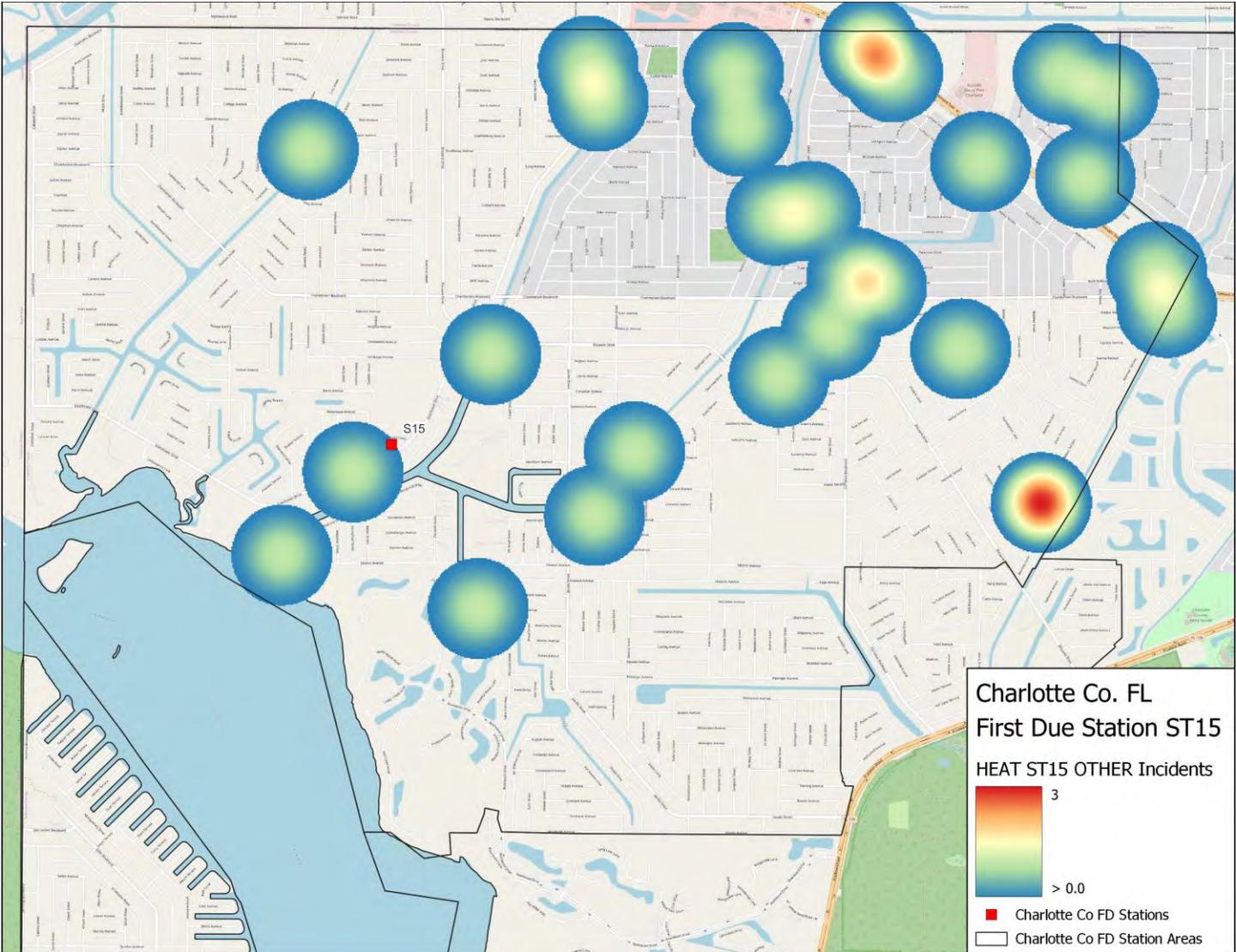
### Hazmat Hot Spot Map

Station 15 has a concentrated distribution of hazardous materials calls to the Northeast of the first due station area.



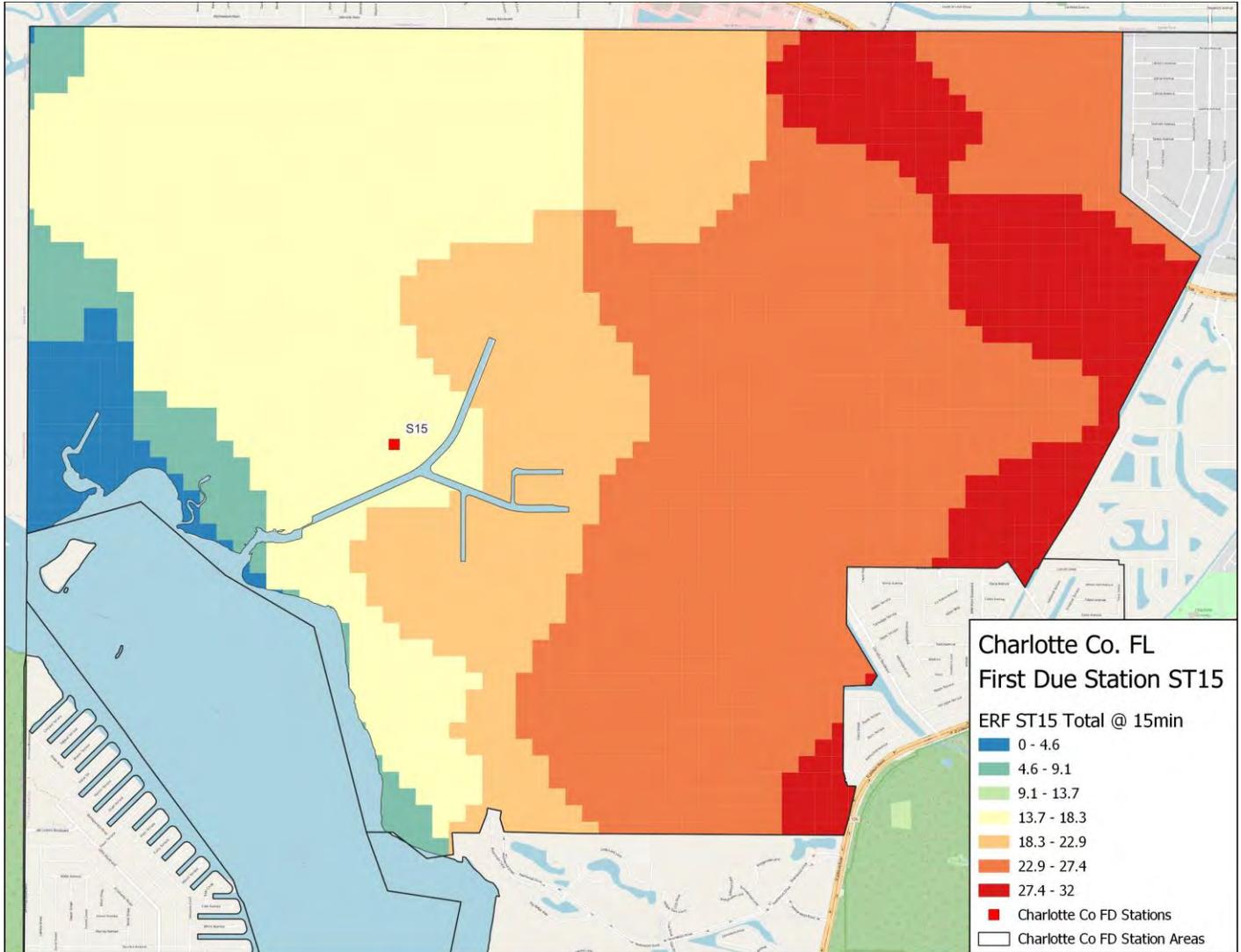
### Other Hot Spot Map

Station 15's other calls are concentrated in close proximity to the fire station, with hot spots to the North-east, and East of the station.



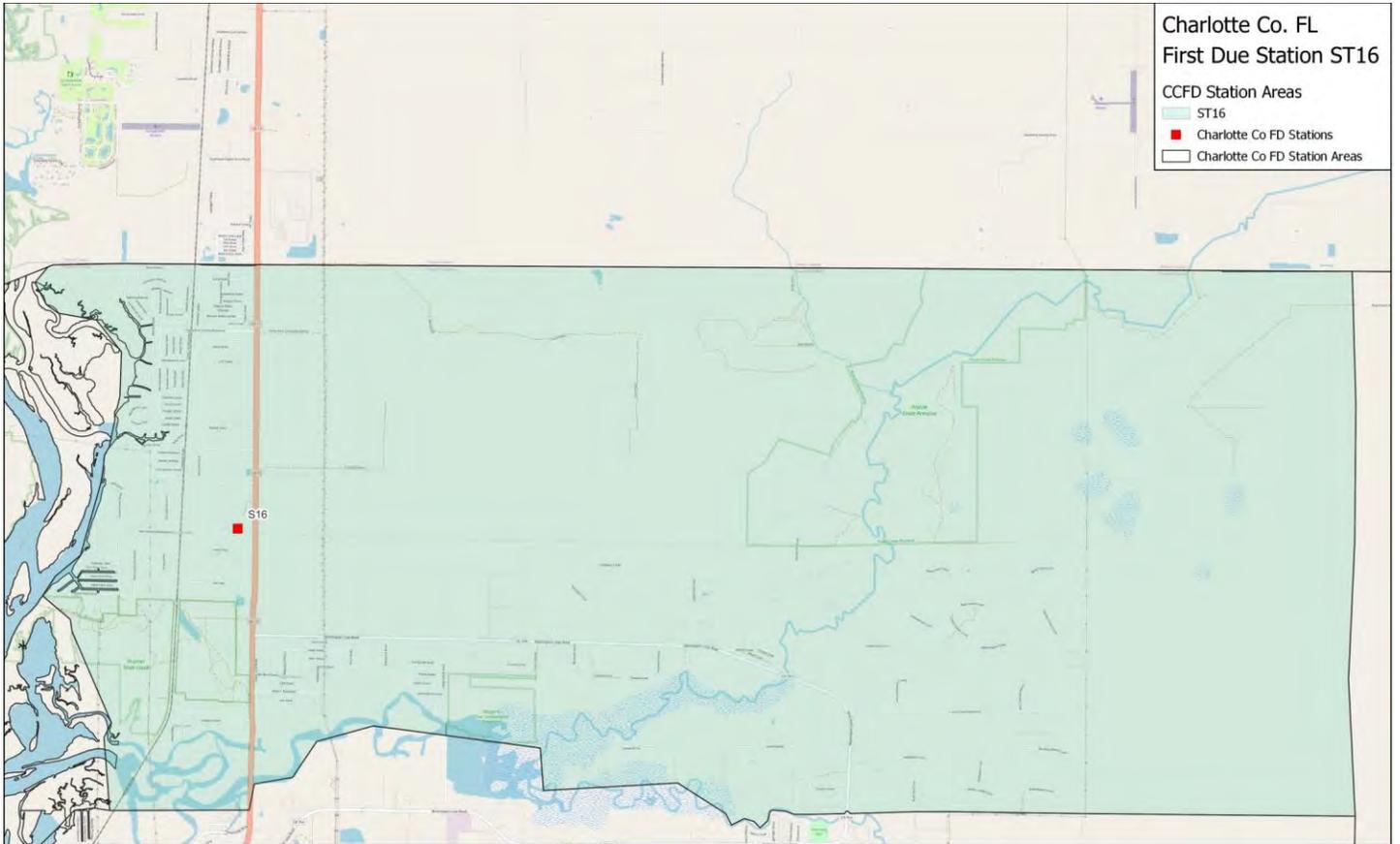
### Concentration—Effective Response Force Capabilities

Station 15's area is analyzed by the number of personnel that can assemble within 15 minutes.



	Unit ID	Unit Type	Personnel
Station 16	E 16	Engine	3
	BR 16	Brush	

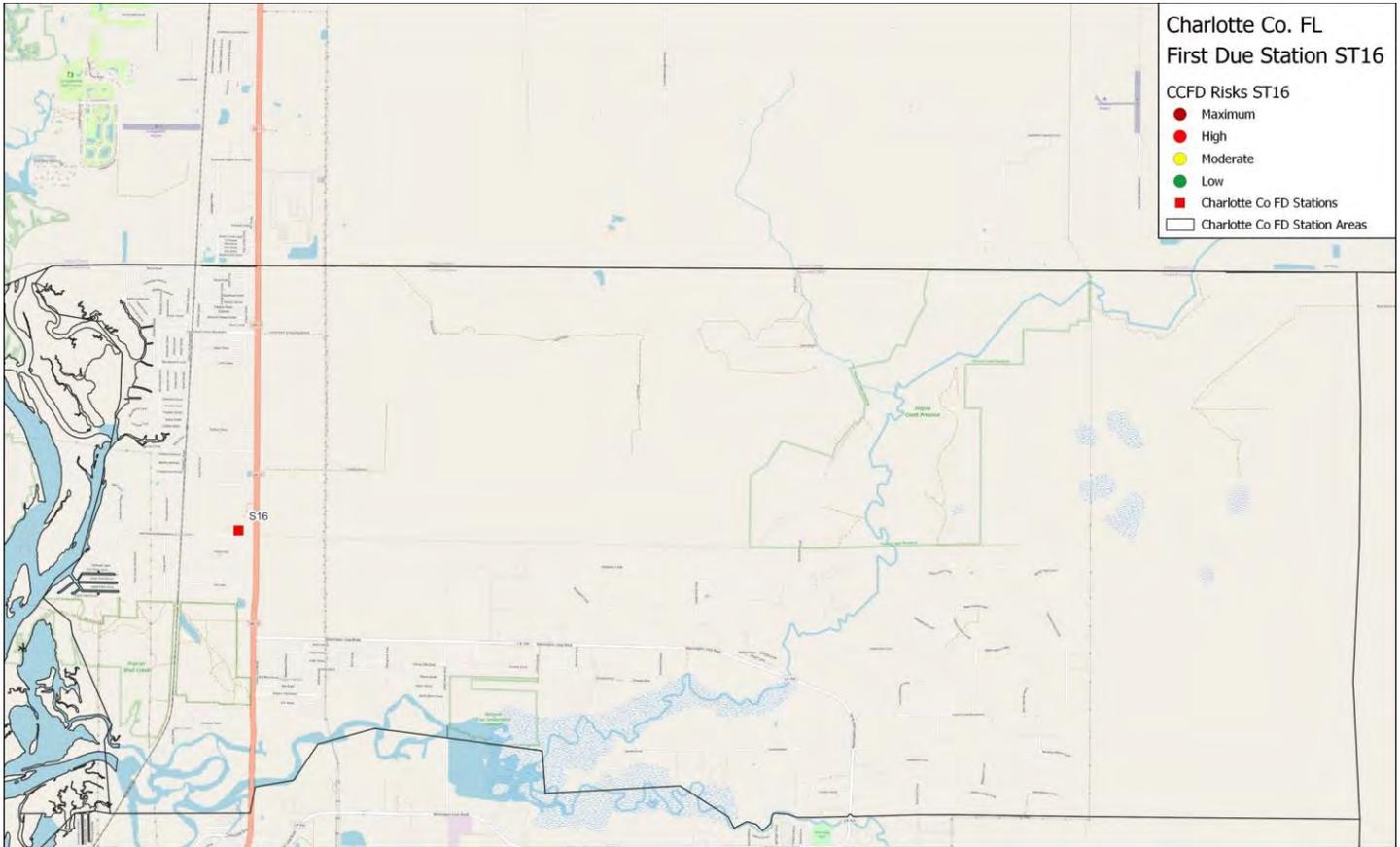
Station 16 cross staffs two units and has a lower overall jurisdictional risk level.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level.

There is a lower risk of buildings located in the station's area.



**Station 16 First Due Area Historical Data Analysis**

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>209</b>	<b>233</b>	<b>212</b>	<b>283</b>	<b>321</b>
Cardiac and stroke	27	33	35	37	41
Seizure and unconsciousness	17	6	13	28	29
Breathing difficulty	20	26	26	36	32
Overdose and psychiatric	3	2	0	1	1
Accident	8	13	8	9	10
Fall and injury	54	60	48	71	75
Illness and other	60	63	54	65	84
Medical No ProQA	18	26	26	32	48
Interfacility transfer	2	4	2	4	1
<b>Fire</b>	<b>77</b>	<b>61</b>	<b>61</b>	<b>91</b>	<b>80</b>
Structure fire	3	3	6	5	4
Outside fire	13	9	17	17	15
Vehicle fire	0	2	3	2	2
Alarm	6	5	10	8	9
Public service	24	27	5	25	31
Fire other	31	15	20	34	19
<b>Hazmat</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Hazmat	0	0	1	0	0
<b>Rescue</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Rescue	0	0	0	0	0
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport	0	0	0	0	0
<b>Total</b>	<b>286</b>	<b>294</b>	<b>274</b>	<b>374</b>	<b>401</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>1.0</b>	<b>1.1</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>2.80%</b>	<b>-6.80%</b>	<b>36.12%</b>	<b>7.51%</b>

**Historical Data Analysis**

Station 16's profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials and technical rescue had only a few incidents during the 5-year rating period.

The year-over-year growth has varied between a 7% decrease and an 36% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
16	BR16	64	29	25	50	23
	<b>Total</b>	<b>64</b>	<b>29</b>	<b>25</b>	<b>50</b>	<b>23</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>

**Station 16 First Due Area Historical Performance**

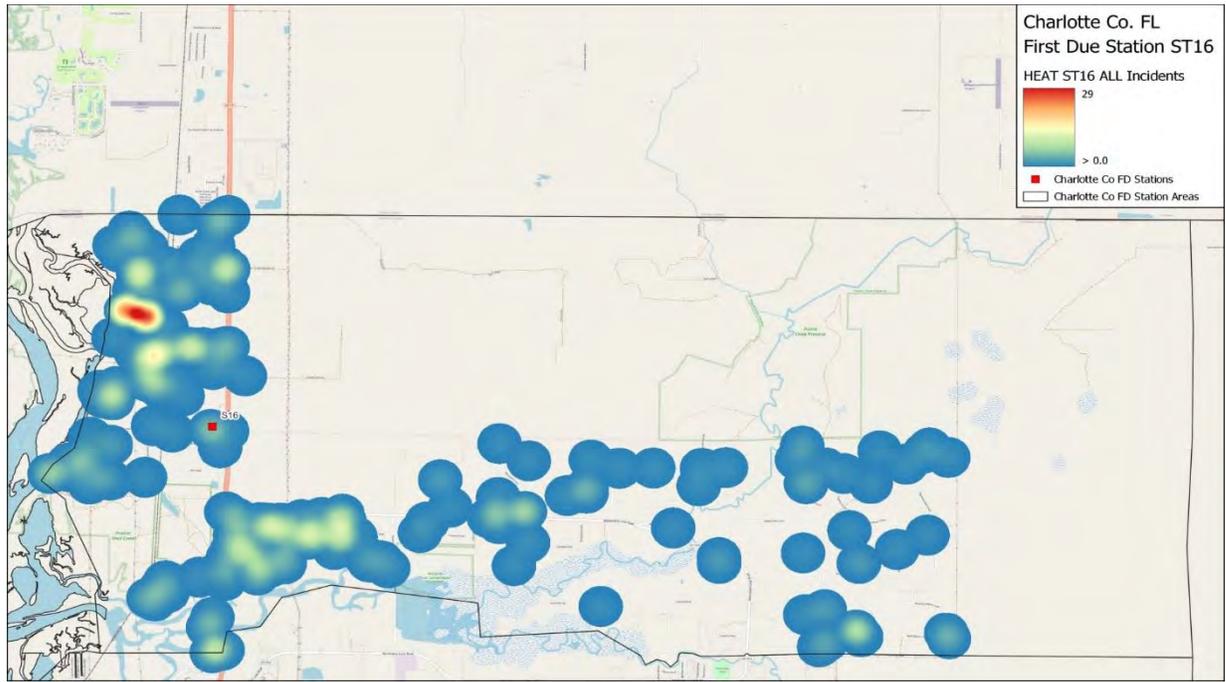
Unit ID	Reporting Period	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size <sup>1</sup>
		(Minutes)	(Minutes)	(Minutes)	(Minutes)	
BR16	2017	15.0	0.0	17.2	27.7	2
	2018	--	--	--	--	--
	2019	8.3	3.3	32.9	41.7	3
	2020	40.7	33.7	0.0	74.4	6
	2021	12.6	19.5	15.4	47.5	2
	<b>All</b>	<b>15.0</b>	<b>19.5</b>	<b>17.2</b>	<b>47.5</b>	<b>13</b>

First Due Station	Reporting Period	Number of Over-lapped Calls	Total Number of Calls	Percentage of Over-lapped Calls
ST16	2017	4	286	1.4
	2018	8	294	2.7
	2019	12	274	4.4
	2020	20	374	5.3
	2021	14	401	3.5
	<b>All</b>	<b>58</b>	<b>1,629</b>	<b>3.6</b>

First Due Station ST16:									
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
<b>Alarm Handling</b>		4:11	4:26	4:09	4:16	4:26	3:56	3:37	82.5
<b>Turnout Time</b>		3:09	3:10	2:46	2:52	3:05	3:27	2:13	74.4
<b>Travel Time</b>	Urban	8:18	7:22	7:39	7:45	8:18	9:01	6:41	78.1
	Rural	10:36	12:02	9:33	10:59	10:13	10:41	10:43	90.3
<b>Total Response Time</b>	Urban	13:27	13:49	11:59	13:01	13:32	13:45	10:50	73.3
		n = 210	n = 39	n = 52	n = 41	n = 44	n = 34		
	Rural	15:29	17:38	13:54	15:01	15:04	15:38	15:14	89.2
		n = 1,338	n = 234	n = 227	n = 221	n = 310	n = 346		

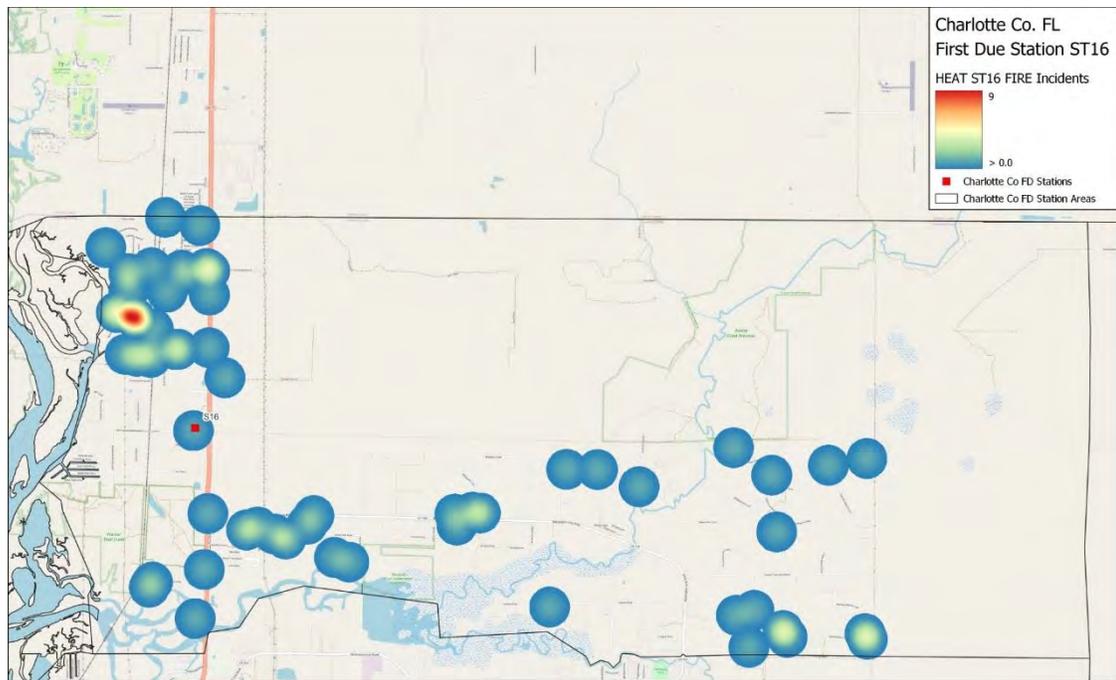
### Overall Hot Spot Map

Trends show Station 16 has an evenly dispersed call volume in their first due area, with the largest volume of calls just Northwest of the station.



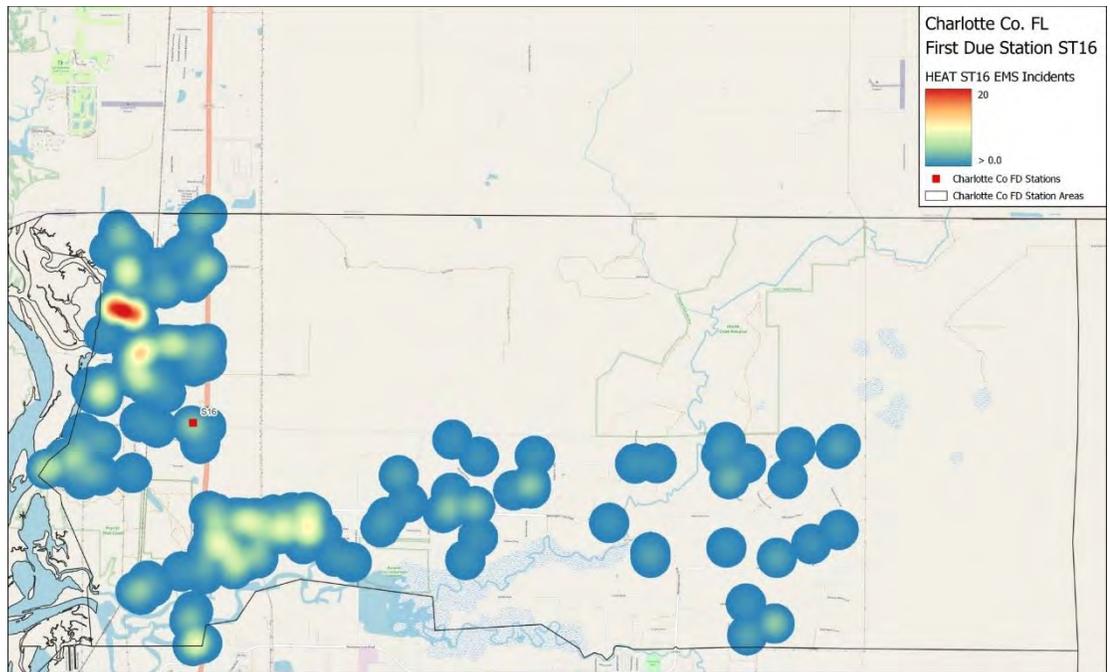
### Fire Hot Spot Map

Station 16's fire calls are typically concentrated in close proximity to the fire station, with the highest volume located just Northwest of the station.



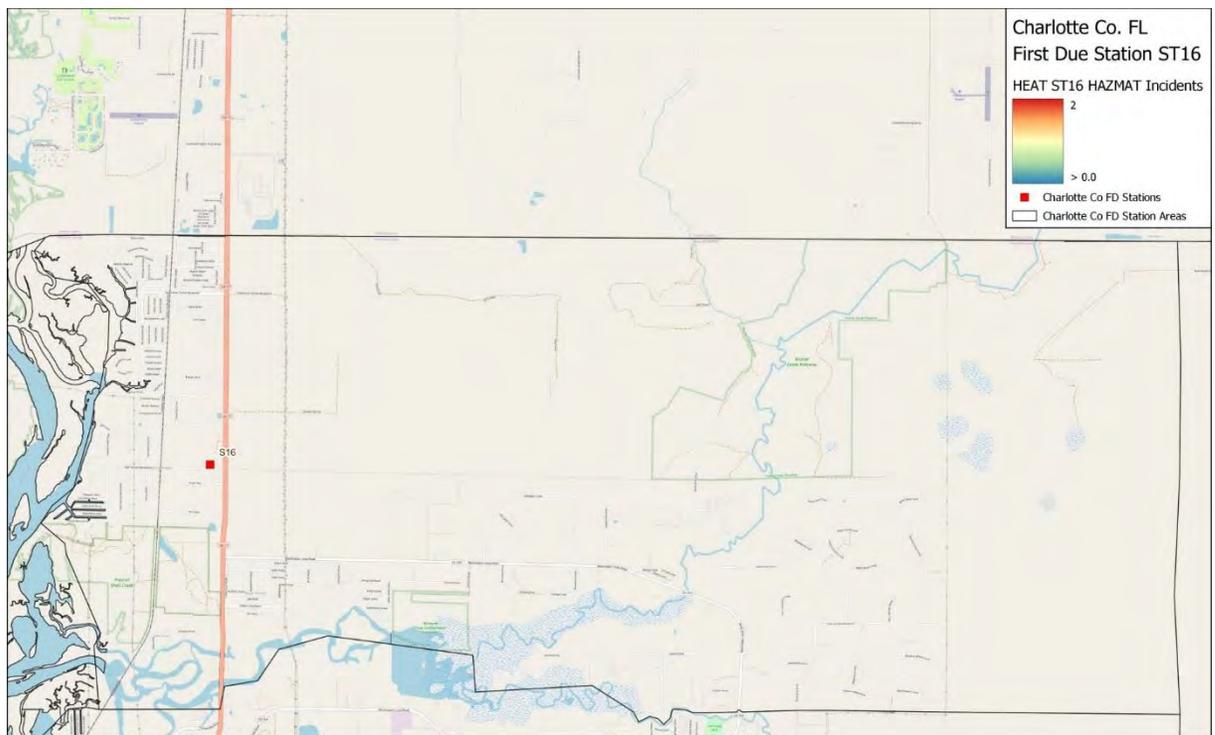
### EMS Hot Spot Map

Station 16's EMS calls spread evenly throughout the first due station area with the exception of a moderate to high amount located Northwest and South of the station.



### Hazmat Hot Spot Map

Station 16 has no distribution of hazardous materials calls throughout the first due station area.



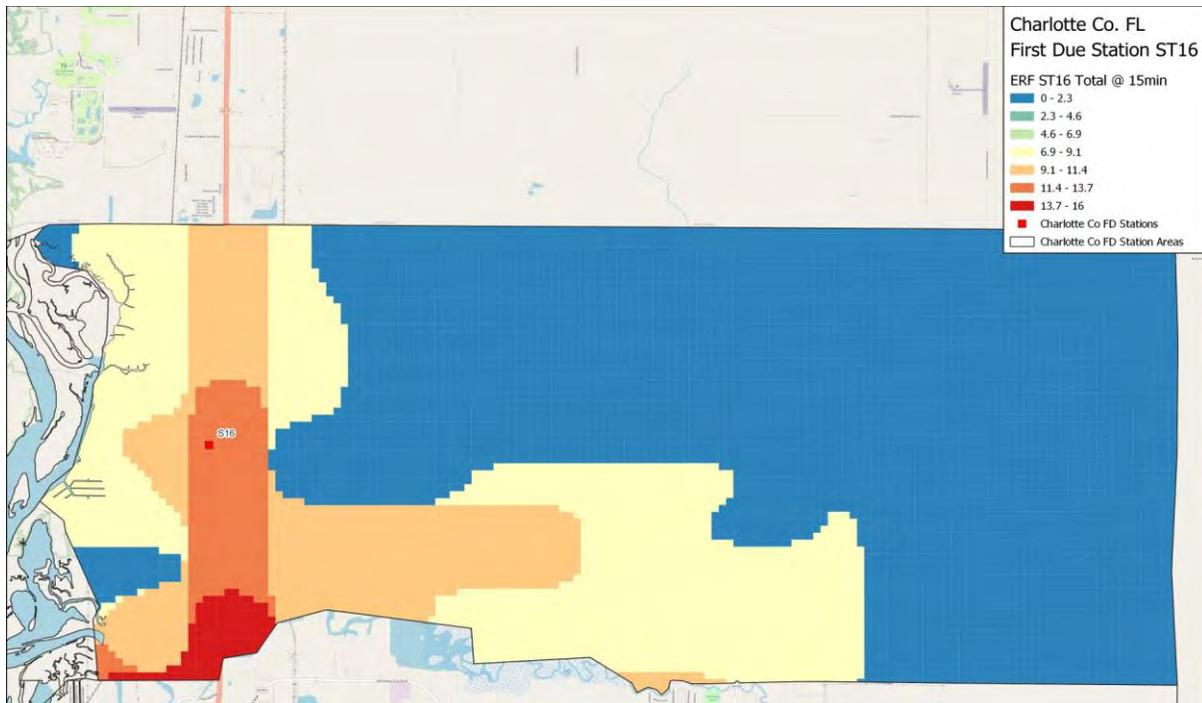
### Other Hot Spot Map

Station 16's other calls are concentrated in close proximity to the fire station, with a hot spot to the Northwest and Southeast.



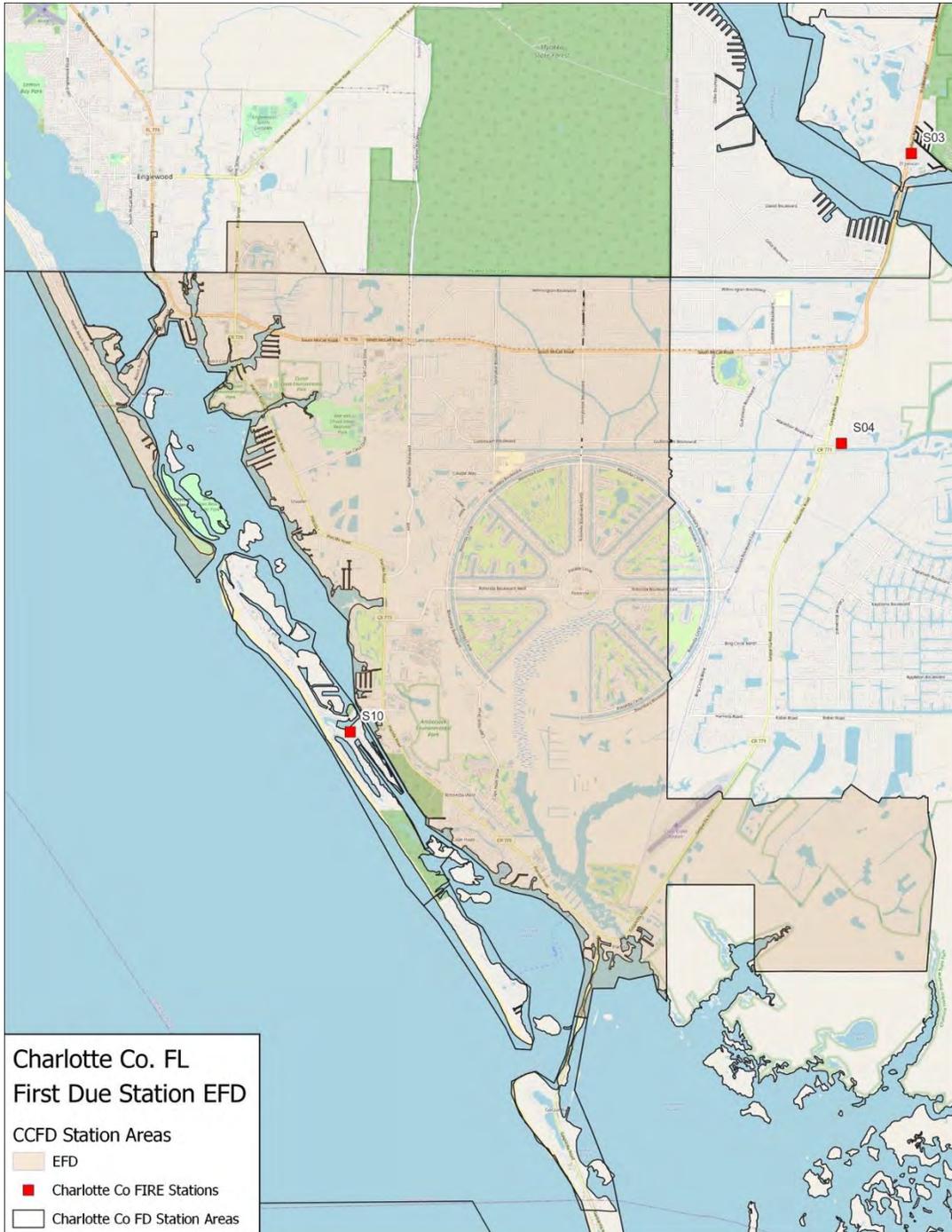
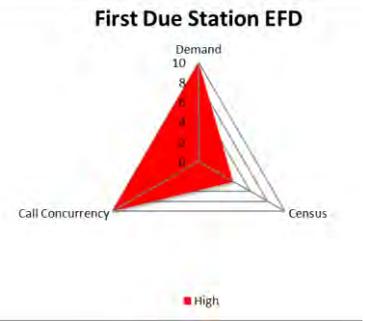
### Concentration—Effective Response Force Capabilities

Station 16's area is analyzed by the number of personnel that can assemble within 15 minutes.



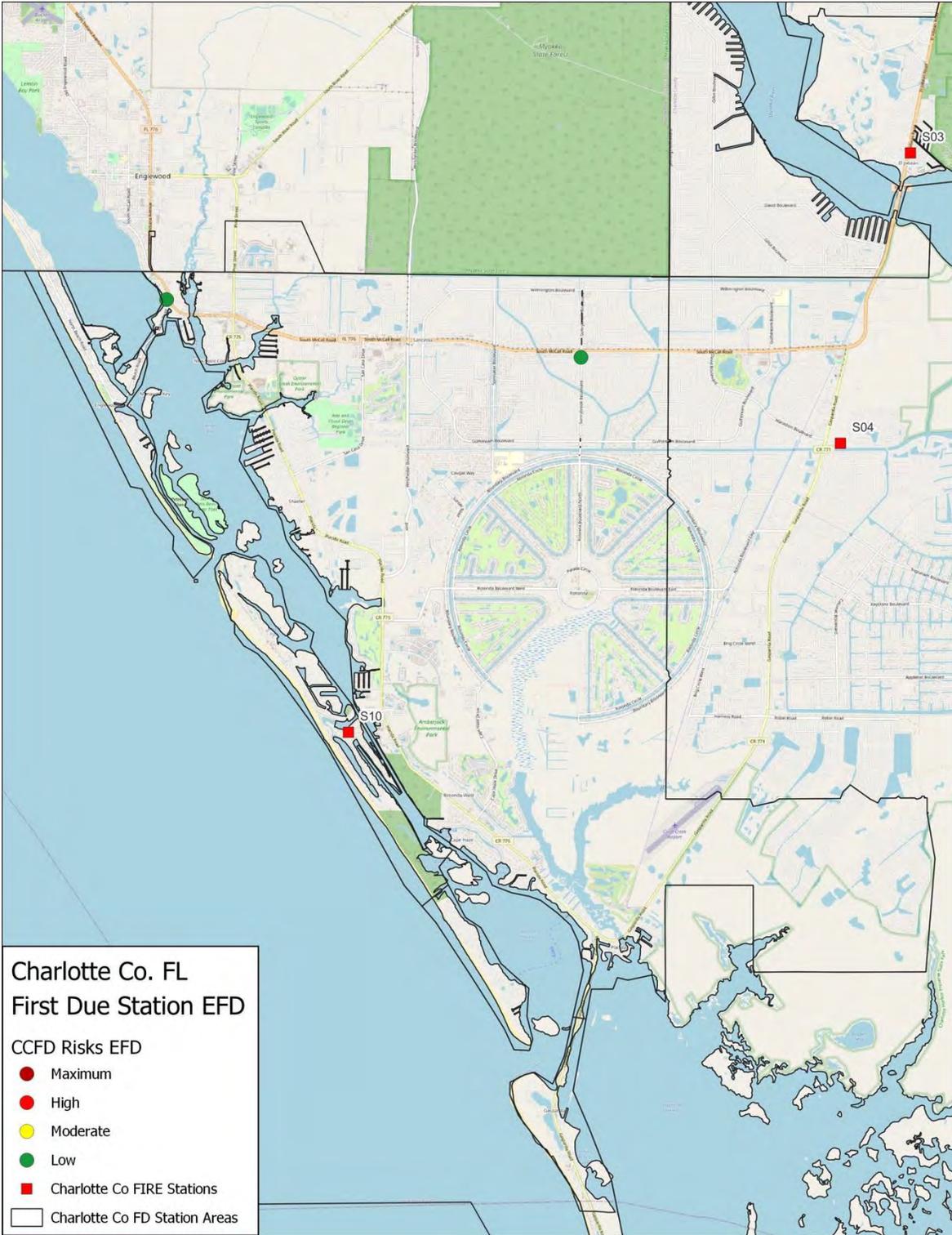
EFD	Unit ID	Unit Type	Personnel
		R14	Rescue

EFD area is staffed by R13 and R14 and has a high overall jurisdictional risk level. Englewood Engine 76 is collocated at Station 14.



### Risk Analysis

The risk of individual building locations is represented by the small circles and shaded to indicate risk level. There are lower risk buildings located in the EFD area.



**EFD First Due Area Historical Data Analysis**

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>3,517</b>	<b>3,859</b>	<b>3,952</b>	<b>3,980</b>	<b>4,450</b>
Cardiac and stroke	414	411	433	421	479
Seizure and unconsciousness	262	291	302	300	341
Breathing difficulty	301	324	258	211	282
Overdose and psychiatric	59	22	30	13	36
Accident	166	150	136	169	202
Fall and injury	779	885	983	954	1093
Illness and other	874	957	933	1013	995
Medical No ProQA	379	355	378	360	435
Interfacility transfer	283	464	499	539	587
<b>Fire</b>	<b>390</b>	<b>185</b>	<b>50</b>	<b>47</b>	<b>64</b>
Structure fire	32	22	32	32	38
Outside fire	2	1	2	2	0
Vehicle fire	0	0	1	1	2
Alarm	2	0	0	1	1
Public service	343	159	7	5	14
Fire other	11	3	8	6	9
<b>Hazmat</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>3</b>
Hazmat	1	1	3	5	3
<b>Rescue</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>8</b>
Rescue	1	3	1	7	8
<b>Airport</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
Airport	1	0	0	1	0
<b>Total</b>	<b>3,910</b>	<b>4,048</b>	<b>4,006</b>	<b>4,040</b>	<b>4,525</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>10.7</b>	<b>11.1</b>	<b>11.0</b>	<b>11.0</b>	<b>12.4</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>3.53%</b>	<b>-1.04%</b>	<b>0.57%</b>	<b>12.31%</b>

**Historical Data Analysis**

EFD’s profile demonstrates a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials and technical rescue had only a few incidents during the 5-year rating period.

The year-over-year growth has varied between a 1% decrease and an 12% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
EFD	CR14	977	1103	1108	1051	1169
	<b>Total</b>	<b>977</b>	<b>1,103</b>	<b>1,108</b>	<b>1,051</b>	<b>1,169</b>
	<b>Average Responses per Day<sup>2</sup></b>	<b>2.7</b>	<b>3.0</b>	<b>3.0</b>	<b>2.9</b>	<b>3.2</b>

**Station 14 First Due Area Historical Performance**

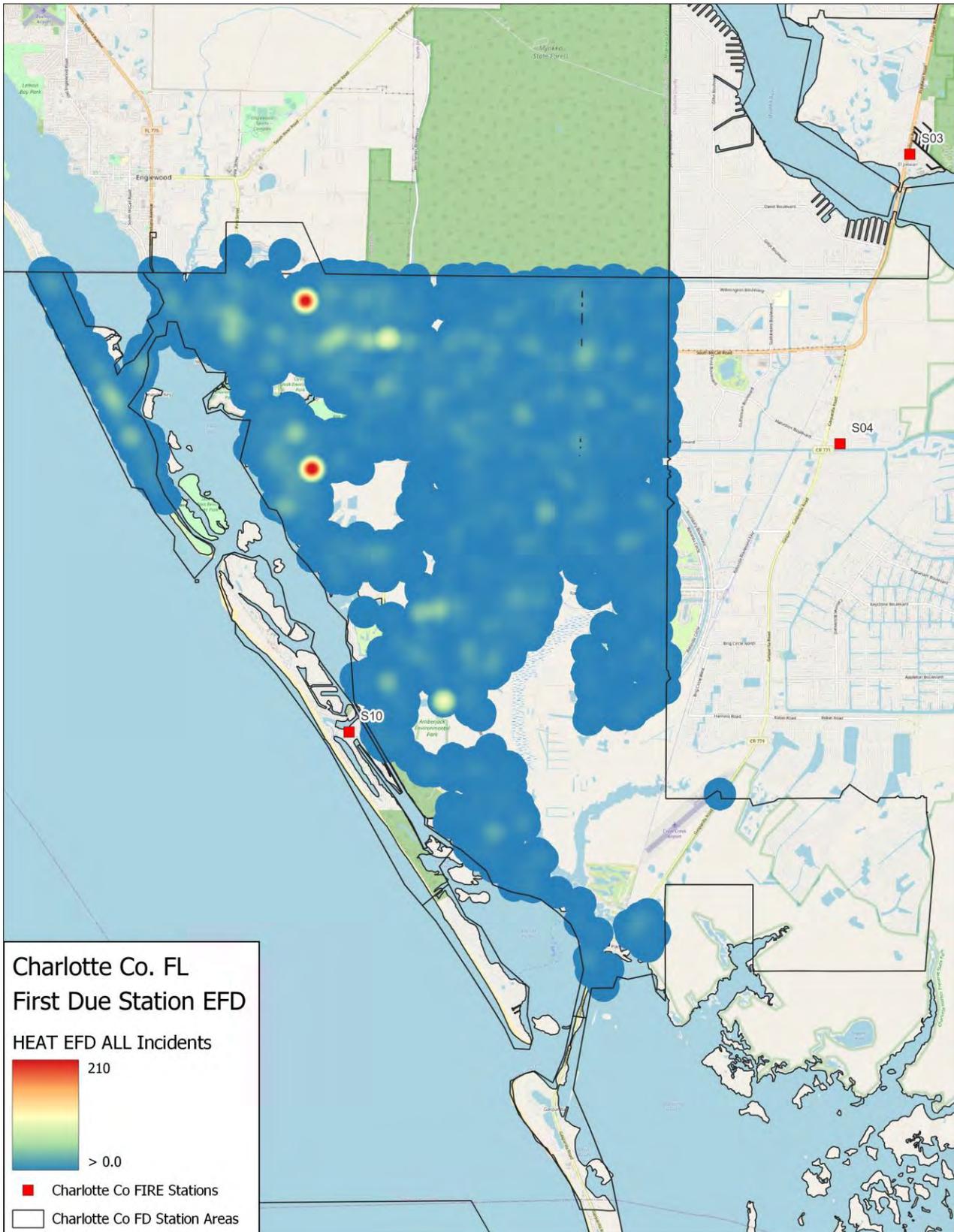
Unit ID	Reporting Period	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)	Sample Size <sup>1</sup>
CR14	2017	4.2	2.5	10.5	15.8	797
	2018	4.0	2.4	9.6	14.4	950
	2019	4.1	2.5	9.0	13.9	918
	2020	4.3	2.3	9.3	13.8	877
	2021	3.8	2.2	9.4	13.4	988
	<b>All</b>	<b>4.1</b>	<b>2.4</b>	<b>9.5</b>	<b>14.2</b>	<b>4,530</b>

First Due Station	Reporting Period	Number of Over-lapped Calls	Total Number of Calls	Percentage of Over-lapped Calls
EFD	2017	1196	3,910	30.6
	2018	1274	4,048	31.5
	2019	1234	4,006	30.8
	2020	1270	4,040	31.4
	2021	1598	4,525	35.3
	<b>All</b>	<b>6,572</b>	<b>20,529</b>	<b>32.0</b>

First Due Station EFD:									
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
<b>Alarm Handling</b>		4:01	4:11	3:56	3:59	4:07	3:50	3:37	84.9
<b>Turnout Time</b>		2:21	2:27	2:24	2:24	2:21	2:09	2:13	87.7
<b>Travel Time</b>	Urban	9:23	10:09	9:19	9:04	9:14	9:24	6:41	63.5
	Rural	11:18	12:56	11:59	10:34	10:57	11:08	10:43	87.2
<b>Total Response Time</b>	Urban	14:01	14:49	13:52	13:47	13:59	13:42	10:50	63.2
		n = 17,116	n = 3,163	n = 3,320	n = 3,374	n = 3,403	n = 3,856		
	Rural	16:07	18:28	16:43	15:20	15:24	15:35	15:14	86.9
		n = 2,377	n = 466	n = 507	n = 467	n = 453	n = 484		

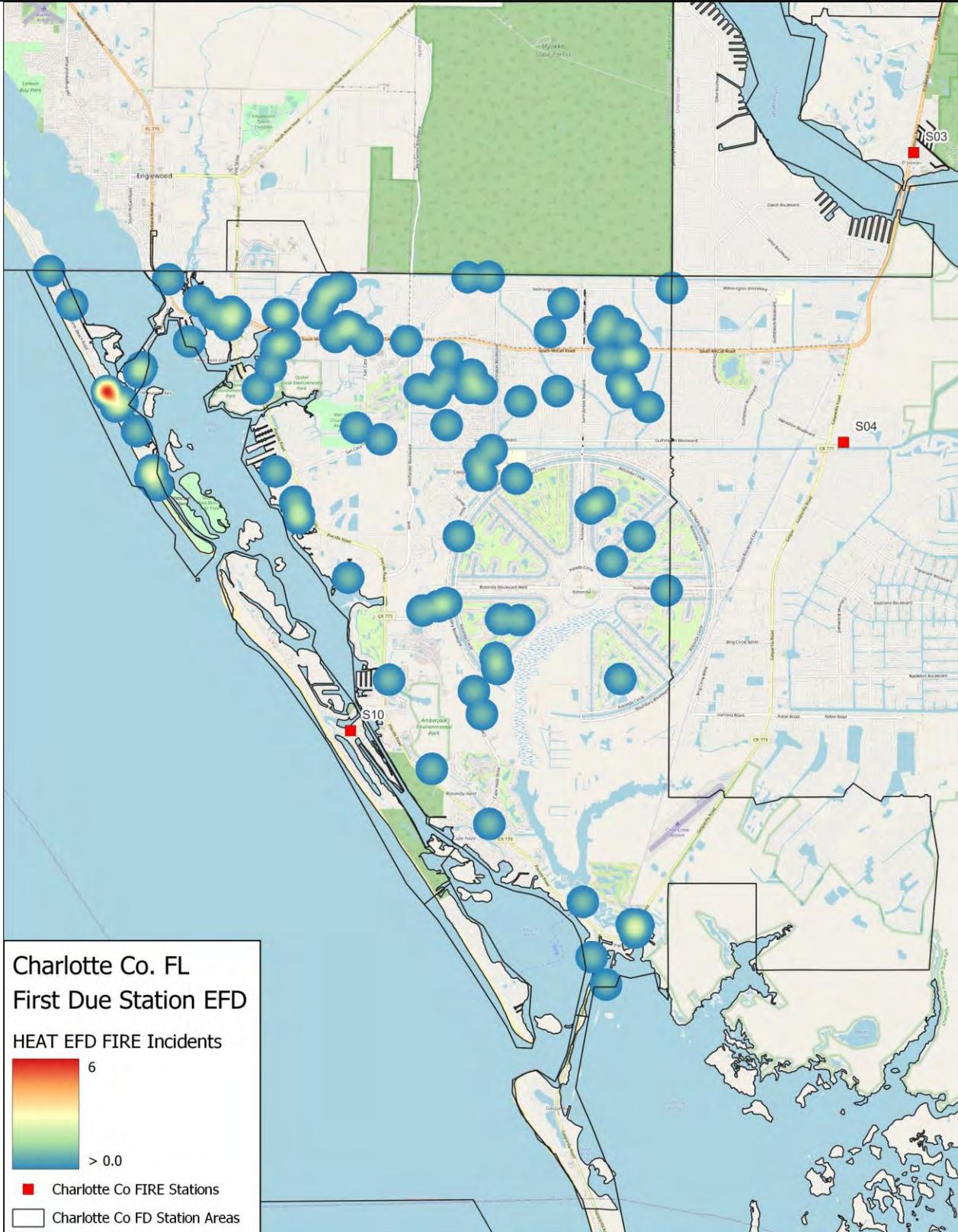
### Overall Hot Spot Map

Trends show EFD's area has an evenly dispersed call volume in their first due area, with the largest volume of calls just Northwest of the area.



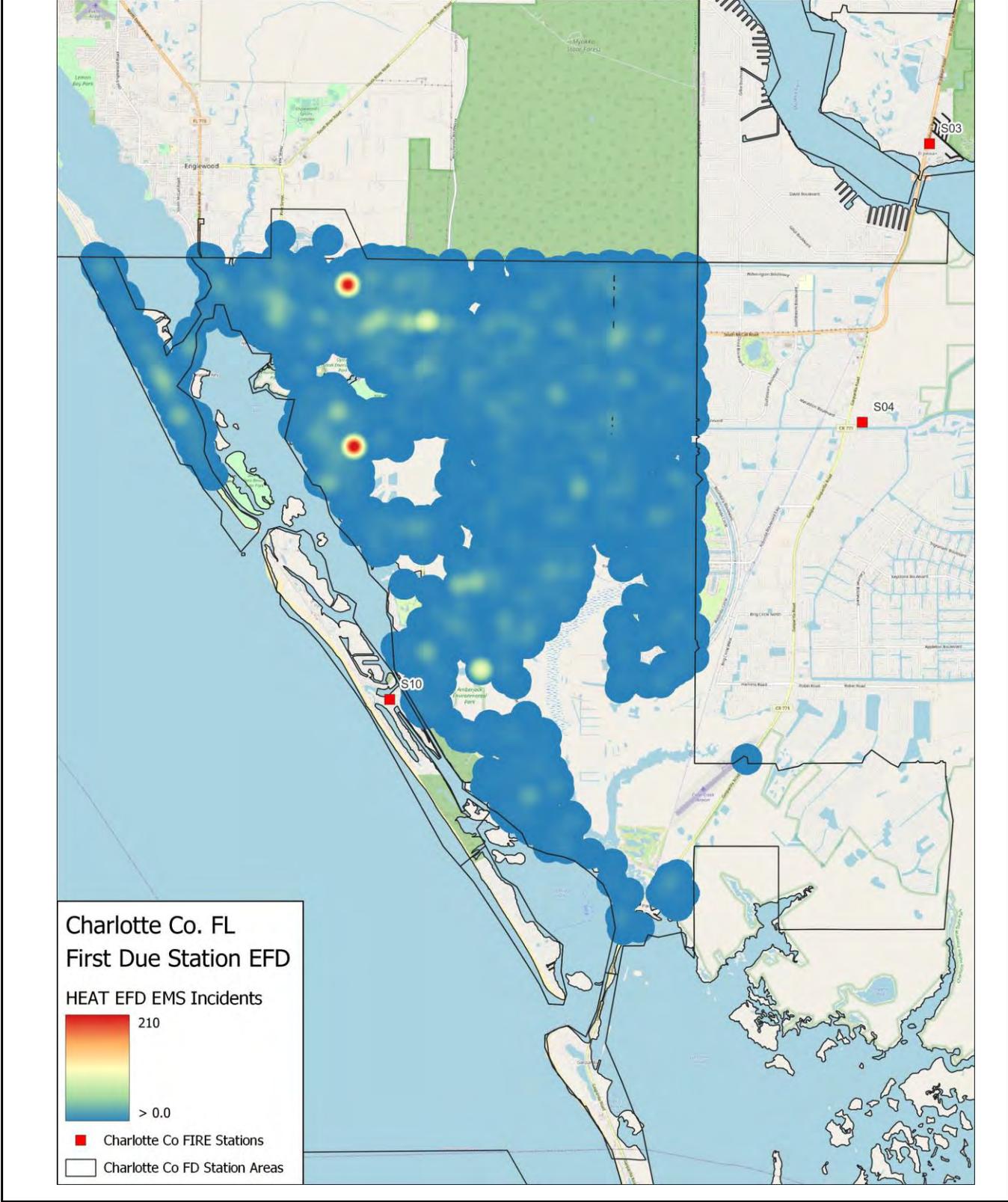
### Fire Hot Spot Map

EFD's fire calls are spread evenly, with a highest volume located just Northwest of the area.



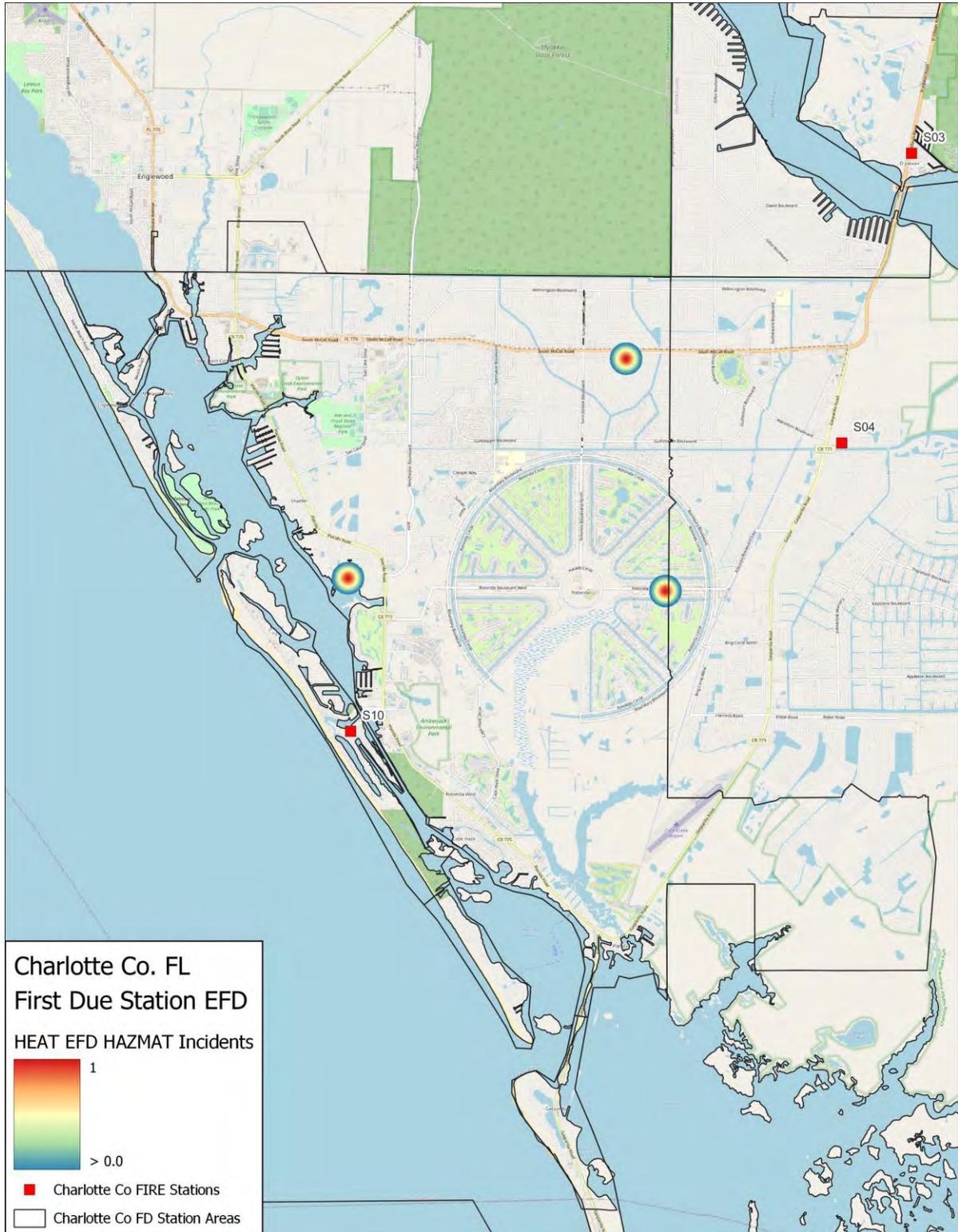
### EMS Hot Spot Map

EFD's EMS calls spread evenly throughout the first due station area with the exception of a moderate to high amount located North and West of the jurisdiction.



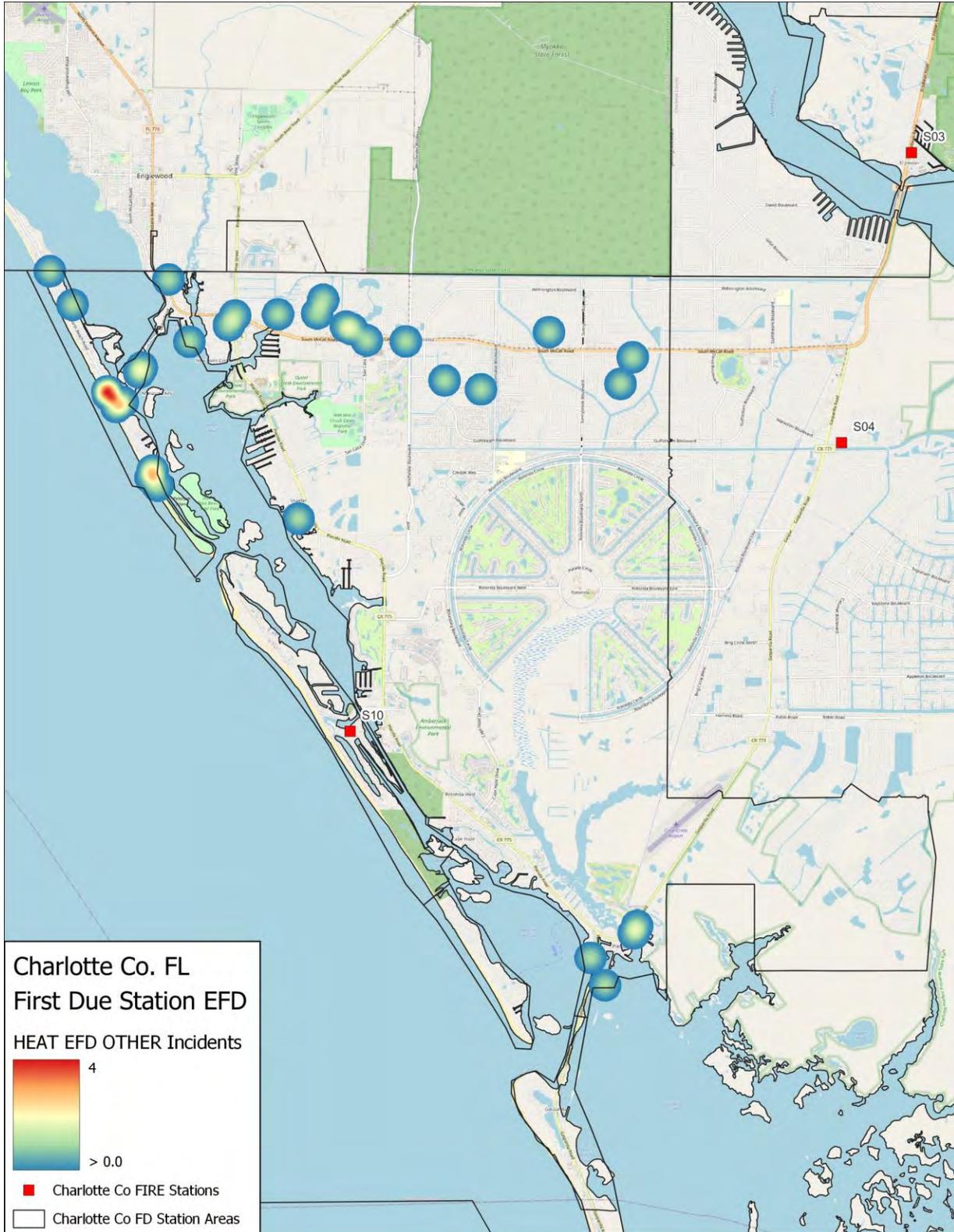
### Hazmat Hot Spot Map

EFD's area has relatively low distribution of hazardous materials throughout the area.



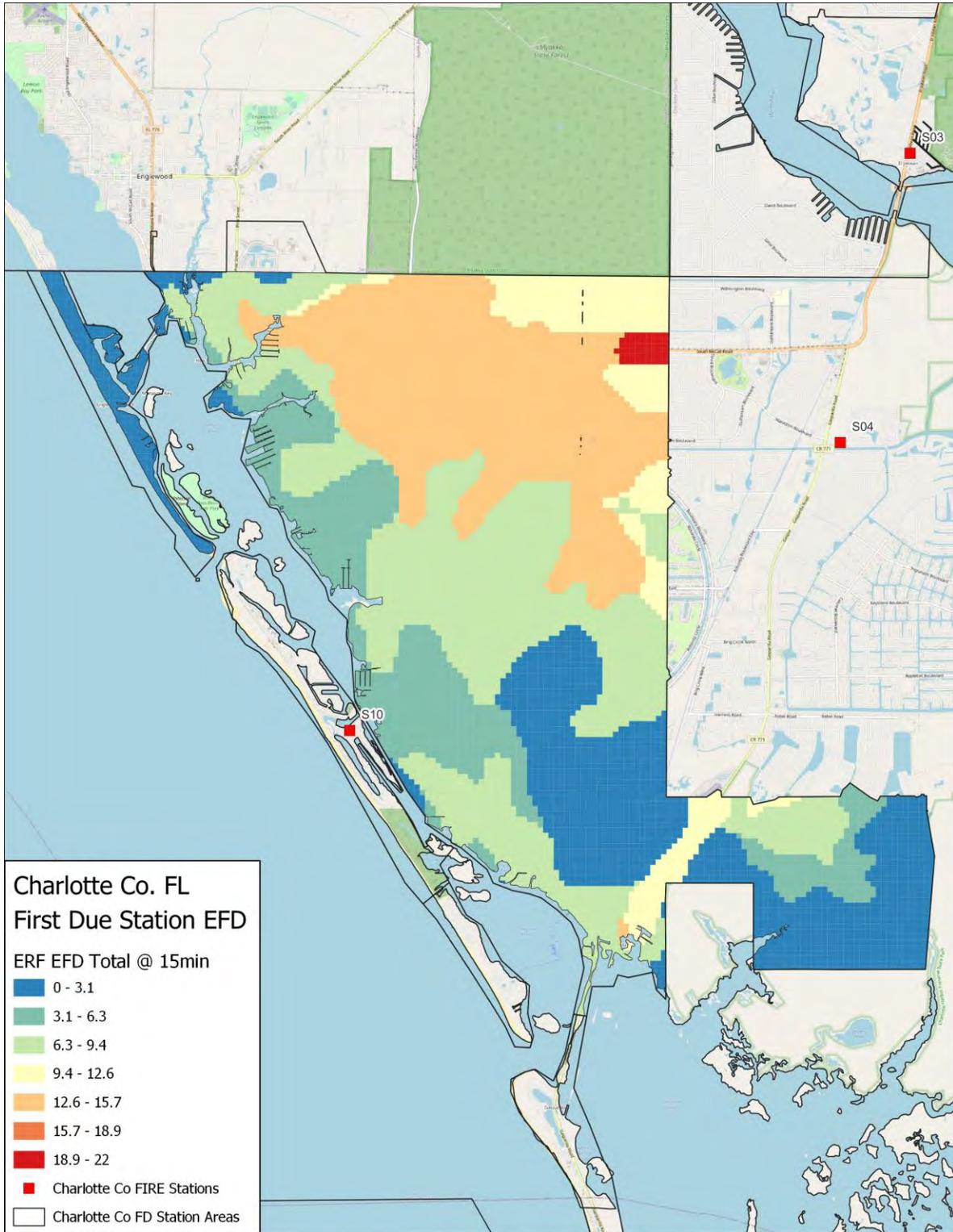
### Other Hot Spot Map

EFD's other calls are concentrated in the northern and northwestern regions of the area.



### Concentration—Effective Response Force Capabilities

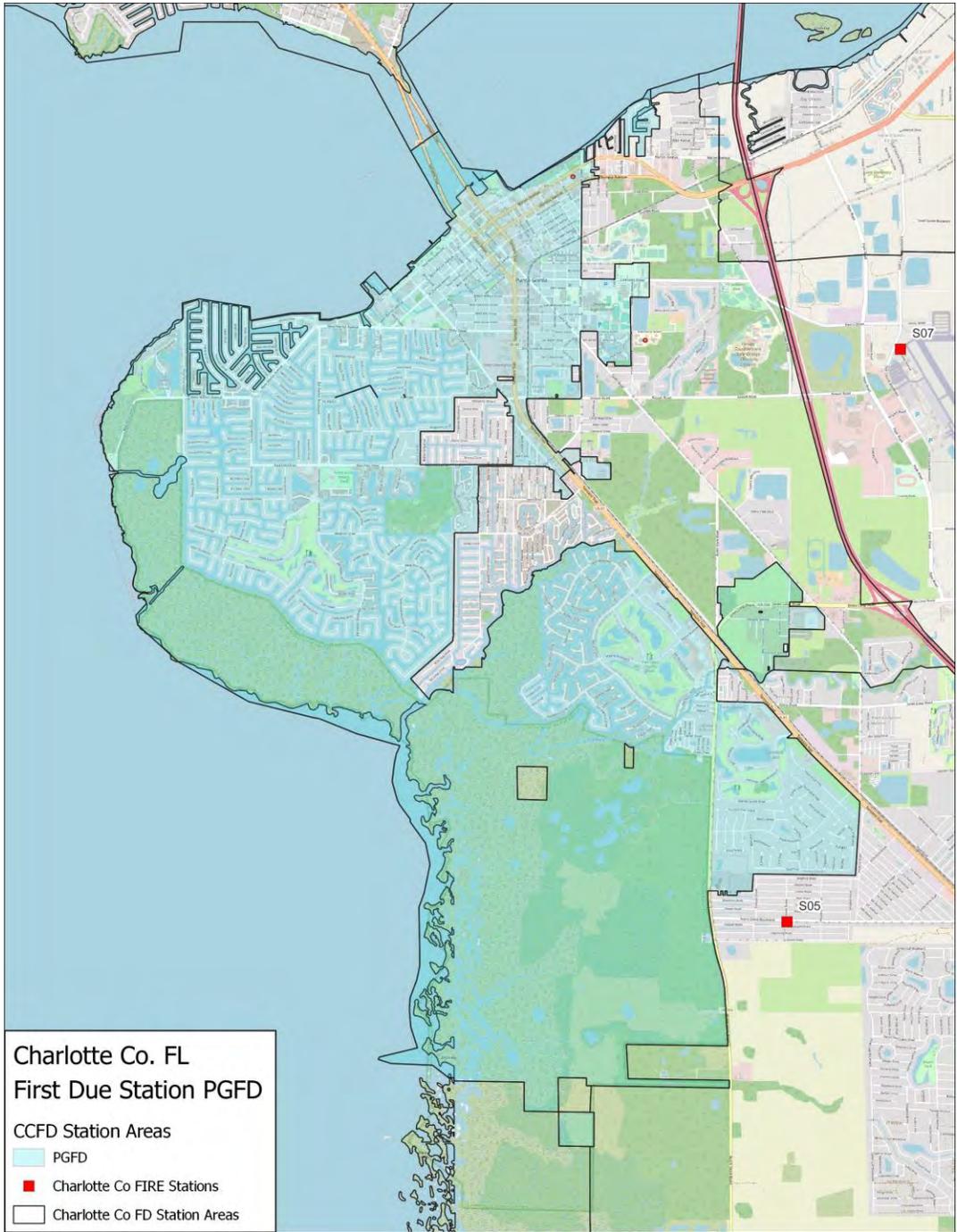
EFD's area is analyzed by the number of personnel that can assemble within 15 minutes.



Station PGFD	Unit ID	Unit Type	Personnel
	R31	Rescue	2
	R32	Rescue	2

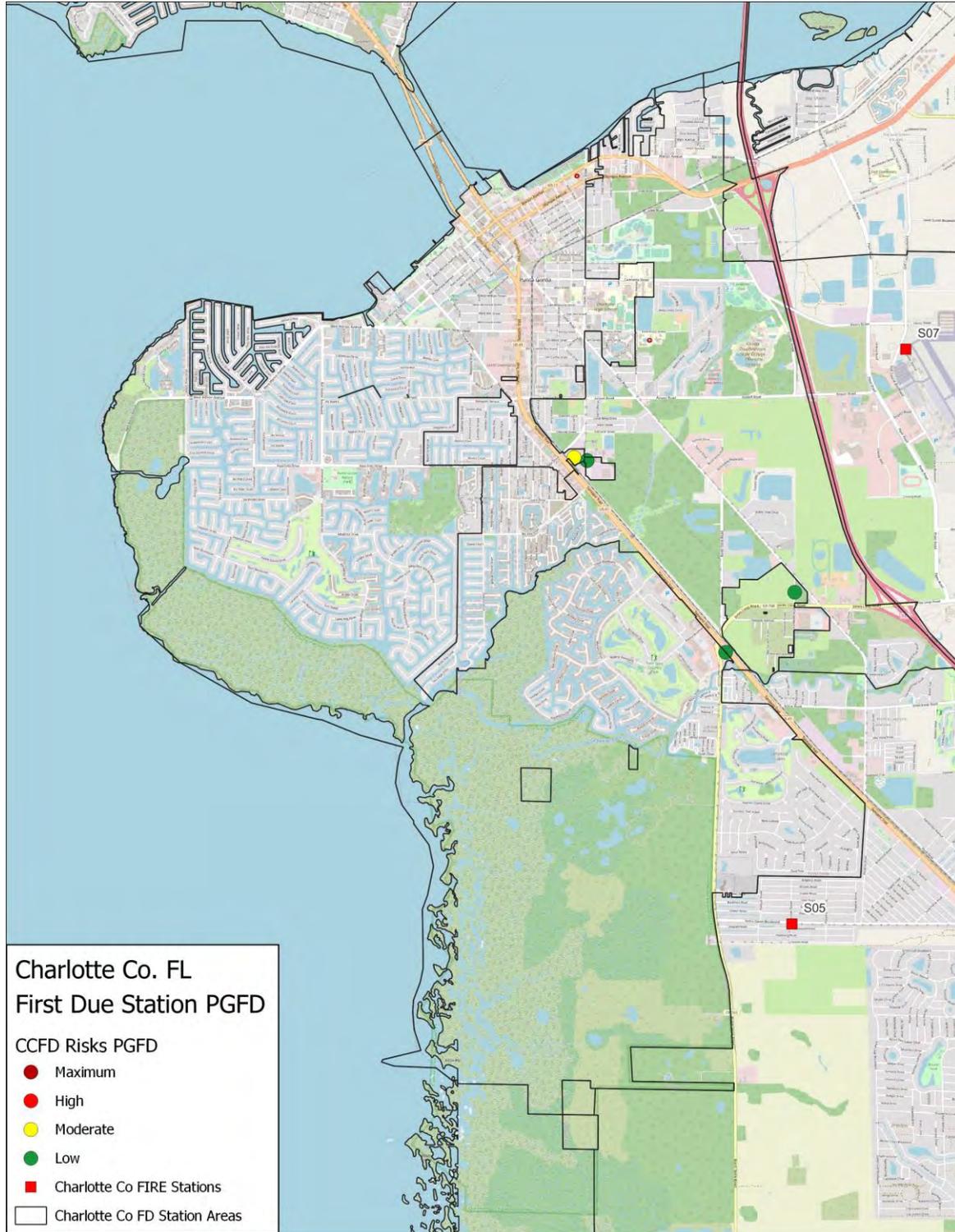


Punta Gorda jurisdiction is high risk. CCFEMS provides two Rescues for primarily EMS services since the City of Punta Gorda.



### Risk Analysis

Risk of individual building locations is represented by the small circles and shaded to indicate risk level. Since the City of Punta Gorda is not the County's responsibility for fire protection, there are few rated occupancies within the jurisdiction.



**PGFD First Due Area Historical Data Analysis**

Call Category	Reporting Period <sup>1</sup>				
	2017	2018	2019	2020	2021
<b>EMS</b>	<b>3,103</b>	<b>3,061</b>	<b>3,018</b>	<b>2,727</b>	<b>3,288</b>
Cardiac and stroke	308	272	262	254	261
Seizure and unconsciousness	192	191	247	209	277
Breathing difficulty	176	188	196	118	203
Overdose and psychiatric	11	8	12	12	12
Accident	43	39	60	51	68
Fall and injury	486	437	532	510	649
Illness and other	650	622	555	644	724
Medical No ProQA	744	697	615	496	626
Interfacility transfer	493	607	539	433	468
<b>Fire</b>	<b>20</b>	<b>22</b>	<b>26</b>	<b>12</b>	<b>30</b>
Structure fire	3	5	11	4	4
Outside fire	1	0	1	0	0
Vehicle fire	0	0	1	0	1
Alarm	0	2	1	0	0
Public service	7	8	5	3	7
Fire other	9	7	7	5	18
<b>Hazmat</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>
Hazmat	1	0	0	0	2
<b>Rescue</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>0</b>
Rescue	2	3	2	2	0
<b>Airport</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport	0	0	0	0	0
<b>Total</b>	<b>3,126</b>	<b>3,086</b>	<b>3,046</b>	<b>2,741</b>	<b>3,320</b>
<b>Average Calls per Day<sup>2</sup></b>	<b>8.6</b>	<b>8.5</b>	<b>8.3</b>	<b>7.5</b>	<b>9.1</b>
<b>YoY Growth</b>	<b>N/A</b>	<b>-1.28%</b>	<b>-1.30%</b>	<b>-10.26%</b>	<b>21.46%</b>

**Historical Data Analysis**

PGFD’s profile demon- states a predominance of EMS responses followed by fire suppression.

Specialty teams such as hazardous materials and technical rescue had only a few incidents during the 5-year rating period.

The year-over- year growth has varied between a 10% decrease and an 21% increase.

Assigned Station	Unit ID	Reporting Period <sup>1</sup>				
		2017	2018	2019	2020	2021
PG ST1	CR32	2838	2929	2827	2636	3157
PG ST3	CR31	1366	1293	1281	1178	1480
<b>Total</b>		<b>4204</b>	<b>4222</b>	<b>4108</b>	<b>3814</b>	<b>4637</b>
<b>Average Responses per Day<sup>2</sup></b>		<b>11.5</b>	<b>11.6</b>	<b>11.3</b>	<b>10.4</b>	<b>12.7</b>

**PGFD First Due Area Historical Performance**

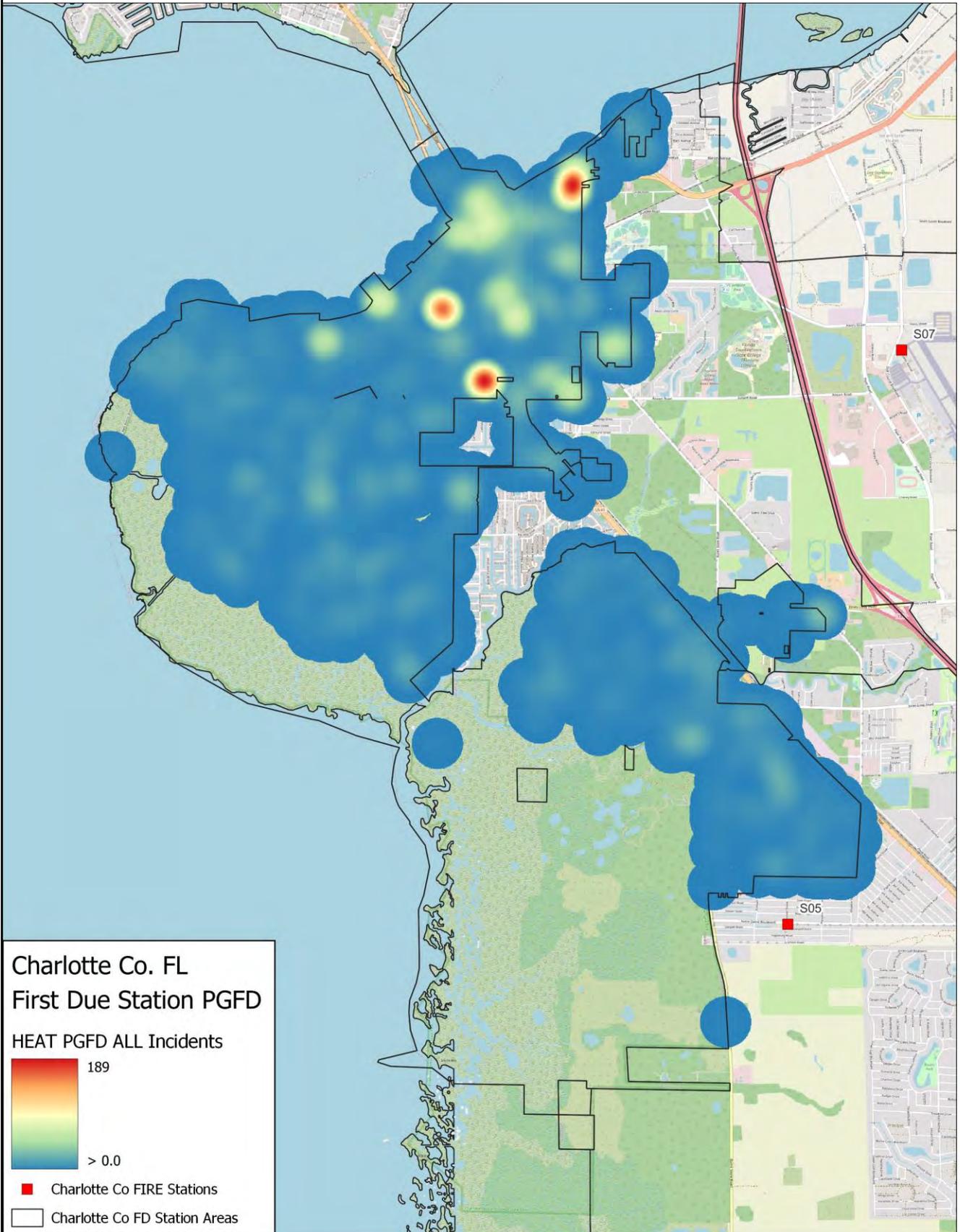
Unit ID	Reporting Period	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size <sup>1</sup>
		(Minutes)	(Minutes)	(Minutes)	(Minutes)	
CR32	2017	3.8	2.2	7.0	11.6	2,117
	2018	3.8	2.2	6.9	11.4	2,160
	2019	3.7	2.1	6.3	10.9	2,215
	2020	4.0	2.2	7.1	11.9	2,082
	2021	3.7	2.2	7.8	11.9	2,374
	<b>All</b>	<b>3.8</b>	<b>2.2</b>	<b>7.1</b>	<b>11.5</b>	<b>10,948</b>
CR31	2017	3.7	2.4	6.7	11.3	1,063
	2018	3.6	2.3	7.2	12.0	974
	2019	3.9	2.2	6.4	11.0	1,074
	2020	3.9	2.3	6.2	10.9	1,014
	2021	3.8	2.3	6.7	11.4	1,206
	<b>All</b>	<b>3.8</b>	<b>2.3</b>	<b>6.6</b>	<b>11.4</b>	<b>5,331</b>

First Due Station	Reporting Period	Number of Overlapped Calls	Total Number of Calls	Percentage of Overlapped Calls
PGFD	2017	673	3,126	21.5
	2018	687	3,086	22.3
	2019	659	3,046	21.6
	2020	563	2,741	20.5
	2021	938	3,320	28.3
	<b>All</b>	<b>3,520</b>	<b>15,319</b>	<b>23.0</b>

First Due Station PGFD:									
1 <sup>st</sup> Arriving Baseline Performance		2017-2021	2017	2018	2019	2020	2021	2017-2021 Benchmark	2017-2021 Compliance
<b>Alarm Handling</b>		3:41	3:39	3:32	3:39	3:54	3:35	3:37	89.1
<b>Turnout Time</b>		2:06	2:07	2:05	1:59	2:10	2:10	2:13	91.5
<b>Travel Time</b>	Urban	6:53	6:57	6:55	6:19	6:43	7:22	6:41	88.8
	Rural	7:33	7:46	6:35	7:32	7:33	7:55	10:43	97.0
<b>Total Response Time</b>	Urban	11:17	11:27	11:14	10:45	11:32	11:36	10:50	87.8
		n = 13,640	n = 2,680	n = 2,599	n = 2,798	n = 2,544	n = 3,019		
	Rural	12:05	12:43	11:42	12:41	12:05	12:05	15:14	95.8
		n = 571	n = 118	n = 138	n = 119	n = 86	n = 110		

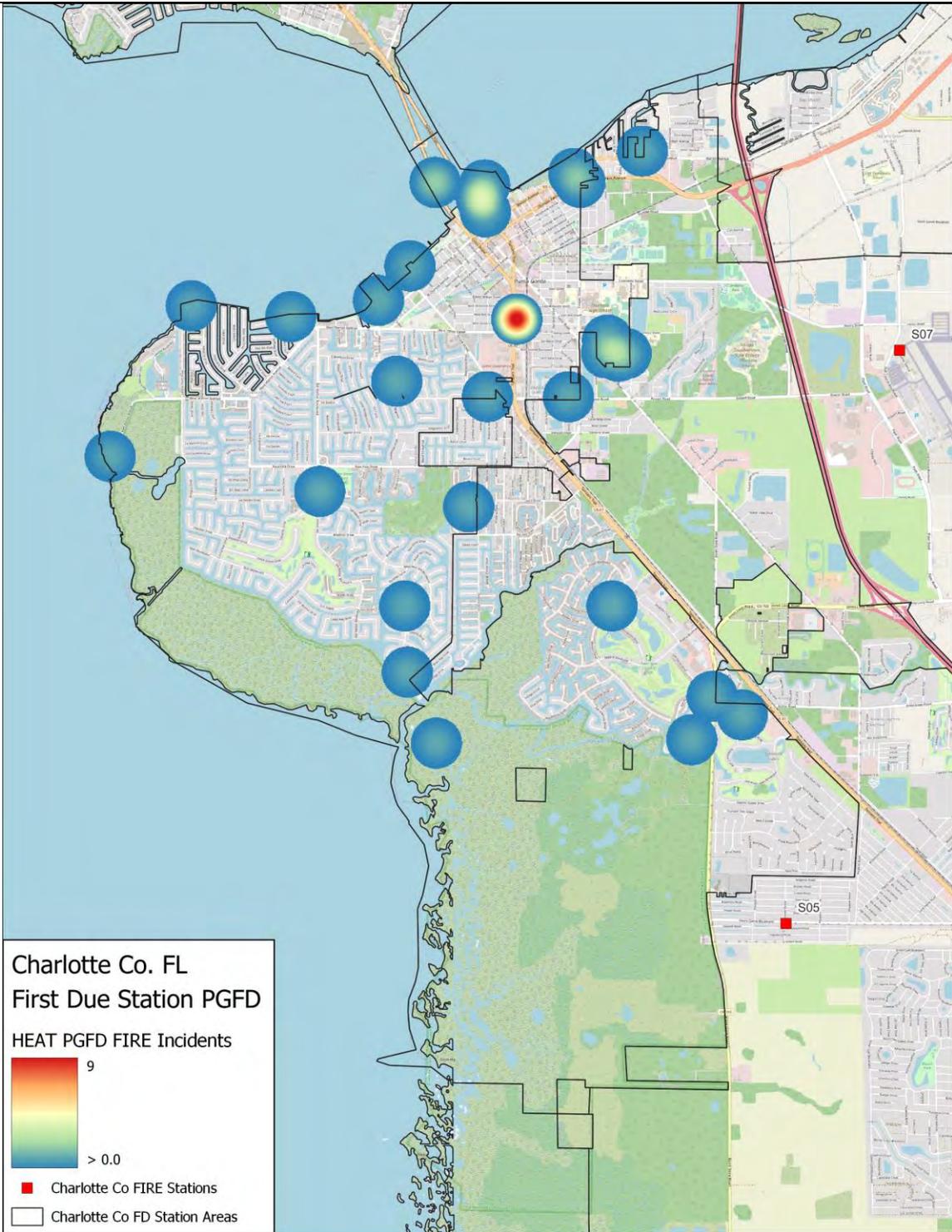
### Overall Hot Spot Map

Punta Gorda's concentration of calls are in the north and northeast part of the city.



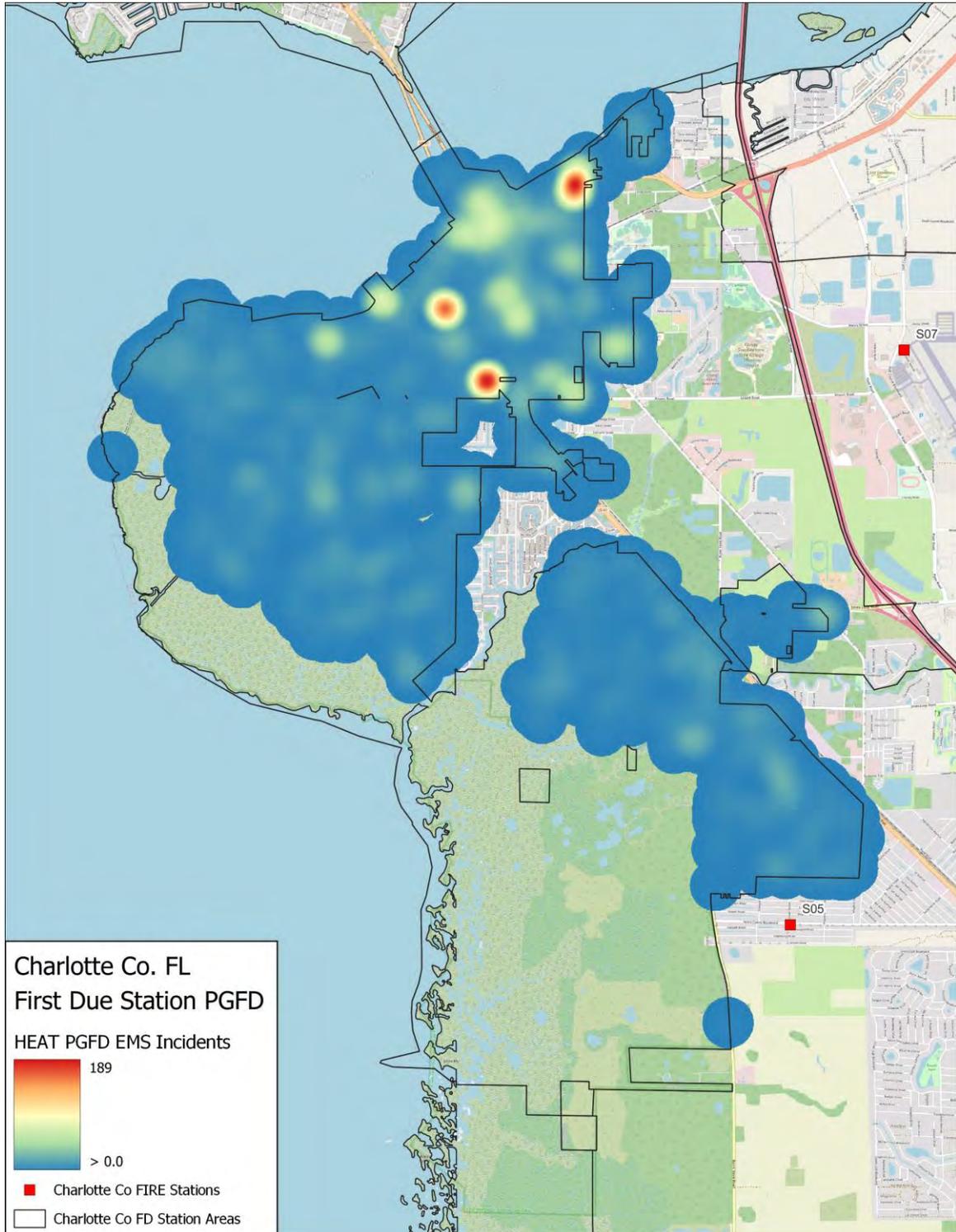
### Fire Hot Spot Map

PGFD's highest concentration of fire related incidents are in the north central region of the city.



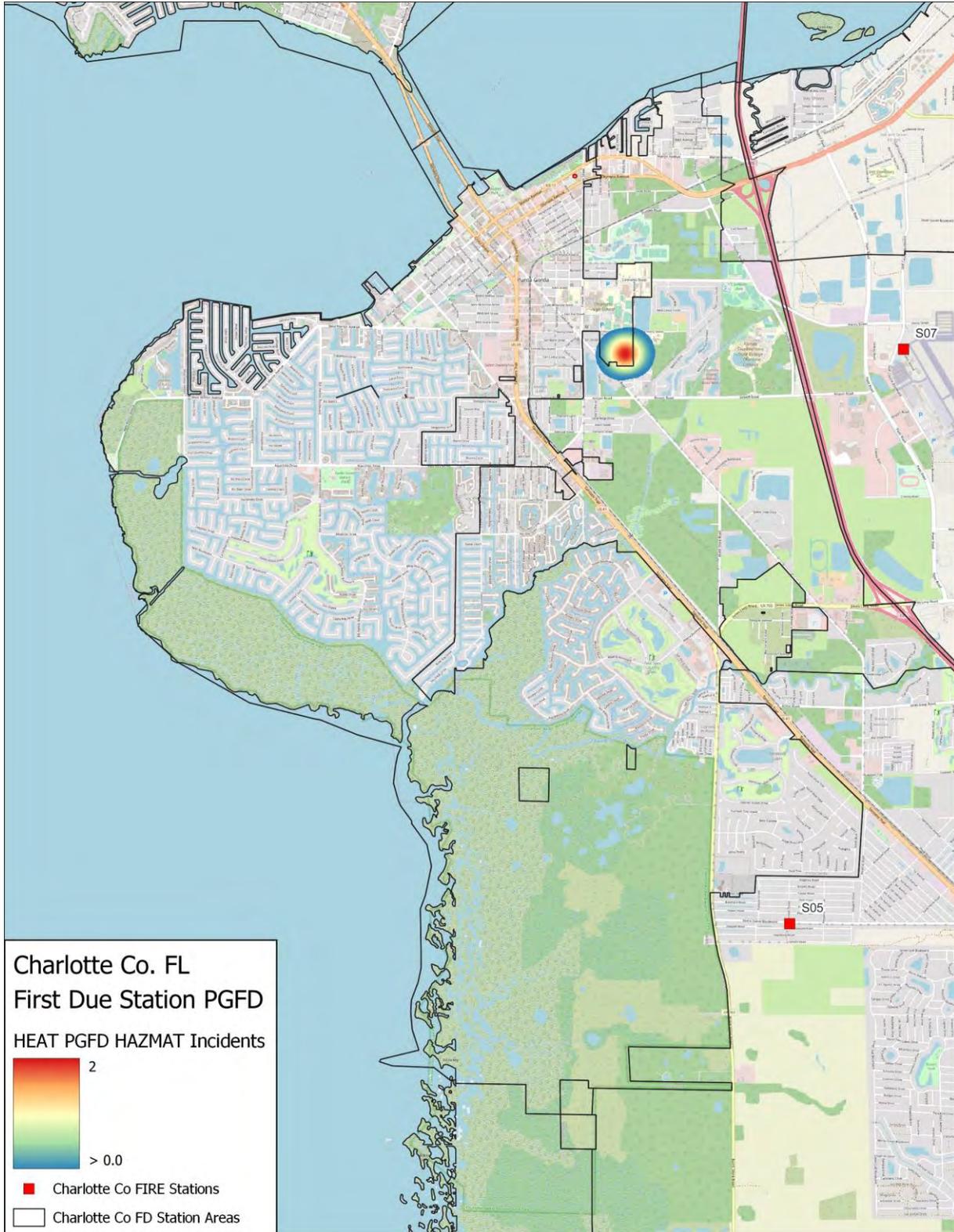
### EMS Hot Spot Map

PGFD's highest concentration of EMS incidents are in the northern and northeastern portion of the city.



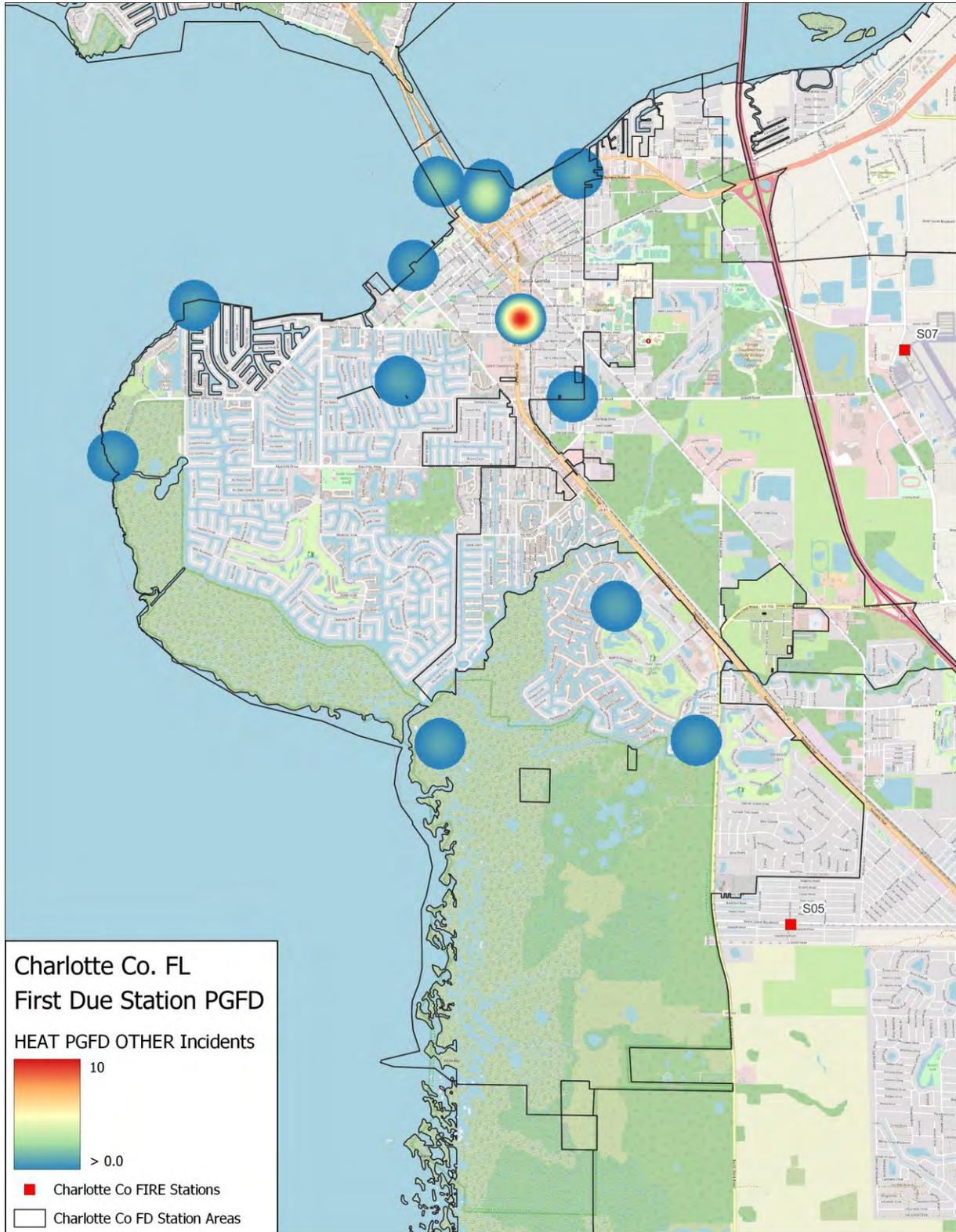
### Hazmat Hot Spot Map

PGFD's concentration of hazardous materials incidents are in the north central area of the city.



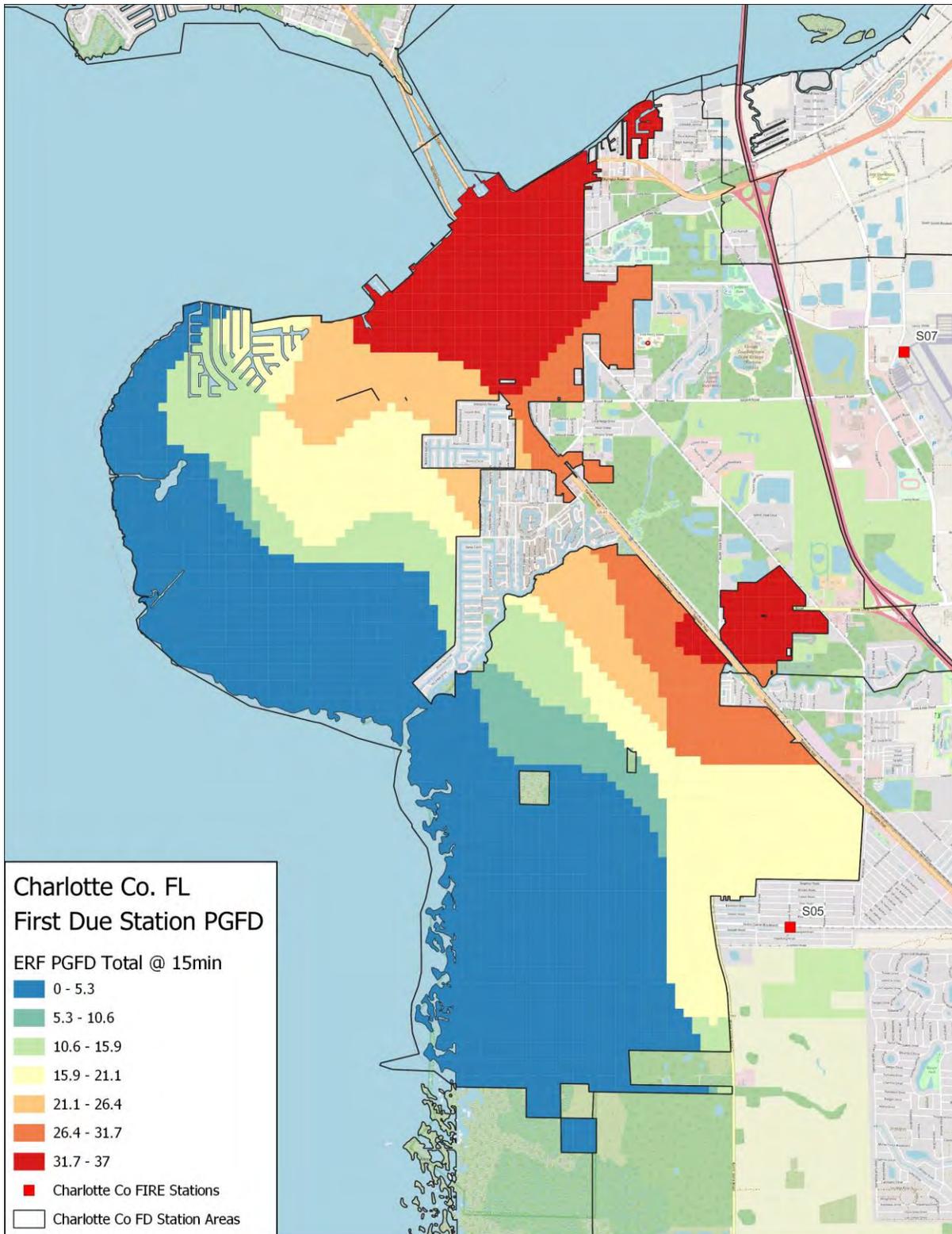
### Other Hot Spot Map

PGFD's Other incidents are distributed across the northern region with the highest concentration in north central.



### Concentration—Effective Response Force Capabilities

PGFD's area is analyzed by the number of personnel that can assemble within 15 minutes.



## **SECTION G – EVALUATION OF CURRENT DEPLOYMENT AND PERFORMANCE**



## Baseline and Benchmark Performance Gaps

### Performance Gap Analysis

It is imperative that departments continuously evaluate their actual performance (baseline performance) versus their established goals (benchmark performance). This section takes a detailed look at the gaps where performance could be improved (noted in red) or is currently exceeding established goals (in green). Important trends can be discerned based upon the risk level (low, moderate, high, extreme) or where the incidents or occurring (urban or rural).

**Evaluation of Current Deployment and Performance as it relates to Criterion 2D:**

The agency has assessed and provided evidence that its current deployment methods for emergency services appropriately address the risk in its service area. Its response strategy has evolved to ensure that its deployment practices have maintained and/or made continuous improvements in the effectiveness, efficiency, and safety of its operations, notwithstanding any external influences beyond its control. The agency has identified the impacts of these external influences and communicates them to the authority having jurisdiction.

**Criterion 5E**

**Fire Suppression (example)**

**Summary**– 10,410 fire incidents in the urban setting and 2,816 in the rural setting at the low risk level saw performance between 1:21 seconds and 1:44 over the established goals, respectively. Overall, higher risk fire incidents had a wider gap. The exception would be first due performance for high-risk fire events.

**2017-2021 Fire Suppression Response Times Gap Analysis**

Risk Level	1st Due/ERF	Urban/Rural	n=	Baseline	Benchmark	Gap
Low	1st Due	Urban	n = 10,410	13:35	12:14	<b>-1:21</b>
		Rural	n = 2,186	17:23	15:39	<b>-1:44</b>
Moderate	1st Due	Urban	n = 2,243	11:54	12:14	<b>0:20</b>
		Rural	n = 819	19:09	15:39	<b>-3:30</b>
	ERF	Urban	n = 164	40:27	36:25	<b>-4:02</b>
		Rural	n = 131	65:34	59:35	<b>-5:59</b>
High	1st Due	Urban	n = 704	10:09	12:14	<b>2:05</b>
		Rural	n = 208	23:41	15:39	<b>-8:02</b>
	ERF	Urban	n = 100	44:01	39:26	<b>-4:35</b>
		Rural	n = 46	81:54	73:44	<b>-8:10</b>
Maximum	1st Due	Urban	n = 41	13:16	12:14	<b>-1:02</b>
		Rural	n = 34	23:07	15:39	<b>-7:28</b>
	ERF	Urban	n = 7	86:46	45:00	<b>-41:46</b>
		Rural	n = 5	64:14	80:00	<b>15:46</b>

**Criterion 5F****Emergency Medical Services**

**Summary**– Overall, EMS incidents were reasonably well aligned with benchmarks. Maximum risk events saw a larger gap between benchmark and baseline performance.

2017-2021 EMS Response Times Gap Analysis						
Risk Level	1st Due/ERF	Urban/Rural	n=	Baseline	Benchmark	Gap
Low	1st Due	Urban	n = 41,207	12:03	10:06	<b>-1:57</b>
		Rural	n = 4,144	16:46	15:05	<b>-1:41</b>
Moderate	1st Due	Urban	n = 49,331	11:59	10:06	<b>-1:53</b>
		Rural	n = 5,791	16:44	15:05	<b>-1:39</b>
	ERF	Urban	n = 16,478	14:23	12:57	<b>-1:26</b>
		Rural	n = 2,661	22:16	20:02	<b>-2:14</b>
High	1st Due	Urban	n = 28,469	11:28	10:06	<b>-1:22</b>
		Rural	n = 4,736	16:05	15:05	<b>-1:00</b>
	ERF	Urban	n = 1,433	22:47	20:31	<b>-2:16</b>
		Rural	n = 399	36:37	32:58	<b>-3:39</b>
Maximum	1st Due	Urban	n = 237	16:47	10:06	<b>-6:41</b>
		Rural	n = 141	8:45	15:05	<b>6:20</b>
	ERF	Urban	n = 32	45:19	40:47	<b>-4:32</b>
		Rural	n = 12	51:44	45:34	<b>-6:10</b>

**Criterion 5G****Technical Rescue**

**Summary**– There were less than 200 hazardous materials calls. The gap varied between approximately 2 minutes and 4 minutes. However, there were a very small sample size, and the reader is cautioned in making any policy decisions based on these data.

**2017-2021 Technical Rescue Response Times Gap Analysis**

Risk Level	1st Due/ERF	Urban/Rural	n=	Baseline	Benchmark	Gap
Low	1st Due	Urban	n = 27	18:44	16:52	<b>-1:52</b>
		Rural	n = 4	N/A	19:02	<b>N/A</b>
Moderate	1st Due	Urban	n = 102	14:17	16:52	<b>2:35</b>
		Rural	n = 12	23:57	19:02	<b>-4:55</b>
	ERF	Urban	n = 39	36:46	33:05	<b>-3:41</b>
		Rural	n = 4	N/A	47:29	<b>N/A</b>
High	1st Due	Urban	n = 40	12:23	16:52	<b>4:29</b>
		Rural	n = 6	14:11	19:02	<b>4:51</b>
	ERF	Urban	n = 3	N/A	40:00	<b>N/A</b>
		Rural	N/A	N/A	50:00	<b>N/A</b>
Maximum	1st Due	Urban	n = 34	11:08	16:52	<b>5:44</b>
		Rural	n = 6	14:29	19:02	<b>4:33</b>
	ERF	Urban	n = 5	53:46	50:00	<b>-3:46</b>
		Rural	N/A	N/A	60:00	<b>N/A</b>

**Criterion 5H****Hazardous Materials**

**Summary**– There were less than 50 hazardous materials calls. The gap varied between 1:24 and 6:22. However, there were a very small sample size, and the reader is cautioned in making any policy decisions based on these data.

**2017-2021 Hazmat Response Times Gap Analysis**

Risk Level	1st Due/ERF	Urban/Rural	n=	Baseline	Benchmark	Gap
Low	1st Due	Urban	n = 15	14:03	12:39	<b>-1:24</b>
		Rural	n = 2	N/A	16:19	<b>N/A</b>
Moderate	1st Due	Urban	n = 16	14:41	12:39	<b>-2:02</b>
		Rural	n = 3	N/A	16:19	<b>N/A</b>
	ERF	Urban	n = 2	N/A	15:32	<b>N/A</b>
		Rural	N/A	N/A	18:00	<b>N/A</b>
High	1st Due	Urban	n = 25	14:26	12:39	<b>-1:47</b>
		Rural	n = 8	15:57	16:19	<b>0:22</b>
	ERF	Urban	n = 8	49:04	44:10	<b>-4:54</b>
		Rural	n = 1	N/A	55:00	<b>N/A</b>
Maximum	1st Due	Urban	n = 16	13:52	7:30	<b>-6:22</b>
		Rural	n = 4	N/A	9:30	<b>N/A</b>
	ERF	Urban	n = 1	N/A	50:00	<b>N/A</b>
		Rural	N/A	N/A	60:00	<b>N/A</b>

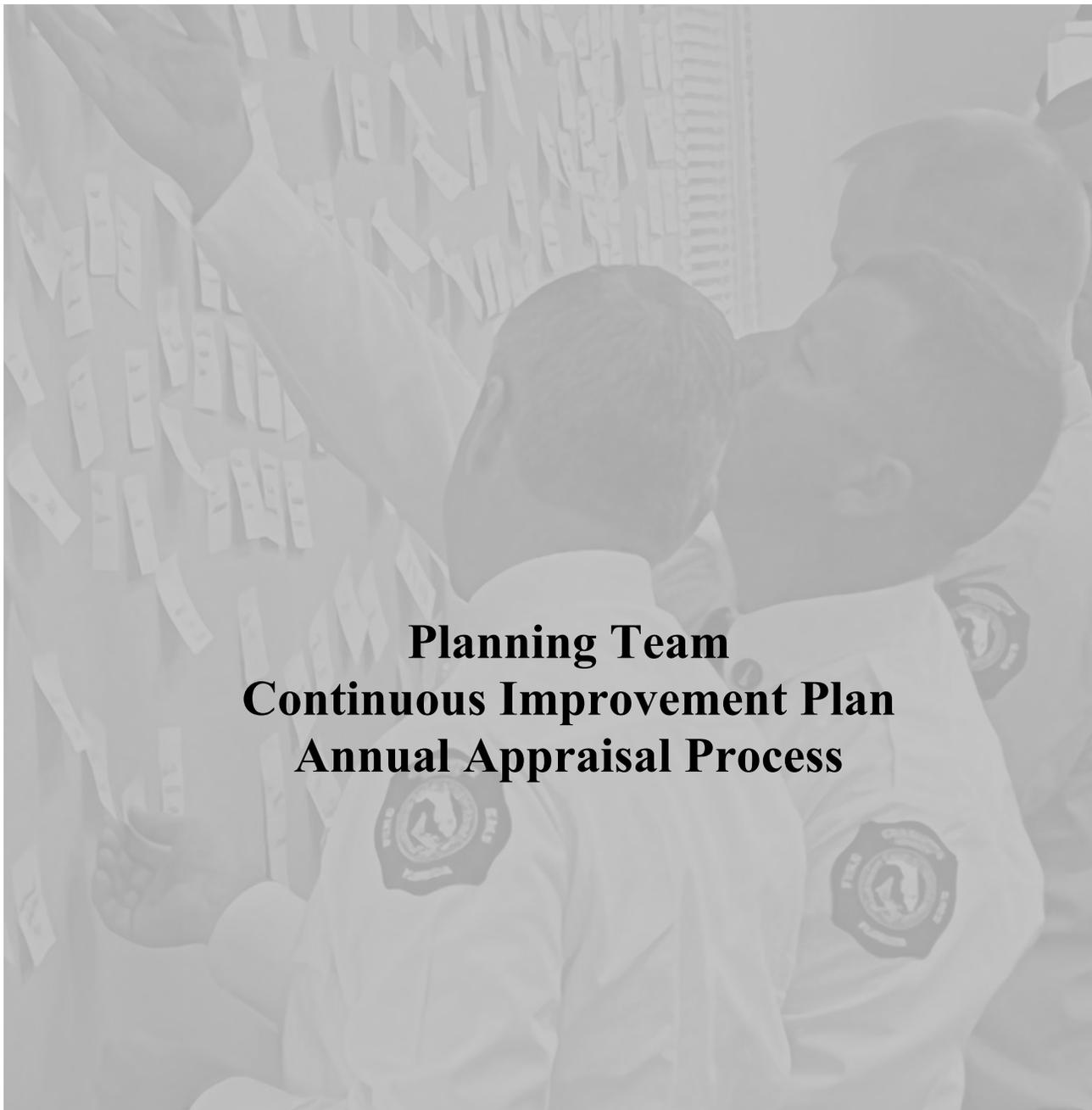
**Criterion 5I****Aviation**

**Summary**– There were just over 200 aviation calls during the five-year period. The gap varied between 13 seconds and 8:44. However, the higher risks had a small sample size, and the reader is cautioned in making any policy decisions based on these data.

**2017-2021 Aviation Response Times Gap Analysis**

Risk Level	1st Due/ERF	Urban/Rural	n=	Baseline	Benchmark	Gap
Low	1st Due	Urban	n = 161	10:13	10:00	<b>-00:13</b>
		Rural	n = 4	N/A	15:00	<b>N/A</b>
	ERF	Urban	n=55	25:29	10:00	<b>-15:29</b>
		Rural	N/A	N/A	15:00	<b>N/A</b>
Moderate	1st Due	Urban	n = 67	14:17	10:00	<b>-4:17</b>
		Rural	n=5	23:44	15:00	<b>-8:44</b>
	ERF	Urban	N/A	N/A	30:00	<b>N/A</b>
		Rural	N/A	N/A	45:00	<b>N/A</b>
High	1st Due	Urban	n = 6	7:10	10:00	<b>2:50</b>
		Rural	N/A	N/A	15:00	<b>N/A</b>
	ERF	Urban	N/A	N/A	40:00	<b>N/A</b>
		Rural	N/A	N/A	50:00	<b>N/A</b>
Maximum	1st Due	Urban	N/A	N/A	10:00	<b>N/A</b>
		Rural	N/A	N/A	15:00	<b>N/A</b>
	ERF	Urban	N/A	N/A	50:00	<b>N/A</b>
		Rural	N/A	N/A	60:00	<b>N/A</b>

## **SECTION H – PLAN FOR MAINTAINING AND IMPROVING RESPONSE CAPABILITIES**



**Planning Team  
Continuous Improvement Plan  
Annual Appraisal Process**

## Performance Evaluation and Compliance Strategy

A strategic plan, on paper, is a commitment to action. A commitment to action requires an execution strategy. CCFEMS does this by including the development of specific, measurable, attainable, relevant, and time-bound goals in the strategic plan. The goals are grouped into five functional areas, including Community Risk Reduction, Administration, Training, Operations, and Logistics. Included are Desired Outcomes and yearly strategies to accomplish.

The strategic plan was developed to provide an inclusive continuous improvement framework to address existing gaps and variations for each functional area of the Department.

Sustaining the work is a critical step in the implementation of a strategic plan. The plan is a living document that supports continuous improvement rather than a static document that sits on the shelf. Meeting quarterly, the planning team will assess progress and report in a similar manner to what is shown here; areas of focus, objectives, goals, and tasks are examined to see if the target is still relevant, if more resources need to be allocated, or if adjustments to the strategy need to be undertaken; all in an effort to address existing gaps and variations between baseline and benchmark performance.

### Core Competency 2D.1

The agency has a documented and adopted methodology for assessing performance adequacy, consistency, reliability, resiliency and opportunities for improvement for the total response area.

### Performance Indicator 2D.2

The agency continuously monitors, assesses, and internally reports at least quarterly, on the ability of the existing delivery system to meet expected outcomes and identifies and prioritizes remedial actions.

### Core Competency 2D.3

The performance monitoring methodology identifies, at least annually, future external influences, altering conditions, growth and development trends, and new or evolving risks, for purposes of analyzing the balance of service capabilities with new conditions or demands.

### Core Competency 2D.7

The agency has systematically developed a continuous improvement plan that details actions to be taken within an identified timeframe to address existing gaps and variations.

### Performance Indicator 2D.8

The agency has systematically developed a continuous improvement plan that details actions to be taken within an identified timeframe to address existing gaps and variations.

### Strategic Plan Community Risk Reduction

	<b>FY24 - FY26 Strategic Plan</b>	<b>Mission</b> Ensuring the health and safety of our community by delivering exceptional fire and EMS services	<b>Vision</b> We will be a metric driven, innovative, and community focused fire and EMS service	<b>Values</b> Accountability Professionalism Respect Integrity Leadership	<b>Facilitators</b> Dr. Brad Brown Ian Womack Bill Sturgeon	
<b>Pillar</b>	<b>CRR</b>	<b>Administration</b>	<b>Training</b>	<b>Operations</b>	<b>Logistics</b>	
<b>Lead</b>	<b>Burke</b>	<b>Styza</b>	<b>Miller</b>	<b>McElroy</b>	<b>Lippel</b>	
<b>Backup</b>	<b>Stadel</b>	<b>McCollum</b>	<b>Tuttle</b>	<b>Kelly</b>	<b>Finkelstein</b>	
<b>Desired Outcome</b>	To support and educate the community we serve	Effectively develop and support personnel and policy ethically and responsibly	Preparing for future challenges by delivery quality training today	Providing innovative emergency response services of exceptional quality for the community	To provide the essential equipment, supplies, and maintenance necessary to fulfill the core mission of the department	
<b>FY24 Strategy</b>	Marketing and Community Engagement	Values Based Policy	Training Division Expansion	Labor/Management Relationship	Improve Productivity and Efficiency	
<b>FY25 Strategy</b>	Community Mental Health	Personnel Development	Personnel Development	Unit Hour Utilization Reduction	Revitalize Vehicle and Equipment Plan	
<b>FY26 Strategy</b>	Risk Reduction Education	Staffing	Training Grounds Enhancement	Staffing Level Increase	Facility Improvements	
<b>Horizon Issues</b>	Targeted Outreach	Incentives Ancillary Services	Assessment Process Evaluation Process	Telestaff Management	Hurricane Plan Uniforms	
<b>Pillar Team Members</b>	Dunn Hornborg Fair Thomas	McCarty Otto Davis	Carr Verne	Maddams Goodwin	Molenda Lopez Morazes	

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Strategic Plan by Fitch and Associates, LLC

### Administration

<b>FY24 - FY26 Operational Plan</b>		<b>Administration</b>		<b>Metrics</b>			
<b>Lead</b>	Styza	Effectively develop and support personnel and policy ethically and responsibly		Tasks	Count	Percentage	Last Updated
<b>Support</b>	McCollum			Not Started	46	100.00%	
				In Progress	0	0.00%	
				Complete	0	0.00%	2/26/2023
				Total	46	100.00%	
<b>FY24 Strategy</b>	Value Based Policy	<b>FY25 Strategy</b>	Personnel Development	<b>FY26 Strategy</b>	Staffing		
<b>FY24 Goal 1</b>	Examine and Improve Culture	<b>FY 25 Goal 1</b>	Focus on the 1-5 yr. employee	<b>FY 26 Goal 1</b>	FTE's	Lead Davis	
	Lead Fair		Lead Carr		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	
<b>Task 1</b>	Values marketing blast	<b>Task 1</b>	Pump operations support	<b>Task 1</b>	Analyze Engine Staffing		
<b>Task 2</b>	Review exit interview data	<b>Task 2</b>	FOI class support	<b>Task 2</b>	Analyze Rescue Staffing		
<b>Task 3</b>	Gather outside input	<b>Task 3</b>	Paramedic school support	<b>Task 3</b>	Administration staffing needs		
<b>Task 4</b>	Marketing values/social media	<b>Task 4</b>	Performance acknowledgment	<b>Task 4</b>	Review field staffing needs		
<b>Task 5</b>		<b>Task 5</b>		<b>Task 5</b>			
<b>FY24 Goal 2</b>	Policy	<b>FY 25 Goal 2</b>	Focus on the 6-10 yr. employee	<b>FY 26 Goal 2</b>	Apparatus	Lead Molenda	
	Lead Davis		Lead Carr		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	
<b>Task 1</b>	One place for everything	<b>Task 1</b>	Conference support	<b>Task 1</b>	Data driven needs review		
<b>Task 2</b>	Review current, identify values	<b>Task 2</b>	FOII class support	<b>Task 2</b>	Review studies including Fitch and IAFF		
<b>Task 3</b>	Team input (labor/management)	<b>Task 3</b>	LFTI support	<b>Task 3</b>	Liaison with logistics and ops		
<b>Task 4</b>	Write/publish/Annual review	<b>Task 4</b>	Advanced med support	<b>Task 4</b>			
<b>Task 5</b>		<b>Task 5</b>	Performance acknowledgement	<b>Task 5</b>			
<b>FY24 Goal 3</b>	Procedures (SOP's)	<b>FY25 Goal 3</b>	Focus on the 11-30 yr. employee	<b>FY26 Goal 3</b>	Stations	Lead Molenda	
	Lead Davis		Lead Carr		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	
<b>Task 1</b>	Review current/identify values	<b>Task 1</b>	FOIII support	<b>Task 1</b>	Data driven needs review		
<b>Task 2</b>	Team input (labor/management)	<b>Task 2</b>	FOIV support	<b>Task 2</b>	Review studies including Fitch and IAFF		
<b>Task 3</b>	Write/publish/Annual review	<b>Task 3</b>	Conference support	<b>Task 3</b>	Liaison with logistics for needs		
<b>Task 4</b>		<b>Task 4</b>	State certification support	<b>Task 4</b>			
<b>Task 5</b>		<b>Task 5</b>	Performance acknowledgement	<b>Task 5</b>			

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# Training

FY24 - FY26 Operational Plan			Training			Metrics				
Lead	Miller		Preparing for future challenges by delivering quality training today			Tasks	Count	Percentage	Last Updated	
Support	Tuttle					Not Started	32	100.00%	2/26/2023	
						In Process	0	0.00%		
						Complete	0	0.00%		
						Total	32	100.00%		
<b>FY24 Strategy</b>	Training Division Expansion		<b>FY25 Strategy</b>	Personnel Development		<b>FY26 Strategy</b>	Training Grounds Enhancement			
<b>FY24 Goal 1</b>	Training Division Needs Assessment	Lead Carr	<b>FY25 Goal 1</b>	Line Personnel Development	Lead Tuttle	<b>FY26 Goal 1</b>	Conduct Needs Assessment for Training Facilities	Lead Miller		
		Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4		
Task 1	Organizational Survey		Task 1	FF/Medic Training road map		Task 1	Conduct Organizational Survey			
Task 2	Redefine staff position needs and requirements		Task 2	Lieutenant Training road map		Task 2	Identify Training Facilities Requirements			
Task 3	Define division responsibilities		Task 3	Captain Training road map		Task 3	Evaluate Needs of Specialty Training			
Task 4	Creation of a concept of work chart		Task 4	Battalion Chief Training road map		Task 4	Evaluate Needs of Fire/EMS Training			
Task 5			Task 5	Executive Chief Training road map		Task 5				
<b>FY24 Goal 2</b>	Expand the FTE's of the Training Division	Lead Carr	<b>FY25 Goal 2</b>	Mentorship Program	Lead Miller	<b>FY26 Goal 2</b>	Update to Training Facilities	Lead Molenda		
		Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4		
Task 1	Determine budgetary impacts		Task 1	Receive peer driven feedback		Task 1	Secure funding sources			
Task 2	Market the needs, show justification		Task 2	Create and develop the mentor program		Task 2	Identify options for current and additional training grounds			
Task 3	Secure the funding		Task 3	Develop buy in		Task 3	Create conceptual plan for new facilities			
Task 4			Task 4	Implementation of program		Task 4				
Task 5			Task 5			Task 5				
<b>FY24 Goal 3</b>	Training Division Staff Development	Lead Carr	<b>FY25 Goal 3</b>	Create additional training opportunities	Lead Verne	<b>FY26 Goal 3</b>	Evaluate the need for training apparatus and equipment	Lead Carr/EVM		
		Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4		
Task 1	Process development		Task 1	Mutual aid training		Task 1	Review current needs of the Training Division for dedicated apparatus			
Task 2	Establish responsibilities		Task 2	Identify External Training Opportunities		Task 2	Review current needs of the Training Division for dedicated equipment			
Task 3	Goal setting		Task 3			Task 3	Evaluate the need for fully stocked reserve vs training apparatus			
Task 4	Evaluation/assessment		Task 4			Task 4				
Task 5			Task 5			Task 5				

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# Operations

FY24 - FY26 Operational Plan			Operations			Metrics				
Lead	McElroy		Providing innovative emergency response services of exceptional quality for the community			Tasks	Count	Percentage	Last Updated	
Support	Kelly					Not Started	49	100.00%	2/26/2023	
						In Process	0	0.00%		
						Complete	0	0.00%		
						Total	49	100.00%		
<b>FY24 Strategy</b>	Labor Management Relationship		<b>FY25 Strategy</b>	Unit Hour Utilization (UHU)		<b>FY26 Strategy</b>	Staffing Level Increase			
<b>FY24 Goal 1</b>	Monthly Meetings	Lead Maddams	<b>FY25 Goal 1</b>	Peak Load Rescue Trial	Lead Kelly	<b>FY26 Goal 1</b>	Perform staffing analysis	Lead McElroy		
		Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4		
Task 1	Increase transparency of meetings		Task 1	Define Peak Load Rescue operation		Task 1	Identify gaps through data analysis			
Task 2	Union meetings post labor/mgt		Task 2	Implementation of trail peak-load Rescue		Task 2	Conduct Staffing Needs Assessment			
Task 3	Union and labor workshops		Task 3	Evaluate need for 2nd Peak Load Rescue		Task 3				
Task 4			Task 4	90 day evaluation of metrics to determine performance increases		Task 4				
Task 5			Task 5			Task 5				
<b>FY24 Goal 2</b>	Real Time Data Usage	Lead Goodwin	<b>FY25 Goal 2</b>	Permanent Peak Load Rescue	Lead Goodwin	<b>FY26 Goal 2</b>	Staffing Model Evaluation	Lead Goodwin		
		Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4		
Task 1	Identify metrics to be utilized		Task 1	Evaluate the data from trial operation		Task 1	Evaluate Engine Staffing Model			
Task 2	Report data to labor/management		Task 2	Define need for additional apparatus		Task 2	Evaluate Truck Staffing Model			
Task 3	Make suggestions on data		Task 3	Evaluate Staffing need for additional units		Task 3	Develop and implement ALS Engine Timeline			
Task 4	Propose data driven changes		Task 4	Develop an implementation plan		Task 4	Evaluate Specialties Staffing			
Task 5			Task 5			Task 5	Evaluate Quick Response ALS SUV			
<b>FY24 Goal 3</b>	Contract Negotiations	Lead Maddams	<b>FY25 Goal 3</b>	Additional Apparatus	Lead Goodwin	<b>FY26 Goal 3</b>	Develop Timeline for Staffing Updates	Lead Goodwin		
		Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4			Q1 Q2 Q3 Q4		
Task 1	Work with Human Resources		Task 1	Review current metrics for all apparatus within 911 system		Task 1	Define number of field staff needed			
Task 2	Share data and comparables		Task 2	Conduct needs assessment for additional Rescues		Task 2	Define number of administrative staff needed			
Task 3	Establish better working relationships		Task 3	Conduct needs assessment for additional Engines/Trucks		Task 3	Develop Timeline for Staffing Updates			
Task 4			Task 4			Task 4				
Task 5			Task 5			Task 5				

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## Community Risk Reduction

FY24 - FY26 Operational Plan				Community Risk Reduction (CRR)				Metrics				
Lead	Burke			To support and educate the community we serve				Tasks	Count	Percentage	Last Updated	
Support	Stadel							Not Started	41	100.00%	2/26/2023	
								In Process	0	0.00%		
								Complete	0	0.00%		
								Total	41	100.00%		
<b>FY24 Strategy</b>	Enhance Marketing and Community Engagement			<b>FY25 Strategy</b>	Community Mental Health and Wellness			<b>FY26 Strategy</b>	Risk Reduction Education			
<b>FY24 Goal 1</b>	Review All Platforms		Lead Dunn	<b>FY25 Goal 1</b>	Identify Community Needs		Lead A. Stadel	<b>FY26 Goal 1</b>	Identify Focus Area Needs		Lead Hornburg	
Task 1	Current content	Q1	Q2	Q3	Q4	Task 1	Engage community stakeholders	Q1	Q2	Q3	Q4	
Task 2	Layout (is it intuitive?)					Task 2	Analytics-mental health incidents					
Task 3	Research best practices					Task 3	Analytics- community stakeholders					
Task 4	Information source/platform review					Task 4						
Task 5						Task 5						
<b>FY24 Goal 2</b>	Review All Programs		Lead Burke	<b>FY25 Goal 2</b>	Evaluate Mental Health Programs		Lead A. Stadel	<b>FY26 Goal 2</b>	Program Research and Development		Lead Hornburg	
Task 1	Review topics for relevance	Q1	Q2	Q3	Q4	Task 1	Identify programs currently available	Q1	Q2	Q3	Q4	
Task 2	Review reference-up to date					Task 2	Identify programs by need					
Task 3	Review reference-platforms					Task 3	Identify programs by age					
Task 4						Task 4	Identify gaps in current programming					
Task 5						Task 5						
<b>FY24 Goal 3</b>	Internal/External Marketing		Lead Dunn	<b>FY25 Goal 3</b>	Develop Education		Lead A. Stadel	<b>FY26 Goal 3</b>	Implementation and Evaluation		Lead Hornburg	
Task 1	Program flyers and banners	Q1	Q2	Q3	Q4	Task 1	Define audience	Q1	Q2	Q3	Q4	
Task 2	Focus topic videos					Task 2	Categorize information					
Task 3	Conference/community events					Task 3	Develop and organize information					
Task 4						Task 4	Engage partners					
Task 5						Task 5	Schedule presentations at events					

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## Logistics

FY24 - FY26 Operational Plan				Logistics				Metrics				
Lead	Lippel			Provide the essential equipment, supplies, and maintenance necessary to fulfill the core mission of the department				Tasks	Count	Percentage	Last Updated	
Support	Finkelstein							Not Started	33	100.00%	2/26/2023	
								In Process	0	0.00%		
								Complete	0	0.00%		
								Total	33	100.00%		
<b>FY24 Strategy</b>	Improve Productivity and Efficiency			<b>FY25 Strategy</b>	Revitalize Vehicle and Equipment Plan			<b>FY26 Strategy</b>	Facility Improvements			
<b>FY24 Goal 1</b>	Additional Staffing		Lead Fair	<b>FY25 Goal 1</b>	Purchase Vehicles		Lead Donnie	<b>FY26 Goal 1</b>	Existing Station Review		Lead Matheis	
Task 1	EVM Additional FTE-EVT	Q1	Q2	Q3	Q4	Task 1	Commercial brush trucks	Q1	Q2	Q3	Q4	
Task 2	EVM Additional FTE-inventory Specialist					Task 2	Marine 2 specifications and purchase					
Task 3	Support Services FTE-Project Coordinator					Task 3						
Task 4						Task 4						
Task 5						Task 5						
<b>FY24 Goal 2</b>	Software Study and Procurement		Lead Thomas	<b>FY25 Goal 2</b>	Equipment Procurement		Lead Rosso	<b>FY26 Goal 2</b>	Implementation of Facility Analysis		Lead Finkelstein	
Task 1	Research common software platforms	Q1	Q2	Q3	Q4	Task 1	Standardize inventory equipment	Q1	Q2	Q3	Q4	
Task 2	EVM Maintenance-Upgrade Software					Task 2	SCBA replacement/procurement					
Task 3	Support Services-Upgrade Software					Task 3	Extrication equipment replacement					
Task 4						Task 4	PPE wear trials/procurement					
Task 5						Task 5						
<b>FY24 Goal 3</b>	Facility Analysis		Lead Molenda	<b>FY25 Goal 3</b>	Equipment R&D/ISO		Lead Lippel	<b>FY26 Goal 3</b>			Lead	
Task 1	Fuel storage study and upgrade	Q1	Q2	Q3	Q4	Task 1	Identify new equipment/technology	Q1	Q2	Q3	Q4	
Task 2	Warehouse study and upgrade					Task 2	Identify R&D officer					
Task 3	Canopy for spare apparatus					Task 3	ISO Review					
Task 4	Equipment storage building					Task 4	NFPA Review					
Task 5						Task 5						

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## Emergency Response

CCFEMS’s mission as an all-hazards emergency services agency is to save lives, protect property, safeguard the environment, and take care of people. The organization understands, even with the best efforts of community risk reduction personnel, that emergencies can and do occur. The strategic plan identified gaps in current performance (at least three years) and serves as a guidepost for improvement.

## Fire and Life Safety Services

Engage and serve the community by providing proactive, strategic, and adaptive fire and life safety programs that prevent and mitigate risk. Public engagement is critical to prevention and preparedness, especially since CCFEMS serves a diverse and rapidly growing population base.

## People and Culture

Exemplify CCFEMS’s mission of taking care of people physically, mentally, and emotionally while creating a robust and diverse culture. Embody and convey the Department's core values with a renewed focus on accountability, integrity, and respect.

## Business Practices

Operate sustainably and responsibly while maintaining transparency by strengthening established business practices.

## Facilities and Equipment

Provide and maintain contemporary facilities and equipment for CCFEMS’s workforce to enable the mission of saving lives, protecting property, safeguarding the environment, and taking care of people. Without proper, well-maintained facilities and equipment, CCFEMS’s teams are unable to proficiently meet the needs of the communities they serve.

## Annual Appraisal Process

The goals, summarized in this section, will be reviewed, and addressed by goal owners in regular leadership reviews, including a quarterly review conducted with the executive leadership team. Annually, a documented report -out will be created by the Fire Chief. The annual reviews will identify any gaps in current capabilities, capacity, and the level of service provided within each service delivery area. Additionally, program goals to mitigate identified risks within the service area will also be discussed. Executive staff and program/goal owners will work collaboratively to ensure an accurate and useful annual appraisal process is performed, documented, and presented, ensuring transparency and trust in maintained between CCFEMS and the communities they serve.

### Core Competency 2C.8

The agency has identified efforts to maintain and improve its performance in the delivery of its emergency services for the past three (initial accreditation agencies) to five (currently accredited agencies) immediately previous years.

### Performance Indicator 2C.9

The agency's resiliency has been assessed through its deployment policies, procedures, and practices.

### Performance Indicator 2D.4

The performance monitoring methodology supports the assessment of the efficiency and effectiveness of each service program at least annually in relation to industry research.

### Performance Indicator 2D.5

Impacts of incident mitigation program efforts, such as community risk reduction, public education, and community service programs are considered and assessed in the monitoring process.

### Core Competency 2D.6

Performance gaps for the total response area, such as inadequacies, inconsistencies, and negative trends, are determined at least annually.

### Core Competency 2D.9

On at least an annual basis, the agency formally notifies the AHJ of any gaps in current capabilities, capacity, and the level of service provided within its delivery system to mitigate the identified risks within its service area, as identified in its community risk assessment/standards of cover.

### Performance Indicator 2D.10

The agency interacts with external stakeholders and the AHJ at least once every three years to determine the stakeholders' and AHJ's expectations for types and levels of services provided by the agency.

**SECTION I – OVERALL EVALUATION AND  
RECOMMENDATIONS**



## **OVERALL EVALUATION AND RECOMMENDATIONS**

### **Overall Evaluation**

The overall evaluation is the final component of the Standards of Cover (SOC) process. As a risk-based process that incorporates risk, mitigation, and outcomes measures, both the Department and the County leadership can more easily discuss service levels, outcomes, and the associated cost allocations based on community risks.

Overall, the department is performing well within the current system. The community enjoys high-quality services from a professional and well-trained department. Predominantly, the department's distribution and concentration delivery models are appropriately aligned with the County's unique risks. In addition, the practice of cross-staffing units provides operational and fiscal efficiencies. However, there are areas that have been identified that the department could make incremental system adjustments to improve.

### **General Observations**

#### **Total Response Time**

The department has established baseline and benchmark performance objectives during the development of this SOC. While it is up to the department to establish policy related to meeting or exceeding community expectations, there are opportunities to better align goals and baseline objectives.

#### **Internal Performance Objectives**

Historically, the department did not utilize formally adopted performance objectives, but rather these were adopted as part of the standards of response coverage process. A gap analysis between baseline and benchmark performance is fully evaluated in Section G of the SOC. In addition, a per-station comparison is provided below in Section F – Station Analyses.

Table 1: 90<sup>th</sup> Percentile Dispatch, Turnout, Travel, and Response Times by Call Type – First Arriving Units

Call Category	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size
Cardiac and stroke	4.0	2.3	7.7	12.2	3,041
Seizure and unconsciousness	3.8	2.2	7.8	12.1	2,165
Breathing difficulty	3.6	2.4	7.5	11.8	2,095
Overdose and psychiatric	4.6	2.6	8.5	14.1	209
Accident	3.0	2.7	8.2	11.7	1,529
Fall and injury	4.0	2.4	8.7	13.3	5,995
Illness and other	4.2	2.4	8.4	13.2	6,942
Medical No ProQA	2.6	2.3	9.2	12.6	3,677
Interfacility transfer	3.7	2.2	6.6	11.1	4,401
<b>EMS Total</b>	<b>3.9</b>	<b>2.4</b>	<b>8.2</b>	<b>12.6</b>	<b>30,054</b>
Structure fire	2.9	3.0	8.0	11.7	219
Outside fire	3.2	3.0	13.8	19.1	200
Vehicle fire	2.3	2.9	12.4	15.7	105
Alarm	2.8	3.1	7.9	12.0	802
Public service	3.8	3.0	9.8	14.7	1,302
Fire other	4.4	2.7	9.8	14.8	977
<b>Fire Total</b>	<b>3.7</b>	<b>3.0</b>	<b>9.5</b>	<b>14.1</b>	<b>3,605</b>
<b>Airport</b>	<b>2.8</b>	<b>2.2</b>	<b>2.7</b>	<b>6.5</b>	<b>62</b>
<b>Hazmat</b>	<b>6.1</b>	<b>4.9</b>	<b>7.7</b>	<b>16.0</b>	<b>29</b>
<b>Rescue</b>	<b>5.0</b>	<b>3.0</b>	<b>8.2</b>	<b>13.0</b>	<b>63</b>
<b>Total</b>	<b>3.9</b>	<b>2.4</b>	<b>8.4</b>	<b>12.8</b>	<b>33,813</b>

## Dispatch Time

Throughout the development of the SOC, the Department understands the relative opportunity to improve the citizen's experience by improving dispatch time. NFPA 1710, NFPA 1221/1225 recommend a 60 and 64 second dispatch time.

Currently, the performance is 3.9 minutes. In an environment that utilizes a call triage or prioritization process could be better aligned with national recommendations of approximately 1.5 to 2 minutes. Following the Medical Priority Dispatch System (MPDS), the delta and echo calls should have the shortest dispatch intervals than lower acuity calls such as alpha calls.

Table 2: 90th Percentile Dispatch, Turnout and Travel Time by EMD Determinant

EMD Determinant	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size
Alpha	4.1	2.3	8.0	12.7	6,782
Bravo	4.0	2.4	8.5	13.1	3,841
Charlie	4.1	2.3	8.0	12.6	6,905
Delta	3.8	2.3	7.8	12.2	6,134
Echo	3.8	2.2	7.2	9.6	44
Omega	4.2	2.8	8.4	13.3	122
NA	2.6	2.4	9.0	12.4	6,226
<b>Total</b>	<b>3.9</b>	<b>2.4</b>	<b>8.2</b>	<b>12.6</b>	<b>30,054</b>

## Turnout Time

Throughout the development of the SOC, the Department understands the relative opportunity to improve the citizen's experience by improving turnout time. The CFAI and NFPA 1710 recommend a 60-second turnout time for EMS events and either 90 seconds or 80 seconds for non-EMS events, respectively.

Currently, EMS performance is 2.4 minutes, and Fire is 3.0 minutes, both approximately twice the recommended best-practice performance.

### Observation:

A one-minute improvement between the dispatch and turnout times, at little to no cost, would have a fiscal equivalency of a multi-million-dollar investment in response capability.

## Travel Time

Utilizing the department or jurisdiction level analysis, the travel time is 8.4 minutes. The travel time for EMS incidents was 8.2 minutes and fire-related events was 9.5 minutes. While the NFPA 1710 recommendations suggest a 4-minute travel time at the 90<sup>th</sup> percentile, Fitch's experience is that most jurisdictions perform between 5- and 9 minutes. Therefore, the County's current performance is well aligned with the national experience.

### Observation:

The County's current performance is well aligned with the national experience. Any changes would solely remain a local policy choice.

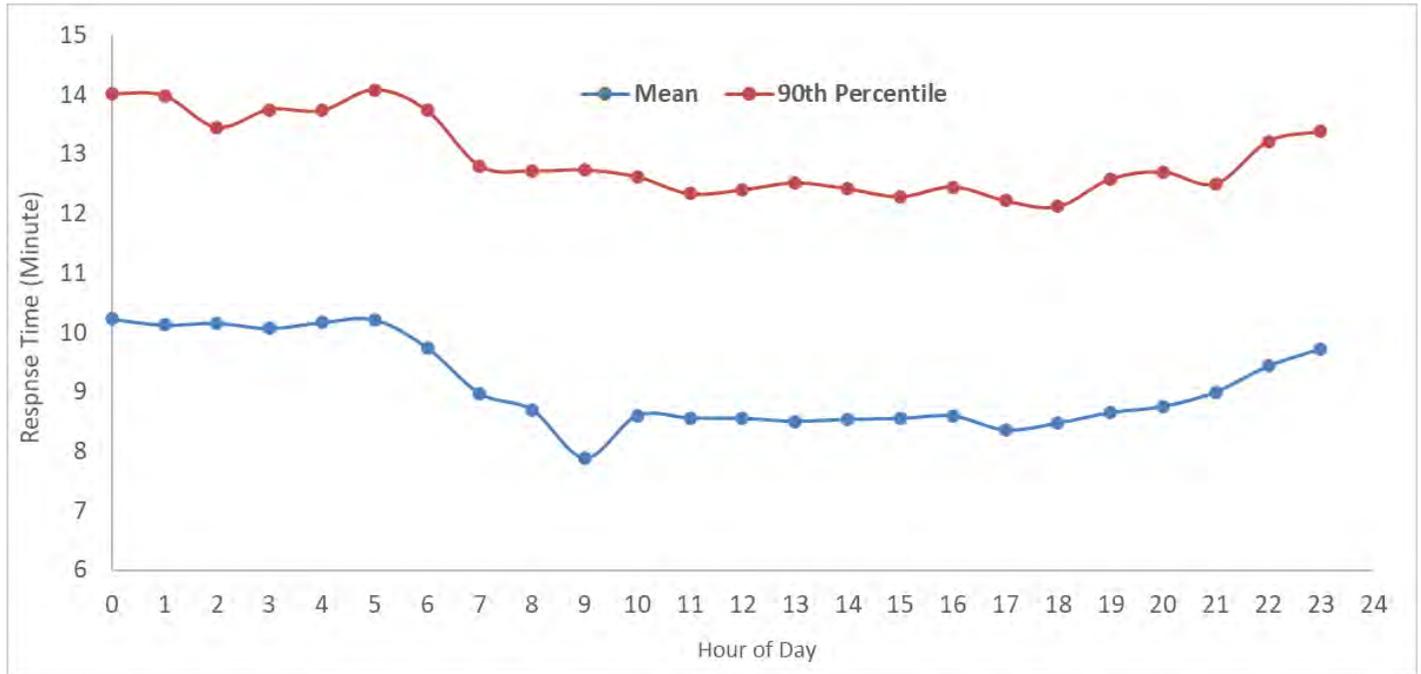
### Recommendation:

It is recommended that the County consider an 8-minute travel time to guide planning and investment strategies.

### Total Response Time by Hour of Day

Lastly, we analyzed average and 90<sup>th</sup> percentile response time by hour of day. From 2200 to 0600, the average and 90<sup>th</sup> percentile response time was longer than the rest of the day. In other words, the overnight hours, typically a period where personnel may be sleeping and/or driving more cautiously while awaking, is longer than any other period that is influenced by rush hours, etc. Finally, during the peak of the day, when the department is at the busiest, the department’s performance was the best.

Figure 1: Average and 90<sup>th</sup> Percentile Response Time by Hour of Day

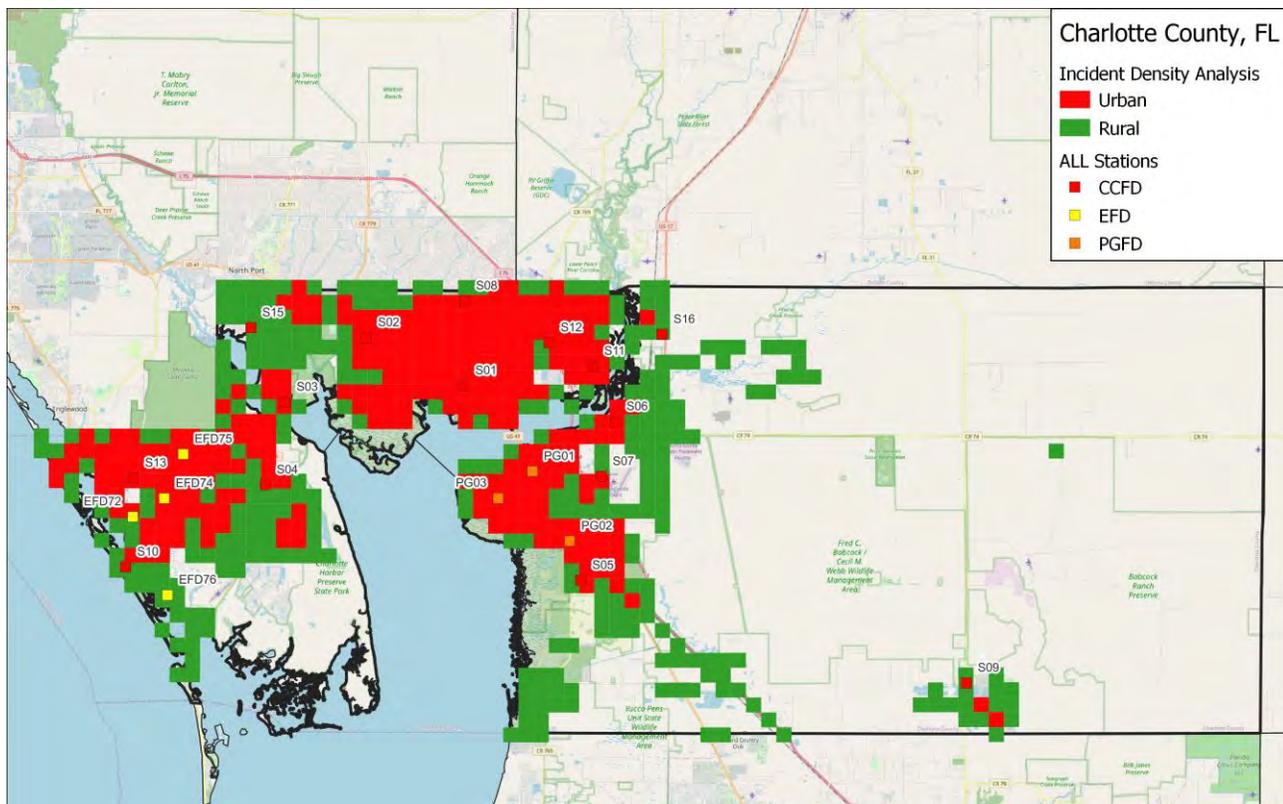


## Consideration for a Commensurate Risk Model

Urban/Rural call density is calculated based on the relative concentration of incidents based on approximately 0.5-mile geographic areas as well as the adjacent 0.5-mile areas. The results demonstrate an urban and rural designation based on call density for services and not based on population. The red areas are designated as urban service areas, and the green areas are designated as rural service areas. Any area that is not colored has less than one call every six months in the 0.5-mile area and the adjacent areas.

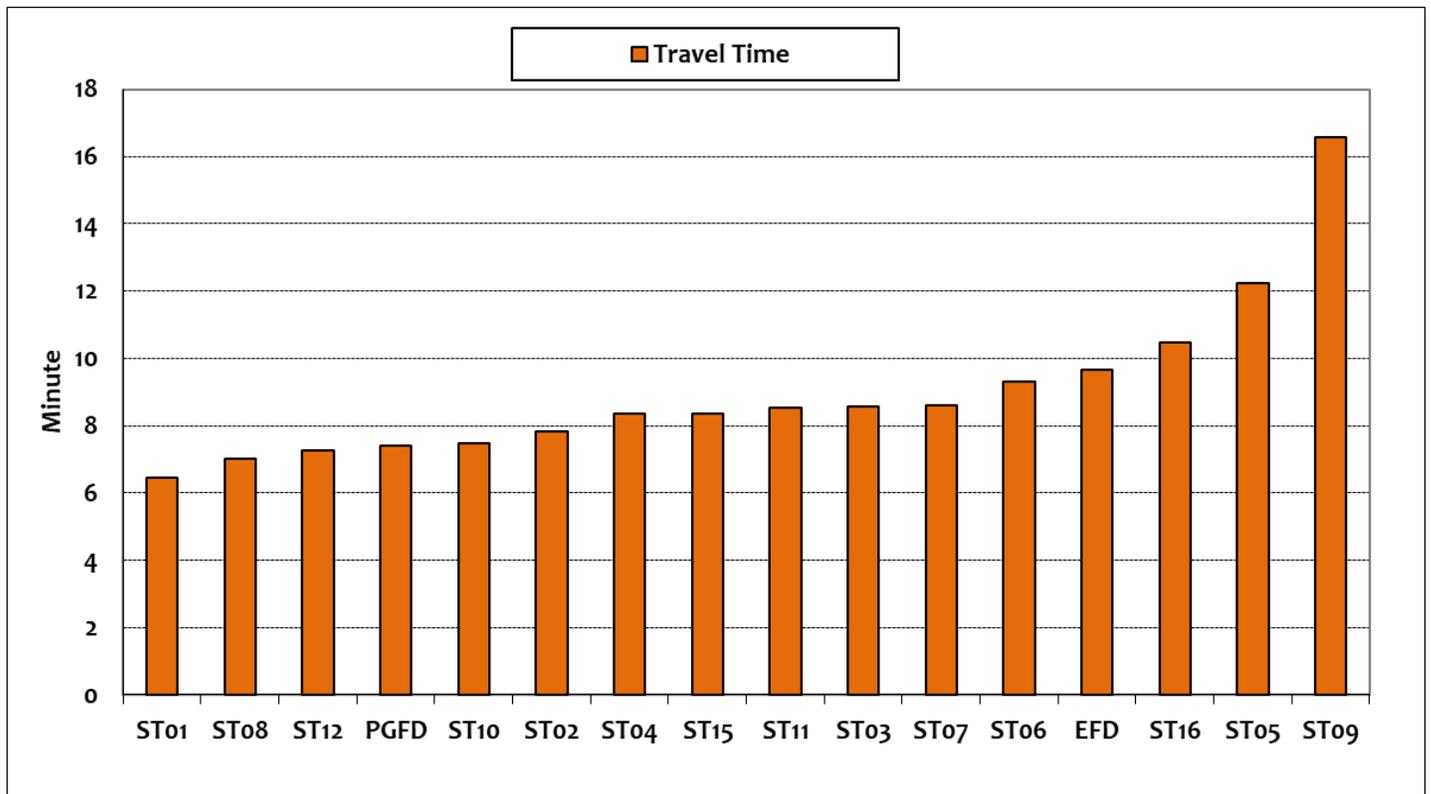
When referring to the Figure below, each of the fire station response areas has a mix of urban and rural call densities. Therefore, the consideration of staffing all stations in a consistent manner would provide a commensurate risk model across all areas of the jurisdiction. This strategy is well aligned and more responsive as a commensurate risk model than the current census definition of urban and rural.

Figure 2: Urban and Rural Call Density Map with Current Stations



Additionally, the individual stations were evaluated to provide insight into the relative ability to provide a commensurate level of service across each of the station areas. Focusing on the travel time, the overall countywide performance is 8.3 minutes at the 90<sup>th</sup> percentile. Station 1 has the best performance at 6.4 minutes, and Station 9 has the longest travel time at 16.6 minutes, both at the 90<sup>th</sup> percentile. However, the majority of stations provide a travel time between 7 and 10 minutes. Only stations 5, 9, and 16 have travel times greater than 10 minutes and are all located on the eastern side of the developed areas. Therefore, these stations have a greater rural demand that proves more challenging for response time.

Figure 3: 90th Percentile Travel Time Performance by Station FDZ in the Ascending Order



In other words, the department’s deployment strategies follow a commensurate risk model as most stations only vary approximately 3 minutes in travel time at the 90<sup>th</sup> percentile. Following a system of measures, the department will be well-positioned to adjust the deployment models to meet changes in development, workload, and risks.

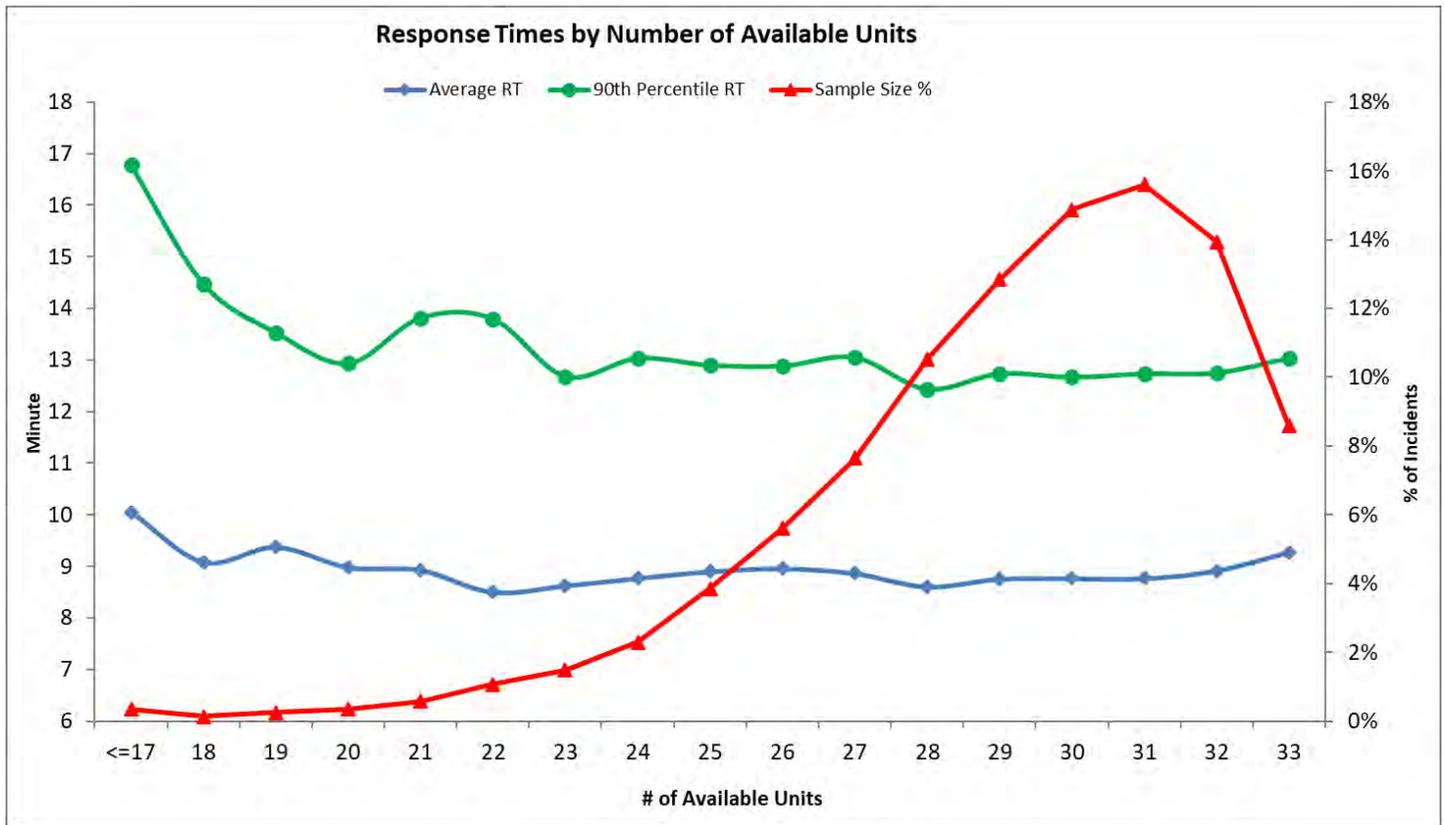
**Observation:**  
 The department’s deployment strategies follow a commensurate risk model as the majority of stations only vary approximately 3 minutes in travel time at the 90<sup>th</sup> percentile.

**Observation:**  
 Following a system of measures, the department will be well-positioned to adjust the deployment models to meet changes in development, workload, and risks.

### Response Time Performance by Available Vehicles

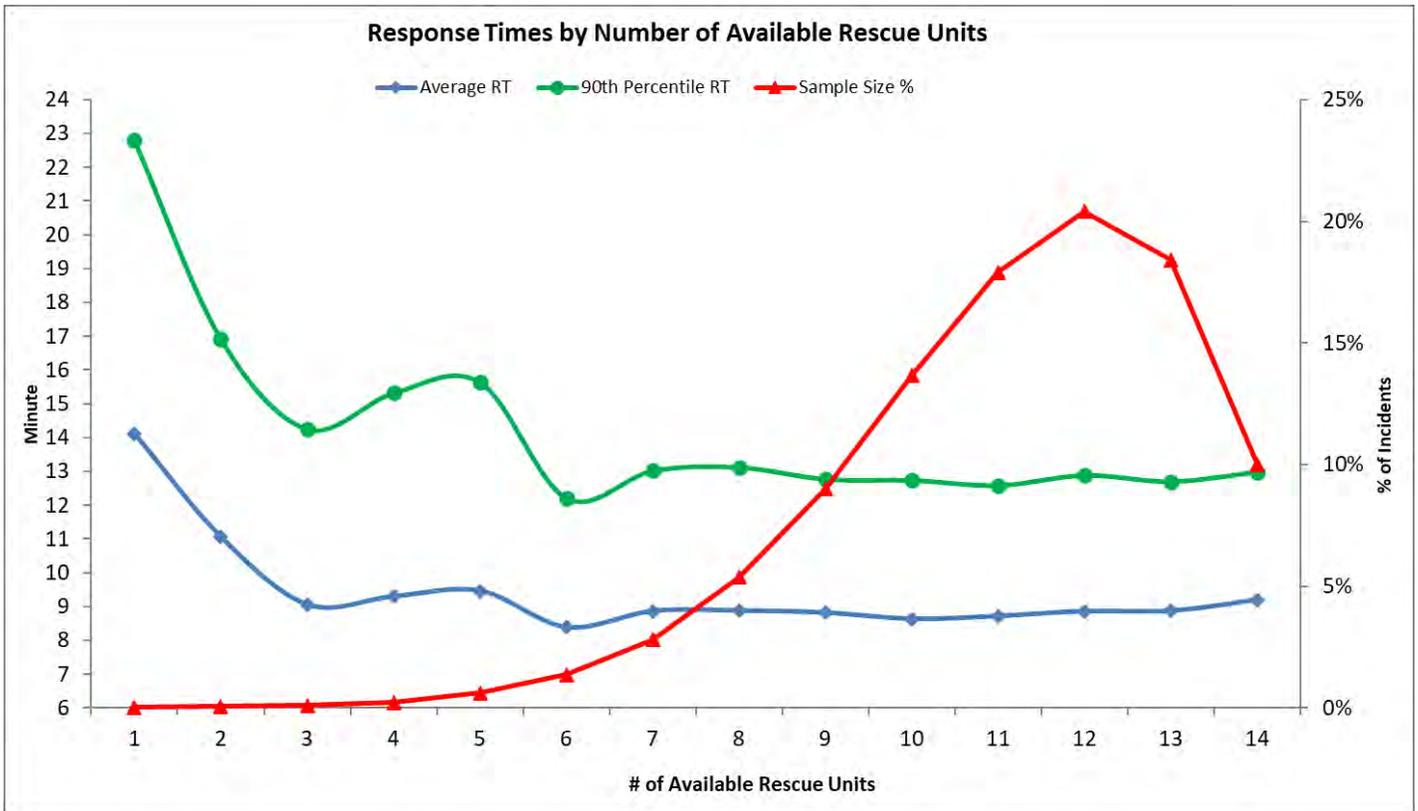
We investigated whether response time performance deteriorated when there were fewer 24-hour per day primary front-line vehicles available to respond to calls. A maximum of 33 manpower teams (units) were available. These 33 units include four units at station 1, three units at stations 2 and 12, two units at stations 3-9, 11, 13, and 14, and one unit available at PG station 1, and PG station 3. For 98% of the calls, the department has over 22 units idle or available for any emergency responses. For 53% of the calls, the department has over 30 units available to respond. The average and 90<sup>th</sup> percentile response time increases slightly when there were less than 22 units available, driven by the large jurisdiction of the department.

Figure 4: Average and 90<sup>th</sup> Percentile Response Times by Number of Available Units



We also investigated whether response time performance deteriorated when there were fewer 24-hour per day rescues available to respond to calls. A maximum of 14 Rescues were available. For 94.8% of the calls, the department has a minimum of 8 Rescue units available to respond. The average and 90<sup>th</sup> percentile response time increases when there were less than 5 Rescue units available, driven by the large jurisdiction of the department.

Figure 5: Average and 90<sup>th</sup> Percentile Response Times by Number of Available Rescue Units

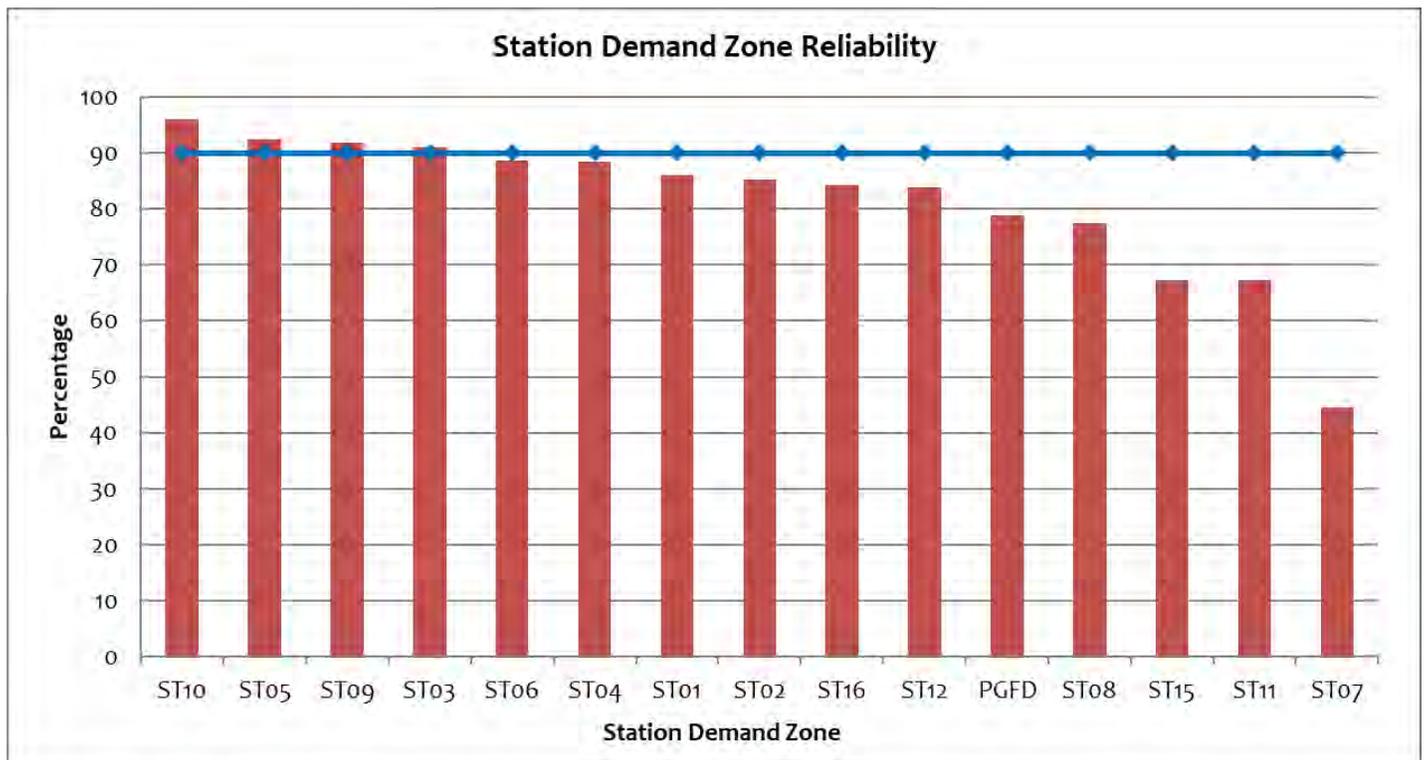


## System Reliability

### Percentage of First Due Compliance

The reliability of the distribution model is a factor of how often the response model is available and able to respond to the call within the assigned demand zone. If at least one unit from the first due zone is able to respond to a call, we consider the station is able to respond to the call within the assigned demand zone. Utilizing the department’s Fire Station Demand Zones (FDZ), analyses reveal that stations 10, 5, 9, and 3 are capable of meeting their demand for services at the 90<sup>th</sup> percentile. In other words, when a request for service is received FDZ 10, 5, 9, and 3 are available to answer the call nine out of 10 times. Stations 07 and 11 had the lowest reliability. It is considered both best practice and the most reliable measure to perform at the 90<sup>th</sup> percentile, as indicated by the “blue” line in the Figure below. This analysis utilized all dispatched calls within the jurisdiction, and the performance included all assigned units to the specific FDZ. Please note we assumed unit stations 13 and 14 were assigned to calls in first-due stations 15 and 16.

Figure 6: Percentage Reliability by Station FDZ in the Descending Order

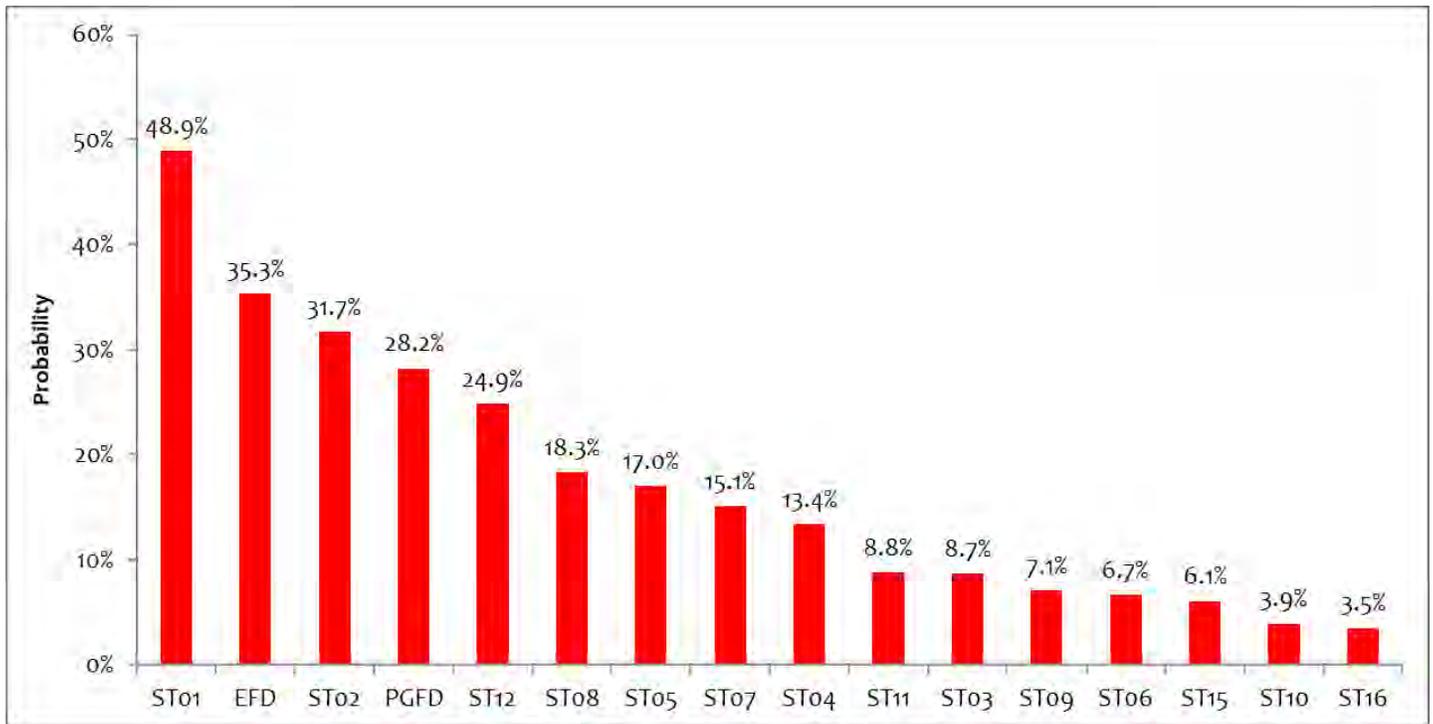


## Overlapped Call Analysis

Overlapped calls are defined as the rate at which another call was received for the same first due zone while there were one or more ongoing calls in the same first due zone. For example, if there is one call in station 1’s zone, before the call was cleared another request in station 1’s zone occurred, and the second call would be captured as an overlapped call. If there is a long structure fire call ongoing, all calls occurred after the structure fire started, but before the structure fire call was cleared would be counted as overlapped calls. Understanding the probability of overlapped calls occurring will help to determine the number of units to staff for each station. In general, the larger the call volume a first due zone has, it is more likely to have overlapped or simultaneous calls. The distribution of the demand throughout the day will impact the chance of having overlapped or simultaneous calls. The duration of a call will also have major influences, since the longer time it takes to clear a request, the more likely to have an overlapped request.

Station 1 has the most demand, and the duration of calls lasted at 35 minutes, thus it has the highest probability of having overlapped calls at 48.9%. This means that during the period of an active station 1 call, there is a 48.9% chance that another incident in station 1 will occur. Calls in EFD and ST02 had the second and third highest probability of overlapped calls occurring since they had the 2<sup>nd</sup> and 3<sup>rd</sup> most call volume. Results are presented below.

Figure 7: Probability of Overlapped Calls Occurring by Station FDZ



**Observation:**

Station 1 has the highest call concurrency of all of the deployed stations at 49%.

## Consideration for a System of Measures to Direct Reinvestment

It is still important to measure and manage the efficiencies of a well-run operation using a system of measures, as presented in the table below. In this manner, the daily management continues in place, but the strict adherence to system design performance is secondary to the outcome measures. For example, if response time increases and there is no change in outcomes, then it would be purely a policy choice to act. Conversely, if the outcomes change, then the Department leadership will turn to the system of measures and attempt to discern which of the variables or combination of variables may be contributing to the change in outcomes.

The summary of measures provided below includes all aspects of time by apparatus staffing by type, relative risk ratings, and system resiliency measures such as reliability, call concurrency, workload, and unit hour utilization. For example, reliability should be at least 70% for each station, and only if the reliability drops below the 70% threshold before considering a mitigation reaction. Similarly, call concurrency is credible until the call concurrency reaches 70%. In other words, only 30% of the calls overlap. Call concurrency is suggested as a per unit threshold unless the majority of calls are multi-unit responses. For example, if there are two units assigned to a station, the station level call concurrency can perform well at 60% or less for single unit responses, as long as the two resources do not correspond to the majority of incidents. Finally, the cross-staffing strategy speaks to an upper threshold of call volume of no more than 1,500 calls per year (4 calls per day) and a call concurrency of 15% or less; units can generally be confidently cross-staffed.

The system of measures provided are not intended to be overly prescriptive for the Department. The Department should adopt the system performance objectives internally and update as needed.

**Table 3: Summary of Recommended Baseline Process Objectives**

Type of Measure	Performance Metric	Recommended Performance Urban	Priority	Review Period
Station/Unit Performance	Turnout Time – EMS	≤1.0 Min at 90%	Emergent	Quarterly
	Turnout Time – All Other	≤1.5 Min at 90%	Emergent	Quarterly
	Travel Time - ALS	≤8 Min at 90%	Emergent	Quarterly
	Travel Time - BLS	≤8 Min at 90%	Emergent	Quarterly
	Minimum Engine Staffing	≥3 Firefighters	All Responses	Daily
	Minimum Medic Staffing	≥1 FF/PM ≥1 FF/EMT	All Responses	Daily
System Design and Performance	Dispatch	≤2 Min at 90%	Emergent	Monthly
	Station Risk Rating	Increases in Risk		Annually
	Reliability	≥70%		Quarterly
	Call Concurrency	≤30% Per Unit		Quarterly
	Call Volume	3,000 – Initial 1,000 – Ongoing		Annually
	Unit Hour Utilization	≤0.25 on 24-hour units ≤0.50 on 12-hour units		Quarterly
	Cross-Staffing at Unit Level	<1,500 annual calls and <15% Call Concurrency		Annually

**Recommendation:**

It is recommended that the department adopt a system of measures or triggers to best manage changes in the environment.

## Validation of Planning Analysis

The first step in this validation analysis is to utilize the historical performance to validate the planning analyses utilized by the GIS system. The 2021 historical performance demonstrated an 8.4-minute overall department travel time performance at the 90<sup>th</sup> percentile. The planning assessments estimated 83.63% risk coverage by 18 stations within 8-minutes of travel time. Therefore, there is a high degree of agreement between the planning tools and actual historical performance.

### 8-Minute Travel Time – All Calls

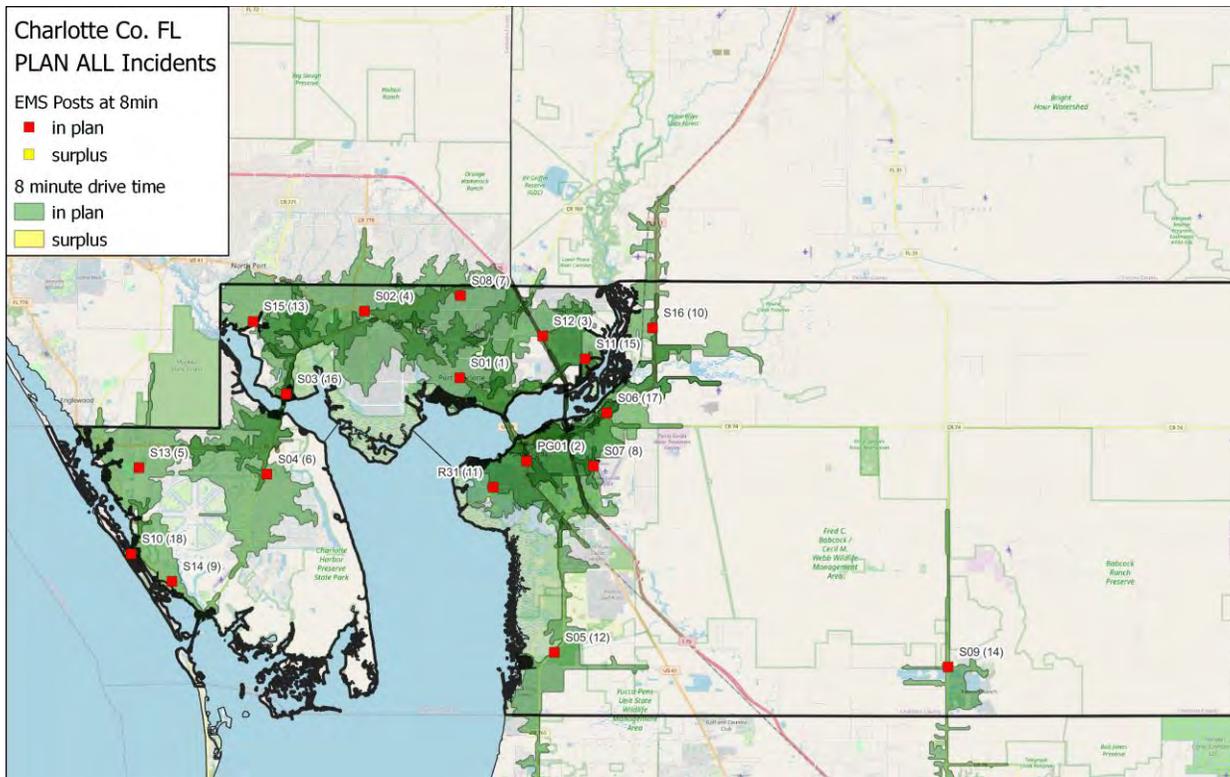
Results suggest that with 18 stations, 83.63% of calls could be responded to within 8-minutes or less travel time.

The GIS analyses use average road speeds; therefore, the few percentage points are reasonable, understanding that it is typical that the fire department can travel faster than the average road speed, especially in rural areas.

**Table 4: Marginal Station Contribution for 8-Minute Travel Time – All Calls – All Fire and EMS Stations**

Rank	Station	Travel Time	Station Capture	Total Capture	Percent Capture
1	S01	8	9,734	9,734	27.63%
2	R32	8	4,121	13,855	39.33%
3	S12	8	3,844	17,699	50.25%
4	S02	8	3,402	21,101	59.91%
5	S13	8	2,664	23,765	67.47%
6	S04	8	1,496	25,261	71.72%
7	S08	8	997	26,258	74.55%
8	S07	8	658	26,916	76.41%
9	S14	8	517	27,433	77.88%
10	S16	8	419	27,852	79.07%
11	R31	8	407	28,259	80.23%
12	S05	8	379	28,638	81.30%
13	S15	8	220	28,858	81.93%
14	S09	8	214	29,072	82.53%
15	S11	8	155	29,227	82.97%
16	S03	8	147	29,374	83.39%
17	S06	8	78	29,452	83.61%
18	S10	8	6	29,458	83.63%

Figure 8: Current Station Bleed Map for 8-Minute Travel Time – All Calls– All Fire and EMS Stations



**Consideration for Move-up Plans**

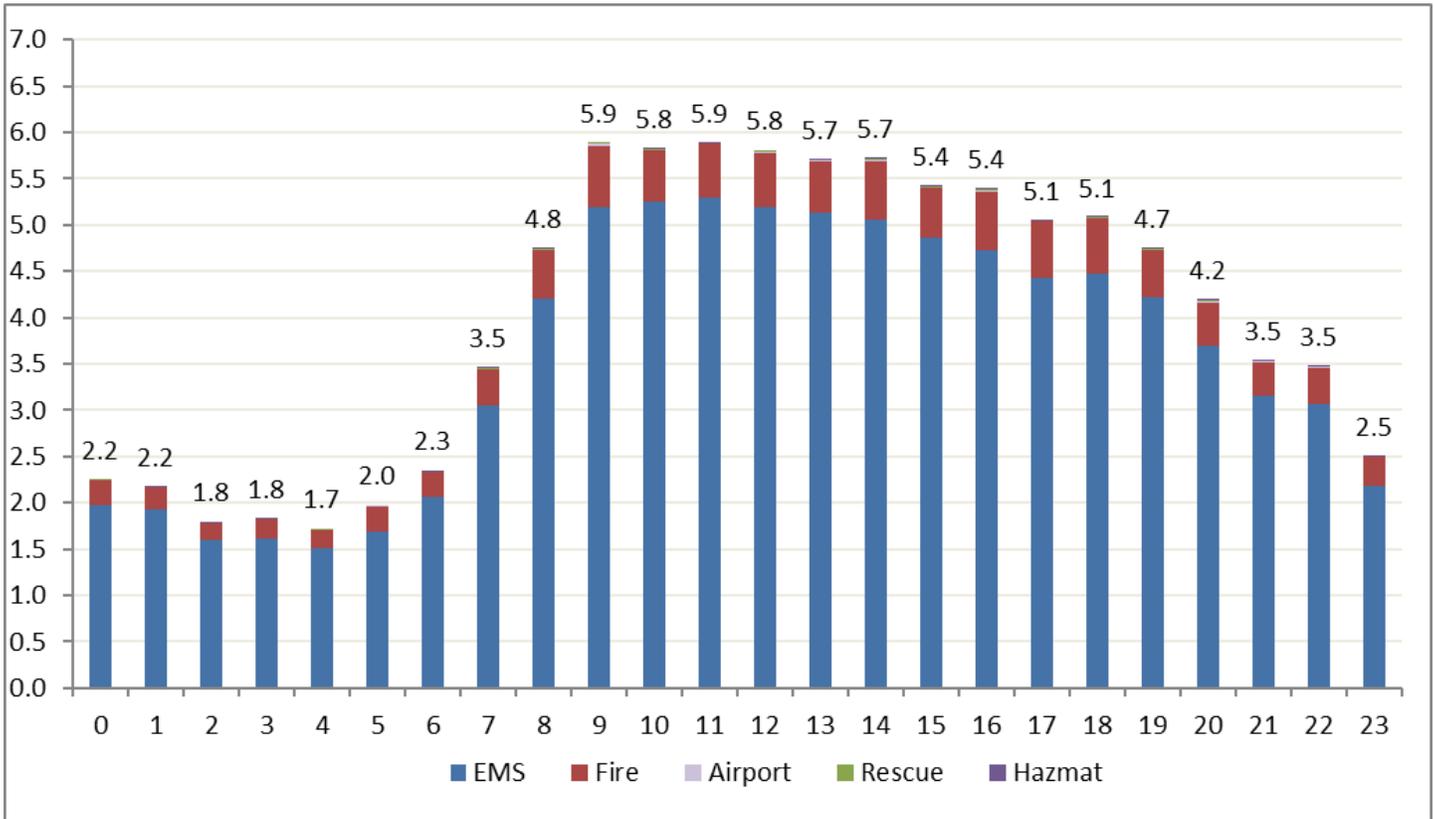
The 8-minute marginal utility analysis validated that the current station configuration can deliver an 8-minute travel time to nearly 84% of all EMS incidents. However, dynamically deployed systems are afforded the greatest efficiency in the utilization of their resources. A traditional fire department model is a *static* system, where each of the resources is assigned a “home” station and after each call, the unit attempts to get back to its home station. Through the lens of a direct “home” station area, it passes the common-sense test as the assigned units are assumed to be the closest. Charlotte County currently employs a progressive move-up strategy that captures some of the intended benefits of a dynamic system.

However, from a system or county perspective, some incremental efficiencies may be found in considering that marginal utility analyses that quantitatively guide the move-up plan.

Assuming an 8-minute, and 18-station deployment, the department should have a minimum of 24 Rescue resources in the system each day to meet both the geographic demand for services and the average hourly demand of 6 calls per hour (18 stations + 6 average demand/hour = 24). Therefore, the department is not sufficiently resourced for EMS deployment. However, an opportunity for improvement may be available by utilizing a more aggressive move-up strategy as units are drawn down.

**Recommendation:**  
 Assuming an 8-minute, and 18-station deployment, the department should have a minimum of 23 Rescue resources in the system each day to meet both the geographic demand for EMS services and the average hourly demand of 5 EMS calls per hour (18 stations + 5 average demand/hour = 23).

Figure 9: Overall: Average Calls per Day by Hour of Day



Reconsidering the marginal utility analysis provided in the table below, a 10-station solution can achieve approximately 91% of the call capture within 10-minutes. Therefore, following the findings of the marginal utility analysis, when the department is resource constrained down to the last 10 units, they should be temporarily moved up or accordingly. This progressive move-up policy will provide a more efficient capture and success in a commensurate delivery approach across the city. The mapping below demonstrates the 10-minute coverage of the six stations only. The difference between this 10-station move-up model and the 18-station delivery is approximately 3% call capture. This analysis and strategy may also serve to redistribute workload across the Rescue units to introduce some cost avoidance strategies within the system.

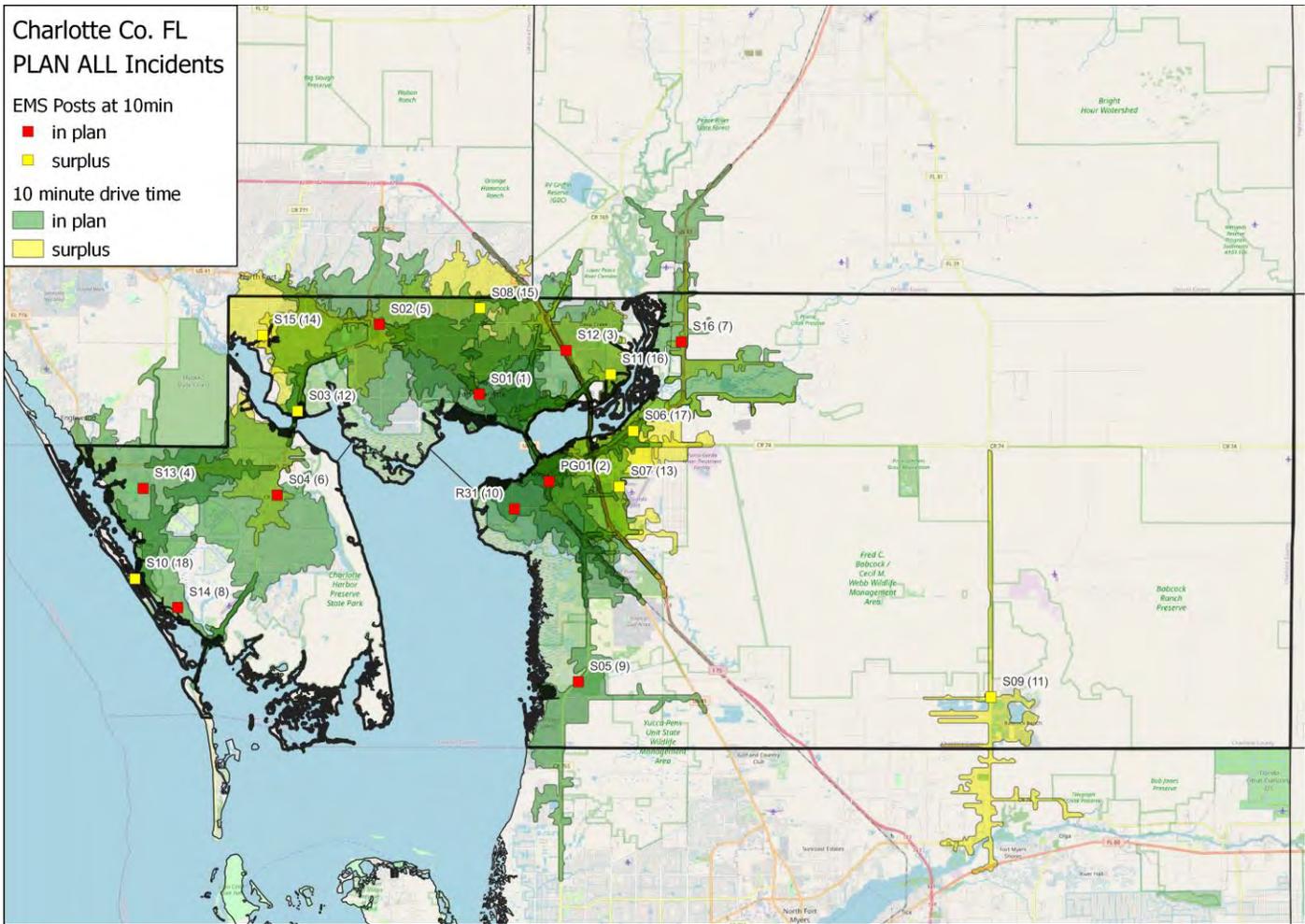
**10-Minute Travel Time – All Calls**

Results suggest that with 18 stations, 93.1% of calls could be responded to within 10-minutes or less travel time. However, a total of 10-stations could achieve 90.65% of the incidents within 10-minutes travel time.

**Table 5: Marginal Station Contribution for 10-Minute Travel Time – All Calls – All Fire and EMS Stations**

Rank	Station	Travel Time	Station Capture	Total Capture	Percent Capture
1	S01	10	13,698	13,698	38.89%
2	R32	10	4,539	18,237	51.77%
3	S12	10	4,026	22,263	63.20%
4	S13	10	3,403	25,666	72.87%
5	S02	10	2,735	28,401	80.63%
6	S04	10	1,666	30,067	85.36%
7	S16	10	567	30,634	86.97%
8	S14	10	491	31,125	88.36%
9	S05	10	460	31,585	89.67%
10	R31	10	344	31,929	90.65%
11	S09	10	307	32,236	91.52%
12	S03	10	131	32,367	91.89%
13	S07	10	115	32,482	92.22%
14	S15	10	100	32,582	92.50%
15	S08	10	82	32,664	92.73%
16	S11	10	64	32,728	92.91%
17	S06	10	60	32,788	93.08%
18	S10	10	6	32,794	93.10%

Figure 10: Current Station Bleed Map for 10-Minute Travel Time – All Calls– All Fire and EMS Stations



Additional analyses evaluated a move up plan specifically for EMS incidents. Understandably, since EMS accounts for 88% of the call volume, no substantive differences were evidenced between the All calls and EMS calls.

## EMS Only Move Up Plans

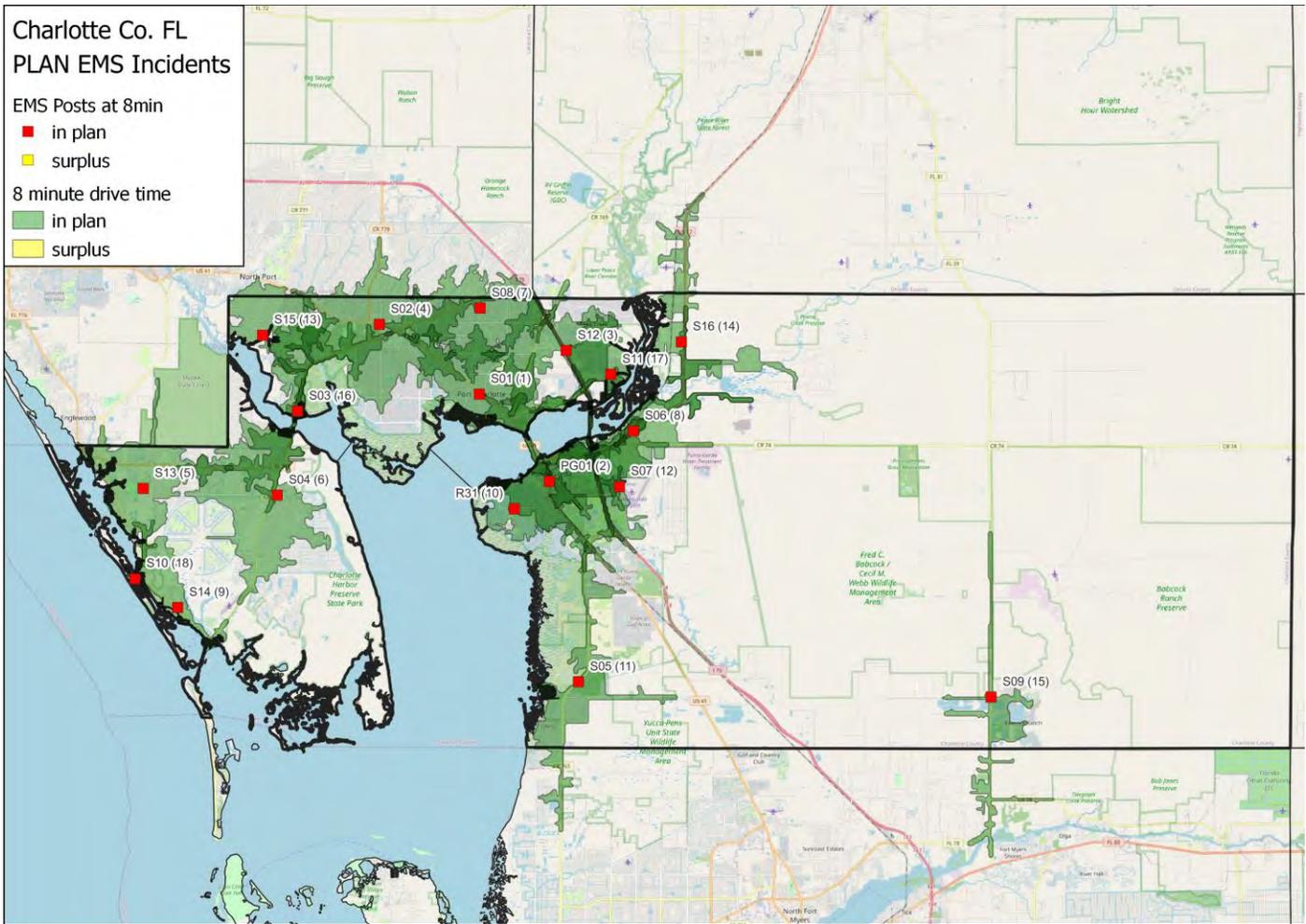
### 8-Minute Travel Time – EMS Calls

The planning assessments estimated 84.14% risk coverage by 18-stations within 8-minutes travel time.

**Table 6: Marginal Station Contribution for 8-Minute Travel Time – EMS Calls – All Fire and EMS Stations**

Rank	Station	Travel Time	Station Capture	Total Capture	Percent Capture
1	S01	8	8,526	8,526	27.44%
2	R32	8	3,903	12,429	40.01%
3	S12	8	3,354	15,783	50.80%
4	S02	8	2,899	18,682	60.13%
5	S13	8	2,615	21,297	68.55%
6	S04	8	1,279	22,576	72.67%
7	S08	8	848	23,424	75.40%
8	S06	8	538	23,962	77.13%
9	S14	8	505	24,467	78.75%
10	R31	8	402	24,869	80.05%
11	S05	8	318	25,187	81.07%
12	S07	8	223	25,410	81.79%
13	S15	8	182	25,592	82.37%
14	S16	8	164	25,756	82.90%
15	S09	8	148	25,904	83.38%
16	S03	8	126	26,030	83.78%
17	S11	8	108	26,138	84.13%
18	S10	8	4	26,142	84.14%

Figure 11: Current Station Bleed Map for 8-Minute Travel Time – EMS Calls – All Fire and EMS Stations



**10-Minute Travel Time – EMS Calls**

Results suggest that with 18-stations, 93.53% of calls could be responded to within 10-minutes or less travel time. However, a total of 10-stations could cover 90.36% of the incidents within 10-minutes or less.

**Table 7: Marginal Station Contribution for 10-Minute Travel Time – EMS Calls – All Fire and EMS Stations**

Rank	Station	Travel Time	Station Capture	Total Capture	Percent Capture
1	S01	10	12,070	12,070	38.85%
2	R32	10	4,144	16,214	52.19%
3	S12	10	3,481	19,695	63.39%
4	S13	10	3,327	23,022	74.10%
5	S02	10	2,296	25,318	81.49%
6	S04	10	1,419	26,737	86.06%
7	S16	10	476	27,213	87.59%
8	S14	10	474	27,687	89.12%
9	S05	10	385	28,072	90.36%
10	R31	10	340	28,412	91.45%
11	S09	10	209	28,621	92.12%
12	S15	10	103	28,724	92.46%
13	S07	10	91	28,815	92.75%
14	S03	10	84	28,899	93.02%
15	S08	10	71	28,970	93.25%
16	S06	10	47	29,017	93.40%
17	S11	10	38	29,055	93.52%
18	S10	10	4	29,059	93.53%

**Effective Response Force Assembly**

There are two prevailing recommendations for the time to assemble an effective response force (ERF) for structure fires. First, NFPA 1710 suggests that the ERF should arrive in 8 minutes travel time or less. Second, CFAI provides a baseline travel time performance objective of 10 minutes and 24 seconds 90% of the time or less as well as a 13-minute travel time ERF for suburban areas.

The quantitative analyses for ERF are problematic due to the limited sample sizes of actual arrival of the ERF. This is a typical result in fire departments across the nation and is not unique or specific to the CCFEMS experience. Therefore, GIS simulation for assembling personnel is a more robust assessment of the conditions rather than the actual percentage of time that an ERF is, in fact, assembled.

Due to the large geographic areas, analyses suggest that the department is very challenged to cover the totality of land area. However, the results should be interpreted with caution since much of the rural portions of the county are undeveloped.

**Table 8: Comparisons of Effective Response Force Performance**

Travel Time Objective	ERF-5	ERF-12	ERF-20
8-Minute	18.4%	3.88%	0.27%
10-Minute	24.96%	8.66%	2.74%
12-Minute	29.32%	12.53%	7.52%
16-Minute	34.46%	21.02%	15.07%
20-Minute	40.21%	28.66%	22.24%

The following analyses specifically evaluated NFPA 1710 response with 16 personnel for each scenario within the city boundaries. These analyses utilized the current deployment configuration, units, and staffing. The GIS simulation suggests that a 16-person ERF can be assembled to only a fraction of the county’s jurisdiction within 8 minutes, and only 25% at 20 minutes.

**Table 9: Comparisons of Effective Response Force Performance – 16 Personnel**

Travel Time Objective	Current
8-Minute	1.24%
10-Minute	5.62%
12-Minute	10.38%
14-Minute	13.96%
16-Minute	17.11%
18-Minute	20.41%
20-Minute	24.55%

Overall, the ERF coverage is more robust in parts of the jurisdiction where the greatest historical demand exists. The areas of the county that are more challenged are areas that do not benefit from concentric response zones such as the eastern portions of the county. The mapping outputs are more informative of the capabilities in the developed areas.

Figure 24: 10-Minute ERF

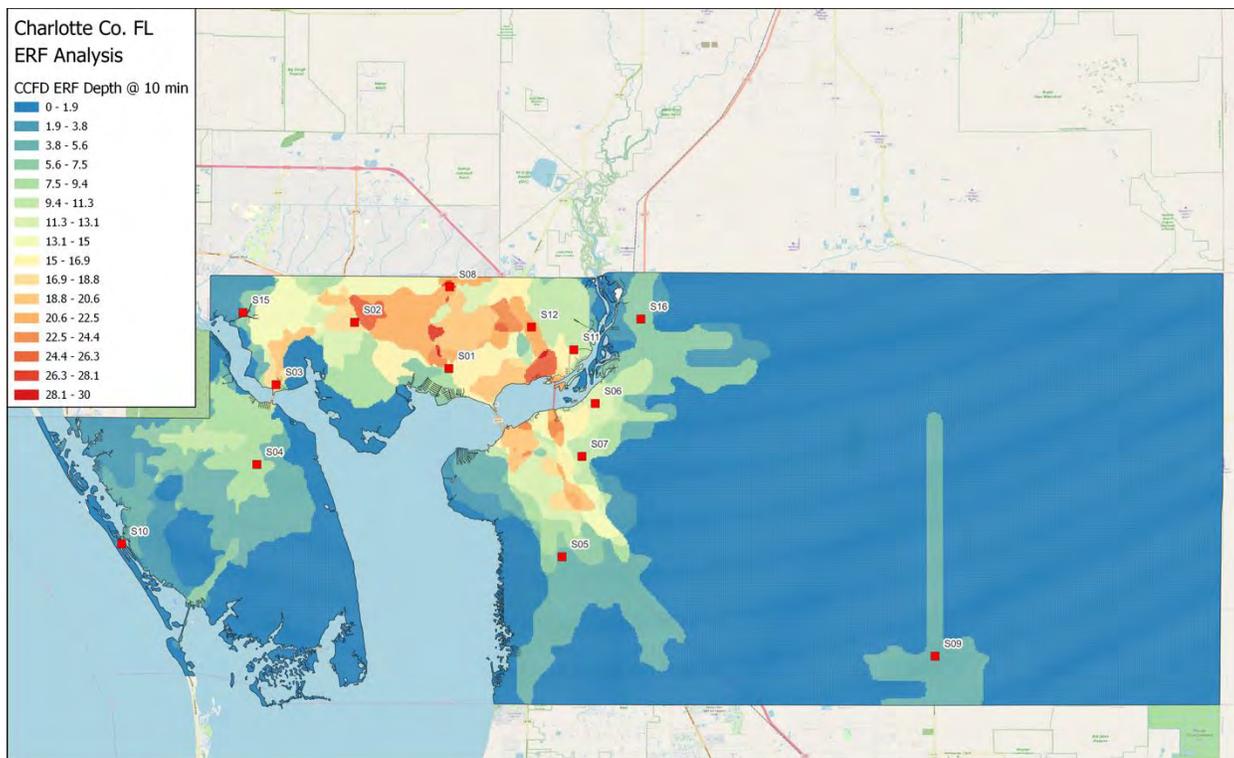
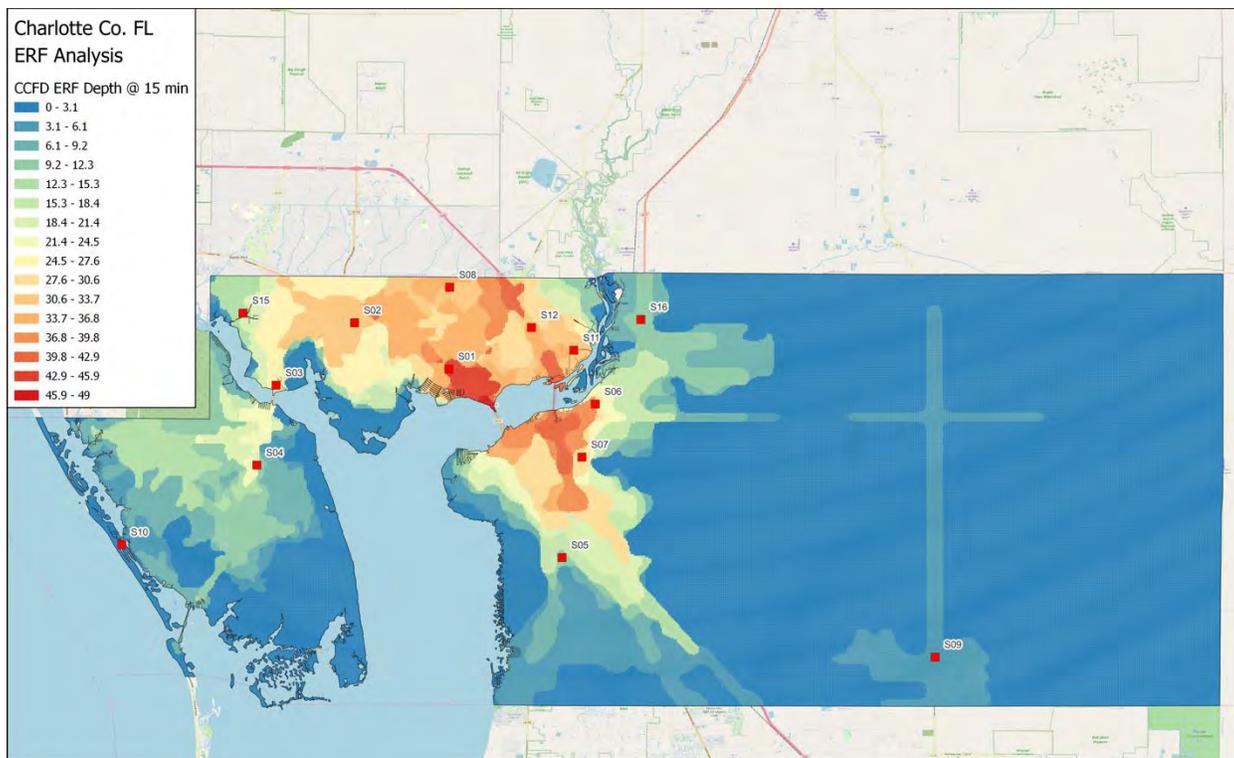
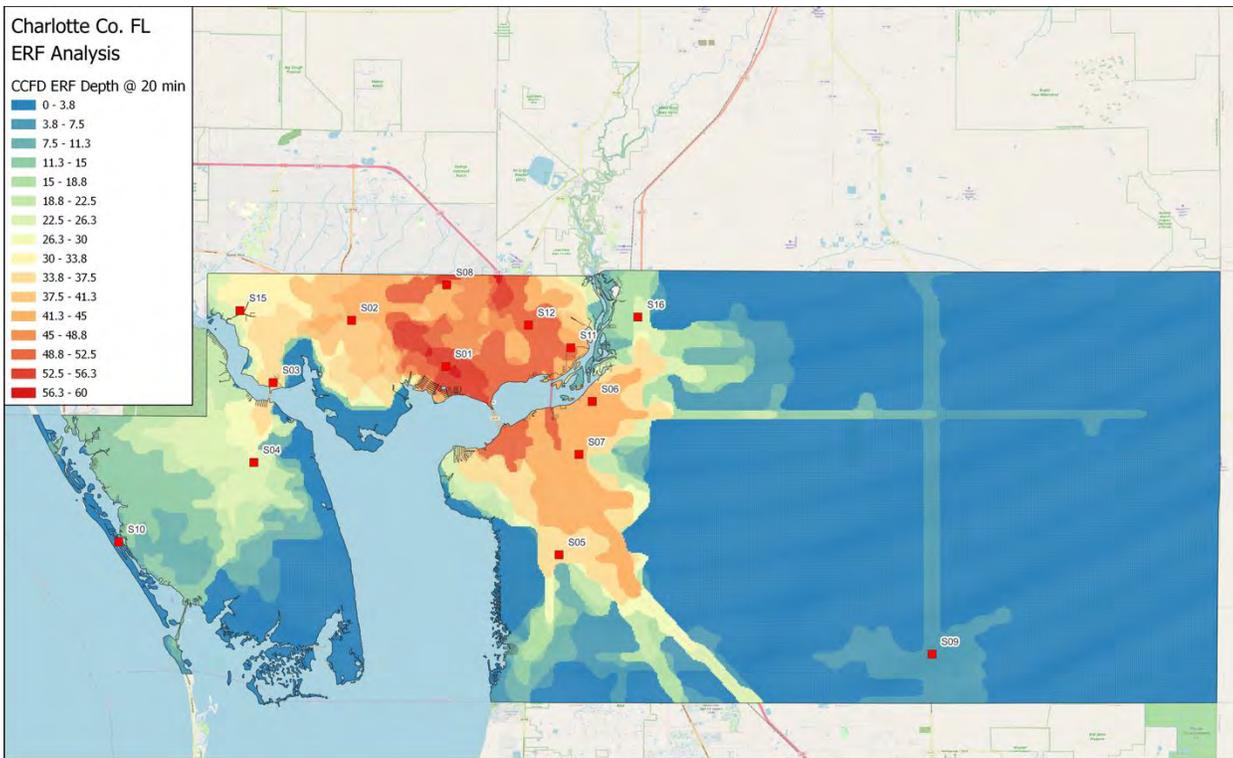


Figure 23: 15-Minute ERF



**Figure 23: 20-Minute ERF**



### Consideration for New Stations

When contemplating future station locations, two scenarios were analyzed. First, is a hybrid model that kept all of the existing station locations and contemplated locations that would provide the greatest amount of call capture for the desired performance of either 6- or 8-minutes. Second, is an optimized station location plan that uses a whiteboard approach. In this scenario, the computer models the locations with the best and most efficient capability to capture calls.

### Hybrid Station Models

Considering an 8-minute travel time, the county would require a minimum of 20 stations to meet the demand to at least 90% of the incidents within 8 minutes or less. If the county was desirous of improving service to 6-minutes, it would require a minimum of 34 stations, which would be a significant investment. However, if that was a 10 or 20 year-long plan, then it would be reasonable to adopt.

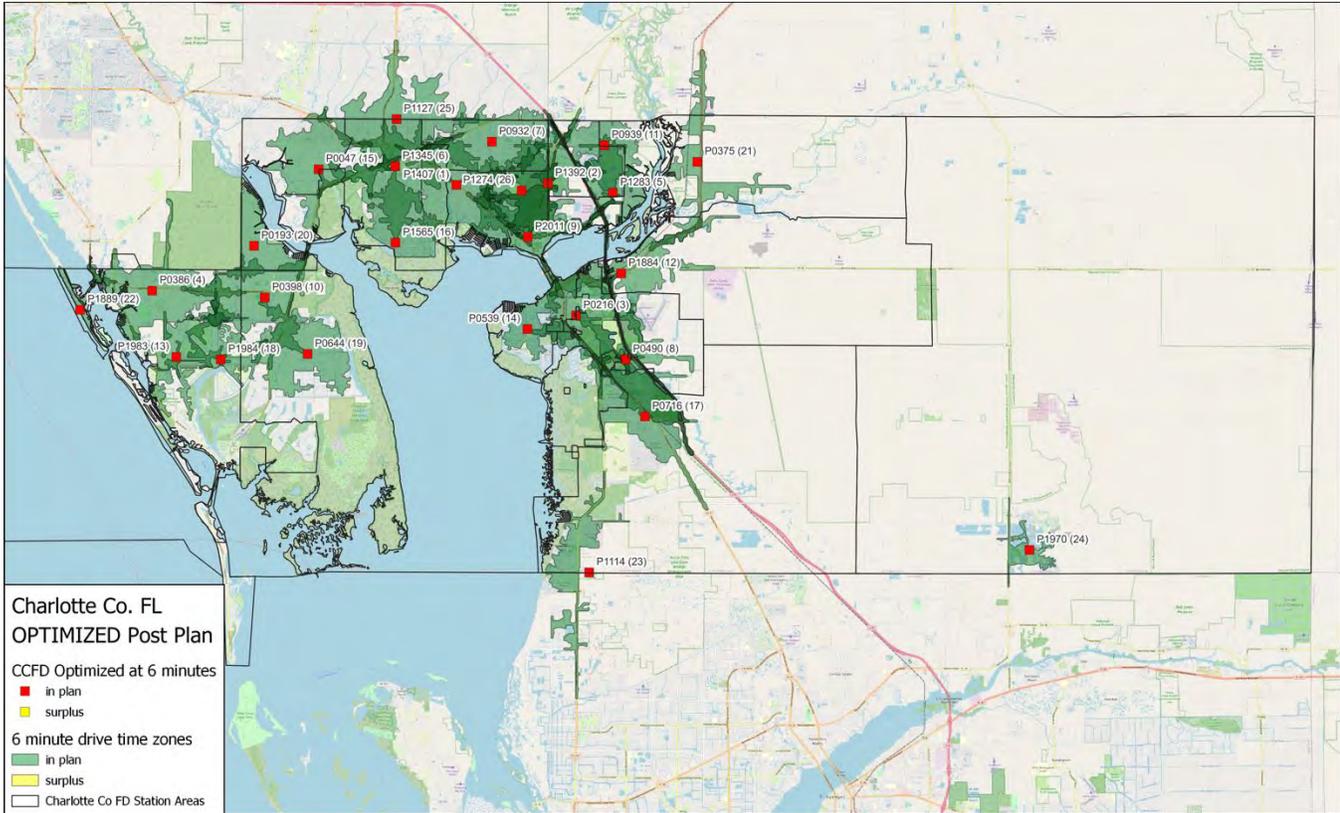


## Optimized Station Locations

### 6-Minute Optimized Station Plan

An optimized station plan suggested that a total of 26 stations would be the most efficient station distribution model to ensure a 6-minute travel time.

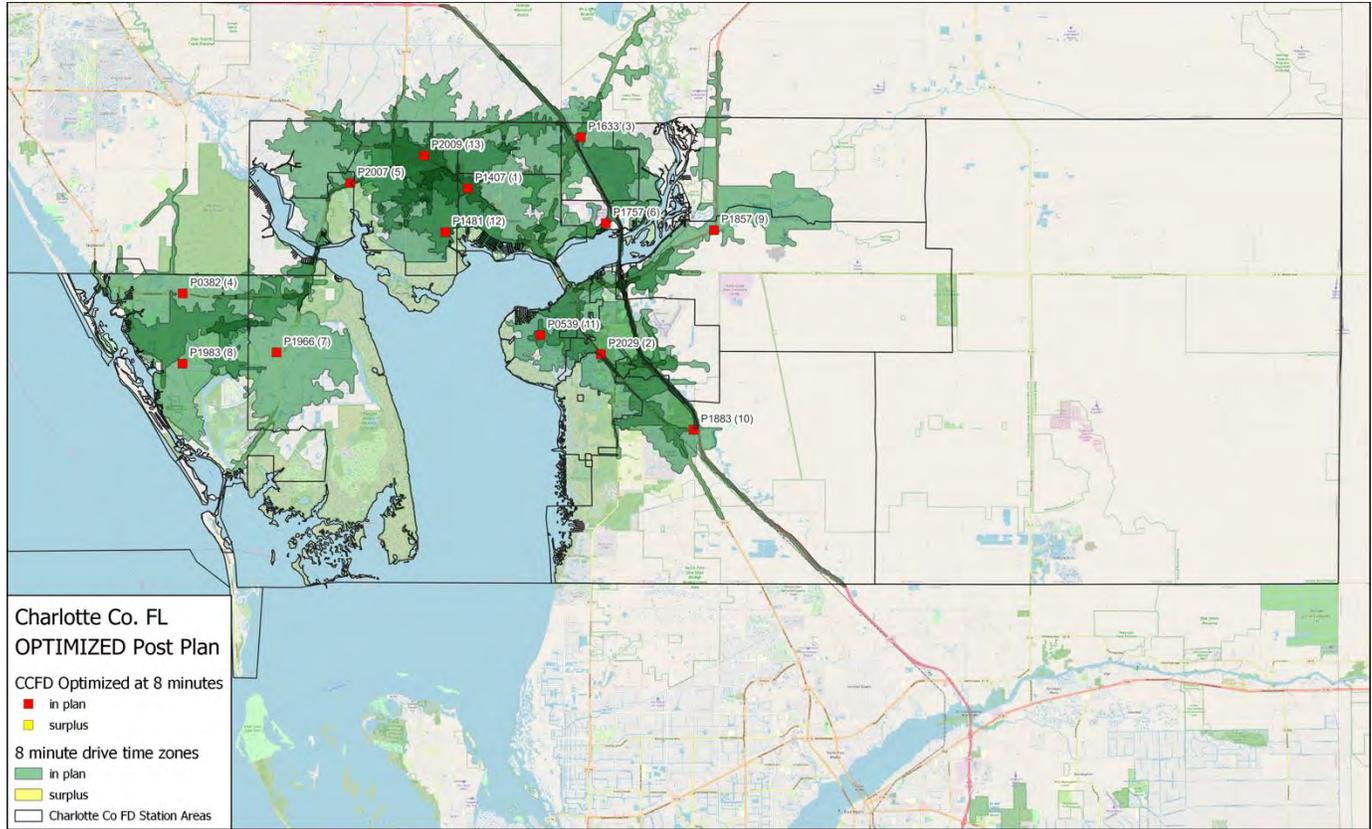
Figure 14: Optimized 6-Minute Station Plan



### 8-Minute Optimized Station Plan

An optimized station plan suggested that a total of 13 stations would be the most efficient station distribution model to ensure an 8-minute travel time. Of course, Station 9 would need to be reintroduced for geographic coverage, for a total of 14 stations.

Figure 15: Optimized 8-Minute Station Plan



## Transport

We analyzed outcomes of EMS calls through an examination of the “Begin to Transport Time” and “Transport to Destination Time” variables available in the data file. EMS calls were transport calls if at least one unit responding to the call had a reported either “Begin to Transport Time” or “Transport to Destination Time” value.

The number of EMS transports totaled 21,397, averaging 58.6 transports per day. Approximately 68.9% of EMS calls have patients being transported to the hospital. Alpha, Charlie, and Delta had the highest transport rates.

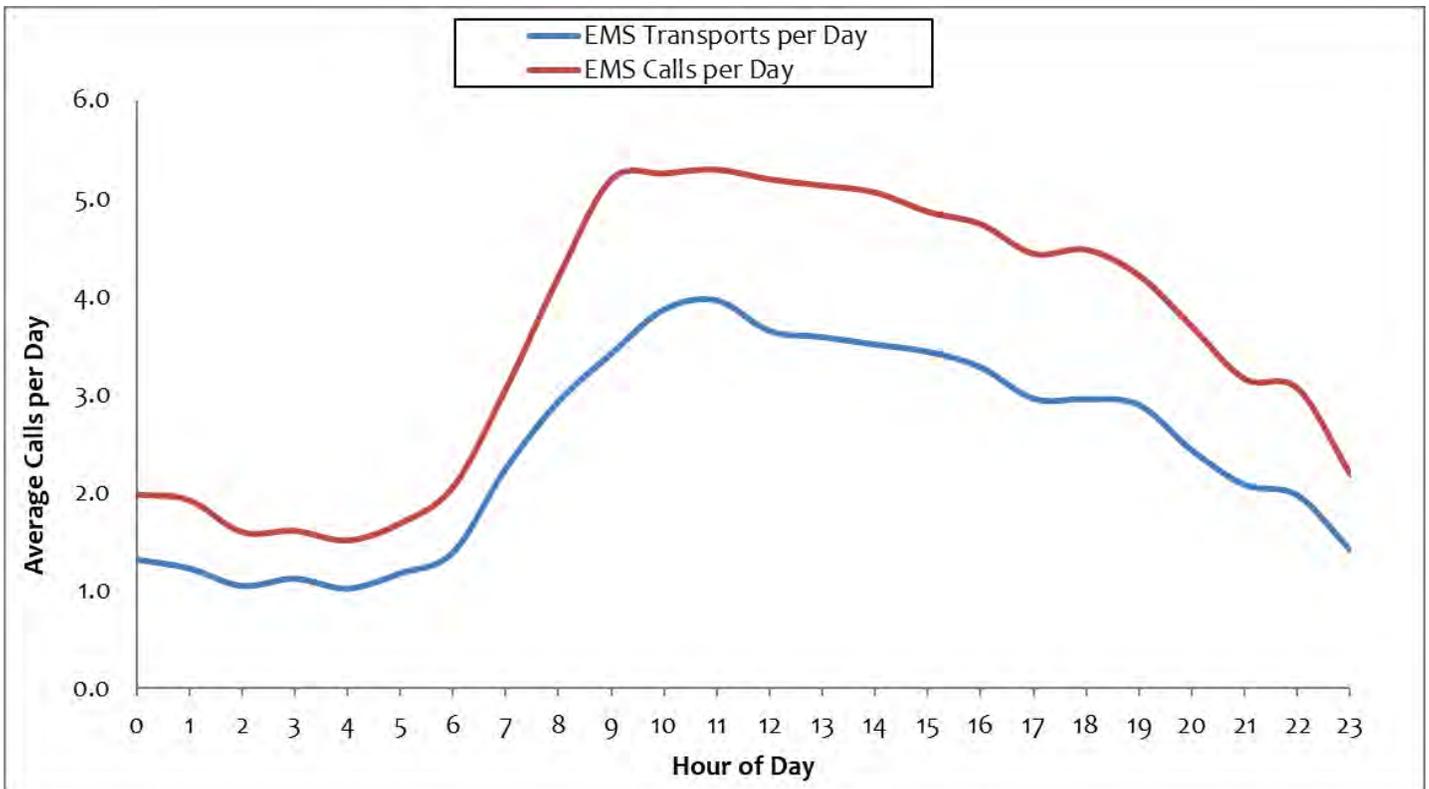
Duration of a call is defined as the difference between the first unit dispatch time and the last unit clear time. On average, the duration of a non-transport EMS call was 18.7 minutes. The duration of a transport call is 2.8 times that of a non-transport call, averaging 50.6 minutes per call.

Table 10: EMS Non-Transport and Transport Calls by EMD Determinant

EMD Determinant	Transport		Non-Transport		Transport Rate
	Duration (minute)	Number of Calls	Duration (minute)	Number of Calls	
Alpha	50.0	5,564	19.6	1,287	81.2%
Bravo	51.4	1,973	16.2	2,104	48.4%
Charlie	49.8	6,152	22.9	841	88.0%
Delta	51.9	5,122	22.1	1,110	82.2%
Echo	44.9	34	19.2	11	75.6%
Omega	46.4	87	21.5	35	71.3%
NA	50.8	2,465	18.0	4,429	35.8%
<b>EMS Total</b>	<b>50.6</b>	<b>21,397</b>	<b>18.7</b>	<b>9,817</b>	<b>68.5%</b>

We analyzed variation of total EMS requests and transport requests by the hour of the day and the average hourly rate of requests. The variation of total EMS requests and EMS transport reports followed a similar pattern. The busiest period for EMS and EMS transport requests was between 0900 and 1800. Requests by hour of the day are presented below.

Figure 16: Average EMS Calls and EMS Transports per Day by Hour of Day



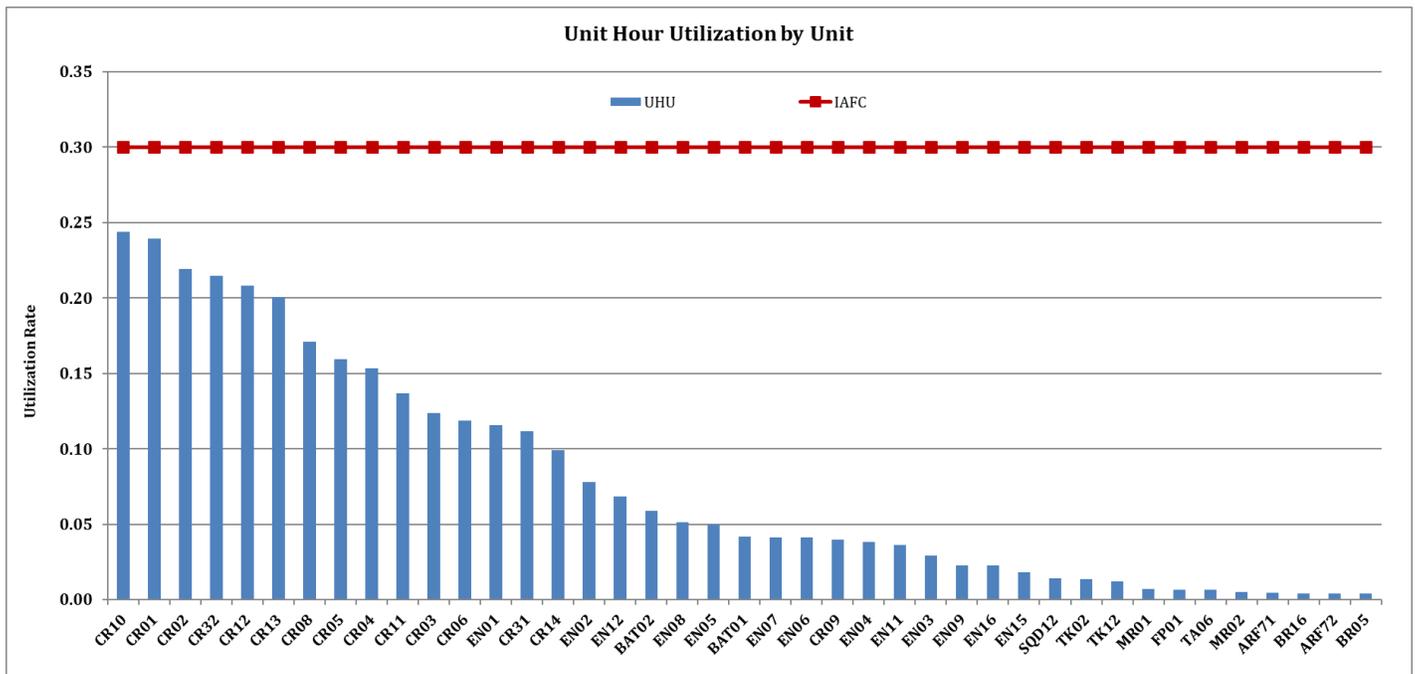
## Unit Hour Utilization

The number of calls responded to primarily address the wear and tear on the apparatus. Another measure, time on task, is necessary to evaluate best practices in efficient system delivery and consider the impact workload has on personnel. Unit Hour Utilization (UHU) determinants were developed by mathematical model. This model includes both the proportion of calls handled in each major service area (Fire and EMS) and total unit time on task for these service categories in 2021. The resulting UHU’s represent the percentage of the work period (24 hours) that is utilized responding to requests for service. The International Association of Fire Fighters (IAFF) recommends that 24-hour units do not surpass a 0.30, or 30% workload threshold. . In other words, best practice would not have units and personnel exceeding 30%, of their workday responding to calls. This would equate to approximately 7.2 hours of the 24-hour period. These thresholds take into consideration the necessity to accomplish non-emergency activities such as training, health and wellness, public education, and fire inspections.

Overall, the department is performing at approximately 0.10, or 10% utilization of 33 fully staffed units. The most utilized unit is the CR10 in station 1, at 0.24. CR01 is the second most utilized at 24%.

FITCH recommends using a UHU value of 0.25 as a planning threshold, as it may take time to work through the budget and policy approval processes to secure additional resource investments. It is anticipated that it would require an increase of approximately 657 calls to increase by 0.05 UHUs, the increase between 0.25 and 0.30. Utilizing the current growth over the last 5 years of 3.6%, it would take CR10 and CR01 approximately two years to surpass the upper threshold on UHU. Therefore, it is recommended that the County adopt the desired performance objectives and plan for reinvestment into the EMS program in particular. The reason adopting the desired performance standard is important is that it will significantly impact the redistribution of workload if the county is desirous of covering more of the geography more quickly.

Figure 17: Unit Hour Utilization – 24-Hour Per Day Units Across All Jurisdictions



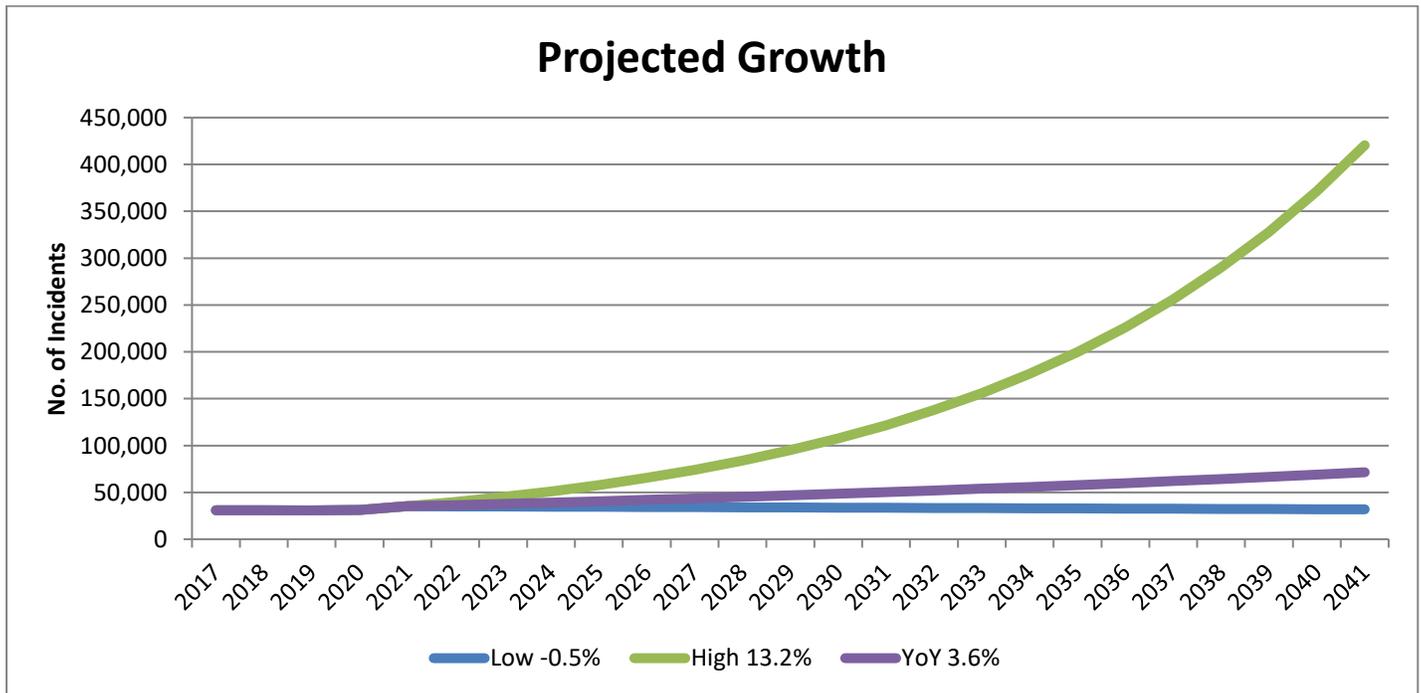
**Observation:**  
 The department Rescue Unit workload is approaching the upper recommended threshold.

**Recommendation:**  
 It is recommended that the department adopt a UHU planning threshold of 0.25, or 25%.

### Projected Growth

The available data set included five reporting periods of data, representing FY 2017 - 2021. From FY 2017 to FY 2021, calls for CCFEMS services increased from 30,801 to 35,224, with an average growth rate of 3.6% per year. The figure below depicts observed call volume during the last five-year reporting periods and various hypothetical growth scenarios for the next 20 years. These projections should be used with caution due to the variability in growth observed across prior calendar years. In all cases, data should be reviewed annually to ensure timely updates to projections and utilize a five-year rolling average.

Figure 18: Observed and Hypothetical Growth in Call Volume



## Optimal Staffing Strategy

Optimally, if the adopted performance objective is an 8-minute travel time for 90% of the incidents than a 24-rescue configuration would be optimal. The engines would be staffed at 3-personnel, with an officer on each apparatus, and the medic units at two personnel (paramedic and EMT).

### Current Relief Multiplier

A Continuous Staffing strategy is utilized when the department hires additional personnel to cover the average leave experienced on shift work. In this manner, the additional personnel are available as “relief” personnel who are utilized to cover vacancies at the straight time rate more frequently and thus reducing the overtime liability.

An optimized staffing analysis was conducted utilizing mathematical formulae to determine the most efficient allocation of personnel to maintain the desired staffing. Data provided by the department included an accounting of all personnel time spent away from regularly scheduled shift work. Analyses found that CCFEMS is optimally staffing personnel with respect to the current minimum staffing.

Optimal staffing is defined as sufficient staffing to cover all scheduled work hours, shift schedules, and the average employee leave experience. Maintaining the 76 minimum daily staffing, it would require a staffing multiplier of 3.52 to optimally staff the department. In other words, it would take 3.52 Full-Time Equivalents (FTEs) for each of the 76 minimum staffed positions for a total of 267 personnel assigned to shift. The current allocation is 269 personnel. This equates to an additional two personnel department-wide. The results are presented below.

*Table 11: Optimized Staffing Analysis*

Current Staffing and Unit Count	
24hr Seats	89
<b>Minimum Per Shift</b>	<b>76</b>
Total FTE Required by Multiplier	267
Budgeted Shift Assigned FTE Strength	269
<b>Difference</b>	<b>2</b>

## Resource Allocation Strategies

Understanding the most significant challenge is to address the future workload of the EMS program within CCFEMS as well as the need for the adoption of a countywide performance standard. A total of four assessments and alternatives were developed. These assessments examined variations in responding to the current EMS calls that CCFEMS handles.

### Baseline Assessment of Current Deployment Capacity

The current deployment included a total of 14 24-hour resources. The following figures illustrate the resource constraint of the current system. When reviewing the figures, the green/yellow/red columns are the hourly demand for services, adjusted for time on task, from Sunday through Saturday. The blue shaded area represents the unit demands to cover the geographic area with an 8-minute travel time. The dark blue line that outlines the shaded area is the required unit deployment required without consideration for the workload. Finally, the red line is the actual unit deployment. Whenever the redline is at or below the blue line, the system is resource constrained even before considering the impact of the workload on the personnel.

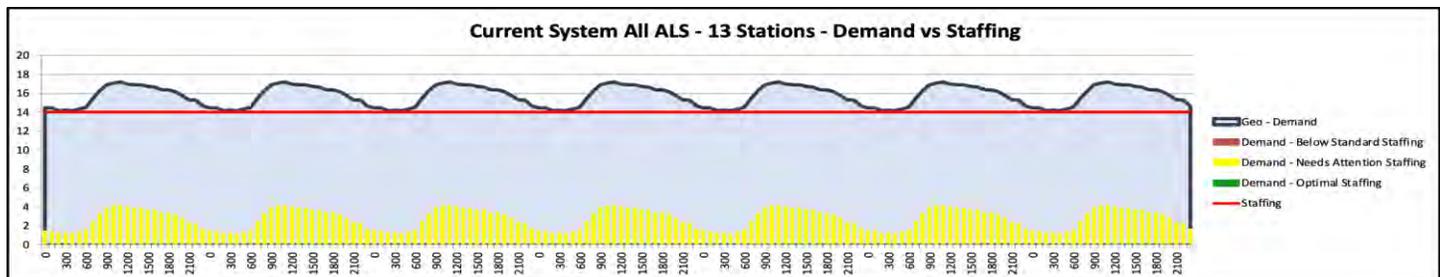
When the system is resource constrained, two things occur. First, the Rescues aren't available to respond immediately, which means that there may be longer response times from farther away units and/or mutual and automatic-aid requests. Second, when the Rescues aren't available to respond as designed, the system attempts to mitigate the system failures by sending the closest Engine or Truck to get a resource there quickly. Over the years, the volume of calls has increased, and the resource allocation has not kept pace resulting in a significant over reliance on large heavy fire apparatus to respond to EMS incidents.

When referring to the figure below, it is evident that the current EMS resource allocation of Rescues is insufficient at all hours of the day, attempting to respond from the 13 staffed locations.

### Baseline Assessment of Current Deployment Capacity – All EMS Incidents

The following assessment assumes that CCFEMS would be asked to respond to all EMS incidents (ALS and BLS) that occur within the county. This assessment evaluates the current deployment capacity to handle all EMS incidents within the county without any controls for the workload. When referring to the figure below, it is evident that the current EMS resource allocation of Rescues is insufficient.

Figure 19: Current EMS-Only Station Configuration

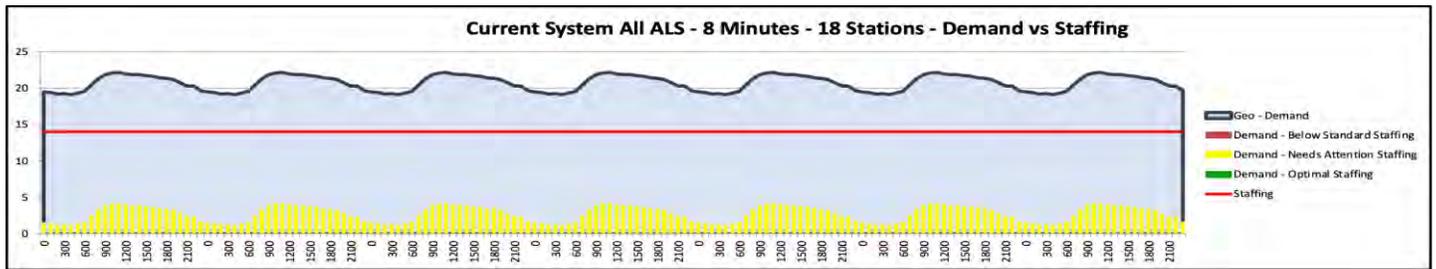


#### Observation:

Optimal EMS deployment would require a minimum of 18 Rescues during the peak of the day, while reducing the reliance on large apparatus responding to lower acuity EMS incidents.

Similarly, when attempting to maintain an 8-minute travel time, all 18 stations would be required to approximate the 8-minute travel time that is consistent with current performance. The resource allocation of 14 rescues and 18 locations is significantly under-resourced.

Figure 20: All Stations - 8-Minute Travel Time and 18 Stations



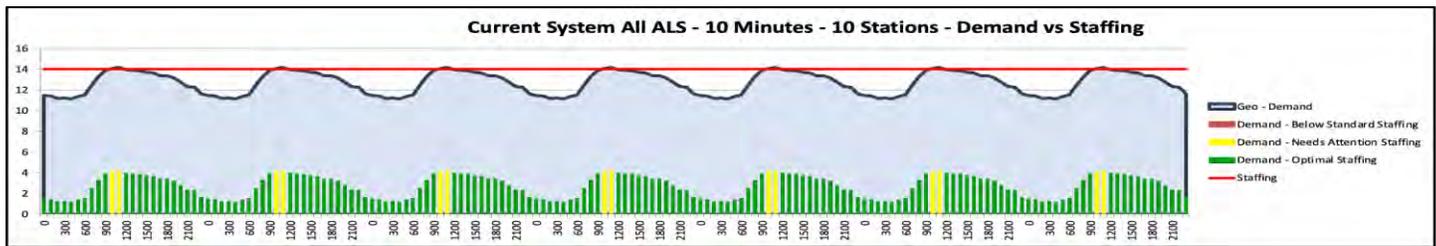
**Observation:**

Rescue resources are not sufficiently allocated to meet an 8-minute travel time and control for workload.

**Adopting a 10-Minute Travel Time – All EMS Incidents**

When utilizing a 10-minute travel time, the geographic station distribution is reduced to 10 stations. This was previously discussed in the move-up considerations. The 10-minute travel time affords the county a very lean resource deployment that will be challenged during the peak periods of the day. This is not recommended; however, it is recognized that it will work with some limitations.

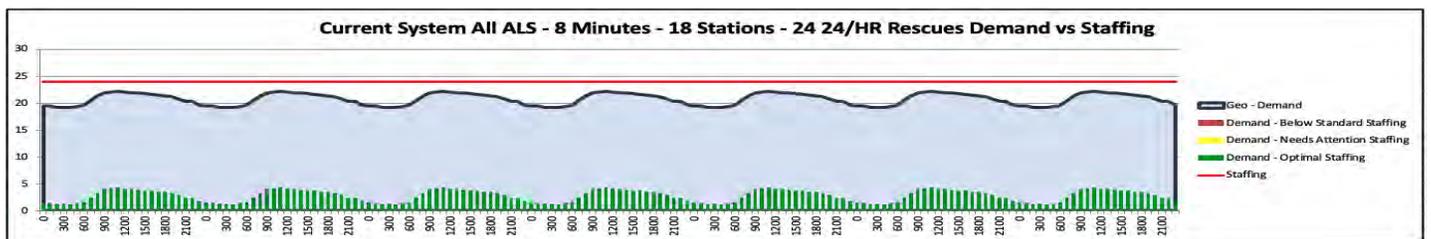
Figure 21: All Stations - 10-minute Travel Time and 10-Station Deployment



**Adopting an 8-Minute Travel Time – All EMS Incidents – 24 24-Hour Rescues**

When utilizing an 8-minute travel time, the geographic station distribution requirement is at least 18-facilities. Therefore, the strategy for meeting this level of performance would require 24 24-hour rescue resources.

Figure 22: All Stations - 8-Minute and 18-Stations Optimized Staffing



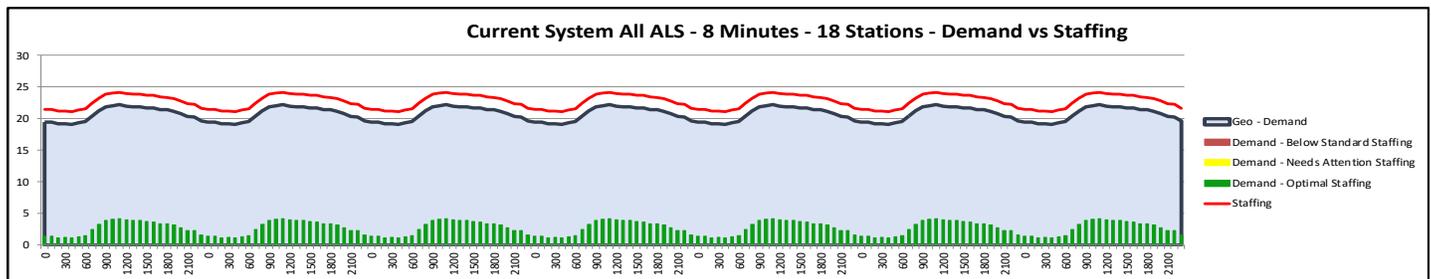
**Observation:**

Considering an 8-minute travel time, an optimized rescue staffing would require a total of 24 24-hour resources, if only considering the application of 24-hour resources.

## Peak Staffing Strategies 21 24-Hour Resources and 3 12-Hour Rescues

Within Charlotte County, the geography is the limiting factor, more so than the workload or UHUs at the systemic level. Therefore, the County could benefit from layering some peak load resources on top of the base 24-hour shift assigned rescues. This will allow for fiscal and operational efficiencies as the peak load units can work upwards of 50%, rather than being capped at 30%. This strategy would require a base of either 20 or 21 24-hour resources and then remaining surge capacity during the peak of the day could be handled by peak load resources (3 or 4-units). The peak load resources are a significant return on investment as the County could deploy two resources with a higher capacity to absorb work than a single 24-hour resource for overnight periods where there is little return on investment.

Figure 23: All Stations - 8-Minute and 18-Stations Optimized Staffing



### Observation:

Considering an 8-minute travel time, an optimized rescue staffing would require a total of 21 24-hour resources and 3 12-hour peak load units.

### Recommendation:

The peak load unit strategy is recommended as the most operationally and fiscally efficient staffing strategy.

## Consideration for ALS and BLS Tiered Service Delivery Models

Since its inception, the standard of care for EMS systems has continued to migrate toward ALS. However, the prevailing belief that ALS systems represent a gold standard by facilitating improved patient care and outcomes is being challenged in the current literature. One of the largest and most expansive studies is the Ontario Prehospital Advanced Life Support (OPALS) study which involved more than 25,000 patients over an 8-year period. OPALS examined the influence of ALS on patient outcomes over three major EMS categories: (1) major trauma, (2) cardiac arrest, and (3) respiratory distress.<sup>2 3</sup>

For major trauma, the OPALS study's primary outcome measure was survival to hospital discharge for adults who had suffered major trauma. The study controlled for age, injury type, severity, and Glasgow Coma Scale

<sup>2</sup> Stiell, I.G., et al. (1998) The Ontario Prehospital Advanced Life Support (OPALS) Study: Rationale and methodology for cardiac arrest patients. *Annals of Emergency Medicine*. 32(2), 180-90. doi: 10.1016/s0196-0644(98)70135-0.

<sup>3</sup> Stiell, I.G., et al. (1999) The Ontario Prehospital Advanced Life Support (OPALS) study Part II: Rationale and methodology for trauma and respiratory distress patients. OPALS Study Group. *Annals of Emergency Medicine*. 34(2), 256-62. doi: 10.1016/s0196-0644(99)70241-6.

(GCS). The study found that survival rates did not differ overall between patients receiving ALS care or BLS care. In fact, among patients with a GCS <9, survival was lower among the ALS group. The study showed that, for major trauma patients, system-wide implementation of full ALS did not decrease mortality or morbidity.<sup>4</sup>

For out-of-hospital cardiac arrest, OPALS focused on the rate of survival to hospital discharge. Their study found no improvement in the rate of survival with the use of ALS in any subgroup. In other words, ALS did not improve the rate of survival for out-of-hospital cardiac arrest in systems that had already optimized rapid defibrillation.<sup>5</sup> The study highlighted the life-saving value of bystander CPR and rapid-defibrillation which can be easily delivered by Automated External Defibrillators (AEDs).

For respiratory distress, the primary outcome measure was mortality, defined as the rate of death before hospital discharge, regardless of the duration of admission. Additional outcome measures considered emergency department intubation rates, aspiration, hospitalization, length of stay, and functional status after discharge. The study included patients whose primary symptom was shortness of breath related to respiratory illness. The study did show that specific ALS interventions had a positive impact on the rate of death—a change from 14.3% for BLS and 12.4% for ALS. However, endotracheal intubation was only performed in 1.4% of patients, and intravenous drugs were administered to 15% of patients. The use of medications for symptom relief increased from 15.7 % at the BLS level to 59.4% at the ALS level.<sup>6</sup> Thus, ALS interventions were rarely used. Other research seems to indicate that the addition of CPAP to the BLS scope of practice can reduce the need for an ALS level of care in patients facing acute respiratory failure.<sup>7</sup>

The OPALS project, the largest to date at its time, provided valuable insight into the efficacy of ALS in EMS. However, the OPALS research does not stand alone. For example, another study of patients suffering out-of-hospital cardiac arrest showed that those who received BLS care had a higher survival rate at hospital discharge than those who received ALS. These patients were also less likely to experience poor neurological functioning.<sup>8</sup>

The research indicates that ALS-level care in the EMS environment has a very limited positive impact on clinical outcomes. While some incidents may benefit by a measure of ALS care, the vast majority of EMS responses can be effectively answered with a highly functioning and proficient BLS level of care, potentially improving patient outcomes.

When evaluating the clinical differences between ALS and BLS models, we also consider the levels of paramedic staffing within ALS models. Research has consistently suggested clinical improvement with fewer paramedics

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<sup>4</sup> Stiell, I.G., et al. (2008) The OPALS major trauma study: Impact of advanced life-support on survival and morbidity. OPALS Study Group. *Canadian Medical Association Journal*. 178(9), 1141-1152. doi: 10.1503/cmaj.071154

<sup>5</sup> Stiell, I.G., et al. (2004) Advanced cardiac life support for in out-of-hospital cardiac arrest. OPALS Study Group. *New England Journal of Medicine*. 351(7), 647-56. doi: 10.1056/NEJMoa040325.

<sup>6</sup> Stiell, I.G., at al. (2007) Advanced life support for out-of-hospital respiratory distress. *The New England Journal of Medicine*. 356(21), 2156-64. doi: <http://dx.doi.org.libproxy.troy.edu/10.1056/NEJMoa060334>

<sup>7</sup> Williams, T. A., Finn, J., Perkins, G. D., & Jacobs, I. G. (2013). Prehospital continuous positive airway pressure for acute respiratory failure: A systematic review and meta-analysis. *Prehospital Emergency Care*, 17(2), 261-273. doi: 10.3109/10903127.2012.749967

<sup>8</sup> Sanghavi, P., et al. (November 2014). Outcomes after out-of-hospital cardiac arrest treated by basic vs. advanced life support. *JAMA Internal Medicine*, E1-E9. Available at <http://www.jamainternalmedicine.com>

per capita. Several studies show better survival rates for SCA with fewer paramedics per capita. Other research has shown that the successful execution of advanced procedures, such as endotracheal intubation, is directly correlated with the first-hand experience level of the clinician.<sup>9</sup> Advanced ALS level skills are inherently rare, as the research shows. Thus, the limited opportunities to perform these skills and remain proficient with them are directly influenced by the concentration of paramedics within the system. Simply put, the limited opportunities to perform ALS skills are diluted with each paramedic added to the system. Therefore, the ALS staffing strategy of one paramedic and one EMT per ALS unit is firmly supported by the research.

The research indicates that EMS systems can over-staff paramedic-level providers, negatively impacting patient outcomes. The ALS staffing strategy of one paramedic and one EMT per ALS unit is firmly supported by the research.

While there is no question regarding the clinical efficacy of a tiered ALS-BLS system, there are considerations for the efficiency and effectiveness of the model. Several policy considerations must be addressed.

It is understood that other considerations, such as challenges in recruitment and retention for paramedics, could influence the ultimate policy decisions.

At this time, it is recommended that the department continues with a single tier all ALS system as the highest level of care and the most fiscally efficient model. It is understood that other considerations, such as challenges in recruitment and retention for paramedics, could influence the ultimate policy decisions.

**Recommendation:**

It is recommended that the department utilizes a single tier all ALS system as the highest level of care and the most fiscally efficient model.

## Optimizing Resource Allocation with Call Triage

Innovative strategies such as considering tiered-response models and other opportunities to best align resource allocation decisions to risk require an elegant call prioritization or triage system at the 911-dispatch center. The more sophisticated the pre-incident call stratification, the greater flexibility the department has to best assign resources.

The following is provided as an example of a protocolized call triage system, Medical Priority Dispatch System (MPDS), which the county currently utilizes, for the purpose of explaining the downstream potentialities for the department. First, the distribution of BLS versus ALS incidents is provided from a national research study of millions of records.

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<sup>9</sup> Wang, H.E., Balasubramani, G.K., et al. (2010). Out-of-hospital endotracheal intubation experience and patient outcomes. *Annals of Emergency Medicine*, 52(3): 256-262.

## Distribution of ALS and BLS Incidents at Time of Dispatch

Data from a study of systems using the Medical Priority Dispatch System (MPDS) would suggest that the relationship is approximately 47% BLS (Alpha, Bravo, Omega) and 53.1% ALS (Charlie, Delta, Echo). Typically, systems that do not utilize a call prioritization strategy will over triage incidents to where all calls are either ALS or dispatched as emergency events.

**Figure 24: Distribution of Cases by Agency and Priority Threat<sup>10</sup>**

Agency	N	Dispatch priority levels: n (%)					
		OMEGA	ALPHA	BRAVO	CHARLIE	DELTA	ECHO
ATCEMS	354,929	3,992 (1.1)	65,822 (18.6)	77,801 (21.9)	62,724 (17.7)	128,676 (36.3)	15,914 (4.5)
EMSA	1,514,033	78,041 (5.2)	236,153 (15.6)	446,747 (29.5)	310,374 (20.5)	418,080 (27.6)	24,638 (1.6)
LMEMS	472,343	24,061 (5.1)	85,092 (18.0)	81,855 (17.3)	115,739 (24.5)	160,519 (34.0)	5,076 (1.1)
MEDIC	156,063	2,101 (1.4)	23,748 (15.2)	28,959 (18.6)	40,911 (26.2)	57,624 (36.9)	2,720 (1.7)
MedStar	617,396	12,603 (2.0)	135,111 (21.9)	161,815 (26.2)	153,777 (24.9)	146,043 (23.7)	8,047 (1.3)
SLCFD	47,526	530 (1.1)	9,881 (20.8)	8,809 (18.5)	8,628 (18.2)	18,623 (39.2)	1,051 (2.2)
Overall	3,162,290	121,328 (3.8)	555,807 (17.6)	805,986 (25.5)	692,153 (21.9)	929,565 (29.4)	57,446 (1.8)

*ATCEMS* = Austin-Travis County EMS, Austin, Texas, USA. *EMSA* = Emergency Medical Services Authority, Tulsa, Oklahoma, USA. *LMEMS* = Louisville Metro EMS, Louisville, Kentucky, USA. *MEDIC* = Mecklenburg EMS Agency, Charlotte, North Carolina, USA. *MedStar* = MedStar-Mobile Healthcare, Ft. Worth, Texas, USA. *SLCFD*

## Resource Allocation on EMS Incidents

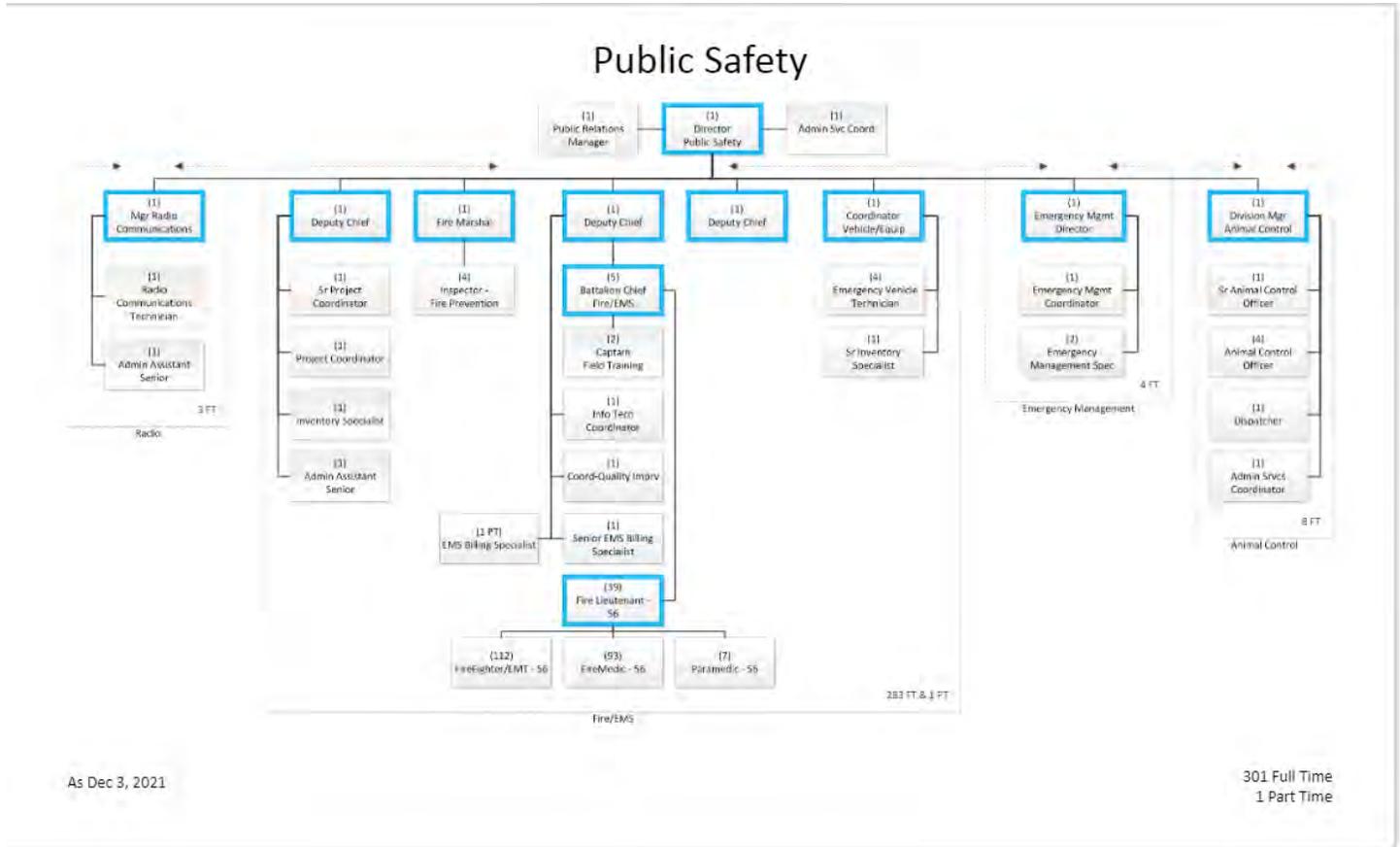
The data confirms that the department responds more than two units to all EMS incidents calculated at 2.5 units per incident. Once again, utilizing the MPDS model as an example, a single ambulance resource can respond to Alpha (BLS) and Charlie (ALS) incidents. This would equate to 17.6% (22.6% Charlotte) of the incidents at the Alpha (BLS) level and 21.9% (23% Charlotte) at the Charlie (ALS) level for a total of 39.5% (45.6% Charlotte) of the incidents. A strategy similar to this would primarily reduce the workload on the large fire apparatus accompanying ambulances to risk levels that don't require multi-unit responses. This would reintroduce capacity back into the system for other activities and higher priority incidents.

<sup>10</sup> Scott, G., Et. Al. (2016). Characteristics of call prioritization time in a Medical Priority Dispatch System. *Annals of Emergency Dispatch & Response*. 2016; 4(1): pp.27-33.



Emergency Management Director, Vehicle Equipment Coordinator, Division Manager of Animal Control, and a Radio Communication Manager.

While the Director/Chief has approximately 7 to 9 direct reports, it is recommended that the Chief only has 5 direct reports / program areas. Therefore, a valid case is made for creating a second management layer between the Chief and the Deputy Chiefs and their direct reports.



As Dec 3, 2021

301 Full Time  
1 Part Time

## Evaluation of Performance – A Shift Towards Outcomes

Evaluation of system performance occurs through various mechanisms of iterative planning and analysis but commonly includes an examination of a system's processes, outputs, and impact. Processes (or activities) are the services or interventions provided by the system to fulfill its mission or goals; outputs are the direct products or results from the system's processes, some of which may also be referred to as process measures; and impact refers to the ultimate benefits that result from the system's activities and output, including positive effects related to short-term, intermediate, and long-term goals, and may also be referred to as outcome measures.

In systems that offer fire and EMS services:

- Processes may include training personnel; acquiring, maintaining, and inspecting vehicles and equipment; establishing community relationships; and developing communication and data management connections with a 911 center;
- Outputs or process measures may include number of calls received and number of responses made by a department, station, or unit; unit dispatch, turnout, travel, on-scene, and response times; percentage of patient transports; percentage of post-seizure patients receiving a blood glucose check;<sup>11</sup> percentage of STEMI patients transported to a designated cardiac receiving center;<sup>12</sup> and number of community outreach or education events; and
- Impact or outcome measures may include reduced financial loss with structure fires; reduced number of forest or wildland fires originating from people; improved patient outcomes; and increased survival rates.

In addition to setting goals or benchmarks related to impact or outcome measures, systems typically set goals or benchmarks related to outputs or process measures due to the presumed or evidence-based relationship between the two measures. For example, research indicates that transport of Step 1 and Step 2 trauma patients to a designated trauma center (process measure) can reduce mortality (outcome measure).<sup>13</sup> As such, the Washington State Department of Health has set a process-related goal that  $\geq 90\%$  of Step 1 and Step 2 trauma patients be transported by EMS to a designated trauma center.

Outputs or process measures are typically more easily evaluated, as the system exerts direct influence over their outputs and processes, and can oversee related data collection and management. Impact or outcome measures

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<sup>11</sup> Washington State Department of Health. (2017, January 18). EMS System Key Performance Indicators / Clinical Measures. State of Washington: Author, KPI 4.1. (Available: <http://ncecc.net/wp-content/uploads/2012/03/WA-State-EMS-KPI-Spreadsheet-Update-20170126.pdf>).

<sup>12</sup> *Ibid*, KPI 5.6.

<sup>13</sup> *Ibid*, KPI 1.2.

become more difficult to evaluate when data collection and management are outside the purview of the system, and interpretation of data must account for other intervening factors.

Nevertheless, systems are encouraged to move beyond goal setting or benchmarking and evaluation related to outputs or process measures, and consider ways that impact or outcome measures can be evaluated. Establishing effective partnerships with medical facilities to access data related to patient outcomes is essential for EMS related outcomes. Internally, the department may benefit from a refined training and quality assurance/quality improvement effort on fire reporting, estimating fire spread, and estimating fire losses.

## **Outcome Measures for Consideration<sup>14</sup>**

In the context of fire suppression related outcomes, several potential outcome measures are posited for the Department's consideration. A brief description and discussion of these outcomes are provided:

### **Fire Spread – Degree of Confinement – All Building Fires with Fire Spread**

Analyses of fire spread could not be completed with the available data provided. Future internal analyses would provide reasonable data to adopt benchmark performance outcome measures to contain all building fires to the building of origin at X%; X% of all building fires to the floor of origin; and X% of all building fires to the room of origin or less.

This capability to measure and report on fire spread is currently available to the department through state and national fire reporting formats. However, it is recommended that a focused quality assurance and quality improvement process be adopted that ensures consistency in reporting and defines key reporting elements. For example, when is a cooking fire in a building a building fire or a cooking fire?

### **Fire Spread – Degree of Confinement – Residential Structure Fires**

The differentiation by occupancy type can be accomplished in the fire reporting. The department is encouraged to begin to measure the degree of confinement by residential fires and commercial occupancies separately and as the aggregate data described previously.

### **Fire Controlled by Fire Suppression Systems**

This measure is available in the Department's fire reporting systems. The Department is encouraged to view this outcome measure from at least two lenses. First, it may be beneficial to measure the percentage of fires controlled by fire suppression systems where a fire suppression system is present. A second lens may be to establish a long-term goal of the number of overall fires that were extinguished by suppression systems to measure the saturation of sprinkler systems in the communities building stock. While both measures are valuable, there are other mechanisms available to the department to capture long-term sprinkler saturation. Therefore, it is recommended that the department focus on ensuring the present sprinkler systems are delivering the desired outcomes at a high level while continuing to further the policy discussion on required sprinkler system saturation.

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<sup>14</sup> Friedman, M. (2011). Adapted from *Fire department performance measures*. Santa Fe, New Mexico: Fiscal Policy Studies Institute (FPSI).

## Preventable Fire Incidents

Fire prevention and community risk reduction efforts generally focus on reducing the preventable fire incidents through engineering, enforcement, economic incentives, and education.<sup>15</sup> The last line of defense is the emergency response. Therefore, it is recommended that the department begin to track and measure the number of preventable and unpreventable incidents of fire. The available fields for cause of fires are provided below.

Count of Incident Number	
Row Labels	Total
Act of nature	
Cause under investigation	
Cause undetermined after investigation	
Cause, other (Only used for additional exposures)	
Failure of equipment or heat source	
Intentional	
Unintentional	
<b>Grand Total</b>	

Therefore, the department is encouraged to utilize and/or create a data point that provides insight into preventable and unpreventable fires. For example, it would be reasonable to suggest that a large percentage of “Unintentional Fires” would be preventable. This category typically accounts for a large percentage of building fires. Similarly, a smaller portion of “Failure of Equipment or Heat Source” may be associated with behavioral influences that serve as proximal or inception events.

Finally, what percentage of the fires were logged with an undetermined cause? The Department is encouraged to ensure that as longer duration investigations are completed, the original fire reporting is updated and captured for analysis, where applicable. Conversely, fires where a cause may not be readily available, the department may evaluate the process for an appropriate return on investment for a more detailed investigation.

## Building Fires in Commercial Occupancies

The differentiation by occupancy type can be accomplished in the fire reporting. The Department is encouraged to begin to measure the degree of confinement by residential fires and commercial occupancies separately and as the aggregate data described previously. In addition, this section of outcomes contemplates capturing fire loss as a percentage of the total property value both with and without fire protection systems.

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<sup>15</sup> National Fire Protection Agency. (2016). *Community risk reduction doing more with more*. Quincy, MA: NFPA Urban Fire and Life Safety Task Force.

## Property Saved in Buildings with Fires

One desired outcome of fire suppression efforts is to not just focus on fire losses but also to focus on the value and proportion of property saved. However, estimates for property saved must be completed with a high degree of transparency, consistency, and fidelity. In other words, the Department must guard against inflating value that erodes trust in the reported outcomes.

Therefore, it is recommended that a structured system be developed internally that incorporates strategies for estimating fire losses, defining, and capturing original value, and legitimately estimating the portion of the building that would have burned without intervention.

First, estimating fire losses has been a difficult proposition for most fire agencies. There is often a lack of structured methodology to estimate the actual loss experienced by insurers may be three-fold the local fire officer's estimates. The fire department may estimate the damage to the room of origin but underappreciate the value to the remainder of the house and contents. Therefore, a system should be developed, and the personnel should be educated in the system accompanied by a quality assurance / quality improvement process.

Second, it will be important to define the source material for the value of the property. For example, is it market value or assessed value? Some agencies have incorporated the tax collector's office link to the address so that completion of the fire report, personnel can have ready access to the buildings value. It is recommended to use assessed value for consistency.

Third, the estimate of property saved has to be moderated by the realistic probability of further damage. In other words, it would not be appropriate for the fire department to put out a small trash can fire in a bathroom of a mall and assume the entire mall would have been a loss without the intervention. In this example, if the bathroom were non-combustible or sprinklered, then the opportunity for fire spread would be greatly reduced. Therefore, it is recommended that a process is adopted that appropriately suggests the impact if there were no intervention similar to the following:

The probability or likelihood of loss to the remaining structure is:

- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

If the building is sprinklered, then the probability may be reduced to less than 10%.

The property value can be multiplied by the percentage of estimated fire spread to determine the amount of property saved. Since the number of incidents is relatively low, each postfire report should be reviewed for accuracy and justification. When specifically contemplating fire loss as a percentage of total protected property value, the department can measure this annually.

Finally, understanding that number of fires is relatively low in frequency, there may be merit in having a few department members or less conduct investigations and/or cost estimates to ensure a high degree of consistency and accuracy in

### **Cardiac Arrest Patient Management**

When contemplating EMS services, there are few better outcome measures than that of understanding the number and percentage of patients that survived cardiac arrest through hospital discharge. The Washington State Department of Health created the “System of Key Performance Indicators and Clinical Measures” that provides a framework for clinical performance and outcomes.<sup>16</sup>

The Washington Key Performance Indicators (KPI) suggests that greater than or equal to 50% of the patients that present in cardiac arrest prior to EMS arrival, with a witnessed collapse, and found in a shockable rhythm will survive to hospital discharge. Similarly, with none of the previous restrictions, it is suggested that greater than or equal to 10% of all cardiac arrest patients will survive discharge from the hospital.

The recommended outcome measures are provided below for the Department’s consideration. Benchmark performances are only a recommendation and items left blank will need to be developed and adopted internally. It is fully expected that the Department will continue to refine the outcome measures as well as add new measures in the future.

#### **Recommendation:**

It is recommended that the department consider adopting outcome measures to complement the system of measures to guide performance management.

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<sup>16</sup> Washington State Department of Health. (2017, January 18). EMS System Key Performance Indicators / Clinical Measures. State of Washington: Author. (Available: <http://ncecc.net/wp-content/uploads/2012/03/WA-State-EMS-KPI-Spreadsheet-Update-20170126.pdf>).

Table 12: Recommended Fire Suppression and EMS Outcome Measures

<b>Fire Suppression</b>		
<b>Measure</b>	<b>Benchmark Performance</b>	<b>Current Performance</b>
<b>Fire Spread – Degree of Confinement – All Building Fires with Fire Spread</b>		
Fire Confined to Building of Origin	95%	%
Fire Confined to Floor of Origin	75%	%
Fire Confined to Room of Origin	50%	%
Time to Fire Confined (from FD arrival)	10:00	mm:ss
<b>Fire Spread – Degree of Confinement – Residential Structures with Fire Spread</b>		
Fire Confined to Room of Origin		
<b>Fires Controlled by Fire Suppression Systems</b>		
Percentage of Fires Extinguished by Fire Suppression Systems in Protected Buildings	90%	%
<b>Preventable Fire Incidents</b>		
Percentage of Fires Unpreventable	%	%
<b>Building Fires in Commercial Occupancies</b>		
Confined to Room of Origin	%	%
Fire Loss as a Percentage of Total Protected Property Value <u>with</u> Fire Protection System	%	%
Fire Loss as a Percentage of Total Protected Property Value <u>without</u> Fire Protection System	%	%
<b>Property Saved in Buildings with Fires</b>		
Value of Property Saved in Dollars	\$	\$
Fire Loss as a Percentage of Total Protected Property Value	0.05%	%

<b>Emergency Medical Services</b>		
<b>7. Cardiac Arrest Patient Management</b>		
7.3 Percent of patients (in cardiac arrest before EMS arrival) with a witnessed collapse and found in an initially “shockable” rhythm, with survival to discharge from the acute care hospital	≥ 50%	%
7.4 Percent of overall cardiac arrest patients with survival to discharge from hospital	≥ 10%	%

## Recommended Process (Activity) Measures

While the outcomes are the ultimate goals of the system design and performance, there are process objectives that have an assumed surrogate relationship to accomplishing and/or maintaining the ultimate outcomes. Therefore, a system of process measures is recommended for the department to create (if not readily available), adopt, measure, and manage the building blocks towards desired outcomes.

Several process measures were identified and are provided here for consideration and/or adoption. These are presented in the Table below. As with the previous presentation for Outcome Measures, any benchmark performance elements that are provided are a suggestion and are not intended to be restrictive for the agency.

**Table 13: Recommended Process Measures**

Process Measure	Benchmark Performance	Current Performance
<b>Performance and Other Objectives to Accomplish Outcomes</b>		
Percentage of Commercial Properties with Operating Fire Protection Systems	%	%
Total Number of Buildings Protected		#
Dollar Value of Buildings Protected		\$
Number of Responses to Fire Alarms	#	#
Percentage of Fire Alarms that are Unwanted Alarms	10%	%
Number of Community Outreach, Training, and Education Events	#	#
Distribution of Fires by Type and Cause	%	%
Percentage of Inspections on Schedule	90%	%

Additionally, a more traditional performance-based system of baseline service measures are provided in the Table below. However, the intended benefit to the County and Department of migrating towards well-defined outcome measures is that the Department can be less sensitive to incremental changes in performance as long as the outcome measures continue to be met. In other words, if the department continues to meet greater than 50% survivability on sudden cardiac arrests, then the sensitivity to a 30-second increase in response time may receive a measured response if at all.

Regarding EMS, the Washington State Department of Health's KPIs clearly articulates process measures that are desirable. The full KPIs are provided as an Appendix for the reader's convenience. A condensed version is provided here for the Department's consideration. It is understood that some of the data points may not currently exist and are either in process development or may have to be fully developed.

At a high level the Medical Director is supportive of a migration towards outcome measures and consideration of the State's KPI platform. The KPIs are categorized into 8 broad patient management categories:

1. Critical Trauma
2. Heart Failure
3. Asthma
4. Seizures
5. Acute Coronary Syndrome/Chest Pain
6. Stroke/TIA
7. Cardiac Arrest
8. Advanced Airways

Again, it is understood that some of the measures may need to be modified or adjusted based on local medical direction. In all cases, the process measures presented in this section will require administrative oversight and capacity and should be accompanied by a robust quality assurance / quality improvement effort. A condensed version of the process measures and the benchmark performances are provided below.

Table 14: Washington State Department of Health KPIs (condensed)

Process Measure	Benchmark Performance	Current Performance
<b>1. Critical Trauma Patient Management</b>		
<b>Percent of Step 1 and Step 2 trauma patients</b>		
1.1 . . . with EMS scene time < 10 minutes (arrival-to-departure of ambulance)	≥ 90%	
1.2 . . . transported to designated trauma center	≥ 90%	
<b>2. Heart Failure Patient Management</b>		
<b>Percent of suspected heart failure patients who received</b>		
2.1 . . . CPAP or had CPAP protocol documented	≥ 90%	
2.2 . . . nitroglycerine (NTG) or had NTG protocol documented	≥ 90%	
<b>3. Asthma Patient Management</b>		
<b>Percent of bronchospasm patients with respiratory distress, indicative of wheezing or known history of asthma or reactive airways disease,</b>		
3.1 . . . who received a beta-agonist or had the beta-agonist administration protocol documented by the first EMS crew able to provide such treatment	≥ 90%	
<b>4. Seizure Patient Management</b>		
<b>Percent of still seizing (upon EMS arrival)</b>		
4.1 . . . and post-seizure patients who received a blood glucose (BG) check	≥ 90%	
4.2 . . . or recurrent seizure patients treated with benzodiazepines by EMS	≥ 90%	
<b>5. Acute Coronary Syndrome/Chest Pain Patient Management</b>		
<b>Percent of patients ≥ 35 years old with suspected cardiac chest pain, discomfort, or other ACS symptoms</b>		
5.1 . . . who received aspirin (ASA) from EMS or had the aspirin protocol documented	≥ 90%	
5.2 . . . with 12-Lead ECG acquired by EMS	≥ 90%	

Process Measure	Benchmark Performance	Current Performance
5.3 . . . who received a 12-Lead ECG < 10 minutes from time of arrival on scene by first 12-Lead ECG-equipped EMS unit	≥ 90%	
5.4 . . . with an EMS scene time (arrival-to-departure of ambulance) < 20 minutes	≥ 90%	
5.5 Percent of suspected STEMI patients in which a Code STEMI alert is activated prior to hospital arrival	≥ 90%	
5.6 Percent of patients identified as STEMI by EMS who are taken to a designated cardiac receiving center	≥ 90%	
<b>6. Stroke/TIA Patient Management</b>		
<b>Percent of suspected CVA/TIA patients</b>		
6.1 . . . who have a FAST exam (i.e., neuro screening) completed and documented or documentation of why an exam could not be completed	≥ 90%	
6.2 . . . receiving a BG check	≥ 90%	
6.3 . . . with an EMS scene time (arrival-to-departure of ambulance) < 20 minutes	≥ 90%	
6.4 . . . with Time Last Normal < 6 hours to hospital arrival, in which a Code Stroke alert is activated prior to hospital arrival	≥ 90%	
6.5 . . . taken to a designated stroke center	100%	
6.6 . . . who have a FAST exam score who have a LAMS Stroke Scale Assessment completed and documented or documentation of why an assessment could not be completed	100%	
<b>7. Cardiac Arrest Patient Management</b>		
7.1 Percent of non-traumatic cardiac arrest patients who received bystander CPR	≥ 50%	
7.2 Percent of patients (in cardiac arrest before EMS arrives) in an initially “shockable” rhythm who received first defibrillation in < 8 minutes from time 911 call was received at Fire/EMS dispatch	≥ 90%	
<b>8. Advanced Airway Management</b>		
<b>Percent of patients</b>		

Process Measure	Benchmark Performance	Current Performance
8.1 . . . intubated with “first pass” success	≥ 80%	
8.2 . . . who are successfully intubated with an ET tube	≥ 90%	
8.3 . . . with successful placement of a supraglottic (SGA) airway	≥ 90%	
8.4 . . . who are successfully intubated or who have an SGA successfully placed	≥ 90%	
8.5 . . . and patients with SGAs with documentation of continuous wave-form ETCO2	≥ 90%	

## High-Level Summary of Recommendations

### Improving Dispatch and Turnout Times

- It is recommended that the Department work with the dispatch center to maximize any potential incremental improvements in call processing times.
- It is recommended that the Department improve turnout times that better align with national recommendations and best practices.

### Optimal Deployment Strategies

- Understanding that there is a fairly uniform risk level across the community, as defined by the urban/rural call density analysis, it is recommended that the County continue staffing all stations.
- It is recommended that a combination of Rescue resources are deployed to meet 24 during the peak of the day.
- The most operationally and fiscally efficient model would require 21 24-hour resources and 3 12-hour peak load units.
- It is recommended to continue to deploy a single-tier ALS EMS delivery model.
- It is recommended that the department consider the recommended move-up policy.
- It is recommended that the department consider staffing all resources with a minimum of three personnel, including one position for a supervisory role.

### Optimized Staffing Strategies

- The Department is staffing to an optimal level concerning the daily minimum staffing of the current deployment.
- Alternative EMS strategies would increase staffing by approximately 7 personnel per 24-hour rescue unit and 5 personnel per 12-hour rescue unit.
- It is recommended to prioritize investments toward improving response capacity and delivery before considering increasing per-unit staffing.

### Invest in Capital Facilities

- It is recommended that the County and Department continue to develop and execute a capital improvement plan for the fire station facilities.
- Currently, the stations' conditions are acceptable, understanding that incremental improvements may be made to account for modern best practices and a changing environment.
- Station capacity is vulnerable to accommodate system design changes such as adding or relocating resources and personnel.

### Fiscal Sustainability

- All of the analyses within this study validate, at a minimum, that the current number of stations and deployment is appropriate to maintain current services and identify needs for further investment.
- The relative distance between stations solidifies the need for the current deployment. In other words, there is no systematic duplication of efforts.

- There are no models that would introduce a reduction in current expenditures that did not include a reduction in response time capability.

### **Consider Introducing Outcome Measures to Performance Management**

- It is recommended that the Department consider introducing outcome measures into the performance management profile.