

Fire Transition Gap Analysis and Strategic Planning Initiatives

Chatham County, GA



To Protect and Save



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The Center also represents local governments at the federal level and has been involved in numerous projects with the Department of Justice and the Department of Homeland Security. In 2014 as part of a restructuring at ICMA, the Center for Public Safety Management (CPSM) spun out as a separate company and is now the exclusive provider of public safety technical assistance for ICMA. CPSM provides training and research for the Association's members and represents ICMA in its dealings with the federal government and other public safety professional associations such as CALEA, PERF, IACP, IFCA, IPMA-HR, DOJ, BJA, COPS, NFPA, etc.

We have conducted almost 500 such studies in 46 states and provinces and more than 450 communities ranging in population size 3,300 (Lewes, DE) to 800,000 (Indianapolis, IN).

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CONTENTS

Section 1. Executive Summary	5
Strategic Initiatives	25
Recommendations	40
Section 2. Methodology	46
CPSM Work Plan and Approach to Project	46
Chatham Emergency Services - Chatham County Fire Department Background Information ..	48
Baseline Assessment and GIS Analysis	49
Section 3. Community Overview	51
Chatham County	51
Governance	52
Chatham County Public Safety Services	53
Population and Growth.....	53
ISO-PPC Analysis	59
Section 4. Fire Department Overview	69
Chatham County Fire Department	69
Behavioral Health Unit	71
Operational Shift Schedule	72
Volunteer Member Component	73
Service Area and Levels of Service.....	76
CCFD Station Staffing Matrix	78
Fire and EMS Critical Tasking	79
Fire and EMS Incident Workload Overview	82
Community Risk Reduction	84
Training and Education	87
Health Safety and Wellness.....	90
Facilities Analysis.....	93
Fleet Analysis.....	111
Self - Contained Breathing Apparatus Analysis.....	121
Structural Protective Gear Ensemble Analysis	123
Mutual and Automatic Aid	126
Section 5. Community Risk Assessment.....	131
Nexus Between Community Risk and Staffing and Deployment of Resources	131
Environmental Risk	134
Transportation Risk.....	143

Building and Target Hazard Risk	151
Fire and EMS Risk Demand Analysis	154
Three-Axis Risk Analysis	157
Section 6. Operational Analysis.....	164
Staffing Concentration Analysis	164
Effective Response Force and Critical Tasking	164
Station Distribution Analysis	171
Response Times	173
CCFD Response Times.....	176
A More Efficient Station Distribution Analysis	181
Conclusion	197

In this report, CPSM discusses Emergency Medical Services (EMS) in the context of a system of providers who render pre-hospital emergency care to individuals who are ill or injured. In Chatham County EMS is provided as follows:

- Emergency Medical Care First Tier Response: Chatham County Fire Department (unincorporated areas)
- Behavioral Health Unit/Community Paramedicine: Chatham County Fire Department
- EMS Ground Transportation: Chatham Emergency Services

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SECTION 1. EXECUTIVE SUMMARY

The Center for Public Safety Management (CPSM) was retained by Chatham County, GA to complete a *Fire Transition Gap Analysis* for the County and the Chatham County Fire Department (CCFD). The purpose of this *Fire Transition Gap Analysis* document is to provide the County with an analysis of key administrative, operational, staffing, infrastructure, equipment, and programs the County is assuming administrative, operational, and fiscal responsibility for as a result of the transition of CES- Chatham Fire to Chatham County Fire Department. Additionally, CPSM has provided the County with several Strategic Initiatives, which are designed to be used as budgetary and planning guides as the Chatham Fire Department transitions to a County department and service delivery operation.

The key elements in this *Fire Transition Gap Analysis and Strategic Initiatives* document include:

- A community risk assessment identifying the population, building, transportation, environmental, Fire and EMS, and other risks in the community the CCFD serves is exposed to.
- Analysis of the levels of service provided to the areas protected by the CCFD.
- An analysis of the agency's current response capability in terms of staffing, equipment, and response time performance.
- Analysis of how department resources are and may be allocated and deployed to maximize emergency response efficiency and effectiveness.
- Analysis of the baseline and benchmark emergency response performance objectives.
- Analysis of future staffing and resource needs.
- Analysis of response times and workload of CCFD units and stations.
- Analysis of service delivery performance.
- Strategic Initiatives to be used for budgetary and overall department planning.

Our report includes comprehensive operational data and GIS analyses. The data and GIS analyses performed for this project provided technical support to recommendations and deployment strategies based on call demand, call type and station workload, current resource needs, and response travel times.

Throughout our analysis, and more specifically when analyzing the operational deployment of resources, CPSM utilized two national benchmarks: the *Insurance Services Office - Public Protection Classification (ISO-PPC)* rating system, and NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments*. Both are important national benchmarks for measuring and creating benchmarks and performance standards for fire departments.

- The Insurance Services Office (ISO), a subsidiary of Verisk Analytics is a national, not-for-profit organization that collects and evaluates information from communities across the United States regarding their capabilities to combat building fires. The Verisk hazard mitigation team collects and evaluates information from communities across the United States regarding their capabilities to provide municipal fire protection. This information is analyzed utilizing the Fire Suppression Rating System from which individual section credits and points are tabulated and

a Public Protection Classification for the community is assigned. Classifications range from 1 through 10, with one being the highest rating a community can achieve.¹

- Chatham County unincorporated area, through the Southside Fire Department (as referenced by the ISO **has achieved a Class 3/3X rating**, which is an achievement the community should be proud of. It is also important to understand that the PPC is not just a fire department classification, but a compilation of community services that include the fire department, the emergency communications systems, and the water supply system. Together, these components are evaluated to determine the community's ability to combat building fires.
- NFPA 1710 outlines the organization and deployment of operations by career, and primarily career fire and rescue organizations.² This standard serves as a benchmark to measure staffing and deployment of resources to certain building types and emergencies. Specific components of NFPA 1710 that are germane to staffing and deployment of resources include the assembling of an Effective Response Force (staffing to perform Critical Tasks on the fireground) for certain building risks, and response times (call processing or dispatch time; turnout time; and travel time to the scene).

Critical tasking for fire and EMS operations is the minimum number of personnel needed to perform the tasks needed to effectively control and mitigate a fire, EMS, or other emergencies. To be effective, critical tasking must assign enough personnel so that all identified functions can be performed simultaneously. The specific number of people required to perform all the critical tasks associated with an identified risk or incident type is referred to as an *Effective Response Force* (ERF).

Chatham County Population and Growth

Chatham County is an Atlantic Ocean coastal county located in the southeastern region of the State of Georgia and is the northern most of the state's coastal counties. Geographically, Chatham County is contiguous with the Georgia counties of Bryan County to the west and southwest, Liberty County to the southwest, and Effingham County to the northwest. Chatham County is also adjacent to Jasper County, South Carolina (separated by the Savannah River).

Chatham County is 632 square miles, of which 433 square miles is land area. The County is bounded northeast by the Savannah River and in the southwest by the Ogeechee River. The southside of Chatham County includes several island areas and marshlands. Several of the island areas are built upon and densely populated. **Unincorporated Chatham County is approximately 196 square miles and represents the fire protection area for Chatham County Fire Department.**

The overall 2020 decennial population for Chatham County was 295,291. The unincorporated population was 92,034. The population of Chatham County grew significantly over the last 40 years, with the largest increase coming between 2000 and 2010, experiencing a 14% increase. Growth slowed slightly between 2010 and 2020 with an 11% increase.

Historically, Chatham County and the city of Savannah have served as the region's largest population center, commercial core, and industrial hub. Because of the growing network of the road transportation network in the County and available and relatively inexpensive land, growth

1. Verisk's Community Hazard Mitigation Services (isomitigation.com)

2. NFPA 1710 is a nationally recognized standard, but it has not been adopted as a mandatory regulation by the federal government or the State of Georgia. It is a valuable resource for establishing and measuring performance objectives for the City of Sterling Heights but should not be the only determining factor when making local decisions about the town's fire and EMS services.

has accelerated away from the denser urban core areas. This trend is projected to continue in the coming decades. By 2040, the population of Chatham County is predicted to be approximately 335,000 residents and the population of the Savannah MSA is predicted to be approximately 500,000. This equates to a population increase of approximately 15.5% in Chatham County over the next 20 years and an increase of approximately 27% in the Savannah MSA.³

CPSM assesses the population and demographics in Chatham County overall pose a moderate risk in totality. While not a high risk, a single call involving a vulnerable population (fire or EMS) poses a higher risk on that particular response. Through pre-fire planning and response district knowledge of residential and other structures housing a vulnerable population as identified above, the CCFD will have the necessary situational awareness and will be better prepared to mitigate the emergency once on the scene of the incident.

Overall, there will be continued growth in unincorporated Chatham County that Chatham Fire should continuously plan for. Population, demographic, and growth impacts must be included in any strategic master planning CCFD conducts in the near, mid, and long terms. Increases in development will increase call demand and will impact the deployment analysis in future ISO-PPC community ratings, and the ability of the CCFD to meet deployment benchmarks and community expectations. **Additionally, as the City of Savannah continues to annex the unincorporated areas, this may create duplicity in fire protection districts between Savannah and Chatham County resources beyond what occurs currently. This is addressed in this report.**

Chatham County Fire Department

The current CCFD is the former fire protection component of Chatham Emergency Services (CES)-Fire Division, a community-based not for profit Fire and EMS agency. CCFD is a primarily career fire department that employs full-time administrative services, training, infrastructure support staff, and operational officers and firefighters.

The CES – Chatham Fire component provided fire protection services to the unincorporated areas of Chatham County. CES-Chatham Fire was an evolution of the former Southside Fire Department. Southside Fire, which began as a volunteer fire department, was incorporated in 1961, and was originally created when five separate volunteer fire departments merged to better service unincorporated Chatham County. CES-Chatham Fire has been a subscription service fire department since its early beginnings.

On July 1, 2024, CES-Chatham Fire transitioned to a full Chatham County agency and became Chatham County Fire Department. Significant events that led to this transition include:

- 2020-2021: CES advises Chatham County government they have a \$3-million budget deficit and that this may create challenges in their ability to effectively provide varied public-safety functions countywide. This is due to 25 percent of property owners in the coverage area who are declining to pay the fire-service subscription fee. CES asked Chatham County for assistance.
- 2022: Chatham County Commission repeals a fire tax (adopted December 2021) and adopts a fire services fee ordinance (May 13, 2022). The fire services fee ordinance establishes a stable revenue source for CES-Chatham Fire (and the current CCFD).
- 2023: Chatham County Commission approves a resolution to *authorize Chatham County Staff to develop and implement a Chatham County Government Fire Department and to develop*

3. U.S. Census Bureau, American Community Survey.

and implement a transition plan for fire services from Chatham Emergency Services, INC to Chatham County, GA.

- June 2024: Chatham County Commission approves three agreements with CES that includes: *Termination of Services* (terminates fire protection services between Chatham Emergency Services and Chatham County); *Lease Agreement for Public Purposes* (14-Fire Stations owned by Chatham Emergency Services and leased to Chatham County); *Purchase Agreement for Public Purposes* (Sale of certain fire protection assets and equipment from Chatham Emergency Services to Chatham County).

Since 2018, Chatham County has successfully created three County public safety agencies: Chatham County Police Department (2018); Chatham E911 Center (2018); and Chatham County Fire Department (2024).

As noted above, the CCFD responds with fire suppression apparatus and crews from fourteen stations that serve fire management zones throughout the unincorporated areas of Chatham County. As the first out staffing is a minimum of two on each engine, squad, and ladder, the CCFD relies heavily on units from multiple CCFD stations to collect the appropriate *Effective Response Force* for single family, multi- family, commercial, and other building type fire and fire related responses requiring increased staffing to mitigate the incident. **There is currently no automatic aid, or automatically shared resources from contiguous municipalities.**

Operationally, the CCFD deploys eleven Engine Companies, three Squad Companies, and four Truck Companies (aerial ladders). There is one operational District Chief on duty for each of the 24-hour shifts. The operational District Chief serves as the County-Wide on-duty operational command officer providing day-to-day operational supervision to each station and personnel, as well as serving as the incident commander on assigned incident responses.

Additionally, there is one Safety Captain on duty each operational shift, who is responsible for managing the department's health, safety, and wellness program, and responds to incidents and assumes the role of Incident Safety Officer. As the health and safety of firefighting is at the forefront of the national fire service, having an on duty shift safety officer is a ***national best practice***.

CCFD Max/Min Daily Staffing			
	Max		Min
Engines (11):	2 Staff	(22)	2 Staff (22)
Trucks (4):	3 Staff	(12)	2 Staff (8)
Squads (3):	2 Staff	(6)	2 Staff (6)
District Chief:	1 Staff	(1)	1 Staff (1)
Safety Capt.:	1 Staff	(1)	1 Staff (1)
Total:	42 Max Staff		38 Min Staff

The CCFD operational deployment model includes normal daily staffing of two personnel assigned to each fire suppression Engine and Squad Company, three assigned to each Truck Company, and one assigned to the District Chief and Safety Captain units, which totals forty-two personnel and represents the maximum daily staffing model.

The minimum daily staffing is thirty-eight, which allows four daily staffing positions to be used to cover scheduled leave (four-line positions are floated to cover leave vacancies to minimize overtime).

Overall, the CCFD is budgeted for 152 positions of which 146 are directly assigned to the CCFD. Six additional positions are assigned to other departments but provide direct services to the CCFD.

The CCFD also deploys four water tender apparatus, which carry large volumes of water to fires where there are no fire hydrants. The CCFD cross staffs these apparatus with engine or squad crews. When the tender apparatus is dispatched, the engine crew will place the engine out of service and respond the tender.

The current operational District Chief's span of control is fourteen stations, which includes eleven Engine Companies, four Truck companies, and three Squad Companies, spread out over 196 square miles. Typically, fire departments staff with one shift command officer (mid-level Chief officer) for every five to seven response units to align closer with the Federal Emergency Management Agency's incident command system span of control of 1:5 (one supervisor to five individuals—in this case company officers and stations).

CPSM assesses the single District Chief/Shift Commander position operates beyond recommended span-of-control best practices. As such, the CCFD should plan for additional operational command officers (Battalion Chief level) and segregate the County, at a minimum, into east and west districts with the District Chief serving as the overall shift commander.

Fire stations are decentralized from the management and command staff, which are typically located together at fire administration.

The role of a company officer ensures a first-line supervisor at each station that provides supervision of and holds assigned crew members accountable to established County and CCFD policies and guidelines; ensures the efficacy of CCFD training ensuring it translates to incident scene effectiveness; ensures that station, fleet, and equipment are maintained in a readiness state for response; manages and supervises all company assignments and activities to include training, pre-plan development, and target hazard reviews; and facilitates company communications to name a few of the more critical company officer functions.

CPSM assesses the CCFD does not have adequate company level first - line supervisory staff in place. As such, the CCFD should develop a staffing plan for additional company officers at the Lieutenant level for assignment to Engine Companies.

The CCFD also offers a Behavioral Health Unit (BHU), which is led by the Director of Fire-Med Services and staffed with two Community Paramedics. A Corporal from the Chatham Police Department also assists in the program. The goal of this program is to assist individuals who may be frequent utilizers of the 911 system, and /or assist individuals navigate the health and social programs that may be available, so that they can gain access to appropriate healthcare and other available social needs care they may not otherwise be able to accomplish on their own.

This program is a best practice and aligns with the Board adopted Chatham Community Blueprint visions: Health and Quality of Life.

The demand for the Behavioral Health Unit program should be evaluated on an annual basis as additional resources may be required. There is also the potential the program may need extension of the hours of service. Any additional staffing resources should be included in strategic planning sessions.

CCFD Volunteer Component

The CCFD currently includes a volunteer firefighter component. The current CCFD volunteer component includes eighteen volunteer members (as of this report) who have various levels of basic training and certifications. The volunteer component includes (not all positions may be filled) Volunteer Chief Officers and Volunteer Firefighters. All firefighters in Georgia, career, or volunteer, are required to meet the same basic training in accordance with the Georgia

Firefighter Standards and Training Council and the and as outlined in the Training and Education section of this report.

Volunteerism as a whole across the United States is in decline. This includes not-for profit volunteering (churches, schools, food banks etc.), some service groups, and volunteer Fire and EMS. A January 2023 report released by the U.S. Census Bureau reported that a smaller share of the U.S. population participates in volunteer opportunities than the previous two decades.

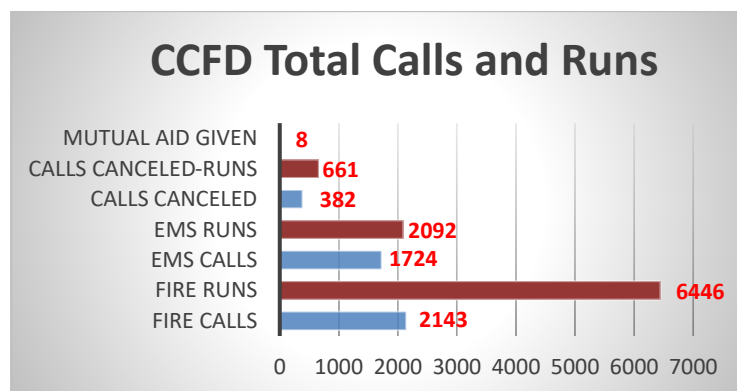
According to the report, the national annual volunteer hours took a sharp dip from fifty-two hours in 2002 to twenty-six hours annually in pre-pandemic 2019, or a 50-percent reduction in volunteer hours.⁴

In the current day CCFD, volunteer members have a purpose. The purpose today is to augment career staffing on fire apparatus. To be able to meet this purpose, volunteer firefighters:

- Have to meet all entry and minimum training requirements according to the *Official Code of Georgia Annotated and as established by the CCFD*.
- Should participate at a CCFD station with CCFD career staff and respond to incidents on CCFD fire apparatus. **CPSM does not recommend the continuance of personal vehicle response any longer due to the potential liability a motor vehicle accident may create for the County.**
- Must complete all CCFD firefighter requirements such as entry and annualized medical physicals; annualized SCBA mask fit testing; meet annualized physical requirements as established by the CCFD; meet annualized training requirements as established; meet any other entry and annualized requirements as established for firefighters and officers of the CCFD.

CCFD Workload

The following information outlines CCFD historical Fire and EMS service incident analysis for the period October 1, 2022, to September 30, 2023. This information includes calls (a single call by Fire or EMS type) and runs (a single call that involves more than one unit response-or total workload).



Community Risk Reduction

- CCFD responded to an average of 11.7 calls, including 1.0 canceled calls, per day.
 - CCFD responded on 2,092 EMS Runs (multiple unit responses).
 - CCFD responded 6,446 Fire Runs (multiple unit responses).
- Overall, CCFR responded to 4,257 Calls and 9,230 Runs for the data analysis period:
October 1, 2022 – September 30, 2023.

4. Volunteering in America: New U.S. Census Bureau, AmeriCorps Research, January 2023.

Community Risk Reduction activities are important undertakings of a modern-day fire department. A comprehensive fire protection system in every jurisdiction should include, at a minimum, the key functions of fire prevention, code enforcement, inspections, and public education. Preventing fires before they occur, and limiting the impact of those that do, should be the priority objectives of every fire department.

Currently, the CCFD is not involved in a formal fire prevention inspection-code enforcement program. It is reported to CPSM by the CCFD and Chatham County Building Safety and Regulatory office that there are at least 1,800 buildings or occupancies in buildings that require fire prevention inspections. These include high hazards, occupancies with vulnerable population, residential buildings, places of public assembly, and all other occupancy types identified in the *Official Code of Georgia Annotated* and *Rules and Regulations of the State of Georgia*.

There are some fire prevention activities currently being managed by the Chatham County Building Official's Office. These include:

- New Construction - Plans Review related to fire and life safety, which includes fire review final inspection.
- Short Term Rental Inspections.
- New Business License Occupancy Tax Certificate Inspections.
- Inspections related to complaints.
- Inspections with the State Fire Marshal's Office when requested.

CPSM assess that Chatham County, based on the 2020 decennial census of 295,291 and pursuant to § 25-2-4 and § 25-2-12(a)(1) of the *Official Code of Georgia Annotated*, is authorized to enforce the state minimum fire safety standards on all buildings and structures except one-family and two-family dwellings and those buildings and structures listed in Code Section 25-2-13. CPSM further assesses Chatham County should continue to conduct fire investigations pursuant to § 25-2-12(a)(6), just as the former Chatham Emergency Services-Fire Division was prior to July 1, 2024. The creation of a Fire Marshal's Office should be included in any near-term strategic planning with a focus on enforcing the state minimum fire safety standards on all buildings and structures except one-family and two-family dwellings and those buildings and structures listed in State Code Section 25-2-13.

Training and Education

Training and educating the Fire and EMS workforce is one of the most important functions that a fire department should plan for and should be performing on a regular basis. Education and training programs help to create the character and culture of a Fire and EMS service organization. Agencies that place a real emphasis on their training tend to be more proficient in carrying out the successful mitigation of emergency and non-emergency calls events and calls for service. The prioritization of training fosters a culture of readiness, an image of professionalism, and instills pride in the organization.

Training in the CCFD is managed by the Division Chief of Training. Training and education programs in the CCFD include career and volunteer recruit and incumbent training programs designed to meet the minimum requirements of the Georgia Fire Standards and Training Council.

CPSM assesses the CCFD meets all mandatory Fire and EMS training to include Georgia Fire Standards and Training Council standards, Georgia Department of Public Health, and the Insurance Services Office Fire Suppression Rating Schedule requirements. CPSM further assesses the CCFD training programs and training program management for recruit and incumbent personnel is well organized and delivered to high standards. This includes digital, hands-on practical training, and task book standards for continuing education.

The training center complex is well maintained and well-managed. All training props and buildings are required for contemporary fire, EMS, and technical services practical training, to include multi-company training drills. **As department staff and programs increase there may be a need for additional training instructor staff.**

Facilities

CCFD has fourteen facilities that they use for front line response. Each building has issues and challenges due to age or original purpose. All facilities (with the exception of Station 13 which is leased through a third party) are owned by Southside Communities Fire Protection, INC. d/b/a Chatham Emergency Services and leased to the County for use as fire stations as a public purpose. Terms of the lease for each facility are *five (5) one-year terms that will automatically renew for an additional five (5) one-year lease term, or for as long as the County remains as the designated fire service provider for the areas of unincorporated Chatham County and needs the buildings.*⁵

Pursuant to the facility lease, Chatham County is responsible for all repairs, replacements, and maintenance of the leased real property (interior and exterior). Alterations and improvements must have written consent from Chatham Emergency Services. Additionally, Stations 1, 3, 8, and 12 will continue to share space with Chatham Emergency Services EMS division.

CPSM conducted an onsite review of each of the fourteen stations in April 2024 and reviewed the 2023 Facility Report conducted by CCFD staff. Facility visits included a walk-around of each facility with a focus on living space, safety features such as CO capture systems, decon areas, separation from living areas and the apparatus bays, and any visible issues. **This was not an engineering assessment of mechanical systems or building construction.**

Overall, the County is leasing aging fire facilities, which will require strategic and fiscal planning regarding needed and on-going renovations (interior and exterior) and maintenance as described in this report, and the potential relocation, movement of deployable assets, and/or new construction of fire facilities. Additionally, many facilities lack contemporary fire facility health and safety components such as vehicle CO capture systems, lack good separation from the apparatus bays to the living areas, and decon areas or separate decon rooms for equipment and personnel.

Fleet

Regarding the CCFD fleet, CPSM identified there is no consistency in fire apparatus manufacturers, and to some degree, fire pumps, motors, drivetrains, and chassis components. An additional point, which is currently being corrected, is that prior to 2020 CES-Fire was purchasing used apparatus in an effort to reduce costs. While admirable, CES-Fire was purchasing fire apparatus at a point in the vehicle's life cycle where it was more than halfway through its service life. The current CCFD is building consistency into their current fleet procurement plan.

5. Lease Agreement for Public Purposes (Fire stations and Attached Equipment) between Chatham County, GA and Southside Communities Fire Protection, INC. d/b/a Chatham Emergency Services.

Overall, the CCFD has twenty-two heavy engine apparatus of which nineteen are in service (fourteen frontline and five reserve). Three of the frontline engines are Squads or rescue engines.

There are three engine apparatus that are out of service. Two are inoperative and based on their age or condition, it may not be cost efficient to repair. A third was involved in an accident and remains out of service (Former Engine 312).

The CCFD has four aerial ladder apparatus (trucks) that are used as front-line response vehicles. CCFD has two reserve aerials available. These two-reserve apparatus are 18 and 23 years old. As the new aerial ladder apparatus arrives (three new aerial apparatus are on order), the CCFD will cycle out two aerial apparatuses based on recommendations from the fleet coordinator.

The CCFD has four apparatus that are considered Tenders. These CCFD apparatus carry from 3000 to 3,500 gallons of water and are used to transport water sources in unincorporated areas where there are no or limited fire hydrants. The vehicles range from 16 years old to 22 years old.

The aggregate fleet of the fourteen frontline pumpers, four tenders, and the four frontline aerials offers the CCFD a diverse complement of fire apparatus. The engines carry a diverse equipment cache for firefighting and vehicle/technical rescue, and are of varying sizes, with varying pump capacities, hose complements, and water tanks. This diversity is important and serves the CCFD well considering the varying building risks, street sizes, building setbacks, longer driveways to some structures, and areas where fire hydrants are of a considerable distance from the fire or are absent.

Overall, the fleet is maintained in-house and managed by the CCFD Fleet Coordinator, who does an outstanding job keeping Fire and EMS fleet in-service. This includes apparatus-specific work and annual preventive maintenance. There are times when a private vendor that specializes in heavy fire apparatus may be used.

CPSM has provided a recommendation and strategic initiative specific to fleet replacement that includes planning objectives focused on following the NFPA 1900 standard for heavy engines and aerial ladder fire apparatus fleet replacement as well as the grading point system the CCFD has implemented..

Self-Contained Breathing Apparatus

Self-contained breathing apparatus (SCBA) is an open-circuit respiratory device that allows trained firefighters to enter atmospheres that are immediately dangerous to life and health (IDLH), breathe atmospheric air containing 21% oxygen, and perform the critical tasks necessary to mitigate emergencies. The SCBA device is the most important piece of equipment firefighters will take into an IDLH atmosphere. Therefore, this equipment should be appropriately cared for and maintained and kept up to date.

Currently, CCFD utilizes SCBA units and air cylinders manufactured by *Avon Protection* (formerly ISI). Specific models include the Deltair model (101 units) and the Viking Z Seven model (37 units). The oldest units are nearing 7 years old.

CPSM was advised by CCFD that Avon Products is no longer supporting the Deltair and Viking Z 7 models. As such, these units (mask, harness, and regulator components) will eventually have to be cycled out as they will no longer be able to be serviced. This should occur in the near term to avoid issues associated with non-supported equipment or components.

Breathing air compressors utilized to fill SCBA cylinders are located at Station 2, Station 3, and Station 14. All fixed compressors, however, are over 20 years old. CPSM was advised these

compressors are not 100% reliable. It is recommended these units comply with NFPA 1989: *Standard on Breathing Air Quality for Emergency Services Respiratory Protection*, 2019 edition.

CPSM has provided recommendations specific to CCFD SCBA units and breathing air compressors in leased fire facilities to ensure CCFD staff maintains a high degree of safety for firefighting staff.

Mutual and Automatic Aid

Automatic aid is a system whereby fire, rescue, and EMS units respond automatically to another community through agreement based on proximity to the incident. In an automatic aid scenario, resources from neighboring jurisdictions are built into run cards in the home jurisdiction for again, an automatic response; this aid is designed to supplement and bolster the Effective Response Force of the home jurisdiction and provide a faster response of EMS ground transport units.

Mutual aid is a system whereby surrounding communities provide fire, rescue, and EMS resources to another community through agreement and specific request from the jurisdiction in need of resources (not automatically but case by case).

CES-Fire participated in automatic and mutual aid with contiguous and surrounding municipalities. As the CES-Fire mutual and automatic aid agreements did not transfer to the County and CCFD on July 1, 2024, CCFD has drafted reciprocal automatic and mutual aid agreements for fire protection and mitigation resources with the jurisdictions the former CES-Fire was signatory with. ***There were and currently are no true automatic aid agreements between the cities and the County to regularly share resources automatically, particularly on building fire and other multi-unit responses on the first alarm assignment of units.***

Overall, CCFD participates in very little automatic or mutual aid in a County that has eight municipal fire departments, and one additional volunteer fire department (Isle of Hope). In fact, during the one-year data analysis period, the CCFD provided mutual aid just eight times.

Additionally, one automatic aid agreement with the City of Savannah was never operationalized consistently after the signing of the agreement (agreement specifically mentions the Savannah Fire Department will cover first in fire response to the Vernonburg area and CES-Fire would assist Savannah Fire with response to the New Hampstead area).

There are several advantages to engaging surrounding jurisdictions in automatic aid. First, it can get the closest emergency units to the call for service faster as auto-aid can be based on the closest location to the request for service regardless of the jurisdiction. This is a force multiplier (supplemental response) as neighboring jurisdictions respond to multi-unit incident responses to the home jurisdiction and assist in bolstering the Effective Response Force (ERF) for the completion of critical fireground and EMS tasks.

Regardless of the reasons there is limited automatic aid and sharing of resources in Chatham County, the upshots to automatic aid outweigh the down shots. In fact, the down shots of not engaging automatic aid, when evaluated, outweigh the best interests of the community as a whole, as the potential for delayed response times, inefficient use of resources, inconsistent service levels, strained interdepartmental relationships, and a hinderance to further regional fire department planning and training have the potential to negatively impact any community in the County.

CPSM has provided recommendations and strategic initiatives specific to mutual and automatic aid.

In addition to automatic and mutual aid, CES-Fire and now the CCFD is also signatory to service agreements with the Town of Vernonburg and the City of Garden City for direct fire protection services. The CPSM analysis has determined the CCFD can continue to provide direct fire protection services to the City of Garden City. The CPSM analysis also suggests the County consider working with the Town of Vernonburg and the City of Savannah to transfer fire protection services to the City of Savannah (through a service agreement between the City and Town), so that the County can work towards a more efficient fire protection service delivery system.

Community Risk Assessment

A significant component of this report is the completion of an *All-Hazard Risk Assessment of the Community*. The *All-Hazard Risk Assessment of the Community* contemplates many factors that cause, create, facilitate, extend, and enhance risk in and to a community. The service demands of Chatham County are numerous for the fire department and include EMS first response, fire, technical rescue, hazardous materials, density challenges, transportation emergencies to include vehicle and rail traffic, and other non-emergency responses typical of urban, suburban, and rural County fire departments.

The greatest current building risk by number in Chatham County is a low-moderate hazard risk, which is single family dwellings of predominantly wood frame construction. Additionally, Chatham County does have high-risk/vulnerable population risks (nursing/assisted living facilities), schools and multifamily residential structures (apartments/condos), as well as mixed use occupancies and industrial/commercial buildings. Although the demographic and building risks in Chatham County pose a low-medium risk in totality, a single call involving a vulnerable population, or a high risk (Fire or EMS) poses a higher risk in that particular response. Planned future buildings include single family, multilevel multifamily residential buildings, and additional commercial development.

Additionally, Chatham County is prone to and will continue to be exposed to certain environmental hazards and risks that may impact the community. Chatham County is susceptible to a wide range of natural hazards, including but not limited to tropical systems, tornados, flooding, summer storms with lightning, and occasional winter weather including freezing temperatures and precipitation. These environmental hazards can destroy property, disrupt the economy, lower the overall quality of life for individuals, and create call demand for the CCFD.

Operational Analysis

When exploring staffing and deployment of fire departments it is prudent to design an operational strategy around the actual circumstances that exist in the community and the fire and risk problems that are identified. The strategic and tactical challenges presented by the varied hazards that a department protects against need to be identified and planned for through a community risk analysis planning and management process as completed in this report.

NFPA 1710 addresses recommended staffing in terms of four types of occupancies. The staff needed to accomplish the critical tasks for each specific occupancy are determined to be the *Effective Response Force* (ERF). The ERF for each of these occupancies is detailed in the NFPA 1710 standard. OSHA and NFPA 1500 *Standard on Fire Department Occupational Safety and Wellness Programs* is specific to operating in immediately dangerous to life or health (IDLH) environments, where there is a requirement of two firefighters outside of the building or entry

point to the IDLH, while there are two firefighters operating inside the building or other vessel that has an IDLH.

As discussed earlier, the CCFD responds with two-person staffing on all heavy fire apparatus (*Engines, Squads, Ladders*). Also discussed is there are no company officers assigned to engines and squad units - only the ladders. The CCFD current response matrix to building fires (all types) is 2-Engines, 1-Squad, 1-Truck (ladder), the District Chief (1 staff), and the Safety Officer (1-staff).

The total CCFD Effective Response Force is 10 staff.

The four building types included in the NFPA 1710 standard (all of which are in Chatham County) are discussed next in terms of the minimum staff required to accomplish the critical tasks to mitigate fire emergencies in these buildings.

Single-Family Dwelling

The initial full alarm assignment (ERF) to a structural fire in a typical 2,000 square-foot, two-story, single-family dwelling without a basement and with no exposures must provide for a minimum of 16 members (17 if an aerial device is used). **Single family dwellings represent the majority of building risk in Chatham County. CCFD Effective Response Force: 10 staff.**

Open-Air Strip Mall/Commercial Building

The initial full alarm assignment (ERF) to a structural fire in a typical open-air strip center/commercial building ranging from 13,000 square feet to 196,000 square feet in size must provide for a minimum of 27 members (28 if an aerial device is used). **CCFD Effective Response Force: 10 staff.**

Apartment Building

The initial full alarm assignment (ERF) to a structural fire in a typical 1,200 square-foot apartment within a three-story, garden-style apartment building must provide for a minimum effective response force (ERF) of 27 members (28 if an aerial device is used). **CCFD Effective Response Force: 10 staff.**

High Rise

Chatham County does have high rise buildings. The initial full alarm assignment to a fire in a building where the highest floor is greater than 75 feet above the lowest level of fire department vehicle access must provide for a minimum of 42 members (43 if the building is equipped with a fire pump). **CCFD Effective Response Force: 10 staff.**

CPSM assesses that the CCFD is unable to, as a single responding agency, assemble an Effective Response Force for single-family dwellings, strip mall/commercial buildings, apartment and condominium building fires, and for a high-rise fire without the response of automatic/mutual aid companies on the initial alarm, which is allowed under the NFPA 1710 standard.

For building fires, the CCFD would be able to deploy one attack line (includes primary engine operator), one backup line with personnel merging the task of primary search and rescue (after three units arrive), a two-person rapid intervention team (when the fourth unit arrives), safety officer (outside tasks and overall safety), and incident command. These are the basic fireground tasks to begin an initial attack. Obviously, tasks are altered depending on the conditions and challenges encountered by initial arriving crews. In any case, the CCFD will be challenged to accomplish critical tasks with very minimal staffing when benchmarked against NFPA 1710.

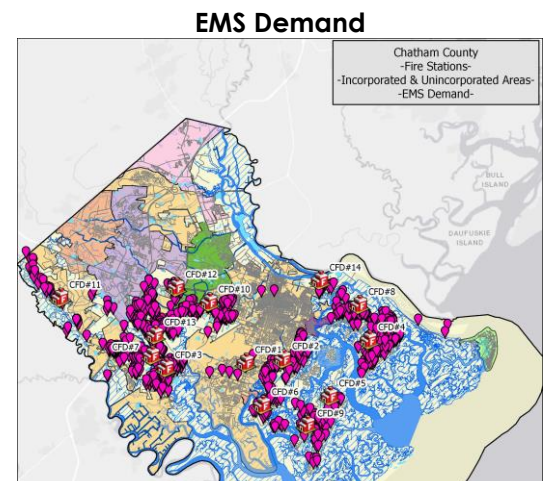
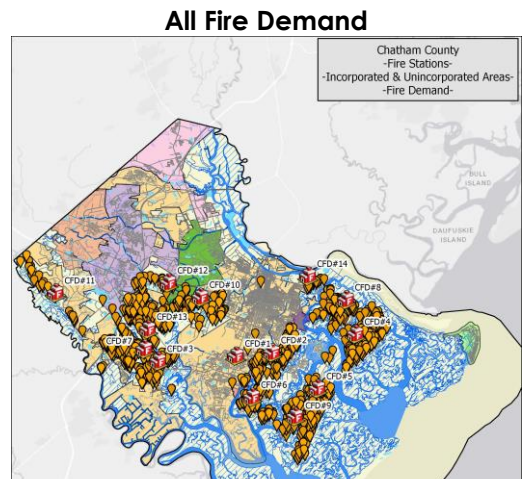
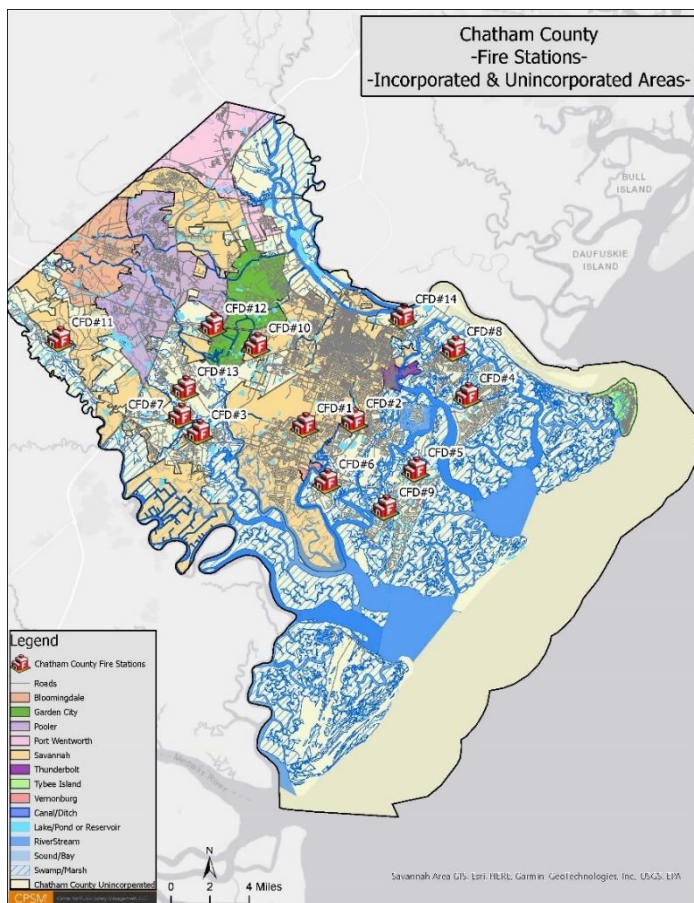
CPSM has provided recommendations specifically for enhancing the CCFD Effective Response Force, which includes increasing staffing on all heavy fire apparatus (*Engines, Squads, Ladders*) to a minimum of three to include a company officer on all heavy fire apparatus over the near and midterms. Additional staffing complements are offered as well in the applicable strategic initiative.

Station Distribution Analysis

Station distribution analysis provides information on district response patterns and demand by station district. Sound community fire-rescue protection requires the strategic distribution of an adequate number of station facilities and deployment resources to ensure effective service area coverage is achieved, that predicted response travel times satisfy prevailing community goals and national best practices, and that the facilities are capable of supporting mission-critical personnel and vehicle-oriented requirements and needs. As discussed herein, the CCFD responds from fourteen fire facilities.

During the CPSM 12-month study period, there was a total of 4,249 calls in the County (excludes 8 mutual aid and includes 383 canceled calls). Call demand is more concentrated in the Station 2, 3, 4, 7, and 13 districts.

Station Locations with Fire and EMS Demand



Station by station workload (by station area or district) is illustrated next. The Station 7 district is the busiest (15.1% of all work). Stations 4 (14.0%), and 13 (10.9%) are similarly as busy in terms of workload. Stations 1 and 14 are the least busy, handling 0.2% and 1.0% respectively of the work.

Station Area	Calls	Percent Calls	Runs	Runs Per Day	Percent Work
1	8	0.2	28	0.1	0.2
2	498	11.7	986	2.7	9.5
3	407	9.6	857	2.3	7.1
4	554	13.0	1,150	3.2	14.0
5	141	3.3	372	1.0	3.6
6	224	5.3	470	1.3	7.7
7	662	15.6	1,371	3.8	15.1
8	321	7.5	761	2.1	9.3
9	257	6.0	625	1.7	7.2
10	228	5.4	547	1.5	5.8
11	109	2.6	190	0.5	2.8
12	167	3.9	342	0.9	3.2
13	554	13.0	1,286	3.5	10.9
14	42	1.0	86	0.2	1.0
Other	85	2.0	159	0.4	2.4
Total	4,257	100.0	9,230	25.3	100.0

The next table examines response times by station as average and at the 90th percentile (NFPA benchmark).

Station Area	Average Response Time				90th Percentile Response Time				Call Count
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total	
1	1.4	0.8	5.2	7.4	2.4	1.8	8.0	10.5	8
2	1.3	1.3	3.9	6.5	2.8	2.6	7.1	9.8	367
3	1.2	1.2	3.9	6.3	2.4	2.3	7.3	10.0	292
4	1.2	1.4	4.5	7.1	2.4	2.8	7.8	10.5	375
5	1.6	1.0	4.6	7.2	3.5	1.9	7.2	10.1	96
6	1.0	1.2	3.6	5.9	2.1	2.5	7.3	9.6	162
7	1.1	1.2	4.4	6.7	2.4	2.6	7.2	9.7	528
8	1.2	1.4	3.1	5.8	2.4	2.8	6.2	8.8	238
9	1.8	1.2	4.1	7.1	3.6	2.3	6.5	10.3	134
10	1.3	1.1	4.4	6.8	2.4	2.0	7.6	10.8	178
11	1.4	1.4	4.7	7.5	2.4	3.6	10.1	13.1	90
12	1.3	1.1	3.9	6.3	2.4	2.1	7.4	9.5	122
13	1.1	1.1	4.2	6.5	2.3	2.2	7.6	10.0	421
14	0.9	2.3	4.3	7.5	2.1	2.9	7.2	12.9	23
Total	1.2	1.3	4.1	6.6	2.5	2.5	7.3	10.0	3,034

Overall, the 12-month data analysis tells us:

- The 90th percentile dispatch time (alarm handling) was 2.5 minutes (**150 seconds**).
 - The NFPA 1710 dispatch time or call processing time standard is 64 seconds, 90 percent of the time, and not more than 106 seconds, 95 percent of the time. For special calls, the dispatch time or call processing is 90 seconds, 90 percent of the time, and not more than 120 seconds, 95 percent of the time. The greatest majority of CCFD calls for service are outside of the special call type.
- The 90th percentile turnout time was 2.5 minutes (**150 seconds**).
 - The NFPA 1710 turnout time is 60 seconds for EMS response and 80 seconds for fire and special call responses.
- The 90th percentile travel time was 7.3 minutes (**438 seconds**).
 - The NFPA 1710 travel time is:
 - ≤ 240 seconds for the first arriving engine company to a fire suppression incident 90 percent of the time.
 - ≤ 240 seconds for the first arriving engine company to an EMS incident with automated external defibrillator (AED) or higher-level capability.

CPSM assesses that CCFD response times do not meet the NFPA 1710 benchmark standards. **CPSM recommends the** CCFD adopt a performance benchmark for turnout time of ≤ 80 seconds for fire and special operations and ≤ 60 seconds for EMS responses at the 90th percentile. **CPSM further recommends** the CCFD work with Chatham County 911 Center regarding call processing performance standards of 64-seconds at the 90th percentile for identified higher acuity calls (structure fires and high acuity technical fire related calls as outlined in the NFPA 1710 standard. **Response travel time performance benchmarks are better identified through the completion of a Standards of Cover operational analysis.**

An additional station distribution benchmark is the ISO Public Protection Classification rating system. Under this system, one element a jurisdiction is graded on is the distribution of fire assets within built-upon areas with a focus on engine companies and ladder companies (deployment analysis). For full credit in the Fire Suppression Rating Schedule (FSRS), a jurisdiction's fire protection area with residential and commercial properties will have a first-due engine company within 1.5 road miles (which is the ISO estimate for 240 second travel time as a comparable to the NFPA 1710 standard) and a ladder or service company within 2.5 road miles of built upon land.⁶

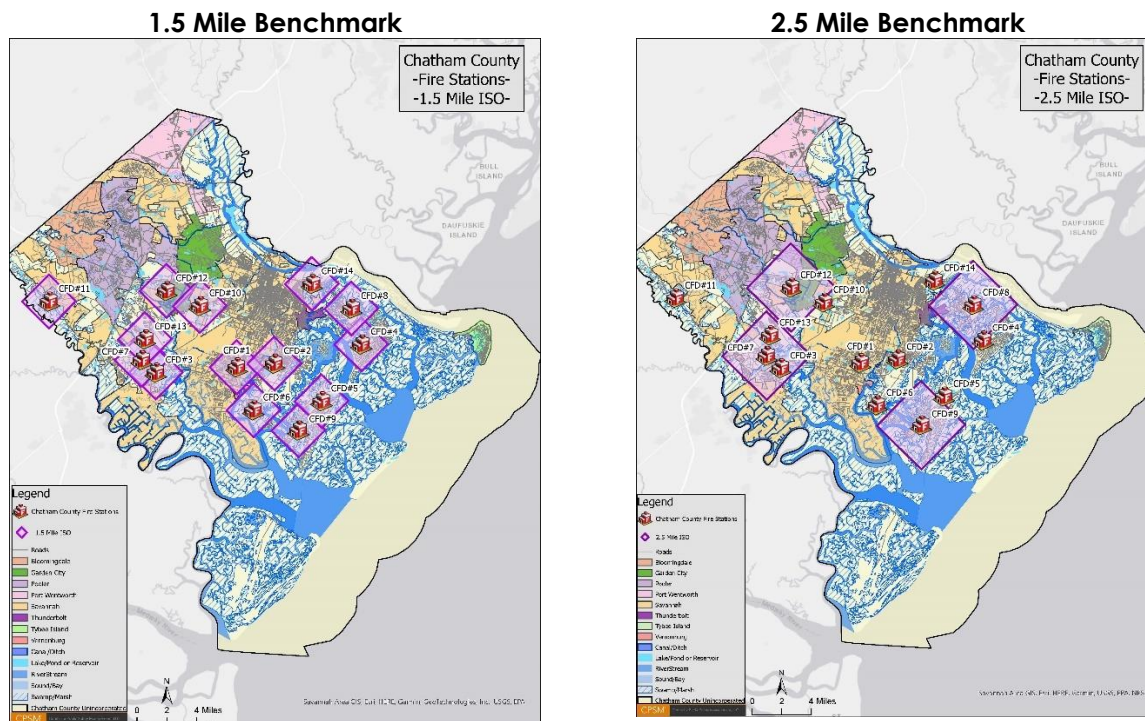
As engine and ladder companies both respond from fire facilities, and because engine companies are the more prevalent fire suppression company, fire facilities are predictably sited based on the response needs of engine companies first, with ladder companies then placed on a broader geographic footprint.

The next figure illustrates the County's coverage of built-upon areas with existing engine and ladder companies when measured against the ISO benchmarks.

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6. Insurance Services Office, ISO Mitigation, Deployment Analysis.

Chatham County Engine and Ladder Coverage-ISO Benchmark



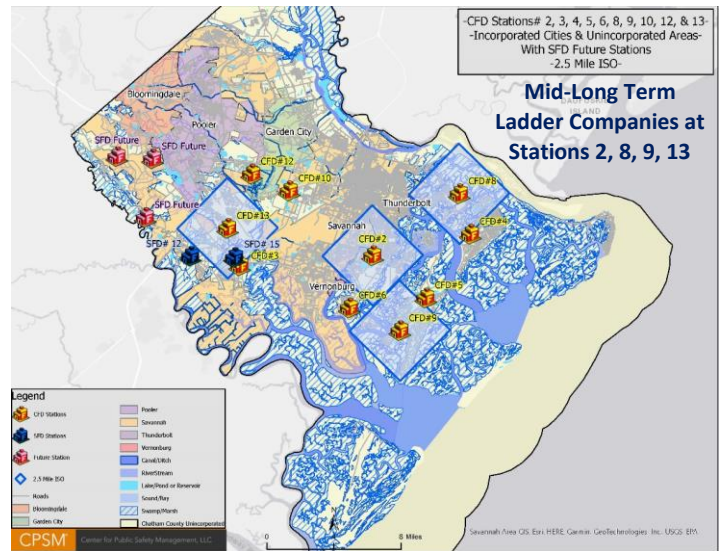
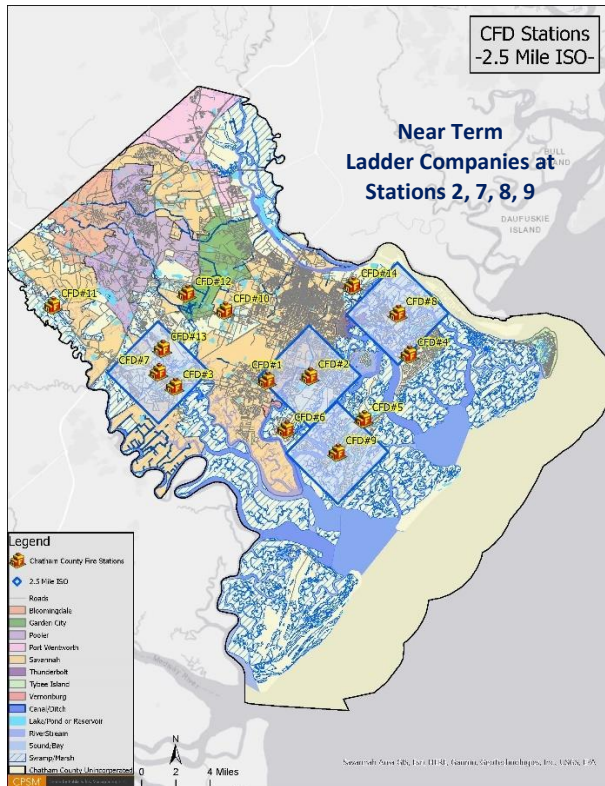
In review of the 1.5-mile ISO-PPC map, the first observation is the built-upon area of the unincorporated County has good coverage by a staffed first due engine company within 1.5 miles of built upon land. There are minor gaps east and west of Station 11; west of Station 12; north of Station 13; east of Station 2; South of Station 9; North of Station 4. **In the current ISO-PPC report, Chatham County received 6.00/6.00 Credits for Engine Companies.**

The County does not have overlapping ladder resource company coverage. The ladder company resource is also graded on the number of response areas within the County with five buildings that are three or more stories (or 35 or more feet in height), or with five buildings that have a needed fire flow greater than 3,500 gallons per minute, or a combination of these two criteria. Generally, and from a first due ladder company perspective, the greatest percentage of these are covered. There are some ladder company gaps east and south of Station 4 (Truck 8 response area); Stations 2 and 6 districts; Station 10 district. **In the current ISO-PPC report, Chatham County received 2.49/4.00 Credits for Ladder Companies.**

A more effective alignment of ladder companies the CCFD should consider in the **near term** includes the reassignment of Truck 12 to Station 2. This closes the gap in the Stations 2 and 6 districts and locates three of the four ladder companies on the east side of Savannah where the majority of the buildings 35' or more are located.

Additionally, and for a better alignment of resources as discussed in the next section, and if the County considers constructing a new Station 13, the optimum location for a west side ladder company is in the Station 13 district. **The suggested mid-longer-term realignment of ladder company resources is illustrated in the next figure.**

Chatham County Realigned Ladder Coverage (Near and Mid-Longer Term) - ISO Benchmark



A More Efficient Station Distribution

In terms of response travel times and as benchmarked against ISO-PPC engine and ladder company distribution and taking into consideration the fragmented unincorporated areas in the western region of the County due to municipal annexation, CES-Fire and now Chatham County fire station distribution and response travel times are reasonable.

That said, continued annexation in western Chatham County will further fragment unincorporated areas making it difficult to efficiently provide fire protection. Additionally, as municipalities annex unincorporated land, they very well may also be planning new fire stations creating situations where a municipal fire station is within blocks of a sometimes-long-standing County fire station or stations. As unincorporated areas shrink, so do the cost-effectiveness of a fire station that may have once served a larger fire district.

CPSM looked at several models that may create a more efficient CCFD and at the same time redeploy assets to make the current CCFD more effective. Any efficiency models are dependent on continued annexation, when municipal fire stations will be built, and the willingness of municipalities to participate in service area and automatic aid agreements with the County. Additionally, while western Chatham County annexation will continue, when and where is speculative as of this report. However, planning now is prudent.

Efficiency models include:

- **Near Term:** Decommission CCFD Stations 1 and 14 and contract with the City of Savannah (if the city is agreeable) to cover the small first due areas these stations currently cover. These include:

- The Town of Vernonburg. CCFD Station 1 is situated inside the City of Savannah and primarily services the Town. Savannah Fire Station 10 is in closer proximity to the Town. CCFD Station 1 has the lowest workload of all CCFD stations (0.2% of in-district workload).
- Engine 14's district is relatively small. Savannah Fire Station 9 is in close proximity to CCFD Station 14. CCFD Station 14 has the second lowest workload of all CCFD stations (1.0% of in-district workload).
 - Redeploy Engine 1 staffing (2 per shift) as designated by the Fire Chief to increase staffing to a minimum of 3/Shift on two companies. Redeploy engine apparatus to a station that has an older apparatus-redeploy older apparatus to reserve status.
 - Redeploy Engine 14 staffing (2 per shift) as designated by the Fire Chief to increase staffing to a minimum of 3/Shift on two companies. Redeploy engine apparatus to a station that has an older apparatus-redeploy older apparatus to reserve status. Redeploy the Tender as determined by the Fire Chief.

As a note, the County will likely lose fire fee assessment revenue from these two areas as remuneration for the City of Savannah providing fire protection service.

- **Near Term:** Decommission Station 7 and contract with the City of Savannah (if the city is agreeable) to have Savannah Fire Department Station 12 cover calls in the Station 7 district (that CCFD Stations 3 and 13 cannot) and also provide automatic aid response in Station 3's district from Savannah Fire Department Station 15 on structure and other multi-unit responses.
 - Redeploy Engine 7 staffing as determined by the Fire Chief to increase staffing to 3/shift where needed. Redeploy Engine 7 apparatus to another station with an older apparatus or to reserve.
 - Redeploy Truck 7 apparatus and staffing to Station 3 as a temporary measure until a new Station 13 can be constructed.

As a note, the County will likely lose fire fee assessment revenue from the Station 7 district or a portion thereof that CFD Stations 3 and 13 cannot cover as remuneration for the City of Savannah providing fire protection service.

- **Mid-Longer Term:** Decommission Station 11 once the City of Savannah completes either temporary or permanent stations (two in the New Hampstead area of the city and one along the SR 204 corridor west of I-95). Contract with the City of Savannah (if the city is agreeable) to cover the Station 11 first due area, which currently includes the SR 204 corridor west of I-95 to the Effingham County line.
 - Redeploy Engine 11 staffing where needed as determined by the Fire Chief to increase staffing to 3/Shift. Redeploy Engine 11 to another station with an older apparatus or to reserve.

As a note, the County will likely lose fire fee assessment revenue from this area as remuneration for the City of Savannah providing fire protection service.

- **Mid-Long term:** Close Station 10 should the City of Savannah annex the area east and south of Buckhalter Road. Redeploy Engine 10 staffing where needed as designated by the Fire Chief to increase staffing to 3/Shift on two units. Redeploy Engine 10 to another station with an older apparatus or to reserve.
- **Mid-Long Term:** Relocate Station 2 to the area of Winterberry Road and Ferguson Ave. This station borders the City of Savannah to the north and west and is out of position for response to its primary district. Additional planning and consideration should be given to relocating CCFD administration and program staff to this County facility.

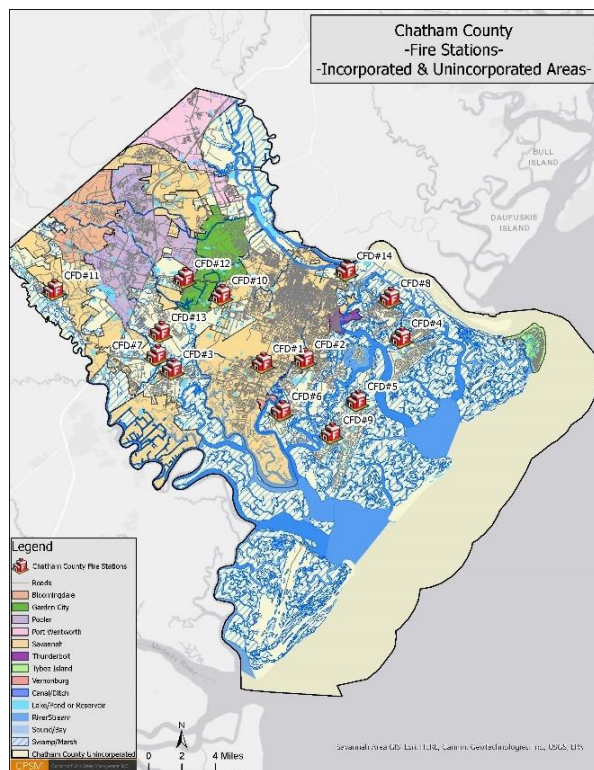
The County and CCFD can realize a more efficient response model over the near and mid-terms should the City of Savannah be willing to enter into service area agreements for the CCFD Station 7, 11, and 14 response areas, and an automatic aid agreement for the Station 7 area that Station 3 and 13 areas.

Additional efficiency can be gained if the City of Savannah and the Town of Vernonburg are willing to work together and have the Savannah Fire Department provide fire protective services to the Town, which is currently served by the CCFD from CCFD Station 1.

Should these service agreements be successful, the CCFD can decommission fire services from Stations 1, 7, 11, and 14, and redeploy staffing, apparatus, and equipment assets to other CCFD stations, or place apparatus and equipment assets in reserve, and also modify the facility lease agreement between Chatham Emergency Services and the County.

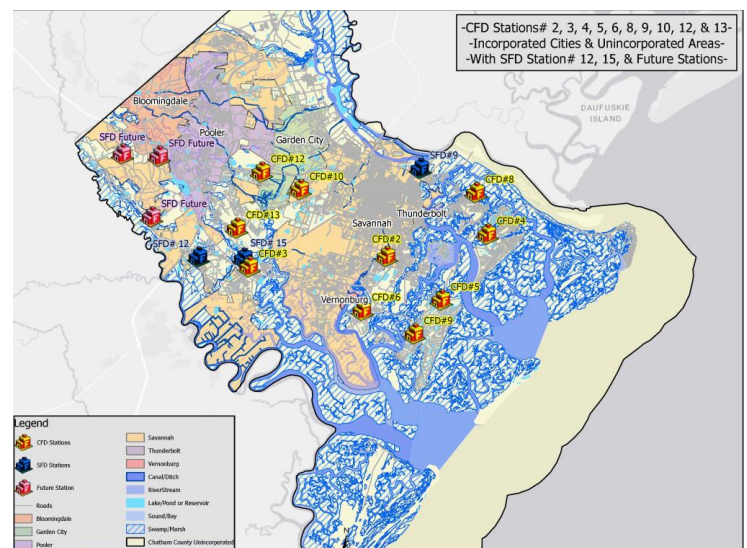
Ten Station Footprint Considerations

Current CCFD 14-Station Footprint



Ten Station Footprint with CCFD Stations 2, 3, 4, 5, 6, 8, 9, 10, & 13 and SFD Stations 9, 12, 15, and Future SFD Stations

This scenario considers the decommissioning of CCFD Stations 1, 7, 11, and 14.



The ten-station CCFD footprint, utilizing a 360 second travel time benchmark, and with service area agreements with the City of Savannah for the Station 7, 11, and 14 districts, provides effective coverage for unincorporated Chatham County. With the agreements and the ten CCFD stations, there are only nominal differences when compared to a fourteen-station CCFD footprint.

- The ten-station footprint reduces staffed heavy fire apparatus from eighteen to fourteen.
 - 14 station model: 11 Engines; 3 Squads; 4 Ladders
 - 10 station model: 7 engines; 3 squads; 4 ladders

- The Garden City service area contract is sustained with Stations 10 and 12. If the City of Savannah continues to annex unincorporated area in the Station 10 district and there is no longer a need for Station 10, the Garden City contract is still sustained with Station 12.
- The redeployment of staffing from the decommissioning of Engines 1, 7, 11, and 14 can be utilized elsewhere in the CCFD system to increase staffing on seven response units as outlined herein.
- The redeployment of decommissioned engines to other stations where there may be older apparatus or to reserve should reduce the size of the overall engine fleet.

An additional consideration for an eleven-station model that includes the relocation of CCFD Station 14 to the Talahi, Whitemarsh, and Wilmington Island region of the County. Currently this region is served by Stations 4, 8, and 14. As an island region of unincorporated Chatham County, access is limited to US Highway 80E and the Islands Expressway. In comparison the southern region of unincorporated Chatham County that includes Skidaway and Montgomery Islands is served by four fire stations.

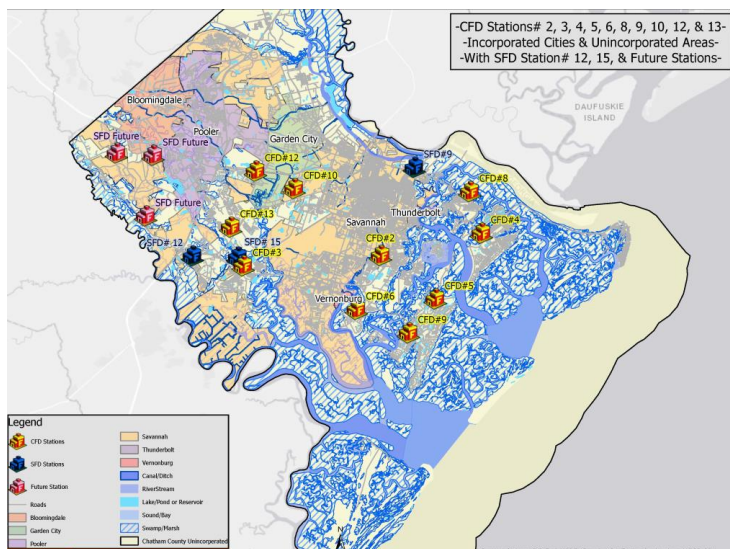
The relocation of Station 14 increases the CCFD model to an eleven-station model (a reduction from 14 to 11) and reduces staffed apparatus from eighteen to fifteen as follows:

- 14 station model: 11 Engines; 3 Squads; 4 Trucks (Ladder Apparatus)
- **11 station model: 8 Engines; 3 Squads; 4 Trucks (Ladder Apparatus)**

Eleven Station Footprint Considerations

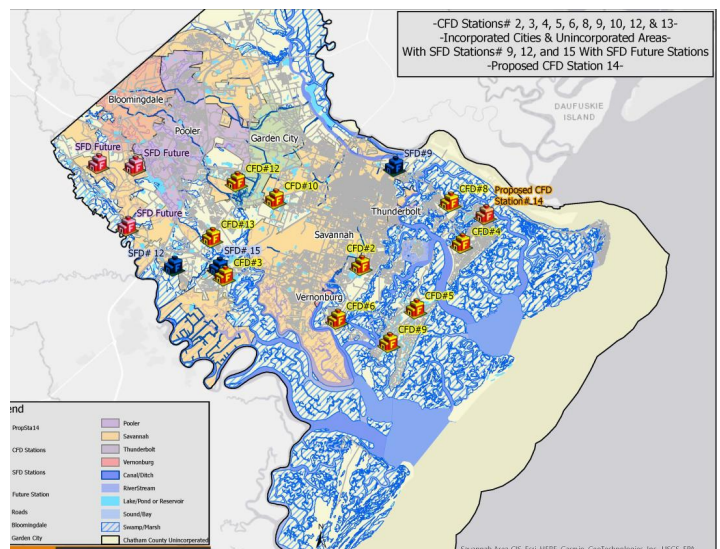
Ten Station Footprint with CCFD Stations 2, 3, 4, 5, 6, 8, 9, 10, & 13 and SFD Stations 9, 12, 15, and Future SFD Stations

This scenario considers the decommissioning of CCFD Stations 1, 7, 11, and 14.



Eleven Station Footprint with CCFD Stations 2, 3, 4, 5, 6, 8, 9, 10, 13, and Relocated 14 and SFD Stations 9, 12, 15 and Future SFD Stations

This scenario considers the decommissioning of CCFD Stations 1, 7, 11



Strategic Initiatives

The Chatham County *Fire Transition Gap Analysis and Strategic Initiatives* report contains five strategic initiatives with goals and objectives that focus on priority areas of the Chatham County Fire Department transition as a County department, and also the unincorporated area in terms of Fire Protection and EMS first response service delivery.

The five strategic initiatives and goals include: (details of each initiative begin on the next page)

Strategic Initiative 1: CCFD Organizational Resiliency
<p>Goal 1.1: Health, Safety, and Wellness: Alignment with NFPA 1500: Standard on Fire Department Occupational Safety and Wellness Programs and NFPA 1582 Standard on Comprehensive Occupational Medical Program for Fire Departments.</p> <p>Goal 1.2: Sustain a highly trained and prepared workforce capable of responding effectively and safely to a wide range of emergencies.</p> <p>Goal 1.3: Ensure staffing levels are sustained and effective recruitment aligns with organizational expansion.</p>
Strategic Initiative 2: Organizational Growth and Excellence
<p>Goal 2.1: Expand Operational Officer Corps.</p>
Strategic Initiative 3: Sustainable Infrastructure
<p>Goal 3.1: Continue Maintaining and Renovating CCFD Leased Facilities.</p> <p>Goal 3.2: Rebuild and purchase CCFD facilities to ensure sustainable facility infrastructure.</p> <p>Goal 3.3: Sustain CCFD Fire Operational Fleet.</p> <p>Goal 3.4: Sustain CCFD Structural Firefighting Equipment.</p>
Strategic Initiative 4: Ensuring a Resilient Community
<p>Goal 4.1: Develop and Implement a Community Risk Reduction Program.</p> <p>Goal 4.2: Sustain ISO-PPC Community Rating.</p> <p>Goal 4.3: Sustain and Enhance the Behavioral Health Unit Program.</p> <p>Goal 4.4: Engage in a robust Automatic Aid response initiative with contiguous jurisdictions.</p>
Strategic Initiative 5: Resource Optimization and Effective Deployment
<p>Goal 5.1: Increase deployable assets aimed at enhancing the CCFD's ability to assemble an Effective Response Force for building fires.</p> <p>Goal 5.2: Create greater efficiencies in resource location and distribution. Initial Phase.</p> <p>Goal 5.3: Create greater efficiencies in resource location and distribution. Secondary Phase.</p>

Strategic Initiative 1 – CCFD Organizational Resiliency	
Initiative Manager(s): As assigned.	
Goal 1.1: Health, Safety, and Wellness: Alignment with NFPA 1500: Standard on Fire Department Occupational Safety and Wellness Programs and NFPA 1582 Standard on Comprehensive Occupational Medical Program for Fire Departments.	
Objectives	Term (Near/Mid/Long)
1. Continuance of a health, safety, and wellness committee, including the Chatham County Human Resources and Risk Management, with a goal of sustaining a comprehensive health, safety, and wellness initiative program that aligns with NFPA 1500, <i>Standard on Fire Department Occupational Safety and Wellness Programs</i> , (current and future editions).	All Terms
2. Conduct an annualized department-wide health, safety, and wellness needs assessment.	All Terms
3. Maintenance of and continual updating of department policies, procedures, and guidelines that link or should link to health, safety, and wellness while members are engaged in emergency and non-emergency activities.	All Terms
4. Ensure the current health and wellness program encompasses proactive mental health and individual assistance, and the minimization of carcinogen and other occupational exposures.	All Terms
5. Continuance of candidate and incumbent occupational medical program components that align with <i>NFPA 1582 Standard on Comprehensive Occupational Medical Program for Fire Departments</i> (current and future editions).	All Terms

Strategic Initiative 1 – CCFD Organizational Resiliency	
Initiative Manager(s): As assigned.	
Goal 1.2: Sustain a highly trained and prepared workforce capable of responding effectively and safely to a wide range of emergencies.	
Objectives	Term (Near/Mid/Long)
1. Continuance of training curriculums for new hires and incumbents that align with the Georgia Fire Standards and Training Council standards, Georgia Department of Public Health, and the Insurance Services Office Fire Suppression Rating Schedule requirements. Regularly update current curriculums and training materials and position task books to reflect current best practices and emerging technologies.	All Terms
2. Enhance skill retention and training accessibility through the continuance of frequent digital training and scenario-based hands-on practical training opportunities.	All Terms
3. Foster professional development for incumbent personnel through adequate funding for regional, state, and national training opportunities that include the National Fire Academy, National Emergency Management Institute, and professional conferences.	All Terms
4. Ensure adequate funding to maintain the CCFD training center infrastructure, training props, and training equipment.	All Terms
5. Ensure there is adequate training instructor staff to meet the needs of new-hire and incumbent training requirements and organizational needs. Provide adequate funding to expand the training staff as organizational staff and needs expand.	All Terms

Strategic Initiative 1 – CCFD Organizational Resiliency	
Initiative Manager(s): As assigned.	
Goal 1.3: Ensure staffing levels are sustained and effective recruitment aligns with organizational expansion.	
Objectives	Term (Near/Mid/Long)
<p>1. Assess and develop a recruitment program for the CCFD that includes firefighter and officer ranks.</p> <ul style="list-style-type: none"> The recruitment program should recognize that expanding the officer ranks (Lieutenant, Captain, Battalion Chief) may include internal promotional processes and external recruitment and assessing processes to ensure the best candidate(s) are selected. 	All Terms
<p>2. Ensure CCFD salary and benefits remain competitive when benchmarked against regional fire departments and that both align with recruitment and retention efforts of operational staff.</p>	All Terms
<p>3. Continue to recruit and retain volunteer members to augment career staffing on fire apparatus.</p> <ul style="list-style-type: none"> Ensure volunteer members meet all entry and minimum training requirements according to the <i>Official Code of Georgia Annotated and as established by the CCFD</i>. Ensure retention programs are guided to retain volunteers and recognize their value to the fire department and to the county. 	All Terms

Strategic Initiative 2 – Organizational Growth and Excellence	
Initiative Manager(s): As assigned.	
Goal 2.1: Expand Operational Officer Corps.	
Objectives	Term (Near/Mid/Long)
<p>1. The single District Chief/Shift Commander position operates beyond recommended span-of-control best practices.</p> <ul style="list-style-type: none"> • Create the Battalion Chief level position as the district command officer and supervisor and segregate the CCFD fire coverage area into east and west districts with one Battalion Chief in overall command of each district (six FTEs). Can be phased in - one additional Battalion Chief per shift, per budget year (3 FTEs). • Maintain the current District Chief/Shift Commander position as the overall shift manager and day-to-day shift commander. • Expand the Battalion Chief districts to east, central, and west (one additional Battalion Chief per shift - 3 FTEs) when needed and as determined by the Fire Chief due to response distance challenges and as company level staffing and incident demand increases. 	<p>Term funding is available.</p> <p>Long Term</p>
<p>2. CCFD does not have adequate company level first - line supervisory staff in place to provide day-to-day supervision of CCFD programs, incident response, and staff at the company level.</p> <ul style="list-style-type: none"> • Develop a staffing plan for additional company officers at the Lieutenant level for assignments to Engine and Squad Companies. <ul style="list-style-type: none"> ➤ Phase I: Add Lieutenant positions to the three Squad Companies - Squads 6, 8, and 13 as funding is available (9 new FTEs). ➤ Phase II: Add Lieutenant positions to six Engine Companies as determined by the Fire Chief as funding is available (18 FTEs). ➤ Phase III: Add Lieutenant positions to five Engine Companies as determined by the Fire Chief as funding is available (15 FTEs). 	<p>Near Term</p> <p>Near term</p> <p>Term funding is available.</p> <p>Term funding is available.</p>
<p>3. CCFD does not have consistency in rank amongst the Truck Company officers (Trucks 7 & 9 have Captain positions; Trucks 8 & 12 have Lieutenant positions). The job functions and responsibilities are consistent across the four Truck companies.</p> <ul style="list-style-type: none"> • Create two Captain positions for Trucks 8 & 12 (6 new FTEs). • Transfer the six Lieutenant FTEs to either Squad or Engine companies that are designated to receive Lieutenant positions. 	<p>Near term as funding is available.</p>

Strategic Initiative 3 – Sustainable Infrastructure	
Initiative Manager(s): As assigned.	
Goal 3.1: Continue Maintaining and Renovating CCFD Leased Facilities.	
Objectives	Term (Near/Mid/Long)
1. Contract with an engineering firm who specializes in facility assessments and inspections to conduct a facility assessment on all leased facilities that are in the age seventeen to fifty plus year range, to include all structural and mechanical systems, for the purpose of identifying structural, roof, and mechanical system issues that require repair and/or replacement so that major facility issues can be prioritized and properly funded.	Near Term
2. Ensure that all stations are equipped with carbon monoxide (CO) capture systems to reduce carcinogen exposure to station crews and visitors. <ul style="list-style-type: none"> • Apply for grant funding through the Federal Emergency Management Agency's Assistance to Firefighters Grant program for this project. 	Near Term
3. Develop a plan for the renovation of existing stations to ensure all facilities have adequate bunking, showering, bathroom, and locker room areas for a diverse workforce and that are gender separated or can be separated through reasonable and best-practice methods; decon areas; adequate storage; non-porous kitchen counter tops; smoke and carbon monoxide detectors; separation between living and apparatus bay spaces; structural gear storage racks or cages that are open and allow adequate air-flow; adequate physical fitness equipment (cardio and strength conditioning) separated from apparatus area when possible. Renovation budgets should include life-cycle replacement of structural, mechanical, plumbing, and equipment components.	Near Term Renovation(s) to occur as funding is available.

Strategic Initiative 3 – Sustainable Infrastructure	
Initiative Manager(s): As assigned.	
Goal 3.2: Rebuild and purchase CCFD facilities to ensure sustainable facility infrastructure.	
Objectives	Term (Near/Mid/Long)
<p>1. Conduct an analysis in the initial five years of the current <i>Lease Agreement for Public Purposes (Fire Stations and attached equipment)</i> between Chatham County and Southside Communities Fire Protection, INC., d/b/a Chatham Emergency Service , INC., to rebuild stations 4, 6, and 8 either in proximity to the station's current site, or in a more advantageous location to better serve unincorporated Chatham County.</p> <ul style="list-style-type: none"> • Conduct a cost-benefit analysis of significant renovation to a leased facility versus rebuilding and ownership of the new facility. • Conduct a land availability analysis to build a new Station 13 (this facility is a leased building from a private vendor and is not conducive to the delivery of contemporary fire services). 	<p>Analysis-Near Term</p> <p>Facility Rebuilding- as funding is available.</p> <p>Near Term</p> <p>Near Term</p>
<p>2. Conduct an analysis in the second five year term of the of the current <i>Lease Agreement for Public Purposes (Fire Stations and attached equipment)</i> between Chatham County and Southside Communities Fire Protection, INC., d/b/a Chatham Emergency Service , INC., that will assist the County with making a determination of maintaining the agreement (and all maintenance and upkeep of CES facilities) or purchasing the facilities that remain as active fire stations in the CCFD footprint.</p> <ul style="list-style-type: none"> • At a minimum, the County considers the purchase of Station 3 and all training props from CES as this facility serves as the central facility for all CCFD recruit and incumbent training. 	<p>Mid-Long Term</p> <p>Mid Term</p>

Strategic Initiative 3 – Sustainable Infrastructure	
Initiative Manager(s): As assigned.	
Goal 3.3: Sustain CCFD Fire Operational Fleet.	
Objectives	Term (Near/Mid/Long)
1. Continue to include in all capital budgeting the following planning objectives to sustain the current and future fleet: <ul style="list-style-type: none"> • Follow the NFPA 1900 standard for heavy engine, aerial ladder, and tender fire apparatus fleet replacement and the CCFD vehicle evaluation point system. <ul style="list-style-type: none"> ➤ Engines: 10 years front-line (Additional 2-5 years as reserve status based on condition). ➤ Aerial: 12 years front line (Additional 3-5 years as reserve status based on condition). ➤ Tender: 20 years front line based on condition. (If the tenders become a staffed responding unit the life cycle will be adjusted). ➤ Heavy fire apparatus no longer considered for frontline or reserve status once the apparatus reaches the 25-year age ceiling. ➤ Commercial chassis are only considered for water tender apparatus. 	<p>All Terms</p> <p>All Terms</p> <p>All Terms</p> <p>All Terms</p> <p>All Terms</p>

Strategic Initiative 3 – Sustainable Infrastructure	
Initiative Manager(s): As assigned.	
Goal 3.4: Sustain CCFD Structural Firefighting Equipment.	
Objectives	Term (Near/Mid/Long)
1. CCFD continues to utilize NFPA 1971 and NFPA 1851 (or successor standards) as guideline documents for the design, performance, testing, certification, care, maintenance, storage, lifecycle, and selection when procuring structural firefighting ensemble components and inspecting current components in use by CCFD members or in storage.	All Terms
2. The County continues to support the plan to procure and issue a second set of structural turnout gear for each operational member of the department to align with national best practice protective and preventive health measures for operational members and enhanced operational readiness.	All Terms
3. CCFD establishes a replacement schedule that considers SCBA ensemble replacement every other NFPA 1981 update (future NFPA 1970 standard) unless there are substantive updates to a standard update where it is in the best interest of the health and safety of firefighters to consider updating all units of the SCBA ensemble earlier.	All Terms

Strategic Initiative 4 – Ensuring a Resilient Community	
Initiative Manager(s): As assigned.	
Goal 4.1: Develop and Implement a Community Risk Reduction Program.	
Objectives	Term (Near/Mid/Long)
The County currently performs minimal fire prevention inspections through the Building Safety and Regulatory Services Department on existing inspectable occupancies.	
1. Develop and implement a Fire Marshal's Office as a division in the Chatham Fire Department.	Near Term
<ul style="list-style-type: none"> Recruit and hire a Fire Marshal certified in accordance with State of Georgia standards as a fire inspector, fire investigator, and life safety educator. Develop and implement a County approved community risk reduction plan for unincorporated Chatham County that includes fire prevention, fire investigation, and life safety education program work. 	Near Term
2. Determine the number of fire inspectors, fire investigators, and educators based on current and projected inspectable properties and workload.	Near term
3. Inspect and enforce the Minimum Fire Safety Standards established through Rule 120-3-3-.04 <i>State Minimum Fire Safety Standards with Modifications of the Rules and Regulations of the State of Georgia</i> .	All Terms
4. Conduct building and site plans review related to fire protection systems and life safety.	All Terms
5. Investigate and determine the origin and cause of fires and determine if a crime has been committed regarding the origin and cause of a fire.	All Terms
6. Conduct related fire and life safety inspections to include short-term rental inspections and new Business License Occupancy Tax Certificate Inspections.	All Terms

Strategic Initiative 4 – Ensuring a Resilient Community	
Initiative Manager(s): As assigned.	
Goal 4.2: Sustain ISO-PPC Community Rating.	
Objectives	Term (Near/Mid/Long)
1. Measure any new development or the aggregate of new developments for the potential impacts on the CCFD regarding densification created by multi-family/multi-story buildings and/or residential development(s), increase in call demand, and impact on the current deployment model (apparatus type, staffing, deployment locations) of the CCFD.	All Terms
3. Continually monitor all components of the ISO-PPC analysis (Emergency Communications; Fire Department; Water Supply) to ensure current credits earned are not destabilized and result in a reduction in earned credit points.	All Terms
4. To the extent possible and as funding allows, address any deficiencies in the current ISO-PPC analysis to sustain optimum service deliverables and the ISO-PPC community rating of 3/3X and improve earned credit points where feasible.	All Terms

Strategic Initiative 4 – Ensuring a Resilient Community	
Initiative Manager(s): As assigned.	
Goal 4.3: Sustain and Enhance the Behavioral Health Unit Program.	
Objectives	Term (Near/Mid/Long)
1. Continue to align the CCFD with national best practices related to community based Mobile Integrated Health - Community Paramedicine and Behavioral Health response programs.	All Terms
2. Continuous monitoring of Behavioral Health Unit staff workload as it relates to the expanding population of the County that has or develops increased social determinants of health and socio needs issues and challenges.	All Terms
3. Expand Behavioral Health Unit staff as needed to meet community and program workload demands.	Mid-Longer Terms

Strategic Initiative 5 – Resource Optimization and Effective Deployment	
Initiative Manager(s): As assigned.	
Goal 5.1: Increase deployable assets aimed at enhancing the CCFD's ability to assemble an Effective Response Force for building fires.	
Objectives	Term (Near/Mid/Long)
<p>The CCFD is unable to, as a single responding agency, assemble an Effective Response Force for single-family dwellings, strip mall/commercial buildings, apartment and condominium building fires, and for a high-rise fire.</p> <ul style="list-style-type: none"> ➤ Utilize the single-family dwelling response force benchmark of 16-17 personnel as an initial building fire deployment goal (largest building risk in the unincorporated county). ➤ Increase CCFD unit response by one additional Truck (ladder apparatus) and two additional engines (or combination engine/squad) to the initial alarm for building fires, or a combination of resources as determined by the Fire Chief. ➤ Add company officers to Engine and Squad Companies as outlined in Strategic Goal 2.1, which will increase staffing on these units to 3/shift. ➤ Maintain minimum staffing of three on Truck companies. Increase staffing as necessary to achieve this objective. ➤ Engage as many municipal fire departments as possible in automatic aid agreements on structure fire responses in unincorporated Chatham County to bolster the Effective Response Force, particularly for open air/strip mall buildings and apartment and condominium buildings, which require a greater number of Effective Response Force staff. ➤ Increase staffing on Truck and Squad Companies to a minimum of four. 	<p>Near Term</p> <p>Near Term</p> <p>Terms outlined in Goal 2.1</p> <p>All Terms-funding availability</p> <p>All Terms</p> <p>Long Term-funding availability</p>

Strategic Initiative 5 – Resource Optimization and Effective Deployment	
Initiative Manager(s): As assigned.	
Goal 5.2: Create greater efficiencies in resource location and distribution. Initial Phase.	
Objectives	Term (Near/Mid/Long)
<p>As municipalities continue to annex unincorporated land (particularly the City of Savannah), duplication of fire protection services will potentially be duplicated. This potentially conflicts with the <i>Georgia Service Delivery Act's</i> intent "To minimize any duplication or completion among local governments and authorities providing local services."</p> <p>1. Decommission CCFD Stations 1 and 14 and contract with the City of Savannah (if the city is agreeable) to cover the small first due areas these stations currently cover. These include:</p> <ul style="list-style-type: none"> • The Town of Vernonburg. CCFD Station 1 is situated inside the City of Savannah and primarily services the Town. Savannah Fire Station 10 is in closer proximity to the Town. <ul style="list-style-type: none"> ➤ Facilitate discussions between the Town and City for the City to contract with the Town for fire protection services. ➤ Assess loss of revenue to the County. ➤ Redeploy staffing and equipment as determined by the Fire Chief. • CCFD Engine 14's district. Savannah Fire Station 9 is in close proximity to CCFD Station 14 and can adequately cover this County district. <ul style="list-style-type: none"> ➤ Contract with the City for SFD Station 9 to cover the County Station 14 district. ➤ Assess loss of revenue to the County. ➤ Decommission Station 14. ➤ Redeploy staffing and equipment as determined by the Fire Chief. <p>2. Decommission CCFD Station 7 and contract with the City Savannah to cover the CCFD Station 7 district.</p> <ul style="list-style-type: none"> • Contract with the City for SFD Station 12 to cover the County Station 7 district. • Assess loss of revenue to the County. • Decommission Station 7. • Redeploy staffing and equipment as determined by the Fire Chief. • Consider redeployment of Truck 7 to CCFD Station 3 temporarily until a new CCFD Station 13 is constructed (Goal 3.2-Near Term). Engage in an area specific automatic aid agreement with the City that includes SFD Station 15 responding into the CCFD Station 3 district with CCFD providing reciprocal automatic aid to the City. 	<p>Near Term</p> <p>Near Term</p> <p>Near Term</p> <p>Near Term</p>

Goal 5.2: Create greater efficiencies in resource location and distribution. Initial Phase (continued).	
<p>3. Decommission CCFD Station 11 and contract with the City Savannah to cover the CCFD Station 11 district.</p> <ul style="list-style-type: none"> Contract with the City for future SFD stations (two in the New Hampstead area of the city and one along the SR 204 corridor west of I-95) to cover the Station 11 district. Assess loss of revenue to the County. Redeploy staffing and equipment as determined by the Fire Chief. 	Mid-Long Term
<p>4. Relocate Truck 12 and staffing from Station 12 to Station 2 to bolster ladder company response on the east and south side of the County where the greatest percentage of buildings 35' or greater is.</p>	Near Term
<p>5. Relocate Truck 7 to a new Station 13 facility to serve as a westside CCFD ladder company (links to Goal 3.2).</p>	Term funding is available.

Strategic Initiative 5 – Resource Optimization and Effective Deployment	
Initiative Manager(s): As assigned.	
Goal 5.3: Create greater efficiencies in resource location and distribution. Secondary Phase.	
Objectives	Term (Near/Mid/Long)
<p>As municipalities continue to annex unincorporated land (particularly the City of Savannah), duplication of fire protection services will potentially be duplicated. This potentially conflicts with the <i>Georgia Service Delivery Act's</i> intent "To minimize any duplication or completion among local governments and authorities providing local services."</p>	
<p>1. Close Station 10 should the City of Savannah annex the area east and south of Buckhalter Road. Redeploy Engine 10 staffing where needed as designated by the Fire Chief to increase staffing to 3/Shift on two units. Redeploy Engine 10 to another station with an older apparatus or to reserve.</p>	Mid-Long Term
<p>2. Relocate Station 2 to the area of Winterberry Road and Ferguson Ave. This station borders the City of Savannah to the north and west and is out of position for response to its primary district.</p> <ul style="list-style-type: none"> Additional planning and consideration should be given to relocating CCFD administration and program staff to this County facility. 	Mid-Long Term
<p>3. Relocate Station 14 to Johnny Mercer Blvd. and Highway 80E to optimize and enhance response resources in the Talahi, Whitmarsh, and Wilmington Island region.</p>	Mid-Long Term
<p>4. Maintain the Garden City fire protection contract.</p>	All Terms

Strategic Initiative 5 – Resource Optimization and Effective Deployment	
Initiative Manager(s): As assigned.	
Goal 5.4: Dispatch, Turnout, and Response Travel Times of System Resources	
Objectives	Term (Near/Mid/Long)
1. Work with the Chatham Emergency Communication 911-Center to close the gap of call processing times (to the extent possible) to align closer to NFPA 1710 performance standards of 64-seconds at the 90 th percentile for identified higher acuity calls (structure fires and high acuity technical fire related calls, and high acuity medical calls).	Near Term
2. Adopt a performance benchmark for turnout time of ≤ 80 seconds for fire and special operations and ≤ 60 seconds for EMS responses at the 90 th percentile, which aligns with NFPA 1710 performance standard.	Near Term
3. Conduct a Standards of Cover and Community Risk Assessment that aligns with the Commission of Fire Accreditation International standards and format, and NFPA and ISO-PPC standards and benchmarks to determine a response travel time performance benchmark based on station distribution and resource concentration.	Near Term

***As discussed herein, although the County will likely lose fire fee assessment revenue from unincorporated service areas the County may contract with the City of Savannah to provide fire protection service to, the decision to proceed with this service delivery model and subsequent action would follow the Georgia Service Delivery Act's intent "To minimize any duplication or completion among local governments and authorities providing local services."*⁷**

Recommendations (listed next in the order in which they appear in the report)

ISO-PPC Analysis Report: Effective January 1, 2024

1. CPSM recommends that all deficiencies in the current ISO-PPC analysis be included in any strategic planning the County and CCFD conduct in all future planning terms. This should include assessment of the dispatch circuits (911 Center and CCFD stations), current engine and ladder company distribution, staffing (company personnel), and water distribution. Any strategy should include the goal of sustaining optimum service deliverables and the ISO-PPC community rating of 3/3X and improve earned credit points where feasible.

Organizational Analysis

2. As Trucks 8 & 12 have Lieutenant positions assigned as company officers, CPSM recommends the County consider assigning Captains to Trucks 8 & 12 (6 Captain positions-new FTEs). The purpose of this upgrade is to establish consistency in rank amongst the Truck Company officers (Trucks 7 & 9 have Captain positions) as the job functions and responsibilities are consistent across the four Truck companies.

⁷ Georgia Department of Community Affairs.

3. CPSM recommends the County consider phasing in the Lieutenant position on Engine and Squad Companies. The purpose of this recommendation is to establish first-line supervisors on engine and squad apparatus (and in stations) where there is no supervisory staff to ensure day-to-day supervision of CCFD programs, incident response, and staff at the company level. Implementing these positions aligns with national best practices and with municipal fire departments in the County.
4. CPSM recommends, when managing the volunteer firefighter program, the CCFD ensure that all volunteer members who engage in incident response and operational activities:
 - Meet all entry and minimum training requirements according to the *Official Code of Georgia Annotated* and as established by the CCFD.
 - Participate at a CCFD station with CCFD career staff and respond to incidents on CCFD fire apparatus. While in the station and operating on a CCFD fire apparatus, a volunteer member operates under the station officer or senior crew leader in the absence of an officer.
 - Discontinue personal vehicle response due to the potential liability a motor vehicle accident may create for the County.
 - Complete all CCFD firefighter requirements such as entry and annualized medical physicals; annualized SCBA mask fit testing; meet annualized physical requirements as established by the CCFD; meet annualized training requirements; meet any other entry and annualized requirements as established for firefighters and officers of the CCFD.
5. CPSM recommends the reorganization of the volunteer officer rank structure and retitle volunteer chief officer title(s) to that of Volunteer Captain. The purpose of this recommendation is to organize the volunteers into regional companies, with each to be supervised by a Volunteer Captain. This aligns with the current CCFD career company officer rank structure. CPSM further recommends that the Volunteer Captain have supervisory responsibilities over assigned volunteers in his/her company only and not career staff. Further, volunteer Captains must meet and maintain the requirements of a career Captain or as established by the CCFD Fire Chief. The number of volunteer companies to be decided by the CCFD Fire Chief.
6. CPSM does not recommend assigning or reassigning take home vehicles to volunteer officer positions as these are not emergency response/incident command positions. This will help to alleviate any future liability issues.

Community Risk Reduction

7. CPSM recommends over the near term the County develop and implement a Fire Marshal's Office as a division in the Chatham Fire Department that has the responsibility to:
 - Inspect and enforce the Minimum Fire Safety Standards established through Rule 120-3-3-.04 *State Minimum Fire Safety Standards with Modifications of the Rules and Regulations of the State of Georgia*;
 - Conduct building and site plans review related to fire protection systems and life safety;
 - Investigate and determine the origin and cause of fires, and determining if a crime has been committed regarding the origin and cause of a fire;
 - Conduct related fire and life safety inspections to include short-term rental inspections and new Business License Occupancy Tax Certificate Inspections.

8. CPSM recommends the initial hiring of a Fire Marshal (near term), certified in accordance with State of Georgia standards as a fire inspector, fire investigator, and life safety educator. The Fire Marshal's initial charge should be to develop and implement a County approved community risk reduction plan for unincorporated Chatham County that includes fire prevention, fire investigation, and life safety education program work. The number of fire inspectors, investigators, and educators to be determined based on current and projected inspectable properties and workload.

Training and Education

9. As the CCFD organization expands with operational personnel, the CCFD should continually monitor training staff resource allocation to ensure there is adequate training instructor staff to meet the needs of new-hire and incumbent training requirements and organizational needs. Therefore, CPSM recommends that the expansion of training instructor staff be included in annual strategic planning needs assessment sessions to ensure organizational staff and training needs/requirements are adequately maintained.

Facilities

10. CPSM recommends the CCFD contract with an engineering firm who specializes in facility assessments and inspections to conduct a facility assessment on all leased facilities that are in the age seventeen to fifty plus range, to include all structural and mechanical systems, for the purpose of identifying structural, roof, and mechanical system issues that require repair and/or replacement so that major facility issues can be prioritized and properly funded.
11. CPSM recommends as a priority that all stations be equipped with carbon monoxide (CO) capture systems to reduce carcinogen exposure to station crews and visitors. CPSM further recommends the CCFD apply for grant funding through the Federal Emergency Management Agency's Assistance to Firefighters Grant program for this project.
12. CPSM recommends the County fund the renovation of existing stations to ensure all facilities have adequate bunking, showering, bathroom, and locker room areas for a diverse workforce and that are gender separated or can be separated through reasonable and best-practice methods; decon areas; adequate storage; non-porous kitchen counter tops; smoke and carbon monoxide detectors; separation between living and apparatus bay spaces; structural gear storage racks or cages that are open and allow adequate air-flow; adequate physical fitness equipment (cardio and strength conditioning) separated from apparatus area when possible. Renovation budgets should include life-cycle replacement of structural, mechanical, plumbing, and equipment components.
13. CPSM recommends that strategically, the County should consider, in the initial five years of the current *Lease Agreement for Public Purposes (Fire Stations and attached equipment)* between Chatham County and Southside Communities Fire Protection, INC., d/b/a Chatham Emergency Service , INC., to rebuild the following stations either in proximity to the station's current site, or in a more advantageous location to better serve unincorporated Chatham County:
 - Station 13 near term (this is a leased building that CES does not own).
 - Stations 4, 6, and 8.

Consideration to rebuild should include the cost-benefit analysis of significant renovation to a leased facility versus rebuilding and ownership of new facility, potential future municipal annexation around station location, availability of a municipality to service unincorporated areas through service agreements, and automatic aid agreements with municipalities.

- In the second five year term of the of the current *Lease Agreement for Public Purposes (Fire Stations and attached equipment)* between Chatham County and Southside Communities Fire Protection, INC., d/b/a Chatham Emergency Service , INC., the County should conduct an analysis and make a determination on whether to maintain the current agreement (and all maintenance and upkeep of CES facilities) or purchasing the facilities that remain as active fire stations in the Chatham County Fire Department footprint. **At a minimum, CPSM recommends the County purchase Station 3 and all training props from CES as this facility serves as the central facility for all CCFD recruit and incumbent training.**

Fleet

14. CPSM recommends that the County should continue to include in all CCFD capital budget planning over the near, mid, and long terms, planning objectives that consider the NFPA 1900 standard for heavy engine, aerial ladder, and tender fire apparatus fleet replacement and the CCFD vehicle evaluation point system as outlined herein. CPSM further recommends planning objectives that include not utilizing heavy fire apparatus once the apparatus reaches the 25-year age ceiling. Additionally, the CCFD should continue its current evaluation system for staff, light vehicles and trailers and replace these vehicles based on age, mileage, maintenance costs, downtime, resale value, and overall condition and functionality.

Self-Contained Breathing Apparatus

15. CPSM recommends the CCFD continues to provide annual testing of all the components of the SCBA ensemble and document results, maintenance, and repair in a records management program.
16. CPSM recommends the CCFD should evaluate all current SCBA manufacturers, ensuring future SCBA ensembles include:
 - Compliance with NFPA 1981, current edition - *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*.
 - Compliance with NFPA 1982, current edition - *Standard of Personal Alert Safety Systems (PASS)*.
 - Bluetooth components that allow fireground accountability and data transmission to the incident command post.
 - Comfort and ergonomics.
 - Ability to easily clean.
 - Ability to easily service.
 - Length of Warranty.
 - The length of vendor support for parts and services extends the life of the SCBA ensemble (harness and harness components, regulator and regulator components, air cylinder, PASS device, and mask).
 - Compatibility with Chatham County municipal fire departments.

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17. CPSM recommends the CCFD establish a replacement schedule that considers SCBA ensemble replacement every other NFPA 1981 update (future NFPA 1970 standard) unless there are substantive updates to a standard update where it is in the best interest of the health and safety of firefighters to consider updating all units of the SCBA ensemble earlier.
18. CPSM recommends all breathing air compressors in CCFD inventory either owned or leased comply with NFPA 1989: *Standard on Breathing Air Quality for Emergency Services Respiratory Protection*, 2019 edition.
19. CPSM recommends the CCFD apply for grant funding through the Federal Emergency Management Agency's Assistance to Firefighters Grant program for the current and any future (federal funding availability) SCBA update and replacement project(s).

Structural Turnout Gear

20. CPSM recommends the CCFD continue to utilize NFPA 1971 and NFPA 1851 as guideline documents for the design, performance, testing, certification, care, maintenance, storage, lifecycle, and selection when procuring structural firefighting ensemble components and inspecting current components in use by CCFD members or in storage.
21. CPSM recommends, following national best practice, the County continue to support the plan to procure and issue a second set of structural turnout gear for each operational member of the department to align with protective and preventive health measures for operational members and enhanced operational readiness.

Automatic and Mutual Aid

22. CPSM recommends Chatham County and the CCFD continue current discussions regarding automatic aid with those municipalities that are contiguous with unincorporated areas of the County. These discussions should include:
 - What each jurisdiction is willing to provide in terms of automatic aid?
 - What each jurisdiction expects in return for providing automatic aid?
 - What staffing levels are required for a jurisdiction to engage in automatic aid?
 - What training levels for officers is required to assume the responsibility of incident commander?
 - Will automatic aid be specific to certain areas of each jurisdiction participating in the agreement, or will the agreement expand to all areas of the signatory jurisdictions?
 - Will the agreement require multi-jurisdictional training and drills?
 - Will common response protocols and guidelines be developed and included in the agreement?
 - It is recommended that automatic and mutual aid decisions be made as soon as possible to initiate many of the immediate recommendations needed. CPSM further recommends that Chatham County engage as many jurisdictions as possible in automatic aid agreements for the sole purpose of sharing resources and enhancing service deliverables for the betterment of signatory jurisdictions.

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Fire Ground Operations

23. CPSM recommends the CCFD consider the following to increase the Effective Response Force to building fires, utilizing the single-family dwelling benchmark as an initial goal (sixteen staff-seventeen if aerial device utilized), as these buildings represent the largest building risk in the County:
- Increasing CCFD unit response by one additional Truck (ladder apparatus) and two additional engines (or combination engine/squad) to the initial alarm for building fires, which would increase the Effective Response Force to sixteen total.
 - Engage as many municipal fire departments as possible in automatic aid agreements on structure fire responses in unincorporated Chatham County to bolster the Effective Response Force, particularly for open air/strip mall buildings and apartment and condominium buildings, which require a greater number of Effective Response Force staff.
 - Increase staffing for Truck Companies (ladder apparatus) and Squad Companies to a minimum of three in the near term, with a goal of achieving a minimum of three staff on all CCFD engines over the midterm. An additional goal/consideration to bolster staffing over the longer term is an increase in staffing on Truck Companies to four initially, and then Squad Companies to four staff as funding allows.

Response Times

24. CPSM assesses that CCFD response times do not meet the NFPA 1710 benchmark standards. **CPSM recommends the** CCFD adopt a performance benchmark for turnout time of ≤ 80 seconds for fire and special operations and ≤ 60 seconds for EMS responses at the 90th percentile. **CPSM further recommends** the CCFD work with Chatham County 911 Center regarding call processing performance standards of 64-seconds at the 90th percentile for identified higher acuity calls (structure fires and high acuity technical fire related calls as outlined in the NFPA 1710 standard. **Response travel time performance benchmarks are validated through the completion of a Standards of Cover operational analysis, which the CCFD should conduct.**

Ladder Company Realignment

25. CPSM recommends the CCFD consider relocating Truck 12 and staffing to Station 2 to bolster ladder company response on the east side of the County where the greatest percentage of buildings 35' or greater is.
26. CPSM recommends that if the County considers constructing a new Station 13, then Truck 7 and staffing be relocated to Station 13 to serve as the westside CCFD ladder company.

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SECTION 2. METHODOLOGY AND BACKGROUND

CPSM Work Plan and Approach to Project

CPSM has developed a universal approach to public safety operational, administrative, and Fire and EMS analyses and reports. Our project work plan begins with a thorough review of the client's scope of work and is followed up with a project kick off meeting and on-site meetings with our client to discuss the purpose of the project, ensure a mutual understanding of the scope of work, and discuss the desired outcomes. Through this dialogue CPSM's and the client's expectations are managed throughout the analysis process. More specifically, for this *Transition Analysis* project, CPSM utilized the following analysis methodology:

Data Analysis

The CPSM Fire and EMS Team used numerous sources of data to support our conclusions and recommendations for the Chatham County Fire Department Transition Analysis. Information was obtained from the County and fire department along with numerous sources of internal information gathered from a CPSM document/information request. Internal sources included data from the fire department and the fire department's records management systems, the fire department's National Incident Reporting System (NFIRS) records management system for calls for service, County Administration and Budget, the County's Police Chief, Resilience Program Administrator, Engineering Department, Building Officials Office, Human Resources, and the County's 9-1-1 Computer Aided Dispatch (CAD) data.

Stakeholder Interviews

This study relied extensively on interviews and interaction with fire department command staff and the County. On-site and in-person interviews to include virtual meetings were conducted with senior fire department staff, middle managers, and field staff regarding the administration and operations of the department. Stakeholder meetings and input also included County Administration and senior County leadership, County directors and program managers, the Savannah Fire Department Chief and Assistant Chief, and Chatham Fire operational staff during CPSM tours of each fire station.

Document Review

CPSM Fire Team consultants were furnished with numerous reports and summary documents by the County and Chatham County Fire Department. Information on the transition of Chatham Emergency Services-Fire into the County, fire department staffing and deployment of resources; mutual aid; policies and procedures; community risk; fleet and facilities; and distribution of fire and EMS companies was reviewed by fire project team staff. Follow-up phone calls, emails, and virtual meetings were used to clarify information as needed.

Operational/Administrative Observations

Over the course of the evaluation period, numerous observations were conducted. These included observations of fire and EMS operations; community risk; administrative functions; deployment of apparatus from a coverage perspective and as benchmarked against national standards; and operational staffing benchmarked against national standards as it relates to assembling an Effective Response Force. The CPSM Fire and EMS Team engaged all facets of fire department operations from a ground floor perspective and as well from a management perspective.

Deployment Analysis

In virtually all CPSM Fire and EMS studies, we are asked to identify appropriate staffing and resource deployment levels to include proper distribution of fire assets, response times, and workload as it relates to resiliency. This is the case in this analysis as well. In this report we discuss operational workload; critical tasking; assembling an effective response force; operational deployment, station locations, and the feasibility of relocating deployable assets to improve response coverage; and other factors to be considered such as city annexation of unincorporated land when establishing appropriate deployment levels of service.

The primary concepts of the Standards of Cover (SOC) analysis concepts are to develop an integrated response management plan that links the identified community's risk to the safe and effective fire department's response force to fire suppression, emergency medical services, and specialty response incidents.

A key component of an SOC is the comprehensive Community Risk Assessment (CRA). Community risk factors have an impact on all fire department responses to include fire, non-fire related, and EMS responses. The analysis of community risk includes components such as community demographics; community growth and future development; natural hazards; transportation networks and hazards; fire management zone analysis for call type and demand; building risks and hazards; water utilities, and hazards specific to a community.

Where applicable in this report CPSM utilizes national benchmarking as follows:



Insurance Services Office: The Insurance Services Office (ISO), a subsidiary of Verisk Analytics is a national, not-for-profit organization that collects and evaluates information from communities across the United States regarding a community's capabilities to combat building fires. The Verisk hazard mitigation

team collects and evaluates information regarding the community's capabilities to provide municipal fire protection. This information is analyzed further utilizing the Fire Suppression Rating System from which individual section credits and points are tabulated and a Public Protection Classification for the community is assigned. Classifications range from 1 through 10, with one being the highest rating a community can achieve.⁸



NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments, 2020 edition (National Fire Protection Association, Quincy, MA): NFPA 1710 outlines the organization and deployment of operations by career, and primarily career fire and rescue organizations.⁹ This standard

serves as a benchmark to measure staffing and deployment of resources to certain building types and emergencies. Specific components of NFPA 1710 that are germane to staffing and deployment of resources include the assembling of an Effective Response Force (staffing to perform Critical Tasks on the fireground) for certain building risks, and response times (call processing or dispatch time; turnout time; and travel time to the scene).

8. Verisk's Community Hazard Mitigation Services (isomitigation.com)

9. NFPA 1710 is a nationally recognized standard, but it has not been adopted as a mandatory regulation by the federal government or the State of Georgia. It is a valuable resource for establishing and measuring performance objectives for the CCFD but should not be the only determining factor when making local decisions about the city's fire and EMS services.



Quality Improvement for the Fire and Emergency Services, 10th edition, Center for Public Safety Excellence: This manual details the process for conducting a community risk assessment, developing standards of cover, establishing a community-driven strategic plan, and self-assessing all segments of a fire department.¹⁰

Any staffing and deployment recommendations in this report are based upon our comprehensive evaluation of all relevant factors and are benchmarked against national standards such as the National Fire Protection Association (NFPA) 1710 Standard, ISO Public Protection Classification rating system, and the Center for Public Safety Excellence, Standards of Cover.

Chatham Emergency Services-Chatham County Fire Department Background Information^{11,12,13}

The current Chatham County Fire Department (CCFD) is the former component of Chatham Emergency Services (CES)-Fire Division, a community-based not-for-profit fire and EMS agency. The CES – Chatham Fire component provided fire protection services to the unincorporated areas of Chatham County, and also engaged in mutual aid with the cities in the County as well. The current CES - EMS component provides EMS ground transport services to all of Chatham County (incorporated and unincorporated areas).

CES-Chatham Fire was an evolution of the former Southside Fire Department. Southside Fire, which began as a volunteer fire department, was incorporated in 1961, and was originally created when five separate volunteer fire departments merged to better service unincorporated Chatham County. CES-Chatham Fire has been a subscription service fire department since its early beginnings.

Noteworthy events through the years include:

- 1961-1972: Two additional fire stations were added in the Southside Fire Division of unincorporated Chatham County.
- 1972: Southside Fire absorbed the Wilmington Island Fire Department and added a station on Wilmington Island.
- 1975: Southside adds the Skidaway Island Division and adds a fire station on Skidaway Island.
- 1978: Southside Fire absorbs Montgomery Fire Department and the Montgomery station. Southside Fire also adds a station and equipment in the Georgetown area of unincorporated Chatham County.
- 1979: The City of Savannah contracts with Southside Fire to provide fire protection to annexed land that was previously protected by Southside Fire.
- 1984: A second station was added to the Islands Division on Highway 80.

10. Center for Public Safety Excellence, Chantilly, VA

11. [History and Stations | Chatham Emergency Services \(chathames.org\)](#)

12. [Fire Alarm: Chatham Emergency Services struggles with \\$3 million operating deficit | Community | Savannah News, Events, Restaurants, Music | Connect Savannah](#)

13. Agenda Item 7.1, Chatham County, GA County Commission, August 25, 2023, Commission Meeting.

- 1990: Southside Fire merges with Seventh District, which adds two additional stations to the Southside Fire organization. These stations are located at 4501 Ogeechee Road and Ogeechee Road near Little Neck Road.
- 1997: Southside Fire purchases Mercy Ambulance Service and begins EMS ground transport services.
- 1998: Southside Fire adds a new station in the Southbridge Community at 1381 Dean Forest Road.
- 2000: A new Station 2 is opened as the result of a transportation project that required the former Station 2 to be relocated.
- 2011: Southside Fire purchases MedStar One Ambulance, which gives Southside Fire access to obtain the Chatham County EMS contract.
- 2013: Southside Fire constructs and opens a new Fire and EMS Headquarters located at 1399 Dean Forest Road.
- 2017: Southside Fire purchases Coastal EMS Ambulance Services and continues to provide EMS ground transport services in Chatham County. Southside Fire rebrands as Chatham Emergency Services (CES).
- 2020-2021: CES advises Chatham County government they have a \$3-million budget deficit and that this may create challenges in their ability to effectively provide varied public-safety functions County-Wide. This is due to 25 percent of property owners in the coverage area who decline to pay the fire-service subscription fee. CES asks Chatham County for assistance.
- 2022: Chatham County Commission repeals a fire tax (adopted December 2021) and adopts a fire services fee ordinance (May 13, 2022). The fire services fee ordinance establishes a stable revenue source for CES-Chatham Fire (and the current CCFD).
- 2023: Chatham County Commission approves a resolution to *authorize Chatham County Staff to develop and implement a Chatham County Government Fire Department and to develop and implement a transition plan for fire services from Chatham Emergency Services, INC to Chatham County, GA.*
- June 2024: Chatham County Commission approves three agreements with CES that includes: *Termination of Services* (terminates fire protection services between Chatham Emergency Services and Chatham County); *Lease Agreement for Public Purposes* (14-Fire Stations owned by Chatham Emergency Services and leased to Chatham County); *Purchase Agreement for Public Purposes* (Sale of certain fire protection assets and equipment from Chatham Emergency Services to Chatham County).
- July 1, 2024: Chatham County Fire Department (CCFD) commences service.

Baseline Assessment and GIS Analysis

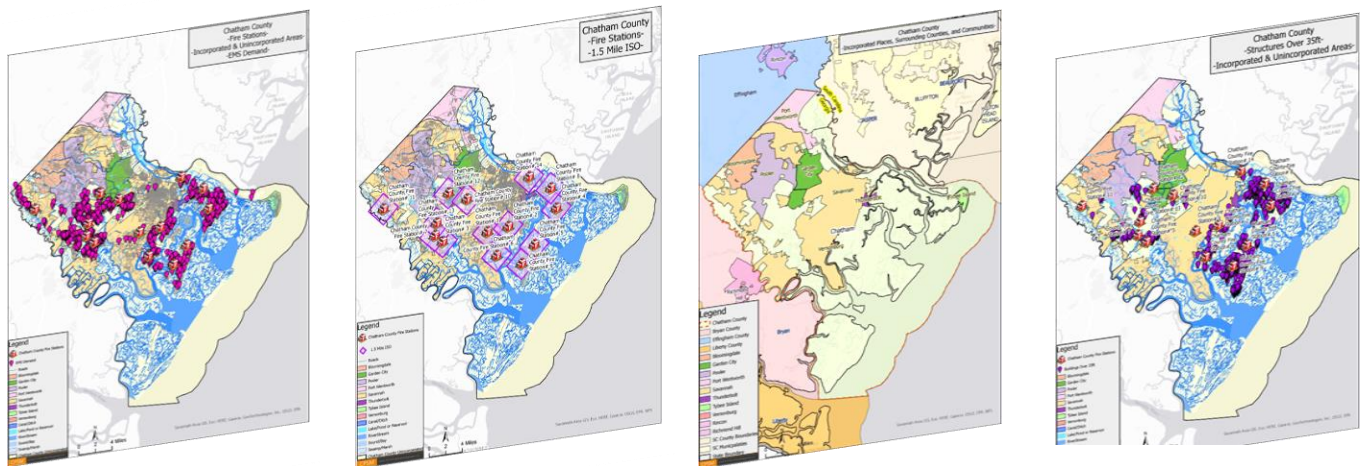
CPSM collected a number of data sets to conduct a baseline assessment of Chatham County and the CES-Chatham Fire Department. These include:

- Chatham County U.S. Census data.
- Computer Aided Dispatch (CAD) data.
- National Incident Fire Reporting System (NFIRS) data.
- Southside Fire - Insurance Services Office Reports.

- Chatham County-Savannah Comprehensive Plan 2040.
- Chatham County Emergency Operations Plan.
- CES-Chatham Fire Performance Metrics.
- Annual Budgets.
- CES-Chatham Fire Staffing and Deployment Matrix.
- CES-Chatham Fire Apparatus Inventory and Maintenance Records.
- CES-Chatham Fire Facility Inventory and Maintenance Records.
- Equipment and Vendor Inventory and Maintenance Records.
- Chatham County Human Resources Employee Handbook and Associated Documents.
- Chatham County Target Hazard Inventory.
- Chatham County Fire Departments Current and Proposed Station Locations.
- Unincorporated Area Water Utilities Fire Hydrant Data.

The data sets CPSM collects and analyzes serve as the foundation for Geographic Information System (GIS) mapping CPSM performs. This includes:

- Chatham Fire Station Locations (Distribution).
- Response Time Bleeds from Chatham Fire Stations Benchmarked Against the NFPA 1710 Standard (Concentration).
- Land Use, Future Growth and Population Density.
- ISO Benchmarking for Engine and Ladder Company Distribution.
- Fire and EMS Demand.



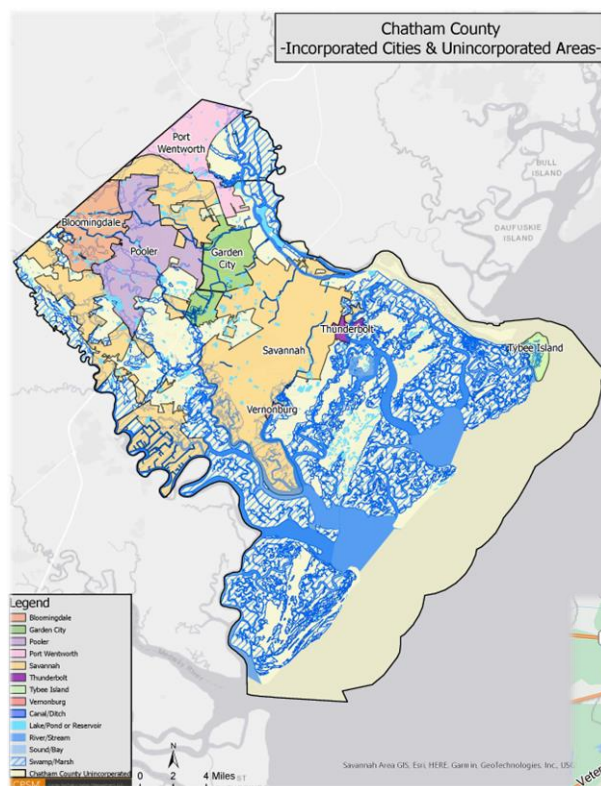
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SECTION 3. COMMUNITY OVERVIEW

Chatham County

Chatham County is an Atlantic Ocean coastal county located in the southeastern region of the State of Georgia and is the northern most of the state's coastal counties. Geographically, Chatham County is contiguous with the Georgia counties of Bryan County to the west and southwest, Liberty County to the southwest, and Effingham County to the northwest. Chatham County is also adjacent to Jasper County, South Carolina (separated by the Savannah River).

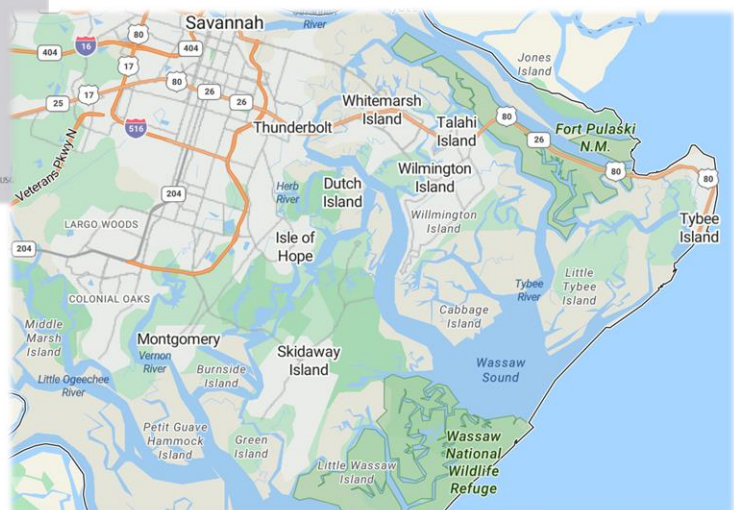
The total area of the County is currently 632 square miles, of which 433 square miles is land area. The County is bounded northeast by the Savannah River and in the southwest by the Ogeechee River. The southside of Chatham County includes several island areas and marshlands. Several of the island areas are built upon and densely populated.



Chatham County includes unincorporated areas and eight incorporated cities (Bloomingdale; Garden City; Pooler, Port Wentworth; Savannah; and Tybee Island) and towns (Thunderbolt and Vernonburg). The City of Savannah serves as the County Seat.

Unincorporated Chatham County includes several census designated areas (Dutch Island; Georgetown; Henderson; Isle of Hope; Montgomery; Skidaway Island; Tahlia Island; Whitmarsh Island; and Wilmington Island) and communities (Pin Point and Sandfly).

Islands of Chatham County



Protected areas of Chatham County include the Savannah National Wildlife Refuge, the Wassaw National Wildlife Refuge, and the Fort Pulaski National Monument Park, among others.

Chatham County is also home to the Port of Savannah, which is the third busiest container port gateway in the nation (source: Savannah Economic Development Authority).

Governance

The governing authority for unincorporated Chatham County is the Board of Commissioners of Chatham County.¹⁴ The Board of Commissioners is made up of eight Commissioners (one each elected from their individual district) and a Chair of the Board of the County Commission who is elected at large. The Chair serves as the Chief Executive of the County and the presiding officer of the Board of Commissioners.¹⁵

Chatham has a County Manager who serves as the Chief Administrative Officer of the County and is responsible to the Board of Commissioners for the proper and efficient administration of the affairs of the County.¹⁶ Amongst the extensive list of duties and responsibilities delineated in the Chatham County Code, the County Manager supervises County department heads and services as outlined in the Code, to include all emergency services departments and contracts for emergency services.

In 2015, the Coastal Georgia Indicators Coalition developed and delivered to the Board of County Commissioners the *Chatham Community Blueprint*, which serves as a long-term strategic plan for the community. The *Chatham Community Blueprint* development included several community stakeholder meetings and input sessions, as well as various communication mediums to further engage the community and ensure the community stayed informed on the processes.

The culmination of the stakeholder input and work led to the creation of four strategic theme areas (Economy, Education, Health, and Quality of Life) each with a vision statement and accompanying goal statements and core strategies developed to help achieve goals and outcomes.¹⁷



Economy

Vision: Chatham County anchors a thriving, business-friendly, regional economy in which all workers are prepared for quality jobs, and residents feel empowered to attain a high quality of life.



Health

Vision: Chatham County has a culture of health including equal access to quality and affordable healthcare, chronic disease prevention, health inclusive policies and environmental design.



Education

Vision: From early childhood education through post-secondary achievement, Chatham County's innovative and inclusive educational systems are a model of academic excellence that enable students to have the knowledge, skills, and ability to succeed at chosen pathways.



Quality of Life

Vision: Chatham County citizens achieve a superior quality of life within a safe, active, and healthy environment inclusive of the area's history, natural resources, public mobility, and efficient government.

14. §1-101 Chatham County Code

15. §1-115 Chatham County Code

16. §1-118 Chatham County Code

17. Chatham County Blueprint

Chatham County Public Safety Services

Chatham County has expanded their public safety services portfolio to include the following County agencies:¹⁸



Chatham County Police Department. Chatham County Police Department provides the full range of law enforcement functions serving approximately 196 square miles of unincorporated Chatham County. From 1912 to 2003, the Chatham County Police Department provided law enforcement activities to unincorporated Chatham County. From 2003 to 2018 unincorporated law enforcement functions were handled by the combined Savannah-Chatham Metropolitan Police Department. On February 1, 2018, the Chatham County Police Department was recreated and resumed as a County agency.



Chatham County Emergency Management. Chatham Emergency Management Agency provides the necessary planning, mitigation, response, and recovery efforts for natural and manufactured emergencies and disasters to all of Chatham County. These primary functions and others associated with the emergency management discipline are primary functions of a County government.



Chatham County E911 Center. The Chatham County 911 Center provides call receiving, processing, and dispatching of emergency services for all city and County law enforcement and fire departments in the County. In August 2018 Chatham County took on full control of the E911 Center through an agreed upon consolidation of services and operations.



Chatham County Fire Department. The Chatham County Fire Department provides fire protection, first response EMS, public life safety education, and community risk reduction activities in the 196 square miles of unincorporated Chatham County. Formally a division in Chatham Emergency Services. On July 1, 2024, Chatham County took on fire protection responsibilities and created the Chatham County Fire Department.

Since 2018, Chatham County has successfully created three County public safety agencies: Chatham County Police Department (2018); Chatham E911 Center (2018); and Chatham County Fire Department (2024).

Population and Growth

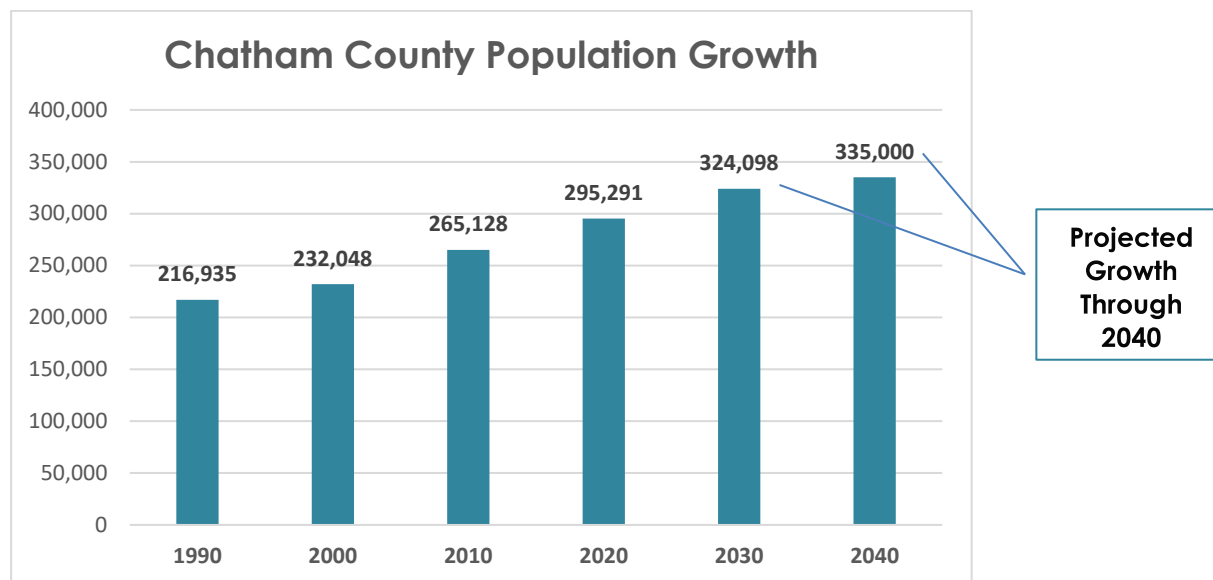
Chatham County was established in 1777 as one of the original counties of Georgia. The County has grown considerably since the start of the 20th Century. The County's population growth rate has remained above 5% in each decennial Census since 1900.

Chatham's 2020 Census population of 295,291 shows an 11.4 percent increase in population since the 2010 census of 265,128. The population density is 681.1 per square mile. This is an increase of 60.1 people per square mile over the 2010 census numbers. Population overall is the main driver of public services and has a substantial impact on public safety services.

¹⁸. Chatham County, GA.

The next figure illustrates the County's population growth from 1990 to 2020 and projected growth through 2040.

Figure 1: Chatham County Population Growth: 1990-2040



Sources (from Chatham County-Savannah Comprehensive Plan 2040):

- Population for 1990, (Georgia Governor's Office of Planning and Budget).
- Population for 2000 and 2020, (U.S. Census Bureau QuickFacts: Chatham County, GA).
- Population for 2030 and 2040, (Georgia Governor's Office of Planning and Budget).

The population of Chatham County grew significantly over the last 40 years, with the largest increase coming between 2000 and 2010, experiencing a 14% increase. Growth slowed slightly between 2010 and 2020 with an 11% increase.

In terms of Fire and EMS risk, the age and socio-economic profiles of the population can have an impact on the number of requests for fire and EMS services. Evaluation of the number of seniors and children by fire management zones can provide insight into trends in service delivery and quantitate the probability of future service requests. In a 2021 National Fire Protection Association (NFPA) report on residential fires, the following key findings were identified for the period 2015-2019:¹⁹

- Males were more likely to be killed or injured in home fires than females and accounted for larger percentages of victims (57 percent of the deaths and 55 percent of the injuries).
- The largest number of deaths (20 percent) in a single age group was among people aged 55 to 64.
- 48 percent of the victims of fatal home fires were between the ages of 25 and 64, and three of every five (62 percent) of the non-fatally injured were between the ages of 25 and 64.

19. M. Ahrens, R. Maheshwari "Home Fire Victims by Age and Gender," Quincy, MA: NFPA, 2021.

- Slightly over one-third (36 percent) of the fatalities were aged 65 or older; only 17 percent of the non-fatally injured were in that age group.
- Children under the age of 15 accounted for 11 percent of the home fire fatalities and 9 percent of the injuries. Children under the age of 5 accounted for 5 percent of the deaths and 4 percent of the injuries.
- Adults of all ages had higher rates of non-fatal fire injuries than children.
- Smoking materials were the leading cause of home fire deaths overall (23 percent) with cooking ranking a close second (20 percent).
- The highest percentage of fire fatalities occurred while the person was asleep or physically disabled and not in the area of fire origin, a key factor to vulnerable populations.

In Chatham County, the following age and socioeconomic factors are considered herein when assessing and determining risk for fire and EMS preparedness and response:²⁰

- Children under the age of five represent 5.7 percent of the population.
- People under the age of 18 represent 20.4 percent of the population.
- People over the age of 65 represent 17.0 percent of the population.
- Female persons represent 51.9 percent of the population.
- There are 2.43 people per household in Chatham County, (2018-2022).
- The median household income (in 2022 dollars), 2018-2022 was \$66,171.
- People living in poverty make up 15.9 percent of the population.

Black or African American alone represents 41.3 percent of the population. The remaining percentage of population by race includes White alone (not Hispanic or Latino) at 47.1 percent, American Indian or Alaska Native alone at 0.4 percent, Asian alone at 3.2 percent, two or more races at 2.5 percent, and Hispanic or Latino at 7.0 percent.

The demographics in Chatham County overall pose a moderate risk in totality. While not a high risk, a single call involving a vulnerable population (fire or EMS) poses a higher risk on that particular response. Through pre-fire planning and response district knowledge of residential and other structures housing a vulnerable population as identified above, the CCFD will have the necessary situational awareness and will be better prepared to mitigate the emergency once on the scene of the incident.

Planned Growth

The *Comprehensive Plan 2040 – Chatham County – Savannah, 2020 Update* is utilized in this document when discussing planned future growth and what effect that may have on the delivery of Fire and EMS services. Chatham County's population is expected to continue to grow well into the future as the County develops available land for housing, commercial, industrial, technology and other land uses.

Chatham County is the largest County in the Savannah Metropolitan Statistical Area (MSA), which also includes Bryan and Effingham Counties. The area's economy has grown to serve

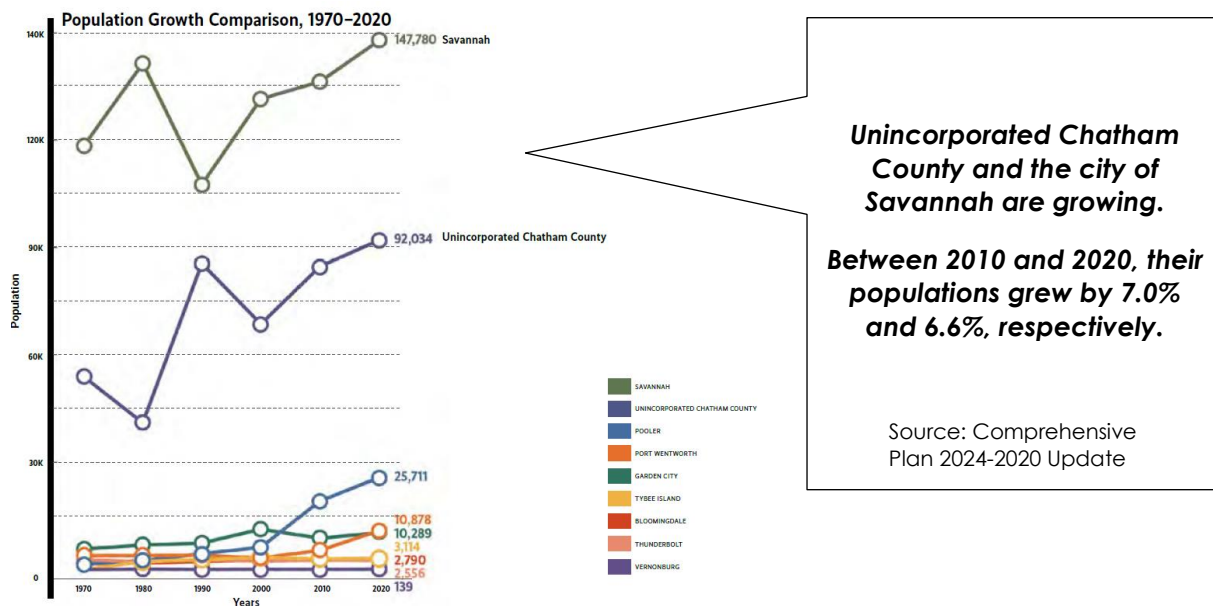
20. U.S. Census Bureau QuickFacts: Chatham County, Georgia.

regional, national, and international markets in a variety of sectors. As mentioned earlier, the Port of Savannah is the third busiest container port in the country.²¹

Historically, Chatham County and the city of Savannah have served as the region's largest population center, commercial core, and industrial hub. Because of the growing network of the road transportation network in the County and available and relatively inexpensive land, growth has accelerated away from the denser urban core areas. This trend is projected to continue in the coming decades. By 2040, the population of Chatham County is predicted to be approximately 335,000 residents and the population of the Savannah MSA is predicted to be approximately 500,000. This equates to a population increase of approximately 15.5% in Chatham County over the next 20 years and an increase of approximately 27% in the Savannah MSA.²²

As of 2020, unincorporated Chatham County had an estimated population of 92,034, with a population density of 281 people per square mile. U.S. Census records show population in the unincorporated area decreased from 1970–1980 but has grown significantly in the past 40 years.

Much of the County's overall population increase in that time period occurred in the unincorporated areas to the east and southwest of Savannah as larger neighborhoods and subdivisions were developed. Estimates for unincorporated Chatham County were calculated by subtracting the sum of the incorporated municipalities' values from the total value for Chatham County as a whole.



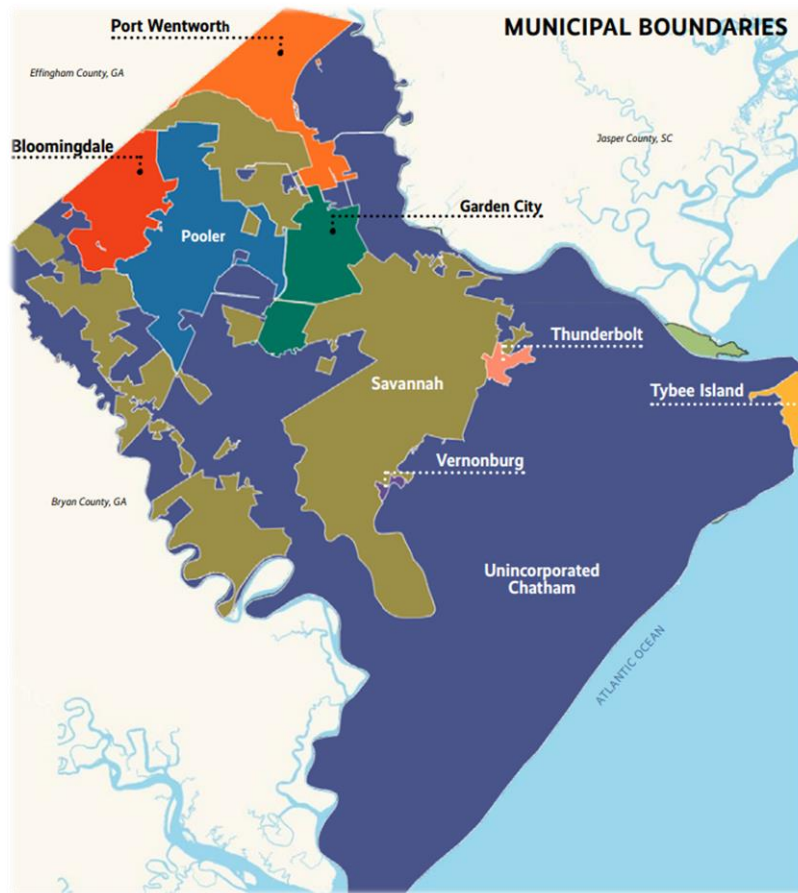
Within Chatham County, unincorporated areas east of Savannah experienced high growth rates during the 1980s and 1990s. As those areas approached build-out, growth moved to the western areas of the County, including unincorporated Chatham County and the municipalities of Bloomingdale, Garden City, Pooler, and Port Wentworth. These portions of the County continue to experience a significant share of the area's growth. The City of Savannah, with its capacity to supply drinking water, annexed nearly 8,000 acres of unincorporated western Chatham County in 2004 and 2005.

21. Savannah Economic Development Authority

22. U.S. Census Bureau, American Community Survey.

The City of Savannah continues to annex areas of unincorporated Chatham County through major sewer and water expansions. Areas lying to the east of Savannah are extensively developed, and further development is limited by physical and zoning constraints. Areas lying to the west of the city were once large areas of agriculture but have undergone and continue to see rapid development. To the east of Savannah, Chatham County is developed at low densities and its character is strongly influenced by the marshes and tidal creeks in this area of the County. To the west, the County has a higher proportion of undeveloped areas; however, as the city of Savannah and unincorporated eastern Chatham have built out, the western portion of Chatham County is emerging as a high growth area.²³

Figure 2: Current Municipal Boundaries and City of Savannah Annexation



Future Growth Strategies

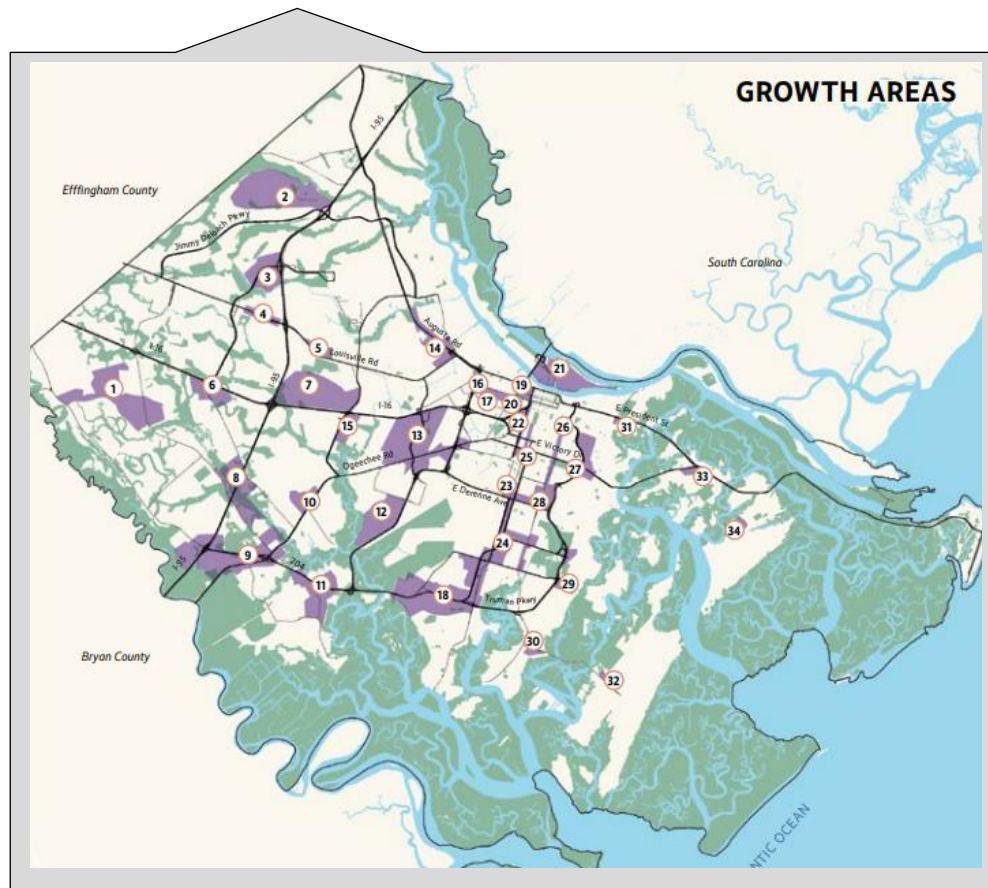
The following is a list of potential *Growth Areas* identified through the prioritized land analysis and preferred growth strategy, some of which are in the unincorporated area. The list is in no particular order and does not indicate the level of importance or priority of one area over another. These areas are depicted in the call out map.²⁴ Continued growth will exist in unincorporated Chatham County.

23. Comprehensive Plan 2024-2020 Update, 146.

24. Ibid., 158.

Table 1: Future Growth Areas

1. New Hampstead	13. Chatham Parkway	25. Abercorn Corridor
2. Highlands	14. Highway 21	26. Waters Ave corridor
3. Godley Station	15. Garden City South	27. Victory Square/Olympus
4. Historic Mainstreet	16. West Savannah	28. Medical Arts
5. US 80 Corridor	17. Tremont	29. Sandfly
6. Quacco Corridor	18. Savannah Mall - GSU–Armstrong Vicinity	30. Ferguson/Skidaway Road Area
7. Megasite	19. Yamacraw Village	31. Beech & Capital
8. Hopeton	20. Canal District	32. Skidaway
9. Fort Argyle	21. Hutchinson Island	33. Whitemarsh Island
10. Berwick	22. Kayton-Frazier	34. Wilmington Island
11. Georgetown	23. DeRenne Ave Corridor	25. Abercorn Corridor
12. Rockingham Farms	24. Oglethorpe Mall	



Overall, there will be continued growth in unincorporated Chatham County that Chatham County Fire should continuously plan for. Population, demographic, and growth impacts must be included in any strategic master planning the CCFD conducts in the near, mid, and long terms. Increases in development will increase call demand and will impact the deployment analysis in future ISO-PPC community ratings, and the ability of the CCFD to meet deployment benchmarks and community expectations. Additionally, as the City of Savannah continues to annex the unincorporated areas, this may create duplicity in fire protection districts between Savannah and Chatham County resources beyond what occurs currently.

ISO-PPC Analysis

The ISO is a national, not-for-profit organization that collects and evaluates information from communities across the United States regarding their capabilities to combat building fires. ISO conducts field evaluations in an effort to rate communities and their relative ability to provide fire protection and mitigate fire risk. This evaluation allows ISO to determine and publish the Public Protection Classification (PPC). The data collected from a community is analyzed and applied to ISO's Fire Suppression Rating Schedule (FSRS) from which a Public Protection Classification (PPC) grade is assigned to a community (1 to 10). This is an analysis of the structural fire suppression delivery system in a community.

Class 1 (highest classification/lowest numerical score) represents an exemplary community fire suppression program that includes all of the components outlined below. Class 10 indicates that the community's fire suppression program does not meet ISO's minimum criteria. It is important to understand the PPC is not just a fire department classification, but a compilation of community services that include the fire department, the emergency communications center, and the community's potable water supply system operator.²⁵

A favorable PPC numerical rating potentially may translate into lower insurance premiums for business owners and homeowners. This more favorable classification makes the community more attractive from an insurance risk perspective. How the PPC for each community affects business and homeowners can be complicated because each insurance underwriter is free to utilize the information, as they deem appropriate. Overall, many factors feed into the compilation of an insurance premium, not just the PPC.

A community's PPC grade depends on:

- **Needed Fire Flows** (building locations used to determine the theoretical amount of water necessary for fire suppression purposes-basic fire flow). Chatham County's current needed fire flow is 3,500 gallons per minute. This is based on the fifth-largest needed fire flow in the County.
- **Emergency Communications** (10 percent of the evaluation).
- **Fire Department** (50 percent of the evaluation).
- **Water Supply** (40 percent of the evaluation).

Historically, unincorporated Chatham County (and Chatham Emergency Services) has been rated as high as a Class 2/2X community (2015), with preliminary regression to a Class 4/4X community (2022-this rating was not applied), to the current community rating of Class 3/3X. The split rating (3X) separates buildings that are within 5 miles of a fire station and not within 1000 feet of a credible water source.

25. Southside Fire Department, Chatham County ISO PPC report Effective January 1, 2024.

Chatham County (unincorporated)/Chatham Emergency Services ISO Rating: Historical Perspective

On **August 31, 2015**, the ISO issued a letter to the Southside Fire Department, Chatham County, GA stating they had completed their analysis of the structural fire suppression delivery system provided in their community. **This analysis resulted in a Public Classification of 02/2X**, effective December 1, 2015. Overall analysis results are outlined in the next table.

Table 2: Summary of ISO-FSRS Analysis: August 2015²⁶

FSRS Component	Earned Credit	Credit Available
414. Credit for Emergency Reporting	2.40	3
422. Credit for Telecommunicators	3.84	4
432. Credit for Dispatch Circuits	3.00	3
440. Credit for Emergency Communications	9.04	10
513. Credit for Engine Companies	5.96	6
523. Credit for Reserve Pumpers	0.49	0.50
532. Credit for Pump Capacity	3.00	3
549. Credit for Ladder Service	3.21	4
553. Credit for Reserve Ladder and Service Trucks	0.47	0.50
561. Credit for Deployment Analysis	6.37	10
571. Credit for Company Personnel	10.07	15
581. Credit for Training	6.85	9
730. Credit for Operational Considerations	2.00	2
590. Credit for Fire Department	38.42	50
616. Credit for Supply System	25.68	30
621. Credit for Fire Hydrants	3.0	3
631. Credit for Inspection and Flow Testing	5.26	7
640. Credit for Water Supply	33.94	40
Divergence	-1.60	-
1050. Community Risk Reduction	3.95	5.50
Total Credit	83.75	105.50

**2015 ISO-PPC
Rating: 2**

26. ISO – PPC Summary Report, Southside Fire Department , Effective Date: December 1, 2015.

On April 26, 2022, the ISO issued a letter to the Southside Fire Department, Chatham County, GA stating they had completed its analysis of the structural fire suppression delivery system provided in their community. **This analysis resulted in a Public Classification of 04/4X.** This score was a retrogression from the previous classification on December 1, 2015. ISO stated they were not implementing the class change at that time. Rather, they afforded the Southside Fire Department an opportunity to develop a program to retain class 02/2X. ISO requested a list of intended changes be submitted within 60 days. In cases where improvements had not been completed within 12 months or by July 25, 2023, ISO would publish the retrogressed classification.

Table 3: Summary of ISO-FSRS Analysis: April 2022²⁷

FSRS Component	Earned Credit	Credit Available
414. Credit for Emergency Reporting	3.00	3
422. Credit for Telecommunicators	3.77	4
432. Credit for Dispatch Circuits	1.95	3
440. Credit for Emergency Communications	8.72	10
513. Credit for Engine Companies	6.00	6
523. Credit for Reserve Pumpers	0.50	0.50
532. Credit for Pump Capacity	3.00	3
549. Credit for Ladder Service	2.39	4
553. Credit for Reserve Ladder and Service Trucks	0.50	0.50
561. Credit for Deployment Analysis	4.69	10
571. Credit for Company Personnel	4.57	15
581. Credit for Training	7.95	9
730. Credit for Operational Considerations	2.00	2
590. Credit for Fire Department	31.60	50
616. Credit for Supply System	14.68	30
621. Credit for Fire Hydrants	3.0	3
631. Credit for Inspection and Flow Testing	5.24	7
640. Credit for Water Supply	22.92	40
Divergence	-1.18	-
1050. Community Risk Reduction	4.15	5.50
Total Credit	66.21	105.50

**2022 ISO-PPC
Rating: 4**

27. ISO – PPC Summary Report, Southside Fire Department, April 26, 2022.

On June 24, 2022, the Southside Fire Department submitted a letter to the ISO of proposed changes to be implemented within 12 months or by July 25, 2023. The Southside Fire Department submitted progress reports to ISO on November 20, 2022, and January 20, 2023.

On September 25, 2023, the ISO issued a letter to the Southside Fire Department, Chatham County, GA stating they had completed its analysis of the structural fire suppression delivery system provided in their community. ***This analysis resulted in a Public Classification of 03/3X, Effective January 01, 2024.***

Table 4: Summary of ISO-FSRS Analysis: Effective January 2024²⁸

FSRS Component	Earned Credit	Credit Available
414. Credit for Emergency Reporting	3.00	3
422. Credit for Telecommunicators	3.77	4
432. Credit for Dispatch Circuits	1.95	3
440. Credit for Emergency Communications	8.72	10
513. Credit for Engine Companies	6.00	6
523. Credit for Reserve Pumpers	0.50	0.50
532. Credit for Pump Capacity	3.00	3
549. Credit for Ladder Service	2.39	4
553. Credit for Reserve Ladder and Service Trucks	0.50	0.50
561. Credit for Deployment Analysis	4.69	10
571. Credit for Company Personnel	5.60	15
581. Credit for Training	8.66	9
730. Credit for Operational Considerations	2.00	2
590. Credit for Fire Department	33.34	50
616. Credit for Supply System	14.68	30
621. Credit for Fire Hydrants	3.0	3
631. Credit for Inspection and Flow Testing	7.00	7
640. Credit for Water Supply	24.68	40
Divergence	-1.00	-
1050. Community Risk Reduction	4.67	5.50
Total Credit	70.41	105.50

**2024 ISO-PPC
Rating: 3**

28. ISO – PPC Summary Report, Southside Fire Department, Effective Date: January 1, 2024.

Currently unincorporated Chatham County is rated as an ISO-PPC Class 3/3X community. This rating is in the upper one-third of the classification system. The rating is split (3/3X) as not all areas in the unincorporated area have a creditable water supply (fire hydrants). The rating of 3 applies to all areas within 5 miles of a fire station and within 1000 feet of a creditable water supply (such as a fire hydrant). The rating 3X applies to all areas within 5 miles of a fire station and not within 1000 feet of a creditable water supply (such as a fire hydrant).

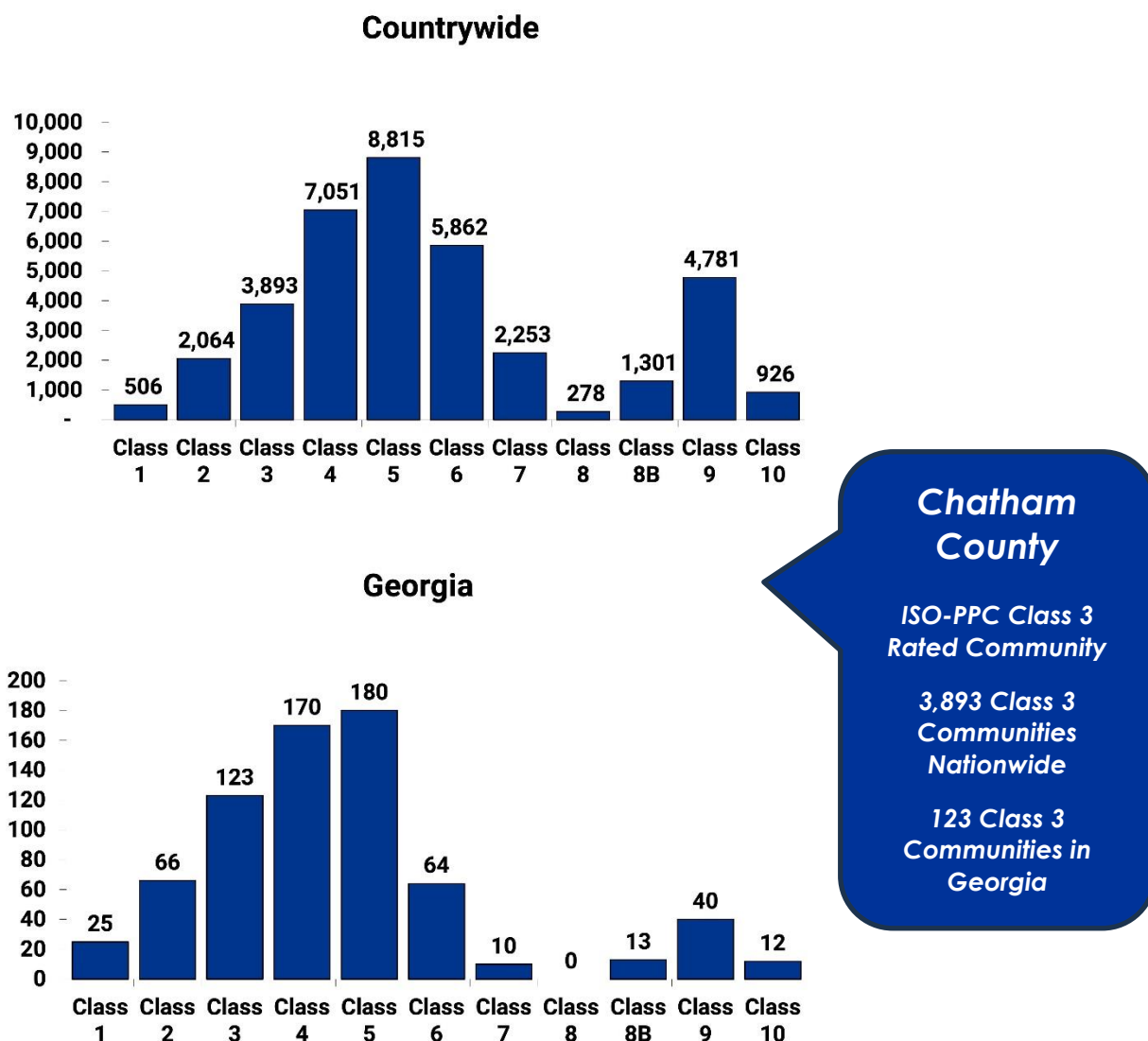
The next table analyzes the historical (2015 – 2024) ISO-PPC analyses for Chatham County and CES-Fire.

Table 5: ISO-FSRS Historical Analysis (2015, 2022, 2024)

FSRS Measure	Credit Available	2015	2022 Preliminary Never Applied	2024	Notes Refer to difference between 2015 and 2024 Credit
Emergency Communications					
414. Credit for Emergency Reporting	3.00	2.40	3.00	3.00	Score improved - Full credit
422. Credit for Telecommunications	4.00	3.64	3.77	3.77	Score improved
432. Credit for Dispatch Circuits	3.00	3.00	1.95	1.95	Score regressed
440. Credit for Emergency Communications	10.00	9.04	8.72	8.72	Lost 0.32 credits
Fire Department					
513. Credit for Engine Companies	6.00	5.96	6.00	6.00	Score improved - Full credit
523. Credit for Reserve Pumpers	0.5	0.49	0.50	0.50	Score improved - Full credit
532. Credit for Pumper Capacity	3.00	3.00	3.00	3.00	No change in score - Full credit
549. Credit for Ladder Service	4.00	3.21	2.39	2.39	Score regressed
553. Credit for Reserve Ladder and Service Trucks	0.5	0.47	0.50	0.50	Score improved - Full credit
561. Credit for Deployment Analysis	10.00	6.37	4.69	4.69	Score regressed
571. Credit for Company Personnel	15.00	10.07	4.57	5.60	Score regressed
581. Credit for Training	9.00	6.85	7.95	8.66	Score Improved
730. Credit for Operational Considerations	2.00	2.00	2.00	2.00	No change in score- Full credit
590. Credit for Fire Department	50.00	38.42	31.6	33.34	Score declined: 5.08 credits
Water Supply					
616. Credit for Supply System	30.00	25.68	14.68	14.68	Score regressed
621. Credit for Hydrants	3.00	3.00	3.00	3.00	No change in score - Full credit
631. Credit for Inspection and Flow Testing	7.00	5.26	5.24	7.00	Scored improved - Full Credit
640. Credit for Water Supply	40.00	33.94	22.92	24.68	Score 9.26 credits
Divergence	-	-1.60	-1.18	-1.00	
1050. Community Risk Reduction	5.50	3.95	4.15	4.67	Score improved
Total Credit	105.5	83.75	66.21	70.41	Total lost 13.34 credits

The following figures illustrate the PPC ratings across the United States and in Georgia.

Figure 3: PPC Ratings in the United States and Georgia²⁹



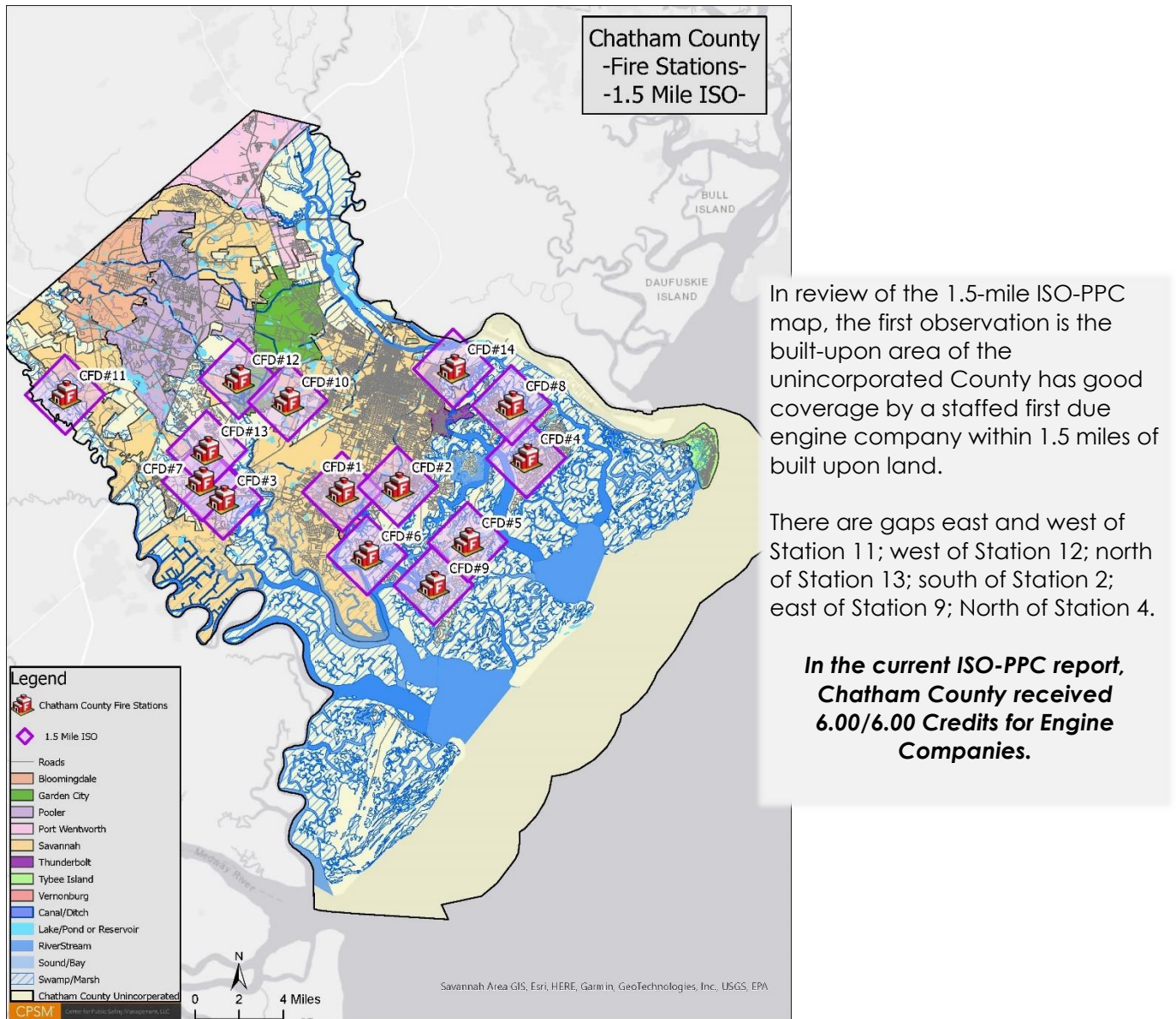
Under the ISO-PPC grading system, a jurisdiction is graded on the distribution of engine and ladder companies within built-upon areas (deployment analysis). For full credit in the Fire Suppression Rating Schedule (FSRS), a jurisdiction's fire protection area with residential and commercial properties should have a first-due engine company within 1.5 road miles and a ladder service company within 2.5 road miles of built upon land.³⁰ As engine and ladder companies both respond from fire facilities, and because engine companies are the more prevalent fire suppression company, fire facilities are predictably sited based on the response needs of engine companies.

29. <https://www.isomitigation.com/ppc/program-works/facts-and-figures-about-ppc-codes-around-the-country/>

30. Insurance Services Office, ISO Mitigation, Deployment Analysis.

The next figure illustrates Engine Company coverage when benchmarked against the ISO-PPC.

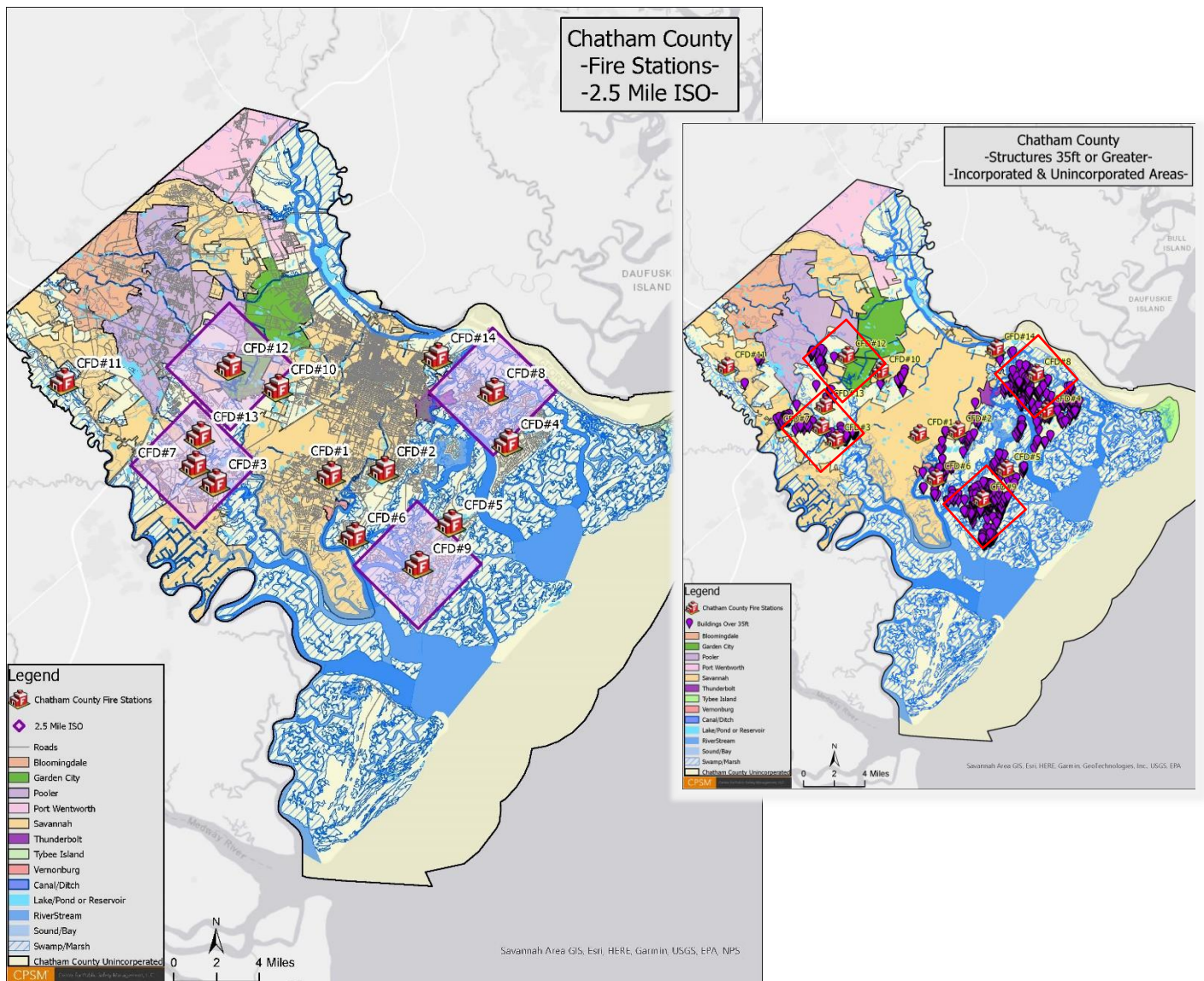
Figure 4: Current Stations: 1.5 Mile Engine Company Locations (ISO-PPC Benchmark)



As a note here, Stations 6, 8, and 13 utilize Squads as the first out fire suppression apparatus. A Squad serves multiple functions and includes a fire pump, water tank, hose, hand tools and equipment, as well as technical rescue equipment - primarily specialized vehicle and machinery extrication and supportive equipment. Squad apparatus responds primarily as an engine company but can serve as a rescue company as needed. The ISO-PPC analysis gives full credit as an engine apparatus.

The next figure illustrates Ladder Company coverage when benchmarked against the ISO-PPC. Included is an illustration of the location of buildings 35' or higher.

**Figure 5: Current Stations: 2.5 Mile Ladder Company Locations
(ISO-PPC Benchmark)**



In analysis of the ISO-PPC 2.5-mile ladder company placement, the County does not have overlapping ladder resource company coverage. The ladder company resource is also graded on the number of response areas within the city with five buildings that are three or more stories (or 35 or more feet in height), or with five buildings that have a needed fire flow greater than 3,500 gallons per minute, or a combination of these two criteria. Generally, and from a first due ladder company perspective, the greatest percentage of these are covered. There are some ladder company gaps east and south of Station 4 (Truck 8 response area); Stations 2 and 6 districts; Station 10 district. ***In the current ISO-PPC report, Chatham County received 2.49/4.00 Credits for Ladder Companies.***

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Areas of scoring that should be reviewed further internally by the County and the CCFD to ensure improvement has been made, and which can have the most impact on service delivery include:³¹

- Credit for Dispatch Circuits: #432 (1.95/3.00 credits).
 - This category contemplates the dispatch circuit facilities used to transmit alarms to fire department members. A “Dispatch Circuit” is defined in NFPA 1221 as “A circuit over which an alarm is transmitted from the communications center to an emergency response facility (ERF) or emergency response units (ERUs) to notify ERUs to respond to an emergency”. All fire departments (except single fire station departments with full-time firefighter personnel receiving alarms directly at the fire station) need adequate means of notifying all firefighter personnel of the location of reported structure fires. The dispatch circuit facilities should be in accordance with the general criteria of NFPA 1221.³²
- Credit for Deployment Analysis: #561 (4.69/10 credits).
 - This category contemplates the number and adequacy of engine and ladder companies (distribution analysis) to cover the built-upon areas of the city and fire protection service area. Credits for engine companies (#513 – 6.00/6.00) and ladder companies (#549 – 2.49/4.00) are considered in this rating section. The ISO benchmark is one engine company sighted for every 1.5 miles of built upon land, and a ladder company sighted for every 2.5 miles of built upon land. Earned credit is based on the percentage of built upon area is covered by existing engine companies (1.5 miles) and existing ladder companies (2.5 miles). **As noted above, there are gaps in both the engine company and ladder company distribution.**
- Credit for Ladder Service: #549 (2.39/4 credits).
 - This item reviews the number of response areas within the city with five buildings that are three or more stories or 35 feet or more in height, or with five buildings that have a needed fire flow greater than 3,500 gpm, or any combination of these criteria. The height of all buildings in the County, including those protected by automatic sprinklers, is considered when determining the number of needed ladder companies. The County is deficient in this category due to the number and type of multistory buildings in the County (residential).
- Credit for Company Personnel: # 571 (5.60/15).
 - This item reviews the average number of firefighters and company officers available to respond to reported fires alarm structure fires in the city. The ISO report gives the CCFD credit for 36.72 on-duty personnel and 4.09 on-call personnel (volunteers) and considers any mutual aid companies available to respond as well. On-duty strength and subsequent credit considers the yearly average of total firefighters and company officers on duty after considering scheduled and unscheduled leave. This is discussed further in the operations section of this report.
- Credit for Water Supply System: # 616 (14.68/15).
 - This item reviews the rate of flow that can be credited at each of the Needed Fire Flow test locations considering the supply works capacity, the main capacity, and the hydrant distribution. The lowest flow rate of these items is credited for each

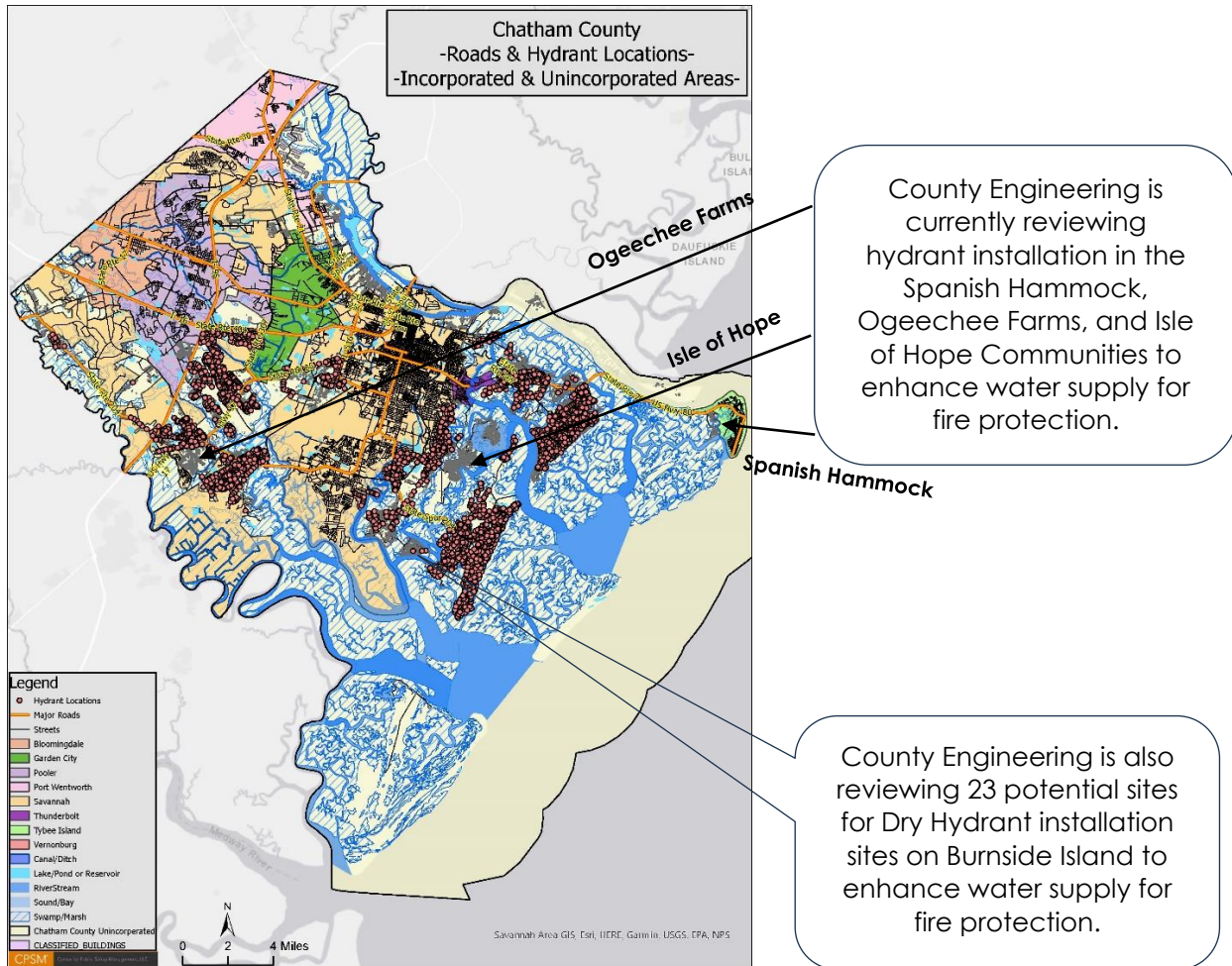
31. Public Protection Classification Summary Report, Southside Fire Department, Chatham County, September 2023.

32. *ibid*

representative location. The supply works capacity is calculated for each representative Needed Fire Flow test location, considering a variety of water supply sources. These include public water supplies, emergency supplies (usually accessed from neighboring water systems), suction supplies (usually evidenced by dry hydrant installations near a river, lake, or other body of water), and supplies developed by a fire department using large diameter hose or vehicles to shuttle water from a source of supply to a fire site.³³

Current fire hydrant distribution is illustrated in the next map.

Figure 6: Current Fire Hydrant Locations (Unincorporated Chatham County)



Recommendation:

CPSM recommends that all deficiencies in the current ISO-PPC analysis be included in any strategic planning the County and CCFD conduct in all future planning terms. This should include assessment of the dispatch circuits (911 Center and CCFD stations), current engine and ladder company distribution, staffing (company personnel), and water distribution. Any strategy should include the goal of sustaining optimum service deliverables and the ISO-PPC community rating of 3/3X and improve earned credit points where feasible.

33. ibid

SECTION 4. FIRE DEPARTMENT OVERVIEW

Chatham County Fire Department

The Chatham County Fire Department (CCFD) formally became a County agency on July 1, 2024. Prior to this, CCFD provided fire protection and first response EMS incident response as a division of Chatham Emergency Services.

CCFD is a primarily career fire department that employs full-time administrative, training, infrastructure support staff, and operational officers and firefighters.

Operationally, the CCFD deploys eleven Engine Companies, three Squad Companies, and four Truck Companies (aerial ladders). There is one operational District Chief/Shift Commander on duty for each of the 24-hour shifts. The operational District Chief serves as the County-Wide on-duty operational command officer providing day-to-day operational supervision to each station and personnel, as well as serving as the incident commander on assigned incident responses. All response heavy fire apparatus is EMS capable (equipment and training).

Additionally, there is one Safety Captain on duty each operational shift, who is responsible for managing the department's health, safety, and wellness program, and responds to incidents and assumes the role of Incident Safety Officer. As the health and safety of firefighting is at the forefront of the national fire service, having an on duty shift safety officer is a ***national best practice***.

Organizationally, the CCFD has established the following seven **Core Values**.

➤ **Professionalism**

Taking pride in our actions, duties, development, and appearance.

➤ **Respect**

Treat all people in a dignified and courteous manner, exhibit understanding of all ethnic and cultural diversity, both in action and deed.

➤ **Integrity**

We strive to adhere to moral and ethical principles at all times.

➤ **Service**

We provide quality service in a courteous efficient and accessible manner.

➤ **Equality**

We are committed to treating all people impartially and with unbiased judgment.

➤ **Honor**

We serve with honor through our actions, conduct, and job performance.

CCFD Max/Min Daily Staffing			
	Max		Min
Engines (11):	2 Staff	(22)	2 Staff (22)
Trucks (4):	3 Staff	(12)	2 Staff (8)
Squads (3):	2 Staff	(6)	2 Staff (6)
District Chief:	1 Staff	(1)	1 Staff (1)
Safety Capt.:	1 Staff	(1)	1 Staff (1)
Total:	42 Max Staff		38 Min Staff

The operational deployment model includes a normal daily staffing of two personnel assigned to each fire suppression Engine and Squad Company, three assigned to each Truck Company, and one assigned to the District Chief and Safety Captain units, which totals forty-two personnel and represents the maximum daily staffing model.

The minimum daily staffing is thirty-eight, which allows four daily staffing positions to be used to cover scheduled leave (four-line positions are floated to cover leave vacancies to minimize overtime).

The CCFD also deploys four water tender apparatus, which carry large volumes of water to fires where there are no fire hydrants. The CCFD cross staffs these apparatus with engine or squad crews. When the tender apparatus is dispatched, the engine crew will place the engine out of service and respond the tender.

The CCFD is led by a **Fire Chief** who has overall responsibility for the management and leadership of the department. The Fire Chief is directly assisted by a Deputy Fire Chief, Fire Medical Services Director, and a Division Chief of Training who are direct reports and assists the Fire Chief with the day-to-day administrative and operational planning, program management, and supervision of a contemporary fire department. The Fire Chief's office also includes civilian positions who manage information technology, procurement, resource management, compliance and recordkeeping, contract administration, records management, and payroll.

The **Division Chief of Training** manages all aspects of training (incumbent and recruit; Fire and EMS), and the department's health, safety, and wellness programs. This includes managing the shift Safety Captain program. Assisting the Chief of Training is two Training Coordinators (firefighter level) who are responsible for direct instruction and course coordination and implementation.

The **Deputy Chief** manages all aspects of the operations branch which includes three operational shifts or platoons who work a rotating on/off duty schedule of 24 hours on and 48 hours off. Duties and responsibilities also include supervision of the **District Chief** (shift operations command position), who manages each of the fourteen stations and eighteen companies.

Overall, the CCFD is budgeted for 152 positions of which 146 are directly assigned to the CCFD. Six additional positions are assigned to other departments but provide direct services to the CCFD.

Assisting the District Chief are the **Captains and Lieutenants** assigned to the four Truck Companies (Captains assigned to Trucks 7 & 9; Lieutenants assigned to Trucks 8 & 12). **The remaining ten stations have no officer level positions, and shift supervision typically falls to the more senior firefighter on duty (crew leader).**

The current operational District Chief's span of control is fourteen stations, which includes eleven Engine Companies, four Truck companies, and three Squad Companies, spread out over 196 square miles. Typically, fire departments staff with one shift command officer (mid-level Chief officer) for every five to seven response units to align closer with the Federal Emergency

Management Agency's incident command system span of control of 1:5 (one supervisor to five individuals—in this case company officers and stations).

CPSM assesses the single District Chief/Shift Commander position is operating beyond recommended span-of-control best practices. As such, the CCFD should plan for additional operational command officers and segregate the County, at a minimum, into east and west districts with the District Chief serving as the overall shift.

The role of the District Chief includes coordination of all on-shift programs and response personnel to include daily staffing, coordination, and oversight of emergency response crews, ensuring apparatus coverage is balanced across the County, assuming command of larger incidents, and plays a critical role in the development, implementation, and oversight of CCFD guidelines and policies. Additional ancillary duties include managing the uniform and protective clothing and equipment programs, as well as the fleet and facility programs to include maintenance, and fleet and equipment specifications.

Adding additional operational command officers would provide a reduction in the span of control and greater attention to the needs of response crews to include overall management and coordination of CCFD programs, training, accountability, and internal communications. In addition, a second District Chief will improve the Effective Response Force coverage and response travel time for the incident command function, **which is further outlined in the operational section of this report**. Segregating the County into east and west districts with an overall District Chief serving as the shift commander will better align the CCFD with span of control best practices.

CPSM assesses the CCFD does not have adequate company level first - line supervisory staff in place. As such, the CCFD should develop a staffing plan for additional company officers at the Lieutenant level for assignment to Engine Companies.

Fire stations are decentralized from the management and command staff, which are typically located together at fire administration. The role of a company officer ensures a first-line supervisor on each unit that provides supervision of and holds assigned crew members accountable to established County and CCFD policies and guidelines; ensures the efficacy of CCFD Fire and EMS training ensuring it translates to incident scene effectiveness; ensures that station, fleet, and equipment are maintained in a readiness state for response; manages and supervises all company assignments and activities to include training, pre-plan development, and target hazard reviews; and facilitates company communications to name a few of the more critical company officer functions. Adding the Lieutenant position to Engine and Squad companies will ensure day-to-day supervision of CCFD programs and staff at the company level.

Behavioral Health Unit

In addition to the traditional fire department deliverables, CCFD also offers a Behavioral Health Unit (BHU), which is led by the Director of Fire-Med Services and staffed with two Community Paramedics. A Corporal from the Chatham Police Department also assists in the program. The goal of this program is to assist individuals who may be frequent utilizers of the 911 system, and /or assist individuals navigate the health and social programs that may be available, so that they can gain access to appropriate healthcare and other available social needs care they may not otherwise be able to accomplish on their own.

Program clients therefore are able to realize an improvement in their quality of life. The program is offered County-Wide, **is a best practice, and aligns with the Chatham Community Blueprint vision: Quality of Life.** The demand for this program should be evaluated on a regular basis as additional resources may be required. There is also the potential the program may need extension of the hours of service. Any additional staffing resources should be included in strategic planning sessions.

Operational Shift Schedule

As mentioned, operational shift personnel work a 24 on 48 off shift schedule. This is a typical fire department schedule. Beginning July 1, 2024, CCFD non-exempt operational staff began operating on a 27-day work period as outlined under the Fair Labor Standards Act (29 C.F.R. § 553.210). This equates to 216 scheduled hours.

Essentially this act allows for longer work periods than the traditional “40 hour” work week for public safety employees before the employee has to be compensated and is often referred to as the “7(k)” exemption (29 U.S.C. § 207(k)). In order to qualify, employees must be engaged in fire protection activities, or activities that are incidental or in conjunction with fire protection duties 80 percent or more of their time (which is the case with CCFD uniform fire employees).

Under the 7(k) exemption, qualifying public agency fire suppression employees working in excess of 53-hours/week shall be compensated. For CCFD employees, these are productive work hours that exceed 204 hours in the work period. The CCFD and the County’s Human Resources Department manage compliance and compensation for qualifying employees in accordance with the law.

Recommendations:

- As Trucks 8 & 12 have Lieutenant positions assigned as company officers, CPSM recommends the County consider assigning Captains to Trucks 8 & 12 (6 Captain positions-new FTEs). The purpose of this upgrade is to establish consistency in rank amongst the Truck Company officers (Trucks 7 & 9 have Captain positions) as the job functions and responsibilities are consistent across the four Truck companies.
- CPSM recommends that the County consider phasing in the Lieutenant position on Engine and Squad Companies. The purpose of this recommendation is to establish first-line supervisors on engine and squad apparatus (and in stations) where there is no supervisory staff to ensure day-to-day supervision of CCFD programs, incident response, and staff at the company level. Implementing these positions aligns with national best practices and with municipal fire departments in the County.
 - Phase I: CPSM recommends the County add Lieutenant positions to the three Squad Companies - Squads 6, 8, and 13 (9 new FTEs) as funding is available.
 - Phase II: CPSM recommends the County add Lieutenant positions to six Engine Companies as determined by the Fire Chief as funding is available (18 FTEs).
 - Phase III: CPSM recommends the County add Lieutenant positions to five Engine Companies as determined by the Fire Chief as funding is available (15 FTEs).

The operational section of this report discusses alternatives and considerations that may alter the phasing of Lieutenant positions at Stations 1, 7, 10, 11, and 14.

Volunteer Member Component

The CCFD currently includes a volunteer firefighter component. As discussed earlier, the current CCFD and former CES-Chatham Fire were an evolution of the former Southside Fire Department. Southside Fire began as a volunteer fire department and was incorporated in 1961 to service the unincorporated areas of Chatham County.

The current CCFD volunteer component includes nineteen volunteer members (as of this report) who have various levels of training and certifications. The volunteer component includes (not all positions may be filled):

- Volunteer Chief Officers
- Volunteer Firefighters

All firefighters in Georgia, career, or volunteer, are required to meet the same basic training in accordance with the Georgia Firefighter Standards and Training Council and the and as outlined in the Training and Education section of this report. This includes the following pursuant to Title 25 *Fire Protection and Safety*, Chapter 4 *Firefighter Standards and Training* of the *Official Code of Georgia Annotated*:

§ 25-4-9(a)(1)(B): *The volunteer council shall determine the course content, number of hours, and all other matters relative to basic firefighter training for volunteer firefighters. Each volunteer firefighter shall be required to complete such basic training course within 18 months after being appointed as volunteer firefighter.*

In addition to the above, and as is the case for career firefighters under a different State Code section, qualifications for volunteer firefighters are governed through the *Official Code of Georgia Annotated* § 25-4-8.1.

- a. *Except as otherwise provided in Code Section 25-4-12, any person volunteering at a volunteer fire department as a volunteer firefighter shall, as prescribed by the volunteer council:*
 1. *Be at least 18 years of age;*
 2. *Not have been convicted of, or pleaded guilty to, a felony in any jurisdiction or of a crime which if committed in this state would constitute a felony under the laws of this state within ten years prior to volunteering, provided that a person who has been convicted of a felony more than five but less than ten years prior to volunteering may be registered as a volunteer firefighter when the person has:*
 - A. *Successfully completed a training program following the Georgia Fire Academy curriculum and sponsored by the Department of Corrections;*
 - B. *Been recommended to a volunteer fire department by the proper authorities at the institution at which the training program was undertaken; and*
 - C. *Met all other requirements for a volunteer firefighter as set forth in this chapter.*

As a volunteer firefighter for the County, and in accordance with Title 36 *Local Government Provisions Applicable to Counties and Municipal Corporations*, Chapter 60 *General Provisions*, Section 36-60-23 *Volunteer Firefighters for Counties and Municipalities* outlines certain provisions available for volunteers that include:

(a) As used in this Code section, the term "volunteer firefighter" means a person who is a volunteer firefighter, as defined in Code Section 47-7-1, relating to definitions regarding the Georgia Firefighters' Pension Fund, and who receives no compensation for services as a volunteer firefighter other than:

- (1) Actual expenses incurred;
- (2) A per diem for services;
- (3) Contributions to the Georgia Firefighters' Pension Fund;
- (4) Workers' compensation coverage under Chapter 9 of Title 34; or
- (5) Any combination of items specified in paragraphs (1) through (4) of this subsection.

(b) Notwithstanding the provisions of Code Section 36-30-4, 45-2-2, or any other provision of law to the contrary, a volunteer firefighter for a County or municipal corporation shall be eligible to serve as a member of the governing authority of that County or municipal corporation.

(c) Nothing in this Code section shall require a County or municipal governing authority to make any of the payments or offer the benefits to volunteer firefighters specified in subsection (a) of this Code section.

The above are sections of the state statutes the County and the CCFD should maintain familiarity with to ensure a successful volunteer program. **As a note, numbers 2, 3, and 4 have been implemented for CCFD volunteers.** CPSM was informed of the following when discussing the volunteer program with CCFD staff:

- Not all volunteer firefighters have met or continue to meet the minimum training requirements.
- Volunteer firefighters respond to the scene of incidents in their private vehicles.
- Volunteer members who have volunteered for ten years are exempt from the current fire exemption fee for life.
- Not all volunteer members maintain consistent participation and have a low call volume.

Volunteerism as a whole across the United States is in decline. This includes non-profit volunteering (churches, schools, food banks etc.), some service groups, and volunteer Fire and EMS. A January 2023 report released by the U.S. Census Bureau reported that a smaller share of the U.S. population engages in volunteer opportunities than the previous two decades. The annual volunteer hours took a sharp dip from fifty-two hours in 2002 to twenty-six hours annually in pre-pandemic 2019, or a 50-percent reduction in volunteer hours.³⁴

In the current day CCFD, volunteer members have a purpose. The purpose today is to augment career staffing on fire apparatus. To be able to meet this purpose, volunteer firefighters:

- Have to meet all entry and minimum training requirements according to the *Official Code of Georgia Annotated* and as established by the CCFD.
- Should participate at a CCFD station with CCFD career staff and respond to incidents on CCFD fire apparatus. **CPSM does not recommend the continuance of personal vehicle**

34. Volunteering in America: New U.S. Census Bureau, AmeriCorps Research, January 2023.

response any longer due to the potential liability a motor vehicle accident may create for the County.

- Must complete all CCFD firefighter requirements such as entry and annualized medical physicals; annualized SCBA mask fit testing; meet annualized physical requirements as established by the CCFD; meet annualized training requirements; meet any other entry and annualized requirements as established for firefighters and officers of the CCFD.

Further, CCFD volunteer officers should meet minimum training and other requirements as established for CCFD officers. CPSM does not recommend a volunteer officer be allowed to hold an incident command position, unless authorized by the CCFD Fire Chief.

Recommendations:

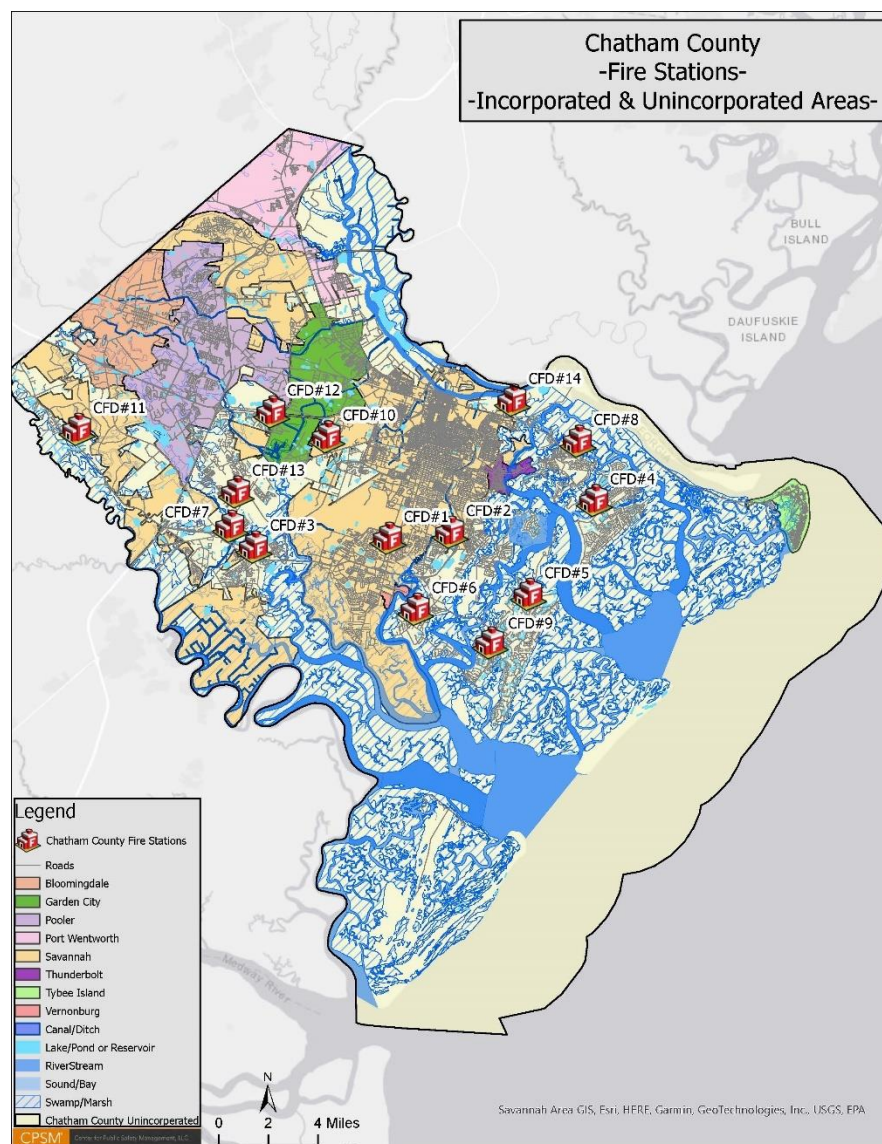
- CPSM recommends, when managing the volunteer firefighter program, the CCFD ensure that all volunteer members who engage in incident response and operational activities:
 - Meet all entry and minimum training requirements according to the *Official Code of Georgia Annotated* and as established by the CCFD.
 - Participate at a CCFD station with CCFD career staff and respond to incidents on CCFD fire apparatus. While in the station and operating on a CCFD fire apparatus, a volunteer member operates under the station officer or senior crew leader in the absence of an officer.
 - Discontinue personal vehicle response due to the potential liability a motor vehicle accident may create for the County.
 - Complete all CCFD firefighter requirements such as entry and annualized medical physicals; annualized SCBA mask fit testing; meet annualized physical requirements as established by the CCFD; meet annualized training requirements as established; meet any other entry and annualized requirements as established for firefighters and officers of the CCFD.
- CPSM recommends the reorganization of the volunteer officer rank structure and retitle volunteer chief officer title(s) to that of Volunteer Captain. The purpose of this recommendation is to organize the volunteers into regional companies, with each to be supervised by a Volunteer Captain. This aligns with the current CCFD career company officer rank structure. CPSM further recommends that the Volunteer Captain have supervisory responsibilities over assigned volunteers in his/her company only and not career staff. Further, volunteer Captains must meet and maintain the requirements of a career Captain or as established by the CCFD Fire Chief. The number of volunteer companies to be decided by the CCFD Fire Chief.
- CPSM does not recommend assigning or reassigning take home vehicles to volunteer officer positions as these are not emergency response/incident command positions. This will help to alleviate any future liability issues.

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Service Area and Levels of Service

The service area for the CCFD includes approximately 196 square miles of urban, suburban, and some rural neighborhoods that includes single and multi-family residential buildings of varying number of floors and heights; commercial, industrial, and large footprint industrial, manufacturing, and distribution buildings; parks and trails; mass transit; freight rail; local roads and limited access highways; contiguous urban and suburban municipalities, and a vast network of rivers, creeks, runs, and marshland.

Figure 7: Chatham County Fire Station Locations



CCFD Fire Resources

<u>Station 1</u> Engine 1	<u>Station 8</u> Squad 8 Truck 8
<u>Station 2</u> Engine 2	<u>Station 9</u> Engine 9 Truck 9
<u>Station 3</u> Engine 3 Tender 3	<u>Station 10</u> Engine 10
<u>Station 4</u> Engine 4 Tender 4	<u>Station 11</u> Engine 11
<u>Station 5</u> Engine 5	<u>Station 12</u> Engine 12 Truck 12
<u>Station 6</u> Squad 6 Tender 6	<u>Station 13</u> Squad 13
<u>Station 7</u> Engine 7 Truck 7	<u>Station 14</u> Engine 14 Tender 14

CCFD also provides fire protection service to the Town of Vernonburg and the area south of Interstate 16 in the City of Garden City through agreement with each municipality.

Levels of Service

CCFD responds with fire suppression apparatus and crews from fourteen stations that serve fire management zones throughout the unincorporated areas of Chatham County. As the first out staffing is a minimum of two on each engine, squad, and ladder, the CCFD relies heavily on units from multiple CCFD stations to collect the appropriate *Effective Response Force* for single family,

multi-family, commercial, and other building type fire and fire related responses requiring increased staffing to mitigate the incident. ***There is currently no automatic aid, or automatically shared resources from the cities assisting the CCFD.***

Emergency response units include:

Engine Company, which is primarily designed for firefighting operations, the transport of crew members, hose (fire attack and larger supply), tank water, ground ladders, self-contained breathing apparatus, and storage of an assortment of hand tools used for a broad spectrum of fire operational tasks. As engines are often utilized as first response units on EMS calls, they also carry an assortment of EMS gear to treat patients and provide life-saving measures prior to the arrival of EMS transport units. The CCFD engine is set up for this as well and is staffed with emergency medical technicians, advanced EMTs, and paramedics. CCFD currently responds to emergencies with an inventory of eleven engines.

Ladder Company or Truck Company, which are also primarily designed for firefighting operations but differ from engines in that they also have a hydraulically operated aerial device designed to reach above grade floors to transport crew members, effect rescues, and provide an elevated water stream. Ladder trucks also transport crew members, ground ladders, self-contained breathing apparatus, various forcible entry tools, ventilation equipment, and hydraulic rescue tools as well as other equipment to deal with an assortment of fires and technical rescues. Some ladder trucks, such as the those in the CCFD, carry hose (fire attack and larger supply) and tank water.

When a ladder apparatus is configured to carry hose (attack and supply lines), a fire pump, and water tank, they are often referred to as a Quint and are able to provide the dual role of engine and ladder work. The key to successful Quint operations is staffing these units properly (a minimum of four-preferred five) so that they can provide both functions simultaneously. When staffing with two or three, crews can typically implement either engine or ladder company tasks and functions.

Additionally, the ladder apparatus can be configured to have either a straight hydraulic aerial ladder of various lengths (generally between 75' and 110'), or a straight hydraulic aerial ladder of various lengths or solid or box-beam construction with a platform device connected to the tip of the aerial device utilized to transport and maneuver crews for fire extinguishment, rescue, ventilation, and upper floor or roof access.

The CCFD currently responds with four ladder apparatus of which all are Quints. One is a straight ladder and three are ladders with platforms.

Squad Company or Rescue Engine, which is also primarily designed for firefighting operations as an engine apparatus transports crew members, self-contained breathing apparatus, various hand and forcible entry tools, ventilation equipment, and equipment to deal with an assortment of fire and technical rescue incidents. Squads or Rescue Engines are also configured with hose (fire attack and larger supply), tank water, and ground ladders. The CCFD currently responds to emergencies with an inventory of three Squads.

Water Tender, which is a type of firefighting apparatus that specializes in the transport of water utilizing a large on-vehicle tank to a fire scene. This apparatus is also configured with fire pumps, portable tanks to offload water for drafting purposes, and carry a limited inventory of hose. The CCFD currently responds to emergencies with an inventory of four water tender trucks.

Command Vehicles, which are typically SUV-type vehicles with command centers built into the cargo compartment, are designed to carry a command level officer to the scene, and equipped with radio and command boards, as well as scene personnel tracking equipment and associated gear. CCFD has command vehicles assigned to the District Chief, Fire Chief and command staff.

CCFD Station Staffing Matrix

The CCFD staffs fourteen stations, which include engine, squad, ladder, and tender apparatus as outlined in the following table.

Table 6: CCFD Staffing Minimum Staffing Matrix

Station 1 Engine 1: 1 AO1, 1 FF (Total 2-staff)	Station 6 Squad 6: 1 AO1, 1 FF (Total 2-staff) Tender 6: No full time staff Cross staffed by E6 crew	Station 11 Engine 11: 1 AO1, 1 FF (Total 2-staff)
Station 2 Engine 2: 1 AO1, 1 FF (Total 2-staff)	Station 7 Engine 7: 1 AO1, 1 FF (Total 2-staff) Truck 7: 1 AO2, 1 Capt. (Total 2-staff)	Station 12 Engine 12: 1 AO1, 1 FF (Total 2-staff) Truck 12: 1 AO2, 1 LT. (Total 2-staff)
Station 3 Engine 3: 1 AO1, 1 FF (Total 2-staff) Tender 3: No full time staff Cross staffed by E3 crew	Station 8 Squad 8: 1 AO1, 1 FF (Total 2-staff) Truck 8: 1 AO2, 1 FF (Total 2-staff)	Station 13 Squad 13: 1 AO1, 1 FF (Total 2-staff)
Station 4 Engine 4: 1 AO1, 1 FF (Total 2-staff) Tender 4: No full time staff Cross staffed by E3 crew	Station 9 Engine 9: 1 AO1, 1 FF (Total 2-staff) Truck 9: 1 AO2, 1 Capt. (Total 2-staff)	Station 14 Engine 14: 1 AO1, 1 FF (Total 2-staff) Tender 14: No full time staff Cross staffed by E14 crew
Station 5 Engine 5: 1 AO1, 1 FF (Total 2-staff)	Station 10 Engine 10: 1 AO1, 1 FF (Total 2-staff)	

- AO 1: Apparatus Operator Level 1: Able to operate Engine, Squad, Tender, and Truck apparatus.
- AO 2: Apparatus Operator Level 2: Able to operate Engine, Squad, and Tender apparatus.
- Cross Staff Tender: When the Tender apparatus is dispatched, the Engine crew will place the Engine out of service and respond the Tender.

Fire and EMS Critical Tasking

NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments*, 2020 edition, outlines organization and deployment of operations by career, and primarily career fire and rescue organizations. It serves as a benchmark to measure staffing and deployment of resources to certain structures and emergencies. Questions of legal responsibilities are often discussed in terms of compliance with NFPA standards. NFPA standards are consensus standards and not the law. Many cities and counties strive to achieve these standards to the extent possible while not placing an undue financial burden on the community. Cities and communities must decide on the level of service and compliance they can deliver based on budgetary constraints and operational capabilities.

NFPA 1710 details staffing levels for fire departments in terms of fire, EMS, and special operations incidents. According to NFPA 1710, fire departments should base their capabilities on a formal community risk assessment, as discussed in this report, and taking into consideration:³⁵

- Life hazard to the population protected.
- Provisions for safe and effective firefighting performance conditions for the firefighters.
- Potential property loss.
- Nature, configuration, hazards, and internal protection of the properties involved.
- Types of fireground tactics and evolutions employed as standard procedure, type of apparatus used, and results expected to be obtained at the fire scene.

NFPA 1710 addresses standards for an *Effective Response Force* across several types of occupancies. An effective response force (ERF) is defined as the minimum number of firefighters and equipment that must reach a specific emergency incident location within a maximum prescribed travel [driving] time. The maximum prescribed travel time acts as one indicator of resource deployment efficiency.

The Center for Public Safety Excellence (CPSE) has also established benchmarks regarding staffing and deployment. CPSE sets standards for agencies desiring accreditation through the Commission on Fire Accreditation International (CFAI). CFAI uses standards set forth in the *Quality Improvement for the Fire and Emergency Services* manual, to provide guidance in staffing and deployment to agencies desiring accreditation through Core Competencies.

Both CPSE and the NFPA have defined *critical tasking*. CPSE defines critical tasking as the application of tasks assigned to human and physical resources that are minimally required to effectively mitigate pain, suffering, and loss of life and/or property. Critical tasking is relevant to risk classifications and risk categories.³⁶

Critical tasks as defined by NFPA 1710 are those activities that must be conducted on time by responders at emergency incidents to control the situation and stop loss. Critical tasking for fire operations requires a minimum number of personnel to perform the tasks needed to effectively control and mitigate a fire or other emergency. To be effective, critical tasks must be assigned through adequate on-scene staffing so that all identified functions can be performed simultaneously. However, it is important to note that initial response personnel may manage secondary support functions once they have completed their primary assignment. Thus, while an incident may end up requiring greater commitment of resources or a specialized response, a

35. NFPA 1710, 5.2.1.1, 5.2.2.2

36. Center for Public Safety Excellence, *Quality Improvement for the Fire and Emergency Services*, 2020

properly executed critical tasking assignment will provide adequate resources to immediately begin bringing the incident under control.

There are over 90 Core Competencies required for a department to achieve accreditation status as defined by CPSE. Competency 2C.4 is under the heading of Current Deployment and Performance and addresses critical tasking.

Criterion 2C: Current Deployment and Performance

*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 service areas. The agency develops procedures, practices, and programs to appropriately guide its resource deployment.*³⁷

Core Competency 2C.4

A critical task analysis of each category and risk class is conducted to determine the first due and effective response force capabilities, and a process is in place to validate and document the results. Core competency 2C.4 requires that the agency conduct a critical task analysis of each risk category and risk class to determine the first-due and effective response force capabilities, and to have a process in place to validate and document the results. The process considers the number of personnel needed to perform the necessary emergency scene operations. Completion of the process also helps to identify any gaps in the agency's emergency scene practices.

The next table matches critical tasking assignments to low, moderate, high, or special risk fire and EMS categories. Low, moderate, and high or special risk fire events align with NFPA 1710. EMS critical tasks are not as well-defined as those in the fire discipline. Notwithstanding, *Critical Tasking* in EMS is typical of that in the fire service in that there are certain critical tasks that need to be completed either in succession or simultaneously. EMS critical tasking is typically developed (in fire-based EMS Standards of Cover documents) in accord with the U.S. Department of Health and Human Services, Centers for Medicare & Medicaid Services (CMS), as:

- Basic Life Support (BLS)-**low risk**, which is an emergency response by a ground transport unit (and crew) and the provision of medically necessary supplies and services.
- Advanced Life Support, Level 1 (ALS1)-**moderate risk**, which is the transportation by ground ambulance vehicle and the provision of medically necessary supplies and services including the provision of an ALS assessment or at least one ALS intervention.
- Advanced Life Support, Level 2 (ALS2)-**high risk**, which is the transportation by ground ambulance vehicle and the provision of medically necessary supplies and advanced services.

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37. Center for Public Safety Excellence, Quality Improvement for the Fire and Emergency Services, 2020

Table 7: Critical Tasking Categories and Effective Response Force

Task	Low Risk Fire <i>Outside Fire</i>	Low Risk EMS <i>As Determined by EMD</i>	Moderate Risk Fire <i>Single Family Dwelling</i>	Moderate Risk EMS <i>As Determined by EMD</i>	High Risk Fire <i>Apt./Condo or Commercial</i>	High Risk EMS <i>As determined by EMD</i>
Incident Command	1	-	1	1	2	1
Primary Patient Care	-	1 Fire or EMS	-	1 Fire or EMS	-	1 Fire or EMS
Secondary Patient Care	-	1 Fire or EMS	-	2 Fire and EMS	-	1 Fire or EMS
Tertiary Patient Care	-	-	-	-	-	2 Fire and EMS
Apparatus Operator	1	1 EMS	1	1 Fire or EMS	2	1 Fire or EMS
Handlines 2 staff each	2		4		6	
Fireground Support Staff			2		3	
Primary Search & Rescue			2		4	
Ventilation-Ground Ladders			2		4	
Initial Rapid Intervention Team			4		4	
Aerial Operator (if aerial used)			(1)		(1)	
Initial Medical Care					2	
Total Staff	4	2	16 (17)	5	27 (28)	6

For EMS incidents, this table depicts how fire departments interact with EMS crews and the critical tasking associated with call acuity type.

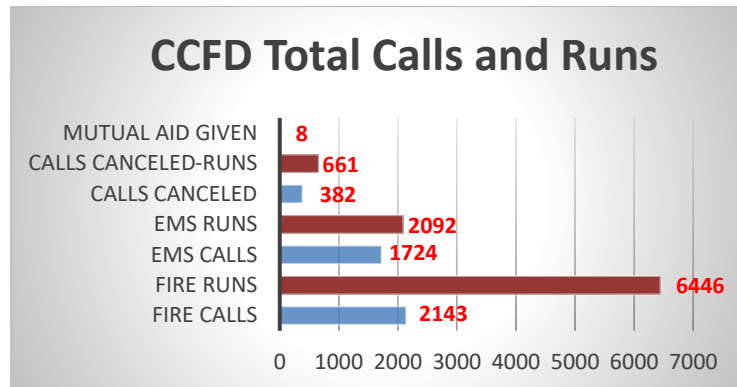
Table 8: Critical Tasking Categories: High or Special Risk (High Rise Fire)

Task	Special Risk Fire
Incident Command	2
Apparatus Operator	1
Handlines- 2 staff each	4
Primary Search & Rescue	4
Building Fire Pump Monitoring	(1) If Equipped
Hose line Above Fire Floor	2
Rapid Intervention Team	4
Accountability Officers- fire floor and floor above fire	4
Evacuation Teams	4
Elevator Operations Officer	1
Incident Safety Officer	1
Interior Staging Manager	1
Rehab Mgt.	2
Vertical Ventilation Team	4
Lobby Control	1
Transport of Equipment	2
Base Operations Officer	1
Medical Care Team	2
Total Staff	42 (43)

Fire and EMS Incident Workload Overview

The following information depicts historical Fire and EMS service incident analysis for the period October 1, 2022, to September 30, 2023. This information includes calls (a single call by Fire or EMS type) and runs (a single call that involves more than one unit response-or total workload).

Figure 8: Total Calls by Type



CCFD responded to an average of 11.7 calls, including 1.0 canceled calls, per day.

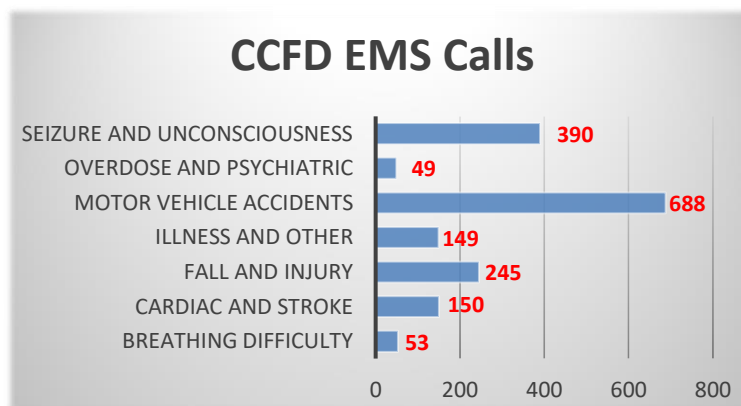
CCFD responded on 2,092 EMS Runs (multiple unit responses).

CCFD responded 6,446 Fire Runs (multiple unit responses).

Overall, CCFD responded to 4,257 Calls and 9,230 Runs for the data analysis period:

October 1, 2022 – September 30, 2023.

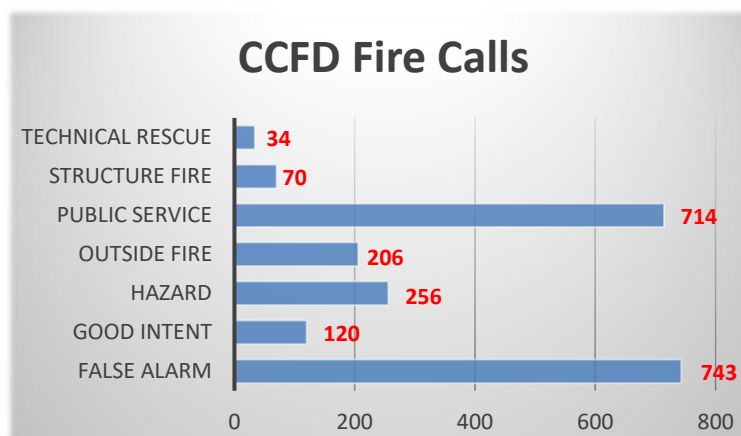
Figure 9: EMS Calls by Type



EMS calls for the year totaled 1,724 (40 percent of all calls) and averaged 4.7 (5) calls per day.

Motor vehicle accidents were the largest category of EMS calls at 40 percent of EMS calls, an average of 1.9 (2) calls per day.

Figure 10: EMS Calls by Type



Fire calls for the year totaled 2,143 (50 percent of all calls), an average of 5.9 (6) calls per day.

False alarm calls were the largest category of fire calls at 35 percent of fire calls, an average of 2.0 calls per day. These are typically fire protection system malfunctions or accidental alarms.

Structure and outside fire calls combined made up 13 percent of fire calls, an average of just under 1 call per day.

As a note: Historical response data represents CCFD prior to July 1, 2024 when CCFD was Chatham Emergency Services-Chatham Fire Department.

Community Risk Reduction

Community Risk Reduction activities are important undertakings of a modern-day fire department. A comprehensive fire protection system in every jurisdiction should include, at a minimum, the key functions of fire prevention, code enforcement, inspections, and public education. Preventing fires before they occur, and limiting the impact of those that do, should be the priority objectives of every fire department.

Fire suppression and response, although necessary to protect property, have negligible impact on preventing fire. Rather, it is public fire education, fire prevention, and built-in fire protection systems that are essential elements in protecting citizens from death and injury due to fire, smoke inhalation, and carbon monoxide poisoning. The fire prevention mission is of utmost importance, as it is the only area of service delivery that dedicates 100 percent of its effort to the reduction of the incidence of fire.

In Georgia, Title 25 *Fire Protection and Safety*, Chapter 2 *Regulation of Fire and Other Hazards to Person and Property Generally* of the *Official Code of Georgia Annotated* regulates fire code enforcement and investigation of fires. Noteworthy chapter information includes:

§ 25-2-4: *Safety Fire Commissioner -- Adoption of rules and regulations:*

*The Commissioner shall adopt such rules and regulations as he deems necessary to promote the enforcement of this chapter. Such rules and regulations shall have the force and effect of law and shall have state-wide application as being the state minimum fire safety standards and shall not require adoption by a municipality or County. **The governing authority of any municipality or County in this state is authorized to enforce the state minimum fire safety standards on all buildings and structures except one-family and two-family dwellings and those buildings and structures listed in Code Section 25-2-13.** All other applications of the state minimum fire safety standards and fees are specified in Code Sections 25-2-4.1, 25-2-12, and 25-2-12.1. Before the Commissioner shall adopt as a part of his rules and regulations for the enforcement of this chapter any of the principles of the various codes referred to in this chapter, he shall first consider and approve them as reasonably suitable for the enforcement of this chapter. Not less than 15 days before any rules and regulations are promulgated, a public hearing shall be held. Notice of the hearing shall be advertised in a newspaper of general circulation.*

§ 25-2-12(a)(1): *Adoption of state fire safety standards and enforcement; investigations; excuse from compliance with standards; interpretation of standards and granting variances therefrom by Commissioner:*

*The county governing authority in any county having a population of 100,000 or more, and the municipal governing authority in any municipality having a population of 45,000 or more, each as determined by the most recent decennial census published by the United States Bureau of the Census, and those municipalities pursuant to subsection (b) of this Code section **shall adopt** the state minimum fire safety standards adopted in the rules and regulations promulgated pursuant to this chapter, including all subsequent revisions thereof.*

§ 25-2-12(a)(3):

Nothing in this subsection shall be construed so as to prohibit fire service personnel of any such local governing authority from making inspections of any state owned and operated or occupied building or structure listed in Code Section 25-2-13 and from filing reports of such inspections with the office of the Commissioner.

§ 25-2-12(a)(6):

Every such local governing authority shall be responsible for investigating all cases of arson and other suspected incendiary fires within its jurisdiction, shall have the duties and powers authorized by Code Sections 25-2-27, 25-2-28, and 25-2-29 in carrying out such responsibility, and shall submit quarterly reports to the state fire marshal containing fire-loss data regarding all fires within its jurisdiction. The state fire marshal shall have the authority to initiate any arson investigation upon request of any such local governing authority and he shall provide assistance to the requesting authority regarding any of the duties and responsibilities required by this paragraph.

In summary, CPSM assess that Chatham County, based on the 2020 decennial census of 295,291 and pursuant to § 25-2-4 and § 25-2-12(a)(1) of the *Official Code of Georgia Annotated*, is authorized to enforce the state minimum fire safety standards on all buildings and structures except one-family and two-family dwellings and those buildings and structures listed in Code Section 25-2-13. CPSM further assesses Chatham County should be and continue to conduct fire investigations pursuant to § 25-2-12(a)(6), just as the former Chatham Emergency Services-Fire Division was prior to July 1, 2024.

Currently, the CCFD is not involved in a formal fire prevention inspection-code enforcement program. Community Risk Reduction components that fire departments typically are involved with, or manage, typically include:

- Inspection and enforcement of the adopted Fire Prevention Code to ensure all buildings are in compliance with the adopted fire code and ordinances. The targeted goal of these inspections is to ensure life safety and to reduce property loss. This includes all occupancy types on a planned basis such as annually, biannually, triennially.
- Building and site plans review related to fire protection systems and life safety to ensure there is proper ingress and egress for fire suppression units, and overall compliance with life safety codes and the adopted building code as it links to fire and life safety. This also includes final inspections of fire protection systems, ingress and egress, and other review items to ensure compliance with the approved plan.
- Investigating and determining the origin and cause of fires and determining if a crime has been committed regarding the origin and cause of the fire.
- Delivering public life-safety education programs designed to change the behavior of the public so that there are fewer dangerous situations, fires, and injuries from fires.

There are some fire prevention activities currently being managed by the Chatham County Building Officials Office. These include:

- New Construction - Plans Review related to fire and life safety, which includes fire review final inspection.
- Short Term Rental Inspections.
- New Business License Occupancy Tax Certificate Inspections.
- Inspections related to complaints.
- Inspections with the State Fire Marshal's Office when requested.

The County currently relies on the State Fire Marshal's Office to conduct fire prevention inspection and enforcement of the *Minimum Fire Safety Standards* established through Rule 120-

3-3-.04 State Minimum Fire Safety Standards with Modifications of the Rules and Regulations of the State of Georgia.

Currently, it is reported to CPSM by the CCFD and Chatham County Building Officials Office that there are at least 1,800 buildings or occupancies in buildings that require fire prevention inspections. These include high hazards, occupancies with vulnerable population, residential buildings, places of public assembly, and all other occupancy types identified in the *Official Code of Georgia Annotated and Rules and Regulations of the State of Georgia*.

A primary reason for fire prevention inspections is to protect the lives and property of residents and businesses and business occupants. By ensuring that buildings and facilities meet fire safety standards, the risk of fire-related injuries, fatalities, and property damage is significantly reduced. Overall, fire prevention is crucial for safeguarding public safety, protecting property, and promoting the resilience and sustainability of communities. It serves as a proactive measure to reduce the risk of fire incidents and mitigate their impact when they occur.

Communities that have the population and building and occupancy types that exists in Chatham County, should have a comprehensive Fire Marshal's Office that has the responsibility for:

- Inspection and enforcement of the adopted Fire Prevention Code
- Building and site plans review related to fire protection systems and life safety to ensure the overall compliance with life safety codes and the adopted building code as it links to fire and life safety.
- Investigating and determining the origin and cause of fires, and determining if a crime has been committed regarding the origin and cause of the fire
- Public life-safety education programs are designed to change the behavior of the public so that there are fewer dangerous situations, fires, and injuries from fires.

In Chatham County, a Fire Marshals Office program aligns with the adopted Chatham Community Blueprint vision: Quality of Life.

Currently, the following coastal Georgia counties have established a Fire Marshal's Office and conduct fire prevention inspections and code enforcement activities, building and site plans review, investigation into the origin and cause of fires, and life safety education:

- Camden County-2020 population - 54,768
- Glynn County-2020 population - 84,499
- Bryan County-2020 population - 44,741

Recommendation:

CPSM recommends over the near term the County develop and implement a Fire Marshal's Office as a division in the Chatham Fire Department that has the responsibility to:

- Inspect and enforce the *Minimum Fire Safety Standards established through Rule 120-3-3-.04 State Minimum Fire Safety Standards with Modifications of the Rules and Regulations of the State of Georgia*;
- Conduct building and site plans review related to fire protection systems and life safety;

- Investigate and determine the origin and cause of fires, and determining if a crime has been committed regarding the origin and cause of a fire;
- Conduct related fire and life safety inspections to include short-term rental inspections and new Business License Occupancy Tax Certificate Inspections.

CPSM further recommends the initial hiring of a Fire Marshal (near term), certified in accordance with State of Georgia standards as a fire inspector, fire investigator, and life safety educator. The Fire Marshal's initial charge should be to develop and implement a County approved community risk reduction plan for unincorporated Chatham County that includes fire prevention, fire investigation, and life safety education program work. The number of fire inspectors, investigators, and educators to be determined based on current and projected inspectable properties and workload.

Training and Education

Training and educating the Fire and EMS workforce is one of the most important functions that a fire department should plan for and should be performing on a regular basis. Education and training programs help to create the character and culture of a Fire and EMS service organization. Agencies that place real emphasis on their training tend to be more proficient in conducting the successful mitigation of emergency and non-emergency calls events and calls for service. The prioritization of training fosters a culture of readiness, an image of professionalism, and instills pride in the organization.

An effective fire department training program should be comprehensive and diverse and must cover all of the essential elements of the Fire and EMS department's core missions and responsibilities. The annualized training program must ensure compliance with state and local certification requirements, NFPA and ISO benchmarks, and should include an appropriate combination of classroom training and manipulative or hands-on/practical evolutions. Most of the training, but particularly the practical, hands-on training evolutions, should be developed based upon the department's own operating procedures while remaining cognizant of widely accepted practices and standards, and those of mutual aid departments.

Training in the CCFD is managed by the Division Chief of Training. The Chief of Training is assisted by two Training Coordinators who develop and implement Fire and EMS training. Additionally, the health, safety and wellness program is the responsibility of the Division Chief of Training and the shift Safety Captain program reports to this position as well. Together, these positions along with senior command staff and operational officers develop and deliver Fire and EMS training for and to the CCFD.

Training and education programs in the CCFD include career and volunteer recruit and incumbent training programs designed to meet the minimum requirements of the Georgia Fire Standards and Training Council. CCFD training programs are outlined in the next table.

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Table 9: CCFD Training Programs

Recruit Firefighter Training	Officer Training
<ul style="list-style-type: none"> -Firefighter I -Hazardous Material Awareness Certification <ul style="list-style-type: none"> • State certification is awarded after successfully passing exams for both courses and completion of a task book. -Firefighter II Certification -Hazardous Materials Operations Certification -Fire and Life Safety Educator -Swift Water Awareness -EMT-Basic -Emergency Response Driving -Swift Water Awareness and Operations -National Incident Fire Reporting System -Introduction to Emergency Response to Terrorism -National Incident Management System 100, 200, 700, 800 <ul style="list-style-type: none"> • Career recruit school is typically Monday-Friday. • Volunteer recruit training typically occurs on Tuesday and Thursday nights and on Saturdays. 	<ul style="list-style-type: none"> -Fire Officer I -Fire Officer II <ul style="list-style-type: none"> • FOI and FOII required for promotion to Lieutenant -Fire Officer III <ul style="list-style-type: none"> • FOIII required for promotion to Captain -Incident Safety Officer <ul style="list-style-type: none"> • ISO required for promotion to Captain and Shift Safety Officer position. -Leadership and Supervision: Creating Environments for Professional Growth - Leadership and Supervision: Perspectives in Thinking <ul style="list-style-type: none"> • Leadership and Supervision classes required for all officers.
EMS Training	Supplemental Training
<ul style="list-style-type: none"> -EMT-Advanced -Pediatric Advanced Life Support -Basic Life Support -Advanced Cardiac Life Support 	<ul style="list-style-type: none"> -Fire Instructor I & II -Apparatus Operator Pumper and Aerial -Rescue Technician Ropes I and II -Paramedic -Swift-Flood Water Rescue technician -Boat Operations -Public Safety Diver

In addition to regular recruit, incumbent, and officer training, the CCFD has implemented several task books that are utilized for advancement in the department. The utilization of task books is a national best practice. CCFD task books include:

- Basic Firefighting task book: This task book is required by the Georgia Fire Standards and Training Council as a requisite for final certification.
- Advanced Firefighter Task Book: Task book issued six months after the completion of recruit school. Typically completed in a six month time period. If successful, probationary firefighter advances to Advanced Firefighter level in the organization.
- Fire Apparatus Driver-Operator: Pumper: Task book issued six months after the completion of Advanced Firefighter task book. This task book is linked to the Apparatus Driver/Operator Pumping Apparatus training - state certification and state task book. If successful, the Advanced Firefighter advances to Apparatus Operator 1 level in the organization. Must be completed within five years of commencement.

- Fire Apparatus Driver-Operator: Aerial: Task book issued to any CCFD firefighter who has completed the Fire Apparatus Driver-Operator – Pumper certification and task book. This task book is linked to the Apparatus Driver/Operator Aerial Apparatus training and state certification. Must be completed within one year of commencement.
- Acting Lieutenant: This task book is designed to prepare candidates for promotion to Lieutenant and is a requisite to sit for the Lieutenant promotional examination. This task book outlines prerequisites to obtain a task book (certifications) and required certifications within six months of completing the task book.

Throughout CCFD Fire and EMS operational guidelines, to include Fire, EMS, and specialty/technical rescue response, there are inferences and/or direct language regarding training related to the various operational functions conducted on a daily basis.

As mentioned earlier, Fire training requirements are governed by the Georgia Fire Standards and Training Council in accordance with Title 25 of the *Official Code of Georgia Annotated*.

EMS training certification/licensure is governed by the Georgia Department of Public Health, Office of EMS. EMS certifications and licensing include:

- Emergency Medical Responder (EMR); Emergency Medical Technician (EMT); Advanced EMT (AEMT); and Paramedic.

Certain Occupational Safety and Health Administration (OSHA) regulations dictate that minimum training must be completed on an annual basis. The state of Georgia does not operate under an approved state OSHA program for public employees at the state or local government level.

There are, however, certain Federal OSHA health and safety standards found in Title 29 of the Code of Federal Regulations (CFR) that most fire departments across the country follow as a best practice. As such, the CCFD should ensure the following are included in the training matrix and program requirements for all uniform personnel:

- Annual review of the respiratory protection standard, self-contained breathing apparatus (SCBA) refresher and user competency training, SCBA fit testing (29 CFR 1910.134).
- Annual Blood Borne Pathogens Training (29 CFR 1910.1030).

Other training requirements the CCFD must meet include:

- The ISO-PPC has certain training requirements for which fire departments receive credit during the ISO-PPC review.

In the most recent ISO-PPC analysis, the CCFD received 8.66/9.00 credits for the training segment. There were no significant deficiencies in this section of the ISO-PPC report.³⁸

CPSM assesses the CCFD meets all mandatory Fire and EMS training to include Georgia Fire Standards and Training Council standards, Georgia Department of Public Health, and the Insurance Services Office Fire Suppression Rating Schedule requirements. CPSM further assesses the CCFD training programs and training program management for recruit and incumbent personnel is well organized and delivered to high standards. This includes digital, hands-on practical training, and task book standards for continuing education. The training center

38. Public Protection Classification Summary Report, Chatham County, GA, 2024.

complex is well maintained and well-managed. All training props and buildings are required for contemporary fire, EMS, and technical services practical training, to include multi-company training drills.

Recommendation:

As the CCFD organization expands with operational personnel, the CCFD should continually monitor training staff resource allocation to ensure there is adequate training instructor staff to meet the needs of new-hire and incumbent training requirements and organizational needs. Therefore, CPSM recommends that the expansion of training instructor staff be included in annual strategic planning needs assessment sessions to ensure organizational staff and training needs/requirements are adequately maintained.

Health, Safety, and Wellness

The prevention and reduction of accidents, injuries and occupational illnesses should be established goals of any fire-rescue department and should be primary considerations at all times (emergency and non-emergency activities). This concern for safety and health must apply to all members of the fire-rescue department and should include others who may be involved in fire department activities.

The CCFD does and should continue to strive to make every reasonable effort to provide a safe and healthy work environment, recognizing the dangers involved in the types of service fire-rescue departments deliver. Included in this effort should be appropriate and continuous training, supervision, procedures, program support and review to achieve department health and safety objectives in all department functions and activities.

Firefighting and EMS service delivery are inherently dangerous activities occurring in environments over which the participants have no direct engineering control. NFPA 1500, *Standard on Fire Department Occupational Safety and Wellness Programs* was developed to provide a "consensus standard for an occupational safety and health program for the fire service." NFPA 1500 is intended to be an umbrella document, establishing the basic framework for a comprehensive safety and health program, and providing for its implementation and management.

The Health and Safety Officer for the CCFD is the Division Chief of Training. The Fire Chief and Deputy Fire Chief also plays a significant role in Health, Safety, and Wellness initiatives through their oversight of facilities, fleet, and equipment (facility and fleet). The operational District Chiefs ensure Health and Safety initiatives are engaged and followed by personnel under their command. Operational field Districts Chiefs have an added focus ensuring incident Health and Safety policies and initiatives are followed.

The CCFD has taken an extra step in health and safety through the implementation of the operational Shift Safety Captain. This position ensures compliance with organizational health and safety guidelines by incorporating health and safety program components into daily routines, provides instruction when to firefighters regarding Fire and EMS safety, and operates withing the incident command system managing all incident safety aspects when on scene to include the immediate correction of situations or cessation of activities that create an imminent hazard to operating members.

In 2021, the NFPA produced *The Fifth Needs Assessment of the U.S. Fire Service* and revealed the following:

- 72 percent of departments lack a program to maintain basic firefighting fitness and health.
- 61 percent of departments don't provide medical and physical evaluations for all firefighters that comply with *NFPA 1582: Standard on Comprehensive Occupational Medical Program for Fire Departments*.
- 73 percent of departments lack a behavioral health program (larger departments are much more likely to have such a program).
- 56 percent of fire stations are not equipped for exhaust emissions control; this number rises to 82 percent in the smallest communities.
- Many departments do not engage in cancer prevention best practices.³⁹

A successful health, safety, and wellness program requires:

- Senior Management buy-in.
- The establishment of a Health Safety & Wellness Committee.
- A department needs assessment.
- The establishment of obtainable goals and objectives.
- The establishment of a budget for health, safety, and wellness.
- Implementation.
- Evaluation.⁴⁰

Primary goals of a comprehensive health, safety, and wellness should include:

- Reducing injury leave and light duty due to on-the-job injuries.
- Potentially lowering workers' compensation and employee health care costs.
- Reducing injuries.⁴¹

Firefighter injuries and deaths are devastating to families, fellow responders, local governments, and the community. The National Institute for Occupational Safety and Health (NIOSH) has studied firefighter fatality root causes, and found five key factors, which are commonly referred to as the NIOSH 5:

- Lack of fireground firefighter accountability.
- Lack of fireground communication methods.
- Lack of standard operating procedures related to response and fireground operations.
- Lack of incident management/command.
- Lack of appropriate risk assessment of the incident as whole, the building, the emergency scene, and basic fireground knowledge to understand the risk.

These five fireground factors should be etched into every firefighter's brain. A fire department training regimen, equipment, guidelines, and culture should center on these five factors. A lack

39. Creating a Health & Wellness Program for Your Department, Firehouse Magazine, October 2022.

40. *ibid*

41. *ibid*

of understanding of these five factors leads to sloppy, ineffective, and unsafe fireground operations. They should be taken seriously.

An additional and key component of a fire department health, safety, and wellness program is the inclusion of occupational medical programs for uniformed firefighters. These standards are outlined in NFPA 1582 *Standard on Comprehensive Occupational Medical Program for Fire Departments*, 2022 edition. NFPA is an important document as it outlines the medical and physical requirements for firefighters. Its significance lies in several key areas:

- **Health and Safety:** NFPA 1582 provides guidelines to ensure that firefighters are physically and medically fit to perform their duties. Firefighting is a physically demanding and hazardous profession, so maintaining the health and safety of firefighters is paramount. The standard helps identify medical conditions that could impair a firefighter's ability to safely perform essential job functions.
- **Prevention and Early Detection:** The standard emphasizes the importance of regular medical evaluations to detect potential health issues early. Early detection and intervention can prevent the progression of certain conditions, thereby reducing the risk of on-the-job injuries or fatalities.
- **Consistency in Medical Evaluations:** NFPA 1582 establishes consistent criteria for medical evaluations, which helps ensure that all firefighters, regardless of their location or department, are held to the same medical standards. This consistency is crucial for maintaining a baseline level of health and fitness across the profession.
- **Compliance and Legal Protection:** Fire departments that follow NFPA 1582 are better protected from legal liabilities related to firefighter health and safety. Compliance with the standard demonstrates a commitment to the well-being of personnel, which can be important in case of litigation or workers' compensation claims.
- **Fitness for Duty:** The standard helps fire departments determine whether their personnel are fit for duty or if certain medical conditions may require restrictions or accommodation. This ensures that firefighters can safely perform their tasks without putting themselves or others at risk.

Managing the health, safety, and wellness components of a fire-rescue department are as important as any other, as the concepts of health, safety, and wellness apply to both emergency and non-emergency activities. For any fire department, this takes dedicated staff hours and oversight from a command and station level.

CPSM assesses the CCFD has established a health, safety, and wellness program with a focus on employee health and safety. The department is committed to continue the development of a comprehensive health, safety, and wellness initiative program that aligns with NFPA 1500, *Standard on Fire Department Occupational Safety and Wellness Programs*, 2021 edition, NFPA 1582 *Standard on Comprehensive Occupational Medical Program for Fire Departments*, 2022 edition, and *The Fifth Needs Assessment of the U.S. Fire Service* as it relates to health, safety, and wellness of the fire service.

Facilities Analysis

Fire facilities must be designed and constructed to accommodate current and forecasted future trends in fire service vehicle type and manufactured dimensions. A facility must have sufficiently sized bay doors, circulation space between garaged vehicles, departure and return aprons of adequate length and turn geometry to ensure safe response, and floor drains and oil

separators to satisfy environmental concerns. Station vehicle bay areas should also consider future tactical vehicles that may need to be added to the fleet to address forecasted response challenges, even if this consideration merely incorporates civil design that ensures adequate parcel space for additional bays to be constructed in the future.

Personnel-oriented needs in fire facilities must permit performance of daily duties in support of response operations. For personnel, fire facilities must have provisions for vehicle maintenance and repair; storage areas for essential equipment and supplies; space and amenities for administrative work, training, physical fitness, laundering, meal preparation, and personal hygiene/comfort, and—where a fire department is committed to minimize “turnout time”—bunking facilities.

A fire department facility may serve as a de facto “safe haven” during local community emergencies, and also serve as a likely command center for large-scale, protracted, campaign emergency incidents. Therefore, design details and construction materials and methods should embrace the goal of building a facility that can perform in an uninterrupted manner despite prevailing climatic conditions and/or disruption of utilities. Programmatic details, such as the provision of an emergency generator connected to automatic transfer switching, even going as far as providing tertiary redundancy of power supply via a “piggyback” roll-up generator with manual transfer (should the primary generator fail), provide effective safeguards that permit the fire department to function fully during local emergencies when response activity predictably peaks.

Personnel/occupant safety is a key element of effective station design. This begins with small details such as the quality of finish on bay floors and nonslip treads on stairwell steps to decrease tripping/fall hazards or use of hands-free plumbing fixtures and easily disinfected surfaces/countertops to promote infection control. It continues with installation of specialized equipment such as an exhaust recovery system to capture and remove cancer-causing byproducts of diesel fuel exhaust emissions. A design should thoughtfully incorporate best practices for achieving a safe and hygienic work environment.

Ergonomic layout and corresponding space adjacencies in a fire station should seek to limit the travel distances between occupied crew areas to the apparatus bays. Likewise, design should carefully consider complementary adjacencies, like lavatories/showers in proximity of bunk rooms, and desired segregations, like break rooms or fitness areas that are remote from sleeping quarters. Furnishings, fixtures, and equipment selections should provide thoughtful consideration of the around-the-clock occupancy inherent to fire facilities. Durability is essential, given the accelerated wear and life cycle of systems and goods in facilities that are constantly occupied and operational.

Sound community fire-rescue protection requires the strategic distribution of fire station facilities to ensure that effective service area coverage is achieved, that predicted response travel times satisfy prevailing community goals and national best practices, and that the facilities are capable of supporting mission-critical personnel and vehicle-oriented requirements and needs. Additionally, depending on the fire-rescue department's scope of services, size, and complexity, other facilities may be necessary to support emergency communications, personnel training, fleet and essential equipment maintenance and repair, and supply storage and distribution.

National standards such as the National Fire Protection Association's (NFPA) 1500, Standard on Fire Department Occupational Safety, Health, and Wellness Program, outlines standards that transfer to facilities such as infection control, personnel and equipment decontamination, cancer prevention, storage of protective clothing, and employee fitness. NFPA 1851, Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Firefighting and

Proximity Fire Fighting, further delineates laundering standards for protective clothing and station wear. Laundry areas in fire facilities continue to evolve and are being separated from living areas to reduce contamination. Factors such as wastewater removal and air flow need to be considered in a facility design.

CCFD has fourteen facilities that they use for front line response. Each building has issues and challenges due to age or original purpose. These will be discussed in detail later in this section.

All facilities (with the exception of Station 13 which is leased through a third party) are owned by Southside Communities Fire Protection, INC. d/b/a Chatham Emergency Services and leased to the County for use as fire stations as a public purpose. Terms of the lease for each facility are *five (5) one-year terms that will automatically renew for an additional five (5) one-year lease term, or for as long as the County remains as the designated fire service provider for the areas of unincorporated Chatham County and needs the buildings.*⁴²

Pursuant to the facility lease, Chatham County is responsible for all repairs, replacements, and maintenance of the leased real property (interior and exterior). Alterations and improvements must have written consent from Chatham Emergency Services. Additionally, Stations 1, 3, 8, and 12 will continue to share space with Chatham Emergency Services EMS division.

CPSM conducted an onsite review of each of the fourteen stations in April 2024 and reviewed the 2023 Facility Report conducted by CCFD staff. Facility visits included a walk-around of each facility with a focus on living space, safety features such as CO capture systems, decon areas, separation from living areas and the apparatus bays, and any visible issues. ***This was not an engineering assessment of mechanical systems or building construction.***

The following list of stations has their own unique characteristics and issues that need repair or attention. A common thread throughout each station is as follows:

- All stations have a backup generator except for Station 13.
- All stations have some form of smoke detection capability and a carbon monoxide detector.
- None of the stations have a proper decontamination area.
- None of the stations have a vehicle exhaust CO capture system.
- All stations have minimal fitness equipment and lack proper separation from the bay.
- All PPE are stored in the bay area which provides good air flow but is exposed to UV light which will degrade the material. Storing any item in the bay area will be contaminated by vehicle exhaust gases.
- All the stations have porous kitchen surfaces that can harbor microorganisms and reduce infection control.
- PPE extractors and dryers are located at Station 2, 3, 9, and 12. Station three was outfitted with two extractors and is pending a dryer.

Each fire facility is detailed next.

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42. Lease Agreement for Public Purposes (Fire stations and Attached Equipment) between Chatham County, GA and Southside Communities Fire Protection, INC. d/b/a Chatham Emergency Services.

Station 1: 10703 White Bluff Road



This station was constructed in 1991, and the station has undergone various transformations over the years. In 2009, the District Chief's office was relocated to this station, and in 2011, it became the central hub for EMS operations. Engine 1 is located at this facility and is staffed with two personnel. Station 1 currently occupies a 2.42-acre site and spans approximately 9,184 square feet. Items of interest include:

- Through the facility lease with CES, this facility houses both CCFD and CES-EMS.
- Roof replacement approximately eight years ago.
- The bay doors require regular maintenance but function as intended.
- Parking is adequate.
- Most exterior doors are deteriorating or damaged.
- Exterior siding and trim require repair and painting.
- Existing fencing is damaged and needs replacement.
- The EMS living area has been renovated.
- Fire living space has received minimal updates.
- Interior floors have missing tiles due to slab repairs but are otherwise well-maintained.
- There are occasional slab leaks that have been linked to faulty water lines.
- Oxygen bottles and cylinders are stored in the bay area and are subject to damage by apparatus.
- The ceiling and walls are dirty with vehicle exhaust soot (potential carcinogen exposure areas).
- Apparatus bay area stores used oil drums. Other accommodation is needed.
- The fire living space currently houses two 24-hour personnel assigned to Engine 1 with a dedicated bunk room for three. The District Chief has a separate office/bunk area. Other living spaces include the facility manager's office, a day room, a large training room and two kitchens.

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Station 2: 1831 E. Montgomery Crossroads



The station was constructed in 2002 and has housed Engine 2 since its opening. The station sits on 3.16 acres and is approximately 6,300 square feet. Engine 2 is currently the only unit assigned to the station and staffed by two personnel. Items of interest include:

- The roof was replaced in 2022.
- The bay doors are in good working order.
- There are issues with the exterior deck and erosion on the east side of the building.
- Parking is sufficient, and recent repairs have been made to a large section of the driveway.
- The fencing for the service yard needs repair or replacement.
- The building's exterior needs cleaning/repainting.
- Internally, Station 2 has been well-maintained.
- The first-floor bathroom shower has been problematic and was currently under repair during the CPSM visit.
- The second-floor bathroom was inaccessible during the CPSM visit and leaks into the hallway below.
- The HVAC system has been a persistent issue; the unit is too large for the station and creates excessive humidity.
- A cascade system is located at this station along with the CCFD SCBA repair room.
- The second-floor mezzanine is used for turnout gear and spare tools.
- There is minimal fitness gear for staff to use and it is located in the bay area.
- There is an ice machine located in the bay area that needs to be relocated to a cleaner room to prevent contamination.
- Currently, two personnel are assigned to the station, with two of the four bunks in use. Without significant renovations or personnel relocation, Station 2 cannot accommodate more than two additional personnel (a total of four).

Station 3: 2009 Grove Point Road



Station 3 was constructed in 2005. Currently, Station 3 serves as home to CCFD operational resources and houses the fire training center. The station is home to Engine 3, Tender 3, Shift Safety Officer, the Division Chief of Training, two Fire Training Instructors, and a CES-EMS unit. Two personnel staff the Engine. Without significant renovations Station 3 will have difficulty accommodating additional staff. Items of interest include:

- The exterior is showing signs of age, with minimal maintenance since its establishment.
- The roof is approaching the window for replacement in the next few years and should be inspected by a roof expert.
- The bay doors present a consistent maintenance challenge, and there are signs of rot affecting the base of the columns in front of the building.
- Repairs are needed for the gable vents, and the rear external deck was partially removed due to extensive rot damage and weathering.
- The parking area has been extended with a graveled area but remains insufficient for the station's parking needs, particularly during training events.
- Internally, Station 3 is in excellent condition with new paint and floors throughout the station.
- Lawn maintenance equipment and minimal fitness equipment are located in the bay area.
- This facility includes an SCBA filling station, which is located in the bay area.
- There is a large classroom for training.
- The training areas need additional classroom space and shower facilities. Additionally, there is a need for additional administrative space. These additions/renovations will create needed living space for fire crews when considering enhanced services from this facility.



Station 4: 155 Wilmington Island Road



The station was constructed in 1973 on approximately 0.5 acres and provides roughly 3,000 square feet of living space. Currently, this facility houses Engine 4 and Tender 4 and also houses the Islands Division Volunteers. Two personnel staff engine 4. Items of interest include:

- Station 4 has undergone minimal renovations in its nearly fifty years of existence.
- The exterior of the building is in poor condition. The metal stairs on the northeast side of the building have been removed due to safety concerns.
- The roof is deteriorating and should be inspected by a roof expert for repair/replacement.
- The stucco and siding need repair.
- The bay doors are functional with minimal issues.
- Exterior window trim is deteriorating, and one exterior door is essentially a rotting piece of plywood.
- There is no paved or hard surface parking area for employees, volunteers, and visitors.
- On the north side of the building there is a second floor exit door with no steps.
- The south side of the building has a second-floor door with metal steps.
- Internally, Station 4 has recently been updated due to the delay of a proposed/planned reconstruction. Downstairs is notably small and includes an office, day room area, kitchen, and bathroom. The second floor includes a newly completed open floor bunk room, bathrooms, and classroom area.
- The ice machine is located in the bay area and subject to contamination.
- There are exposed wood beams in the bay area.

Station 5: 553 McWhorter Drive



The station was constructed in 1979 on a 1.15-acre plot. The station spans 4,192 square feet, with 2,392 square feet of usable interior space. This station currently accommodates Engine 5 and serves as a location for Skidaway Island Division volunteers. This station is staffed with two personnel. Items of interest include:

- Initially this facility consisted of living space for career and volunteer staff and apparatus bays. A classroom/volunteer meeting room was added in the mid-90's.
- Station 5 remains in relatively good condition.
- The exterior siding does not show any noticeable issues.
- The roof was replaced within the last five years.
- Bay doors function well.
- The concrete apparatus pad is cracked and deteriorating due to tree roots. The tree causing this damage is deteriorating and leaning toward the station.
- There is a possible issue with the septic field. This should be inspected by a professional.
- The station lacks paved parking for employees, volunteers, and visitors.
- Internally, Station 5 has been well-maintained, with personnel completing several projects over time. The flooring has been replaced and is in good shape. However, the carpet is dated and worn and this floor covering needs to be replaced.
- The station's configuration cannot efficiently accommodate additional personnel without an extensive remodel.
- Ceiling insulation in the bay area is open and falling to the floor.
- There is minimal fitness equipment located in the bay area.
- There is a large classroom with a kitchen attached.

Station 6: 214 Shipyard Road



The station was constructed in 1976 and is located on 0.45 acres. The station has a total area of 4,148 square feet, with approximately 2,170 square feet of usable living space. Currently, Squad 6 and Tender 6 are stationed here, with Squad 6 staffed by two personnel. Items of interest include:

- The roof was recently replaced and is in good condition.
- The bay doors have recently been replaced.
- Some exterior siding is beginning to deteriorate, and the front door is cracked/damaged and may need replacing.
- The apparatus concrete pad is deteriorating.
- The oak tree in front of the station has damaged the parking lot concrete with tree roots.
- Ceiling insulation in the bay area is open and falling to the floor.
- There is minimal fitness equipment in the bay area.
- The ice machine is located in the bay area and subject to contamination.
- The living space of Station 6 has had reasonable maintenance efforts, with various projects undertaken to update the facility. The VCT floors are in excellent shape but require substantial upkeep. There is a popcorn ceiling with staining inside in the living area indicating a potential roof leak-repairs are needed.
- The station has the capacity to house additional personnel.

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Station 7: 1440 Grove Point Road



The station was constructed in 1990 and is on a 1.75-acre lot with a total square footage of 4,096. It currently houses Engine 7 and Truck 7 with four personnel assigned each day (minimum). Items of Interest include:

- This rear of the station backs up to a flood plain. This station has flooding issues during heavy or long rain periods. Most recently (August 2024), during Hurricane Debby, this station could not respond to calls.
- The station is showing signs of wear and tear, with minimal updates to the exterior since its opening.
- The roof was replaced six years ago.
- The metal siding is rusted and damaged in many areas.
- The interior has undergone some minor renovations, mainly completed by station personnel including interior space for living area.
- Ceiling insulation in the bay area is open and falling to the floor.
- This station has the capacity for one additional staff.

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Station 8: 4800 East Highway 80



The station was constructed in 1984 and occupies approximately one acre of land. The building's total area is 3,840 square feet, with approximately 1,020 square feet of living space on each side of the apparatus bays. Currently, the station houses Squad 8, Truck 8, and a CES-EMS unit. Total CCFD staff is four personnel minimum staffing. Items of interest include:

- The siding shows signs of rot in various areas.
- Multiple windows have plywood covering them and need repair.
- The gable vents are damaged or rotting and need repair.
- The roof should be inspected by a professional for repair or replacement.
- The bay doors function well with minimal maintenance.
- The two front doors are damaged and need repair.
- Parking is limited, especially with additional staffing, and there's little room to park apparatus for training.
- There are soot covered cobwebs in the bay area indicating vehicle exhaust exposure issues.
- The interior living space is divided between two nearly identical spaces, both of which have had some changes made to improve living conditions.
- The HVAC system struggles during hot months (according to crew members).
- Station 8 currently accommodates six personnel, with bunks divided into three separate areas.
- Station 8 cannot house additional personnel.

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Station 9: 59 Log Landing Road



The station was constructed in 1995 and is situated on a 1.67-acre parcel within the gated portion of the Landings, providing apparatus access to the neighborhoods on Green Island Road. The station encompasses 4,688 square feet, with approximately 1,748 square feet designated as usable living space. Currently, Station 9 houses Engine 9 and Truck 9, staffed with two personnel each. Station 9 currently has four personnel assigned to it, with bunks divided into two separate areas. Items of interest include:

- The roof should be inspected by a professional as visually it looks as though it will likely need replacement in the near future.
- The bay doors remain functional but have experienced some minor functional issues.
- The exterior siding shows signs of aging and should be addressed with proper maintenance.
- The parking area currently accommodates personnel adequately.
- The interior of Station 9 has been well-maintained. There is new flooring, which is in excellent condition. The bathroom has undergone a recent renovation and functions appropriately.
- There is minimal fitness equipment in the bay area.
- The station is set back from normal street traffic and the lot backs up to a large community lake.

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Station 10: 4501 Ogeechee Road



The station was constructed in 1960 and covers approximately 0.55 acres of land. The building spans a total of 4,314 square feet, including roughly 1,500 square feet of usable living space. Currently, Station 10 is home to Engine 10. Engine 10 operates with two personnel. Items of interest include:

- The exterior of Station 10 is in poor condition, requiring significant maintenance and repair. Issues include damaged soffits, the need for a roof replacement (should be inspected by a professional), multiple structural cracks in the exterior walls (attributed to the west side of the building sinking), flaking paint, and a dilapidated outbuilding at the rear of the property.
- There are bowstring truss assemblies in the bay area with exposed steel and wooden frame, and the roof is exposed from the interior of the apparatus bay.
- Living quarters are built inside of the bay (located at the rear of the bay area – a building in a building) with storage on top.
- The side garage building has noticeable cracks on the exterior wall. The space that transitions between the main building and the side garage building needs repair.
- There is minimal fitness equipment in the garage area.
- The interior condition of the station has several areas requiring attention. The window from the bay into the dayroom was broken several years ago and has not been replaced. Flooring is a mix of flaking garage floor epoxy and laminate flooring in the bunkrooms. Both bathrooms have experienced water infiltration into the floor tiles, with cracked tiles in the full bath. The HVAC system is insufficient and requires repair or replacement. The electrical system has been patched together over the years, and the water lines have been reconfigured along the exterior walls due to multiple slab leaks.
- Currently, three personnel are assigned to the station, with accommodation for up to five personnel.

Station 11: 1615 Fort Argyle Road



The station was constructed in 1991 and is situated on a 3.49-acre plot. There is a total of 2,432 square feet, with approximately 884 square feet of living space. Station 11 houses Engine 11 and both of the department's aluminum boats. Two personnel are assigned to the station, with a single large bunk room capable of accommodating up to four personnel. Items of interest include:

- The exterior exhibits signs of deterioration, with rotting siding and a decaying apparatus bay door.
- The ground where the drain field was replaced was never graded after repairs.
- The gable vents need repairing due to decay.
- The station is a two-bay building with living space built at the rear of bay.
- The apparatus bay needs cleaning and painting.
- There is minimal fitness equipment in the bay area.
- The interior of the facility needs general maintenance. The flooring is worn beyond repair. Both the kitchen and dayroom areas need painting.
- The HVAC unit has had recurring issues and needs to be inspected for potential replacement.

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Station 12: 1399 Dean Forest Road



This station is the newest facility and was constructed in 2012 and occupies approximately 3 acres of land and serves as the CCFD's administrative headquarters, vehicle maintenance facility, and houses Engine 12 and Truck 12. The main building boasts a total of 17,116 square feet, with approximately 4,270 square feet designated as space for operational use. At present, four personnel are assigned to the station, with two assigned to the Engine and two to the Truck (minimum staffing). Items of interest include:

- Through the facility lease with CES, this facility houses both CCFD and CES-EMS.
- The exterior of Station 12 is in good condition.
- The roof is in good condition.
- The bay doors have experienced minimal issues.
- An extra parking lot was added in 2023 for fire administration.
- The interior of Station 12 is well-maintained. The floors remain in good condition, and the kitchen cabinets and countertops are in good condition. The operations bathroom functions well but is insufficient for the six personnel assigned to the station (including the CES-EMS crew). The bunk room is one large area capable of housing up to six individuals.
- Additional personnel cannot be accommodated without adding more space to the living quarters.
- There is minimal fitness equipment in the bay area.



**Vehicle
Maintenance Facility**

Station 13: 105 Quacco Road



The building was constructed in 1995 as an auto repair shop and is situated on approximately 0.68 acres. The facility includes 1,240 square feet, with the living space accounting for less than half of the total area. Squad 13 operates from this location and is staffed with two personnel. There is no room for expansion at this location. ***This facility is the only building that is not owned by CES and is leased from a third party for the purpose of housing personnel and apparatus.*** Items of interest include:

- The exterior of the facility is in poor condition, with mismatched bay doors and no front door access to the station.
- Access to the living quarters can only be made from the apparatus bay.
- The station features only one small exterior window.
- The main apparatus pad is in good shape.
- There are no paved parking spaces for employees or visitors.
- Internally, the station is extremely cramped, with the dayroom, office, and kitchen sharing roughly 250 square feet of space. The kitchen space is minimal with room for a refrigerator, sink, microwave, and only twelve inches of counter space. The tile floors are in acceptable condition. The HVAC system consists of a window unit for the bunk room and a mini split unit for the remainder of the living space.
- The station's water supply has a foul odor, even with a water filter system in place.
- Fitness is done outside of the facility and there is a small shed for maintenance equipment.

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Station 14: 2606 East President Street



This facility was constructed in 2009 and sits on approximately one acre of land. The entire building is 4,900 square feet with roughly half of that space dedicated to living space. Station 14 houses Squad 14 and Tender 14, with Squad 14 staffed with two personnel. The bunkroom area is divided into four separate sleeping areas, capable of housing up to four personnel. Items of interest include:

- The exterior of Station 14 is in good condition.
- The roof is in good condition.
- The bay doors have had minimal issues.
- Exterior doors and windows are in good working order.
- The parking area is sufficient for the number of personnel currently assigned to the station.
- The interior of Station 14 has been well-maintained and includes a large fitness room.
- The second floor/loft area is used for training. Fire personnel designed and built the props that are used for training in this area.
- This station has an SCBA breathing air filling station.

Facility Planning

Decisions on renovating and/or replacing facilities (those not recommended to be re-located) are better made by an engineer who specializes in facility assessments to include mechanical systems and structural components.

In general however, a building goes through a life cycle that includes general maintenance/repair and some mechanical component replacement in the first 16 years of

facility life; the next phase in the building life cycle (age 17-29) goes beyond the general maintenance and repair and includes larger replacement items such as roofs and HVAC systems, windows, apparatus aprons, exterior finish upgrades, obsolete electrical components, and major living space renovation due to expansion of services; the next phase (age 30-49) include replacement of building components that were replaced in earlier years (1-16), interior and exterior renovations, and continuation of replacement of mechanical system components (plumbing, electrical, HVAC).

Facilities that remain active after 50 years of age, while still functional, will continue to need regular maintenance and repair, continued cosmetic updating, and replacement of mechanical and structural components that were replaced in previous life cycle segment years.⁴³

The fourteen CCFD leased fire facilities range in age (original building) from 1960 to 2012 and in 2024 fall into a building life cycle range as follows:

Age 10-16 years: 2 (Stations 12 and 14)

Age 17-29 years: 4 (Stations 2, 3, 9, and 13).

Age 30-49 years: 6 (Stations 1, 5, 6, 7, 8, and 11).

Age 50+: 2 (Stations 4 and 10).

Overall, the County is leasing aging fire facilities, which will require strategic and fiscal planning regarding needed and on-going renovations (interior and exterior) and maintenance as described herein, and the potential relocation, movement of deployable assets, and/or new construction. Additionally, many facilities lack contemporary fire facility health and safety components such as vehicle CO capture systems, lack good separation from the apparatus bays to the living areas, and decon areas or separate decon rooms for equipment and personnel.

As a national best practice, all renovation and new Fire and EMS facility planning should contemplate the following:

- Maximization of access from the living space to the apparatus bay space to reduce turnout times.
- Attention to the health and safety of all staff and visitors to include security; carcinogen exposure; decon areas for staff, gear, station wear, PPE, and equipment; efficient HVAC systems that provide maximum ventilation and air movement; porous free surfaces throughout; living spaces free of contaminants; contemporary physical training space and equipment located away from the apparatus bays and well ventilated; and gender separate bathroom, shower, and bunking areas.
- Auxiliary power that will power the entire facility.
- Separate and ventilated room for structural protective clothing.
- Decon room for staff that has an exterior entry point to reduce contamination and gross decon shower.
- Ice machine is placed in a room separate from the apparatus bays and industrial/shop areas.

43. What happens over the life of a building, Albrice, 2010.

- Apparatus bay space that accommodates the current and future department Fire and EMS mission, and that are drive through to reduce backing apparatus.
- Living space that will accommodate current and future Fire and EMS staffing.
- An adequate day room that can also accommodate training.
- EMS supply storage that is separated from apparatus bays to avoid contamination.
- Incorporate engineering for the proper disposal of medical waste generated during EMS operations.
- Air-lock entry from the apparatus floor to living space to reduce CO contamination in living areas.
- Controlled entry onto public roads from the apparatus bay ramp.
- Site security such as keypad entry into the building; security cameras; site fencing, and other safeguards for building occupants either department or public.
- Minimal maintenance construction and finished materials.

Recommendations:

- CPSM recommends the CCFD contract with an engineering firm who specializes in facility assessments and inspections to conduct a facility assessment on all leased facilities that are in the age seventeen to fifty plus range, to include all structural and mechanical systems, for the purpose of identifying structural, roof, and mechanical system issues that require repair and/or replacement so that major facility issues can be prioritized and properly funded.
- CPSM recommends as a priority that all stations be equipped with carbon monoxide (CO) capture systems to reduce carcinogen exposure to station crews and visitors. CPSM further recommends the CCFD apply for grant funding through the Federal Emergency Management Agency's Assistance to Firefighters Grant program for this project. In the FY 2024 grant cycle, there will be \$324 million available for awards under this program and CO capture systems qualify. The application period is expected to open in January 2025.
- CPSM recommends the County fund the renovation of existing stations to ensure all facilities have adequate bunking, showering, bathroom, and locker room areas for a diverse workforce and that are gender separated or can be separated through reasonable and best-practice methods; decon areas; adequate storage; non-porous kitchen counter tops; smoke and carbon monoxide detectors; separation between living and apparatus bay spaces; structural gear storage racks or cages that are open and allow adequate air-flow; adequate physical fitness equipment (cardio and strength conditioning) separated from apparatus area when possible. Renovation budgets should include life-cycle replacement of structural, mechanical, plumbing, and equipment components.

CPSM recommends that strategically, the County should consider, in the initial five years of the current *Lease Agreement for Public Purposes (Fire Stations and attached equipment)* between Chatham County and Southside Communities Fire Protection, INC., d/b/a Chatham Emergency Service , INC., to rebuild the following stations either in proximity to the station's current site, or in a more advantageous location to better serve unincorporated Chatham County:

- Station 13 near term (this is a leased building that CES does not own).
- Stations 4, 6, and 8.

Consideration to rebuild should include the cost-benefit analysis of significant renovation to a leased facility versus rebuilding and ownership of new facility, potential future municipal annexation around station location, availability of a municipality to service unincorporated areas through service agreements, and automatic aid agreements with municipalities.

Stations 1, 2, 7, 11, and 14 are discussed further regarding closure or realignment in the operations section of this report.

- In the second five year term of the of the current *Lease Agreement for Public Purposes (Fire Stations and attached equipment)* between Chatham County and Southside Communities Fire Protection, INC., d/b/a Chatham Emergency Service , INC., the County should conduct an analysis and make a determination on whether to maintain the current agreement (and all maintenance and upkeep of CES facilities) or purchasing the facilities that remain as active fire stations in the Chatham County Fire Department footprint. **At a minimum, CPSM recommends the County purchase Station 3 and all training props from CES as this facility serves as the central facility for all CCFD recruit and incumbent training.**

Fleet Analysis

The provision of an operationally ready and strategically located fleet of mission-essential fire vehicles is fundamental to the ability of a fire department to deliver reliable and efficient public safety within a community.

The procurement, maintenance, and eventual replacement of response vehicles is one of the largest expenses incurred in sustaining a community's fire department. While it is the personnel of the fourteen fire stations who provide emergency services within the community, each fire station's fleet of response vehicles is essential to operational success. Modern, reliable vehicles are needed to deliver responders and the equipment/materials they employ to the scene of dispatched emergencies within the County.

CCFD apparatus maintenance is performed in-house and managed by the CCFD Fleet Coordinator, who does an outstanding job keeping Fire and EMS fleet in-service. This includes apparatus-specific work and annual preventive maintenance. There are times when a private vendor that specializes in heavy fire apparatus may be used. This combination of maintenance and repair work is common practice across the country in fire departments. The intricacies and scope of fire pumps and fire pump controls, aerial ladder hydraulic systems and controls, and apparatus electrical control systems (the main components outside of the motor, chassis, and drive train) are best left in the hands of specialists for diagnosis, maintenance, and repair.

Regarding the CCFD fleet, CPSM identified there is no consistency in fire apparatus manufacturers, and to some degree, fire pumps, motors, drivetrains, and chassis components. An additional point, which is currently being corrected, is that prior to 2020 CES-Fire was purchasing used apparatus in an effort to reduce costs. While admirable, CES-Fire was purchasing fire apparatus at a point in the vehicle's life cycle where it was more than halfway through its service life. Progress, however, has been made in the consistency of motors and drive trains over the last four to five years.

Consistency in heavy fire apparatus is important, particularly with the major components such as motor, drive train, chassis components, electrical systems, fire pumps, and aerial devices, as these are the central components of the apparatus, and creates a more efficient vehicle maintenance and repair program (component familiarity) and reduces common parts

inventory overhead. Interoperability consistency with cab, pump, and aerial configurations and controls is important as well for apparatus operators.

Engine Apparatus

Overall, the CCFD has twenty-three heavy engine apparatus of which twenty are in service (fourteen frontline and six reserve). As discussed earlier, three of the frontline engines are rescue engines (engines that also carry specialized technical rescue equipment as well as firefighting equipment).

There are three engine apparatus that are out of service. All three are inoperative and based on damage to core vehicle infrastructure and components, it may not be cost efficient to repair two of these units (units 101 and 126).

Three of the engine apparatus are commercial cab chassis configured. **As a note here,** commercial cab chassis fire apparatus has certain downsides to include:

- Because the motor is forward in a commercial chassis this chassis will have a poor (wider) turning radius. Custom fire chassis have an excellent turning radius as the wheels are just below or just ahead of the motor, which provides greater turning functionality.
- Custom chassis fire apparatus is built with frame rails and axles that are engineered for the type and weight of the apparatus (engine, ladder, rescue). The front axle in a commercial chassis is limited. The custom fire apparatus chassis has more options for weight (larger front axles and heavier frame rails).
- A commercial chassis is purchased to match specific purposes, however, they are built for general purposes and not engineered for the fire service specifically.
- Commercial chassis will be longer (motor is in the front and there is limited room in the cab).
- Custom chassis are built to NFPA 1901 standards—they typically have higher crash test and overall safety standards. Commercial chassis will have upfit costs to transform the chassis into a fire apparatus chassis.
- Because a commercial chassis is not engineered and built specifically for the fire service, longevity may be an issue. These include chassis and braking issues, particularly those assigned in a suburban/urban setting. The chassis components get worn, and if the motor is not sized correctly, motor issues develop as they are under a constant heavy load.

CPSM does not recommend the CCFD procure commercial chassis heavy fire apparatus other than water tender apparatus.

CES has six reserve pumpers in their current fleet. Four of these are commercial chassis and two are custom chassis. All six reserve pumpers are 15+ years in age, which is typical. One of the reserve pumpers (Unit number 7010) is a two-seat commercial vehicle and would limit the number of personnel that could respond in stations that potentially may expand in staffing in the future. The oldest reserve pumper is used as the training pumper but cannot be placed in front line service if needed (Unit number 7004).

Heavy engine fire apparatus assigned to each station are outlined in the next table.

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Table 10: Profile of Heavy Fleet - Pumpers

Type	CC Fleet #	Radio Number	Frontline or Reserve	Assigned Station	Year Built	Year in Service with CFD	Purchased New or Used	Pump Size	Water Tank Size
Engine	7013	Eng. 301	Frontline	Station 1	2006	2018	Used	1250	750
Engine	20-7032	Eng. 302	Frontline	Station 2	2020	2020	New	1500	1000
Engine	7005	Eng. 303	Frontline	Station 3	2006	2006	New	1250	1000
Engine	20-7042	Eng. 304	Frontline	Station 4	2020	2020	New	1500	1000
Engine	19-7028	Eng. 305	Frontline	Station 5	2019	2019	New	1500	1000
Engine	7003	Eng. 307	Frontline	Station 7	2006	2018	Used	1250	750
Engine	15-7033	Eng. 309	Frontline	Station 9	2015	2015	New	1250	1000
Engine	20-7029	Eng. 310	Frontline	Station 10	2020	2020	New	1500	1000
Engine	7043	Eng. 311	Frontline	Station 11	2005	2018	Used	1250	1000
Engine	20-7031	Eng. 314	Frontline	Station 14	2020	2020	New	1500	1000
Rescue Engine	24-7001	Sqd. 306	Frontline	Station 6	2023	2023	New	1500	1000
Rescue Engine	23-7000	Sqd. 308	Frontline	Station 8	2023	2023	New	1500	1000
Rescue Engine	20-7030	Sqd. 313	Frontline	Station 13	2020	2020	New	1500	1000
Engine	7011		Reserve	As Needed	2010	2010	New	1250	1000
Engine	7004		Reserve	As needed	2003	2003	New	1250	1000
Engine	7006		Reserve	As needed	2007	2007	New	1250	1000
Engine	7007		Reserve	As needed	2009	2009	New	1250	1000
Engine	7010		Reserve	As needed	2010	2010	New	1250	1000
Engine	7012		Reserve	As needed	2008	2018	Used	1250	750

Type	CC Fleet #	Radio Number	Frontline or Reserve	Assigned Station	Year Built	Comments
Engine	101	OOS	OOS (Motor)	OOS	2006	Vehicle has a cracked engine block-repairs deemed cost -prohibitive.
Engine	126	OOS	OOS (Fire)	OOS	2005	Vehicle involved in accident-extensive damage.
Engine	106x	OOS	OOS-Accident	OOS	2020	Vehicle experienced extensive fire damage-repairs deemed cost -prohibitive.

Aerial Apparatus

The CCFD has four aerial ladder apparatus (trucks) that are used as front-line response vehicles. Three of these are considered tower ladders as they have a platform assembly connected to the tip of the hydraulic aerial device. These aerial ladder apparatuses are 16-18 years old and are scheduled for replacement (three new aerial ladder apparatuses are on order). The fourth aerial ladder apparatus and newest, is a straight aerial ladder (no platform).

Three of the four aerial ladder apparatus have 1500 GPM fire pumps and the fourth has a 2000 GPM fire pump. All aerial ladder apparatus carries 300 gallons of water. All CCFD aerial ladder apparatus are considered Quints (able to perform engine and aerial ladder tasks).

CCFD has two reserve aerals available. These two-reserve apparatus are 18 and 23 years old. As the new aerial ladder apparatus arrives, the CCFD will cycle out two aerial apparatus based on recommendations from the CCFD fleet coordinator.

Heavy aerial ladder fire apparatus assigned to each station are outlined in the next table.

Table 11: Profile of Heavy Fleet - Aerials

Type	CC Fleet #	Radio Number	Frontline or Reserve	Assigned Station	Year Built	Year in Service w/CFD	Purchase New or Used	Pump Size	Water Tank Size	Length of Aerial
Ladder	7014	Trk. 307*	Frontline	Station 7	2006	2019	Used	1500	300	100
Ladder	7015	Trk. 308*	Frontline	Station 8	2006	2019	Used	1500	300	100
Ladder	219	Trk. 309*	Frontline	Station 9	2008	2008	New	1500	300	100
Ladder	22-7034	Trk. 312	Frontline	Station 12	2022	2022	New	2000	300	100
Ladder	7017		Reserve	As Needed	2001	2001	New	1500	300	100

Ladder	7021		Reserve	As Needed	2006	2018	Used	1500	300	100
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*Trucks 7, 8, and 9 are aerial platform apparatus.

Water Tender Apparatus

The CCFD has four apparatus that are considered Tenders. These apparatuses carry from 3000 to 3,500 gallons of water and are used to transport water sources in unincorporated areas where there are no or limited fire hydrants. The vehicles range from 16 years old to 22 years old.

There currently is no reserve tender apparatus.

Table 12: Profile of Heavy Fleet - Tenders

Type	CFD Unit #	Radio Number	Frontline or Reserve	Assigned Station	Year Built	Year in Service w/CFD	Purchased New or Used	Pump Size	Water Tank Size
Tender	7023	Tender 303	Frontline	Station 03	2012	2018	Used	500	3000
Tender	7020	Tender 304	Frontline	Station 04	2003	2003	New	500	3000
Tender	7016	Tender 306	Frontline	Station 06	2007	2020	Used	500	3000
Tender	7018	Tender 314	Frontline	Station 14	2003	2003	New	N/A	3500

Ancillary Vehicles

Air Truck

CCFD has one breathing air truck that is utilized to fill self-contained breathing apparatus (SCBA) cylinders with breathing air while units are operating on scene. The unit can also be used to fill SCBA air cylinders at individual fire stations as needed. This unit is nineteen years old and has been reframed to extend its life.

Small Vehicles

CCFD has smaller vehicles used for general purposes and/or response vehicles. There are nine response vehicles for staff and operational chief officers that range in age from 2 to 7 years old. There are two trailers with boats, and a vehicle for training.

Table 13: Profile of Staff and Utility Vehicles

Type	CFD Unit #	Assigned To	Year Built	Comments
Van	7024	Station 03	2000	Training Transport Purchased Used

Explorer	17-7037	Chief 303	2017	Chief 303-MSD
F-150	18-7026	Station 03	2018	Safety
Type	CFD Unit #	Assigned To	Year Built	Comments
F-150	18-7027	Station 03	2018	Training
F-150	18-7038	District Chief	2018	District Chief
F-150	18-7039	Chief 310	2018	Chief 310
F-150	17-7036	BHU 301	2017	BHU 301
F-150	20-7035	Chief 302	2020	Chief 302
F-150	22-7040	Chief 301	2022	Chief 301
Expedition	7041	Reserve	2011	Command Vehicle
Boat	Boat 02	Station 11		Boat w/trailer 406
Boat	Boat 01	Station 11		Boat w/trailer 407
Intl.	7022		2006	Air Unit

The aggregate fleet of the fourteen frontline pumpers, four tenders, and the four frontline arials offers the CCFD a diverse complement of fire apparatus. The engines carry a diverse equipment cache for firefighting and vehicle/technical rescue, and are of varying sizes, with varying pump capacities, hose complements, and water tanks. This diversity is important and serves the CCFD well considering the varying building risks, street sizes, building setbacks, longer driveways to some structures, and areas where fire hydrants are of a considerable distance from the fire or are absent.

Fleet Replacement

Replacement of heavy fire apparatus response vehicles is a necessary, albeit expensive, element of fire department budgeting that should reflect careful planning. A well-planned and documented emergency vehicle replacement plan ensures ongoing preservation of a safe, dependable, and operationally capable response fleet. A plan must also include a schedule for future capital outlay that is affordable to the community.

NFPA 1901, *Standard for Automotive Fire Apparatus*, 2016 edition (consolidated with other standards into NFPA 1900, *Standard for Aircraft Rescue and Firefighting Vehicles, Automotive Fire Apparatus, Wildland Fire Apparatus, and Automotive Ambulances*, 2024 edition) serves as a guide to the manufacturers that build fire apparatus and the fire departments that purchase them.

Annex F.1 of NFPA 1900 contains guidelines for front-line and reserve fire apparatus (NFPA 1901 standard) regarding service life. With respect to the recommended vehicle service life, the following excerpt is noteworthy:

To maximize firefighter capabilities and minimize risk of injuries, it is important that fire apparatus be equipped with the latest safety features and operating capabilities. In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatus more than 15 years old might include only a few of the safety upgrades required by the recent editions of the NFPA fire department apparatus standards or the equivalent Underwriters Laboratories of Canada (ULC) standards. Because the changes, upgrades, and fine tuning to NFPA 1901 (now 1900) have been truly significant, especially in the area of safety, fire departments should seriously consider the value (or risk) to firefighters of keeping fire apparatus more than 15 years old in first-line service.

Apparatus that was not manufactured to the applicable NFPA fire apparatus standards or that are over 25 years old should be replaced.

The impetus for these service life threshold guidelines is continual advances in occupant safety and construction enhancements. Despite good stewardship and maintenance of emergency vehicles in sound operating condition, there are many advances in occupant safety, such as fully enclosed cabs, enhanced rollover protection and air bags, three-point restraints, antilock brakes, higher visibility, cab noise abatement/hearing protection, carcinogen exposure reduction, and a host of other improvements as reflected in each revision of NFPA 1901 (and now NFPA 1900). These improvements provide safer response vehicles for those providing emergency services within the community, as well those "sharing the road" with these responders.

The CCFD has established a point system that is utilized for heavy fire apparatus replacement. This practice should continue as long as current and future NFPA recommendations are considered.

The point system CCFD utilizes includes:

- Age: One point for every three years of chronological age, based on the in-service date for engines/trucks and one point for every five years for tenders.
- Miles/Hours: One (1) point for each 10,000 miles or 1000 hours of use for trucks/engines and 1500 hours for tenders.
- Reliability: Points are assigned as one (1), three (3), or five (5) depending on the frequency that a vehicle is in the shop for repair. Five would be assigned to a vehicle in the shop two or more times per month on average, while one would be assigned to a vehicle in the shop an average of once every three months or less.
- Maintenance & Repair (M&R) Costs: One (1) to five (5) points are assigned based on total life M&R costs (not including the repair of accident damage). A five is assigned to a vehicle with life M&R costs equal to or greater than the vehicle's original purchase price, while a one is given to a vehicle with life M&R costs equal to 20 percent or less than its original purchase cost. (This is difficult in our application as the M&R costs have not been recorded per vehicle. This is recommended to begin to provide additional data to increase the ability for more precise evaluation.)

- Condition: This category takes into consideration body condition, rust, interior condition, accident history, anticipated repairs, and so on. A scale of one to five points is used with five being poor condition.

Point ranges include the following, with replacement consideration beginning at the 20-point threshold:

- Fewer than 16 Points: Condition I - Excellent
- 16 to 20 points: Condition II - Good
- 20 to 25 points: Condition III - Qualifies for replacement
- 25 points and above: Condition IV - Needs immediate consideration

In addition to the evaluation system outlined above, the CCFD has established the following (recommended) life cycle for heavy fire apparatus:

- Engines: 10 years front-line (Additional 2 years as reserve status based on condition).
- Aerial: 12 years front line (Additional 3 years as reserve status based on condition).
- Tender: 20 years front line based on condition. (If the tenders become a staffed responding unit the life cycle will be adjusted).

The grading system for heavy fire apparatus the CCFD has developed aligns with NFPA 1900 Annex D.2, which considers the following:

It is a generally accepted fact that fire apparatus, like all types of mechanical devices, have a finite life. The length of that life depends on many factors, including vehicle mileage and engine hours, quality of the preventative maintenance program, quality of the driver training program, whether the fire apparatus was used within the design parameters, whether the apparatus was manufactured on a custom or commercial chassis, quality of workmanship by the original manufacturer, quality of the components used, and availability of replacement parts, to name a few.

Many departments use a 10-12-5 rule (10-12 years frontline service, then 5 years of reserve service) when programming replacement of fire apparatus such as engines, ladders, water tenders, heavy rescues, and heavy squad type haz-mat vehicles. ***This is a standards recommendation only for the reasons stated herein. Dependent on wear and tear, some departments utilize a 15–24-year service life of heavy apparatus.***

Regardless of the replacement plan for fire apparatus, the reality is that it is a best practice to establish a life cycle for fire apparatus that would match the development of replacement funding, while applying the methodology of determining the replacement date in real life, in an effort to achieve greater planning and cost efficiency where possible. CCFD has done this.

A few additional notes. Deferring replacement purchases may be a good strategy at the time for balancing the budget, however this typically leads to the following:

- Costs are transferred from the capital budget to the operating budget to pay for maintenance and repair of the ageing vehicle.
- Deferrals of capital costs may increase overall fleet costs in future years as more than one apparatus may have to be replaced in a given budget year rather than spread out over several budget years.

One additional note here. Since the pandemic, heavy fire apparatus (engines, ladders, rescues) typically takes 36-42 months to deliver after an order is placed, depending on the manufacture. There are some circumstances that can shorten this time frame; however, these are stock units that may not fit the department's needs and response profile. **These lead times have to be considered in any fleet replacement program methodology and will require considerable forecasting.**

When benchmarked against Annex F.1 of NFPA 1900 - guidelines for front-line and reserve fire apparatus (NFPA 1901 standard), CPSM has outlined in the next table, a potential heavy fire apparatus replacement cycles the County and CCFD should begin to plan for.

The next table includes planning considerations for the replacement of heavy fire fleet based on the following methodology (and considering catchup costs of a new County fire department):

- Ten-year minimum front-line service for engine apparatus and two to five years in reserve based on CCFD point system.
- Twelve-year minimum front-line service for ladder (truck) apparatus and three years in reserve based on CCFD point system.
- Twenty-year front-line service for tender apparatus and three-to-five-year reserve based on CCFD point system.

Table 14: Heavy Fire Apparatus Fleet Replacement Planning Considerations

Type	CFD Unit #	Radio Number	Year Built	Projected Fiscal Year Range for Replacement
Aerial	7014	Truck 307	2006	New Vehicle is on order
Aerial	7015	Truck 308	2006	New Vehicle is on order
Aerial	7019	Truck 309	2008	New Vehicle is on order
Tender	7018	Tender 314	2003	FY2025-FY 2026
Tender	7020	Tender 304	2003	FY 2025-FY 2026
Engine	7005	Engine 303	2006	FY 2025-FY 2026
Engine	7003	Engine 307	2006	FY 2025-FY 2026
Engine	7043	Engine 311	2005	FY 2025-FY 2026
Engine	126	Engine 312 OOS-Fire	2005	FY 2025-FY 2026
Engine	7013	Engine 301	2006	FY 2025-FY 2026
Engine	101	OOS-Motor	2006	FY 2025-FY2026
Tender	7016	Tender 306	2007	FY 2029-FY 2032
Tender	7023	Tender 303	2012	FY 2034-FY 2037

Type	CFD Unit #	Radio Number	Year Built	Projected Fiscal Year Range for Replacement
Engine	15-7033	Engine 309	2015	FY 2027-FY 2030
Engine	19-7028	Engine 305	2019	FY 2031-FY 2034
Engine	20-7029	Engine 310	2020	FY 2032-FY 2035
Engine	20-7030	Squad 313	2020	FY 2032-FY 2035
Engine	20-7031	Engine 314	2020	FY 2032-FY 2035
Engine	20-7042	Engine 304	2020	FY 2032-FY 2035
Engine	20-7032	Engine 302	2020	FY 2032-FY 2035
Aerial	22-7034	Truck 312	2022	FY 2036-FY 2039
Engine	23-7000	Squad 308	2023	FY 2035-FY 2038
Engine	24-7001	Squad 306	2024	FY 2036-FY2039

For Chatham County planning purposes, the next table outlines by fiscal year range when heavy fire apparatus should be considered for replacement, which is based on the NFPA 1900 standard and the CCFD evaluation system.

Table 15: Projected Replacement Schedule Over the Next 14 Fiscal Years.

Type	FY 2025 – FY 2029	FY 2030 – FY 2034	FY 2035 -FY 2039
Engine	7	6	2
Ladder	0	0	1
Tender	2	1	1

- Vehicle # 106x may require replacing if accident damage cannot be repaired.
- Engine replacement may be reduced based on station closures and movement of heavy fire fleet as discussed later in this report.

Recommendation:

CPSM recommends that the County should continue to include in all CCFD capital budget planning over the near, mid, and long terms, planning objectives that consider the NFPA 1900 standard for heavy engine, aerial ladder, and tender fire apparatus fleet replacement and the CCFD vehicle evaluation point system as outlined herein. CPSM further recommends planning objectives that include not utilizing heavy fire apparatus once the apparatus reaches the 25-year age ceiling. Additionally, the CCFD should continue its current evaluation system for staff, light vehicles and trailers and replace these vehicles based on age, mileage, maintenance costs, downtime, resale value, and overall condition and functionality.

Self-Contained Breathing Apparatus Analysis

Self-contained breathing apparatus (SCBA) is an open-circuit respiratory device that allows trained firefighters to enter atmospheres that are immediately dangerous to life and health (IDLH), breathe atmospheric air containing 21% oxygen, and perform the critical tasks necessary to mitigate emergencies. An SCBA unit includes an air cylinder, harness, regulator and system hoses, and a mask. SCBA masks are fit tested to the individual, and typically assigned as a piece of issued agency equipment. The SCBA device is the most important piece of equipment firefighters will take into an IDLH atmosphere. Therefore, this equipment should be appropriately cared for and maintained and kept up to date.

The CCFD has an inventory of 138 Self Contained Breathing Apparatus (SCBA) units that include the harness (and assemblies) and the air cylinder. Of these, 107 are used on response apparatus and the remaining are assigned to training.

Currently, CCFD utilizes SCBA units and air cylinders manufactured by *Avon Protection* (formerly ISI). Specific models include the Deltair model (101 units) and the Viking Z Seven model (37 units). The oldest units are nearing 7 years old.

CPSM was advised by CCFD that Avon Products is no longer supporting the Deltair and Viking Z 7 models. As such, these units will eventually have to be cycled out as they will no longer be able to be serviced. This should occur in the near term to avoid issues associated with non-supported equipment or components.

Currently, the service of SCBA units and masks is performed by internal certified CCFD personnel, as well as a third-party servicing vendor.

All fire personnel are assigned their own SCBA mask. Annual fit testing is conducted for the facepiece with a Quantifit testing system and is conducted by internal certified staff. Additionally, the N95 filter masks fit testing is conducted in conjunction with the SCBA fit testing session. All records of fit testing are maintained in the current CCFD Records Management System (RMS).

Breathing air compressors utilized to fill SCBA cylinders are located at Station 2, Station 3, and Station 14. All fixed compressors, however, are over 20 years old. CPSM was advised these compressors are not 100% reliable. It is recommended these units comply with NFPA 1989: *Standard on Breathing Air Quality for Emergency Services Respiratory Protection*, 2019 edition.

NFPA 1981: *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services* 2018 edition establishes levels of respiratory protection and functional requirements for SCBA. This standard applies to all open-circuit and combination SCBA and Supplied Air Respirator (SAR) used during firefighting, rescue, hazardous materials, terrorist incidents, and similar emergency operations. This standard, like other NFPA standards, undergoes revision every 5-7 years. **Unless there are substantive updates to SCBA and/or SAR units, it is recommended that fire departments update SCBA and SAR units every other NFPA 1981 cycle update.**

The current edition of NFPA 1981 is passing the customary cycle update and will be consolidated with:

- NFPA 1971: *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2018 edition.
- NFPA 1975: *Standard on Emergency Services Work Clothing Elements*, 2019 edition.

- NFPA 1982: *Standard of Personal Alert Safety Systems (PASS)*, 2018 edition.

The consolidated standard will be titled NFPA 1970: Standard on Protective Ensembles for Structural and Proximity Firefighting, Work Apparel, Open-Circuit Self Contained Breathing Apparatus (SCBA) for Emergency Services, and Personal Alert Safety Systems (PASS). The next edition is scheduled for 2025.

When considering the purchase of SCBA units and associated components, the CCFD should consider:

- Compliance with NFPA 1981, current edition - Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services.
- Compliance with NFPA 1982, current edition - Standard of Personal Alert Safety Systems (PASS).
- Bluetooth components that allow fireground accountability and data transmission to the incident command post.
- Comfort and ergonomics.
- Ability to easily clean.
- Ability to easily service.
- Length of Warranty.
- The length of vendor support for parts and services extends the life of the SCBA ensemble (harness and harness components, regulator and regulator components, air cylinder, PASS device, and mask).
- Compatibility with Chatham County municipal fire departments.

As the current vendor is no longer supporting the SCBA units the CCFD has in inventory, the CCFD should begin planning now for near-term replacement of all SCBA units, cylinders, and masks.

Recommendations:

- CPSM recommends the CCFD continues to provide annual testing of all the components of the SCBA ensemble and document results, maintenance, and repair in a records management program.
- CPSM recommends the CCFD should evaluate all current SCBA manufacturers, ensuring future SCBA ensembles include:
 - Compliance with NFPA 1981, current edition - *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*.
 - Compliance with NFPA 1982, current edition - *Standard of Personal Alert Safety Systems (PASS)*.
 - Bluetooth components that allow fireground accountability and data transmission to the incident command post.
 - Comfort and ergonomics.
 - Ability to easily clean and service.
 - Length of Warranty.

- The time period for vendor support for parts and services of the SCBA ensemble (harness and harness components, regulator and regulator components, air cylinder, PASS device, and mask).
 - Compatibility with Chatham County municipal fire departments.
- CPSM recommends the CCFD establish a replacement schedule that considers SCBA ensemble replacement every other NFPA 1981 update (future NFPA 1970 standard) unless there are substantive updates to a standard update where it is in the best interest of the health and safety of firefighters to consider updating all units of the SCBA ensemble earlier.
- CPSM recommends all breathing air compressors in CCFD inventory either owned or leased comply with NFPA 1989: *Standard on Breathing Air Quality for Emergency Services Respiratory Protection*, 2019 edition.
- CPSM recommends the CCFD apply for grant funding through the Federal Emergency Management Agency's Assistance to Firefighters Grant program for the current and any future (federal funding availability) SCBA update and replacement project(s).

Structural Protective Gear Ensemble Analysis

A structural firefighting ensemble refers to the specialized protective clothing and equipment worn by firefighters when operating on fires in buildings, vehicles, and other structures, as well as operating in other hazardous conditions and atmospheres. This ensemble is designed to provide a level of protection for firefighters from the various hazards they may be exposed to such as heat, flames, debris, and other hazardous conditions.

A typical structural firefighting ensemble includes:

- Turnout Gear (or Bunker Gear): This consists of three layers:
 - Outer Shell: Made of fire-resistant materials like Nomex or Kevlar, providing flame and abrasion resistance.
 - Moisture Barrier: Prevents water, chemicals, and other fluids from penetrating while allowing sweat to escape.
 - Thermal Liner: Provides insulation against extreme heat.
- Helmet: Protects the head from impact, heat, and falling debris. It often includes a face shield or goggles to protect the eyes.
- Gloves: Fire-resistant gloves that protect the hands from burns, cuts, and punctures while maintaining dexterity.
- Boots: Made from fire-resistant and waterproof materials that provide protection against heat, sharp objects, and electrical hazards.
- Hood: Typically made of flame-resistant fabric, the hood covers the head, neck, and part of the face, providing additional protection from heat and flames.

NFPA 1851: *Standards on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2020 edition establishes the requirements for how fire departments select, inspect, clean, repair, store, and retire personal protective equipment (PPE).

Based on information CCFD provided to CPSM, CCFD has a current inventory of protective ensembles manufactured by MSA-Globe and Lion as follows.

Each member is issued a primary set of turnout gear consisting of:

- Globe G-XCEL Jacket, Globe GPS Trousers and Suspenders
- Cairns MSA Black 1044 Helmet or Cairns MSA White 1044 Helmet Deluxe.
- Black Diamond Rubber Boots.
- FireCraft P5000 Structural Gloves.
- Life Liners KL23 Hood.
- FireCraft Jumbo Gear Bags.
- Hand light – Streamlight Survivor alkaline model, orange 90 degree with clip

The current inventory of turnout gear includes issuance to all career staff and qualified volunteer members, and items assigned to inventory (spare). The following table lists the four main components of structural firefighting gear, which includes pants, coat, helmet, and boots. The remaining issued turnout gear is considered consumable and may be replaced more frequently.

As a note, Section 10.1.2 of NFPA 1851 establishes the retirement timeline for the structural firefighting ensemble as:

- Structural firefighting ensembles and ensemble elements shall be retired in accordance with the standard no more than 10 years from the date the ensembles or ensemble elements were manufactured.
- Section 3.3.130 of NFPA 1971: Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2018 edition identifies structural firefighting ensemble as: *Multiple elements of compliant protective clothing and equipment that when worn together provide protection from some risks, but not all risks, of emergency incident operations.*

The next table outlines expiration dates for CCFD structural protective ensemble components.

Table 16: Inventory Expiration Dates and Amount (at time of report)

Expiration Year	Boots	Helmets	Coats	Pants
2023	12	5	9	7
2024	7	1	1	1
2025	4	3	7	5
2026	7	0	6	7
2027	4	8	38	41
2028	10	28	28	26
2029	14	51	28	30
2030	28	4	26	23
2031	10	15	22	22
Totals	96	115	165	162

There has been a push for a second set of turnout gear in the fire service for a number of years. Having two sets of turnout gear is considered **a best practice** for firefighters for several important reasons related to safety, health, and operational readiness:

- Health and Safety

- Contaminant Exposure: After responding to fires, turnout gear can be contaminated with harmful substances such as carcinogens, chemicals, and biological agents. Wearing contaminated gear can lead to prolonged exposure to these hazardous materials, increasing health risks for firefighters.
- Proper Cleaning: Having a second set of turnout gear allows firefighters to properly clean and decontaminate their gear after an incident without having to wear it again while still contaminated. This reduces the risk of absorbing harmful substances into their bodies and ensures compliance with NFPA 1851.

- Operational Readiness

- Rapid Turnaround: Firefighters are often called to multiple emergencies in quick succession. Having two sets of gear ensures they can immediately respond to a new call while their first set is being cleaned or repaired.
- Wet Gear: After a fire, gear can become wet from firefighting efforts or from being cleaned. Wet turnout gear can lose its protective properties and become less effective, putting the firefighter at greater risk during future calls.

- Compliance with Regulations

- NFPA Standards: As reviewed herein, there are NFPA standards that include, for health and safety reasons, regular cleaning, and decontamination of turnout gear guidelines. Having two sets of turnout gear helps firefighters comply with these standards while ensuring their safety and readiness.

- Durability and Longevity of Gear

- Reduced Wear and Tear: Constant use of a single set of gear can degrade the components quicker. By alternating between two sets, firefighters can extend the life of both sets and ensure that their gear remains in usable condition consistent with NFPA standards for a longer period.

In summary, having two sets of turnout gear enhances both firefighter safety and efficiency, minimizes health risks, and ensures operational readiness. **That said, the CCFD has budgeted for and will be issued a second set of turnout gear in FY 25.**

Recommendations:

- CPSM recommends the CCFD continue to utilize NFPA 1971 and NFPA 1851 as guideline documents for the design, performance, testing, certification, care, maintenance, storage, lifecycle, and selection when procuring structural firefighting ensemble components and inspecting current components in use by CCFD members or in storage.
- CPSM recommends, following national best practice, the County continue to support the plan to procure and issue a second set of structural turnout gear for each operational member of the department to align with protective and preventive health measures for operational members and enhanced operational readiness.

Mutual and Automatic Aid

Automatic aid is a system whereby fire, rescue, and EMS units respond automatically to another community through agreement based on proximity to the incident. In an automatic aid scenario, resources from neighboring jurisdictions are built into run cards in the home jurisdiction for again, an automatic response; this aid is designed to supplement and bolster the Effective Response Force of the home jurisdiction and provide a faster response of EMS ground transport units.

Mutual aid is a system whereby surrounding communities provide fire, rescue, and EMS resources to another community through agreement and specific request from the jurisdiction in need of resources (not automatically but case by case).

There are several advantages to engaging surrounding jurisdictions in automatic aid. First, it can get the closest emergency units to the call for service faster as auto-aid can be based on the closest location to the request for service regardless of the jurisdiction. This is a force multiplier (supplemental response) as neighboring jurisdictions respond to multi-unit incident responses to the home jurisdiction and assist in bolstering the Effective Response Force (ERF) for the completion of critical fireground and EMS tasks.

CES-Fire participated in automatic and mutual aid with contiguous and surrounding municipalities. As the CES-Fire mutual and automatic aid agreements did not transfer to the County and CCFD on July 1, 2024, CCFD has drafted reciprocal automatic and mutual aid agreements for fire protection and mitigation resources with the jurisdictions the former CES-Fire was signatory with.

The CES-Fire agreements included:

- City of Savannah Fire Department: Agreement and Memorandum of Understanding for Automatic Aid Protocols for First Due Engine for Emergency Responders between Savannah Fire Department and Chatham Emergency Services.
 - This agreement provides for automatic dispatch of the most appropriate first due apparatus response resources(s) available to an incident location, without regard to jurisdictional boundary lines.
 - This agreement specifically mentions the Savannah Fire Department will cover first in fire response to the Vernonburg area and CES will be assisting Savannah Fire with the New Hampstead area. **According to CCFD staff, this agreement, although signed, was not implemented on a regular and consistent basis.**
- City of Savannah Fire Department: Agreement and Memorandum of Understanding for Automatic Aid Protocols for Vehicle Extrication/Rescue Emergencies on the Harry Truman Parkway – Vernon River Bridge.
 - This agreement provides for automatic dispatch of the most appropriate first due apparatus response resources(s) available to an incident location, without regard to jurisdictional boundary lines. This agreement also establishes the boundary division line on the bridge to determine the Authority Having Jurisdiction (AHJ) on emergency incidents.
 - This agreement also stipulates what assigned fire apparatus that each jurisdiction will respond to emergencies on the bridge.

- Emergency and Disaster Mutual Aid Agreement: between the City of Savannah, Cities and Towns of Chatham County government, and Privately-operated Fire and Emergency Services Providers of Chatham County and Public Safety Agency providing Law Enforcement Services.
 - This agreement provides for any city, town or County agency that is a part of this agreement to give and receive assistance during emergencies and disasters.
- City of Garden City: City of Garden City and Chatham Emergency Services Mutual Aid Agreement.
 - This agreement provides for mutual aid between the two agencies as requested on an as needed basis.
- City of Bloomingdale: City of Bloomingdale and Chatham Emergency Services Mutual Aid Agreement.
 - This agreement provides for mutual aid between the two agencies as requested on an as needed basis.
- Bryan County: Mutual Aid Agreement between Bryan County Fire Department and Southside Fire/EMS.
 - This agreement provides for mutual aid between the two agencies as requested on an as needed basis.
- Mutual Aid Agreement between U.S. Army Garrison, Fort Stewart/Hunter Army Airfield, Georgia and Chatham Emergency Services, Savannah, Georgia.
 - This agreement provides for mutual aid between the two agencies as requested on an as needed basis.
- City of Port Wentworth: An Amendment to the City's Fire Protection Agreement with Southside Communities Fire Protection, Inc., dated January 1, 1999, for the purpose of:
 - This agreement provides for the assignment of a staffed ladder truck to provide firefighting services to high elevation commercial and residential structures within the City's service area.
- City of Port Wentworth: City of Port Wentworth and Chatham Emergency Services Mutual Aid Agreement.
 - This agreement provides for mutual aid between the two agencies as requested on an as needed basis.
- City of Richmond Hill and Chatham Emergency Services Mutual Aid Agreement.
 - This agreement provides for mutual aid between the two agencies as requested on an as needed basis.

- Town of Thunderbolt: Town of Thunderbolt and Chatham Fire Emergency Services Mutual Aid Agreement.
 - This agreement provides for mutual aid between the two agencies as requested on an as needed basis.

Overall, CCFD participates in very little automatic or mutual aid in a County that has eight municipal fire departments, and one additional volunteer fire department (Isle of Hope). In fact, during the one-year data analysis period, the CCFD provided mutual aid just eight times.

In a County or region such as Chatham County that has a vast network of fire department resources, there are many benefits to automatic aid agreements. These benefits make automatic aid a crucial component of contemporary fire service operations, especially in regions where fire departments may have overlapping jurisdictions or where resources are limited to include:

- Quicker Response Times: Automatic aid ensures that the closest fire department responds to a multi-unit emergency, such as a building fire regardless of jurisdiction. This can significantly reduce response times.
- Resource Sharing: It allows fire departments to pool resources, including personnel, equipment, and apparatus. This is especially beneficial for smaller departments that may not have the resources to manage large incidents on their own.
- Increased Coverage: Automatic aid provides continuous coverage across regions, ensuring that no area is left vulnerable when one department is managing an incident. This prevents gaps in service and ensures that emergencies are addressed promptly.
- Enhanced Safety for Firefighters: By having additional support from neighboring departments, firefighters can operate more safely. More personnel on the scene means that tasks can be performed more efficiently, reducing the risks associated with understaffed operations.
- Cost Efficiency: Instead of every department investing in the same specialized equipment or training, departments can share these resources, reducing overall costs while still maintaining high service levels.
- Improved Training and Collaboration: Firefighters from different departments often train together as part of automatic aid agreements. This leads to better coordination and understanding during actual emergencies, improving overall effectiveness.
- Support During Large-Scale Incidents: In the case of large fires or disasters, automatic aid ensures that there are enough resources available to manage the situation without overwhelming a single department.
- Standardized Procedures: Automatic aid agreements often involve standardizing procedures, which will help ensure that all responding units operate seamlessly together, regardless of which department they belong to.

There are successful multi-jurisdictional automatic aid systems across the country. A sample of these include:

- Phoenix, AZ Metropolitan Region.
- Northern VA region to include regional military installations and the Washington Metropolitan Airports Authority.
- Hamilton County, Ohio.

- Unified Response System: 12 cities in Los Angeles County, CA.

Automatic aid agreements often require signatory jurisdictions to provide or agree to:

- Company Officers on responding fire apparatus (or qualified acting officers).
- Minimum staffing (typically three per apparatus - sometimes four depending on jurisdiction).
- Signatory departments must train together (typically quarterly).
- Response protocols and incident guidelines.
- How initial and continuum of incident command occurs when a command officer from another jurisdiction arrives first in the home jurisdiction.
- A jurisdiction's commitment on the first-alarm assignment (1-2 engines; 1 ladder; 1 Tender etc.)

Regardless of the reasons there is limited automatic aid and sharing of resources in Chatham County, the upshots to automatic aid outweigh the down shots. In fact, the down shots of not engaging automatic aid, when evaluated, outweigh the best interests of the community as a whole, as the potential for delayed response times, inefficient use of resources, inconsistent service levels, strained interdepartmental relationships, and a hinderance to further regional fire department planning and training have the potential to negatively impact any community in the County.

Recommendation:

CPSM recommends Chatham County and the CCFD continue current discussions regarding automatic aid with those municipalities that are contiguous with unincorporated areas of the County. These discussions should include:

- What each jurisdiction is willing to provide in terms of automatic aid?
- What each jurisdiction expects in return for providing automatic aid?
- What staffing levels are required for a jurisdiction to engage in automatic aid?
- What training levels for officers is required to assume the responsibility of incident commander?
- Will automatic aid be specific to certain areas of each jurisdiction participating in the agreement, or will the agreement expand to all areas of the signatory jurisdictions?
- Will the agreement require multi-jurisdictional training and drills?
- Will common response protocols and guidelines be developed and included in the agreement?
- It is recommended that automatic and mutual aid decisions be made as soon as possible to initiate many of the immediate recommendations needed. CPSM further recommends that Chatham County engage as many jurisdictions as possible in automatic aid agreements for the sole purpose of sharing resources and enhancing service deliverables for the betterment of signatory jurisdictions.

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Service Agreements

CES-Fire was also signatory to service agreements with the Town of Vernonburg and the City of Garden City for direct fire protection services as outlined below.

- Agreement between Southside Communities Fire Protection Inc., dba Chatham Emergency Services and the Town of Vernonburg, GA.
 - Vernonburg shall contract with CES for the purpose of providing fire protection services.
 - CES shall provide such appropriate equipment for the purpose of providing fire protection and such equipment as is appropriate in order to provide service to Vernonburg.
 - Vernonburg shall pay CES an initial annual fee equivalent to the sum of all individual subscriber fees for the area of Vernonburg under the terms and conditions of this contract.
- Agreement between Southside Communities Fire Protection Inc. and the City Garden City, GA.
 - Garden City to contract with Southside Communities Fire Protection, Inc. to furnish fire service to all areas of the City south of U.S. Interstate 16.
 - The annual service fee shall be the actual cumulative area subscription rate used by Southside Communities Fire Protection, Inc. for the coverage area as determined by Southside Communities Fire Protection, Inc.

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SECTION 5. COMMUNITY RISK ASSESSMENT

Nexus Between Community Risk and Staffing and Deployment of Resources

Chatham Fire recognizes there are hazards and risks that exist currently in the CCFD service area, and which will increase as the County continues to develop. Current and future risks bring with them an inherent risk to the citizens and visitors of the department's service area, including property and the environment itself. In less technical terms, hazards are the causes of danger and peril in the community and risk quantifies the degree of potential danger that the hazard presents.

Contemporary risk assessing utilizes three factors when analyzing risk. These are:

- **Probability** or likelihood of an incident occurring, which defines the frequency of the various incidents fire departments respond to.
- **Consequence** (magnitude) of an incident on the community, which is the measure of the outcome of a fire, fire related, EMS, technical rescue, or Haz-Mat incident on the community.
- **Probability and Consequence** combined identifies the risk based on the probability of an incident and the consequence on the community.
- **Impact** of an incident on the Chatham Fire as an emergency response agency and its ability to provide ongoing services to the remaining areas for service demand analysis.

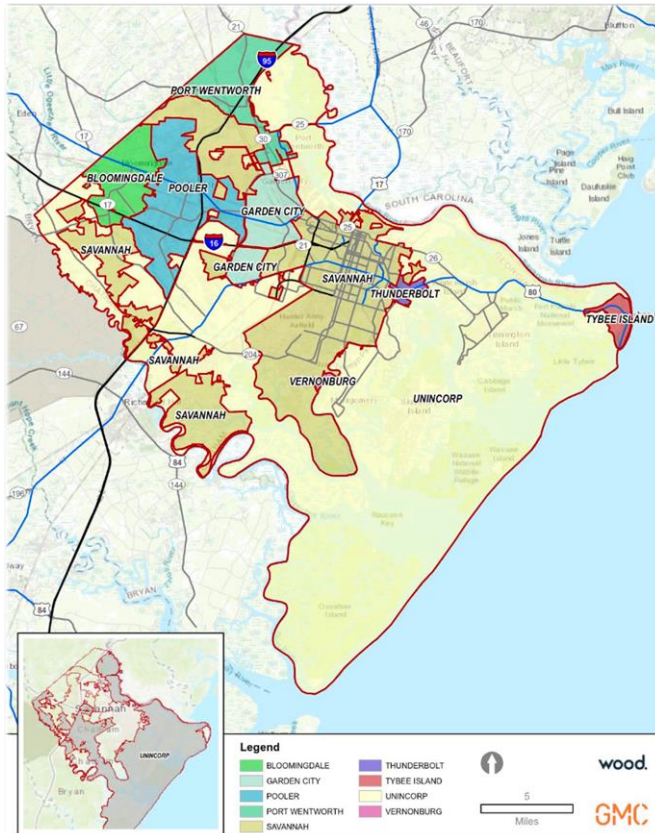
Already discussed are specific risks that impact fire and EMS calls for service, and which link directly to probability of occurrence, consequence on the community, and impact on the CFD. These are:

- Population and demographics drive incident demand. As the population increases so does the demand for public services, to include fire and EMS.
- Transportation Infrastructure, which includes roads, trails, and rail.
- Land Use and Growth, which links to population growth, and by the type of growth (residential, commercial, mixed use etc.), increases community risk and will affect critical tasking and levels of Chatham Fire response by the types of buildings built (residential over commercial, large square footage single family dwellings, multi-level residential, large footprint commercial buildings, commercial processes using hazardous materials, vulnerable population housing), as well as density.

Hazards are a natural part of our environment that will inevitably continue to occur, but there is much we can do to minimize their impact on our communities and prevent them from resulting in disasters. Planning is one of the best ways to develop a customized program that will mitigate the impacts of hazards while considering the unique character of a community.

The Chatham County Multi-Jurisdictional Pre-Disaster Hazard Mitigation Plan was developed to meet this need. The following jurisdictions within Chatham County are covered in the risk assessment analysis of the Plan. **Direct information from this plan is included throughout this section of the CPSM report.**

Figure 11: Participating Jurisdictions⁴⁴



Chatham County	City of Bloomingdale	City of Garden City
City of Pooler	City of Port Wentworth	City of Savannah
Town of Thunderbolt	City of Tybee Island	Town of Vernonburg

The hazards addressed in this plan were chosen by the Hazard Mitigation Planning Committee (HMPC), based on the previous plan, the current Georgia State Mitigation Strategy, and consideration of hazard frequency and potential severity of damage. Wherever possible, the probability of future occurrences was based on historical occurrence data.

The conclusions drawn from each individual hazard profile and vulnerability assessment were used to prioritize all potential hazards to Chatham County using the Priority Risk Index (PRI). This method provides a standardized numeric value to each hazard for comparability. A higher PRI value indicates a hazard poses a higher risk to the community. The PRI is a weighted sum of values assigned across five categories: probability, impact, spatial extent, warning time, and duration. Each hazard is assigned a value between 1 and 4 for each category based on a defined set of criteria.

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44. Chatham County Multi-Jurisdictional Pre-Disaster Hazard Mitigation Plan.

Figure 12: Summary of PRI Results⁴⁵

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Dam Failure	Unlikely	Limited	Negligible	Less than 6 hrs	Less than 1 week	1.8
Drought	Likely	Minor	Large	More than 24 hrs	More than 1 week	2.5
Earthquake	Possible	Limited	Moderate	Less than 6 hrs	Less than 6 hrs	2.3
Erosion	Likely	Limited	Small	More than 24 hrs	Less than 1 week	2.3
Extreme Heat	Highly Likely	Critical	Large	More than 24 hrs	Less than 1 week	3.3
Flood	Highly Likely	Critical	Moderate	6 to 12 hours	Less than 1 week	3.3
Hurricane	Likely	Catastrophic	Large	More than 24 hrs	Less than 1 week	3.3
Sea Level Rise	Likely	Critical	Moderate	More than 24 hrs	More than 1 week	2.9
Severe Weather (Hail) ¹	Highly Likely	Minor	Small	Less than 6 hrs	Less than 6 hrs	2.4
Severe Weather (Lightning) ¹	Highly Likely	Minor	Negligible	Less than 6 hrs	Less than 6 hrs	2.2
Severe Weather (Winds) ¹	Highly Likely	Limited	Large	Less than 6 hrs	Less than 6 hrs	3.1
Severe Winter Weather	Likely	Limited	Large	More than 24 hrs	Less than 1 week	2.7
Tornado	Likely	Critical	Small	Less than 6 hrs	Less than 6 hrs	2.7
Wildfire	Likely	Limited	Moderate	Less than 6 hrs	Less than 1 week	2.8
Hazardous Materials	Likely	Critical	Moderate	Less than 6 hrs	Less than 24 hrs	3.0
Terror Threat	Unlikely	Catastrophic	Negligible	Less than 6 hrs	More than 1 week	2.2

¹Note: Severe Weather hazards average to a score of 2.6 and are therefore considered together as a high-risk hazard.

The results from the PRI have been classified into three categories based on the assigned risk value which are summarized as follows:

- **High Risk** – Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread.
- **Moderate Risk** – Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **Low Risk** – Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal. This is not a priority hazard.

Figure 13: Summary of Hazard Risk Classification⁴⁶

High Risk (> 2.4)	Extreme Heat Hurricane Flood Hazardous Materials Incident Sea Level Rise Wildfire Severe Winter Weather Tornado Severe Weather (Thunderstorm Wind, Lightning, Hail) Drought
Moderate Risk (2.0 – 2.4)	Earthquake Erosion Terror Threat
Low Risk (< 2.0)	Dam Failure

45. Ibid., 220.

46. Ibid., 221.

Federal and/or state disaster declarations may be granted when the Governor certifies that the combined local, County and state resources are insufficient, and that the situation is beyond their recovery capabilities.

In the past 25 years, Chatham County has been designated in three federal major disaster declarations, and seven federal emergency declarations.

Table 17: Summary of Federal Emergency Declarations

Disaster #	Declaration Date	Event Title/Description	Type Assistance
EM-3607-GA	8/5/2024	Hurricane Debby	Public
EM-3464	3/13/2020	COVID-19	Public
DR-4501	3/29/2020	COVID-19	Individual and Public
EM-3422	9/1/2019	Hurricane Dorian	Public
EM-3406	10/10/2018	Hurricane Michael	Public
DR-4338	9/15/2017	Hurricane Irma	Individual and Public
EM-3387	9/8/2017	Hurricane Irma	Public
DR-4284	10/8/2016	Hurricane Matthew	Individual and Public
EM-3379	10/6/2016	Hurricane Matthew	Public
EM-3218	9/5/2005	Hurricane Katrina Evacuation	Public
EM-3144	9/14/1999	Hurricane Floyd	Public

Environmental Risk

Chatham County is prone to and will continue to be exposed to certain environmental hazards and risks that may impact the community. Chatham County is susceptible to a wide range of natural hazards, including but not limited to seasonal events such as tornados, flooding, severe winds, lightning, and occasionally winter storms to include freezing temperatures with related risks. Additionally, environmental risk includes transportation and human-made events as well. Aggregately, these life-threatening hazards can destroy property, disrupt the economy, lower the overall quality of life for individuals, and create call demand for the CCFD.

Next, the environmental hazards identified in the plan that have the potential of affecting Chatham County are further defined:

Dam Failure: (Low Risk), A dam failure is the collapse or breach of a dam that causes downstream flooding. Dam failures may be caused by natural events, manufactured events, or a combination. Due to the lack of advance warning, failures resulting from natural events, such as earthquakes or landslides, may be particularly severe. Prolonged rainfall and subsequent flooding are the most common causes of dam failure. Water released by a failed dam generates tremendous energy and can cause a flood that is catastrophic to life and property. A catastrophic dam failure could challenge local response capabilities and require evacuations to save lives.

Within Chatham County, there are a total of six dams. Under the Georgia Safe Dams Program, four of the dams are a Hazard Category II, (Low Hazard) and includes dams located where failure will not cause loss of human life. The other two are federally owned pond dams and have a Low Hazard Category. There are no records of historical dam failure occurrences in or affecting the planning area.

Drought: (High Risk), Drought is a deficiency in precipitation over an extended period. It is a normal, recurrent feature of climate that occurs in virtually all climate zones. The duration of a drought varies widely. There are cases when drought develops relatively quickly and lasts a brief period of time, exacerbated by extreme heat and/or wind, and there are other cases when drought spans multiple years, or even decades. Drought is a regional hazard that can cover an entire planning area, and in some cases the entire state. According to the Palmer Drought Severity Index (PDSI), Eastern Georgia has a low-moderate risk for drought compared to the rest of the United States. Additionally, a secondary hazard to drought is wildfire due to dry vegetation. According to the HMP, drought can occur equally in all areas of the planning area.

The most severe drought to impact Chatham County in the past 20 years occurred when the County spent 100 weeks in drought from September 2010 to August 2012. At the drought's peak from June 21, 2011, through August 9, 2011, at least 90 percent of the County was considered in D4 (exceptional) drought.

Over the 20-year period, for which Drought Monitor reports on 991 weeks, from 2000 through 2018, Chatham County had 469 weeks of drought conditions ranging from abnormally dry to exceptional drought. This equates to a 47 percent chance of drought in any given week. At this time, approximately 152 weeks were categorized as a severe (D2) drought or greater, which equates to a 15 percent chance of severe drought in any given week.

Climate assessments indicate that average and extreme temperatures are increasing across the country and average annual precipitation is decreasing in the Southeast. As temperature is projected to continue rising, evaporation rates are expected to increase, resulting in decreased surface soil moisture levels. Together, these factors suggest that drought will increase in intensity and duration in the Southeast.

Earthquake: (Moderate Risk), An earthquake is a movement or shaking of the ground. Most earthquakes are caused by the release of stress accumulated as a result of the rupture of rocks along opposing fault planes in the Earth's outer crust. These fault planes are typically found along borders of the Earth's 10 tectonic plates. The Charleston liquefaction features is the primary active fault area that could produce an earthquake affecting Chatham County. The following figure reflects the location of the Charleston liquefaction features in relation to Chatham County based on data from the USGS Earthquake Hazards Program.

Extreme Heat: (High Risk), According to FEMA, in most of the United States extreme heat is defined as a prolonged period (2 to 3 days) of high heat and humidity with temperatures above 90 degrees. In extreme heat, evaporation is slowed, and the body must work extra hard to maintain a normal temperature, which can lead to death by overwork of the body. Extreme heat often results in the highest annual number of deaths among all weather-related disasters. During these conditions, the human body has difficulty cooling through the normal method of the evaporation of perspiration. Health risks rise when a person is overexposed to heat.

Although Chatham County has no recorded deaths or injuries due to extreme heat, the area regularly experiences heat index temperatures above 100°F. From 1999 – 2019 Chatham County averaged approximately 179 hours per year with heat index values above 100°F. The recorded maximum temperature for the County was 104.4°F. Probability is highly likely that the planning area will continue to experience extreme heat conditions in the future.

Figure 14: Charleston Liquefaction Features



Since 1985, no major earthquake events have impacted the planning area. The largest earthquake to impact the County was the Charleston earthquake of 1886, which registered an MMI of VIII in Savannah (6.2 – 6.5 on the Richter Scale).

Based on the record of past occurrences there were 16 earthquakes over a 208-year period from 1811 to 2019. Using past occurrence as an indicator of future probability, there is a 7.7 percent annual probability of an earthquake being felt in Chatham County, there is a 1.4 percent annual chance of an earthquake causing some building damage.

Erosion: (Moderate Risk), Coastal erosion is a process whereby large storms, flooding, strong wave action, sea level rise, and human activities, such as inappropriate land use, alterations, and shore protection structures, wear away the beaches and bluffs along the coast. Erosion undermines and often destroys homes, businesses, and public infrastructure and can have long-term economic and social consequences. Gradual coastal erosion and accretion results naturally from the impacts of tidal longshore currents. Severe coastal erosion can occur over a brief period when the state is impacted by hurricanes, tropical storms, and other weather systems.

From 1999 to 2020 Chatham County has experienced major erosion from hurricanes, tropical storms, storm surges, and coastal floods resulting from Tropical Storm Tammy (October 2005); northwest winds combined with High Astronomical Tides across Tybee Island (September 2007); heavy rain, wind damage and storm surge from Hurricane Matthew, (October 2016); and storm surge associated with Tropical Storm Irma (September 2017).

Severe Weather (Thunderstorm Wind, Lightning, Hail): Thunderstorms result from the rapid upward movement of warm, moist air. They can occur inside warm, moist air masses and at fronts. There are four ways in which thunderstorms can organize: single cell, multi-cell cluster, multi-cell lines (squall lines), and supercells. Warm, humid conditions are favorable for the development of thunderstorms. Thunderstorms are responsible for the development and formation of many severe weather phenomena, posing great hazards to the population and landscape. Stronger thunderstorms are capable of producing tornadoes and waterspouts.

Thunderstorm Wind: (High Risk), The entirety of Chatham County shares equal risk to the threat of severe weather. Between 1960 and 2019 a total of 502 separate incidents of thunderstorm wind were recorded resulting in eight injuries and one fatality. Recorded gusts averaged roughly 51 mph with the highest gusts recorded at nearly 127 mph on September 8, 1980.

Based on historical occurrences for the 60-year period from 1960 through 2019, Chatham County averages 8.37 wind events per year, which equates to a 100% chance that the County will experience thunderstorm winds in any given year.

Lightning: (Moderate Risk), Over the 24-year period from 1996 through 2019, 31 lightning events were reported as having caused death, injury, or property damage, which equates to an average of 1.29 damaging lightning strikes per year, which equates to a 100% chance that the County will experience damages from lightning in any given year.

Hail: (High Risk), The average hailstone size recorded between 1960 and 2019 in Chatham County was a little over 1.1" in diameter; the largest hailstone recorded was 3.5" recorded on April 4, 1993, in Savannah. Hailstorms frequently accompany thunderstorms. Over the 63-year period from 1957 through 2019, Chatham County experienced 166 reported hail incidents; this averages to 2.63 events per year with reported incidents somewhere in the planning area, or a 100% chance that the County will experience a hail incident in any given year.

Based on these historical occurrences, there is a 100% chance that the County will experience severe weather each year. The probability of damaging impacts is highly likely.

Severe Winter Weather: (High Risk), A winter storm can range from moderate snow over a period of a few hours to blizzard conditions with blinding wind-driven snow that lasts for several days. Some winter storms might be large enough to affect several states, while others might affect only localized areas. Occasionally, heavy snow might also cause significant property damage, such as roof collapses on older buildings. Winter storms are often accompanied by sleet, freezing rain, or an ice storm. Such freeze events are particularly hazardous as they create treacherous surfaces. All of the winter storm elements – snow, low temperatures, sleet, freezing rain, etc. – have the potential to cause significant hazard to a community. Even small accumulations can down power lines and tree limbs, create hazardous driving conditions and disrupt communication and power for days.

Chatham County is accustomed to smaller scale severe winter weather conditions and often receives winter weather during the winter months. The risk of severe winter weather occurring is uniform across Chatham County. The greatest snowfall amounts to impact Chatham County have been between 4-6 inches. Chatham County received one Major Disaster Declaration for a freeze event in 1977 and an additional Emergency Declaration for severe snowfall in 1993.

There are five recorded severe winter weather related events during the 24-year period from 1996 through 2019, which equates to a 21 percent probability in any given year.

Flood: (High Risk), Flooding is defined by the rising and overflowing of water onto normally dry land. As defined by FEMA, a flood is a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties. Flooding is the most frequent and costly of all-natural hazards in the United States. Approximately 90 percent of presidentially declared disasters result from flood-related natural hazard events.

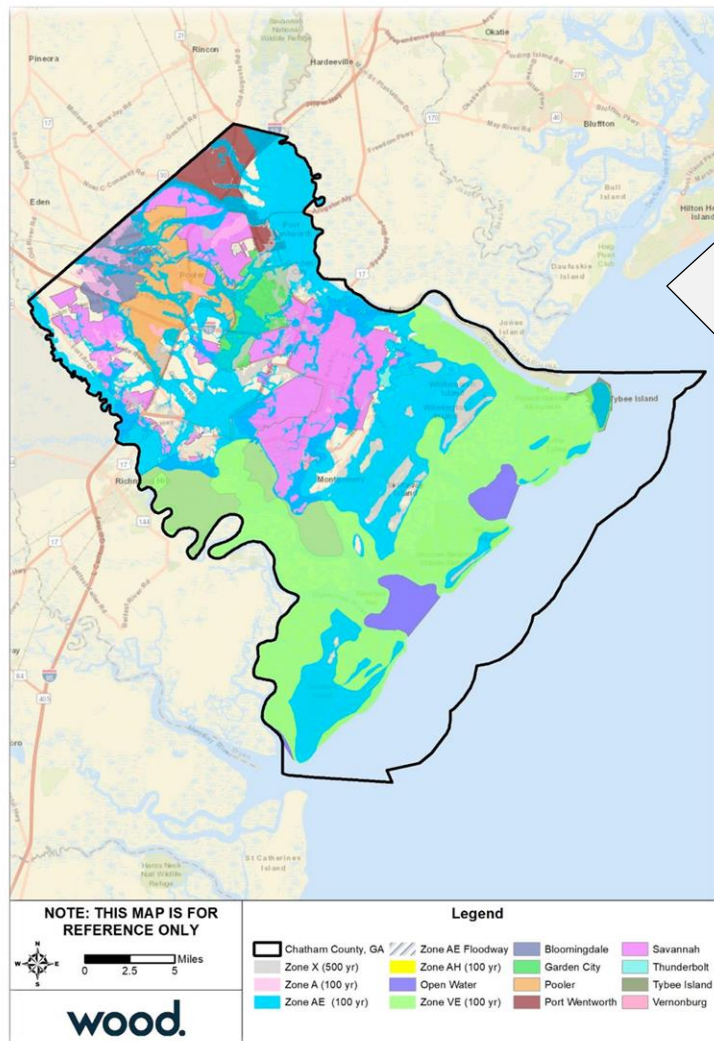
Flooding in Chatham County can be attributed to four main sources as described next. Due to its low-lying coastal setting, flooding can occur anywhere in the County.

- ❑ **Coastal Tidal Flooding:** All lands bordering the coast along the Atlantic Ocean and in low-lying coastal plains are susceptible to tidal effects and flooding. Coastal floods usually occur because of abnormally high tides or tidal waves, storm surge and heavy rains in combination with high tides, tropical storms, and hurricanes.
- ❑ **Riverine Flooding:** Chatham County has numerous rivers and canals running throughout its jurisdiction that are susceptible to overflowing their banks during and following excessive precipitation events.
- ❑ **Flash or Rapid Flooding:** A flash flood occurs when water levels rise at an extremely fast rate as a result of intense rainfall over a brief period, possibly from slow-moving intense

thunderstorms and sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces.

- ▣ **Localized/Stormwater Flooding:** Localized stormwater flooding can occur throughout Chatham County. Localized stormwater flooding occurs when heavy rainfall and an accumulation of runoff overburden the stormwater drainage system.

Figure 15: FEMA Flood Hazard Areas in Chatham County⁴⁷



Zones A, AE, AH and VE are high risk flood zones and represent Special Flood Hazard Areas (SFHA).

SFHAs represent the areas subject to inundation by the 100-year flood event. Structures located within the SFHA have a 26 percent chance of flooding during the life of a standard 30-year mortgage.

According to National Centers for Environmental Information (NCEI), 63 recorded flood events affected the planning area from 1996 to 2019, equating to an average of 2.6 events annually. Therefore, the probability of flooding is considered highly likely for the planning area.

Hurricane: (High Risk), Hurricanes and tropical storms are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counterclockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. A tropical cyclone refers to any such circulation that develops over tropical waters. The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation, and tornadoes. The greatest potential for loss of life related to a hurricane is from the storm surge. Storm surge is water that is pushed

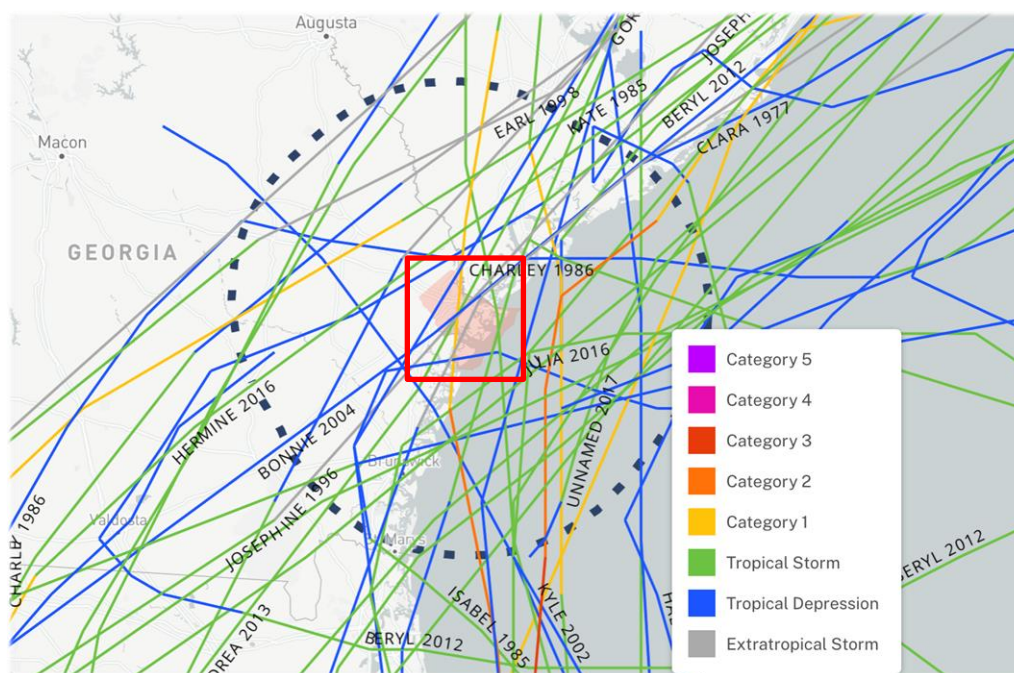
47. Ibid., 99.

toward the shore by the force of the winds swirling around the storm. This advancing surge combines with the normal tides to create the hurricane storm tide, which can increase the mean water level to heights impacting roads, homes, and other critical infrastructure. Damage during hurricanes may also result from inland flooding from associated heavy rainfall.

All of Chatham County is susceptible to the full force of every category of hurricane, (categories 1- 5 on the Saffir-Simpson Scale). NOAA has records of 145 storm tracks passing within 75 miles of Chatham County between 1850 and 2020. Hurricane Irma likely had the greatest impact on Chatham County in September of 2017. Although this hurricane made landfall in Marco Island, FL and moved northwest across the Big Bend region of FL the entire southeast Georgia coast was impacted by storm surge in the range of 3 to 6 feet. The County experience wind gusts up to 70 mph and rainfall totals ranging from 3 to 9 inches. Total damage from Irma amounted to \$20,000,000 in Chatham County.

In the 21-year period from 1999 through 2019, 16 hurricanes and tropical storms have impacted Chatham County, which equates to a 76 percent annual probability of hurricane or tropical storm force winds impacting the planning area in any given year.

Figure 16: Hurricane Tracks Chatham County, GA 1973 – 2023⁴⁸

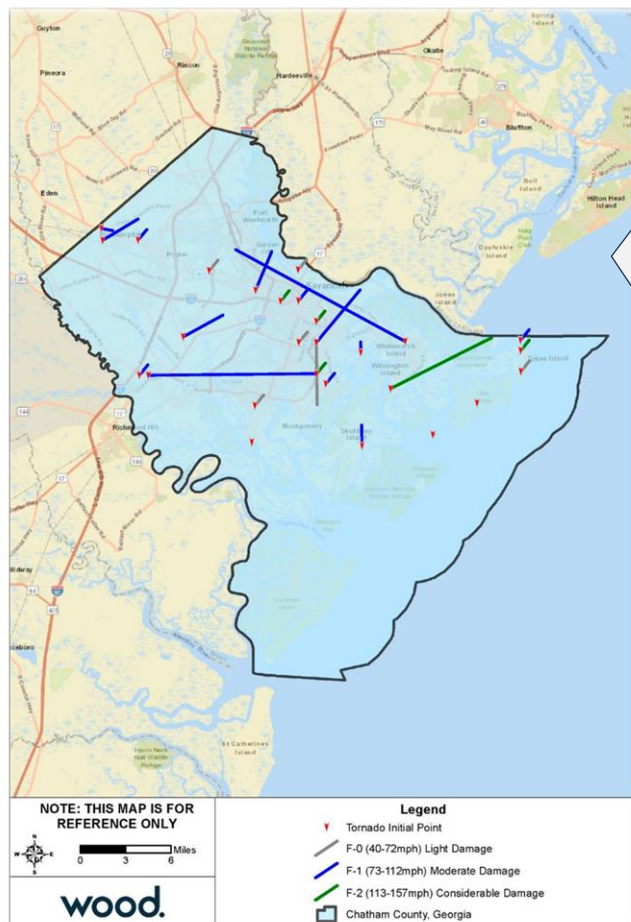


Tornado: (High Risk), According to the Glossary of Meteorology (AMS 2000), a tornado is "a violently rotating column of air, pendant from a cumuliform cloud, and often (but not always) visible as a funnel cloud." Tornadoes can appear from any direction. Most move from southwest to northeast, or west to east. Tornadoes have the potential to produce winds in excess of 200 mph (EF5 on the Enhanced Fujita Scale) and can be very expansive.

48. NOAA Historical Hurricane Tracks, <https://coast.noaa.gov/hurricanes>, (accessed June 1, 2024).

Tornado locations are completely random, meaning the risk of tornadoes is not increased in one area of the county versus another. All of Chatham County is uniformly exposed to this hazard.

Figure 17: Tornado Paths Through Chatham County, 1955-2019⁴⁹



In a 65-year span from 1955 through 2019, Chatham County experienced 32 separate tornado incidents. This correlates to a 49 percent annual probability that the planning area will experience a tornado somewhere in its boundaries. Only five of these past tornado events were a magnitude F2/EF2 or greater; therefore, the annual probability of a significant tornado event is approximately 8 percent.

The most intense tornado to pass through Chatham County in the past 20 years was an EF2 in Wilmington Island on May 23, 2017. While the National Center for Environmental Information (NCEI) reports no property damage occurred, narratives of the event approximate damage to 30 homes ranging from moderate to major. The tornado was 7.49 miles long and 300 yards wide.

Wildfire: (High Risk), A wildfire is an uncontained fire that spreads through the environment. Wildfires have the ability to consume large areas, including infrastructure, property, and resources. When massive fires, or conflagrations, develop near populated areas, evacuations possibly ensue. Not only do the flames impact the environment, but the massive volumes of smoke spread by certain atmospheric conditions also impact the health of nearby populations.

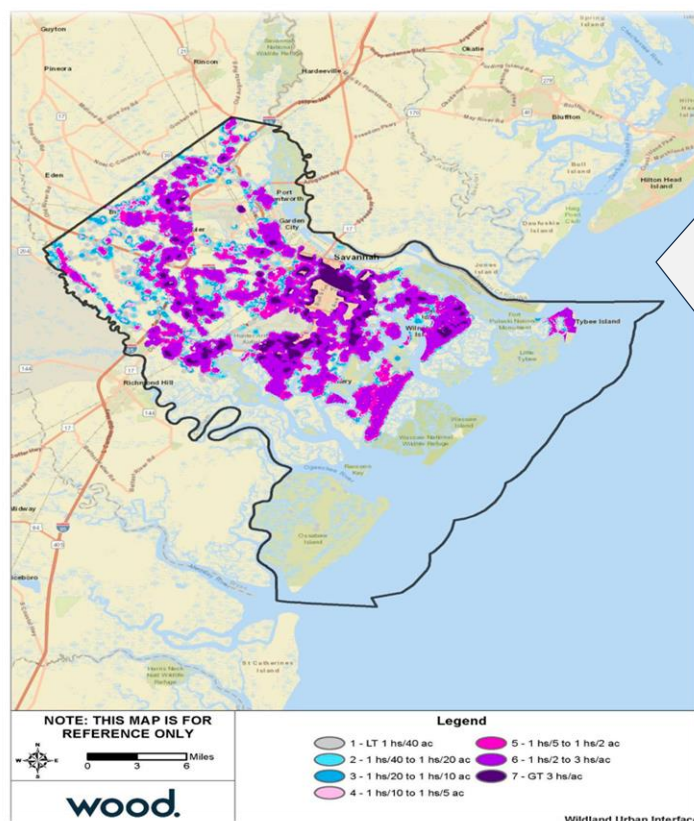
Weather conditions favorable to wildfire include drought, which increases flammability of surface fuels, and winds, which aid a wildfire's progress. The combination of wind, temperature, and humidity affects how fast wildland fires can spread.

The location of wildfire risk can be defined by the acreage of Wildland Urban Interface (WUI). The WUI is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels, and thus demarcates the spatial extent of wildfire risk. The expansion of residential development from urban centers out into rural landscapes increases the potential or wildland fire threat to public safety and the potential for

49. Chatham County Multi-Jurisdictional Pre-Disaster Hazard Mitigation Plan. 187.

damage to forest resources and dependent industries. Population growth within the WUI substantially increases the risk of wildfire.

Figure 18: Wildland Urban Interface, Chatham County⁵⁰



The WUI is essentially all the land in the County that is not heavily urbanized. The Southern Wildfire Risk Assessment (SWRA) estimates that 88.5 percent of the Chatham County population lives within the WUI.

For the period 1999 – 2018, on average, Chatham County experiences 28.2 fires and 176.6 acres burned annually from fires reported by the Georgia Forestry Commission.

Over 50 percent of Chatham County has a likely burn probability. The areas of higher burn probability are located on the coast and on the southwestern border of the County. On average, the probability of wildfire across the County is considered likely.

Sea Level Rise: (High Risk), Sea level rise is the increase in sea levels as a result of atmospheric and oceanic warming which causes water expansion as well as ice melting from ice sheets and glaciers. Sea level rise is a result of global climate change. Climate change may be due to natural internal processes or external forces such as modulations of solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use. Climate change is a natural occurrence in which the earth has warmed and cooled periodically over geologic time. Coastal Chatham County is particularly vulnerable to the effects of sea level rise due to its coastal location, subtropical environment, and low topography.

Sea Level Rise can occur anywhere along the coast and along major waterways in Chatham County. As sea level continues to rise, tidal flooding will continue to occur more frequently and over a greater inland area. Based on U.S. Army Corps of Engineers more conservative guidance and data Chatham County should plan for 0.87 feet of sea level rise from 1992 and 2050. Due to sea-level rise projected throughout the 21st century and beyond, coastal systems and low-lying areas will increasingly experience adverse impacts such as submergence, coastal flooding, and coastal erosion. The probability is likely for continued sea level rise.

50. Ibid., 196.

Terror Threat: (Moderate Risk), In a broad sense, terrorism is the use of violence and threats to intimidate or coerce, especially against civilians, in the pursuit of political aims. Terrorism is defined in the United States by the Code of Federal Regulations as "the unlawful use of force or violence against persons or property to intimidate or coerce a government, civilian population, or any segment thereof, in furtherance of political or social objectives." Terrorism can come in various forms including enemy attack, biological terrorism, chemical terrorism, conventional terrorism, cyber-attack, radiological terrorism, and public disorder. These actions may cause massive destruction and/or extensive casualties.

There have been no major terror events in the County. There is still, however, some possibility that one could occur in the future given the incidents that have occurred in the United States in the past and the facilities and locations in the county that could be potential targets.

While difficult to estimate when a deliberate act like terrorism may occur, it can be inferred that the probability of a terrorist attack in any one area in the County is very low at any given time. When identified, credible threats may increase the probability of an incident; these threats are generally tracked by law enforcement.

Hazardous Materials Incident: (High Risk), A hazardous substance is any substance that may cause harm to persons, property, or the environment when released to soil, water, or air. Chemicals are manufactured and used in increasing types and quantities. Hazardous substances are categorized as toxic, corrosive, flammable, irritant, or explosive. Hazardous material incidents generally affect a localized area.

A fixed hazardous materials incident is the release of chemical substances or mixtures during production or handling at a fixed facility. Hazardous materials releases can be accidental or intentional, as with a terror attack. Fixed facilities with hazardous materials can include industrial, commercial, and federal facilities.

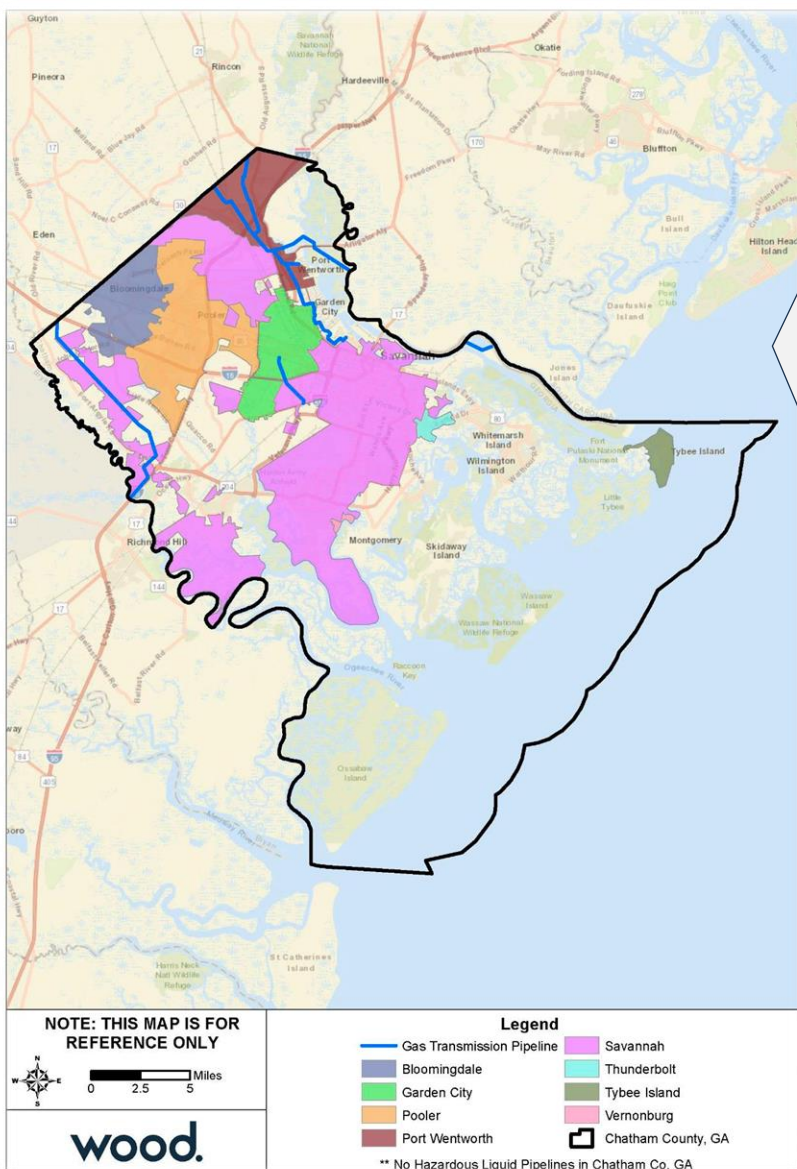
A transportation hazardous materials incident is the accidental release of chemical substances or mixtures during transport. Highway accidents involving hazardous materials pose a great potential for public exposure. Both nearby populations and motorists can be impacted and become exposed to accidents and releases.

A pipeline transportation incident occurs when a break in a pipeline creates the potential for an explosion or leak of a dangerous substance (oil, gas, etc.) possibly requiring evacuation. An underground pipeline incident can be caused by environmental disruption, accidental damage, or sabotage. Incidents can range from a small, slow leak to a large rupture where an explosion is possible.

The Toxic Release Inventory (TRI) Program run by the EPA maintains a database of industrial facilities across the country and the type and quantity of toxic chemicals they release. The TRI Inventory reports 24 sites reporting hazardous materials in Chatham County. Of the 24 sites, 14 are in Unincorporated Chatham County, six are in Savannah, three are in Pooler and one is in Garden City.

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Figure 19: Pipelines and Pipeline Infrastructure in Chatham County⁵¹



The USDOT's Pipeline and Hazardous Materials Safety Administration, (PHMSA) maintains a database of reported hazardous materials incidents, by location and hazardous material class.

According to PHMSA records, there were 379 recorded releases in Chatham County from 1999 through 2018. Nineteen events were considered serious incidents, of which 15 were serious bulk releases; 6 events were flagged for serious evacuation, 2 caused minor injuries, and 5 resulted in the closure of major transportation arteries. The most common materials spilled in the planning area are Class 3 (Flammable and Combustible Liquids) and Class 8 (Corrosives).

Based on historical occurrences as an indication of future probability, there is a 95 percent annual probability of a serious incident

Transportation Risk

The Coastal Region Metropolitan Planning Organization (CORE MPO) is a policy-making planning body serving the Savannah MSA (Chatham, Bryan, and Effingham Counties), and local, state, and federal agencies. CORE MPO region serves as a gateway for global trade and or freight movement in the Southeast, due in large part to the Port of Savannah—the **Nation's fourth-largest container port**.

The Port of Savannah is comprised of two terminals: Garden City and Ocean. The Garden City Terminal handles container traffic and has on-terminal rail intermodal access. The Ocean Terminal manages breakbulk, roll-on/roll-off, and container traffic. In addition to the Port of

51. Ibid., 208.

Savannah, the region contains a comprehensive multimodal network of freight railroads and rail yards, major highways, cargo-serving airports, as well as a substantial warehousing, distribution, and logistics industry to manage freight movements over that network.

In addition, the region is an emerging manufacturing hub for businesses looking to create and ship a diverse portfolio of finished products to clients around the globe. Overall, goods movement in the Savannah region has a major impact on the regional and State economy.⁵²

The region is also home to a number of other regional employment centers, including medical, military, and educational institutions, port-related industries, and manufacturing centers.

Multimodal Freight Network



In the CORE MPO region, freight moves through a transportation system that encompasses all modes. The region is served by a deepwater port, two Class I railroads, three rail terminals (including the Mason Mega Rail Terminal), and one commercial service airport that also provides cargo services. The region's roadway network connects all these assets to provide truck access from the intermodal terminals (seaports, rail yards, and airports) to origins or destinations of goods.

The multimodal freight network consists of the elements of the transportation system that moves goods using various freight modes throughout the region: highway, railroad, marine, and aviation.

Freight Intensive Land Uses

The numerous warehouses and distribution centers within Chatham County are an important consideration when discussing intermodal transportation. 63% of trucks had trip origins within Chatham County with the vast majority of those trip origins occurring within a few miles' radius of the Port of Savannah. This demonstrates that the vast majority of truck trips from the Port of Savannah are shorter distance truck trips to/from the warehouse areas nearby to the Port.

Highways

The roadway network provides a critical connection between users and producers of goods throughout the State, the Nation, and the world. The CORE MPO region's highways are a vital part of the multimodal freight network as they carry the majority of freight traffic and serve as a connection to the Port of Savannah and the region's rail terminals.

Roadways in the region serve multiple purposes and accommodate diverse types of travel. Roadways range from local streets that are designed for direct access to homes and businesses to interstate highways that are primarily for mobility and long-distance travel. The Savannah Metropolitan Statistical Area (MSA) is comprised of Bryan, Chatham and Effingham Counties and has a total of more than 2,490 miles of roadways. These roadways are categorized by their use and the amount of traffic that is carried. These categories, as defined by the Federal Highway Administration (FHWA), are described next:

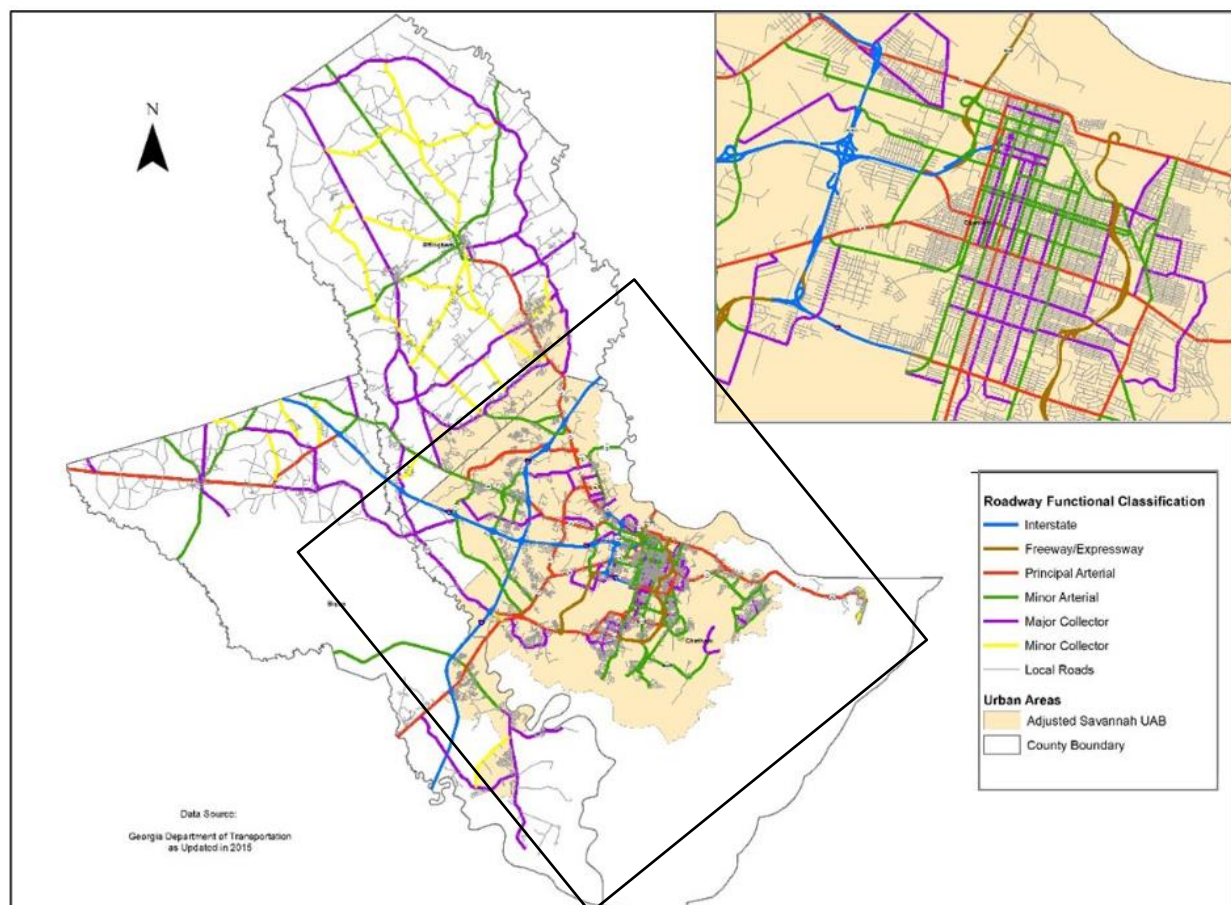
52. Regional Transportation Plan Update, October 2023.

Interstate/Freeway: Roads that are fully access controlled and are designed to carry a large amount of traffic at a high rate of speed; examples include roadways such as I-16, I-95 and Harry Truman Parkway.

- Arterials (Principal and Minor): Roads that are designed to carry substantial amounts of traffic at a relatively high speed, often over longer distances. Often some degree of access management is incorporated; examples of arterials include Islands Expressway, SR 204, and US 80.
- Collectors (Major and Minor): Roads that are designed to carry less traffic at lower levels of speed for shorter distances. These roadways typically “collect” traffic from the local roadways and provide access to arterials. Examples of collectors include Habersham Street, LaRoche Avenue, and Old Louisville Road.
- Local Roadways: Local roadways are those not otherwise classified and tend to serve short, local trips or connect with the collectors to access the broader roadway network.

The following map depicts the functional classification of the roadway network in the Savannah MSA.

Figure 20: Federally Functional Classified Roadways⁵³



53. Mobility Plan 2045 Metropolitan Transportation Plan, August 2019.

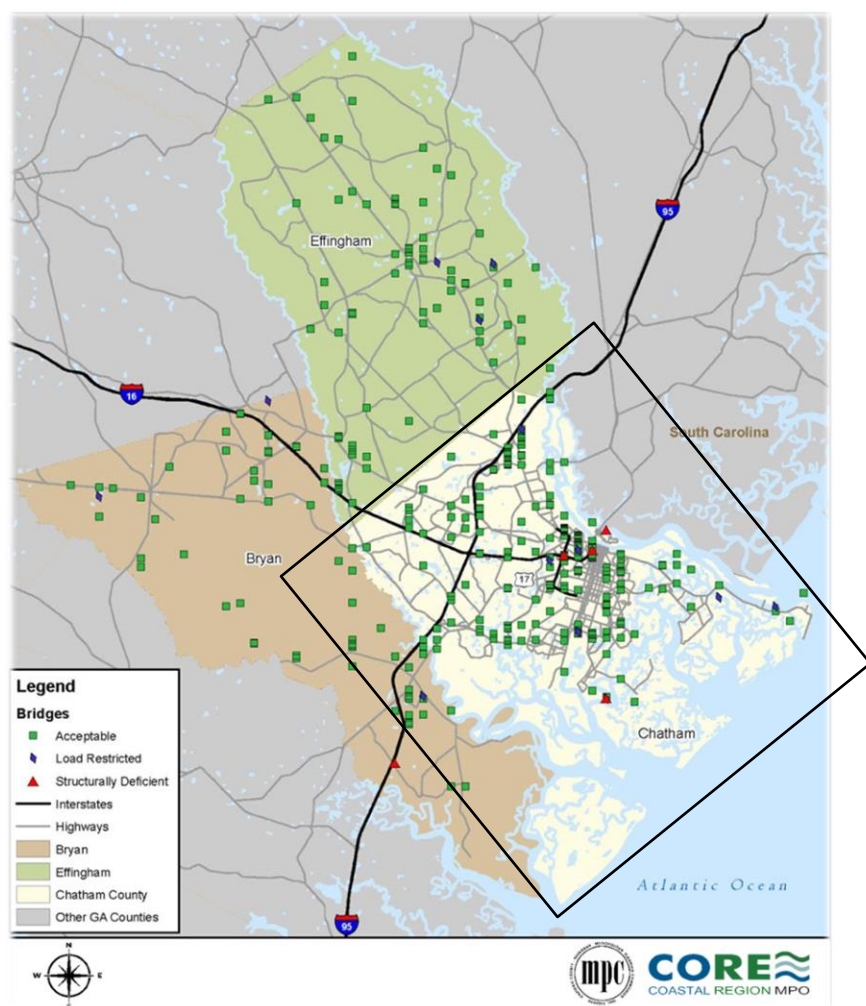
Bridges

Due to the geography of the Savannah region, it is important to have a good understanding of the bridge conditions. This consideration will be necessary for safety, congestion, and freight movements performance measures. The map below shows an inventory of the bridges in the area.

A bridge with fatigue damage may restrict what vehicle types and weights may cross it safely. A bridge is “load posted” when its capacity to carry heavy loads is diminished. The status of these bridges is described as structurally deficient (SD) or functionally obsolete (FO). A bridge with a “posted for load” posting has a weight limit capacity. All SD bridges are posted, but not all posted structures are SD.

As seen in the following map, the vast majority of bridges are in acceptable condition with fewer than 10 deemed as structurally deficient (SD). Bridge conditions are important to the CCFD personnel due to the size and weight of large fire apparatus, as this can affect response routes to various locations that encounter bridges.

Figure 21: Bridge Locations and Conditions⁵⁴

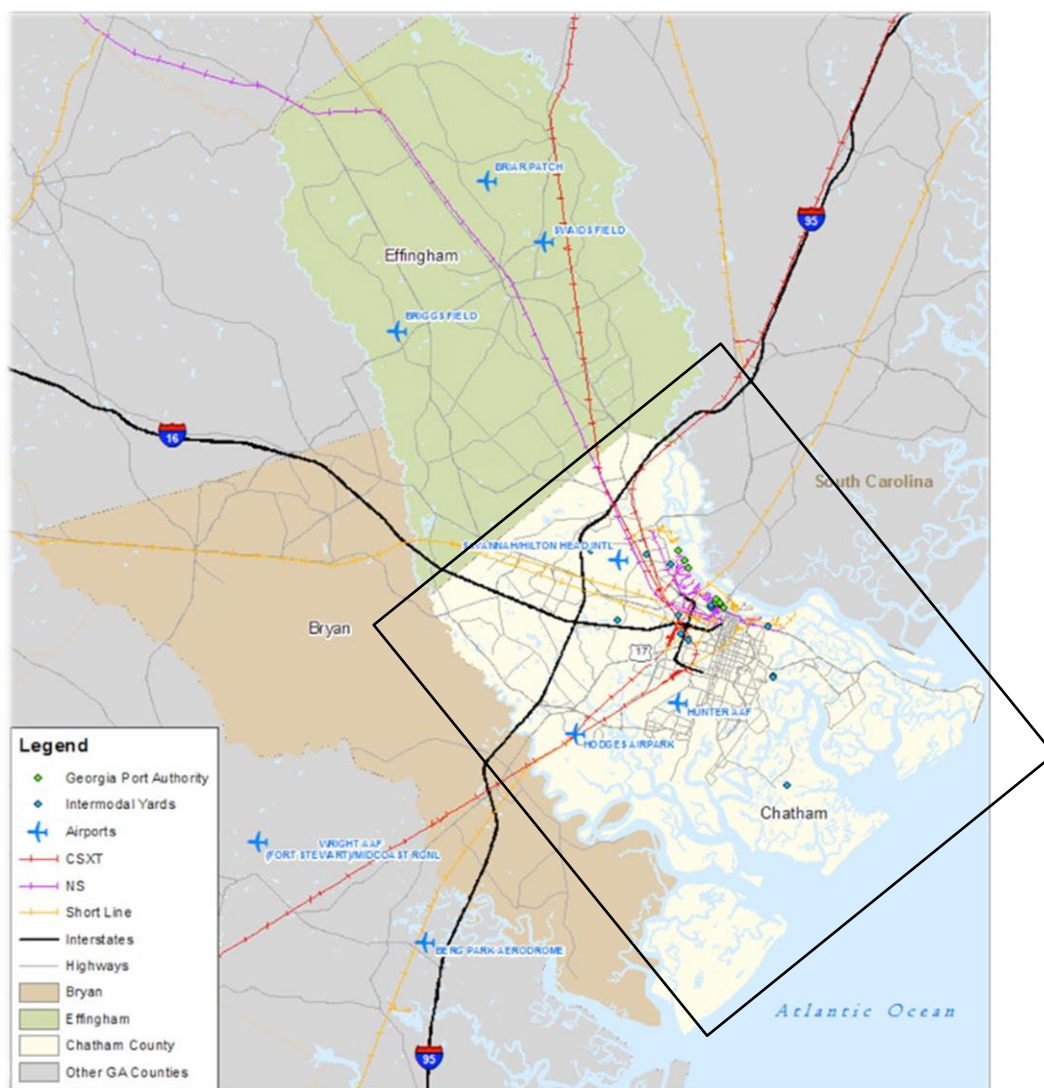


54. Mobility Plan 2045 Metropolitan Transportation Plan, August 2019.

Freight Rail Service

Although the roadway network is the primary backbone of the freight movement, the region is also served by about 170 miles of rail freight facilities, of which CSX Transportation and Norfolk Southern provide the major intermodal services. The major commodities transported by these rail systems are pulp and paper, furniture or fixtures, tobacco products, rubber and plastics, leather, clay, concrete, glass or stone products, fabricated metal products, non-electrical and electrical machinery, scrap metals, and intermodal containers with an array of contents.

Figure 22: Freight Rail Track System



The CORE MPO region represents a key node in the statewide freight rail system, a status that is only growing as the Port of Savannah continues to experience record freight volumes year after year. Ongoing rail capacity expansion projects at the Port of Savannah should further cement the region's status as a critical freight hub for Georgia and the southeastern United States, and freight rail service will continue to play a significant role in this dynamic in the years ahead.

Class I Railroads in the CORE MPO Region

- CSX Transportation (CSX)
- Norfolk Southern (NS)

Class III Railroads in the CORE MPO Region

- Georgia Central Railway (GC)
- PVTX (private railroad serving Georgia Power and Georgia Pacific facilities)
- Savannah Port Terminal Railroad (SAPT)
- Savannah & Old Fort Railroad (SVHO)
- Riceboro Southern Railway (RSOR)
- Ogeechee Railroad Company (ORC)
- Allegheny & Western Railway Company (AWRY)

There is approximately 278.9 miles of rail in the CORE MPO region. Freight railroads are categorized as Class I, Class II, or Class III based on their annual revenues.

Class I railroads are the largest, and generally carry freight longer distances across states and internationally into Canada and Mexico.

Class II railroads tend to operate regionally while **Class III railroads** are typically short-line operations that provide direct, last-mile connections to key destinations in the freight network, including ports and industrial facilities.

Figure 23: Mason Mega Terminal



Freight rail terminals are facilities where the transfer of freight between rail and other transportation modes, including but not limited to the movement of containers and trailers, bulk transloads, and automobile distribution. These facilities are critical components of the region's multimodal freight network.

The Mason Mega Rail Terminal is one of the region's rail intermodal terminals and is adjacent to the Port of Savannah's Garden City Terminal, allowing for the transfer of shipping containers between rail and ships.

The CSX Southern Railyard lies in unincorporated Chatham County adjacent to Hunter Army Airfield. The Norfolk Southern Dillard Yard is in Garden City south of Savannah/ Hilton Head International Airport.

Figure 24: CSX Southern Railyard



Figure 25: Norfolk Southern Dillard Yard



Railroad Crossings⁵⁵

The presence of at-grade railroad crossings on roadways presents potential safety and/or operational concerns to motor vehicles utilizing such roadways. Grade separation refers to a crossing in which the roadway and rail are at different elevations. There are a total of 317 at-grade crossings in the Savannah area. According to the Federal Railroad Association (FRA) and National Transportation Atlas Database (NTAD) there are 199 at-grade crossings in Chatham County. These crossings occur for both Class I and Class III railroads. In October of 2023 Chatham County was set to receive federal grant money towards eliminating 11 at-grade railroad crossings in the county in an effort to address safety issues and enhance traffic flow.

55. Ibid., 56.

Air Transportation⁵⁶

Air cargo has a significant role in the multimodal freight network as it provides the fastest service for long-distance shipments of goods. The high service quality provided by air cargo results in higher shipping costs for this mode. As a result, air cargo tends to be limited to high-value and low-weight goods such as medical supplies, flowers, and electronics.

There are seven airports in the three-county region. However, Savannah-Hilton Head International Airport (SAV) is the only public airport and the only one that manages cargo in the region. Dedicated cargo carriers at SAV include Air Cargo Carriers, Federal Express (FedEx), Martinaire Aviation, Sky Way Enterprises, and Suburban Air Freight. In total, there is about 138,000 square feet of air cargo warehouse space at SAV. This includes an approximately 80,000-square foot general cargo building open to all carriers as well as an approximately 58,000-square foot air cargo facility dedicated to a single tenant. Both facilities are along Bob Harmon Road which is accessed by SR 307/Dean Forest Road. As air cargo is typically interchanged with highway freight, SAV impacts these and surrounding roadways by generating truck traffic to and from its air cargo facilities.

Local Transportation

Intercity Passenger⁵⁷

There are two primary passenger intercity transportation services offered to and from Savannah: Amtrak Rail service and Greyhound Bus service.

Passenger Rail

Amtrak Silver Service provides intercity passenger rail service to and from Savannah at its train station in Savannah. The trains provide direct service between Miami and New York as well as daily connections to the national Amtrak network and connecting bus service to other destinations in the region.

Bus Transit

Greyhound Bus Lines offer intercity bus service between Savannah and other cities within the United States. The terminal is in Savannah located at the Joe Murray Rivers Jr. Intermodal Transit. This station also serves as a transit center for the public CAT system.

Chatham Area Transit Authority

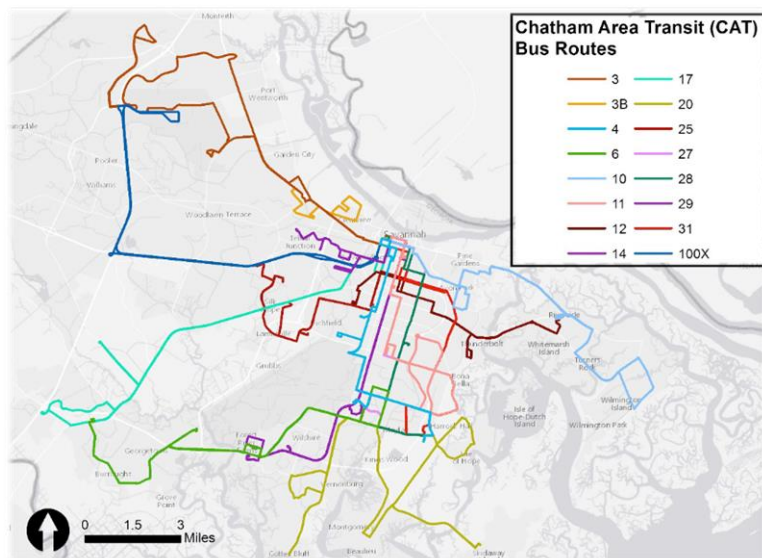
Chatham Area Transit (CAT) is the agency responsible for the provision of public transit services to the Savannah area, including fixed routes and paratransit. The CAT service area includes unincorporated Chatham County, the city of Savannah and portions of Garden City.

CAT operates 60 accessible buses on 16 routes. CAT's paratransit service, CAT Mobility, is specifically designed to transport eligible people with disabilities in Chatham County. This includes people who are unable, due to a permanent or temporary physical or mental disability, to use the fixed-route public transportation system.

56. Regional Freight Transportation Plan Update, Executive Summary, October 31, 2023, 20.

57. Comprehensive Plan 2040, Chatham County – Savannah, 2020 Update, 224.

Figure 26: Chatham Area Transit Bus Routes⁵⁸



The road and transportation network in Chatham County poses risks for a vehicular accident, some at medium to greater than medium speeds, as well as vehicular-versus-pedestrian risks. There are additional transportation risks due to the heavy presence of container truck and rail traffic and other commercial vehicles traveling on the roadways of Chatham County to deliver mixed commodities to business locations.

Fires or releases of products involving these commodities can produce vapors, smoke and other products of combustion that may be hazardous to health. Additionally, there is risk for a mass casualty incident involving commuter trains and mass-transit buses either on specific bus routes/roads in the County or utilizing the road network in the County for stops in jurisdictions external to the County.

Building and Target Hazard Risk

Building and target hazards are defined as significant hazards that can strain the fire department response capability, a plausible scenario in which a fire department could quickly become overwhelmed and for which additional resources would be needed to mitigate the incident.

The purpose of evaluating community risk is to evaluate the community as a whole, and regarding buildings, it will review all buildings and the risks associated with each property and then classifying the property as either a high-, medium-, or low-hazard depending on factors such as the life and building content hazard and the potential fire response force (equipment and staffing) required to mitigate an emergency in the specific property. According to the NFPA *Fire Protection Handbook*, these hazards are defined as:

- High-hazard occupancies: Schools, hospitals, nursing homes, explosives plants, refineries, high-rise buildings, and other high life-hazard (vulnerable population) or large fire-potential occupancies.

⁵⁸ Mobility 2045, Metropolitan Transportation Plan, page 61.

- Medium-hazard occupancies: Apartments (including townhomes, condominiums, residential over commercial), single-family housing units with basements, offices, and mercantile and industrial occupancies not normally requiring extensive rescue by firefighting forces.
- Low-hazard occupancies: One-, two-, or three-family dwellings and scattered small business and industrial occupancies.⁵⁹

Chatham County has the following building types: **Building counts within each category are CPISM's interpretation based on information provided through preplan inspection files and shape file documentation.**^{60 61}

- Single family housing units: 47,570, of which 2,940 are mobile homes, (detached/attached (predominate building risk and primarily wood frame construction).
- Multi-family housing units (townhomes, duplexes etc.): quantity not available, (varying number of vertical floors and primarily wood frame construction).
- Multi-family housing units (apartment building units - garden style): 1,066, (varying number of vertical floors and primarily wood frame construction).
- Assisted living/nursing homes: 9, (varying square footage, with a mix of construction materials).
- Commercial/industrial structures: Commercial: 4,945; Industrial: 4,071, (varying square footage with a mix of construction materials).
- Business/Mercantile: 728 (varying square footage with a mix of construction materials).
- Educational and day-care facilities, (6 elementary schools 2 middle schools, 2 high schools, 5 private schools, and 5 child care/day care facilities).
- Assembly: 118, (varying square footage with a mix of construction materials).
- Buildings greater than 35 feet: 1,054, (varying square footage with a mix of construction materials).
- High rises: 2 (vertical elevation of 75 feet or more).

In terms of identifying target hazards, consideration must be given to the activities that take place (public assembly, life safety vulnerability, manufacturing, processing, etc.), the number and types of occupants (elderly, youth, handicapped etc.), and other specific aspects related to the construction of the structure.

Chatham County has a variety of target hazards that meet an established hazard class:

- High Hazard
 - Commercial occupancies that include assisted living/nursing/development disability.
 - Assisted living/nursing homes.
 - Residential facilities for senior/assisted living.
 - Medical facilities that may be occupied 24/7/365.
 - Public and private educational and day care facilities.

59. Cote, Grant, Hall & Solomon, eds., *Fire Protection Handbook* (Quincy, MA: National Fire Protection Association, 2008), 12.

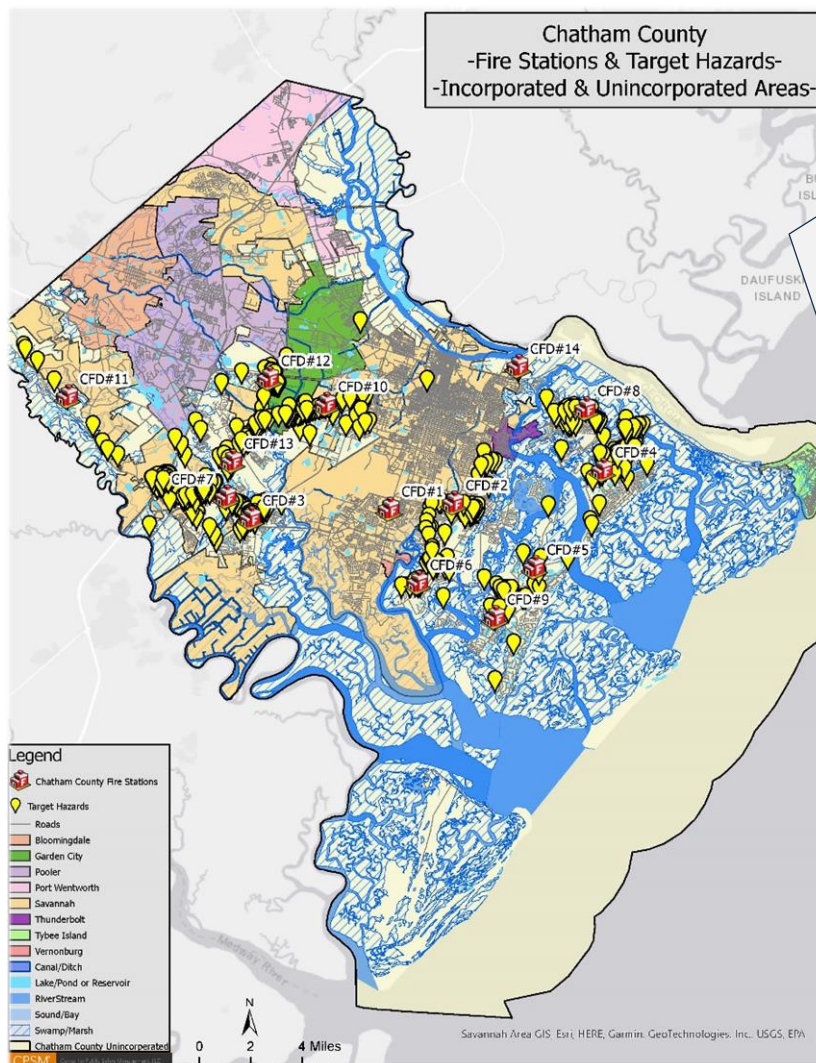
60. CCFD Pre-Fire Plan Data Base, 2022.

61. *ibid*

- Facilities classified as high hazards due to processes/hazardous materials use.
- Medium Hazard
 - Multi-family/multi-story dwelling buildings.
 - Large footprint commercial and industrial buildings/facilities.
 - Medical facilities.
 - Businesses/Occupancies classified as Public Assembly.
 - Shopping centers/retail suites/strip malls.
 - Single family residential over 3,000 square feet, particularly those built with light frame construction, with or without a basement.

The next figure illustrates target hazard locations in unincorporated Chatham County.

Figure 27: Target Hazards-Unincorporated Chatham County



Target Hazards include:

- Places of Public Assembly
- Educational Buildings
- Day Care Centers
- Infrastructure Buildings
- Business, Industrial, and Commercial Buildings with Hazards or Hazardous Processes
- Storage Buildings
- Multi-Unit Residential Buildings
- Mixed Use with Residential Buildings
- Medical and other Institutional Occupied Buildings with Vulnerable Population
- Assisted Living and Nursing Home Buildings with Vulnerable Populations

The greatest amount of building risk in Chatham County is of a low hazard (single family dwellings-predominately wood frame construction). The County does have a number of high and medium risk/vulnerable population risks (nursing/assisted living/ medical facilities), educational facilities/ institutional facilities and multifamily residential structures (apartments/ townhomes). All of these building risks present the Chatham Fire with life-safety concerns.

E-Commerce fulfillment centers have a growing presence in Chatham County. The industrial and mercantile building risk, and large footprint commercial buildings associated with e-commerce and large data centers, while a lower life safety risk, are generally a higher hazard risk based on processes, storage, and overall occupancy type. They also present a greater life safety risk to firefighters due to the large open spaces and long hose stretches necessary to reach a potential fire. There is a concern that fire protection systems are being installed that are not sufficient to control rack storage fires in these type buildings.

Fire and EMS Risk and Demand Analysis

An indication of the community's fire risk is the type and number of fire related, non-fire related, EMS, technical rescue, and hazard incidents the fire department responds to. The entire service area is subject to these types of calls for service.

Statistically, fires are more likely to occur in residential structures and are more likely due to human causes. Statistically, EMS calls for service involve one patient whose symptoms are such that the capabilities of the initial arriving unit(s) can manage the call. Mass casualty incidents may occur in Chatham County, and the impacts on the fire department may be overwhelming, possibly triggering the need for mutual aid.

Technical Rescue incidents in Chatham County will typically involve vehicle extrication. Depending on building type and height, these incident types may also involve elevator emergencies. Due to routine infrastructure work (traffic and utility) and potential growth, there is also the potential for trench and/or structural collapse, and rope rescue (moderate risk).

Hazardous Materials or hazard calls for service may include transportation accidents with leaks/spills/release of hazardous materials on roadways (moderate risk). Chatham County has a variety of fixed sites that store/use hazardous material as well.

The following table details the call types and call type totals for these types of fire-related risks between October 1, 2022, and September 30, 2023. During this time period Chatham Fire units responded to 4,257 calls. Of these, 1,724 calls were EMS related and 2,143 were fire related.

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Table 18: Fire and EMS Calls by Type

Call Type	Total Calls	Calls per Day
Breathing difficulty	53	0.1
Cardiac and stroke	150	0.4
Fall and injury	245	0.7
Illness and other	149	0.4
MVA	688	1.9
Overdose and psychiatric	49	0.1
Seizure and unconsciousness	390	1.1
EMS subtotal	1,724	4.7
False alarm	743	2.0
Good intent	120	0.3
Hazard	256	0.7
Outside fire	206	0.6
Public service	714	2.0
Structure fire	70	0.2
Technical rescue	34	0.1
Fire subtotal	2,143	5.9
Canceled	382	1.0
Aid given	8	0.0
Total	4,257	11.7

- There were 3,867 Fire and EMS calls in Chatham County during the one-year study period (excluding canceled and mutual aid calls).
- Overall, the CCFD responds to 12 calls per day.
- 45% of the Fire and EMS calls are EMS related.
- Motor vehicle accidents, make up 2% of Fire and EMS calls.
- Illness and Other EMS calls (typically lower acuity) make up 4% of EMS calls.
- Fire and Fire related calls make up 55% Fire and EMS calls.
- Structure and Outside Fires make up 7% of Fire related calls.
- False Alarms (typically fire alarm activations) make up 19% of Fire related calls.
- Non fire calls (typically good intent, hazard, and public service) make up 27% of Fire related calls.
- Technical Rescue calls make up 1% of Fire related calls.

Table 19: Calls and Runs in District

Station Area	Calls	Percent Calls	Runs	Runs Per Day	Percent Work
1	8	0.2	28	0.1	0.2
2	498	11.7	986	2.7	9.5
3	407	9.6	857	2.3	7.1
4	554	13.0	1,150	3.2	14.0
5	141	3.3	372	1.0	3.6
6	224	5.3	470	1.3	7.7
7	662	15.6	1,371	3.8	15.1
8	321	7.5	761	2.1	9.3
9	257	6.0	625	1.7	7.2
10	228	5.4	547	1.5	5.8
11	109	2.6	190	0.5	2.8
12	167	3.9	342	0.9	3.2
13	554	13.0	1,286	3.5	10.9
14	42	1.0	86	0.2	1.0
Other	85	2.0	159	0.4	2.4
Total	4,257	100.0	9,230	25.3	100.0

In terms of station workload:

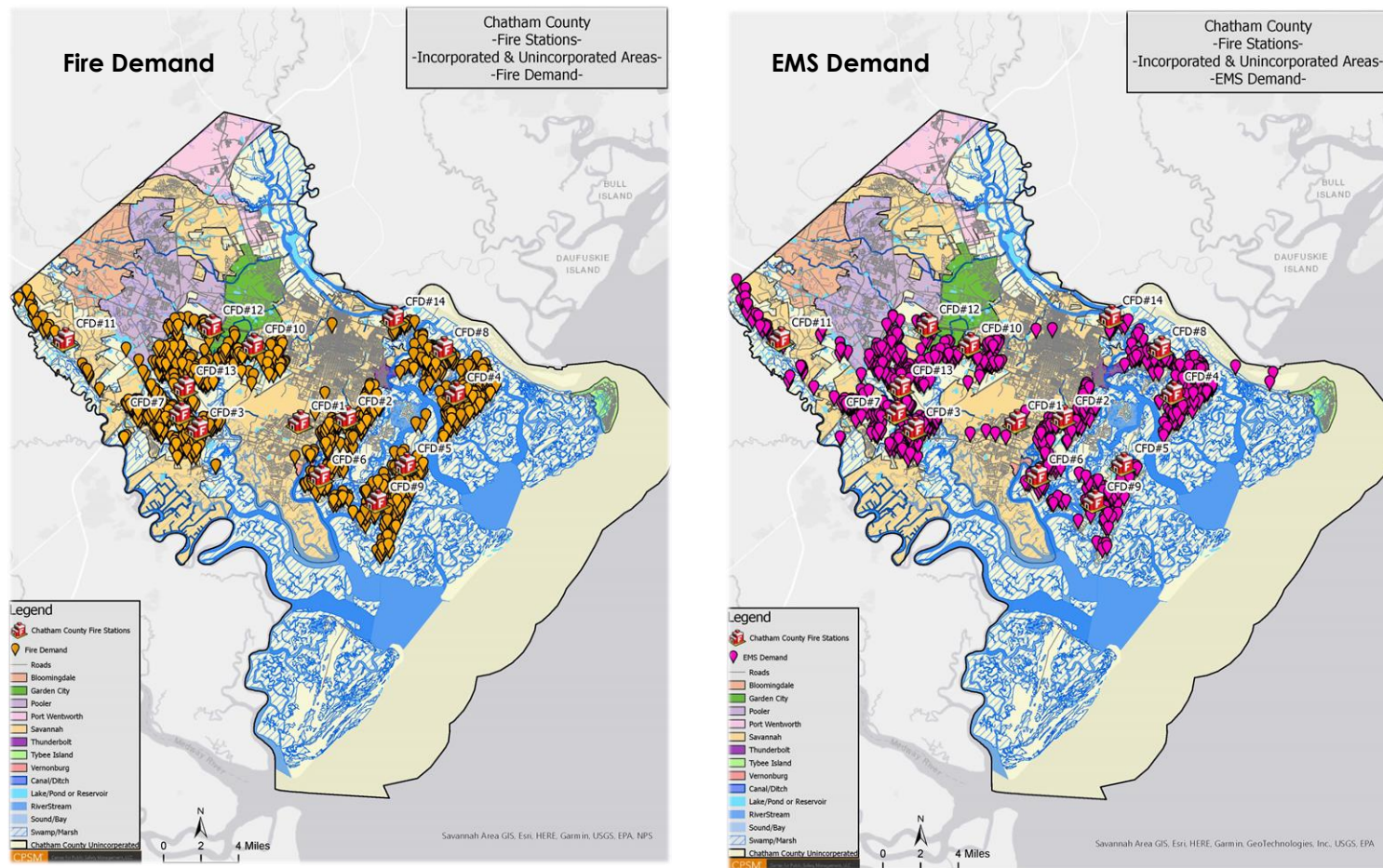
Station 7 has the heaviest workload and represents 15.1% of all work.

Stations 1 and 14 have the lowest workload of 0.2 % and 1.0 %, respectively.

Fire and EMS Demand Analysis

Analyzing where the fire and EMS incidents occur, and the demand density of these incidents, helps to determine adequate fire district resource assignment and deployment. It is also a prime indicator for sustaining EMS ground transport resources. As indicated in the demand maps below, stations 4, 7, and 13 have densified fire call demand coinciding with the values in the table above. For EMS calls, demand is spread somewhat equally across all stations. Stations 2, 3, 4, 7, and 13 appear to have the highest call demand. Stations 1, 11, 12 and 14 have lower EMS demand.

Figure 28: Fire and EMS Demand



Three-Axis Risk Analysis

A comprehensive risk assessment is a critical aspect of assessing and creating a deployment analysis to meet the community's risk and can assist the CCFD in quantifying the risks that it faces. Once those risks are known and understood, the department is better equipped to determine if the current response resources are sufficiently staffed, equipped, trained, and positioned.

Risk is often categorized in three ways: the probability the event will occur in the community, the impact on the fire department, and the consequence of the event on the community. The following three tables look at the probability of the event occurring, which ranges from unlikely to frequent; consequence to the community, which is categorized as ranging from insignificant to catastrophic; and the impact to the organization, which ranges from insignificant to catastrophic.

Table 20: Event Probability

Probability	Chance of Occurrence	Description	Risk Score
Unlikely	2%-25%	Events may occur only in exceptional circumstances.	2
Possible	26%-50%	Event could occur at some time and/or no recorded incidents. Little opportunity, reason, or means to occur.	4
Probable	51%-75%	Events should occur at some time and/or few, infrequent, random recorded incidents, or little anecdotal evidence. Some opportunity, reason, or means to occur; may occur.	6
Highly Probable	76%-90%	Events will probably occur and/or regular recorded incidents and strong anecdotal evidence. Considerable opportunity, means, reason to occur.	8
Frequent	90%-100%	An event is expected to occur. High level of recorded incidents and/or very strong anecdotal evidence.	10

Table 21: Impact on CCFD

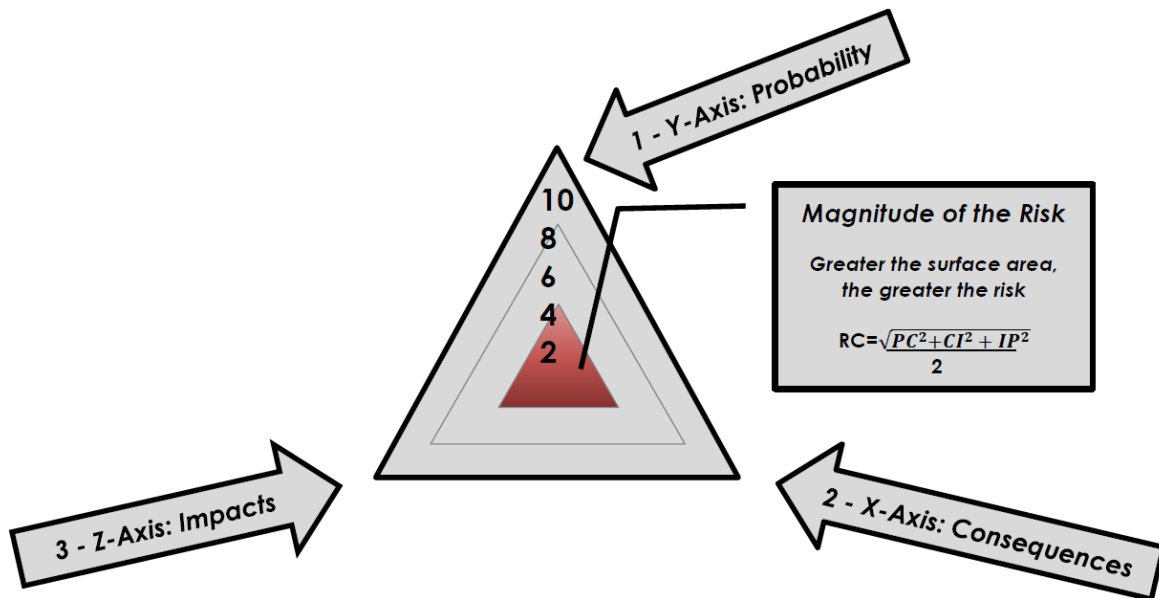
Impact	Impact Categories	Description	Risk Score
Insignificant	Personnel and Resources	One apparatus out of service for a period not to exceed one hour.	2
Minor	Personnel and Resources	More than one but not more than two apparatus out of service for a period not to exceed one hour.	4
Moderate	Personnel and Resources	More than 50 percent of available resources committed to incident for over 30 minutes.	6
Significant	Personnel and Resources	More than 75 percent of available resources committed to an incident over 30 minutes.	8
Catastrophic	Personnel, Resources, and Facilities	More than 90 percent of available resources committed to an incident for more than two hours or event which limits the ability of resources to respond.	10

Table 22: Consequence to Community Matrix

Impact	Consequence Categories	Description	Risk Score
Insignificant	Life Safety	<ul style="list-style-type: none"> 1 or 2 people were affected, minor injuries, minor property damage, and no environmental impact. 	2
Minor	Life Safety Economic and Infrastructure Environmental	<ul style="list-style-type: none"> A small number of people were affected, no fatalities, and a small number of minor injuries with first aid treatment. Minor displacement of people for <6 hours and minor personal support required. Minor localized disruption to community services or infrastructure for <6 hours. Minor impact on environment with no lasting effects. 	4
Moderate	Life Safety Economic and Infrastructure Environmental	<ul style="list-style-type: none"> Limited number of people affected (11 to 25), no fatalities, but some hospitalization and medical treatment required. Localized displacement of small numbers of people for 6 to 24 hours. Personal support satisfied through local arrangements. Localized damage is rectified by routine arrangements. Normal communities are functioning with some inconvenience. Some impact on environment with short-term effects or small impact on environment with long-term effects. 	6
Significant	Life Safety Economic and Infrastructure Environmental	<ul style="list-style-type: none"> Considerable number of people (>25) in affected area impacted with multiple fatalities, multiple serious or extensive injuries, and significant hospitalization. A large number of people were displaced for 6 to 24 hours or possibly beyond. External resources required for personal support. Considerable damage that requires external resources. Community only partially functions, some services unavailable. Significant impact on environment with medium- to long-term effects. 	8
Catastrophic	Life Safety Economic and Infrastructure Environmental	<ul style="list-style-type: none"> A large number of people in affected areas(s) impacted with significant numbers of fatalities, large number of people requiring hospitalization, serious injuries with long-term effects. General and widespread displacement for prolonged duration; extensive personal support required. Extensive damage to properties in affected areas requires major demolition. Serious damage to infrastructure. Significant disruption to, or loss of, key services for a prolonged period. Community unable to function without significant support. Significant long-term impact on environment and/or permanent damage. 	10

Prior risk analysis has only evaluated two factors of risk: probability and consequence. Contemporary risk analysis considers the impact of each risk to the organization, thus creating a three-axis approach to evaluating risk as depicted in the following figure. A contemporary risk analysis now includes probability, consequences to the community and impact on the organization, in this case the CCFD. In this analysis, information presented and reviewed in this section (Community Risk Profile) has been considered. Risk is categorized as Low, Moderate, High, or Special.

Figure 29: Three-Axis Risk Calculation (RC)



The following factors/hazards were identified and considered:

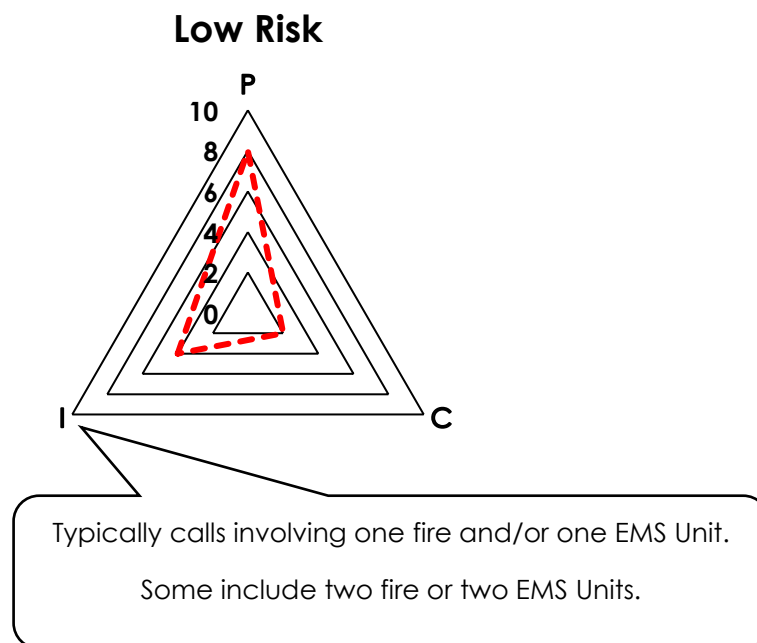
- **Demographic factors** such as age, socio-economic, vulnerability.
- **Natural hazards** such as flooding, snow and ice events, wind events, summer storms.
- **Manufactured hazards** such as transportation risks (road and rail) and target hazards.
- **Structural/building risks.**
- **Fire and EMS incident numbers and density.**
- **Resiliency.**

The assessment of each factor and hazard as listed below took into consideration the likelihood of the event, the impact on the city itself, and the impact on CCFD's ability to deliver emergency services, which includes CFD resiliency and mutual aid capabilities as well. The list is not all-inclusive but includes categories most common or that may present to the county and the CCFD.

Low Risk

- Automatic fire/false alarms.
- Low-acuity BLS EMS Incidents.
- Low-risk environmental event.
- Motor vehicle accident (MVA)-no entrapment, 1-2 patients, low hazards.
- Good intent/hazard/public service fire incidents with no life-safety exposure.
- Outside fires such as grass, rubbish, dumpster, vehicle with no structural/life-safety exposure.

Figure 30: Low Risk

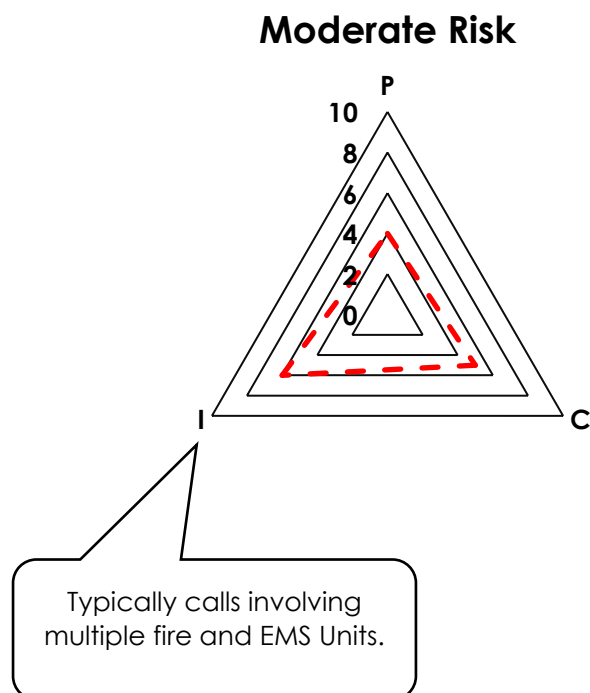


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Moderate Risk

- Fire incidents in a single-family dwelling where fire and smoke or smoke are visible, indicating a working fire.
- Suspicious substance investigation involving multiple fire companies and law enforcement agencies.
- ALS EMS incident.
- MVA with entrapment of passengers.
- Grass/brush fire with structural endangerment/exposure.
- Low-angle rescue involving ropes and rope rescue equipment and resources.
- Surface water rescue.
- Good intent/hazard/public service fire incidents with life-safety exposure.
- Rail or road transportation event with no release of product or fire, and no threat to life safety.

Figure 31: Moderate Risk

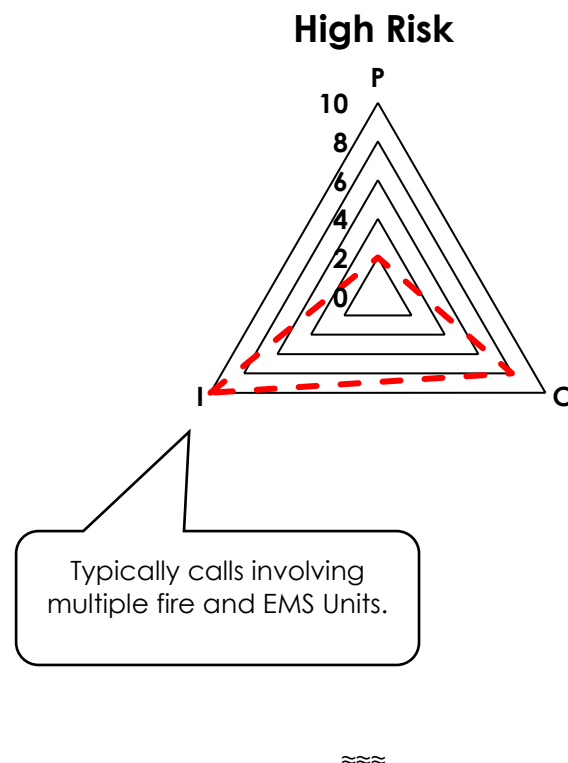


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High Risk

- Working fire in a target hazard.
- Cardiac arrest.
- Mass casualty incident of more than 10 patients but fewer than 25 patients.
- Confined space rescue.
- Structural collapse involving life-safety exposure.
- High-angle rescue involving ropes and rope rescue equipment.
- Trench rescue.
- Suspicious substance incident with multiple injuries.
- Wildland fire burning through extensive acreage and threatening/consuming structures and property.
- Industrial leaks of hazardous materials that cause exposure to people or threaten life safety.
- Weather events that create widespread flooding, heavy snow or ice, heavy winds, building damage, and/or life-safety exposure.

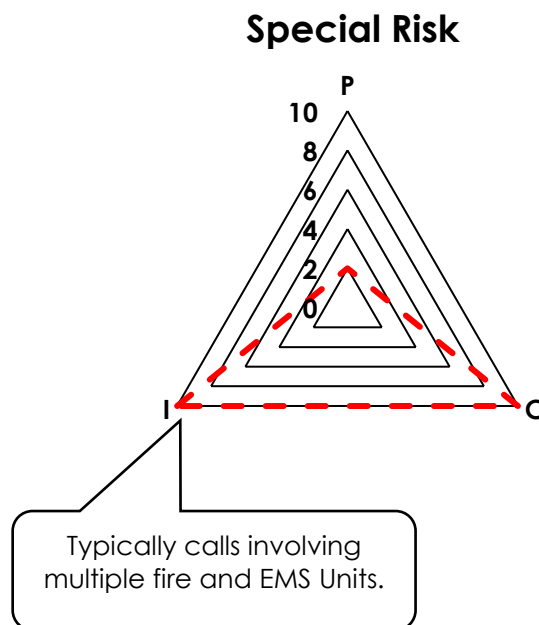
Figure 32: High Risk



Special Risk

- Working fire in a structure of more than three floors.
- Fire at an industrial building or complex with hazardous materials.
- Fire in an occupied targeted hazard with special life-safety risks such as age, medical condition, or other identified vulnerabilities.
- Mass casualty incident of more than 25 patients.
- Transportation incident that causes life-safety exposure or threatens life safety through the release of hazardous smoke or materials and evacuation of residential and business occupancies.
- Explosion in a building that causes exposure to people or threatens life safety or outside of a building that creates exposure to occupied buildings or threatens life safety.
- Massive estuary or coastal flooding, fire in an occupied public assembly or medical institution, high-impact environmental event, pandemic.
- Mass gathering with threat of fire and threat to life safety or other civil unrest, weapons of mass destruction release.

Figure 33: Special Risk



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SECTION 6. OPERATIONAL ANALYSIS

Staffing Concentration Analysis

When exploring staffing and deployment of fire departments it is prudent to design an operational strategy around the actual circumstances that exist in the community and the fire and risk problems that are identified. The strategic and tactical challenges presented by the varied hazards that a department protects against need to be identified and planned for through a community risk analysis planning and management process as completed in this report.

Even with a thorough risk evaluation, staffing fire and EMS companies continues to remain a hotly debated topic among firefighters and governmental leadership since risk assessment models include high risk / low frequency situations. While there are situations that may be low frequency, they can and do occur and thus require operational readiness to mitigate.

NFPA 1710 addresses recommended staffing in terms of four types of occupancies. The staff needed to accomplish the critical tasks for each specific occupancy are determined to be the *Effective Response Force (ERF)*. The ERF for each of these occupancies is detailed in NFPA 1710 (2020 edition), Section 5.2.4, Deployment. OSHA and NFPA 1500 *Standard on Fire Department Occupational Safety and Wellness Programs* is specific to operating in immediately dangerous to life or health (IDLH) environments, where there is a requirement of two firefighters outside of the building or entry point to the IDLH, while there are two firefighters operating inside the building or other vessel that has an IDLH.

Effective Response Force and Critical Tasking

NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments*, 2020 edition, outlines organization and deployment of operations by career, and primarily career fire and rescue organizations. It serves as a benchmark to measure staffing and deployment of resources to certain structures and emergencies. Questions of legal responsibilities are often discussed in terms of compliance with NFPA standards. NFPA standards are consensus standards and not the law. Many cities and counties strive to achieve these standards to the extent possible without an adverse financial impact on the community. Counties and communities must decide on the level of service and compliance they can deliver based on budgetary constraints and community risk when benchmarked against operational capabilities.

NFPA 1710 details staffing levels for fire departments in terms of fire, EMS, and special operation incidents. According to NFPA 1710, fire departments should base their capabilities on a formal community risk assessment, as discussed in this report, and taking into consideration:⁶²

- Life safety hazards.
- Provisions for safe and effective firefighting conditions for the firefighters.
- Potential property loss.
- Nature, configuration, hazards, and internal protection of the properties involved.

62. NFPA 1710, 5.2.1.1, 5.2.2.2

- Types of fireground tactics and evolutions deployed as standard procedure, type of apparatus used, and results expected to be obtained at the fire scene from the community as a whole.

NFPA 1710 addresses standards for an *Effective Response Force* across several types of occupancies. An effective response force (ERF) is defined as the minimum number of firefighters and equipment that must reach a specific emergency incident location within a maximum prescribed travel [driving] time. The maximum prescribed travel time acts as one indicator of resource deployment efficiency. Other indicators include staffing of and type(s) of responding apparatus, type of risk, and training of the ERF to name a few of the higher-level indicators.

NFPA 1710 provides a staffing deployment model and critical tasking guidelines for four specific occupancies. These occupancies are:

- Single-Family Dwelling.
- Open-Air Strip Mall/Commercial Building.
- Garden Style Apartment.
- High Rise.

*All are present in
Chatham County
unincorporated area.*

The Center for Public Safety Excellence (CPSE) has also established benchmarks regarding staffing and deployment. CPSE sets standards for agencies desiring accreditation through the Commission on Fire Accreditation International (CFAI). CFAI uses standards set forth in the *Quality Improvement for the Fire and Emergency Services* manual, to provide guidance in staffing and deployment to agencies desiring accreditation through Core Competencies.

Fire Critical Tasking

Both CPSE and the NFPA have defined *critical tasking*. CPSE defines critical tasking as the application of tasks assigned to human and physical resources that are minimally required to effectively mitigate pain, suffering, and loss of life and/or property. Critical tasking is relevant to risk classifications and risk categories.⁶³

Critical tasks as defined by NFPA 1710 are those activities that must be conducted on time by responders at emergency incidents to control the situation and stop loss. Critical tasking for fire operations is the minimum number of personnel needed to perform the tasks needed to effectively control and mitigate a fire or other emergency. To be effective, critical tasks must be assigned to enough on-scene personnel so that all identified functions can be performed simultaneously. However, it is important to note that initial response personnel may manage secondary support functions once they have completed their primary assignment. Thus, while an incident may end up requiring a greater commitment of resources or a specialized response, a properly executed critical tasking assignment early in the event will provide adequate resources to immediately begin bringing the incident under control.

The specific number of people required to perform all the critical tasks associated with an identified risk or incident type is referred to as an Effective Response Force (ERF).

The CCFD has a response matrix for fire and fire related calls that includes:

63. Center for Public Safety Excellence, *Quality Improvement for the Fire and Emergency Services*, 2020

Incident Type

Structural Fire: All Building Types

Explosion: All Types

Electrical Hazard

Elevator Emergency

Fire: Outside/Outside Tank

Fuel Spill or Odor

Aircraft Emergency/Crash

Technical Rescue/Extrication

Gas Leak or Odor

Haz-Mat

Train Collision/Derailment/Fire

Vehicle Fire with Life Safety Hazards

Water/Ice/Mud Rescues

Watercraft Collision

Vehicle Crash

- Engine: 2
- Squad: 1
- Truck (Ladder) Apparatus: 1
- Safety Officer
- District Chief

Select call determinants:

- 1 Engine or 1 Squad

Select call determinants

- Engine: 2
- Squad: 1
- Truck (Ladder) Apparatus: 1
- Safety Officer

Incident Type

Fire Alarm Notifications

Lightening Strike

Strange/Unknown Odor

Suspicious Package

Backcountry Rescue/Lost Person

Vegetation/Brush

Service Call

Select call determinants

- Engine: 2
- Squad: 1
- Truck (Ladder) Apparatus: 1
- Safety Officer

Select Call Determinants adds District Chief.

Select call determinants:

- 1 Engine or 1 Squad

EMS Low Acuity

- 1 Engine or 1 Squad

EMS High Acuity

- 1 Engine or 1 Squad

Select calls may include an additional Engine or Squad, the Safety Officer, and/or the District Chief.

CCFD Unit Staffing

Engine: 2 (No Company Officer)

Squad: 2 (No Company Officer)

Truck (Ladder Apparatus: 2 (Officer: Lieutenant or Captain)

Tender: 0 (Cross Staffed with Engine or Squad crew where assigned)

Safety officer: 1

District Chief: 1

Building the Effective Response Force

The following discussion and tables will outline how critical tasking and assembling an effective response force is first measured in NFPA 1710, and how the CCFD is benchmarked against this standard for the building types existing in Chatham County. This discussion will cover single-family dwelling buildings, open-air strip mall buildings, apartment buildings and high-rise structures. Chatham County does have high-rise buildings as outlined in the NFPA standard.

Single-Family Dwelling: NFPA 1710, 5.2.4.1

The initial full alarm assignment (ERF) to a structural fire in a typical 2,000 square-foot, two-story, single-family dwelling without a basement and with no exposures must provide for a minimum of 16 members (17 if an aerial device is used). The next table outlines the critical task matrix for single family dwelling fires. **Single family dwellings represent the majority of building risk in Chatham County.**

Table 23: Effective Response Force for Single-Family Dwelling Building

Critical Tasks	Personnel
Incident Command	1
Continuous Water Supply	1
Fire Attack via Two Handlines	4
Hydrant Hook Up - Forcible Entry - Utilities	2
Primary Search and Rescue	2
Ground Ladders and Ventilation	2
Aerial Operator if Aerial is Used	1
Establishment of IRIC (Initial Rapid Intervention Crew)	4
Total Effective Response Force	16 (17 If aerial is used)

The next table outlines how the CCFD assembles staffing and deployable resources as measured against NFPA 1710 benchmarking for an effective response force for a single-family dwelling fire.

Table 24: CCFD Effective Response Force for Single-Family Dwelling Building

Apparatus	Personnel
CCFD District Chief	1
CCFD Safety Officer	1
CCFD Engine	2
CCFD Engine	2
CCFD Squad	2
CCFD Truck (Ladder)	2
Total CCFD Effective Response Force	10

As a single responding agency, the CCFD does not meet the minimum benchmarks of NFPA 1710 for an effective response force for a single-family dwelling fire.

As a note, NFPA 1710 permits fire departments to use established automatic/mutual aid agreements on the initial alarm to comply with section 5.2 of this standard.

Open-Air Strip Mall/Commercial Building, NFPA 5.2.4.2

The initial full alarm assignment (ERF) to a structural fire in a typical open-air strip center/commercial building ranging from 13,000 square feet to 196,000 square feet in size must provide for a minimum of 27 members (28 if an aerial device is used). The following table outlines the critical tasking matrix for these building types.

Table 25: Effective Response Force for Open-Air Strip Mall/Commercial Building

Critical Tasks	Personnel
Incident Command	2
Continuous Water Supply	2
Fire Attack via Two Handlines	6
Hydrant Hook Up - Forcible Entry - Utilities	3
Primary Search and Rescue	4
Ground Ladders and Ventilation	4
Aerial Operator if Aerial is Used	1
Establishment of IRIC (Initial Rapid Intervention Crew)	4
Medical Care Team	2
Total Effective Response Force	27 (28 If aerial is used)

The next table outlines how the CCFD assembles staffing and deployable resources as measured against NFPA 1710 benchmarking for an effective response force for an open-air strip mall and commercial building fires.

Table 26: CCFD Effective Response Force for Open-Air Strip Mall/Commercial Building

Apparatus	Personnel
CCFD District Chief	1
CCFD Safety Officer	1
CCFD Engine	2
CCFD Engine	2
CCFD Squad	2
CCFD Truck (Ladder)	2
Total CCFD Effective Response Force	10

As a single responding agency, the CCFD does not meet the minimum benchmarks of NFPA 1710 for an effective response force for open air/strip mall fires.

As a note, NFPA 1710 permits fire departments to use established automatic/mutual aid agreements on the initial alarm to comply with section 5.2 of this standard.

Apartment Building, NFPA 1710, 5.2.4.3

The initial full alarm assignment (ERF) to a structural fire in a typical 1,200 square-foot apartment within a three-story, garden-style apartment building must provide for a minimum effective response force (ERF) of 27 members (28 if an aerial device is used).

The next table outlines the critical tasking matrix for this type of building fire.

Table 27: Effective Response Force for Apartment Building

Critical Tasks	Personnel
Incident Command	2
Continuous Water Supply	2
Fire Attack via Two Handlines	6
Hydrant Hook Up - Forcible Entry - Utilities	3
Primary Search and Rescue	4
Ground Ladders and Ventilation	4
Aerial Operator if Aerial is Used	1
Establishment of IRIC (Initial Rapid Intervention Crew)	4
Medical Care Team	2
Total Effective Response Force	27 (28 If aerial is used)

The next table outlines how the CCFD assembles staffing and deployable resources as measured against NFPA 1710 benchmarking for an effective response force for an apartment building or other multi-unit housing type building fire.

Table 28: CCFD Effective Response Force for Apartment Building Fire

Apparatus	Personnel
CCFD District Chief	1
CCFD Safety Officer	1
CCFD Engine	2
CCFD Engine	2
CCFD Squad	2
CCFD Truck (Ladder)	2
Total CCFD Effective Response Force	10

As a single responding agency, the CCFD does not meet the minimum benchmarks of NFPA 1710 for an effective response force for apartment/condominium fires.

As a note, NFPA 1710 permits fire departments to use established automatic/mutual aid agreements on the initial alarm to comply with section 5.2 of this standard.

High Rise, NFPA 5.2.4.4

Chatham County does have high rise buildings. The initial full alarm assignment to a fire in a building where the highest floor is greater than 75 feet above the lowest level of fire department vehicle access must provide for a minimum of 42 members (43 if the building is equipped with a fire pump). The following table outlines the critical tasking matrix for this type of building fire.

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Table 29: Effective Response Force for High-Rise Building

Critical Tasks	Personnel
Incident Command	2
Continuous Water Supply	1/1 1 FF for continuous water. If fire pump exists an additional 1 FF will be required for a total of 2
Fire Attack via Two Handlines	4
One Handline above the Fire Floor	2
Establishment of IRIC (Initial Rapid Intervention Crew	4
Primary Search and Rescue Teams	4
Entry Level Officer with Aide near entry point of Fire Floor	2
Entry Level Officer with Aide near the entry point above the Fire Floor	2
Two Evacuation Teams	4
Elevation Operations	1
Safety Officer	1
FF Two floors below Fire to coordinate Staging	1
Rehabilitation Management	2
Officer and FFs to Manage vertical Ventilation	4
Lobby Operations	1
Transportation of Equipment below Fire Floor	2
Officer to Management Base Operations	1
Two ALS Medical Care Team	4
Total Effective Response Force	42 (43) If building is Equipped with Pump

The next table outlines how the CCFD assembles staffing and deployable resources as measured against NFPA 1710 benchmarking for an effective response force for a high-rise building fire.

Table 30: CCFD Effective Response Force for High Rise Building Fire

Apparatus	Personnel
CCFD District Chief	1
CCFD Safety Officer	1
CCFD Engine	2
CCFD Engine	2
CCFD Squad	2
CCFD Truck (Ladder)	2
Total CCFD Effective Response Force	10

As a single responding agency, the CCFD does not meet the minimum benchmarks of NFPA 1710 for an effective response force for high rise fires.

As a note, NFPA 1710 permits fire departments to use established automatic/mutual aid agreements on the initial alarm to comply with section 5.2 of this standard.

CPSM assesses the CCFD is unable to, as a single responding agency, assemble an Effective Response Force for single-family dwellings, strip mall/commercial buildings, apartment and condominium building fires, and for a high rise fire without the response of automatic/mutual aid companies on the initial alarm, which is allowed under the NFPA 1710 standard.

For building fires, the CCFD would be able to deploy one attack line (includes primary engine operator), one backup line with personnel merging the task of primary search and rescue (after three units arrive), a two-person rapid intervention team (when the fourth unit arrives), safety officer (outside tasks and overall safety), and incident command. These are the basic fireground tasks to begin an initial attack. Obviously, tasks are altered depending on the conditions and challenges encountered by initial arriving crews. In any case, the CCFD will be challenged to accomplish critical tasks with very minimal staffing when benchmarked against NFPA 1710.

Recommendation:

CPSM recommends the CCFD consider the following to increase the Effective Response force to building fires, utilizing the single-family dwelling benchmark as an initial goal (sixteen staff-seventeen if aerial device utilized), as these buildings represent the largest building risk in the county:

- Increasing CCFD unit response by one additional Truck (ladder apparatus) and two additional engines (or combination engine/squad) to the initial alarm for building fires, which would increase the Effective Response Force to sixteen in total.
- Engage as many municipal fire departments as possible in automatic aid agreements on structure fire responses in unincorporated Chatham County to bolster the Effective Response Force, particularly for open air/strip mall buildings and apartment and condominium buildings, which require a greater number of Effective Response Force staff.
- Increase staffing for Truck Companies (ladder apparatus) and Squad Companies to a minimum of three in the near term, with a goal of achieving a minimum of three staff on all CCFD engines over the midterm. An additional goal/consideration to bolster staffing over the longer term is an increase in staffing on Truck Companies to four initially, and then Squad Companies to four staff as funding allows.

Station Distribution Analysis

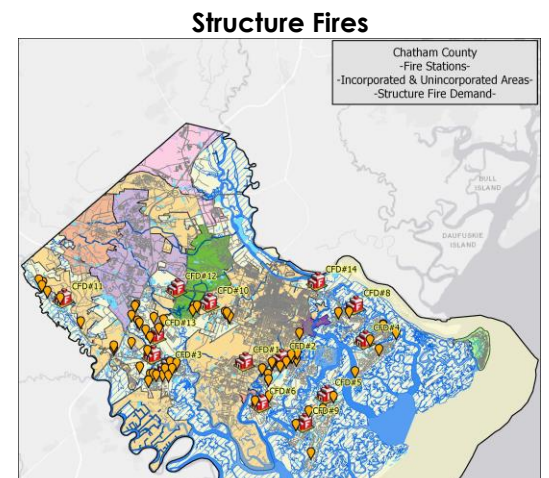
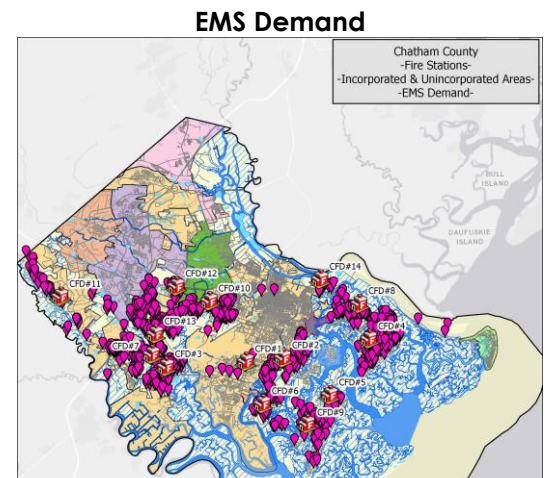
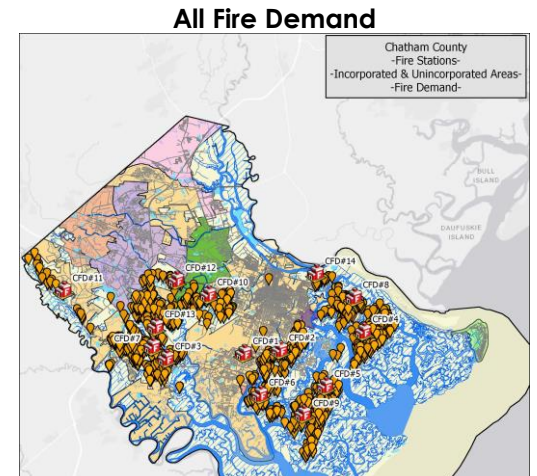
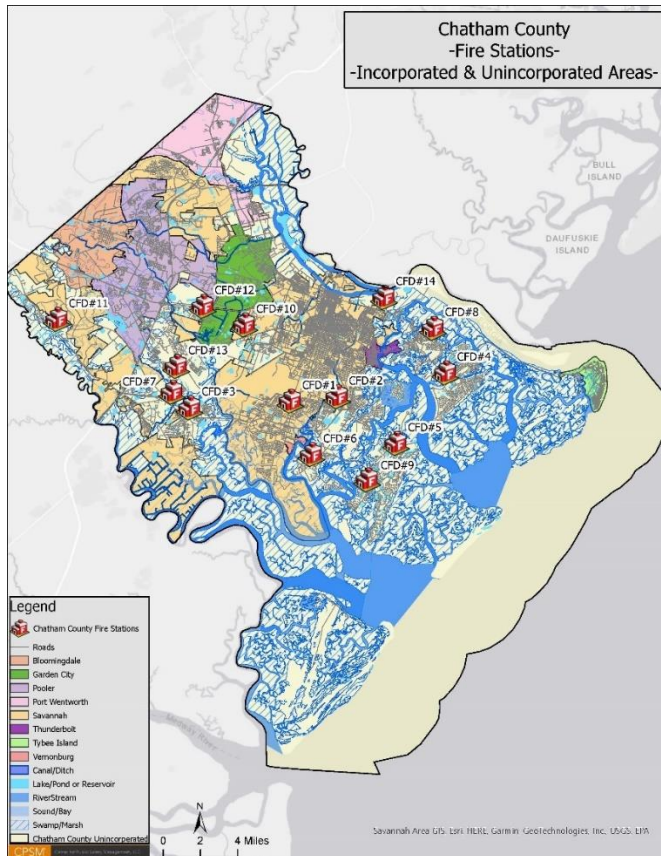
Station distribution analysis provides information on district response patterns and demand by station district. Sound community fire-rescue protection requires the strategic distribution of an adequate number of station facilities and deployment resources to ensure effective service area coverage is achieved, that predicted response travel times satisfy prevailing community goals and national best practices, and that the facilities are capable of supporting mission-critical personnel and vehicle-oriented requirements and needs. As discussed herein, the CCFD responds from fourteen fire facilities.

It is useful to review geographic demand here as it relates to the county overall. Understanding population density and projected growth, annexation, and its relationship to demand is important, particularly when considering how to close response gaps in higher demand areas and in the planning for new fire deployment assets and stations. As stated earlier, higher population centers and specific building risks such as residential buildings of three or more stories will typically drive increased demand and will require increased Fire and EMS resources.

The next figure illustrates CCFD station distribution and Fire and EMS demand. There was a total of 4,249 calls in the county (excluding 8 mutual aid and includes 383 canceled calls).

Station 7 district is the busiest (15.1% of all work). Stations 4 (14.0%), and 13 (10.9%) are similarly as busy in terms of workload. Stations 1 and 14 are the least busy, handling 0.2% and 1.0% respectively of the work.

Figure 34: Station Locations with Fire and EMS Demand



Station Area	Calls	Percent Calls	Runs	Runs Per Day	Percent Work
1	8	0.2	28	0.1	0.2
2	498	11.7	986	2.7	9.5
3	407	9.6	857	2.3	7.1
4	554	13.0	1,150	3.2	14.0
5	141	3.3	372	1.0	3.6
6	224	5.3	470	1.3	7.7
7	662	15.6	1,371	3.8	15.1
8	321	7.5	761	2.1	9.3
9	257	6.0	625	1.7	7.2
10	228	5.4	547	1.5	5.8
11	109	2.6	190	0.5	2.8
12	167	3.9	342	0.9	3.2
13	554	13.0	1,286	3.5	10.9
14	42	1.0	86	0.2	1.0
Other	85	2.0	159	0.4	2.4
Total	4,257	100.0	9,230	25.3	100.0

When analyzing fire station distribution for the most efficient response travel time patterns, several factors must be considered and include: large open/green space such as parks (not built upon land), speed limit of roads traveled to the incident; road layout of a community to include freeways and interstate highways that obstruct thruway of all streets; and traffic congestion from inadequate traffic lanes; weather; road construction; at grade rail crossings; time of day traffic congestion to name the most notable impediments.

Additionally, when analyzing fire facility distribution, and in particular the case of Chatham County where there are municipal fire departments that have fire facilities and assets in close proximity to CCFD facilities, efficiency of service delivery combining county and municipal assets must also be considered.

Response Times

Response times are typically the primary measurement for evaluating Fire and EMS services. Response times can be used as a benchmark to determine how well a fire department is currently performing, to help identify response coverage trends, and when coupled with demand to predict future operational needs. Achieving the quickest and safest response times possible should be a fundamental goal of every fire department.

CCFD resource distribution performance is examined utilizing the NFPA 1710 standard and the ISO standard for engine company and ladder company placement.

NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments, establishes benchmark travel times for first arriving fire units as:

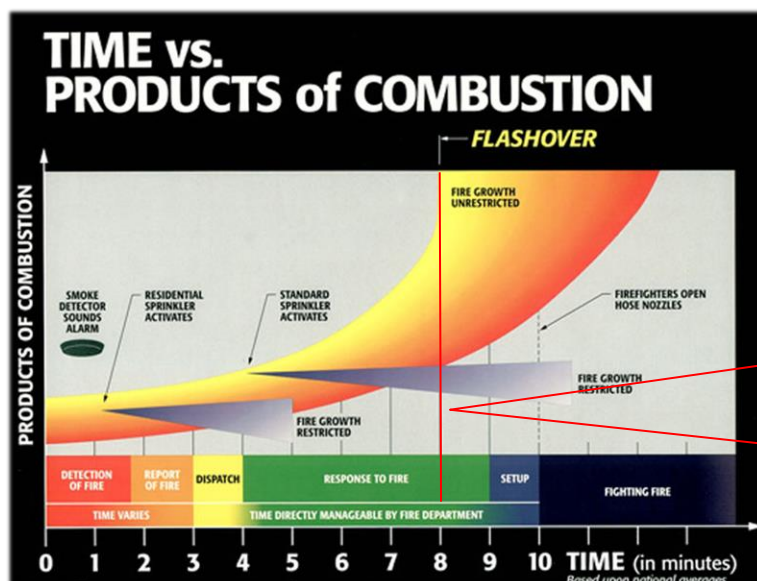
- ≤ 240 seconds for the first arriving engine company to a fire suppression incident 90 percent of the time.
- ≤ 240 seconds for the first arriving engine company to an EMS incident with automated external defibrillator (AED) or higher-level capability.

Response times for fire incidents are based on the concept of “flashover.” A flashover is the near-simultaneous ignition of directly exposed combustible material in an enclosed area. When certain organic materials are heated, they undergo thermal decomposition and release of flammable gases. Flashover occurs when the majority of the exposed surfaces in a space are heated to their auto ignition temperature and ignite.

Flashover occurs more quickly and more frequently today and is caused at least in part by the introduction of significant quantities of plastic and foam-based products into homes and businesses (e.g., furnishings, mattresses, bedding, plumbing and electrical components, home and business electronics, decorative materials, insulation, and structural components). These materials ignite and burn quickly and produce extreme heat and toxic smoke.

When the fire does reach this extremely hazardous state, initial firefighting forces are often overwhelmed, and a larger and more destructive fire occurs. In these circumstances the fire escapes the room and even the building of origin, and significantly more resources are required to affect fire control and extinguishment. This links directly to the discussion in this report regarding the assembling of an Effective Response Force for building fires. The next figure illustrates this phenomenon in terms of fire department response and fire protection systems.

Figure 35: Fire Growth and Flashover⁶⁴



The illustration above shows how a fire grows over a brief period of time from inception (event initiation) through flashover. The time-versus-products of combustion curve shows activation times and effectiveness of residential sprinklers (approximately one minute), commercial sprinklers (four minutes), flashover (eight to ten minutes), and firefighters applying first water to the fire after notification, dispatch, response, and set-up (ten minutes). ***This illustrates the demand on the fire department to have a quick response to a building fire with the goal of containing the fire to the room of origin to reduce property loss and more quickly address a life-safety scenario.***

The focus of EMS response times should be directed to the evidence-based research relationship between clinical outcomes and response times. Much of the current research suggests response times have little impact on clinical outcomes of low acuity calls.

Higher acuity calls such as cerebrovascular accidents (stroke), injury or illness compromising the respiratory system, injury or illness compromising the cardiovascular system to include S-T segment elevation emergencies, certain obstetrical emergencies, and certain other medical emergencies that affect cardiovascular, neurological, and respiratory systems require rapid response times, rapid basic and advanced life support on-scene treatment and packaging for transport, and rapid transport to the hospital.

There are also other EMS incidents that are truly life-threatening, and the time of response can clearly impact the outcome. These involve emergencies such as full drownings, allergic reactions, electrocutions, and severe trauma (often caused by gunshot wounds, stabbings, and severe motor vehicle accidents, etc.).

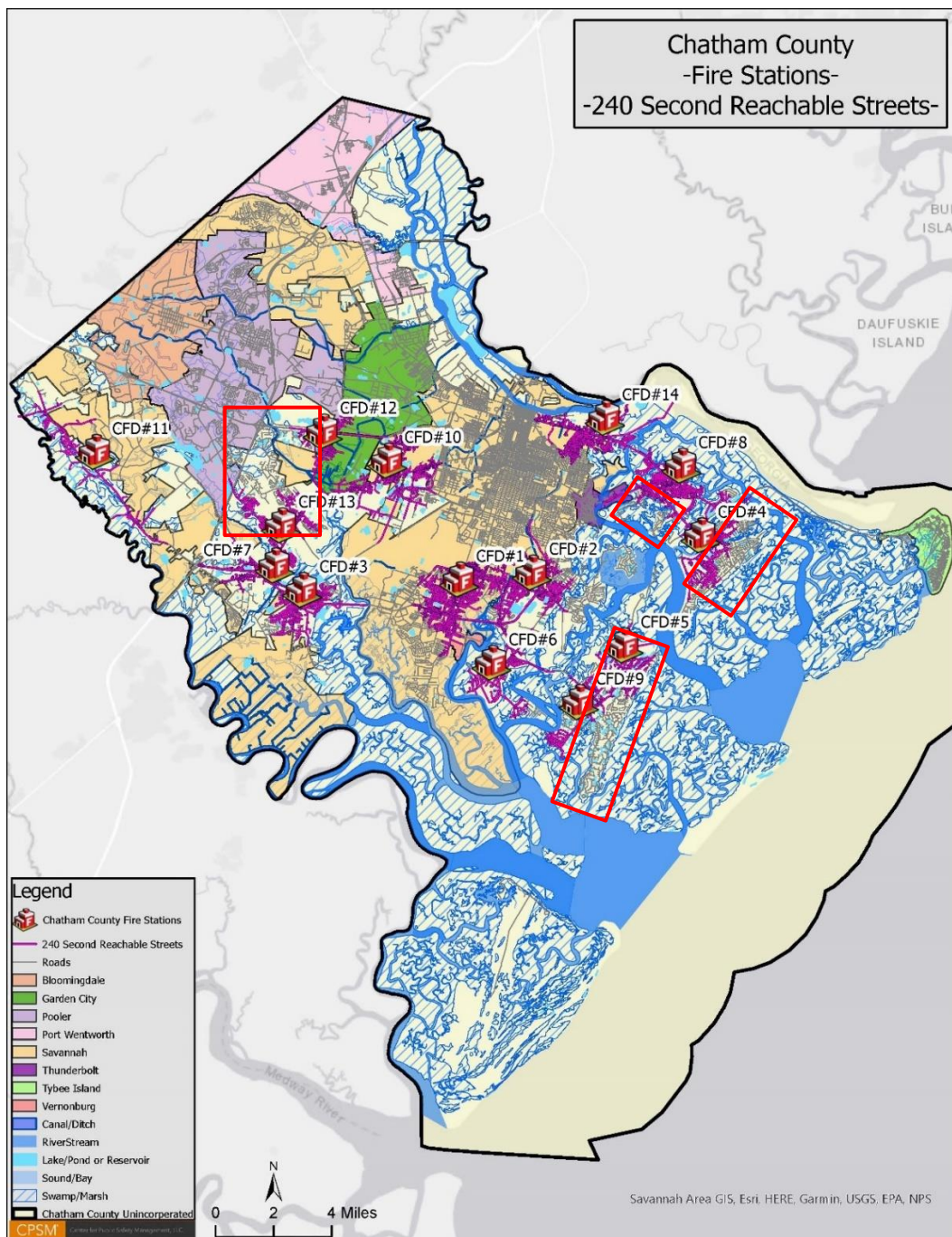
Typically, a low percentage of 911 patients have time-sensitive and advanced life support (ALS) needs. But, for those patients that do, time can be a critical issue of morbidity and mortality. For the remainder of those calling 911 for a medical emergency, though they may not have a medical necessity, they still expect rapid customer service. Response times for patients and their families are often the most important measurement of the EMS department. ***Regardless of the***

64. Fire Protection System Designs, Grant, 2018

service delivery model, appropriate response times are more than a clinical issue; they are also a customer service issue and should not be ignored.

The next map looks at the NFPA 240 second benchmark in totality (entire unincorporated coverage) as benchmarked against CCFD station distribution. It is common for counties that have large land areas that are often not contiguous due to municipal boundaries and annexation, to have areas that are challenged to meet this standard. Larger gap areas are identified in red.

Figure 36: CCFD Stations: 240 Second Travel Time Bleeds (NFPA 1710 Benchmark)



Travel time is key to understanding how fire and EMS station location influences a community's aggregate response time performance. Travel time can be mapped when existing and proposed station locations are known. The location of responding units is one key factor in response time; reducing response times, which is typically a key performance measure in determining the efficiency of department operations, often depends on this factor.

The goal of placement of a single fire station or creating a network of responding fire stations in a single community is to optimize coverage with short travel distances, when possible, while giving special attention to natural and manmade barriers, and response routes that could create response-time problems.⁶⁵ This goal is generally budget-driven and based on demand intensity of fire and EMS incidents, travel times, and identified risks.

CCFD Response Times

The next two tables examine response times by station and then by call type. In this analysis, we included all calls within the primary response area of the Chatham County Fire Department to which at least one non-administrative unit responded while excluding canceled calls. Calls with a total response time of more than 30 minutes were excluded. In addition, we focused on units that had complete time stamps, that is, units with all components recorded, so that we could calculate each segment of response time. Finally, nonemergency calls such as public service calls were excluded from this analysis as they are typically managed with no red lights and siren. As a result, in this section, a total of 13,187 calls are included in the analysis (CY 2023).

Table 31: Average and 90th Percentile Response Times of First Arriving Unit, by First Due Station (Minutes)

Station Area	Average Response Time				90th Percentile Response Time				Call Count
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total	
1	1.4	0.8	5.2	7.4	2.4	1.8	8.0	10.5	8
2	1.3	1.3	3.9	6.5	2.8	2.6	7.1	9.8	367
3	1.2	1.2	3.9	6.3	2.4	2.3	7.3	10.0	292
4	1.2	1.4	4.5	7.1	2.4	2.8	7.8	10.5	375
5	1.6	1.0	4.6	7.2	3.5	1.9	7.2	10.1	96
6	1.0	1.2	3.6	5.9	2.1	2.5	7.3	9.6	162
7	1.1	1.2	4.4	6.7	2.4	2.6	7.2	9.7	528
8	1.2	1.4	3.1	5.8	2.4	2.8	6.2	8.8	238
9	1.8	1.2	4.1	7.1	3.6	2.3	6.5	10.3	134
10	1.3	1.1	4.4	6.8	2.4	2.0	7.6	10.8	178
11	1.4	1.4	4.7	7.5	2.4	3.6	10.1	13.1	90
12	1.3	1.1	3.9	6.3	2.4	2.1	7.4	9.5	122
13	1.1	1.1	4.2	6.5	2.3	2.2	7.6	10.0	421
14	0.9	2.3	4.3	7.5	2.1	2.9	7.2	12.9	23
Total	1.2	1.3	4.1	6.6	2.5	2.5	7.3	10.0	3,034

65. NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments*, 2020 Edition.

Table 32: 90th Percentile Response Times of First Arriving Unit, by Call Type (Minutes)

Call Type	Dispatch	Turnout	Travel	Total	Call Count
Breathing difficulty	2.6	2.5	6.5	9.3	52
Cardiac and stroke	2.9	2.5	7.1	9.7	144
Fall and injury	2.2	3.4	8.9	13.5	238
Illness and other	2.3	2.5	7.6	10.2	143
MVA	2.2	2.4	7.3	9.8	652
Overdose and psychiatric	1.1	4.4	6.5	8.4	48
Seizure and unconsciousness	1.6	2.2	7.1	9.3	383
EMS subtotal	2.1	2.6	7.5	10.0	1,660
False alarm	2.5	2.1	6.7	9.8	730
Good intent	2.7	2.9	8.2	10.6	115
Hazard	3.2	2.5	8.0	11.3	247
Outside fire	2.8	2.2	7.1	9.8	191
Structure fire	2.6	2.3	5.9	9.1	60
Technical rescue	3.8	2.1	5.0	8.1	31
Fire subtotal	2.8	2.3	7.0	9.9	1,374
Total	2.5	2.5	7.3	10.0	3,034

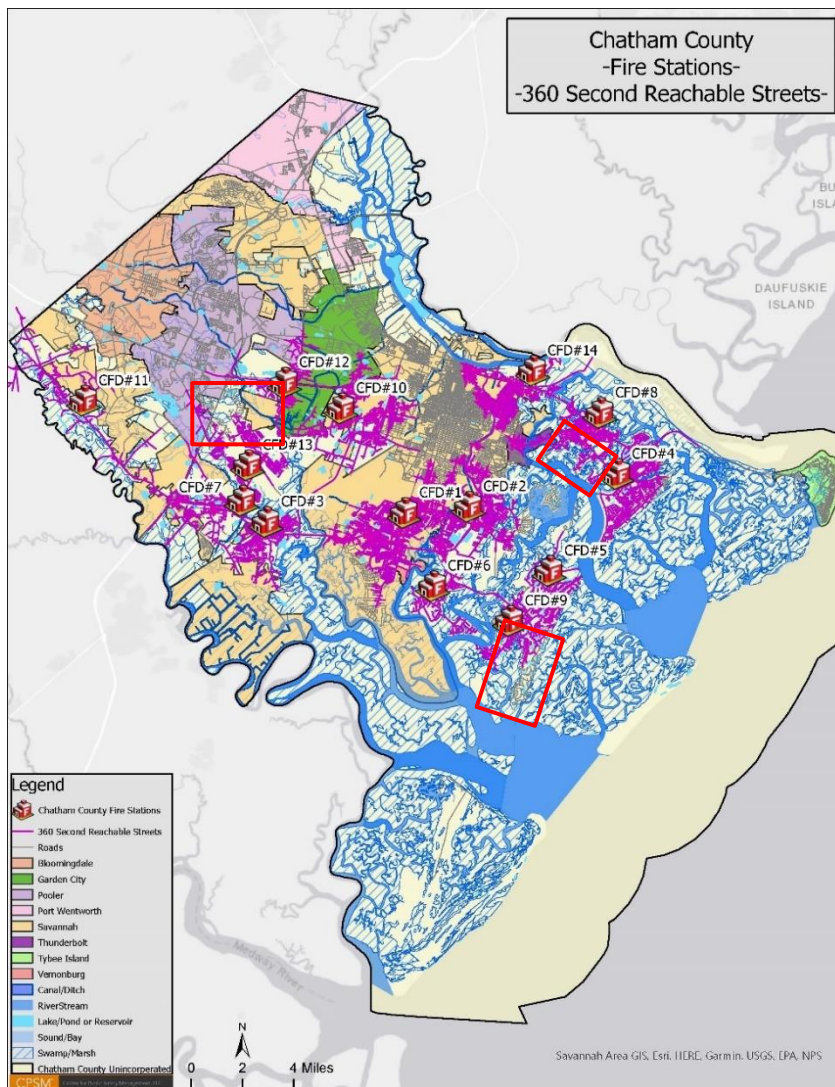
Detailed review of the above tables tells us:

- The 90th percentile dispatch time (alarm handling) was 2.5 minutes (**150 seconds**).
 - The NFPA 1710 dispatch time or call processing time standard is 64 seconds, 90 percent of the time, and not more than 106 seconds, 95 percent of the time. For special calls, the dispatch time or call processing is 90 seconds, 90 percent of the time, and not more than 120 seconds, 95 percent of the time. The greatest majority of CCFD calls for service are outside of the special call type.
- The 90th percentile turnout time was 2.5 minutes (**150 seconds**).
 - The NFPA 1710 turnout time is 60 seconds for EMS response and 80 seconds for fire and special call responses.
- The 90th percentile travel time was 7.3 minutes (**438 seconds**).
 - The NFPA 1710 travel time is:
 - ≤ 240 seconds for the first arriving engine company to a fire suppression incident 90 percent of the time.
 - ≤ 240 seconds for the first arriving engine company to an EMS incident with automated external defibrillator (AED) or higher-level capability.

Fire department leadership has the ability to impact turnout time through constant monitoring and ensuring turnout times are regularly shared with operational personnel, and that they are trained in and understand the importance of a quick response. **Turnout time is the only segment of the total response time that is completely under the control of the emergency response system.**

To some degree, emergency communications center call processing is also under the control of center personnel. This includes center personnel's ability to multi-task, quickly interpret and triage the emergency caller's issues, and enter call information into the CAD system for dispatching. There are however greater impediments to achieving the NFPA benchmark, which removes total control of the call processing. These include language barriers, incoherent and/or frantic callers, inability to establish a relevant address of the emergency, the utilization of medical call processing protocols, and CAD system issues and challenges.

Figure 37: CCFD Stations: 360 Second Travel Time Bleeds



CPSM assesses that CCFD response times do not meet the NFPA 1710 benchmark standards.

CPSM recommends the CCFD adopt a performance benchmark for turnout time of ≤ 80 seconds for fire and special operations and ≤ 60 seconds for EMS responses at the 90th percentile. **CPSM further recommends** the CCFD work with Chatham County 911 Center regarding call processing performance standards of 64-seconds at the 90th percentile for identified higher acuity calls (structure fires and high acuity technical fire related calls) as outlined in the NFPA 1710 standard. **Response travel time performance benchmarks are validated through the completion of a Standards of Cover operational analysis, which the CCFD should conduct.**

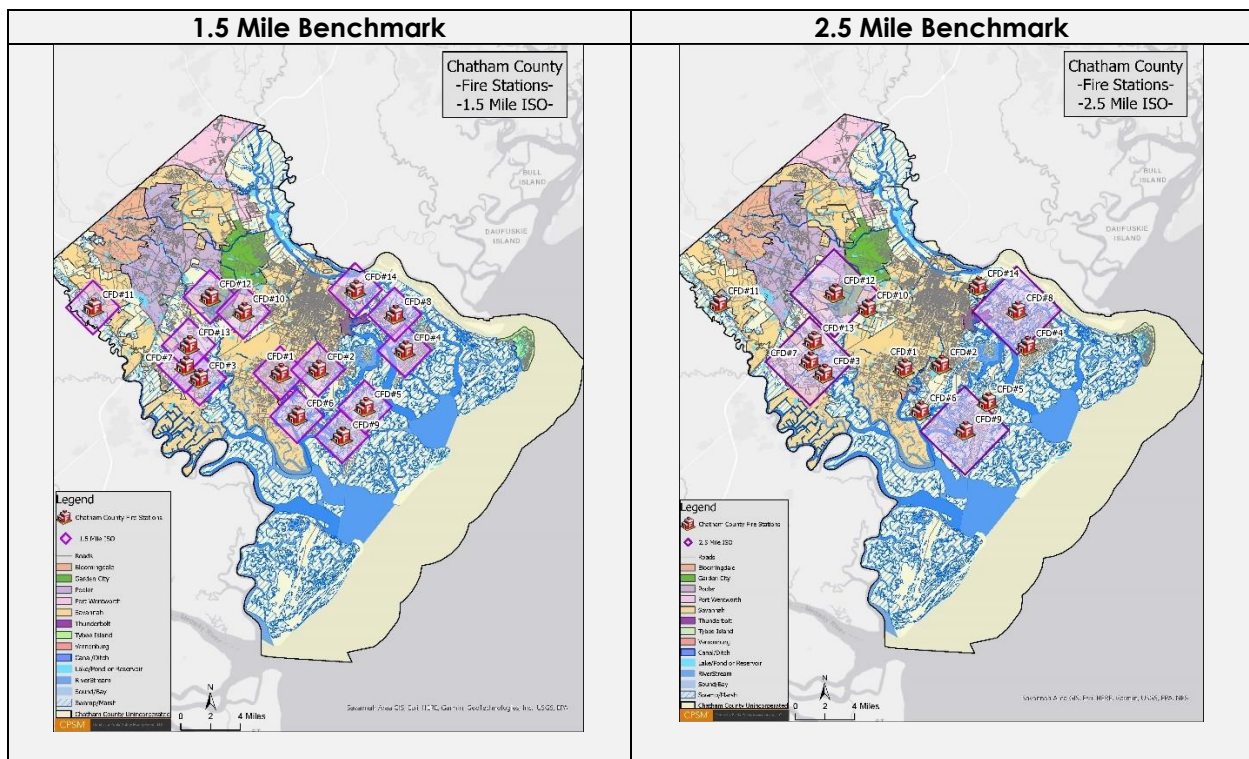
An additional station distribution benchmark is the ISO Public Protection Classification rating system. Under this system, one element a jurisdiction is graded on is the distribution of fire assets within built-upon areas with a focus on engine companies and ladder companies (deployment analysis). For full credit in the Fire Suppression Rating Schedule (FSRS), a jurisdiction's fire protection area with residential and commercial properties will have a first-due engine company within 1.5 road miles (which is the ISO estimate for 240 second travel time as a comparable to the NFPA 1710 standard) and a ladder or service company within 2.5 road miles of built upon land.⁶⁶

As engine and ladder companies both respond from fire facilities, and because engine companies are the more prevalent fire suppression company, fire facilities are predictably sited based on the response needs of engine companies first, with ladder companies then placed on a broader geographic footprint.

As discussed, Chatham County has an ISO rating of Class 03/3X.

The next figure reiterates the county's coverage of built-upon areas with existing engine and ladder companies when measured against the ISO benchmarks.

Figure 38: Chatham County Engine and Ladder Coverage-ISO Benchmark



In review and as previously discussed in the ISO section:

- In review of the 1.5-mile ISO-PPC map, the first observation is the built-upon area of the unincorporated County has good coverage by a staffed first due engine company within 1.5 miles of built upon land. There are minor gaps east and west of Station 11; west of Station 12; north of Station 13; east of Station 2; South of Station 9; North of Station 4. **In the current ISO-PPC report, Chatham County received 6.00/6.00 Credits for Engine Companies.**

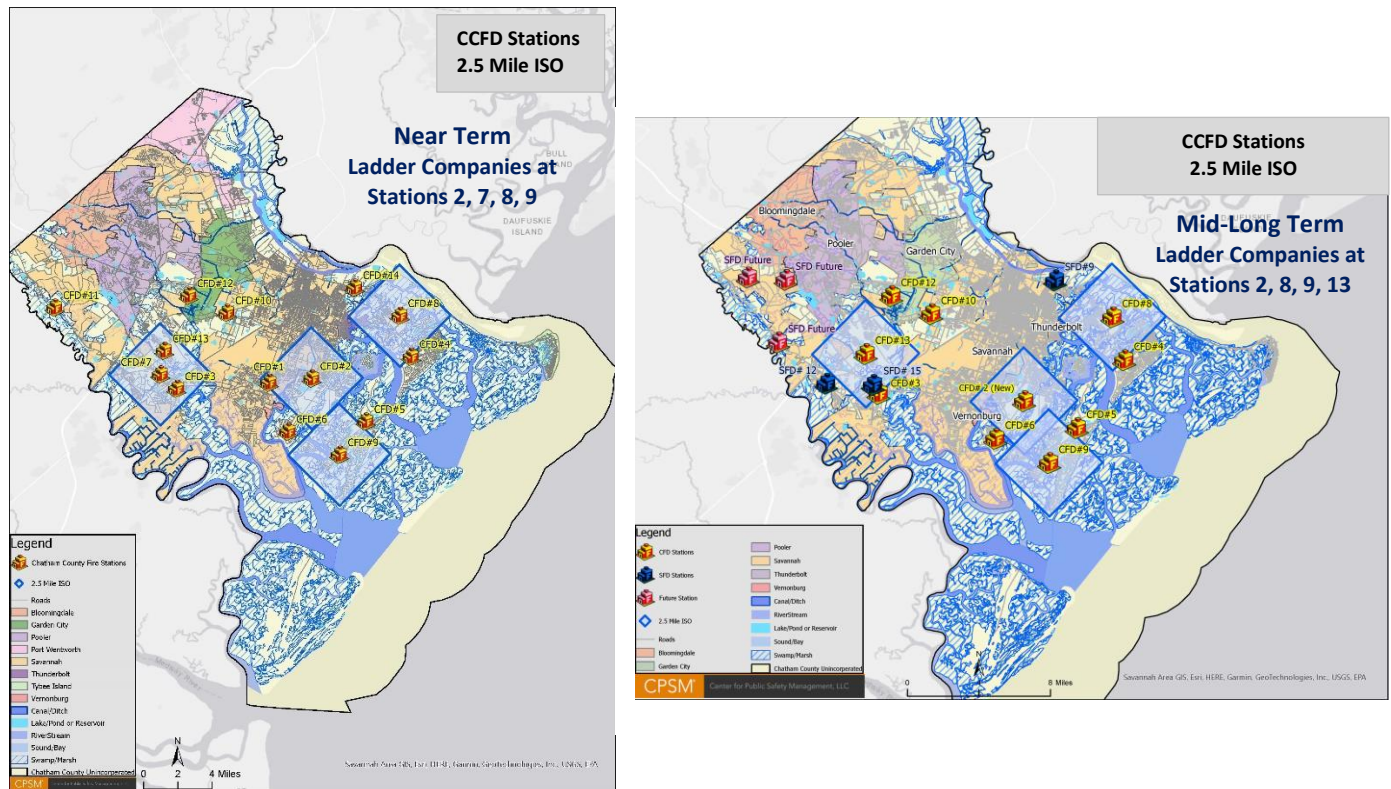
66. Insurance Services Office, ISO Mitigation, Deployment Analysis.

- The county does not have overlapping ladder resource company coverage. The ladder company resource is also graded on the number of response areas within the city with five buildings that are three or more stories (or 35 or more feet in height), or with five buildings that have a needed fire flow greater than 3,500 gallons per minute, or a combination of these two criteria. Generally, and from a first due ladder company perspective, the greatest percentage of these are covered. There are some ladder company gaps east and south of Station 4 (Truck 8 response area); Stations 2 and 6 districts; Station 10 district. ***In the current ISO-PPC report, Chatham County received 2.49/4.00 Credits for Ladder Companies.***

A more effective alignment of ladder companies the CCFD should consider in the **near term** includes the reassignment of Truck 12 to Station 2. This closes the gap in the Stations 2 and 6 districts and locates three of the four ladder companies on the east side of Savannah where the majority of the buildings 35' or more are located.

Additionally, and for a better alignment of resources as discussed in the next section, and if the County considers constructing a new Station 13, the optimum location for a west side ladder company is in the Station 13 district. ***The suggested mid-longer-term realignment of ladder company resources is illustrated in the next figure.***

Figure 39: Chatham County Realigned Ladder Coverage (Near and Mid-Longer Term) - ISO Benchmark



Recommendations:

- CPSM recommends the CCFD consider relocating Truck 12 and staffing to Station 2 to bolster ladder company response on the east side of the county where the greatest percentage of buildings 35' or greater is.
- CPSM recommends that if the County considers constructing a new Station 13, that Truck 7 and staffing be relocated to Station 13 to serve as the westside CCFD ladder company.

A More Efficient Station Distribution

In terms of response travel times and as benchmarked against ISO-PPC engine and ladder company distribution and taking into consideration the fragmented unincorporated areas in the western region of the county due to municipal annexation, CES-Fire and now Chatham County fire station distribution and response travel times are reasonable.

That said, continued annexation in western Chatham County will further fragment unincorporated areas making it difficult to efficiently provide fire protection. Additionally, as municipalities annex unincorporated land, they very well may also be planning new fire stations creating situations where a municipal fire station is within blocks of a sometimes-long-standing County fire station or stations. As unincorporated areas shrink, so do the cost-effectiveness of a fire station that may have once served a larger fire district.

CPSM looked at several models that may create a more efficient CCFD and at the same time redeploy assets to make the current CCFD more effective. *Any efficiency models are dependent on continued annexation, when municipal fire stations will be built, and the willingness of municipalities to participate in service area and automatic aid agreements with the County. Additionally, while western Chatham County annexation will continue, when and where is speculative as of this report. However, planning now is prudent.* Efficiency models include:

- **Near Term:** Decommission CCFD Stations 1 and 14 and contract with the City of Savannah (if the city is agreeable) to cover the small first due areas these stations currently cover. These include:
 - The Town of Vernonburg. CCFD Station 1 is situated inside the City of Savannah and primarily services the Town. Savannah Fire Station 10 is in closer proximity to the Town. CCFD Station 1 has the lowest workload of all CCFD stations (0.2% of in-district workload).
 - Engine 14's district is relatively small. Savannah Fire Station 9 is in close proximity to CCFD Station 14. CCFD Station 14 has the second lowest workload of all CCFD stations (1.0% of in-district workload).

Redeploy Engine 1 staffing (2 per shift) to Squad 6 and Squad 13 (1 each) to increase staffing to a minimum of 3/Shift. Redeploy engine apparatus to a station that has an older apparatus-redeploy older apparatus to reserve status.

Redeploy Engine 14 staffing (2 per shift) to Engine 4 and Truck 8 (1 each) to increase staffing to a minimum of 3/Shift. Redeploy engine apparatus to a station that has an older apparatus-redeploy older apparatus to reserve status. Redeploy Tender apparatus as determined by the Fire Chief.

As a note, the County will likely lose fire fee assessment revenue from these two areas as remuneration for the City of Savannah providing fire protection service.

The next set of figures illustrate how this realignment provides efficiency to the overall CCFD response plan with minimal effect on the Station 1 and 14 service areas.

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Figure 40: CCFD Station 1 Service Area Consideration

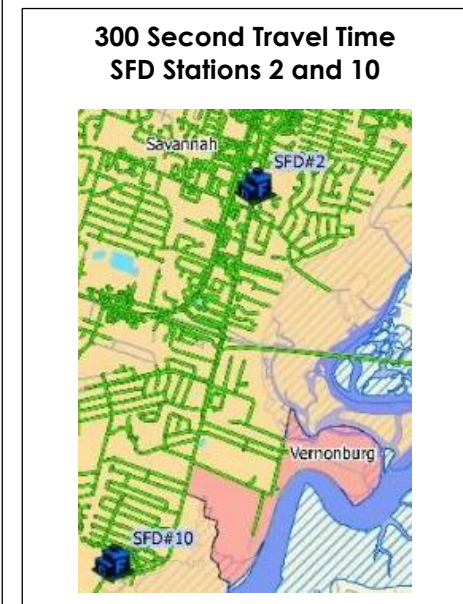
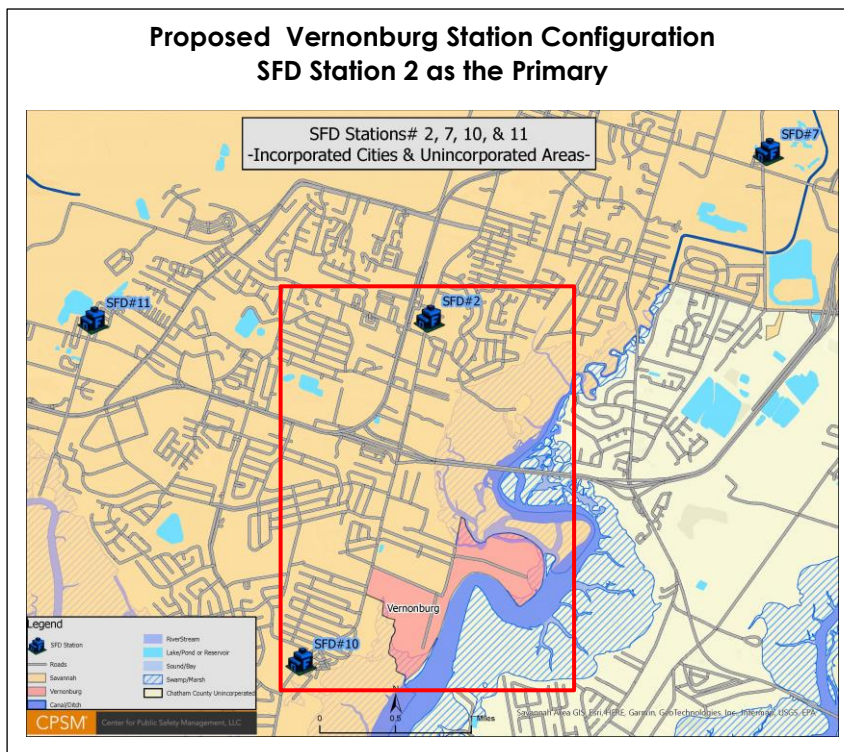
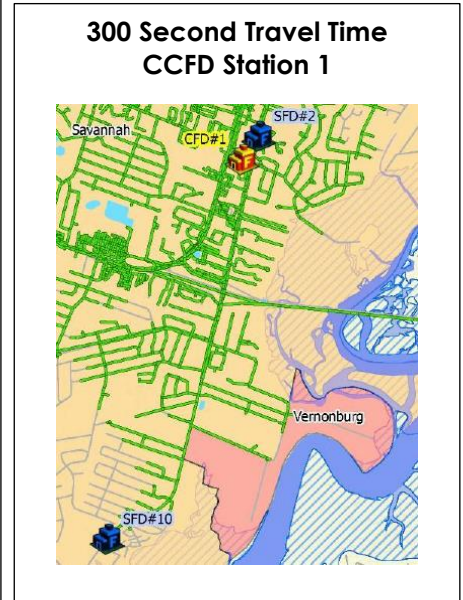
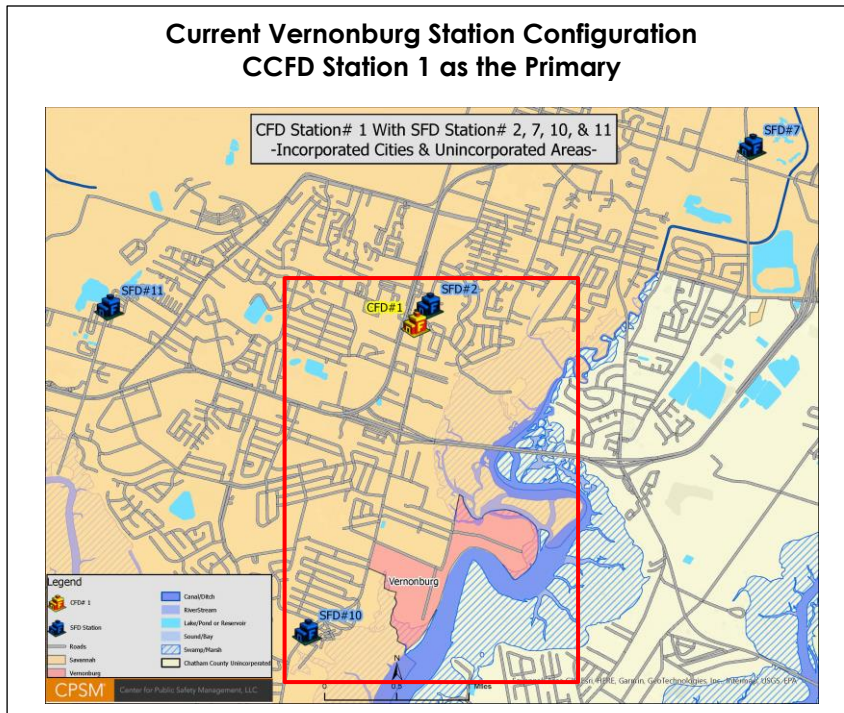
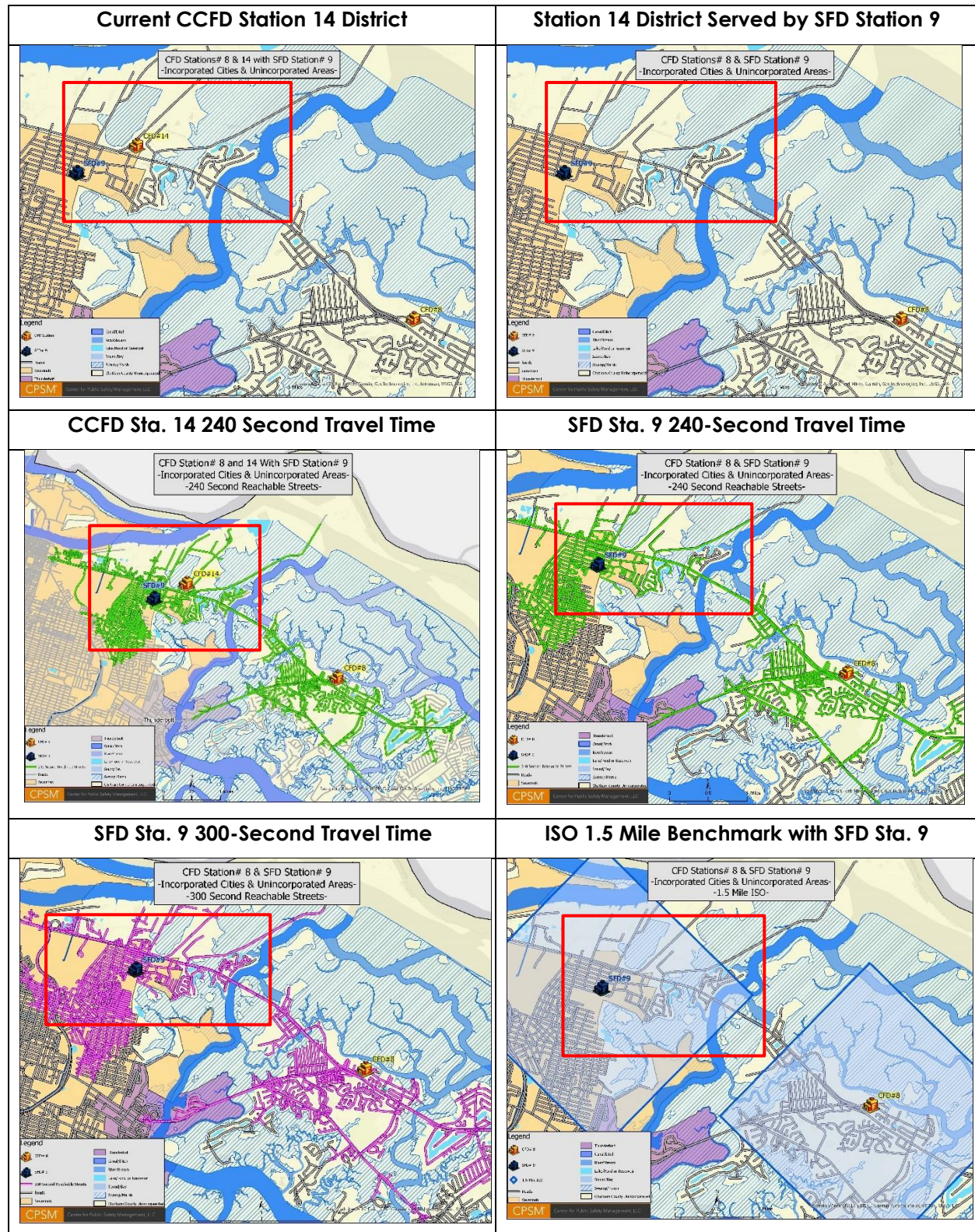


Figure 41: CCFD Station 14 Service Area Consideration



- **Near Term:** Decommission Station 7 and contract with the City of Savannah (if the city is agreeable) to have Savannah Fire Department Station 12 cover calls in the Station 7 district (that CCFD Stations 3 and 13 cannot) and also provide automatic aid response in Station 3's district from Savannah Fire Department Station 15 on structure and other multi-unit responses. Redeploy Engine 7 staffing as determined by the Fire Chief to increase staffing to 3/Shift. Redeploy Truck 7 apparatus and staffing to Station 3 (temporary until a new Station 13 is built). Redeploy Engine 7 to another station with an older apparatus or to reserve.

As a note, the County will likely lose fire fee assessment revenue from the Station 7 district or a portion thereof that CCFD Stations 3 and 13 cannot cover as remuneration for the City of Savannah providing fire protection service. **The next set of figures illustrates how this realignment provides efficiency to the overall CCFD response plan with a minimal effect on the Station 7 service area.**

Figure 42: CCFD Station 7 Service Area Consideration

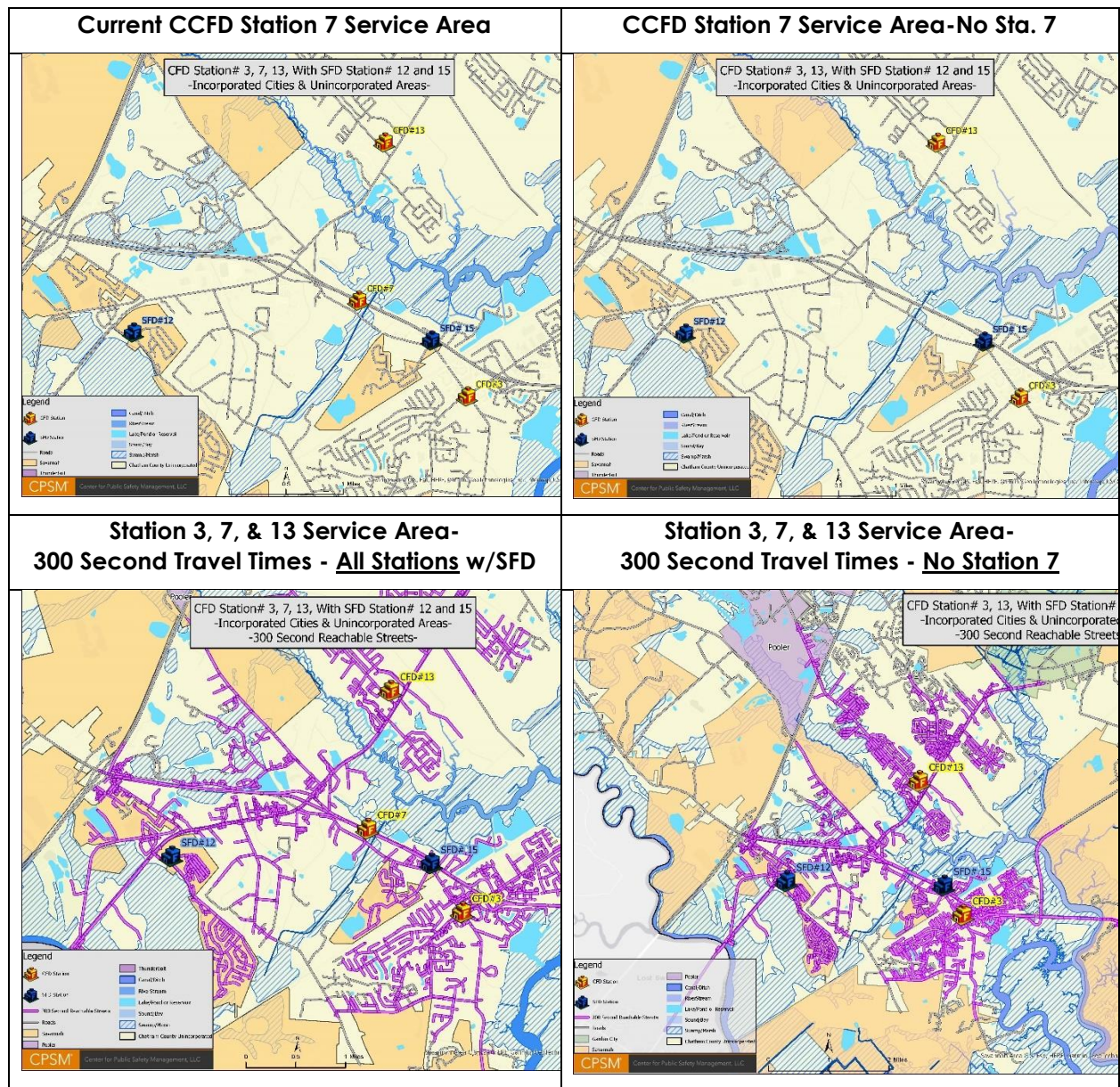
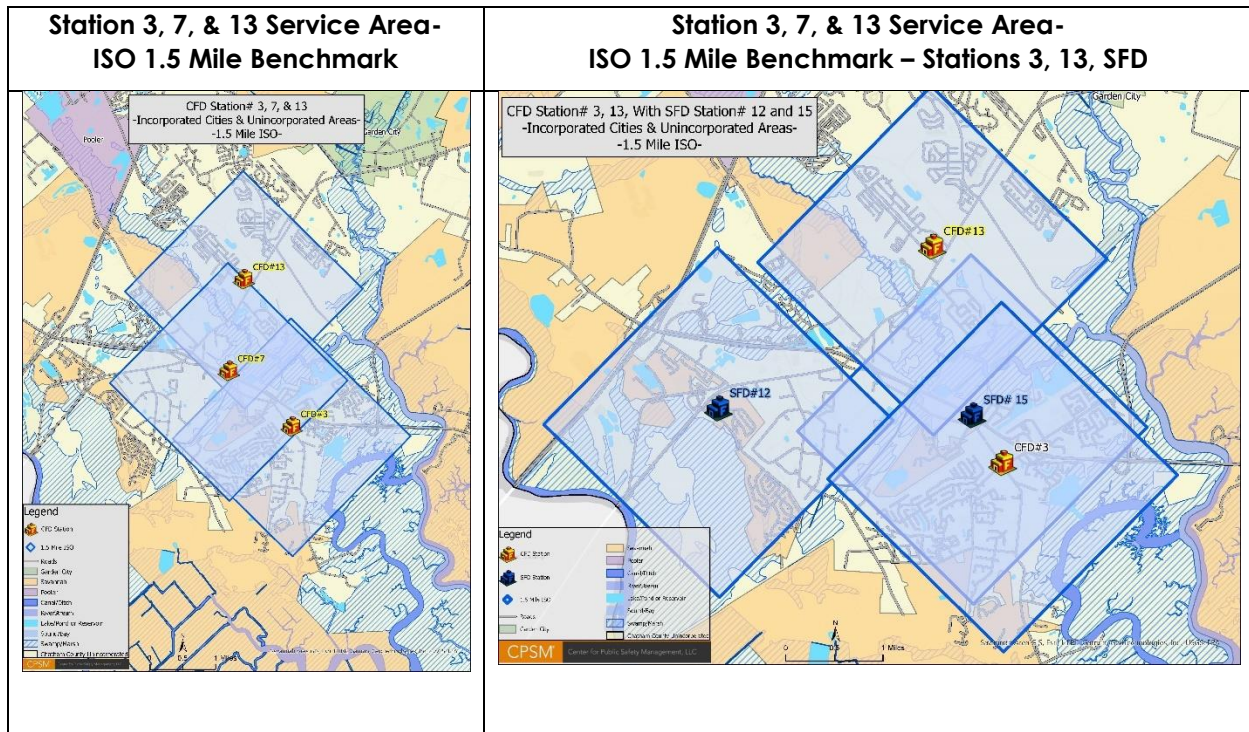


Figure 43: CCFD Station 7 Service Area Consideration (continued)



- **Mid-Long Term:** Decommission Station 11 once the City of Savannah completes either temporary or permanent stations (two in the New Hampstead area of the city and one along the SR 204 corridor west of I-95). Contract with the City of Savannah (if the city is agreeable) to cover the Station 11 first due area, which currently includes the SR 204 corridor west of I-95 to the Effingham County line. Redeploy Engine 11 staffing where needed as determined by the Fire Chief to increase staffing to 3/Shift. Redeploy Engine 11 to another station with an older apparatus or to reserve.

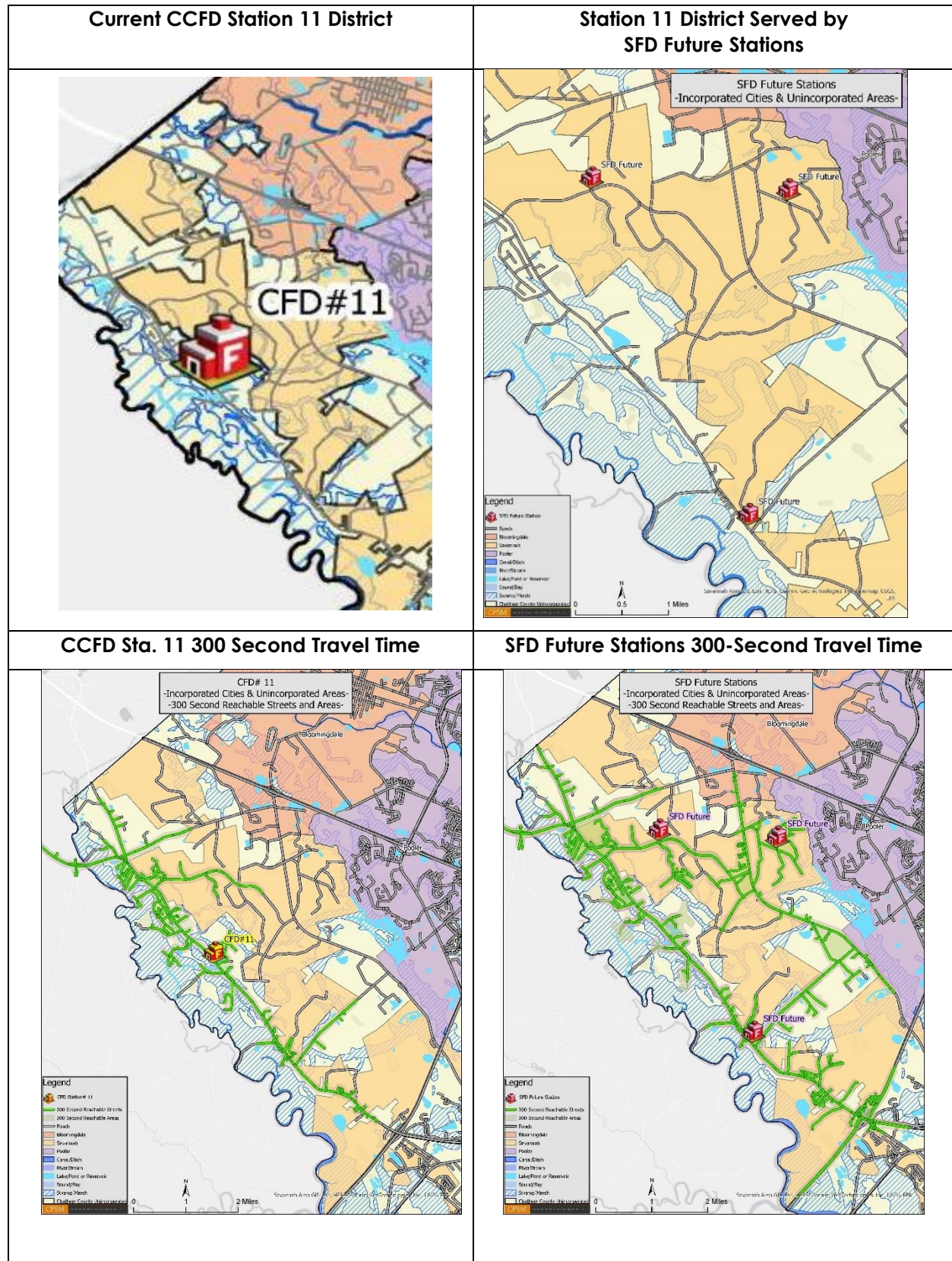
As a note, the County will likely lose fire fee assessment revenue from this area as remuneration for the City of Savannah providing fire protection service.

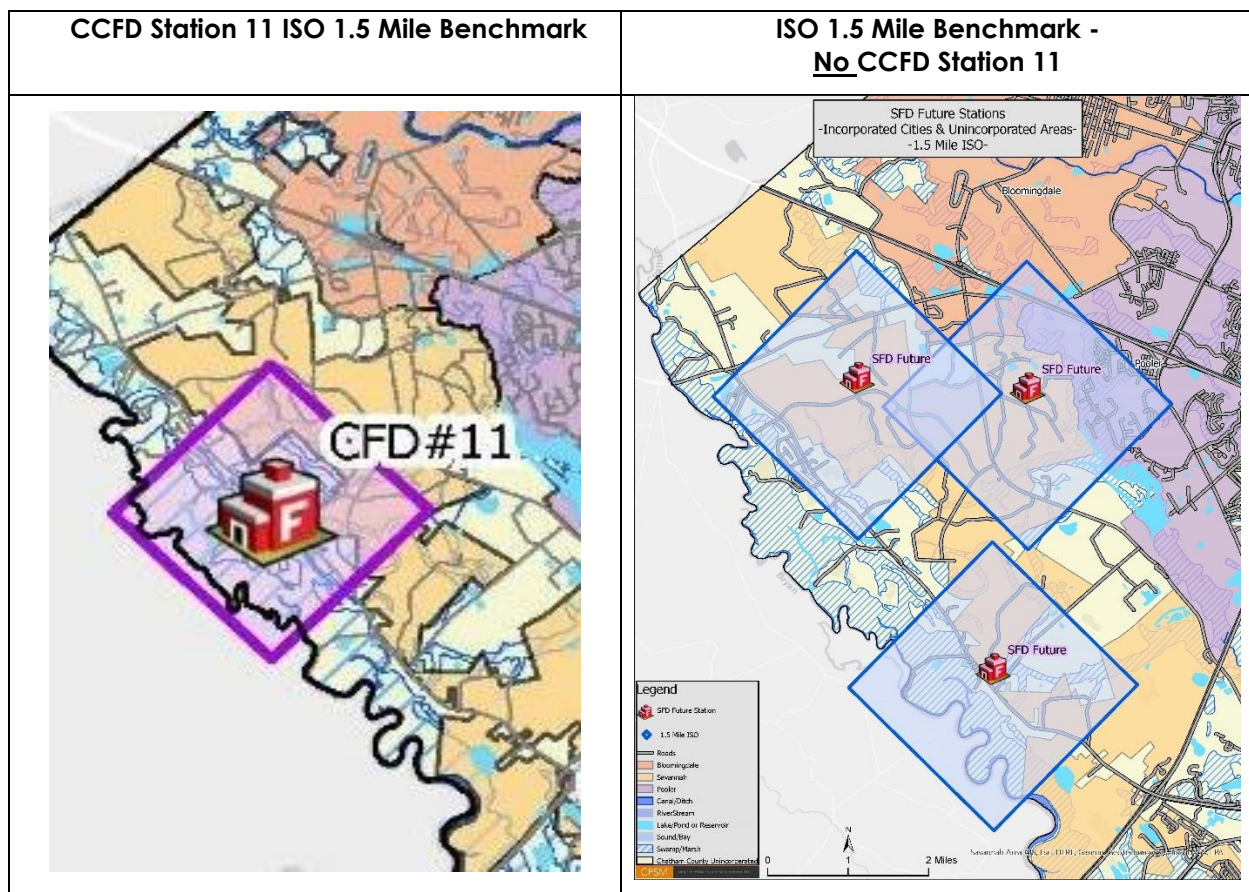
- **Mid-Long term:** Close Station 10 should the City of Savannah annex the area east and south of Buckhalter Road. Redeploy Engine 10 staffing where needed to increase staffing to 3/Shift on two units. Redeploy Engine 10 to another station with an older apparatus or to reserve.

Mid-Long Term: Relocate Station 2 to the area of Winterberry Road and Ferguson Ave. This station borders the City of Savannah to the north and west and is out of position for response to its primary district. Additional consideration should be given to relocating CCFD administration and program staff to this County facility.

The next set of figures illustrate how this realignment provides efficiency to the overall CCFD response plan with minimal effect on the Station 11 service area.

Figure 44: CCFD Station 11 Service Area Consideration





To conclude, the current response footprint of the CCFD has been in place for many years. Population growth, increased demand, and annexation have impacted the CCFD response footprint, particularly on the west side of the county. Municipalities have annexed unincorporated areas once served by the CCFD and then, in some cases, placed a municipal fire station in close proximity to a CCFD fire station.

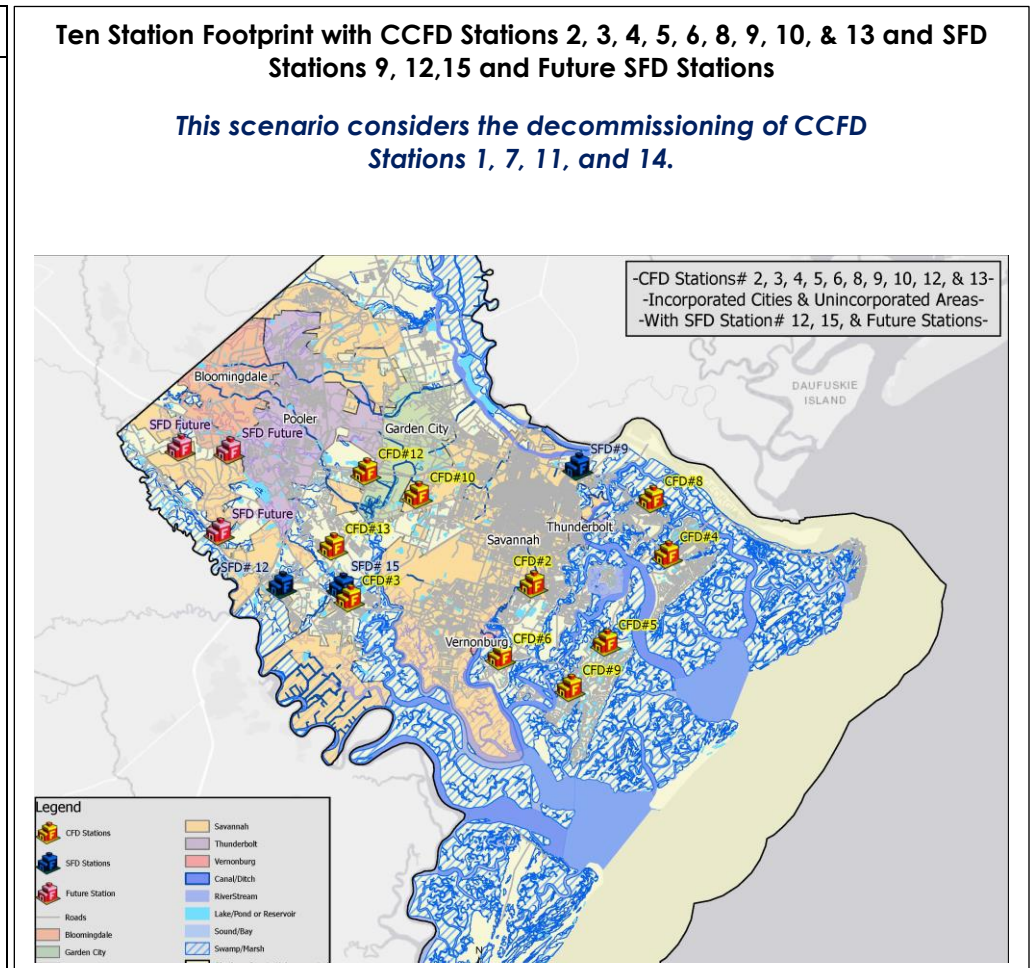
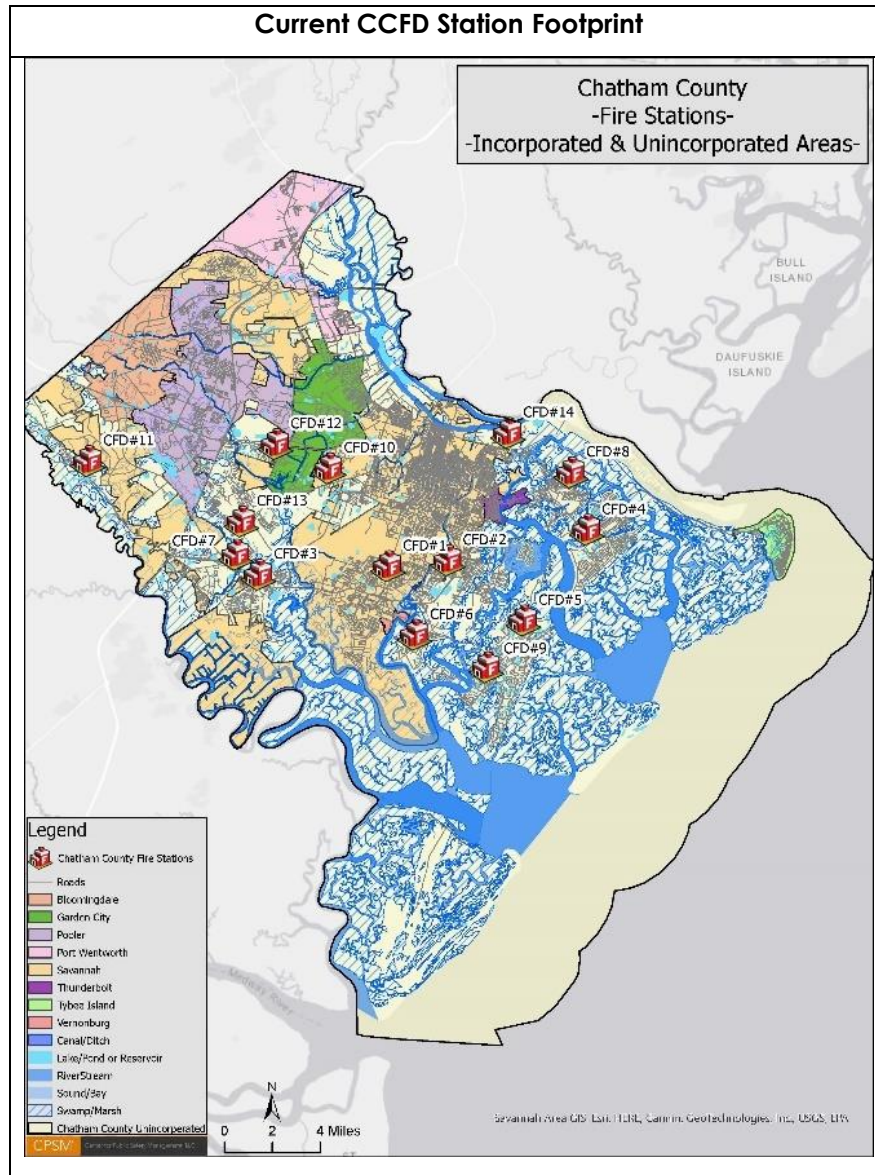
The County and CCFD can realize a more efficient response model over the near and mid-terms should the City of Savannah be willing to enter into three service area agreements for the CCFD Station 7, 11, and 14 response areas, and an automatic aid agreement for the Station 7 area that Station 3 and 13 areas.

Additional efficiency can be gained if the City of Savannah and the Town of Vernonburg are willing to work together and have the Savannah Fire Department provide fire protective services to the Town, which is currently served by the CCFD from CCFD Station 1.

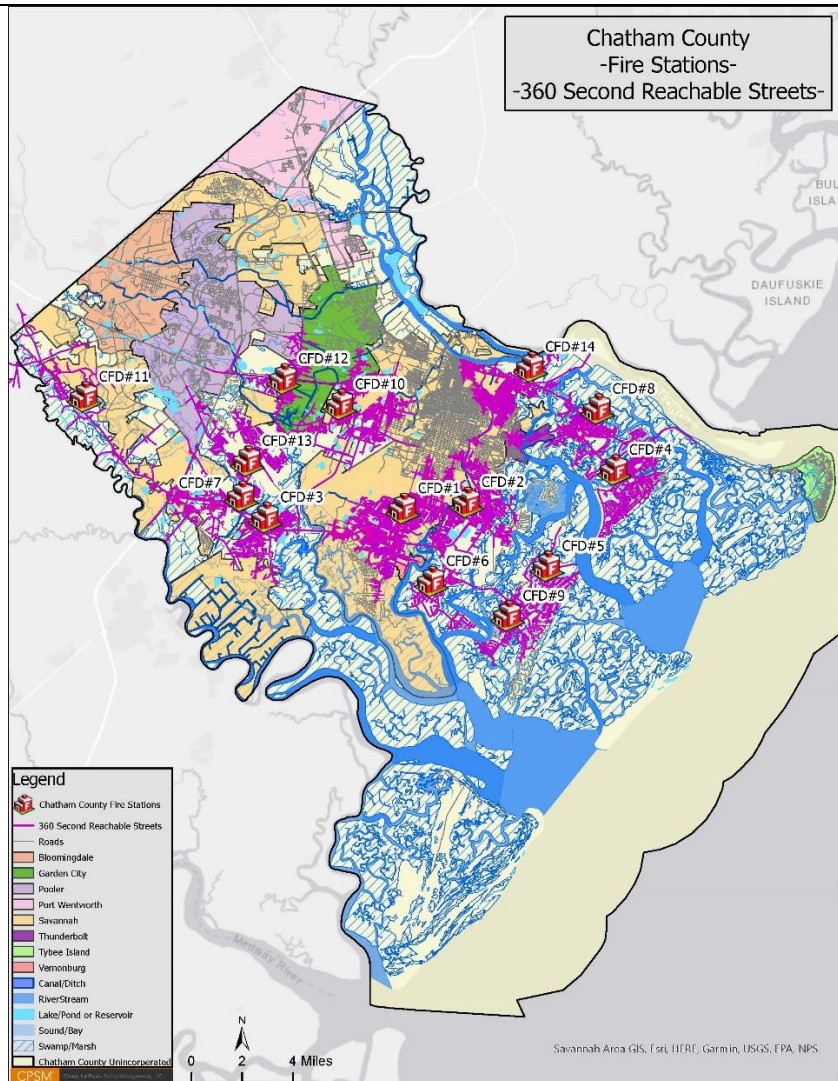
Should these service agreements be successful, the CCFD can decommission fire services from Stations 1, 7, 11, and 14, and redeploy staffing, apparatus, and equipment assets to other CCFD stations, or place apparatus and equipment assets in reserve, and also modify the facility lease agreement between Chatham Emergency Services and the County.

The next figures illustrate the CCFD near-midterm ten station response footprint.

Figure 45: Ten Station Footprint Considerations

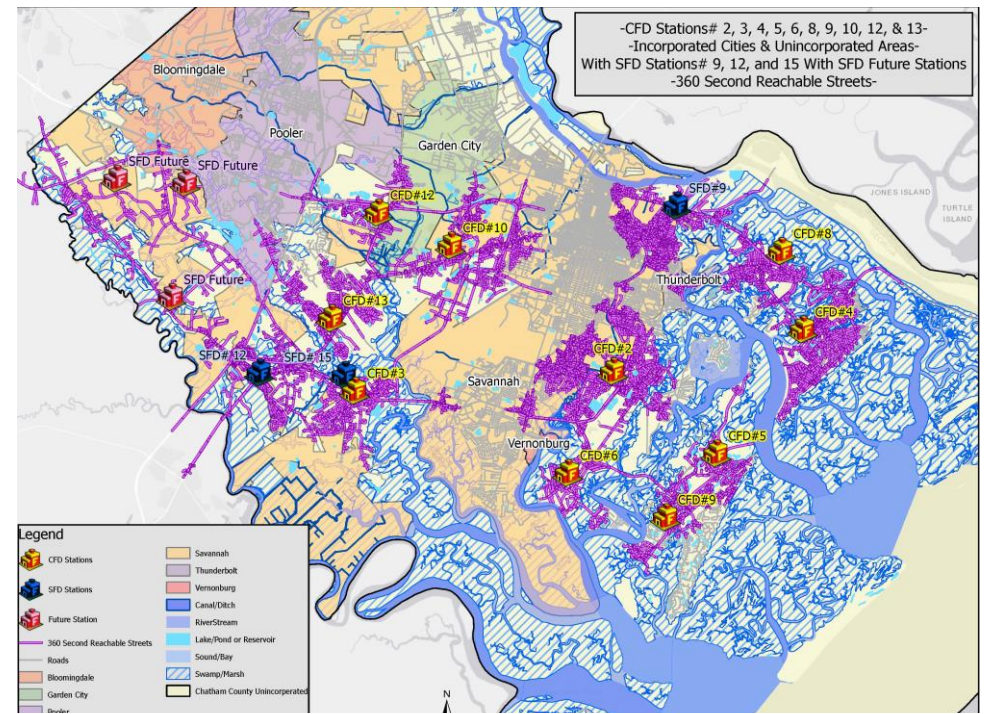


Current CCFD 360 Second Travel Time

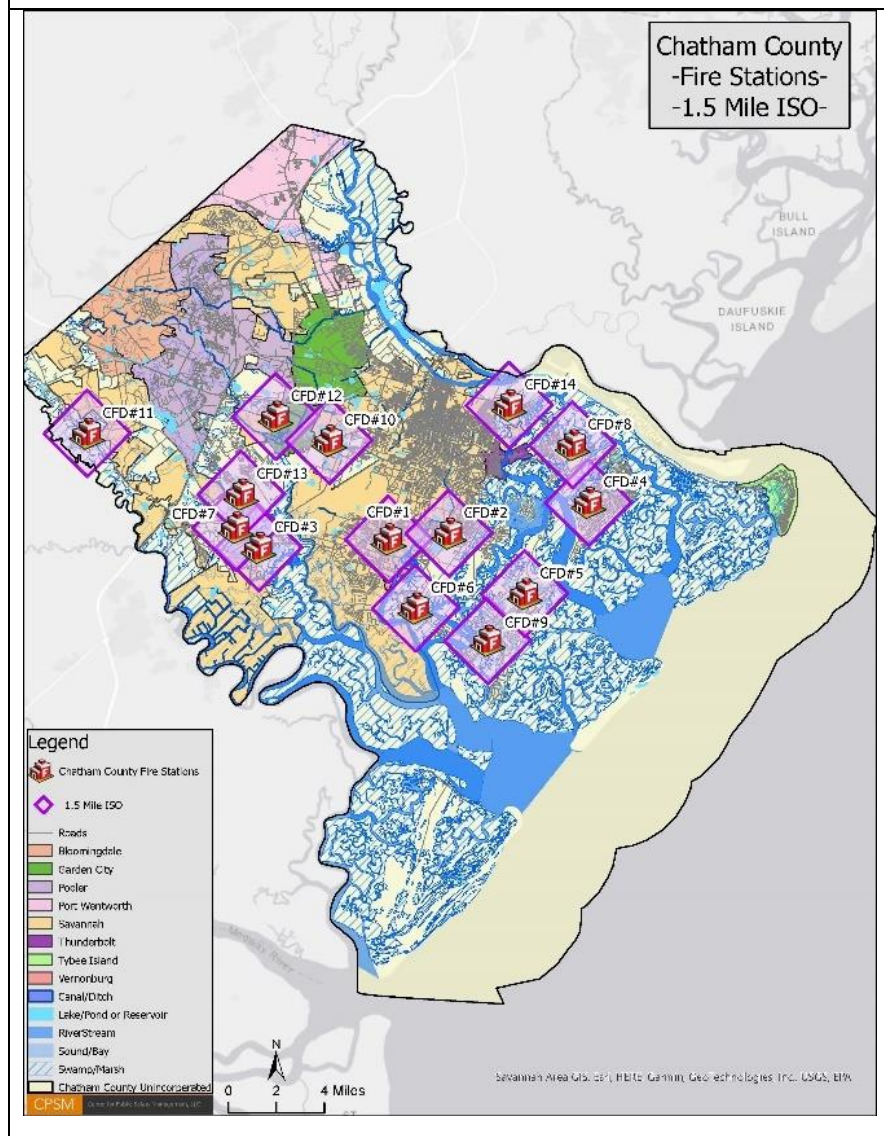


360 Second Travel Time with CCFD Ten Station Footprint and SFD Stations 9, 12, 15 and Future SFD Stations

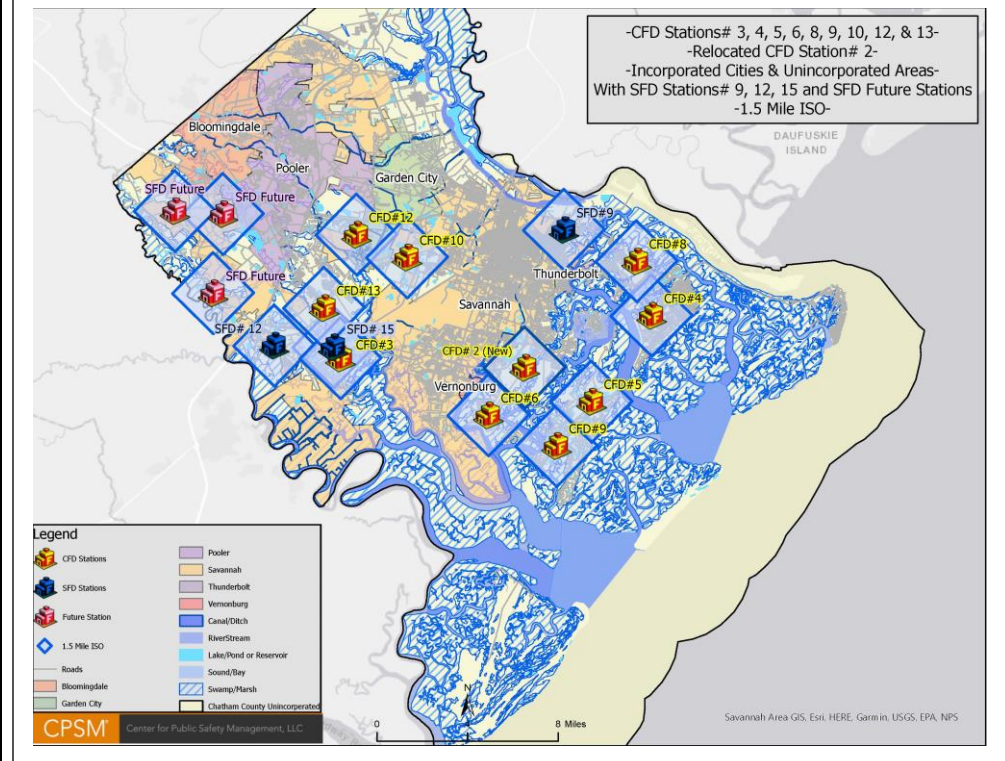
360 seconds is the recommended performance benchmark for the CCFD.



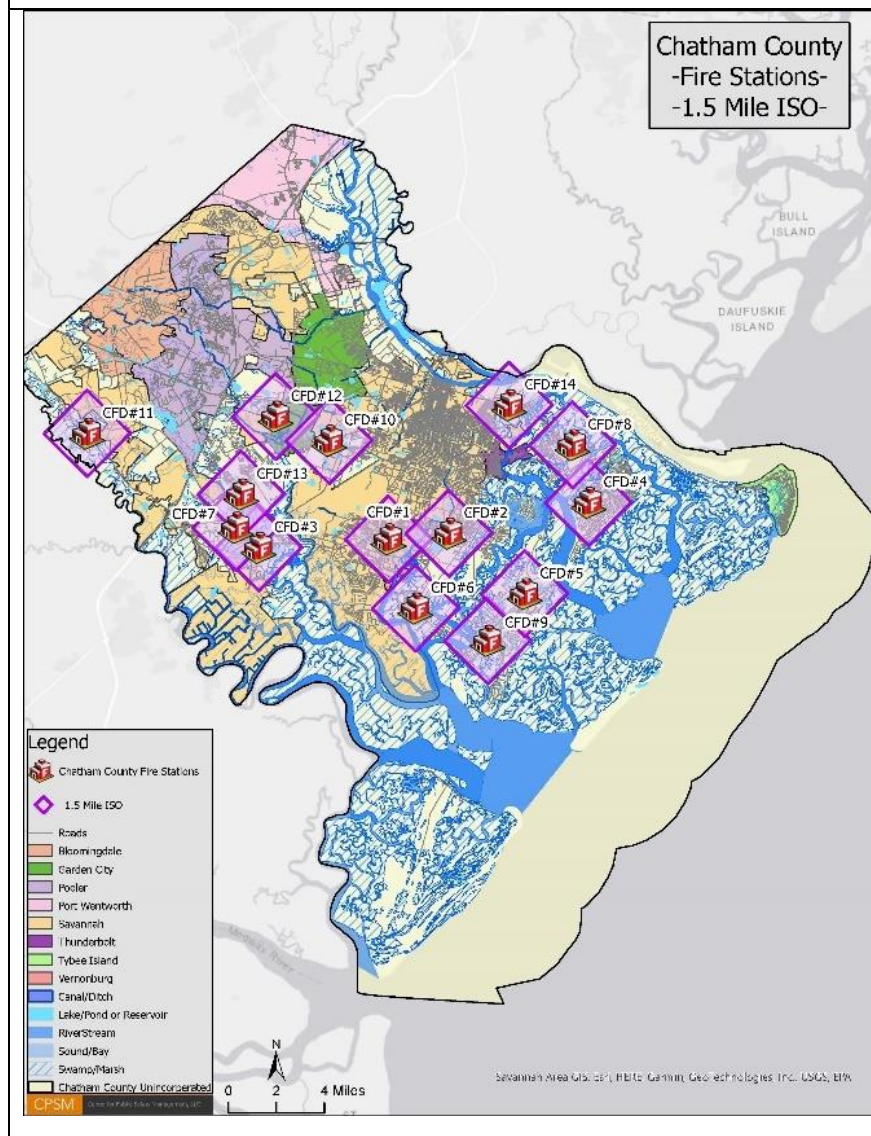
Current CCFD ISO 1.5 Mile Engine Benchmark



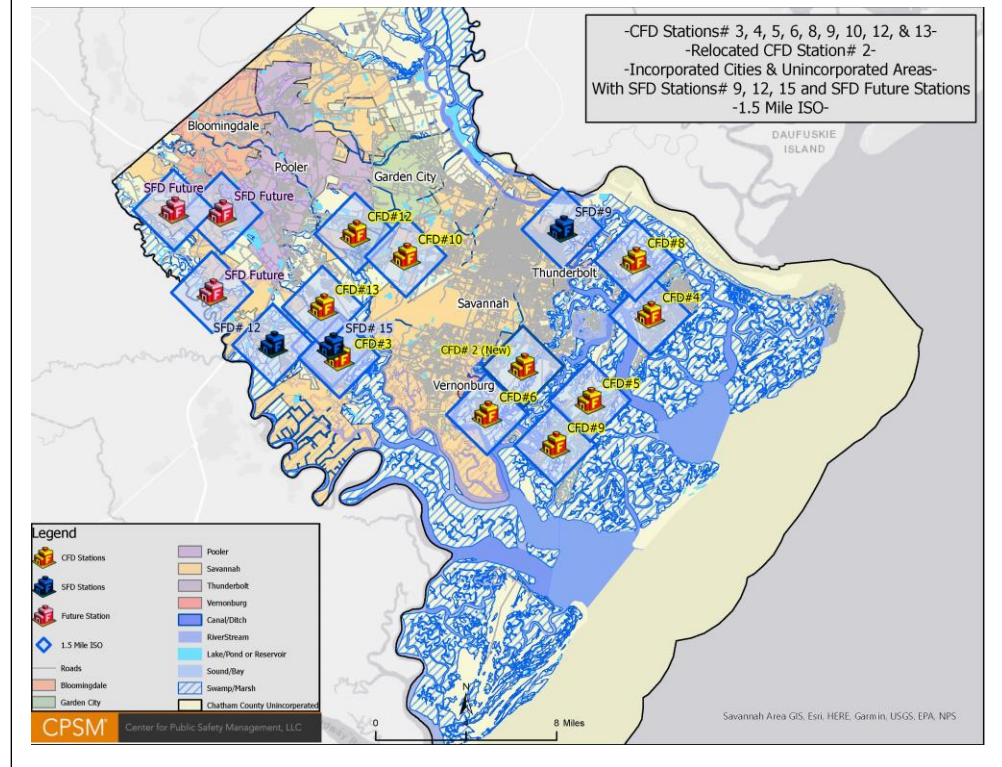
ISO 1.5 Mile Engine Benchmark with CCFD Ten Station Footprint and SFD Stations 9, 12, 15 and Future SFD Stations



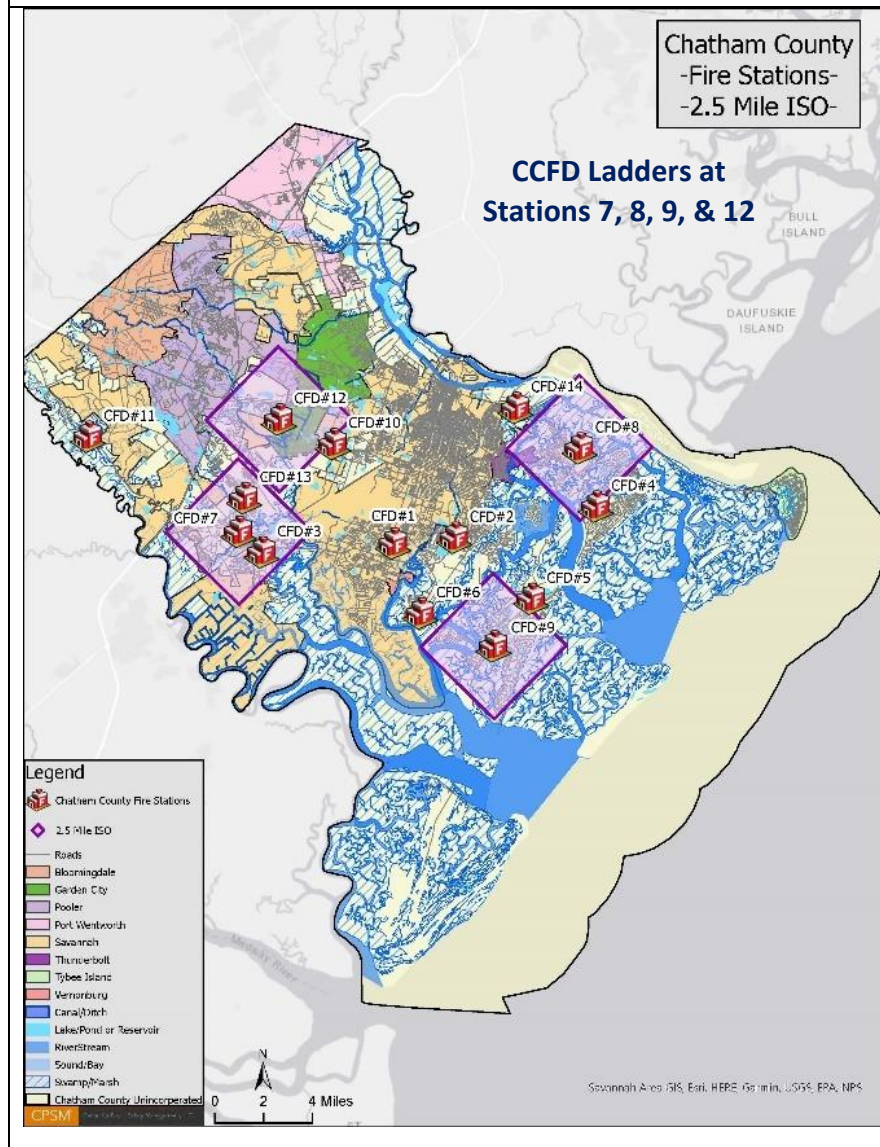
Current CCFD ISO 1.5 Mile Engine Benchmark



ISO 1.5 Mile Engine Benchmark with CCFD Ten Station Footprint (Station 2 Relocated to Sandfly Area) and SFD Stations 9, 12, 15 and Future SFD Stations



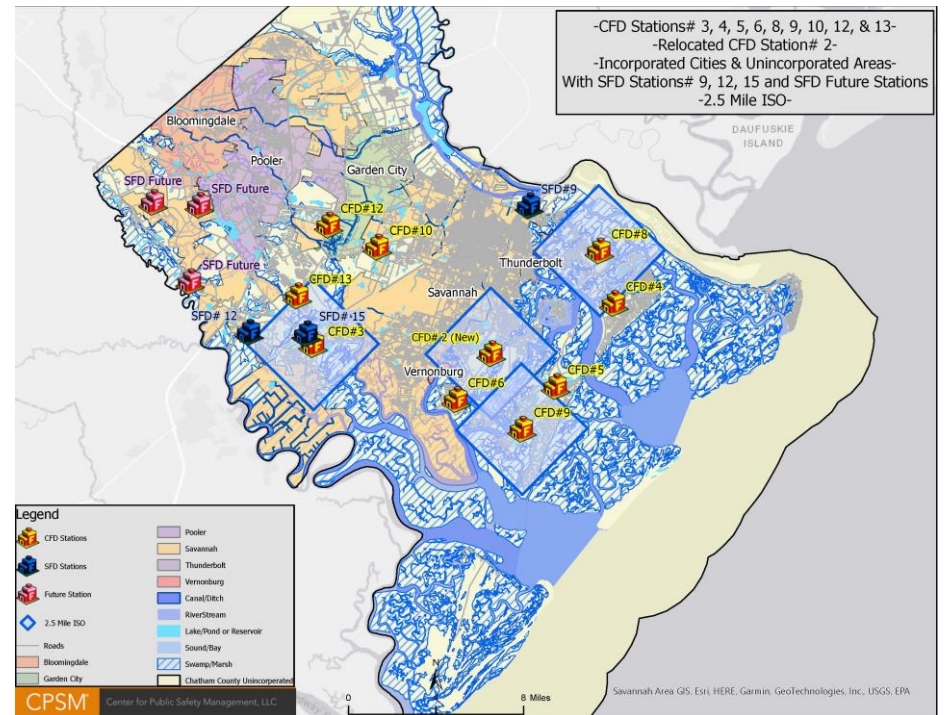
Current CCFD ISO 2.5 Mile Ladder Benchmark



ISO 2.5 Mile Ladder Benchmark with CCFD Ten Station Footprint and SFD Stations 9, 12, 15 and Future SFD Stations

CCFD Ladders Located at Stations 2, 3, 8, & 9

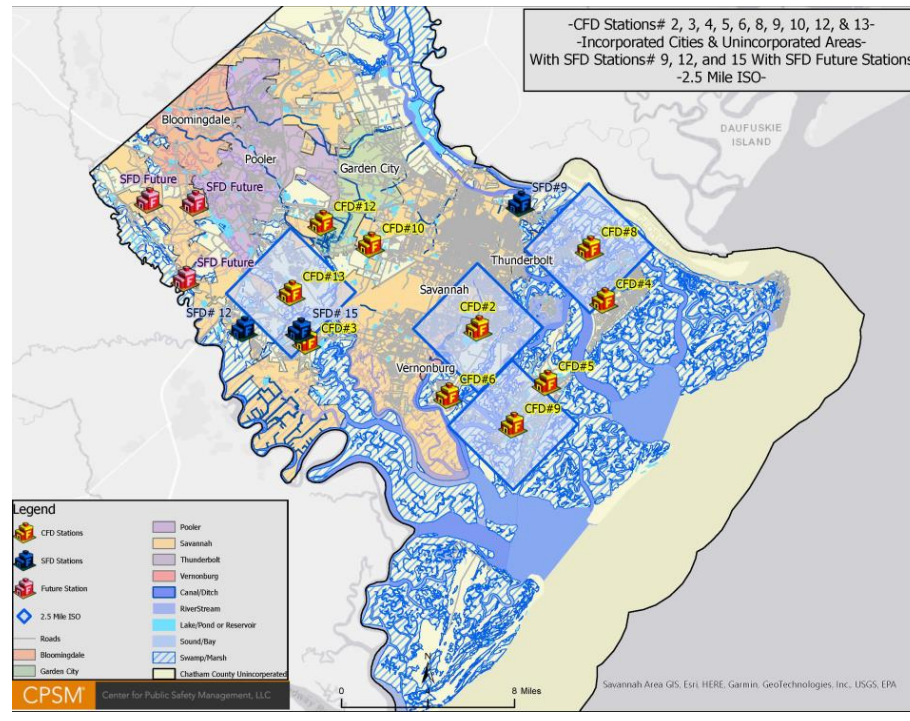
This is the initial scenario if CCFD Station 7 is decommissioned.



ISO 2.5 Mile Ladder Benchmark with CCFD Ten Station Footprint and SFD Stations 9, 12, 15 and Future SFD Stations

CCFD Ladders Located at Stations 2, 8, 9, & 13

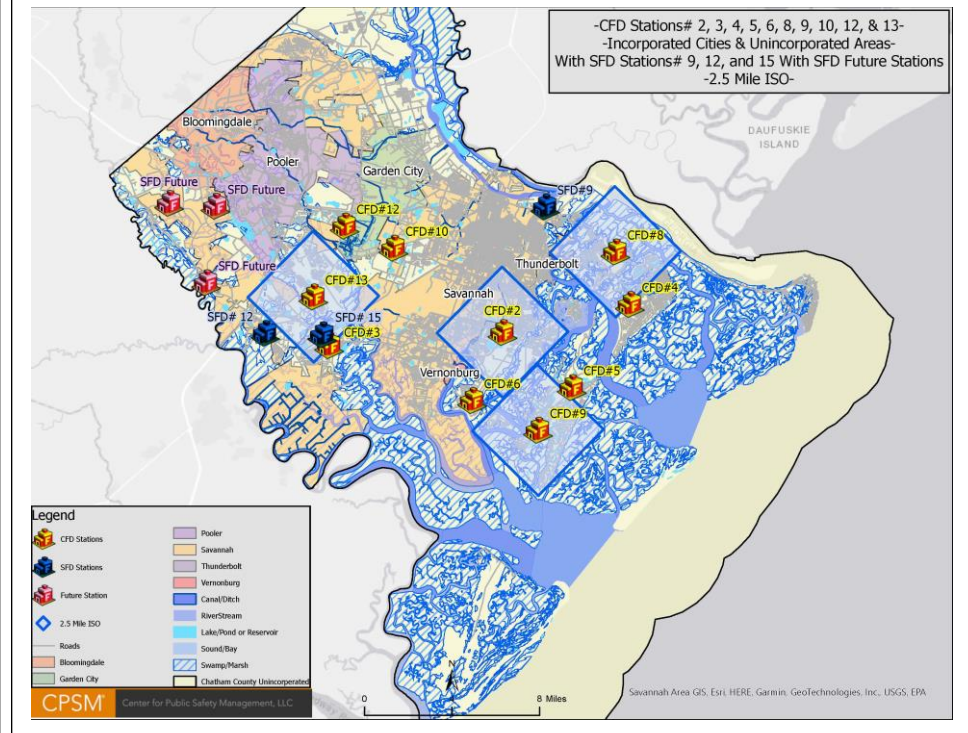
This scenario illustrates the most effective west side ladder company placement and requires a new Station 13 facility in the proximity of the current leased station.



ISO 2.5 Mile Ladder Benchmark with CCFD Ten Station Footprint and SFD Stations 9, 12, 15 and Future SFD Stations

CCFD Ladders Located at Stations 2 (relocated to Sandfly), 8, 9, & 13

This scenario considers new facilities for Stations 2 and 13.



In review of the station efficiency modeling as outlined above:

- The decommissioning of Station 1 has little impact on the level of service to the Town of Vernonburg if the City of Savannah and the Town are willing to work together on a fire service area agreement. Redeployed staffing increases the effectiveness of units staffed with 3-personnel.
- The decommissioning of Station 14 has negligible impact on the level of service to the unincorporated Station 14 district if the City of Savannah is willing to work with the County on a fire service area agreement for Savannah Fire Station 9 to provide service to the limited Station 14 district. Redeployed staffing increases the effectiveness of units staffed with 3-personnel.
- The decommissioning of Station 7 has little impact on the level of service to the unincorporated Station 7 district if the City of Savannah is willing to work with the County on a fire service area and automatic aid agreement for Savannah Fire Station 12 to provide service to the Station 7 district (areas that Stations 3 and 13 cannot) and also provide automatic aid response from Savannah Fire Station 15 in Station 3's district on structure and other multi-unit responses. Redeployed Engine 7 staffing increases effectiveness of units staffed with 3-personnel in this region and makes automatic aid with Savannah Fire Department more appealing. The redeployment of Truck 7 apparatus and staffing to Station 3 as a temporary measure (the ideal location is a new Station 13) maintains a ladder company in western unincorporated Chatham County.
- The decommissioning of Station 11 has little impact on the level of service to the unincorporated Station 11 district if the City of Savannah is willing to work with the County on a fire service area agreement where future Savannah Fire Stations (temporary and/or permanent) provide service to the Station 11 district. Redeploy Engine 11 staffing where needed as determined by the Fire Chief to increase staffing to 3/Shift.
- The ten station CCFD footprint, utilizing a 360 second travel time benchmark, and with service area agreements with the City of Savannah for the Station 7, 11, and 14 districts, provides effective coverage for unincorporated Chatham County. With the agreements and the ten CCFD stations, there are only nominal differences when compared to a fourteen-station CCFD footprint.
- The recommended ten station footprint reduces staffed heavy fire apparatus from eighteen to fourteen.
 - 14 station model: 11 Engines; 3 Squads; 4 Trucks (Ladder Apparatus)
 - **10 station model: 7 Engines; 3 Squads; 4 Trucks (Ladder Apparatus)**

Additionally:

- There is nominal ISO 1.5 benchmark change in coverage with a ten-station footprint.
- The realigned ladder coverage with ladder companies assigned to Station 2, 8, 9, and 13 offers effective coverage when benchmarked against the ISO 2.5-mile standard.
- The Garden City service area contract is sustained with Stations 10 and 12. If the City of Savannah continues to annex unincorporated area in the Station 10 district and there is no longer a need for Station 10, the Garden City contract is still sustained with Station 12.
- The redeployment of staffing from the decommissioning of Engines 1, 7, 11, and 14 can be utilized elsewhere in the CCFD system to increase staffing on other response units as outlined herein.

- The redeployment of decommissioned engines to other stations where there may be older apparatus or to reserve should reduce the size of the overall engine fleet.

Relocation of Station 14 Alternative

One additional consideration and alternative to the near-midterm 10-station model includes the relocation of Station 14 to the Talahi, Whitemarsh, and Wilmington Island region of the County. Currently this region is served by Stations 4, 8, and 14. As an island region of unincorporated Chatham County, access is limited to US Highway 80E and the Islands Expressway.

Should Station 14 be decommissioned and the Station 14 district be contracted to the SFD (Station 9) as discussed above, there would be additional reliance through automatic aid with the City of Savannah and CCFD units from distant Stations 2 and 6 primarily, and Stations 5 and 9 to ensure adequate deployment of resources for building fires and other multi-unit responses.

In comparison and as illustrated in the next map, the southern region of unincorporated Chatham County that includes Skidaway and Montgomery Islands is served by four fire stations. This model was designed to meet the needs of these communities and ensure adequate fire protection coverage and also contemplate the access limitations to island communities.

CCFD, when providing service through Chatham Emergency Services, had planned to construct a new station at Johnny Mercer Blvd. and Highway 80E (as illustrated on the next map). This location provides access to all three islands (Talahi, Whitemarsh, and Wilmington) and provides the CCFD with options for resource deployment that includes the central placement of a Tanker (a resource assigned to the current Station 14), and Engine, and a centrally located Truck (Ladder apparatus)) that is currently located at Station 8 (as determined by the Fire Chief).

As discussed above:

- The recommended ten station footprint reduces the staffed heavy fire apparatus from eighteen to fourteen.
 - 14 station model: 11 Engines; 3 Squads; 4 Trucks (Ladder Apparatus)
 - **10 station model: 7 Engines; 3 Squads; 4 Trucks (Ladder Apparatus)**

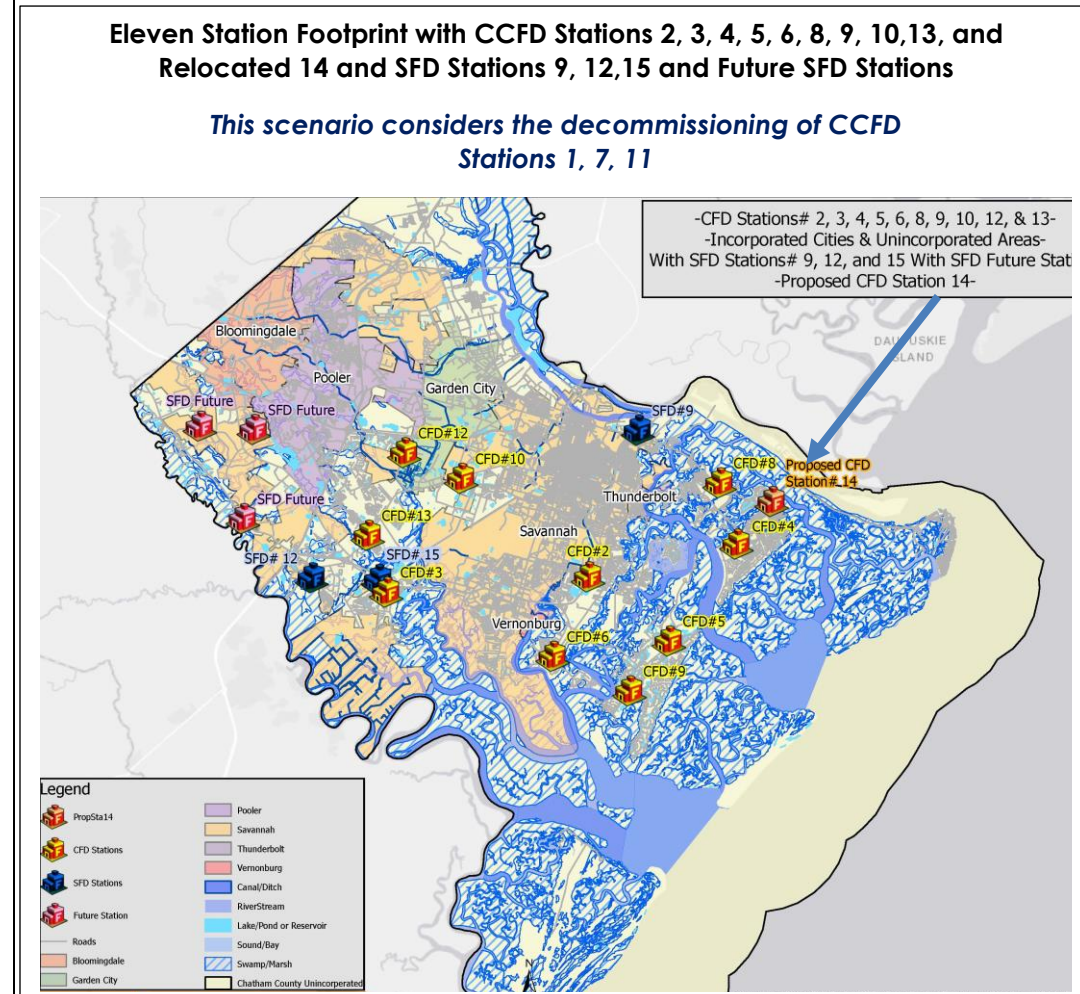
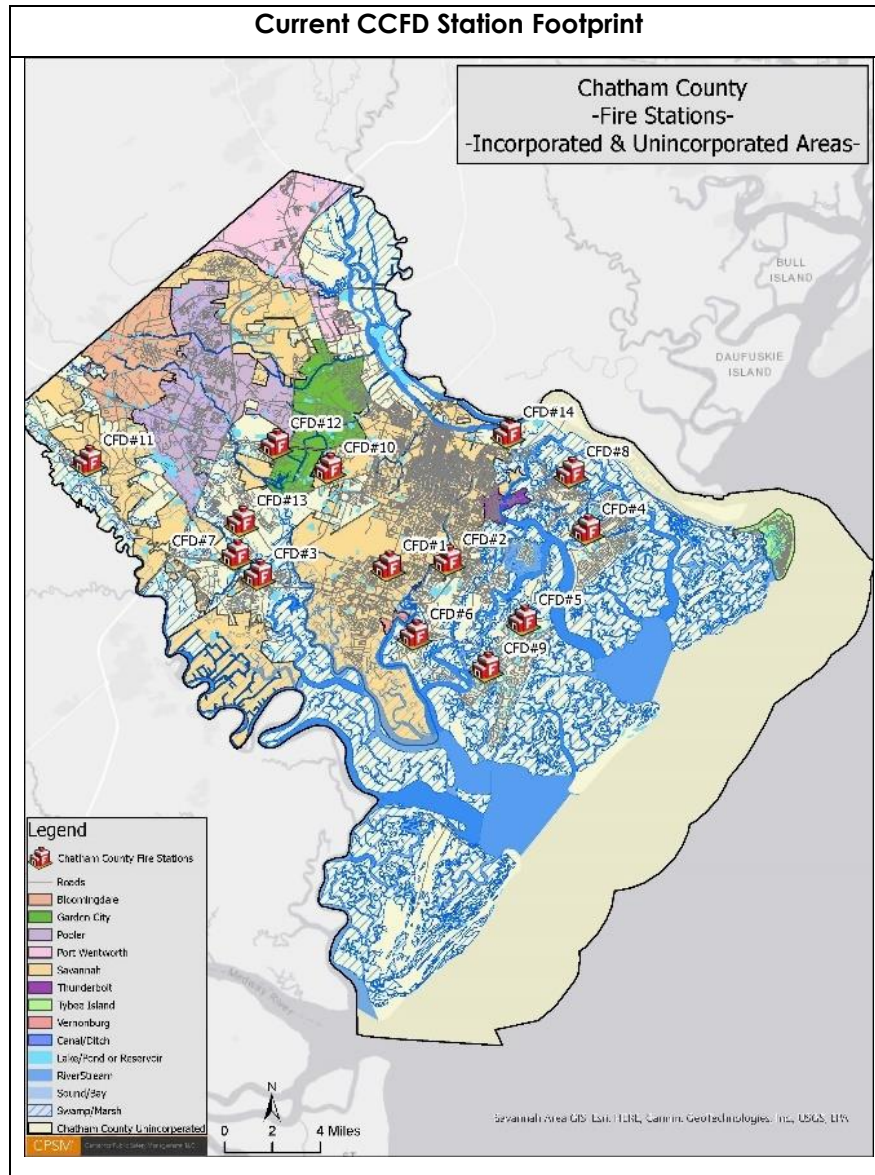
The relocation of Station 14 increases the CCFD model to an eleven-station model (a reduction from 14 to 11) and reduces staffed apparatus from eighteen to fifteen as follows:

- 14 station model: 11 Engines; 3 Squads; 4 Trucks (Ladder Apparatus)
- **11 station model: 8 Engines; 3 Squads; 4 Trucks (Ladder Apparatus)**

The next map illustrates the eleven-station model and SFD station that are considered for contract and automatic aid. Response travel times and resource deployment for the Talahi, Whitemarsh, and Wilmington are enhanced and have no negative fire protection impacts.

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Figure 46: Eleven Station Footprint Consideration



Conclusion

The CPSM team members recognize the magnitude of undertaking a fire department and commend the Chatham County Board of Commissioners, the County Administrator and County leadership team, and the new Chatham County Fire Department for their efforts in transitioning the former Chatham Emergency Services Fire Department to the Chatham County Fire Department.

Overall, CPSM found Chatham County Fire Department staff to be knowledgeable in contemporary Fire and EMS programs and program delivery, the organization of a fire department, and in the provision of basic, fundamental services of a fire department. With the current staffing levels of two per apparatus, the CCFD delivers emergency services well.

This report provides a considerable amount of technical data, much of which was provided by the Chatham County Fire Department. Additional information was provided by the County's Building Official's Office, County Engineering, and the Chatham County Resilience Program Administrator. The comprehensive approach of this document allows the reader to gain a clear understanding of the fire department's infrastructure, staffing levels, the community risk, and programs a contemporary fire department should be involved in.

This document is not intended to be a critical evaluation of the organization, but rather provide the fire department, County leadership, and Board of Commission members with information relevant to the transition of the private fire department to a County fire department and make recommendations and offer considerations to create a more efficient and effective fire department.

It is CPSM's hope that the information contained within this document is found to be useful and will provide the County with the information necessary to meet current and future fire protection and community risk reduction services as efficient and effective as possible.

End of Report

