2024 Community Risk Assessment & Deployment Analysis

Anne Arundel County Fire Department

Maryland

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Emergency Services Consulting International
Helping Change the World, One Community at a Time

Contents

Executive Summary

For the Anne Arundel County Fire Department (AACOFD), Emergency Services Consulting International (ESCI) conducted a comprehensive Community Risk Assessment and Deployment Analysis to enhance its emergency response capabilities and ensure the safety and well-being of the community. This report outlines the general process undertaken and highlights key recommendations for improving service delivery.

The assessment involved a detailed analysis of the community's demographics, infrastructure, and risk factors. ESCI examined various aspects, including population density, housing occupancy, transportation networks, and hazardous substances. The report also reviewed the fire department's current service delivery infrastructure, organizational design, and governance structure.

The AACOFD's service area was divided into urban and rural zones to tailor response strategies effectively. The department's operational staffing, cross-staffing model, and resource allocation were evaluated to identify areas for improvement. The assessment included a thorough review of emergency services, such as firefighting, emergency medical services (EMS), special operations, fire investigations, and fire inspections.

The recommendations focus on key themes to enhance the department's operational readiness and service delivery. Firstly, there is an emphasis on improving operational response by adding command positions, transitioning away from the cross-staffing model, and ensuring dedicated staffing for all critical resources. This includes fully staffing special service resources and implementing a four-person minimum staffing model on all suppression apparatus to align with NFPA 1710 standards.

Secondly, the report recommends adopting urban and rural response zones based on population densities and infrastructure improvements. Establishing standards for staffing and response times for different risk levels is crucial, along with measuring and reporting unit hour commitment quarterly to monitor workload and service delivery.

Thirdly, the recommendations address apparatus and fleet management by revising the apparatus replacement plan, evaluating peak-time ambulances, call diversion, and matching resources to needs. Protecting the reserve fleet from environmental elements and providing shelter is also highlighted.

Lastly, the report suggests administrative and organizational oversight improvements, such as deploying paramedic recruitment academies, transitioning the public information officer (PIO) position to a civilian Communications Director, and establishing a south fleet garage for minor repairs and reserve apparatus. Additionally, to reduce the workload on inspection personnel, exploring options for managing inspection, testing, and maintenance (ITM) reports conducted by third-party contractors and implementing a self-inspection program for lower-priority occupancies are recommended.

By implementing these recommendations, the AACOFD aims to improve its operational readiness, enhance response times, and ensure the safety and well-being of Anne Arundel County's residents and visitors.

Acknowledgments

Anne Arundel County Fire Department

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Organizational Overview

Service Area Population & Demographics

The community of Anne Arundel County, MD, is a sizable and diverse area with a total of 206,625 households as of 2023, which is projected to grow to 234,178 by 2028. The population density is 1,455.1 people per square mile, and the total population is 551,073. The median household income is a substantial $115,866, indicating an affluent community. The diversity index is 65.3, reflecting a varied demographic makeup.

Risk factors within this community are multifaceted. A notable 21% of households include at least one person with a disability, which may necessitate enhanced community services and accessibility considerations. The daily population shift is negative, with 40,082 fewer people during the day, potentially impacting local businesses and service demands. Public assistance is received by 2% of households, and 5% are below the poverty level, highlighting socioeconomic challenges that could affect community welfare and resource allocation.

Housing occupancy reveals that 74% of homes are owner-occupied, suggesting a stable residential base, while 26% are renter-occupied, which could imply a more transient population. The percentage of school-aged children in grades 1-8 is 10%, necessitating adequate educational facilities and programs. Additionally, 39% of homes use gas appliances, emphasizing the importance of safety measures like carbon monoxide alarms.

According to the state assessment data, infrastructure concerns arise with 50% of houses built before 1980, and the median year of residential structure construction is 1983. This could indicate potential risks to older buildings, such as maintenance and code compliance. Furthermore, 6% of housing units are vacant, which may represent either economic challenges or opportunities for growth and development.

In summary, Anne Arundel County is a growing and economically robust community with a diverse population. However, it faces challenges in terms of disability prevalence, economic disparities, housing transience, aging infrastructure, and safety concerns related to gas appliances. Addressing these issues will be crucial for the community's sustainable development and overall well-being. The Fire Department should ensure they remain aware of these challenges and incorporate them into future planning.

Figure 1. Community Profile

COMMUNITY PROFILE

Area: 392.9 square miles

551,073
Population

206,625
Households

2.63
Avg Size Household

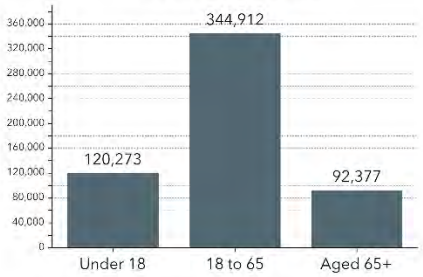
AT RISK POPULATION

44,559	92,377	6,969
Households With Disability	Population 65+	Households Without Vehicle

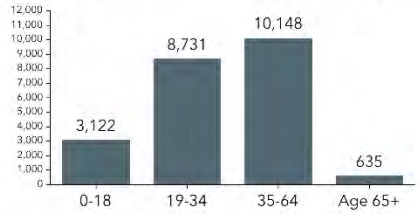
HOUSING PROFILE

39.8	$117,197	$509,081
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

510,991	20,101	242,651
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

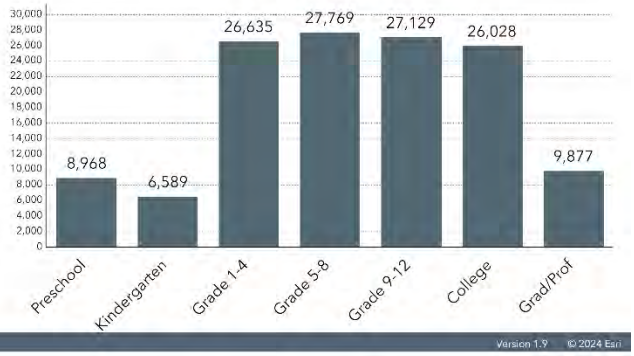
5%	10,809	153
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

155	91	64
Wealth Index	Housing Affordability	DiversityIndex

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**78,347**	**288,469**	**74,642**	**441,458**
Spanish	**6,031**	**20,023**	**1,676**	**27,730**
Spanish & English Well	5,469	17,014	1,441	23,924
Spanish & English Not Well	561	2,335	82	2,978
Spanish & No English	0	675	153	828
Indo-European	**1,647**	**10,226**	**2,699**	**14,572**
Indo-European & English Well	1,564	9,551	2,380	13,495
Indo-European & English Not Well	83	649	232	964
Indo-European & No English	0	25	87	112
Asian-Pacific Island	**1,058**	**8,647**	**2,356**	**12,061**
Asian-Pacific Isl & English Well	984	7,780	1,746	10,510
Asian-Pacific Isl & English Not Well	48	785	304	1,137
Asian-Pacific Isl & No English	26	82	306	414
Other Language	**760**	**5,826**	**530**	**7,116**
Other Language & English Well	710	5,659	487	6,856
Other Language & English Not Well	27	167	43	237
Other Language & No English	23	0	0	23

SCHOOL ENROLLMENT (ACS)



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Comparison to the State of Maryland

Anne Arundel County, when compared to the broader Maryland community, presents a unique demographic and risk profile. Despite the size difference, Anne Arundel County stands out in several aspects, particularly in terms of housing and socioeconomic factors. The county has a higher median household income, indicating a wealthier population on average. The daily population shift is negative, suggesting that a significant number of residents commute out of the region for work, affecting daytime service demands. The community has a lower percentage of renter-occupied units, pointing to a more stable, homeowner-based population. The percentage of school-aged children is consistent with the state average, but the county has a higher percentage of homes using gas appliances, which could pose safety risks. The percentage of vacant housing units is lower, suggesting a tighter housing market. The community's infrastructure is older, with a higher percentage of houses built before 1980 and a median structure year closer to the present, indicating recent development or renovations.

Below is a bulleted list highlighting the primary differences:

- Median Household Income: Anne Arundel County has a higher median income of $115,866 than Maryland's $100,479.
- Households with a Disability: 21% in Anne Arundel County vs. 23% in Maryland.
- Renter Occupied: 26% in Anne Arundel County vs. 33% in Maryland.
- Owner Occupied: 74% in Anne Arundel County vs. 67% in Maryland.
- Homes Using Gas Appliances: 39% in Anne Arundel County vs. 46% in Maryland.
- Vacant Housing Units: 6% in Anne Arundel County vs. 8% in Maryland.
- Houses Built Before 1980: 43% in Anne Arundel County vs. 51% in Maryland.
- Median Year Residential Structure Built: 1983 in Anne Arundel County vs. 1978 in Maryland.
- School-aged Population (Grades 1-8): Both communities have 10%.
- High School Age Population: 5% in both communities.
- Population with College Degrees: 33% in Anne Arundel County vs. 31% in Maryland.

These factors collectively paint a picture of Anne Arundel County as a stable and homeowner-centric community with specific infrastructure and safety considerations.

The community's challenges and strengths differ in key areas when compared to the broader state, which should be considered in local policy and planning.

History, Formation, & General Description

Before the Anne Arundel County Fire Department was created, each community volunteer fire department provided fire protection in Anne Arundel County. The Anne Arundel County Commissioners were allowed to hire a paid "chauffeur and caretaker" for the volunteer stations at Earleigh Heights, Glen Burnie, and Eastport by the Maryland State Legislature in 1924. "Chauffeurs" became county workers in 1932 and were later renamed with the title "Engineman."

In 1963, the County Commissioners established the role of Fire Marshal to oversee fire prevention for the county. Two years later, the county adopted a charter government, and the current AACOFD was formed. Harry W. Klasmeier was appointed as the first Fire Chief in 1964 and was charged with bringing together the independent volunteer fire companies to form a unified county fire department. In 1966, a Central Alarm and Communications center was created along with a Fire Prevention Bureau and Training Academy.

According to National Fire Protection Association standards, all AACOFD responders have national certification at their rank. The department is an "all hazards" organization that provides fire protection, Basic Life Support (BLS), Advanced Life Support (ALS), hazardous materials response and mitigation, collapse rescue, confined space rescue, dive rescue, and marine operations. The department is committed to adapting to meet the changing needs of its citizens and to looking ahead to the future to reduce risks and minimize the destructive effects of man-made and natural disasters.

Currently, AACOFD's available response resources include twenty-nine (29) Advanced Life Support (ALS) units, fourteen (14) Basic Life Support units, forty-four (44) engine companies, ten (10) ladder companies, and seven (7) squad companies. The other department responsibilities include Fire & Emergency Medical Service (EMS) Training, Fire Marshal Office, Communications (911 center), and Logistics Division (Vehicle & Facilities Maintenance, SCBA Maintenance, Quartermaster).

Figure 2. Career Staffed & Volunteer Staffed Resources.

Resource	Total	24/7 Staffed	Available for Volunteer Staffing
Advanced Life Support	29	28	0
Basic Life Support	14	4	10
Engine	44	31*	13
Ladder (Truck)	10	10**	0
Squad	8	7**	1

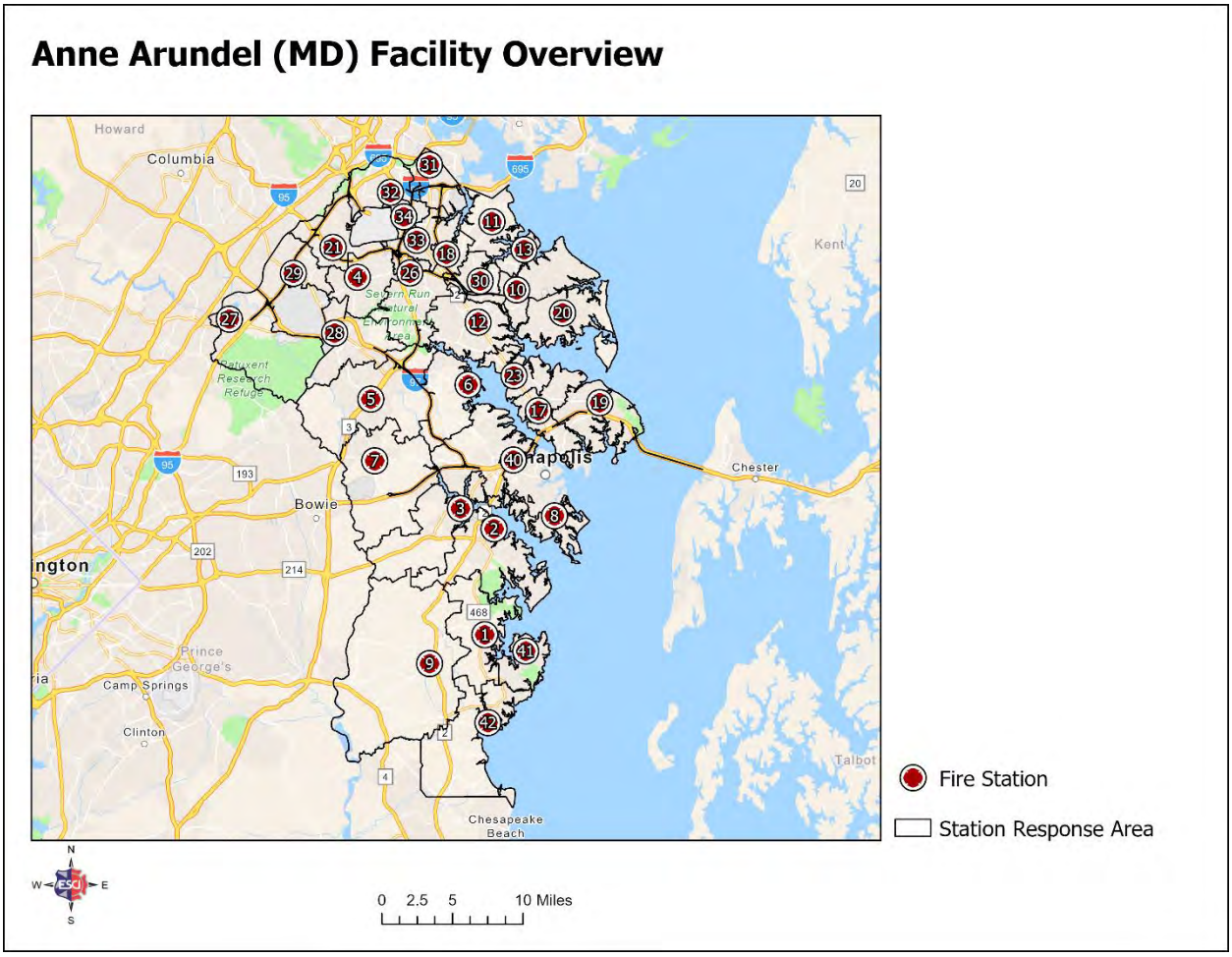
*18 of the 31 engines cross-staff other units.
**These units are cross-staffed with engine company personnel. When the personnel from the engine staff the unit, the engine is unavailable.

The AACOFD is a career fire department supported by several volunteer fire companies that serve a population of 551,073 residents. The department also provides and receives mutual aid services with the Baltimore Washington International Thurgood Marshall Airport, Baltimore City, Baltimore County, Calvert County, City of Annapolis (automatic mutual aid), Prince George's County, Queen Anne's County on the Eastern Shore, and the United States. Army Post Fort George G. Meade, and the United States Naval Academy.

Description of the Current Service Delivery Infrastructure

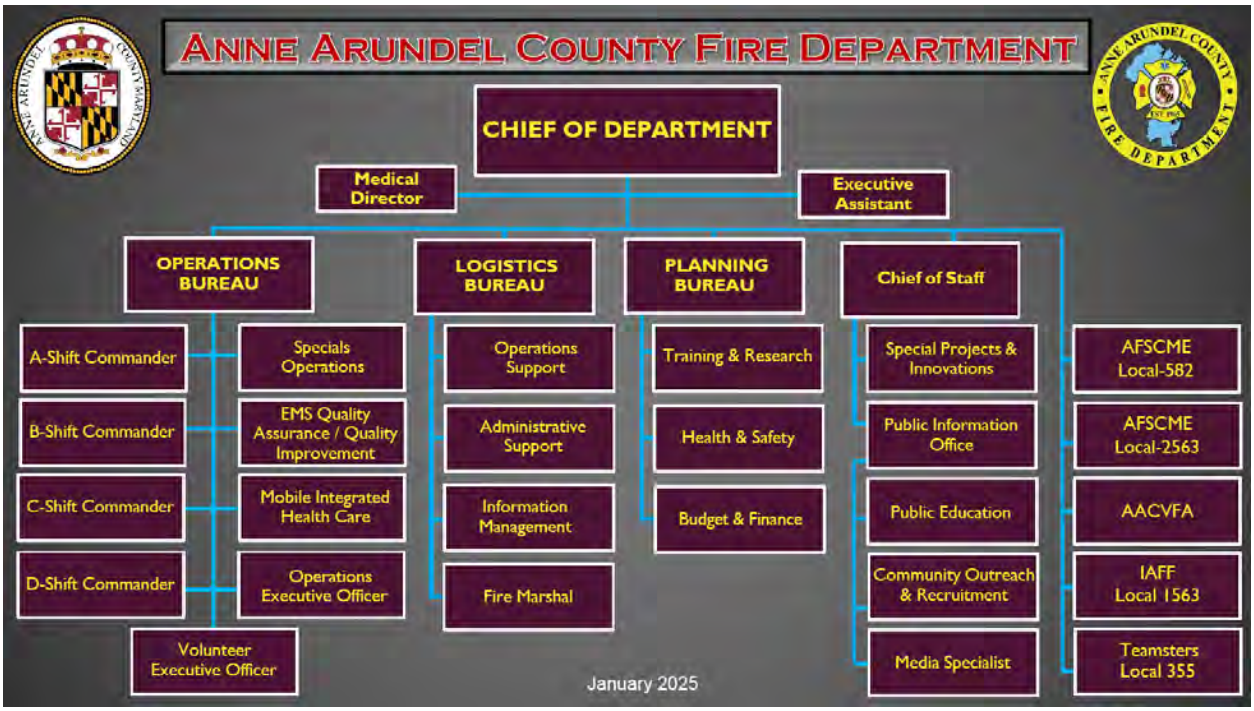
The AACOFD provides fire suppression, emergency medical services, technical rescue, hazardous materials response, fire prevention, and public education to the residents and visitors of the county. The department operates from 31 fire stations, located in urban, suburban, and rural areas, and covers an area of 393 square miles including over 530 miles of coastline. The department also coordinates with neighboring jurisdictions and federal agencies for mutual aid and regional response.

Figure 3. Fire Station Locations



Organizational Design

Figure 4. Organizational Chart



Governance & Lines of Authority

Anne Arundel County is governed by a charter form of government, with an elected county executive and a seven-member county council. The county executive is responsible for the administration of the county and appoints the heads of various departments and agencies. The county council is the legislative branch of the county government, which enacts local laws, approves the budget and oversees the zoning and land use policies. The county also has an independent judiciary consisting of the Circuit Court, the District Court, and the Orphans' Court. The county's fire and emergency services are overseen by the fire chief, who reports to the county executive.

Review of Services Provided

Emergency Services Response Types

The AACOFD is an all-hazard response agency that provides emergency and non-emergency services. The department responds to all fires, medical emergencies, vehicle accidents, hazardous material incidents, and technical rescue incidents, including water rescue. The AACOFD responds to incidents from stations located throughout the county. Through mutual aid, the department receives assistance from other jurisdictions and agencies, and the department assists when requested. Peninsulas that are part of the county's topography create significant response challenges. The peninsulas create a challenge in providing timely service to those areas of the county when the station nearest to a particular peninsula is on another incident and the next available unit must respond, which may have an extended travel route due to the topography. Some of the peninsulas are one way in and out.

Firefighting

The AACOFD responds to fire incidents from the thirty-one stations located throughout the county with a minimum of three personnel on fire apparatus. The number of resources that respond to a fire incident depends on its nature. The appropriate number and type of apparatus required for a particular incident type is programmed into the Computer Aided Dispatch (CAD) system.

Emergency Medical Services (EMS)

The AACOFD responds to Advanced Life Support (ALS) and Basic Life Support (BLS) incidents in the county and, when requested, to other jurisdictions through mutual aid. Resources used to respond to these incidents include ALS and BLS transport units and first responders on various fire apparatus. AACOFD Station 8 is staffed with a City of Annapolis Fire Department medic unit.

Special Operations

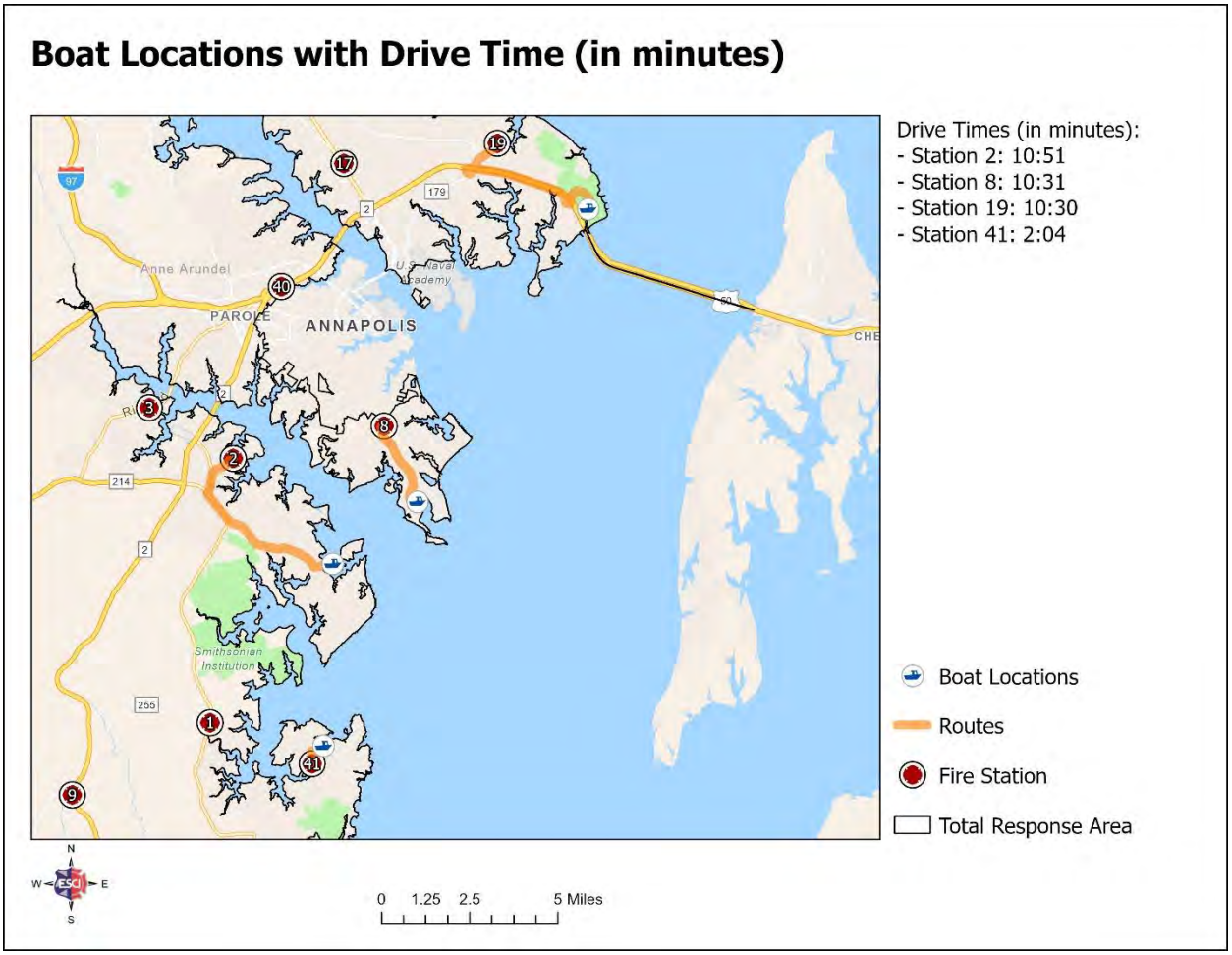
The AACOFD handles incidents requiring specialized training, including hazardous materials, technical rescues, marine operations, and water rescues. The department features dedicated Hazardous Materials (HazMat) and Technical Rescue teams, along with a Marine Operations Division responsible for water rescue. Department personnel receive advanced training in each area to ensure safe and effective response capabilities.

The department handles hazardous material and technical rescue incidents from two primary stations, Station 4 and Station 23, staffed with trained personnel proficient in both areas. Station 4 serves as the primary responder for technical rescue incidents, while Station 23 is the main responder for HazMat incidents. Both stations are equipped with pods and utility vehicles specifically designated for these specialized responses.

The department's marine operations division includes four boats. Three of these boats are cross-staffed and available for service 24/7 throughout the year, responding from three different stations. Two of these boats are equipped with fire suppression capabilities, while the third serves as a dive team asset with rescue capabilities only. The fourth boat is staffed by volunteers, as needed, and operates from a fourth station. There are no boats with dedicated staffing. Each year, the department requests overtime funding to staff the boat 24/7 on Fridays, Saturdays, and Sundays from Memorial Day to Labor Day. The department has been successful in this request for the past three years.

The following figure visualizes the fireboat deployment locations and the response time experienced by the fire stations that deploy those resources.

Figure 5. Fireboat Deployment Locations with Distances in Minutes



Fire Investigations

The Fire Investigations Unit has a staff of eleven investigators and is led and managed by a captain. The unit is responsible for investigating the origin and cause of all fire and explosive incidents, including arson incidents. Each investigator has sworn police powers and is further appointed as Assistant State Fire Marshal. Two of the investigators are members of an Alcohol, Tobacco, and Firearms (ATF) task force. The investigators have the additional task of providing training and education to department members and citizens, as well as working in conjunction with the Juvenile Fire Setters program for incidents involving juveniles.

Fire Inspections

The Bureau has a staff of fifteen personnel and is led and managed by a captain. The Bureau is divided into four areas: North/West (which is considered the northern battalion), South/East (which is considered the southern battalion), In-Service, and

Plans Review. Each of the areas is led by a lieutenant with inspectors assigned. The Bureau conducts approximately 1,500 inspections per year, utilizing the First Due database for scheduling inspections. The office focuses primarily on priority 1 inspections, which are done annually. Priority 2 and 3 inspections are conducted by units in Operations.

The Code Enforcement Bureau conducts fire inspections, plan reviews, food truck inspections, and capacity certifications. Personnel from the Bureau are on site to witness fire pump and sprinkler testing, sprinkler inspections, standpipe system inspections, fire alarm testing, fixed suppression system testing, and smoke removal system inspections for commercial kitchens. Third-party inspections are not accepted. The AACOFD is responsible for conducting inspections of over 58,000 existing structures. The county does not charge for the inspections, while charging for inspections is a common practice for surrounding departments.

The number of inspections conducted in the field does not equate to the number of inspections that need to be completed, as the county is growing, and the number of required fire inspections is increasing. The office would like to increase staffing in Plans Review, as only one person is currently assigned to that area.

Operational Staffing & Assignment Evaluation

The AACOFD operates its thirty-one stations with a daily operational staffing of 177 personnel on 24-hour shiftwork. One EMS transport unit is not staffed for 24 hours but is staffed with two personnel for eight hours and 24 minutes, Monday through Friday, which equates to a 42-hour work week. The department is looking to convert this to a 24-hour unit. The career personnel staff positions on fire apparatus, EMS transport units, and command vehicles. Sixteen of the thirty-one stations house ancillary apparatus that is cross-staffed when requested.

Cross-Staffing Model

The AACOFD currently employs a cross-staffing model where personnel swap between emergency resources based on the type of call for service and the recommendations of the CAD dispatch system. While this approach aims to maximize resource utilization, it introduces several critical issues that compromise the effectiveness and safety of emergency response operations. When an engine company crew cross-staffs a ladder truck, the ladder truck becomes unavailable if the engine is on a call, delaying critical operations such as ventilation, search and rescue, and elevated water streams.

Similarly, when medic crews cross-staff tankers, it removes a medic unit from the system, potentially delaying emergency medical response times.

Safety concerns also arise with cross-staffing. Firefighters check their personal protective equipment (PPE) during shift change to ensure readiness. Cross-staffing increases the risk of leaving critical PPE on another resource when swapping back and forth between apparatus, which can compromise firefighter safety during an emergency. Additionally, cross-staffing requires firefighters to swap unit radios, which can lead to communication issues. Having the wrong radio during a firefighter's mayday situation can be detrimental to incident safety and lead to confusion on the fire scene.

Training and proficiency are also impacted by cross-staffing. Firefighters are trained in various specialized areas, such as engine company work, rural water supply, and ladder truck operations. Cross-staffing demands proficiency in multiple areas, which can dilute the effectiveness and competency of firefighters in specialized tasks. Engine, ladder truck, and heavy rescue operations each require specialized training and experience, and cross-staffing can hinder the proficiency needed for these critical roles.

Operational delays are another significant issue. Cross-staffed crews must wait for the full dispatch to occur before moving equipment to the correct apparatus, hindering the timely deployment of resources during an emergency. To enhance the effectiveness and safety of emergency response operations, the AACOFD should identify the essential resources needed for various emergency scenarios and ensure these resources are adequately staffed.

Transitioning away from the cross-staffing model will ensure that appropriate apparatus, such as ladder trucks, tankers, and heavy rescues, are always available and staffed with trained personnel. By eliminating cross-staffing and ensuring dedicated staffing for all critical resources, the AACOFD can improve its operational readiness and safety for both firefighters and the community they serve.

The following figure outlines the daily minimum staffing and cross-staffing model.

Figure 6. Minimum Staffing Table

Station Designation	Unit No.	Resource Type	Minimum Daily Staffing	Hours Staffed
Station 1	Engine 1	Engine	3	24
	Rescue Squad 1	Heavy Rescue	0	
	Medic 1	Medic Unit	2	24
	Tanker 1	Tanker/Tender	0	
	Battalion 3	Command	1	24
	EMS 3	EMS Command	1	24
Station 2	Ambulance 29	Ambulance	0	
	Brush 2	Brush Unit	0	
	Engine 21	Engine	3	24
	Engine 22	Engine	0	
	Fireboat 2	Fireboat	0	
	Rescue Squad 2	Heavy Rescue	0	
	Medic 2	Medic Unit	2	24
	Chief 2	Volunteer Chief	0	
Station 3	Brush 3	Brush Unit	0	
	Engine 32	Engine	0	
	Medic 3	Medic Unit	2	24
	Rescue Engine 3	Rescue Engine	3	24
	Tanker 3	Tanker/Tender	0	
Station 4	Rescue Squad 4	Heavy Rescue	0	
	Medic 4	Medic Unit	2	24
	Rescue Engine 4	Rescue Engine	4	24
	Tech Rescue 4	Special Ops	0	
	Boat 4	Special Ops	0	
	Safety 5	Safety	1	24
Station 5	Tower Ladder 5	Aerial	0	
	Engine 51	Engine	4	24
	Medic 5	Medic Unit	2	24
	Battalion 4	Command	1	24
Station 6	Brush 6	Brush Unit	0	
	Engine 61	Engine	3	24
	Medic 6	Medic Unit	2	24
	Ambulance 69	Ambulance	0	
	Tanker 6	Tanker/Tender	0	

Station 7	Ambulance 79	Ambulance	2	24
	Brush 7	Brush Unit	0	
	Engine 71	Engine	3	24
	Engine 73	Engine	0	
	Rescue Squad 7	Heavy Rescue	0	
Station 8	Engine 84	Pumper/Tanker	3	24
	Dive Unit 8	Special Ops	0	
	Boat 8	Special Ops	0	
Station 9	Engine 91	Engine	3	24
	Medic 9	Medic Unit	2	24
	Tanker 9	Tanker/Tender	1	24
Station 10	Engine 101	Engine	3	24
	MAB Support	Mass Casualty	0	
	Medic 10	Medic Unit	2	24
Station 11	Ambulance 119	Ambulance	0	
	Engine 113	Engine	3	24
	Rescue Squad 11	Heavy Rescue	0	
	Medic 11	Medic Unit	2	24
	Tanker 11	Tanker/Tender	0	
Station 12	Ambulance 129	Ambulance	0	
	Engine 121	Engine	3	24
	Engine 122	Engine	0	
	Rescue Squad 12	Heavy Rescue	0	
	Medic 12	Medic Unit	2	24
	Special Unit 12	Special Unit	0	
Station 13	Truck 13	Aerial	0	
	Ambulance 139	Ambulance	0	
	Engine 131	Engine	3	24
	Medic 13	Medic Unit	2	24
Station 17	Brush 17	Brush Unit	0	
	Engine 171	Engine	3	24
	Engine 172	Engine	0	
	Medic 17	Medic Unit	2	24
	EMS 2	EMS Command	1	24
Station 18	Engine 181	Engine	3	24
	Medic 18	Medic Unit	2	24
	Medic 18-B	Medic Unit	2	8
Station 19	Brush 19	Brush Unit	0	
	Engine 191	Engine	3	24
	Fireboat 19	Fireboat	0	

	Medic 19	Medic Unit	2	24
	Engine 194	Pumper/Tanker	0	
Station 20	Ambulance 209	Ambulance	2	24
	Brush 20	Brush Unit	0	
	Engine 201	Engine	0	
	Engine 204	Pumper/Tanker	0	
	Rescue Engine 20	Rescue Engine	3	24
	Chief 20	Volunteer Chief	0	
Station 21	Ambulance 219	Ambulance	2	24
	Engine 21	Engine	3	24
	Medic 21	Medic Unit	2	24
	Mini Pumper 21	Mini Pumper	0	
	EMS 1	EMS Command	1	24
Station 23	Truck 23	Aerial	0	
	Medic 23	Medic Unit	2	24
	Rescue Engine 23	Rescue Engine	4	24
	Tech Rescue 23	Special Ops	0	
	Boat 23	Special Ops	0	
Station 26	Tower Ladder 26	Aerial	3	24
	Engine 261	Engine	3	24
	Medic 26	Medic Unit	2	24
Station 27	Ambulance 279	Ambulance	0	
	Brush 27	Brush Unit	0	
	Engine 272	Engine	0	
	Medic 27	Medic Unit	2	24
	Rescue Engine 27	Rescue Engine	3	24
Station 28	Truck 28	Aerial	0	
	Ambulance 289	Ambulance	0	
	Engine 282	Engine	0	
	Medic 28	Medic Unit	2	24
	Rescue Engine 28	Rescue Engine	3	24
Station 29	Truck 29	Aerial	0	
	Engine 291	Engine	3	24
	Medic 29	Medic Unit	2	24
Station 30	Tower 30	Aerial	0	
	Engine 301	Engine	3	24
	Medic 30	Medic Unit	2	24
	Battalion 2	Command	1	24
Station 31	Truck 31	Aerial	3	24
	Engine 311	Engine	3	24

	Medic 31	Medic Unit	2	24
Station 32	Engine 321	Engine	3	24
	Medic 32	Medic Unit	2	24
Station 33	Ambulance 339	Ambulance	0	
	Engine 331	Engine	4	24
	Engine 332	Engine	0	
	Rescue Squad 33	Heavy Rescue	0	
	Medic 33	Medic Unit	2	24
	Medic 33-B	Medic Unit	2	24
	Battalion 1	Command	1	24
Station 34	Ambulance 34	Ambulance	0	
	Engine 343	Engine	0	
	Rescue Squad 34	Heavy Rescue	0	
Station 40	Tower 40	Aerial	3	24
	Ambulance 409	Ambulance	2	24
	Brush 40	Brush Unit	0	
	Engine 401	Engine	0	
	Engine 402	Engine	3	24
	Medic 40	Medic Unit	2	24
	Tanker 40	Tanker/Tender	0	
Station 41	Brush 41	Brush Unit	0	
	Engine 411	Engine	3	24
	Fireboat 41	Fireboat	0	
	Medic 41	Medic Unit	2	24
Station 42	Truck 42	Aerial	0	
	Ambulance 429	Ambulance	0	
	Brush 42	Brush Unit	0	
	Engine 421	Engine	3	24
	Engine 422	Engine	0	
	Medic 42	Medic Unit	2	24
	Tanker 42	Tanker/Tender	0	
Total Minimum Daily Staffing:			**177**	

AACOFD consistently deploys services from several different types of apparatus daily, as listed in the figure below. Units that are not consistently staffed daily are not included.

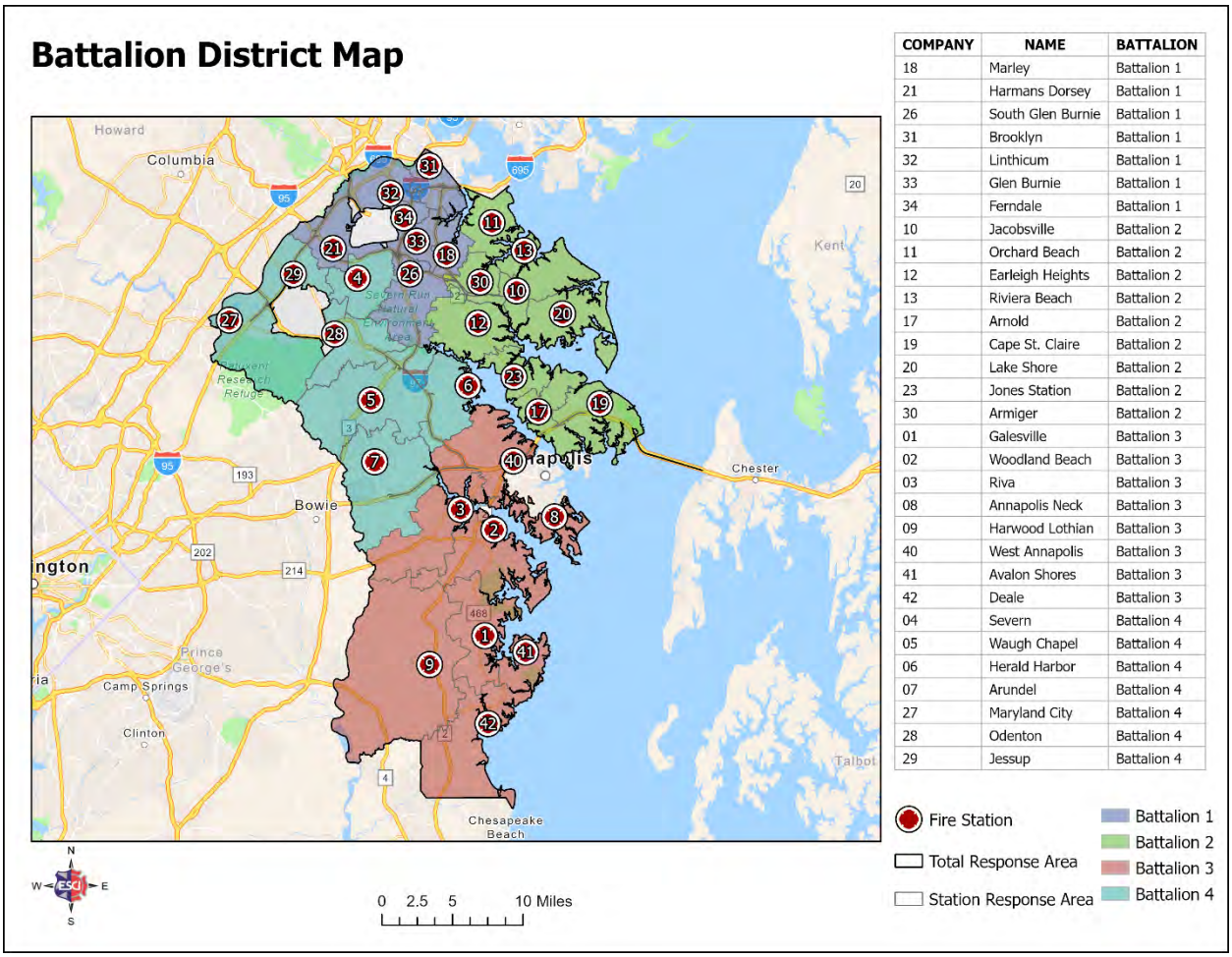
Figure 7. Apparatus Types & Definitions

Apparatus Type	Description

Aerial	Tower, Ladder, or Tiller Apparatus
Ambulance	EMS Transport Unit – Basic Life Support
Battalion	Command Unit
Brush Unit	Light-weight Wildland Fire Truck
Division Chief	Command Unit – Shift Commander
Engine	1,000/1,500 gal/min Pumper with 1,000 Gallon Tank
Pumper-Tanker	Engine with a 2500 Gallon Tank
Fireboat	Water-based Fire Apparatus
Heavy Rescue	Heavy Apparatus for Special Rescue
Medic Unit	EMS Transport Unit – Advanced Life Support
Rescue Engine	Pumper with Special Rescue Tools
Safety	Incident Safety Officer
Tanker/Tender	Apparatus for Water Shuttle

Like many other fire departments, AACOFD uses battalion chiefs to provide daily operational and administrative oversight in the operations division. The battalion chiefs are responsible for geographic areas defined by a collection of station district boundaries. The following figure visualizes the battalion chiefs' areas of responsibility.

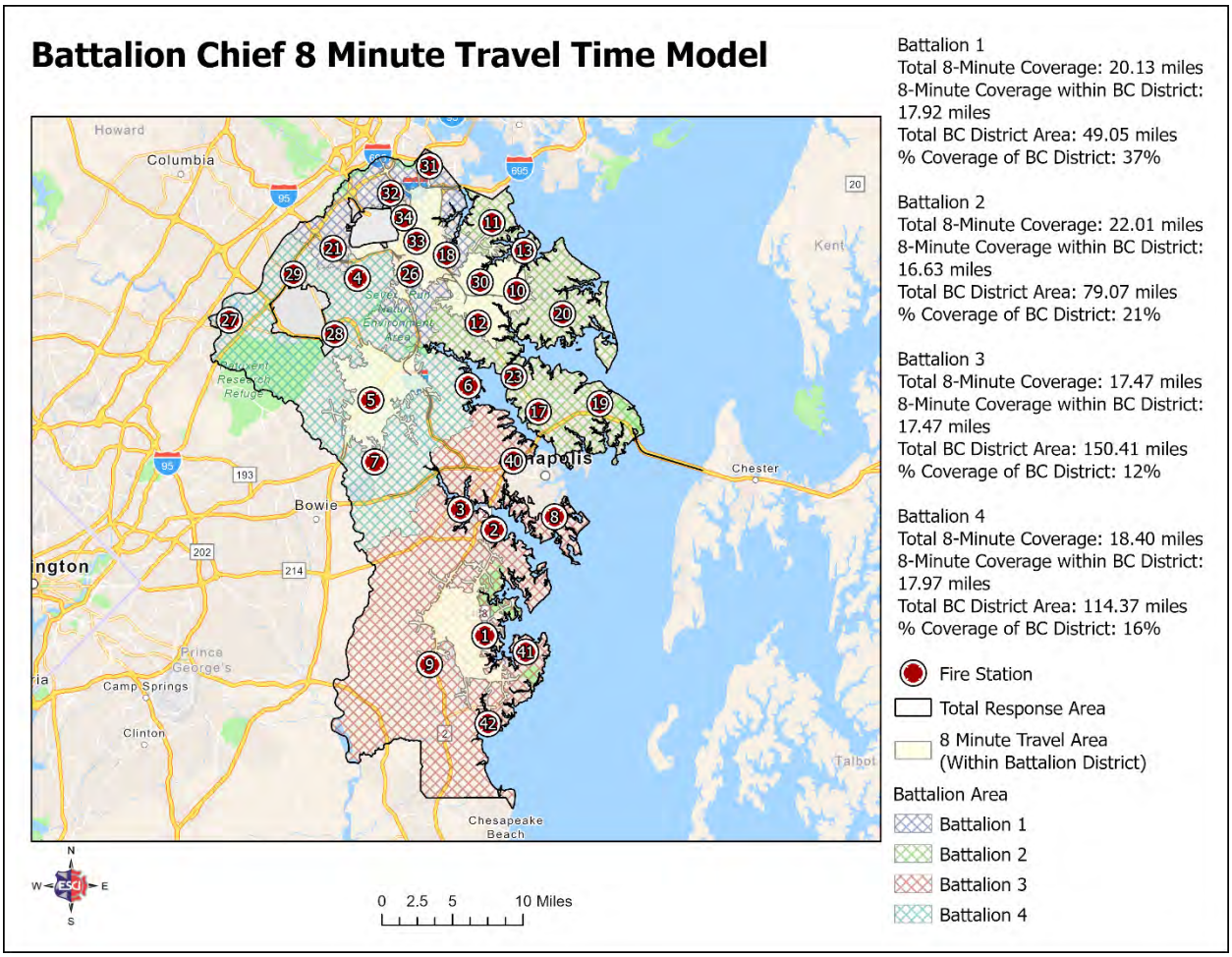
Figure 8. Battalion Map



COMPANY	NAME	BATTALION
18	Marley	Battalion 1
21	Harmans Dorsey	Battalion 1
26	South Glen Burnie	Battalion 1
31	Brooklyn	Battalion 1
32	Linthicum	Battalion 1
33	Glen Burnie	Battalion 1
34	Ferndale	Battalion 1
10	Jacobsville	Battalion 2
11	Orchard Beach	Battalion 2
12	Earleigh Heights	Battalion 2
13	Riviera Beach	Battalion 2
17	Arnold	Battalion 2
19	Cape St. Claire	Battalion 2
20	Lake Shore	Battalion 2
23	Jones Station	Battalion 2
30	Armiger	Battalion 2
01	Galesville	Battalion 3
02	Woodland Beach	Battalion 3
03	Riva	Battalion 3
08	Annapolis Neck	Battalion 3
09	Harwood Lothian	Battalion 3
40	West Annapolis	Battalion 3
41	Avalon Shores	Battalion 3
42	Deale	Battalion 3
04	Severn	Battalion 4
05	Waugh Chapel	Battalion 4
06	Herald Harbor	Battalion 4
07	Arundel	Battalion 4
27	Maryland City	Battalion 4
28	Odenton	Battalion 4
29	Jessup	Battalion 4

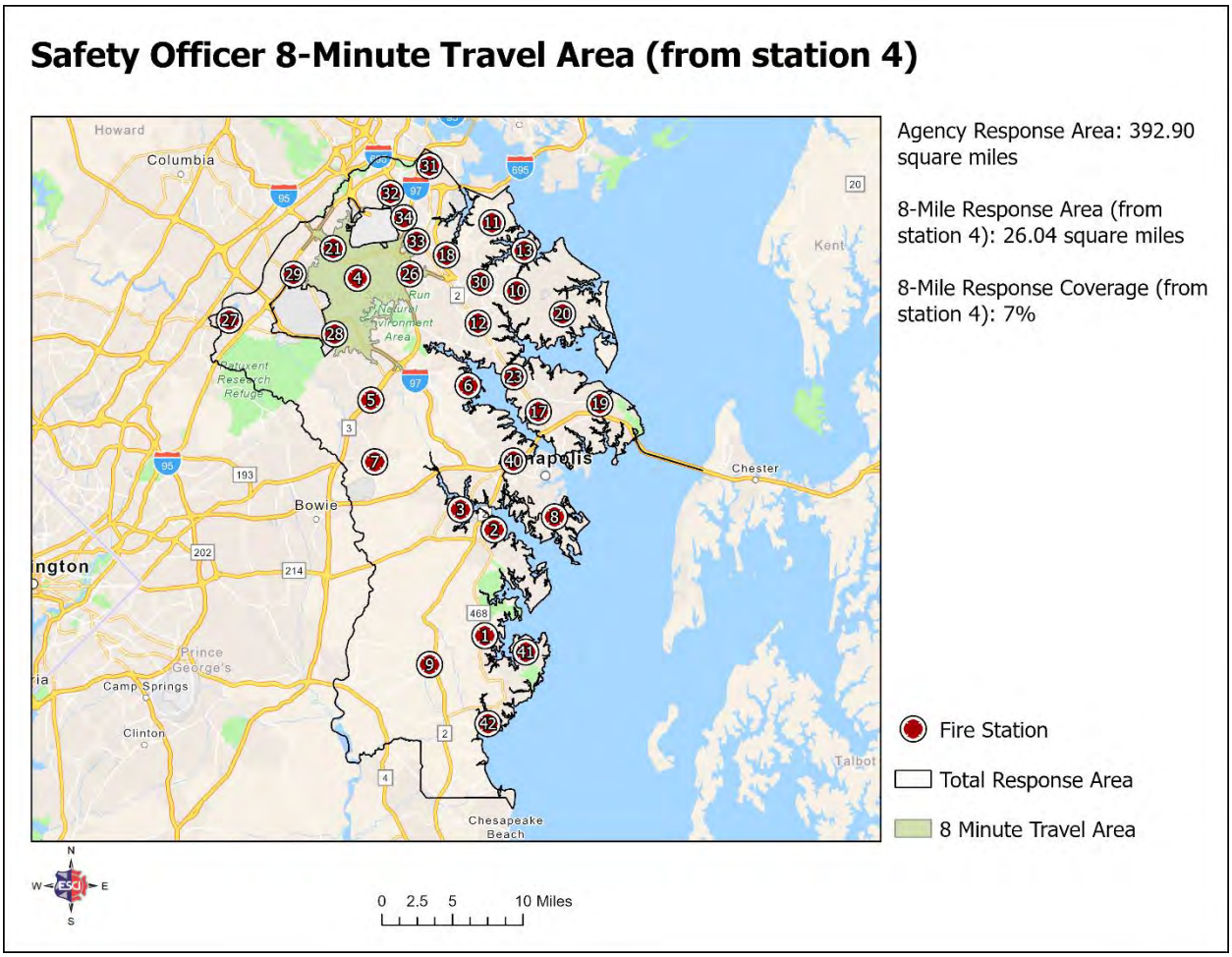
Additionally, the following figure visualizes the capacity to arrive within eight minutes within their respective districts.

Figure 9. Battalion Chief Travel Time Capacity.



Along the same lines, the AACOFD's safety officer is responsible for operational coverage of the entire county and responds to all major incidents. The figure below illustrates the capacity for that resource to arrive in a timely manner. Within eight minutes, the safety officer can reach just 8% of the community served.

Figure 10. Safety Officer Capacity



Staff Allocation for Emergency Functions

AACOFD staffing is organized with a ranking structure that includes firefighters, lieutenants, captains, battalion chiefs, and a division chief for daily operations. All personnel are trained to various EMS levels, including Emergency Medical Technician (EMT) basic and paramedic. The firefighters, lieutenants, and captains staff the fire apparatus, EMS transport units, three medical duty officer positions, and one safety officer position. The battalion chiefs staff the four command officer positions, and division chiefs staff the shift commander position. With the increase in call volume and

management complexities, an analysis should be done to determine if there is a need for an additional command officer position.

In March 2024, the Public Consulting Group LLC (PSC) delivered the "Fire Department Paramedic Study" for the AACOFD. PSC has identified several key findings and recommendations based on observations from the Public Consulting Group regarding the department's EMS system operations and feedback obtained from interviews and surveys. These insights draw from PSC's expertise in fire/EMS operations and education and highlight the underlying challenges affecting AACOFD 's paramedic recruitment and retention.

PSC recommends eliminating the paramedic school selection lottery system, covering the costs for all student paramedic candidates, and removing the union contract's termination clause before AACOFD develops its internal paramedic education program. Implementing these recommendations will better position the department to successfully recruit internal candidates for paramedic training, enhance retention of current paramedics, and establish a more accurate baseline for considering the development of an internal paramedic education program.[1]

Staff Scheduling Methodology

The AACOFD fire and EMS operations personnel assigned to shiftwork and Fire Alarm (communications) personnel work on a four-platoon system operation on a 24-hour shift rotation, with members working 24 hours followed by 72 hours off duty. This equates to a 42-hour work week with no Fair Labor Standards Act (FLSA) implications regarding overtime. One EMS transport unit is staffed 8 hours daily, Monday through Friday. The fire investigators work reverse 10/14 shifts, two 14-hour nights, and two 10-hour days, followed by 96 hours off duty. This equates to a 42-hour work week. The department's administrative staff work 8-hour days, 40 hours per week.

[1] Public Consulting Group LLC, Public Safety Consulting Services Team. (2024). *Fire Department Paramedic Study: Anne Arundel County Fire Department, Maryland*. Consultant's Final Report.

Community Risk Assessment

Geospatial Community Characteristics

Anne Arundel County, Maryland, is characterized by its extensive coastline, diverse water bodies, and varied urban and rural landscapes. With over 530 miles of shoreline along the Chesapeake Bay and its tributaries, the county is rich in aquatic environments, including the Severn, South, and Magothy Rivers. The Deale-Shady Side Peninsula is a notable feature, extending into the Chesapeake Bay and highlighting the county's vulnerability to sea level rise and flooding. Other significant landforms are the Broadneck Peninsula, located between the Severn and Magothy Rivers, and the Mayo Peninsula is located between the South River and the Rhodes River. The Mayo Peninsula presents significant access challenges during major weather events. These peninsulas, surrounded on three sides by water, can pose access challenges, particularly during adverse weather conditions or emergencies.

Urban areas, particularly around Annapolis, the state capital, and other densely populated regions like Glen Burnie, Severna Park, and Odenton, are marked by significant residential, commercial, and industrial development. In contrast, the southern and western parts of the county are more rural, featuring agricultural lands, forests, and open spaces with lower population densities. The county's terrain is relatively flat, with some rolling hills, and it experiences a humid subtropical climate, moderated by the proximity to the Chesapeake Bay. This blend of urban and rural environments, coupled with its unique geospatial characteristics, makes Anne Arundel County a dynamic and diverse region.

Urban vs. Rural Environment

Emergency response in Anne Arundel County must address the distinct challenges its diverse urban and rural landscapes pose. The county's largely rural population density demands a tailored approach to resource allocation and service levels. The AACOFD operates under one set of performance benchmarks for urban and rural areas. However, due to the stark differences in resource concentration and distribution, it is recommended that AACOFD adopt separate performance benchmarks for these environments. The following three figures vividly illustrate the disparities between urban and rural areas, emphasizing the need for a more nuanced emergency response strategy that can effectively cater to the unique needs of each region.

Figure 11. Analysis of Address Points Outside of a 10-Minute Response Area

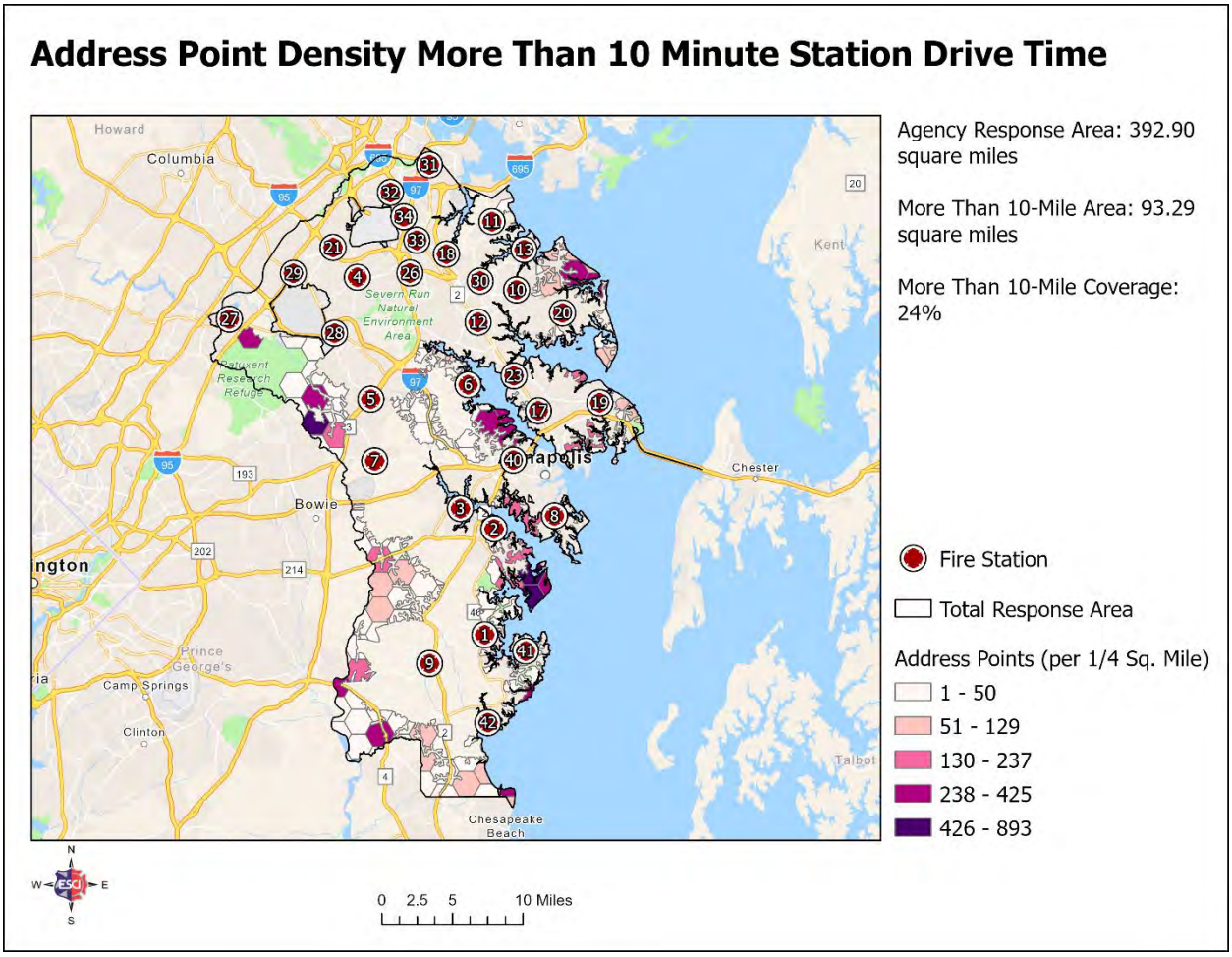


Figure 12. Population Density

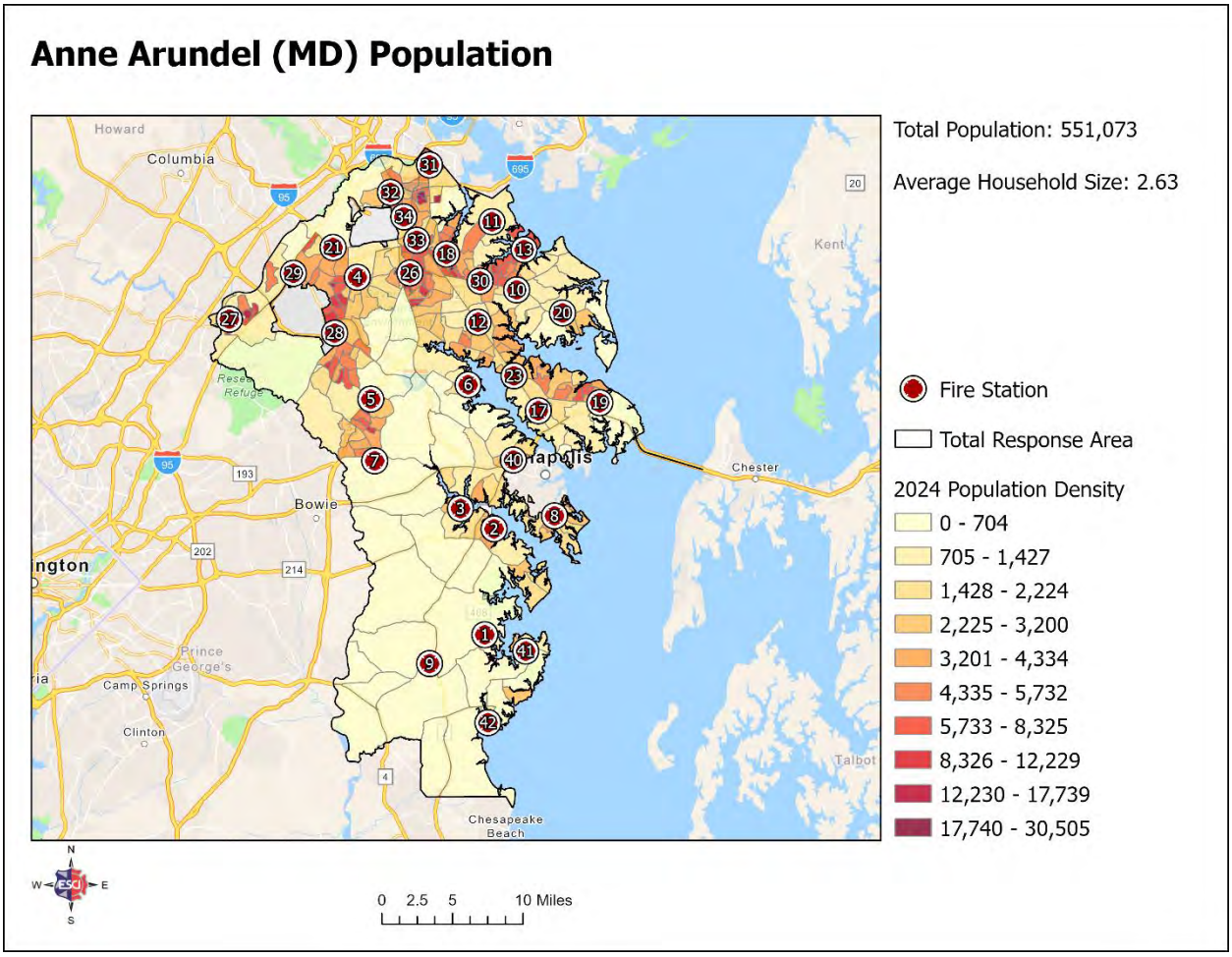
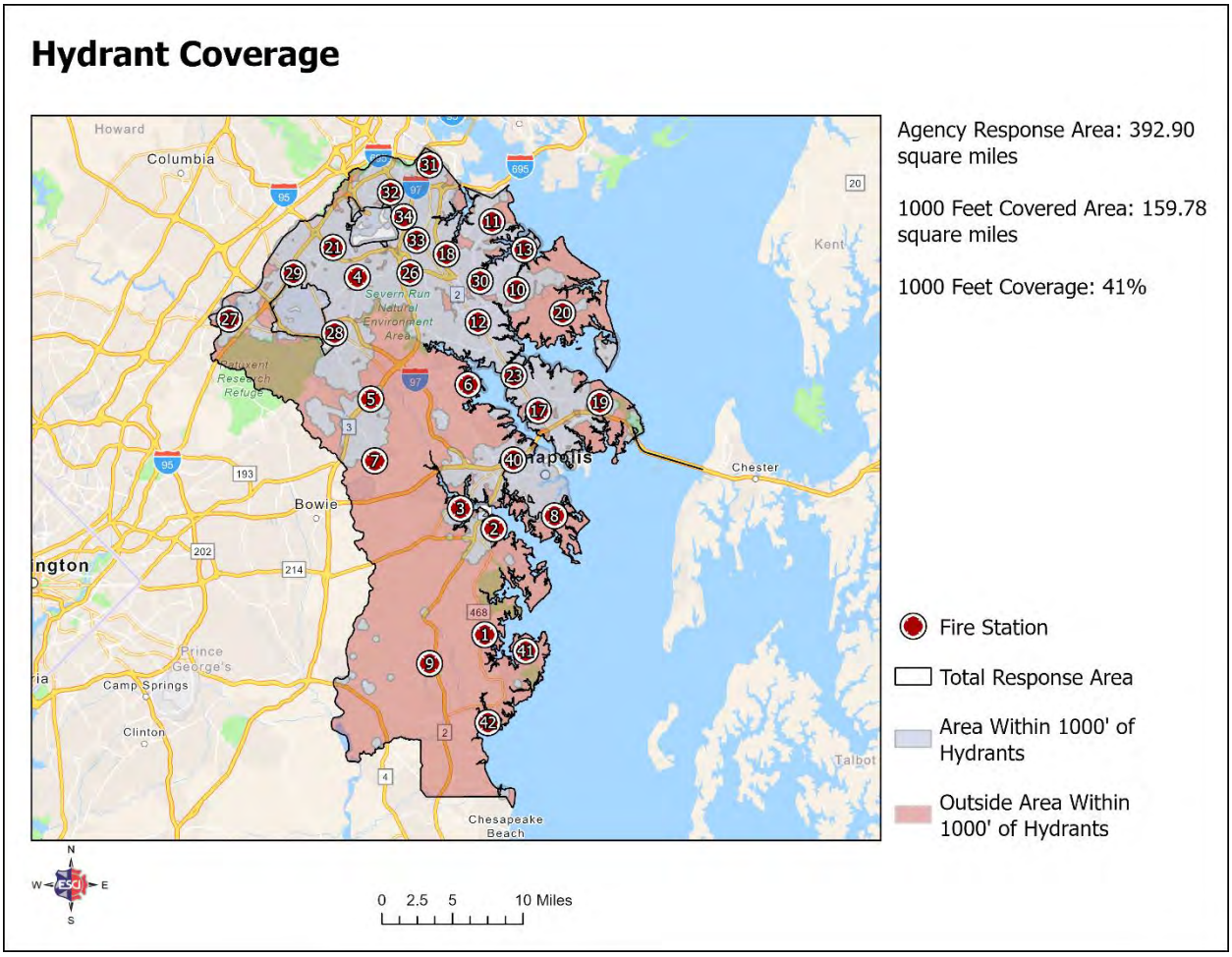
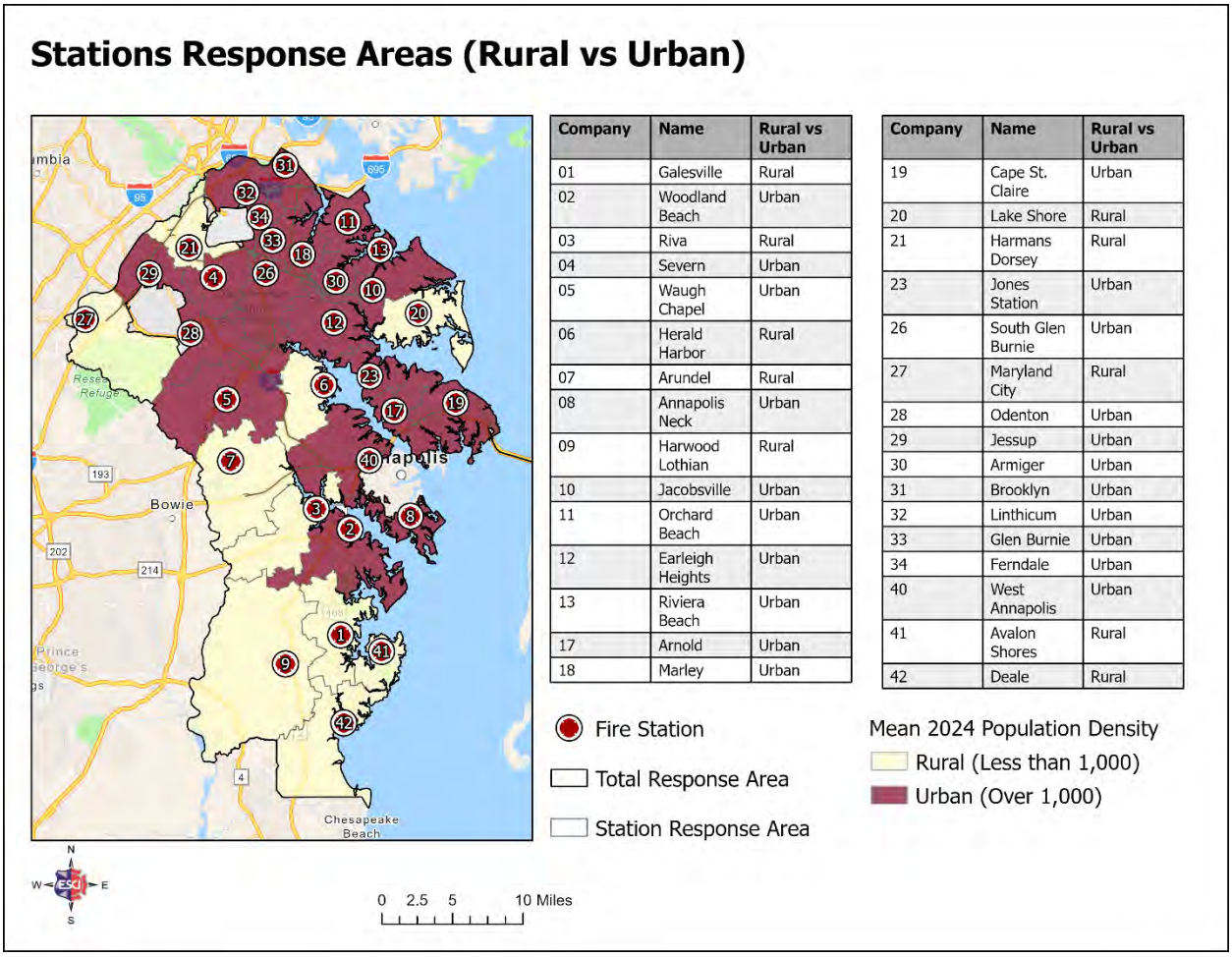


Figure 13. Total Hydrant Coverage



If AACOFD accepted the recommendation to adopt rural and urban response zones, one practical approach would be to designate fire response zones by type. This approach allows AACOFD to conduct performance measurements more easily as the fire districts are already established. The below figure outlines this approach.

Figure 14. Rural & Urban Designations



Company	Name	Rural vs Urban
01	Galesville	Rural
02	Woodland Beach	Urban
03	Riva	Rural
04	Severn	Urban
05	Waugh Chapel	Urban
06	Herald Harbor	Rural
07	Arundel	Rural
08	Annapolis Neck	Urban
09	Harwood Lothian	Rural
10	Jacobsville	Urban
11	Orchard Beach	Urban
12	Earleigh Heights	Urban
13	Riviera Beach	Urban
17	Arnold	Urban
18	Marley	Urban

Company	Name	Rural vs Urban
19	Cape St. Claire	Urban
20	Lake Shore	Rural
21	Harmans Dorsey	Rural
23	Jones Station	Urban
26	South Glen Burnie	Urban
27	Maryland City	Rural
28	Odenton	Urban
29	Jessup	Urban
30	Armiger	Urban
31	Brooklyn	Urban
32	Linthicum	Urban
33	Glen Burnie	Urban
34	Ferndale	Urban
40	West Annapolis	Urban
41	Avalon Shores	Rural
42	Deale	Rural

Topography

Anne Arundel County features a diverse topography that ranges from sea level at the Chesapeake Bay and its tidal tributaries, to about 300 feet in the western areas near the fall line. The terrain is predominantly flat or gently rolling. However, more dramatic banks and bluffs are present where waterways cut through areas of higher elevation. This varied landscape provides a mix of coastal and inland features, contributing to the county's natural beauty and offering a variety of environments for residents and visitors alike.

Transportation

Anne Arundel County is well-connected through a variety of transportation networks, including major roads, rail lines, airports, and waterways.

Major Roads:

- Interstate 97 (I-97): This is the main highway running north-south through the county, connecting Baltimore to Annapolis.
- U.S. Route 50 (US 50): Running east-west, it connects the county to Washington, D.C., and the Eastern Shore of Maryland.
- Maryland Route 2 (MD 2): Serving as a major north-south route, it parallels I-97 and provides additional connectivity.

Rail Lines:

- Maryland Area Regional Commuter (MARC) Train: The county is served by the MARC train, offering commuter rail service to the Baltimore-Washington Metropolitan Area.
- The Amtrak passenger rail line passes through Anne Arundel County running north and south between the Cities of Baltimore and Washington D. C., with one of the more significant stops in the system located in the county at the Baltimore/Washington International Thurgood Marshall Airport.

Airports:

- Baltimore/Washington International Thurgood Marshall Airport (BWI): Located just inside the county's northern border, BWI is a major international airport serving the region.

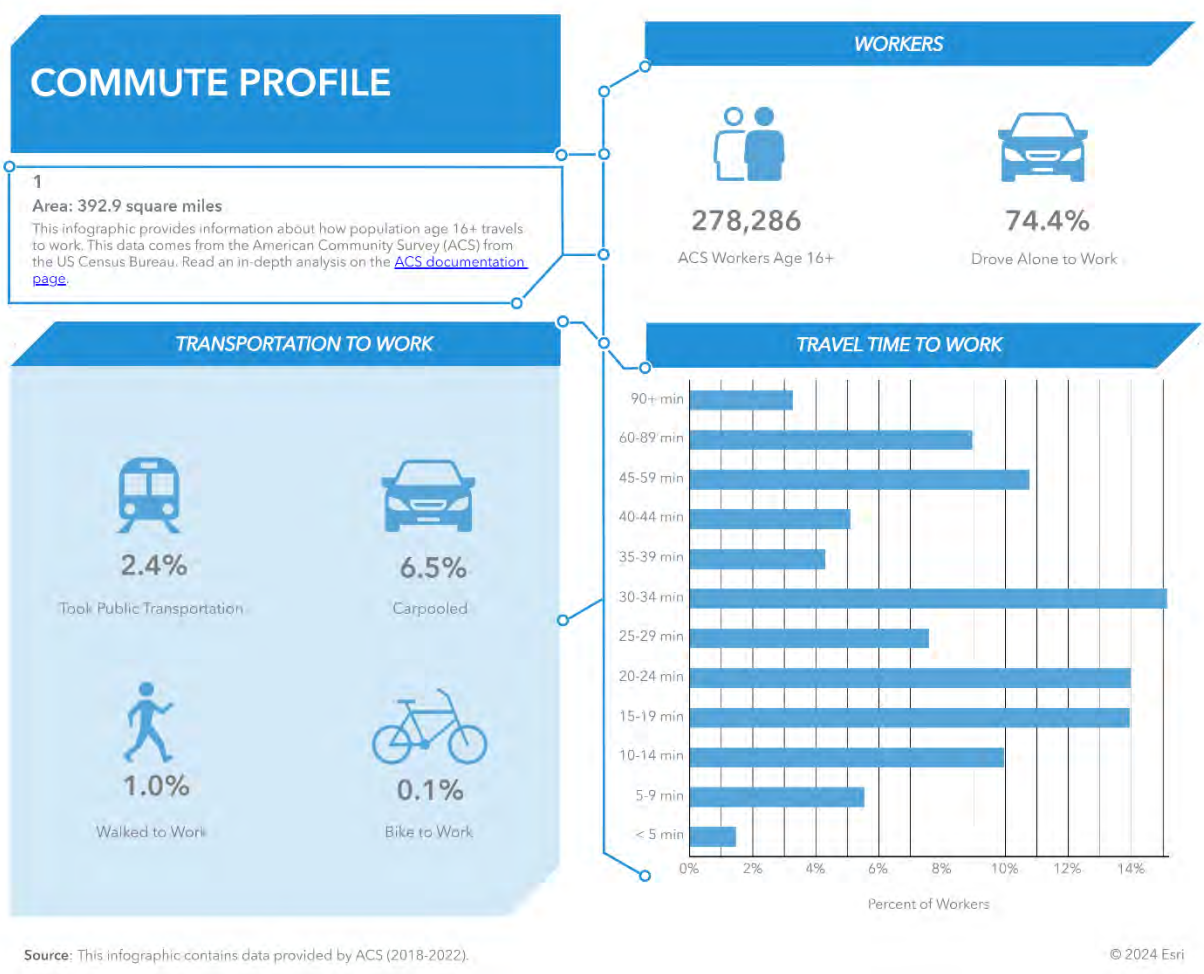
Waterways:

- Chesapeake Bay: The county has an extensive shoreline along the Chesapeake Bay, providing numerous opportunities for maritime activities.
- AACOFD's response is adjacent to the Port of Baltimore, and the county's resources are first responders to ships passing through and at anchor.
- Severn River, South River, and West River: These rivers offer additional waterborne transportation options and recreational activities.

The county's transportation infrastructure supports its economic vitality and provides residents and businesses with critical links to regional, national, and international destinations. The presence of BWI Airport, in particular, positions Anne Arundel County as an important hub for air travel and commerce.

The commute profile for Anne Arundel County showcases the transportation habits of its 278,286 workers. A significant portion of them drive alone to work (74.4%), while carpooling is chosen by 9.2% of the population. Public transportation is utilized by 6.5% of the workforce, and a smaller fraction, 2.4%, opt for taxis, bikes, or other means. Walking and biking to work are less common, at 1.0% and 0.1%, respectively. The infographic also indicates that most commutes fall within the 15 to 30-minute range, giving a snapshot of the county's commuting dynamics. This data, drawn from the American Community Survey (ACS) spanning 2018-2022, offers valuable insights for urban planning and traffic management in Anne Arundel County.

Figure 15. Commute Profile



Community Land Use Regulations

Community land use regulations in Anne Arundel County are based on Plan2040, the General Development Plan (GDP), and the Zoning Ordinance. The GDP is a comprehensive document that guides the future growth and development of the county for the next 20 years. It establishes goals, policies, and strategies for land use, transportation, environment, public facilities, historic preservation, housing, and economic development. The GDP also designates land use categories for different areas of the county, such as residential, commercial, industrial, mixed-use, open space, and rural.

The Zoning Ordinance is a legal document that implements the GDP by regulating the use, density, height, bulk, and location of buildings and structures on each parcel of land. The Zoning Ordinance divides the county into zoning districts corresponding to the GDP's land use categories. Each zoning district has specific standards and requirements for permitted uses, conditional uses, accessory uses, lot size, setbacks, parking, landscaping, signs, and other aspects of development. The Zoning Ordinance also contains provisions for special exceptions, variances, nonconforming uses, and site development plans.

The purpose of the community land use regulations is to promote the health, safety, and welfare of the county's residents and visitors and protect the county's natural and cultural resources. The community land use regulations aim to achieve orderly and efficient development, preserve and enhance the character and identity of communities, foster economic vitality, encourage affordable and diverse housing, provide adequate public facilities and services, reduce traffic congestion and pollution, conserve energy and water, and prevent environmental degradation. The community land use regulations are enforced by the Department of Planning and Zoning, the Office of Law, and the Board of Appeals.

Hazardous Substances

The Toxics Release Inventory (TRI), managed by the U.S. Environmental Protection Agency (EPA), is a comprehensive database that tracks the management of certain toxic chemicals that may threaten human health and the environment. Established under the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, the TRI program requires industrial and federal facilities to report annually on the

quantities of these chemicals they release into the air, water, and land, as well as the waste they manage through recycling, energy recovery, and treatment.

TRI data is a valuable resource for communities, researchers, policymakers, and businesses, enabling informed decision-making and fostering transparency. The data help identify trends in chemical releases, support pollution prevention activities, and assess potential environmental and health impacts. By making this information publicly accessible, the TRI program empowers communities to engage in local environmental and public health issues, promoting greater accountability and environmental stewardship. The following two figures show the TRI data available in Anne Arundel County.

Figure 16. TRI Data Map

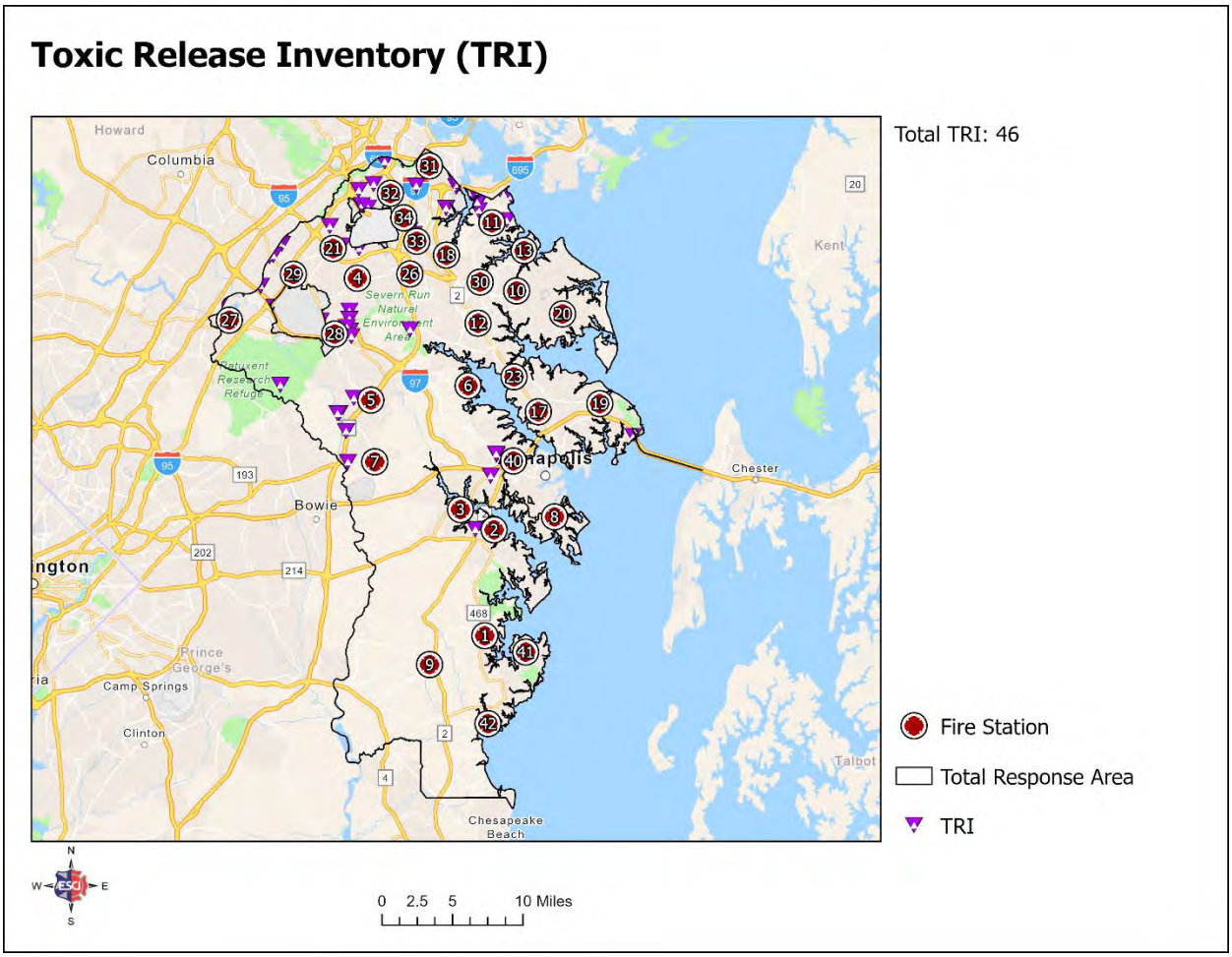


Figure 17. TRI Locations Table

Name	City	URL
ARINC Incorporated	Annapolis	LINK
Best Gate Plant	Annapolis	LINK
BETCO Supreme Inc	Odenton	LINK
Bp Products North America Inc Curtis Bay Terminal	Curtis Bay	LINK
CCARE LLC	Linthicum Heights	LINK
Chaney Industries	Annapolis	LINK
Cianbro Corporation Baltimore Facility	Curtis Bay	LINK
Consolidated Pharmaceutical Group	Baltimore	LINK
Crofton Ready Mix Concrete	Crofton	LINK
Deluxe Check Printers	Hanover	LINK
Electronics Sys Group Materials Acquisition Ctr	Glen Burnie	LINK
Elite Spice, Inc	Hanover	LINK
Environmental Inks & Coatings	Linthicum	LINK
Formica Corporation	Odenton	LINK
General Service Admin.-Curtis Bay Depot	Baltimore	LINK
Hi-Tech Color	Odenton	LINK
Kop Flex	Hanover	LINK
L-3 Chesapeake Sciences Corp	Millersville	LINK
Lafarge Mid-Atlantic, LLC - Jessup Plant	Jessup	LINK
Martin Marietta - Ocean Systems	Glen Burnie	LINK
MPA - Cox Creek	Baltimore	LINK
NEVAMAR Decorative Surfaces Div Odenton Facility	Odenton	LINK
Northrop Grumman Systems Corp - Undersea Systems	Annapolis	LINK
Northrop Grumman Systems Corp. - BWI	Linthicum	LINK
Northrop Grumman Systems Corporation	Linthicum	LINK
Northrop-Grumman Systems Corp. - ATL	Linthicum	LINK
Oldcastle APG Mid-Atlantic Crofton, Md	Odenton	LINK
Patuxent Materials Inc.	Crofton	LINK
Prince Specialty Products LLC	Curtis Bay	LINK
Quebecor Printing Memphis, Inc	Glen Burnie	LINK
R.S. Leitch Co.	Edgewater	LINK
Reichhold Chem Inc.	Baltimore	LINK
S&G Concrete Company	Odenton	LINK
Separation Technologies	Curtis Bay	LINK
Smith Bus Service, Inc.	Odenton	LINK
SMO Annapolis Plant	Annapolis	LINK
SMO Glen Burnie Plant	Glen Burnie	LINK
Southern States Co-Op Inc	Baltimore	LINK

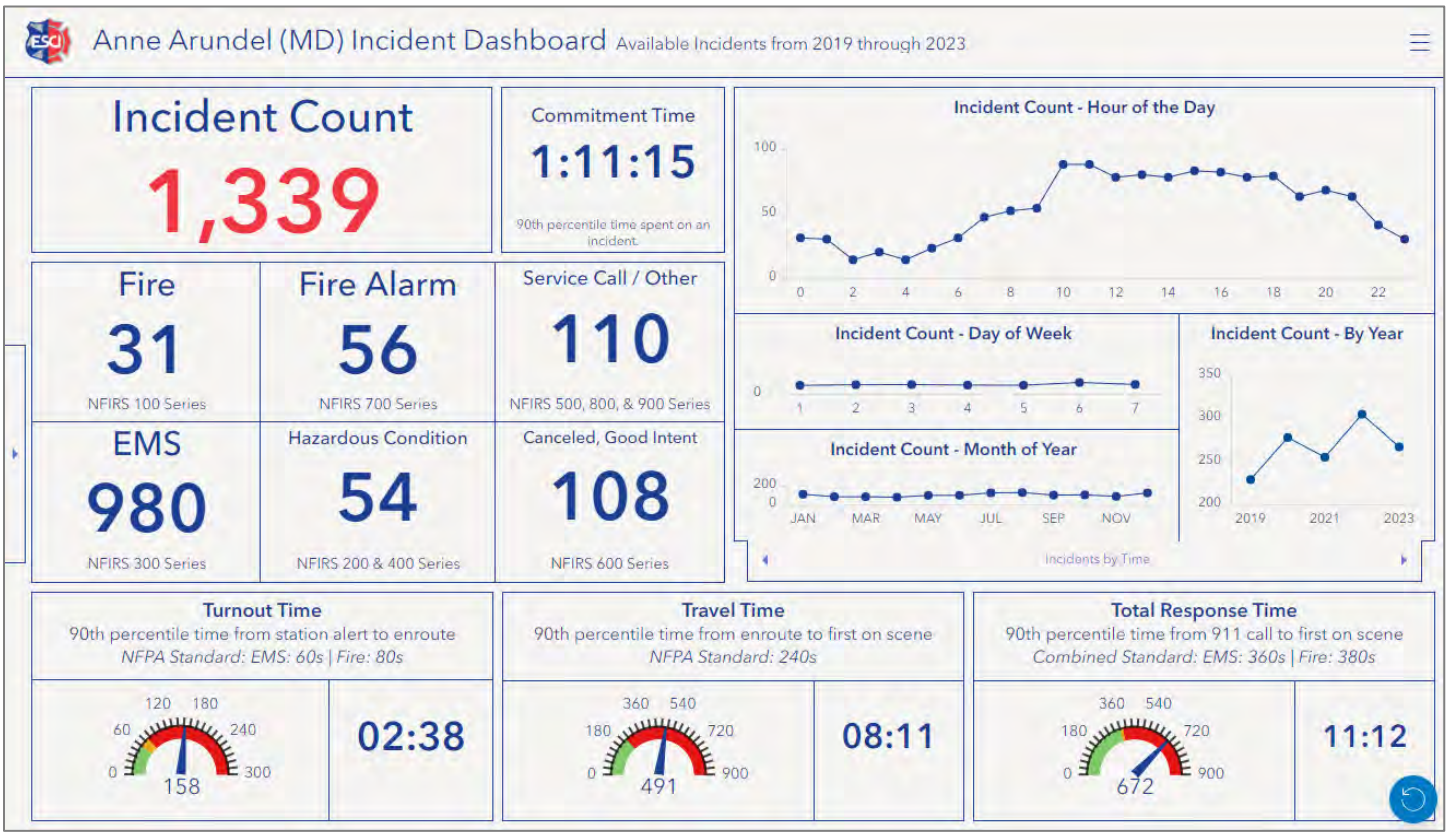
Name	City	URL
U S Coast Guard Yard	Baltimore	LINK
Us Army Garrison Fort George G Meade	Fort George G Meade	LINK
USG Interiors - Access Floor Div.	Linthicum	LINK
Waugh Chapel Plant	Gambrills	LINK
Wm. T. Burnett & Co.	Jessup	LINK

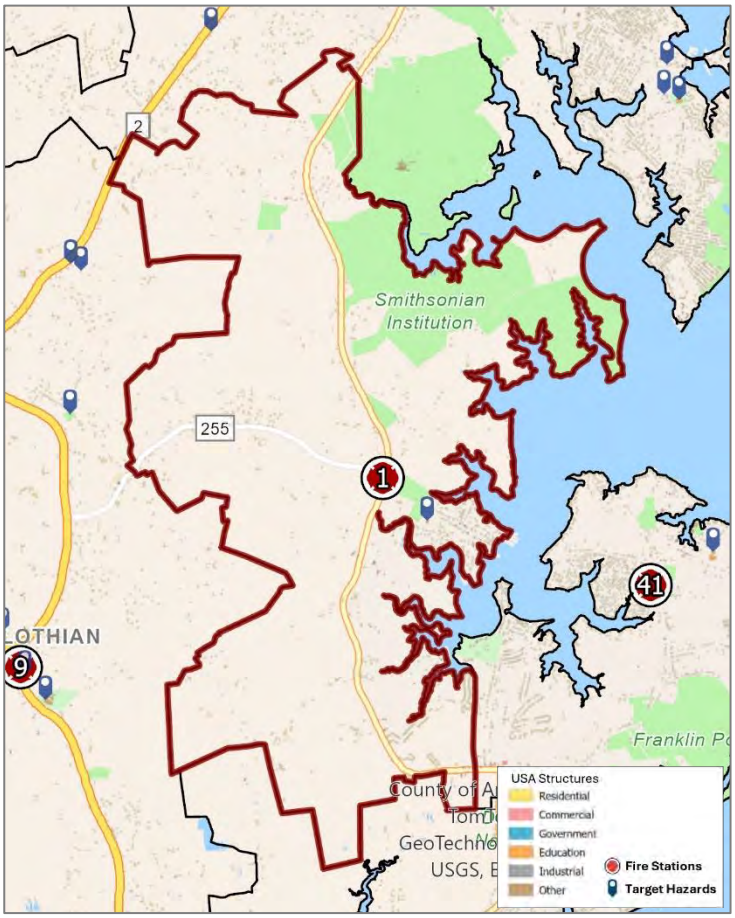
Community Risk Profiles

The Community Profile section of this report offers a comprehensive examination of the AACOFD's station districts. It delves into the demographics of the area, providing insights into the population served. The section also covers incident response statistics, highlighting the department's efficiency and areas of high activity. Additionally, it identifies frequent utilizers of emergency services, examines residential occupancies, and locates target hazards within the community. This in-depth analysis aims to provide a clear understanding of the community's needs and the department's role in addressing them.

Understanding local risk and data is crucial for effective emergency response and community safety. By analyzing detailed information about demographics, incident patterns, and high-risk areas, the fire department can allocate resources more efficiently and develop targeted strategies to mitigate risks. This section serves as a valuable resource for operations staff, enabling them to gain a deeper understanding of the communities they serve. With this knowledge, they can enhance their preparedness, improve response times, and ultimately provide better service to the residents of Anne Arundel County.

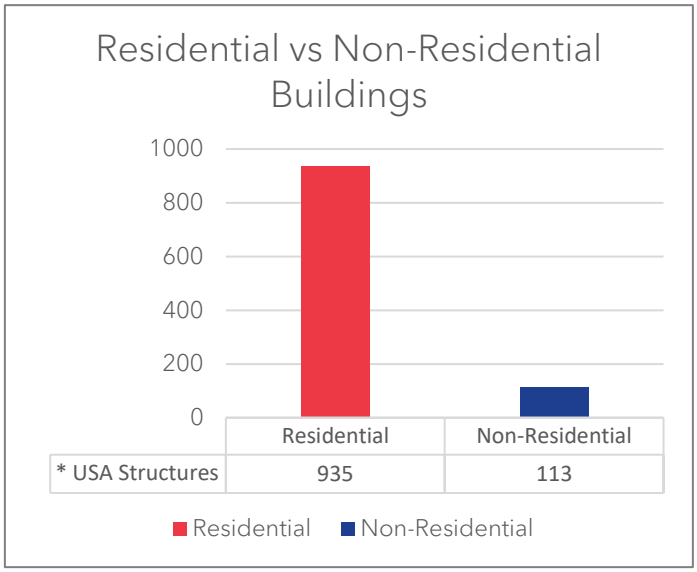
Company 1 Galesville





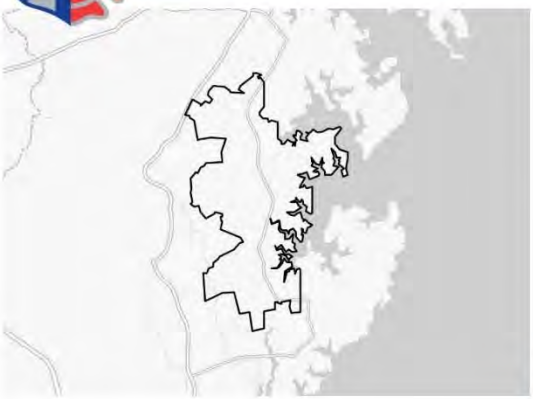
Frequent Responses

ADDRESS	TOTAL RESPONSES
4680 MUDDY CREEK RD	89
90 FIDDLERS HILL RD	27
5502 MUDDY CREEK RD	26
4817 RIVERSIDE DR	25
954 MAIN ST	19



COMMUNITY PROFILE

Company: 01



2,003
Population

761
Households

2.62
Avg Size Household

AT RISK POPULATION

277
Households With Disability

515
Population 65+

4
Households Without Vehicle

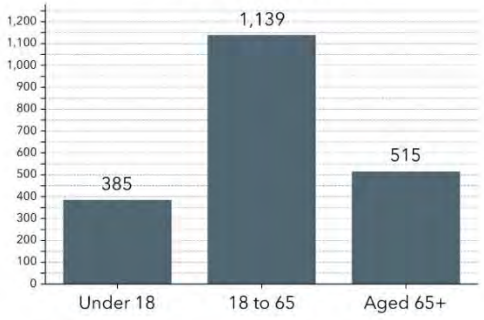
HOUSING PROFILE

48.5
Median Age

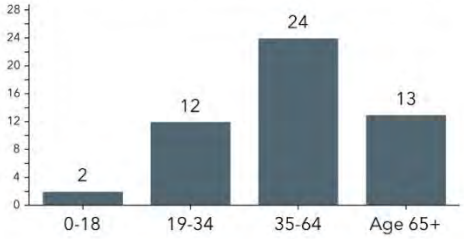
$146,227
Median Household Income

$727,727
Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

1,641
Daytime Population

85
Total Businesses

812
Total Employees

POVERTY AND LANGUAGE

1%
Households Below the Poverty Level

9
Households Below the Poverty Level

0
Pop 65+ Speak Spanish & No English

WEALTH PROFILE

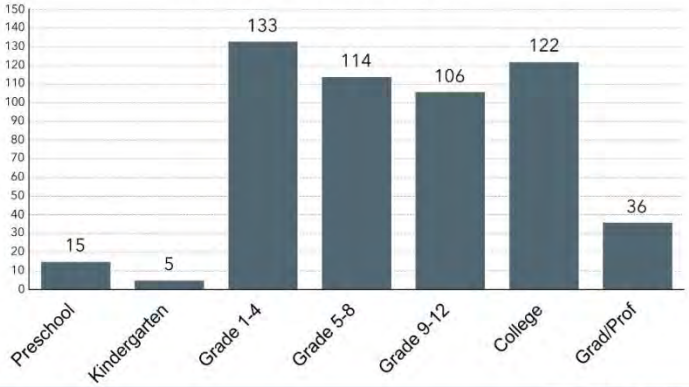
201
Wealth Index

79
Housing Affordability

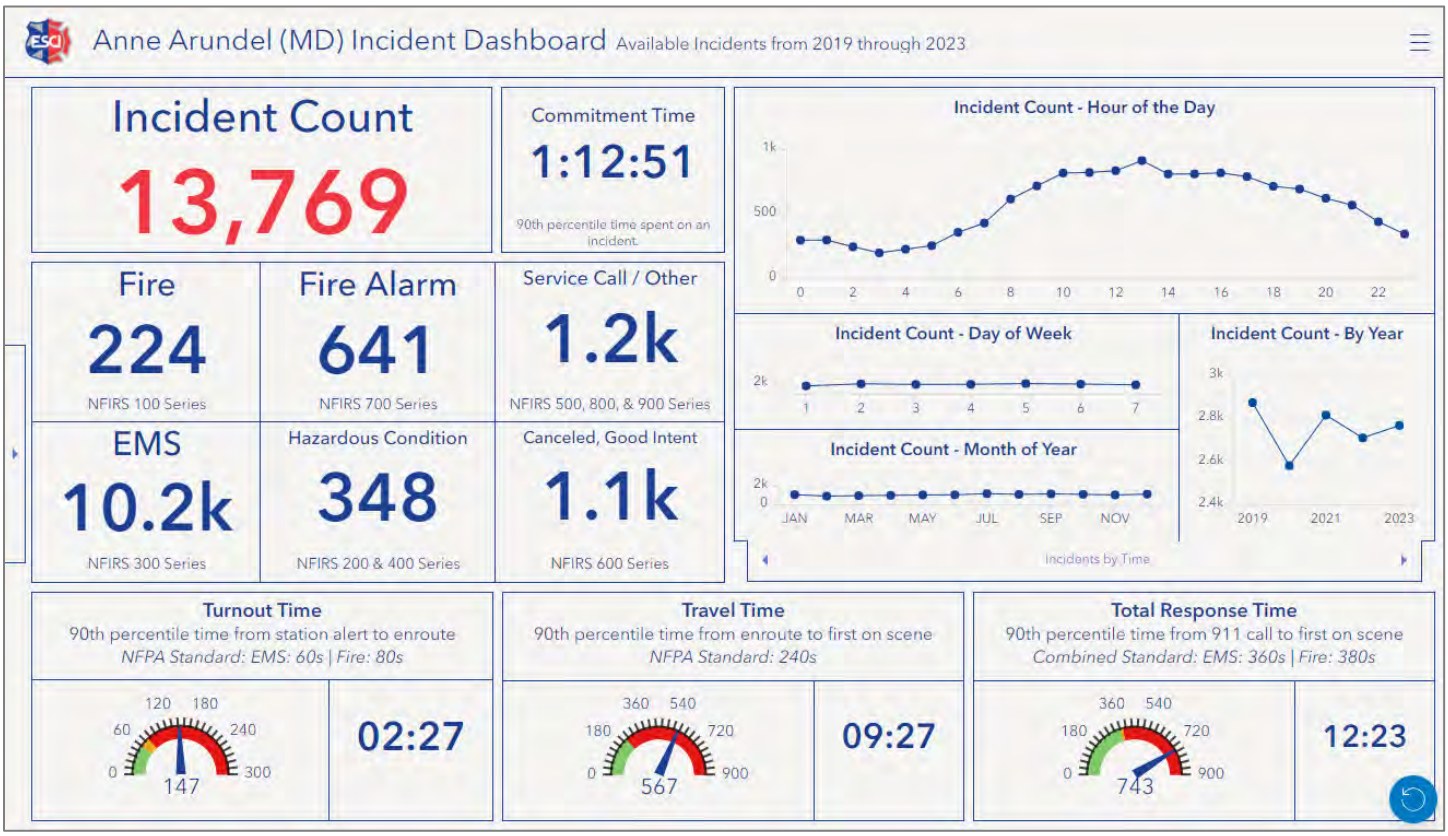
45
Diversity Index

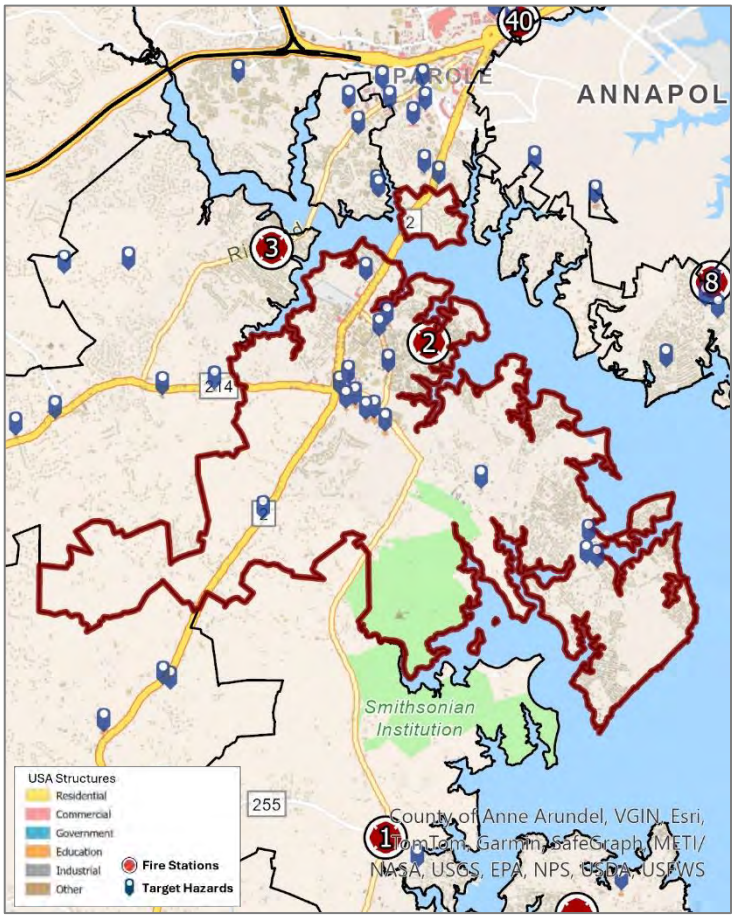
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	334	1,161	680	2,175
Spanish	9	83	17	109
Spanish & English Well	9	80	17	106
Spanish & English Not Well	0	3	0	3
Spanish & No English	0	0	0	0
Indo-European	3	10	0	13
Indo-European & English Well	3	10	0	13
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	0	1	2	3
Asian-Pacific Isl & English Well	0	1	2	3
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	0	0
Other Language	0	0	0	0
Other Language & English Well	0	0	0	0
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



Company 2 Woodland Beach (Edgewater)

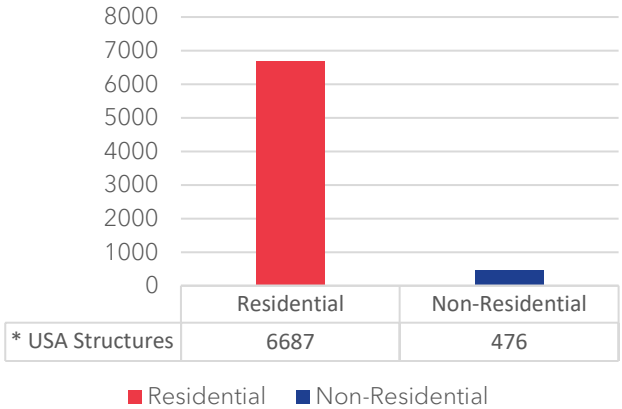




Frequent Responses

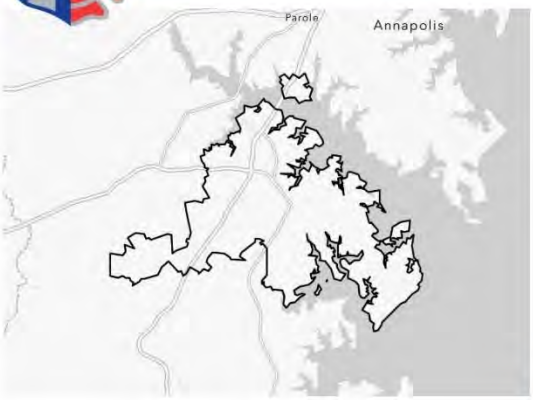
ADDRESS	TOTAL RESPONSES
3059 SOLOMONS ISLAND RD LOT F2	270
529 LONDONTOWN RD	207
8 LEE AIRPARK DR	137
27 OLD SOUTH RIVER RD	122
201 CENTRAL AVE E	113

Residential vs Non-Residential Buildings



COMMUNITY PROFILE

Company: 02



20,751
Population

7,871
Households

2.62
Avg Size Household

AT RISK POPULATION

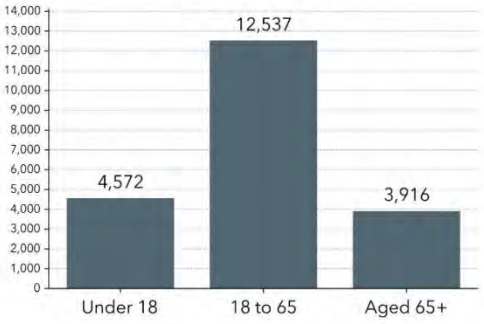
1,797	3,916	161
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

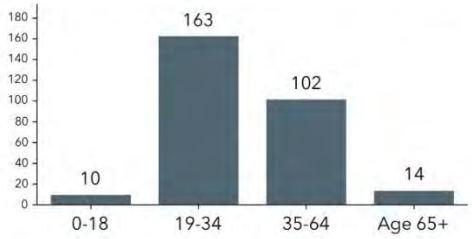
42.4	$125,946	$598,921
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**2,836**	**11,061**	**3,251**	**17,148**
Spanish	**92**	**781**	**40**	**913**
Spanish & English Well	92	565	40	697
Spanish & English Not Well	1	215	0	216
Spanish & No English	0	0	0	0
Indo-European	**19**	**173**	**18**	**210**
Indo-European & English Well	14	173	10	197
Indo-European & English Not Well	5	0	8	13
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**14**	**125**	**40**	**179**
Asian-Pacific Isl & English Well	14	98	29	141
Asian-Pacific Isl & English Not Well	0	27	11	38
Asian-Pacific Isl & No English	0	0	0	0
Other Language	**0**	**57**	**23**	**80**
Other Language & English Well	0	45	23	68
Other Language & English Not Well	0	12	0	12
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

18,495	889	7,509
Daytime Population	Total Businesses	Total Employees

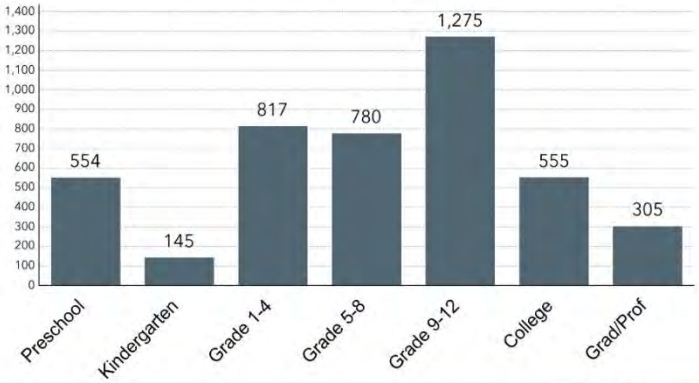
POVERTY AND LANGUAGE

8%	600	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

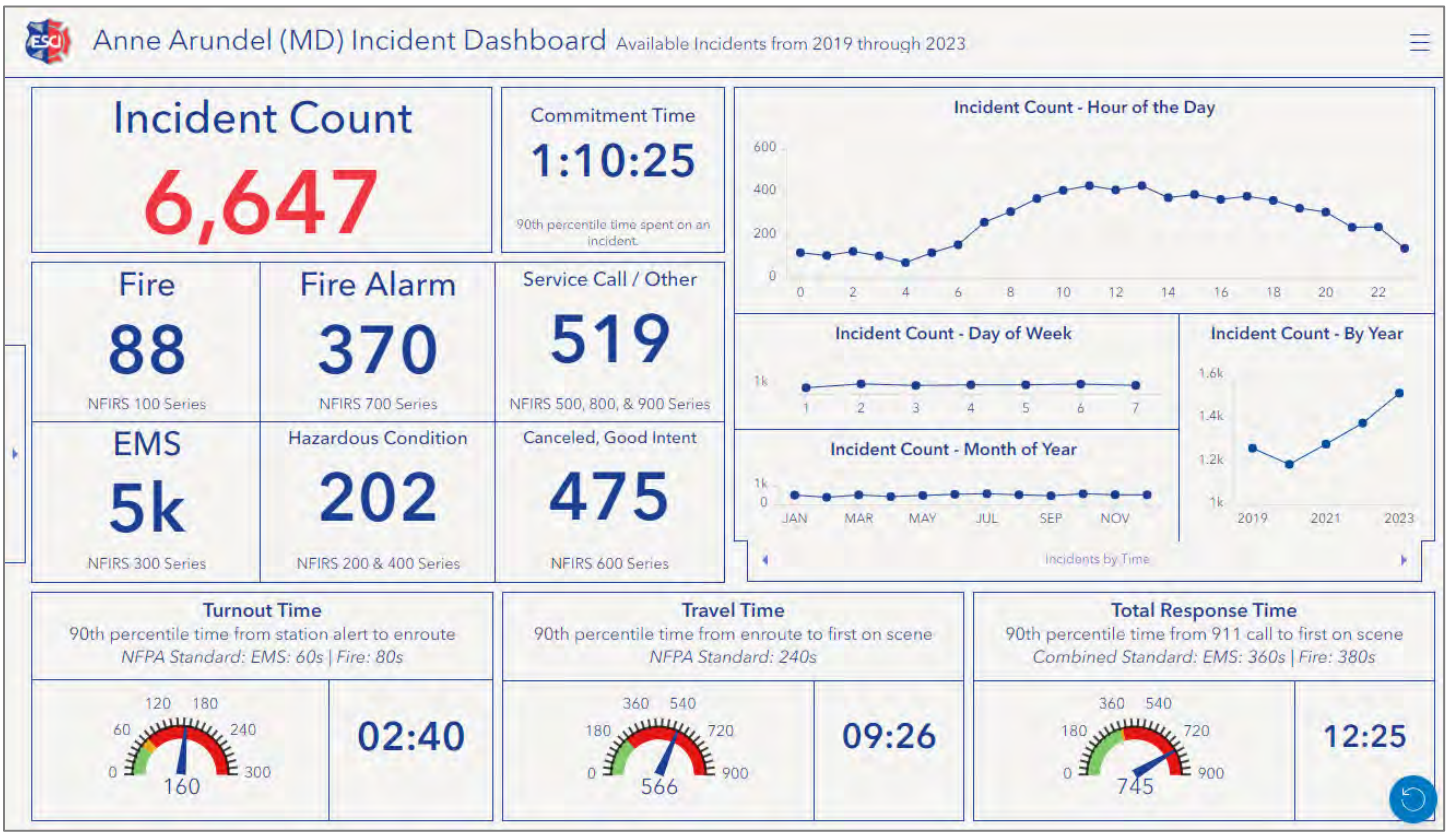
WEALTH PROFILE

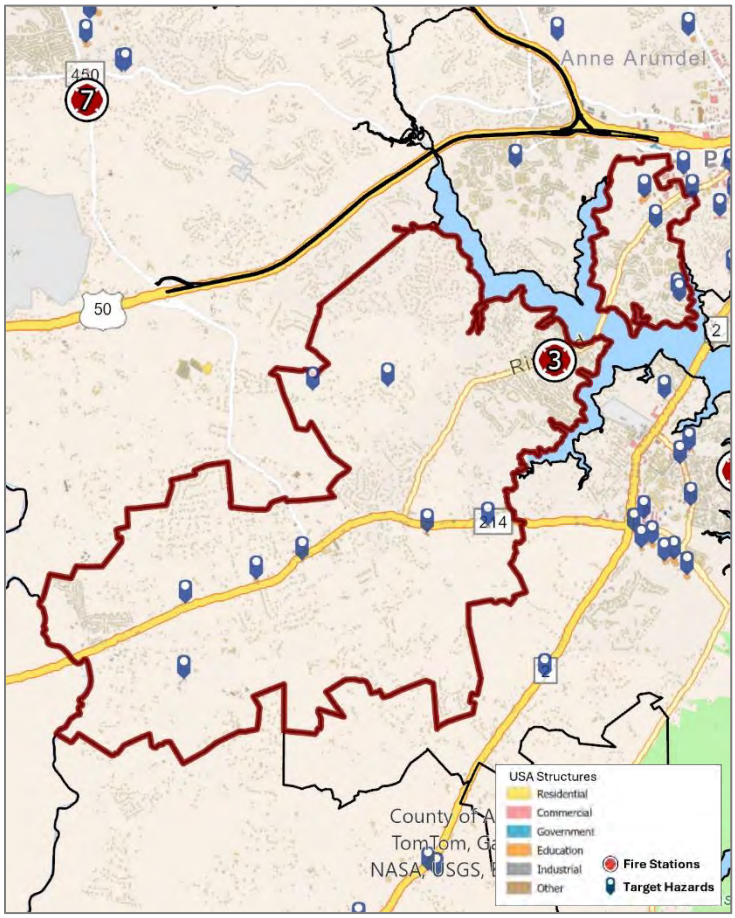
178	83	45
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)



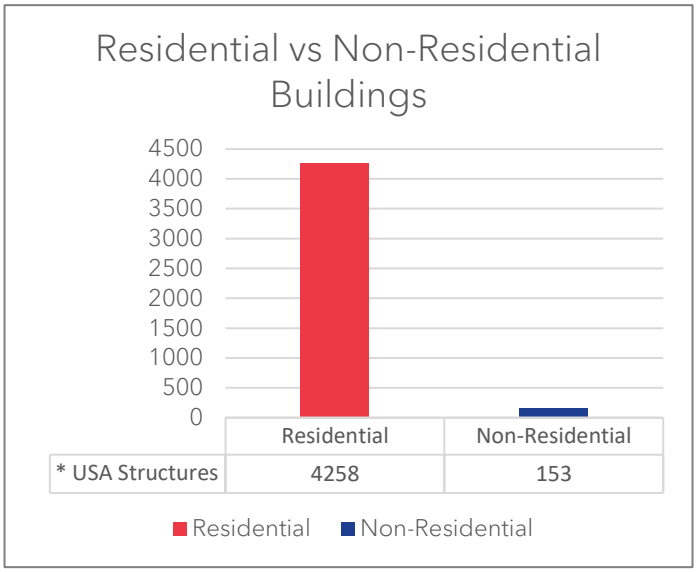
Company 3 Riva





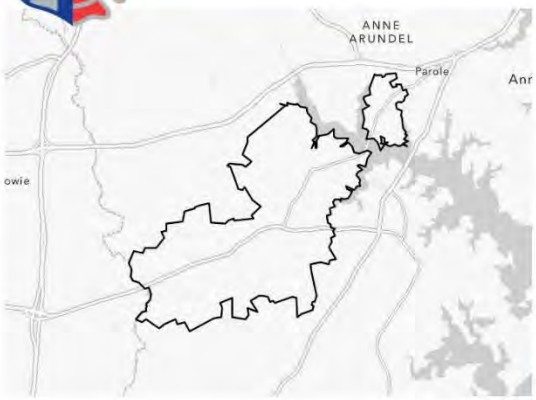
Frequent Responses

ADDRESS	TOTAL RESPONSES
3030 OLD RIVA RD	138
3123 RIVA RD	106
2700 RIVA RD	102
4000 RIVER CRESCENT DR	81
2717 RIVA RD	77



COMMUNITY PROFILE

Company: 03



12,055
Population

4,593
Households

2.59
Avg Size Household

AT RISK POPULATION

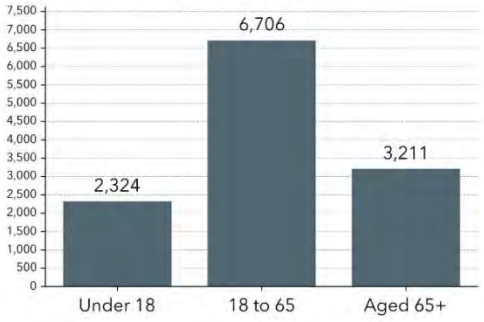
954	3,211	221
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

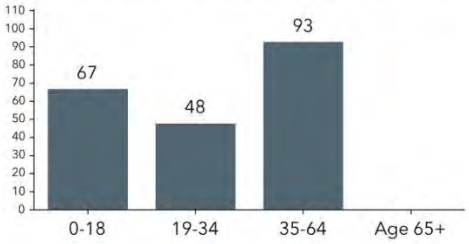
49.5	$164,539	$733,617
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	2,167	6,288	2,842	11,297
Spanish	19	168	22	209
Spanish & English Well	13	153	22	188
Spanish & English Not Well	6	15	0	21
Spanish & No English	0	0	0	0
Indo-European	8	297	62	367
Indo-European & English Well	8	297	53	358
Indo-European & English Not Well	0	0	9	9
Indo-European & No English	0	0	0	0
Asian-Pacific Island	0	11	0	11
Asian-Pacific Isl & English Well	0	11	0	11
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	0	0
Other Language	0	21	0	21
Other Language & English Well	0	21	0	21
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

21,226	507	7,573
Daytime Population	Total Businesses	Total Employees

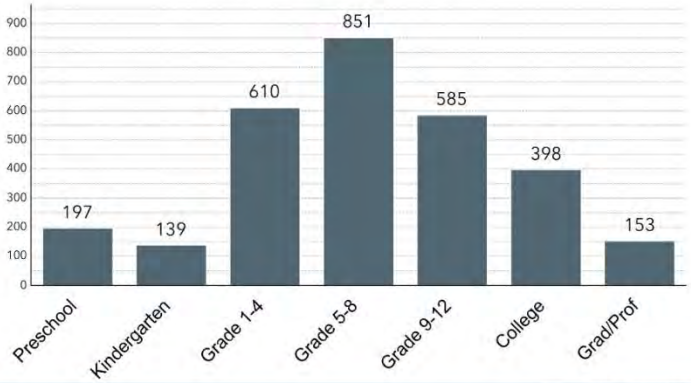
POVERTY AND LANGUAGE

2%	103	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

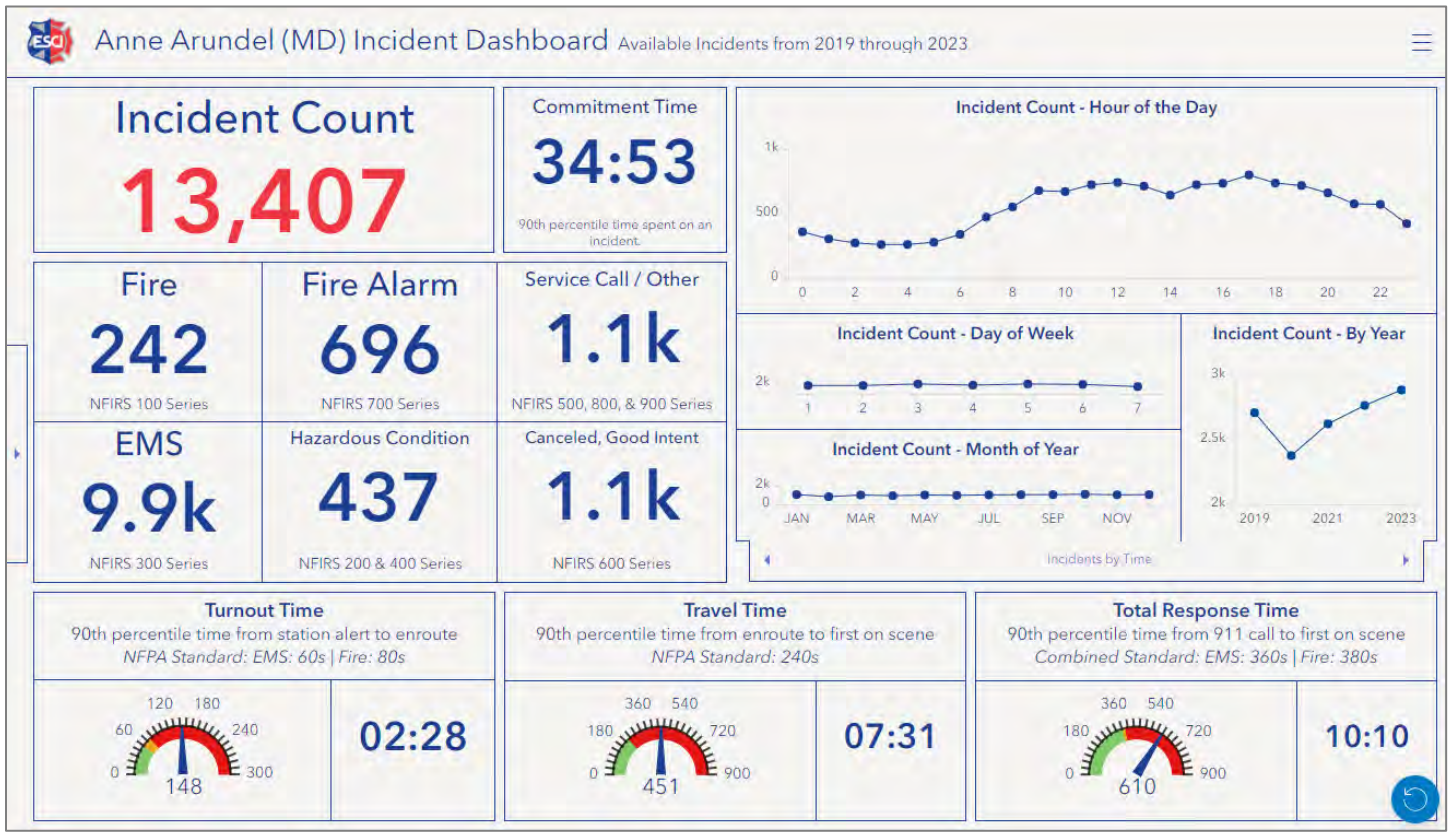
WEALTH PROFILE

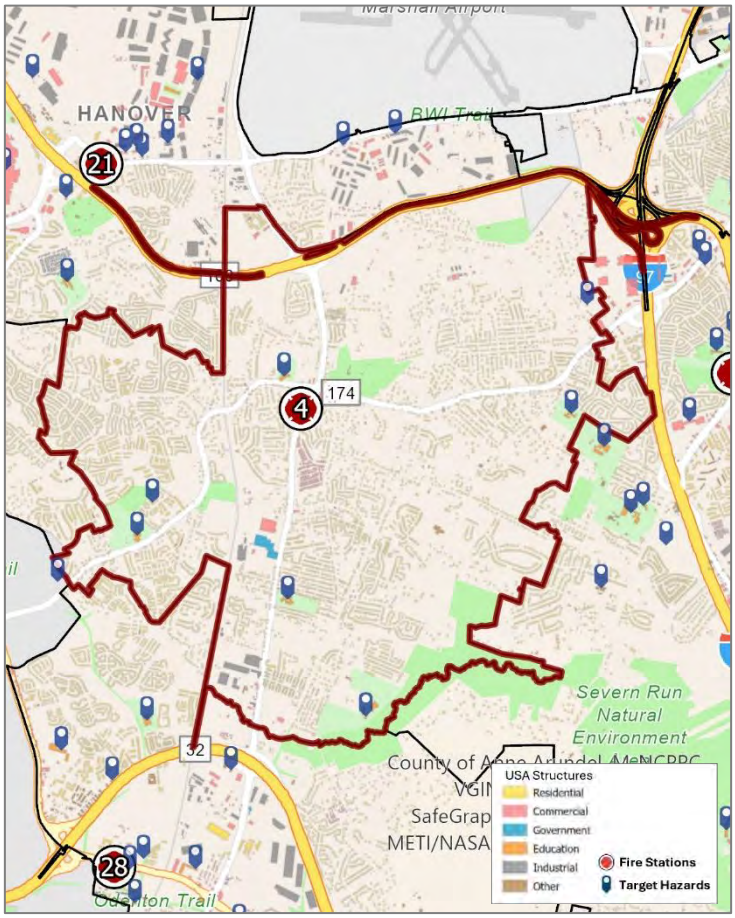
257	89	36
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)



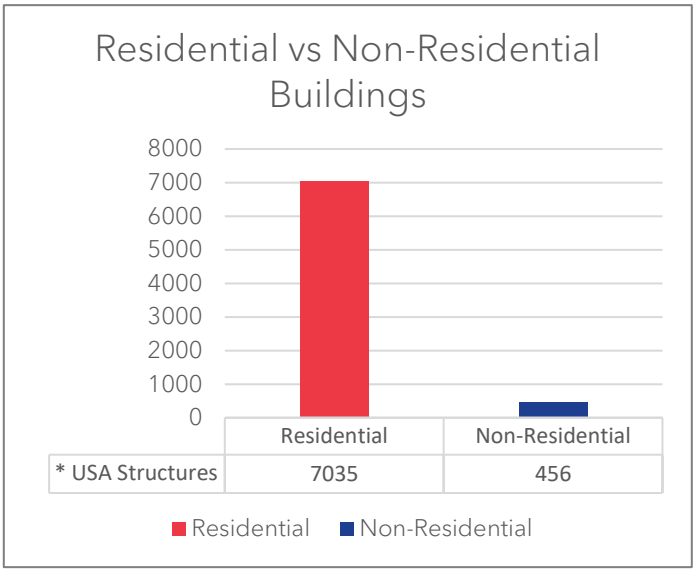
Company 4 Severn





Frequent Responses

ADDRESS	TOTAL RESPONSES
7713 BUCKINGHAM NURSERY DR	156
7870 TELEGRAPH RD	146
1107 THOMPSON AVE	61
7615 LILLY AVE	57
TELEGRAPH RD/REECE RD	53



COMMUNITY PROFILE

Company: 04

26,487
Population

9,137
Households

2.89
Avg Size Household

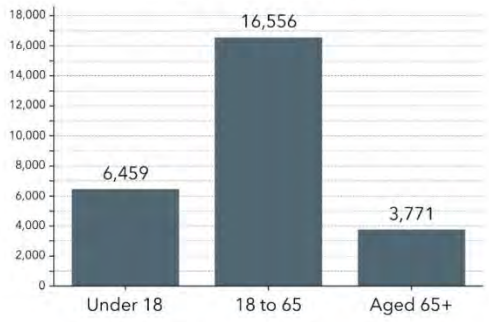
AT RISK POPULATION

1,923	3,771	199
Households With Disability	Population 65+	Households Without Vehicle

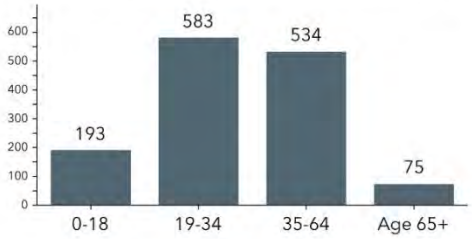
HOUSING PROFILE

38.2	$137,560	$502,807
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

17,998	411	4,650
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

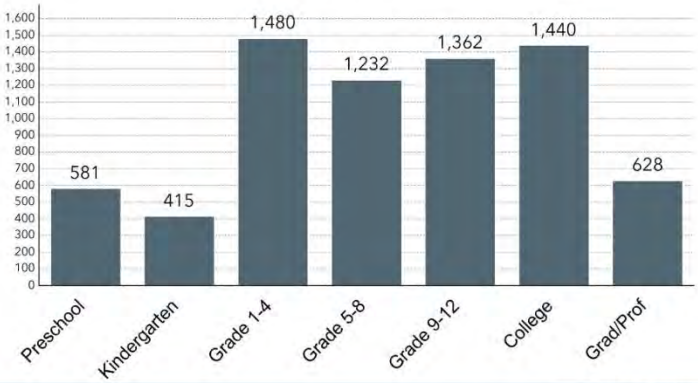
5%	462	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

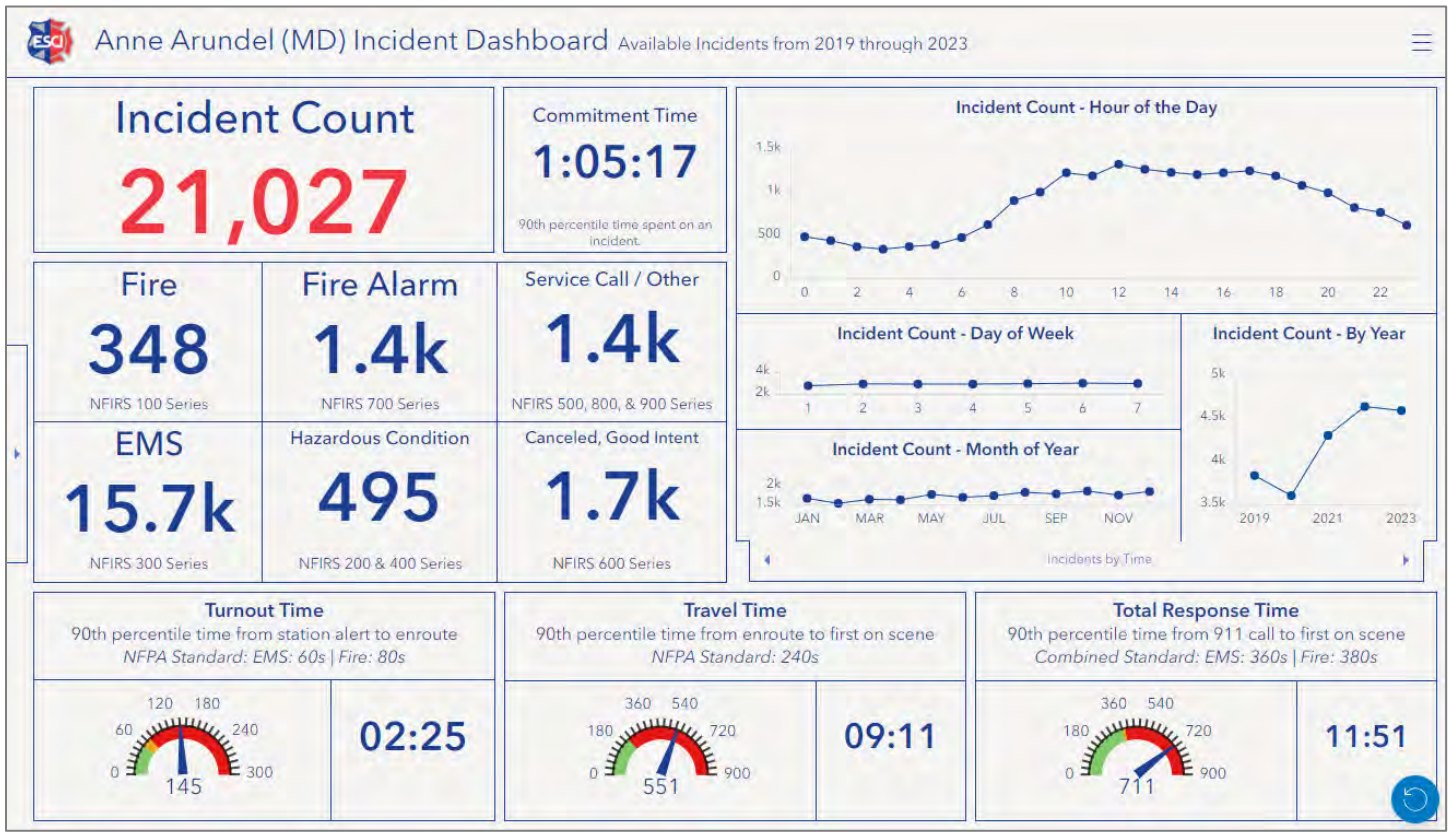
161	108	74
Wealth Index	Housing Affordability	Diversity Index

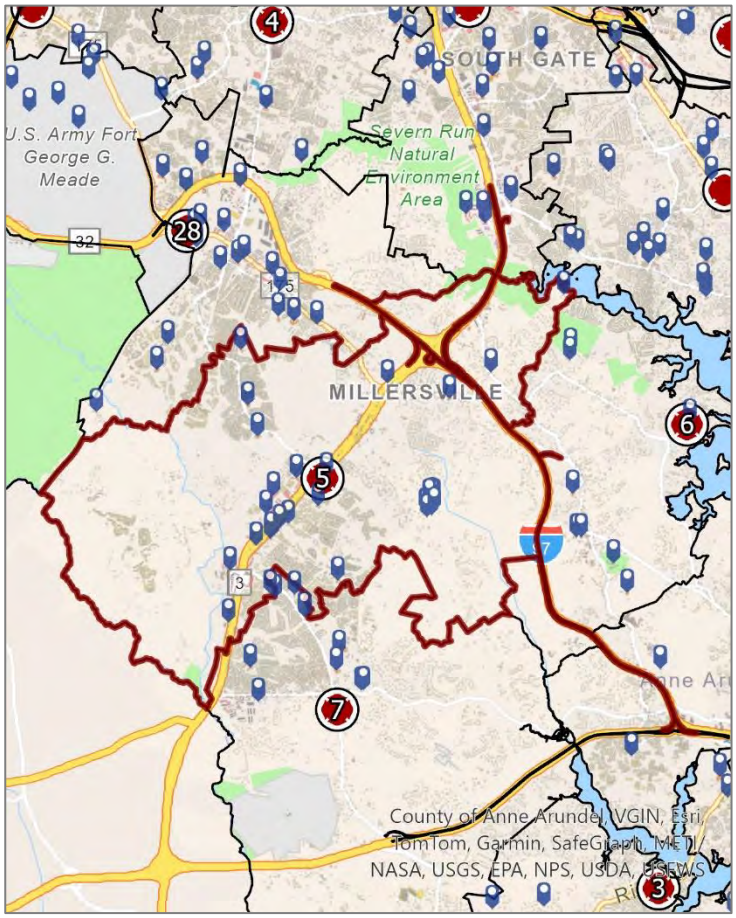
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**4,193**	**13,059**	**2,756**	**20,008**
Spanish	**244**	**706**	**253**	**1,203**
Spanish & English Well	244	561	244	1,049
Spanish & English Not Well	0	146	9	155
Spanish & No English	0	0	0	0
Indo-European	**128**	**614**	**200**	**942**
Indo-European & English Well	79	597	200	876
Indo-European & English Not Well	49	18	0	67
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**71**	**788**	**155**	**1,014**
Asian-Pacific Isl & English Well	71	648	100	819
Asian-Pacific Isl & English Not Well	0	130	55	185
Asian-Pacific Isl & No English	0	10	0	10
Other Language	**92**	**777**	**13**	**882**
Other Language & English Well	92	777	13	882
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



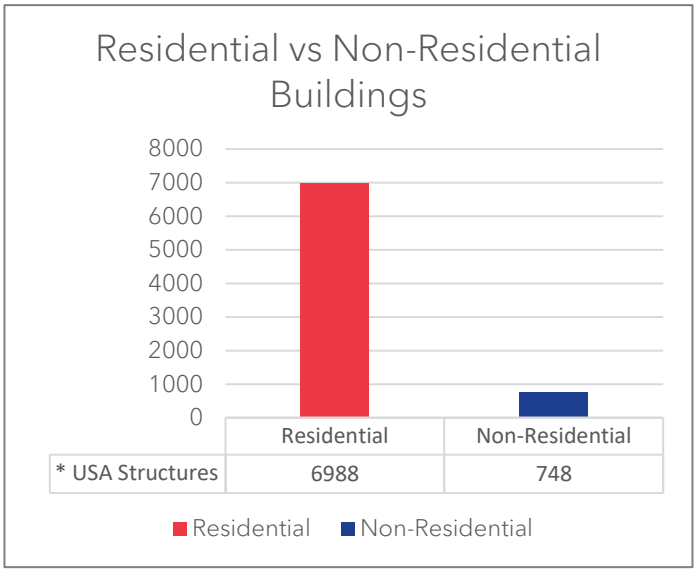
Company 5 Waugh Chapel





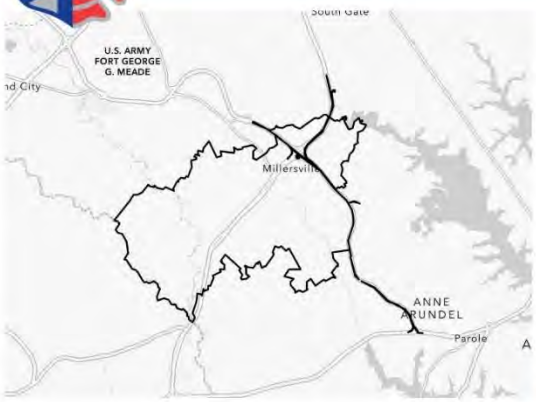
Frequent Responses

ADDRESS	TOTAL RESPONSES
2401 BRANDERMILL BLVD #100	453
1300 RIEDEL RD	160
1301 CLARITY DR	131
730 CRAIN HWY S	106
1728 LEISURE WAY	99



COMMUNITY PROFILE

Company: 05



36,549
Population

13,705
Households

2.66
Avg Size Household

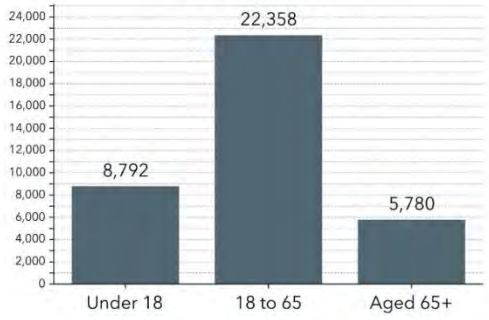
AT RISK POPULATION

2,191	5,780	352
Households With Disability	Population 65+	Households Without Vehicle

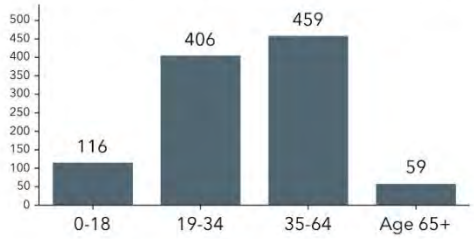
HOUSING PROFILE

39.8	$140,496	$579,266
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

32,651	1,293	12,717
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

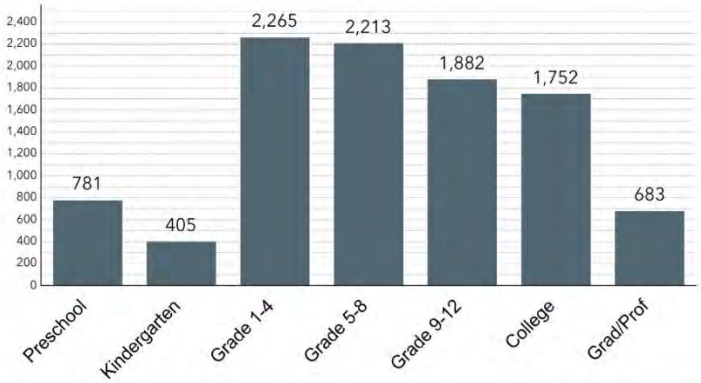
5%	661	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

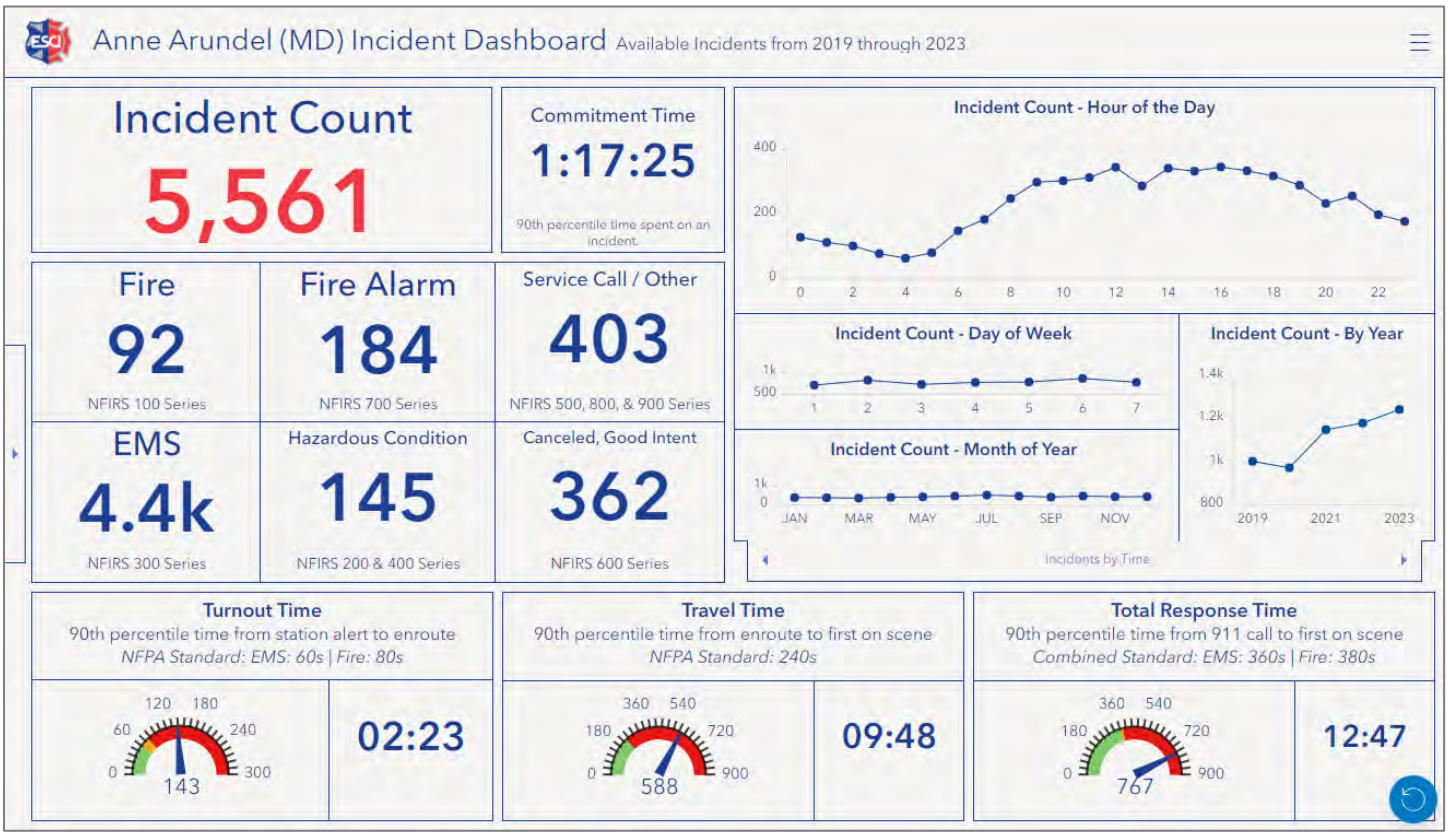
183	96	65
Wealth Index	Housing Affordability	Diversity Index

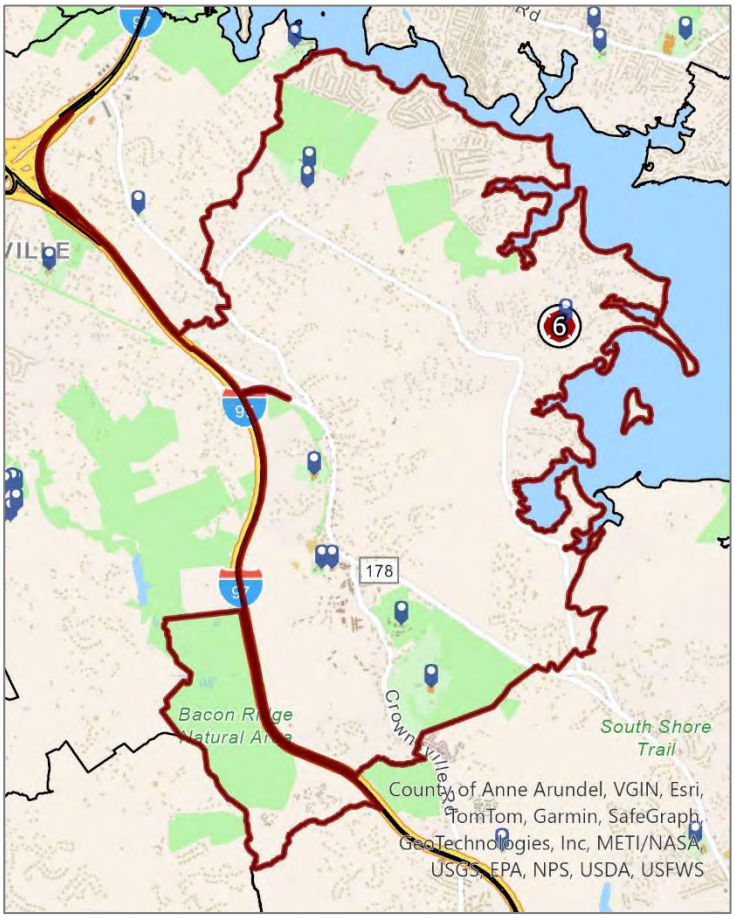
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**6,136**	**17,196**	**3,654**	**26,986**
Spanish	**331**	**1,269**	**141**	**1,741**
Spanish & English Well	284	1,247	141	1,672
Spanish & English Not Well	46	22	0	68
Spanish & No English	0	0	0	0
Indo-European	**238**	**682**	**265**	**1,185**
Indo-European & English Well	238	553	244	1,035
Indo-European & English Not Well	0	130	21	151
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**78**	**1,096**	**198**	**1,372**
Asian-Pacific Isl & English Well	78	1,088	76	1,242
Asian-Pacific Isl & English Not Well	0	8	0	8
Asian-Pacific Isl & No English	0	0	122	122
Other Language	**60**	**662**	**100**	**822**
Other Language & English Well	60	604	57	721
Other Language & English Not Well	0	58	43	101
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



Company 6 Herald Harbor

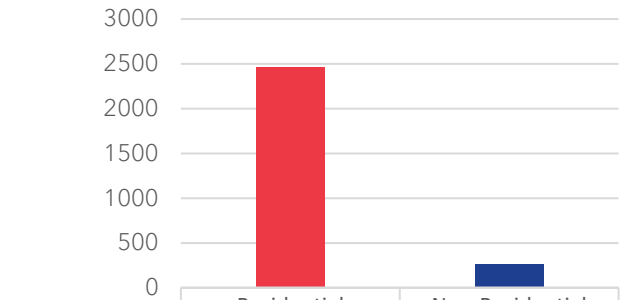




Frequent Responses

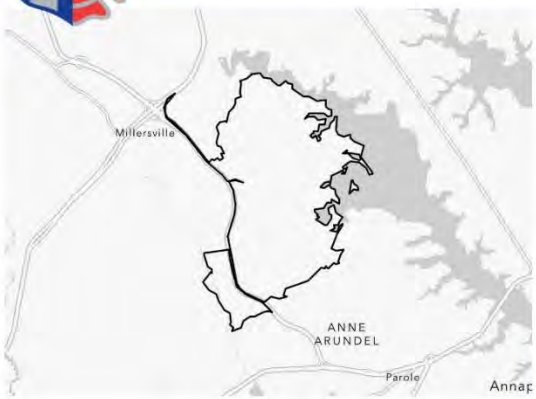
ADDRESS	TOTAL RESPONSES
107 CIRCLE DR	354
26 MARBURY DR	288
105 CIRCLE DR	276
1570 CROWNSVILLE RD	187
43 COMMUNITY PL	144

Residential vs Non-Residential Buildings



COMMUNITY PROFILE

Company: 06



7,493
Population

2,845
Households

2.62
Avg Size Household

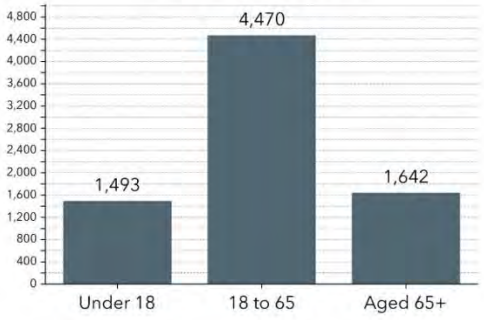
AT RISK POPULATION

469	1,642	26
Households With Disability	Population 65+	Households Without Vehicle

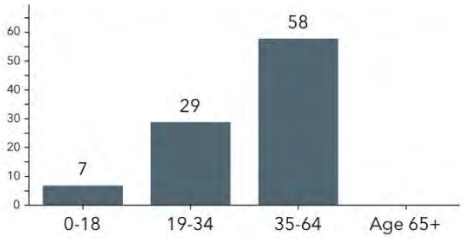
HOUSING PROFILE

45.1	$151,080	$699,971
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

5,515	207	1,347
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

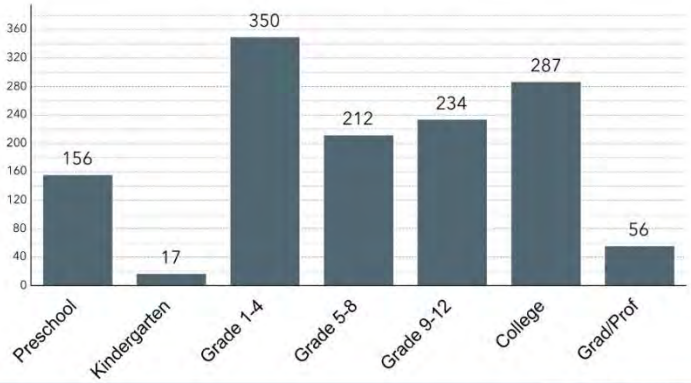
5%	134	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

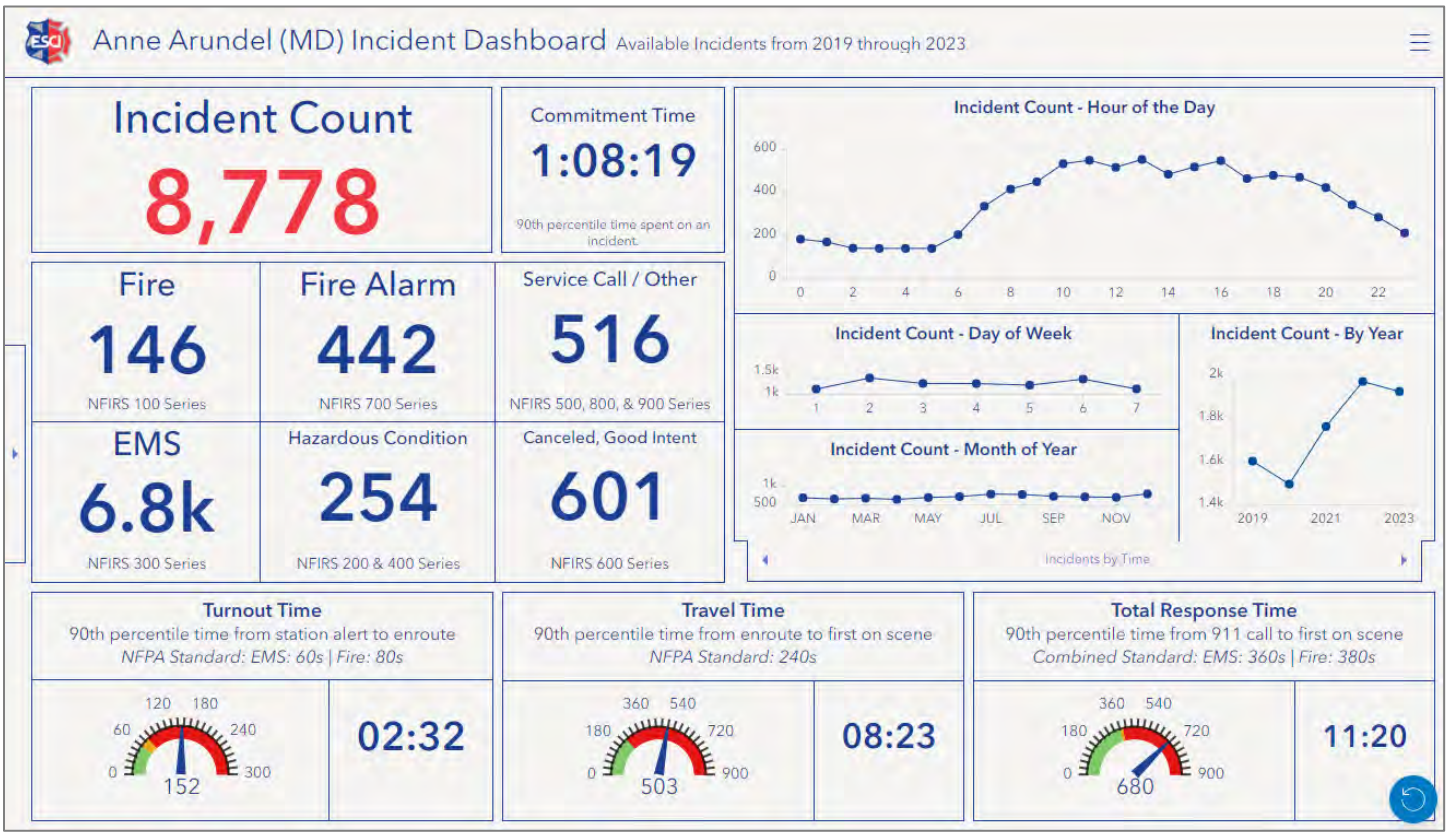
226	85	40
Wealth Index	Housing Affordability	Diversity Index

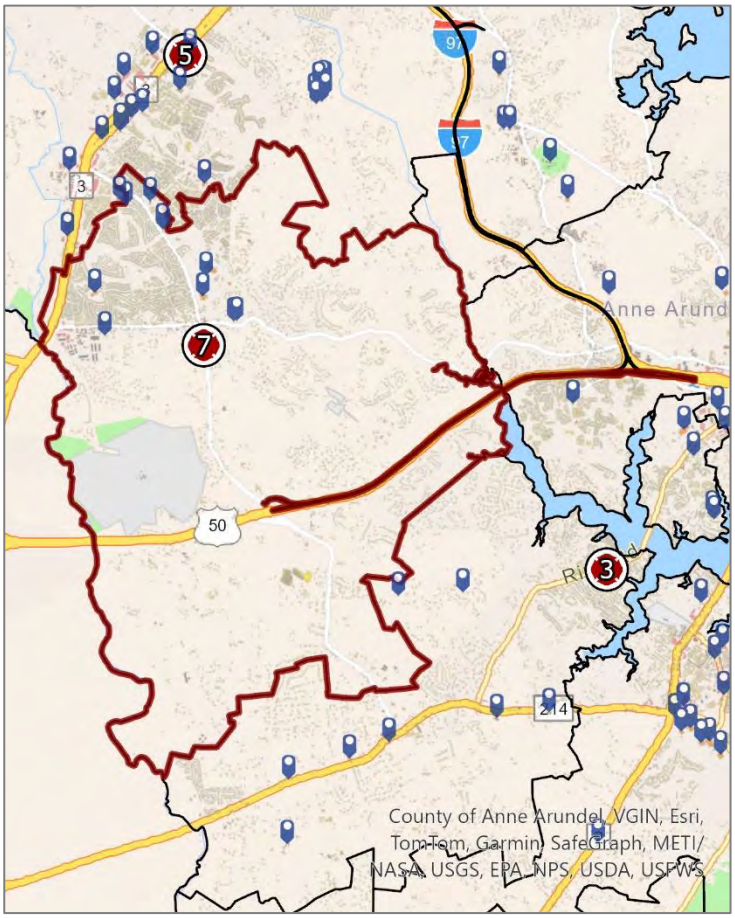
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**866**	**3,837**	**1,442**	**6,145**
Spanish	**8**	**164**	**10**	**182**
Spanish & English Well	4	164	10	178
Spanish & English Not Well	4	0	0	4
Spanish & No English	0	0	0	0
Indo-European	**34**	**182**	**121**	**337**
Indo-European & English Well	34	182	91	307
Indo-European & English Not Well	0	0	30	30
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**6**	**7**	**0**	**13**
Asian-Pacific Isl & English Well	6	7	0	13
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	0	0
Other Language	**0**	**22**	**25**	**47**
Other Language & English Well	0	11	25	36
Other Language & English Not Well	0	11	0	11
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



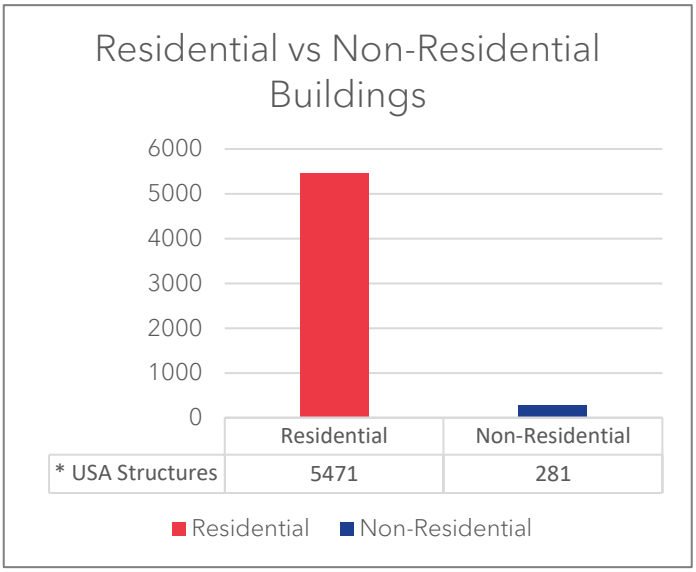
Company 7 Arundel





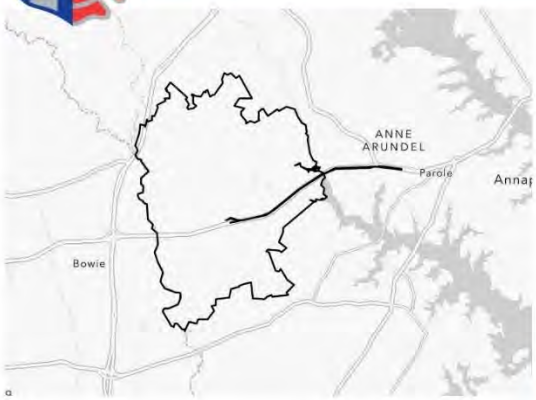
Frequent Responses

ADDRESS	TOTAL RESPONSES
2380 DAVIDSONVILLE RD	149
1260 DEFENSE HWY	129
1726 PEARTREE LN	91
1262 DEFENSE HWY	80
2131 DAVIDSONVILLE RD	73



COMMUNITY PROFILE

Company: 07



17,784
Population

6,182
Households

2.85
Avg Size Household

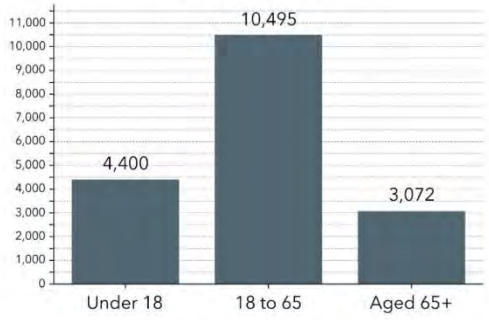
AT RISK POPULATION

885	3,072	160
Households With Disability	Population 65+	Households Without Vehicle

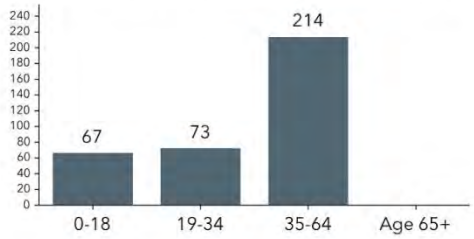
HOUSING PROFILE

40.9	$150,458	$618,623
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

15,726	757	7,002
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

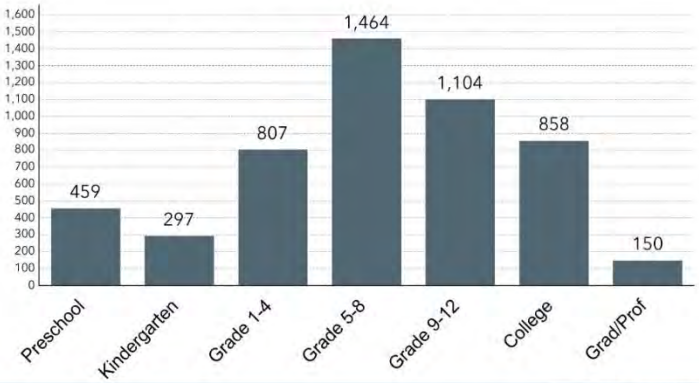
3%	195	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

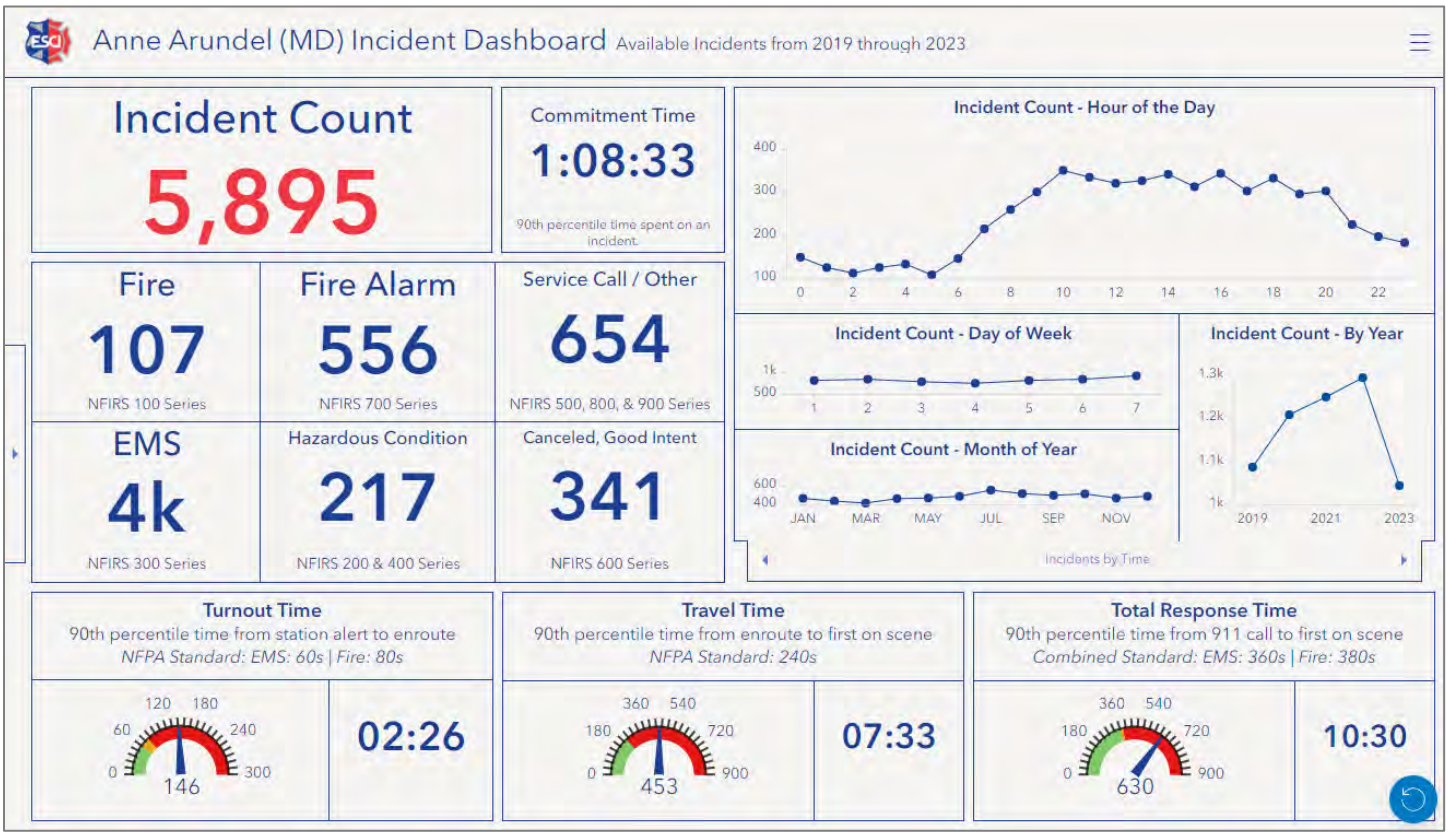
211	96	50
Wealth Index	Housing Affordability	Diversity Index

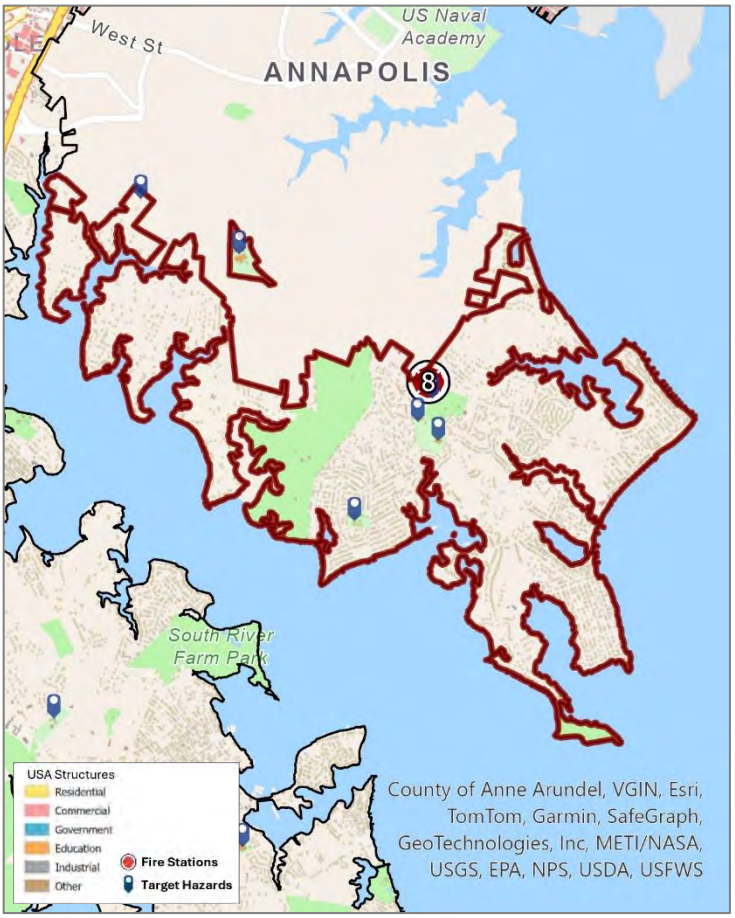
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**3,618**	**8,603**	**2,494**	**14,715**
Spanish	**68**	**237**	**90**	**395**
Spanish & English Well	68	234	90	392
Spanish & English Not Well	0	2	0	2
Spanish & No English	0	0	0	0
Indo-European	**53**	**420**	**54**	**527**
Indo-European & English Well	53	405	37	495
Indo-European & English Not Well	0	15	17	32
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**64**	**326**	**65**	**455**
Asian-Pacific Isl & English Well	64	326	51	441
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	14	14
Other Language	**0**	**3**	**11**	**14**
Other Language & English Well	0	3	11	14
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



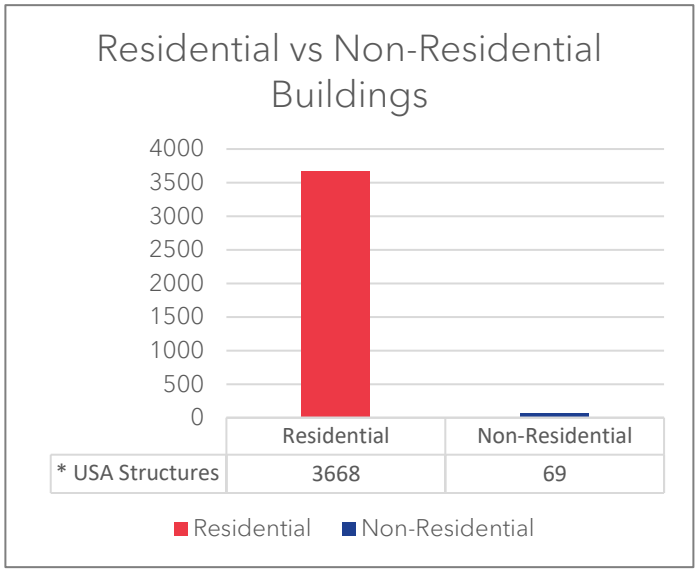
Company 8 Annapolis Neck





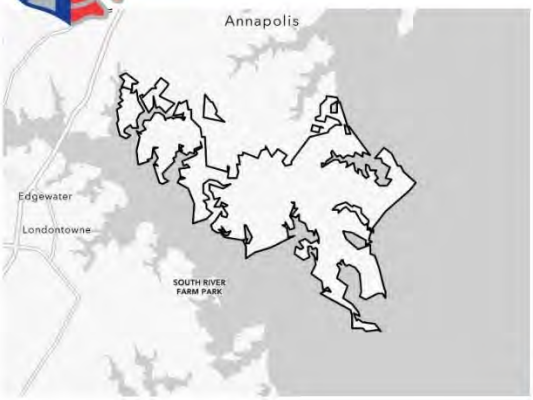
Frequent Responses

ADDRESS	TOTAL RESPONSES
1399 FOREST DR	176
991 BAY RIDGE RD	162
3023 ARUNDEL ON THE BAY RD	135
3023 ARUNDEL ON THE BAY RD #B	69
50 DECATUR AVE	59



COMMUNITY PROFILE

Company: 08



9,789
Population

3,855
Households

2.50
Avg Size Household

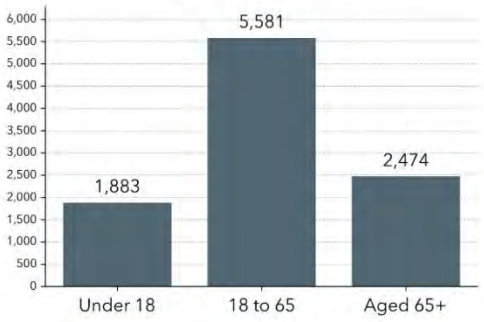
AT RISK POPULATION

689	2,474	126
Households With Disability	Population 65+	Households Without Vehicle

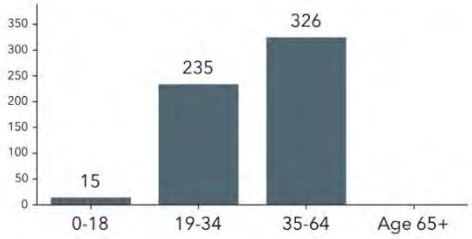
HOUSING PROFILE

48.2	$158,080	$733,202
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

6,881	236	1,642
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

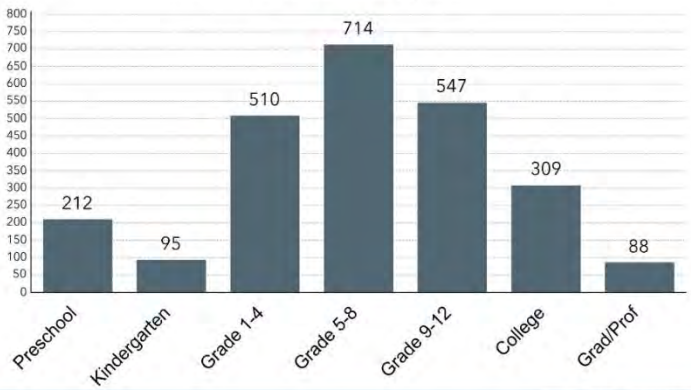
2%	83	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

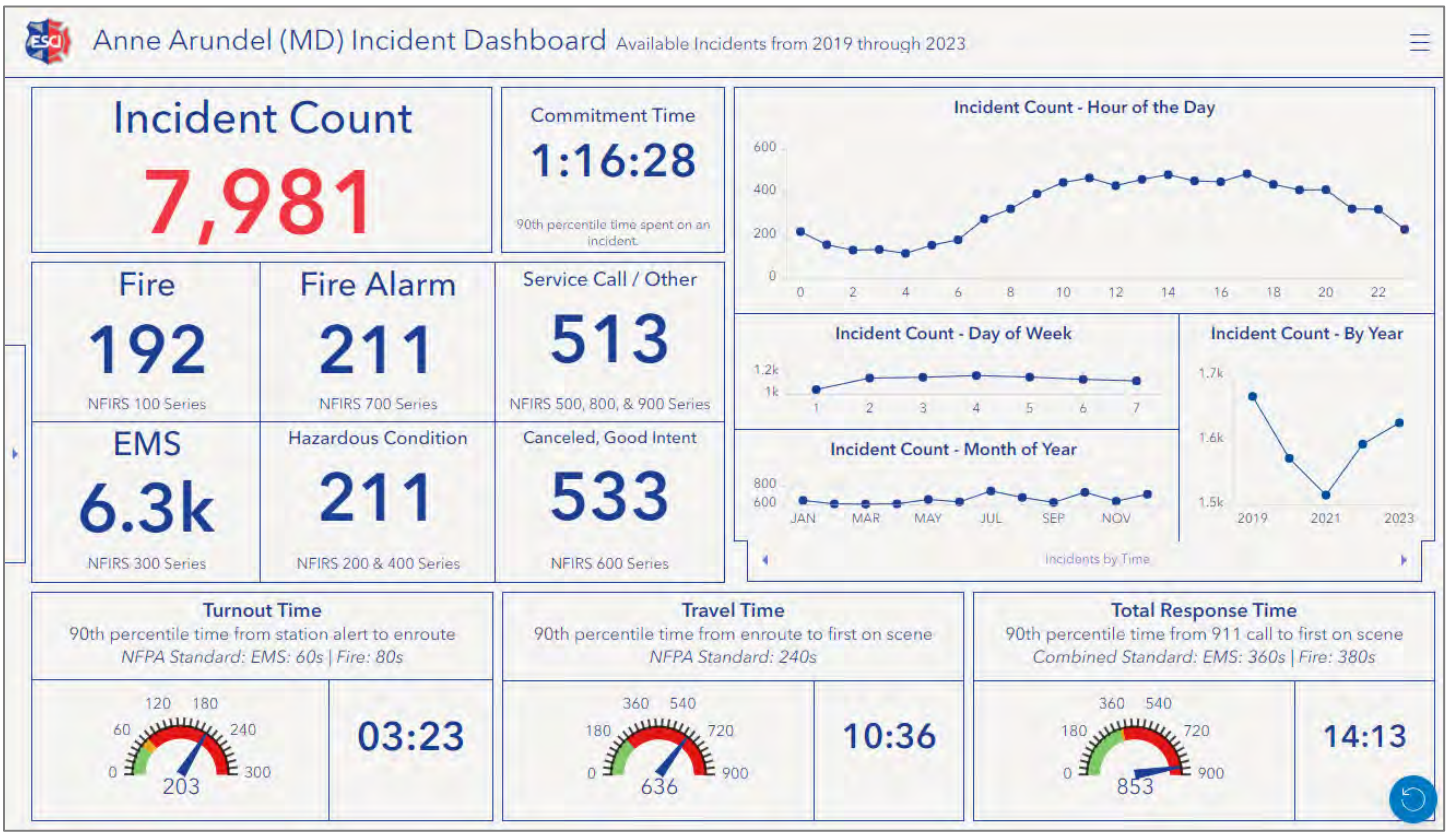
250	85	45
Wealth Index	Housing Affordability	Diversity Index

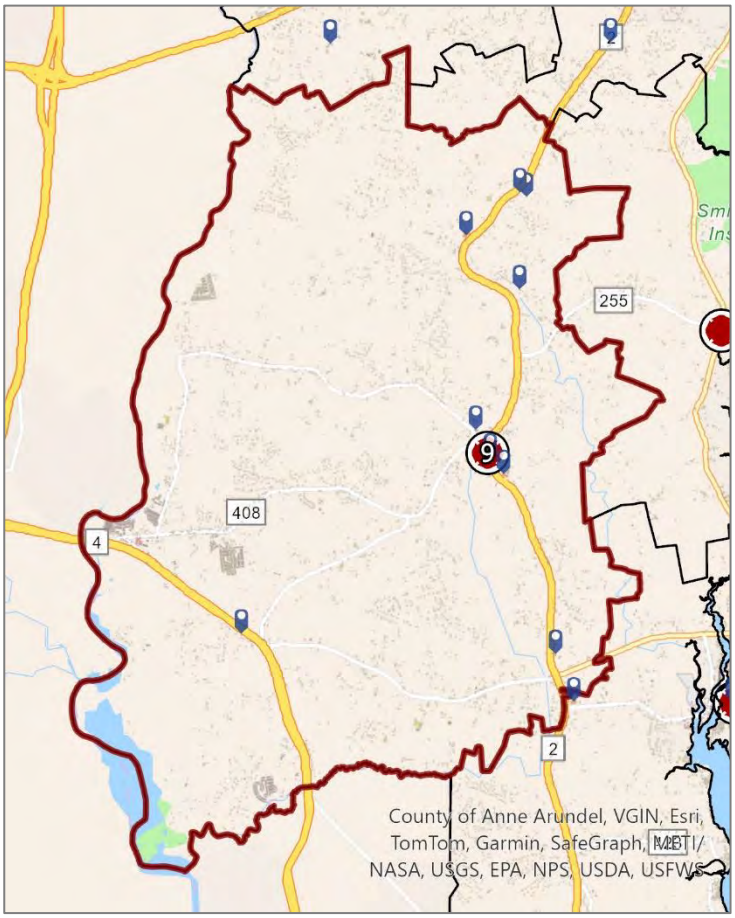
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	1,834	5,860	2,275	9,969
Spanish	0	119	43	162
Spanish & English Well	0	119	43	162
Spanish & English Not Well	0	0	0	0
Spanish & No English	0	0	0	0
Indo-European	63	159	46	268
Indo-European & English Well	63	111	46	220
Indo-European & English Not Well	0	48	0	48
Indo-European & No English	0	0	0	0
Asian-Pacific Island	11	63	24	98
Asian-Pacific Isl & English Well	11	63	24	98
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	0	0
Other Language	0	57	0	57
Other Language & English Well	0	57	0	57
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



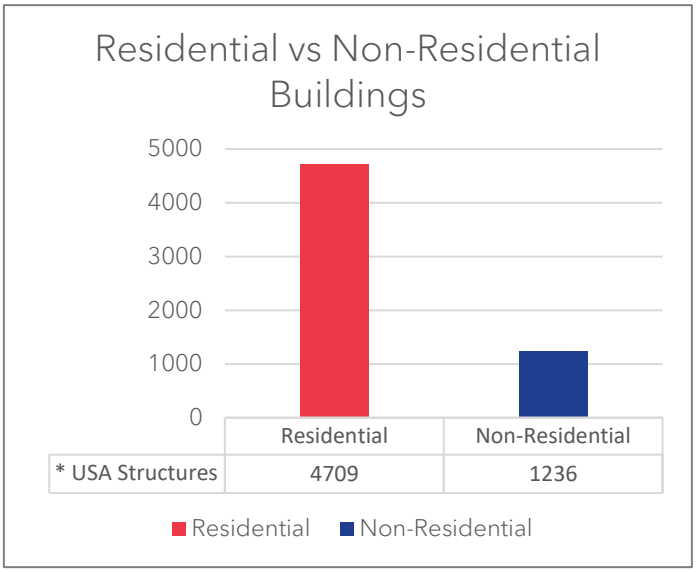
Company 9 Harwood Lothian





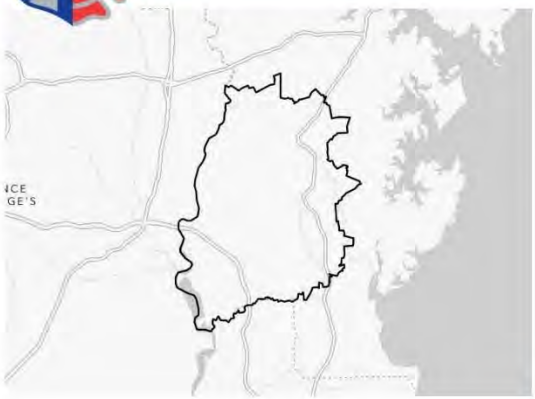
Frequent Responses

ADDRESS	TOTAL RESPONSES
5165 SOLOMONS ISLAND RD	318
1048 PAM ANN LN	83
68 3RD ST	78
4400 SOLOMONS ISLAND RD	71
1501 FLANDERS LN LOT F	59



COMMUNITY PROFILE

Company: 09



10,695
Population

3,808
Households

2.80
Avg Size Household

AT RISK POPULATION

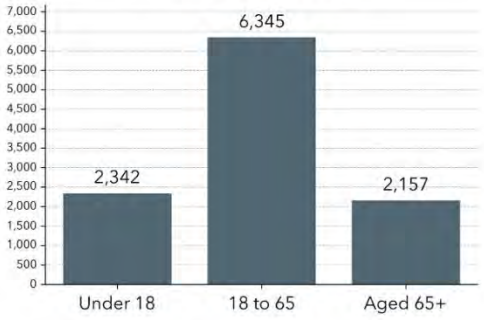
1,046	2,157	106
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

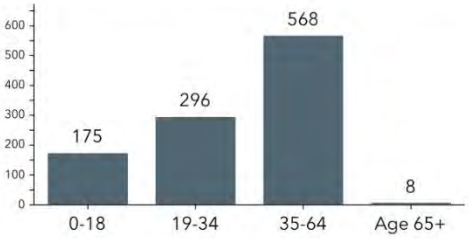
42.4	$107,711	$526,308
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	1,156	5,421	2,226	8,803
Spanish	342	446	10	798
Spanish & English Well	342	423	10	775
Spanish & English Not Well	1	23	0	24
Spanish & No English	0	0	0	0
Indo-European	2	4	35	41
Indo-European & English Well	2	4	35	41
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	15	56	0	71
Asian-Pacific Isl & English Well	15	56	0	71
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	0	0
Other Language	0	133	0	133
Other Language & English Well	0	133	0	133
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

8,872	298	2,400
Daytime Population	Total Businesses	Total Employees

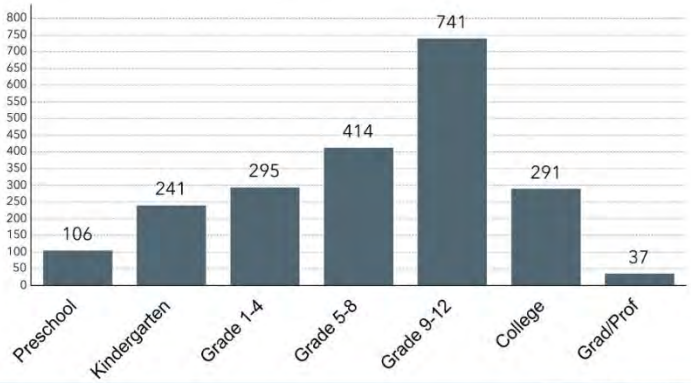
POVERTY AND LANGUAGE

8%	296	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

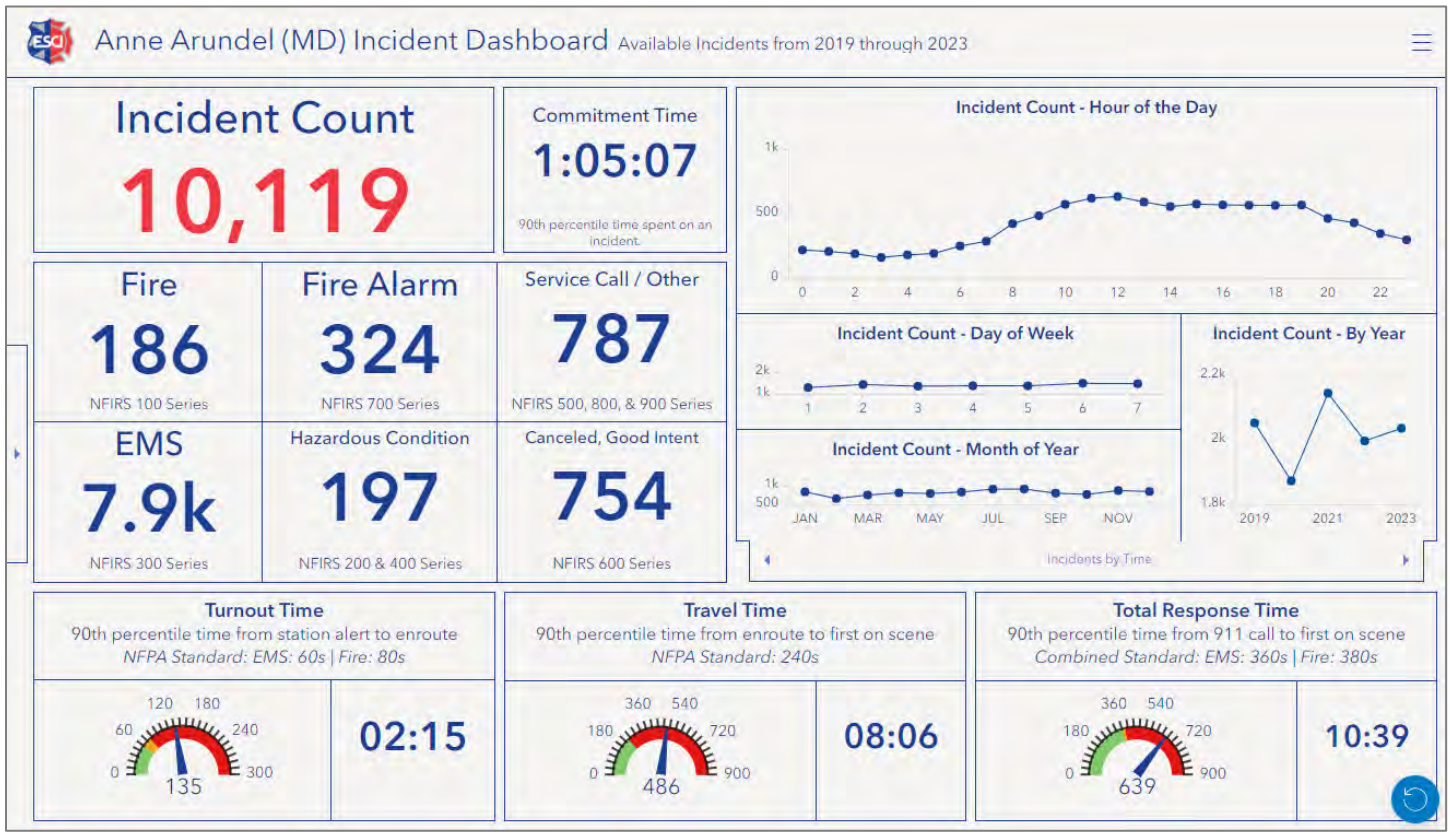
WEALTH PROFILE

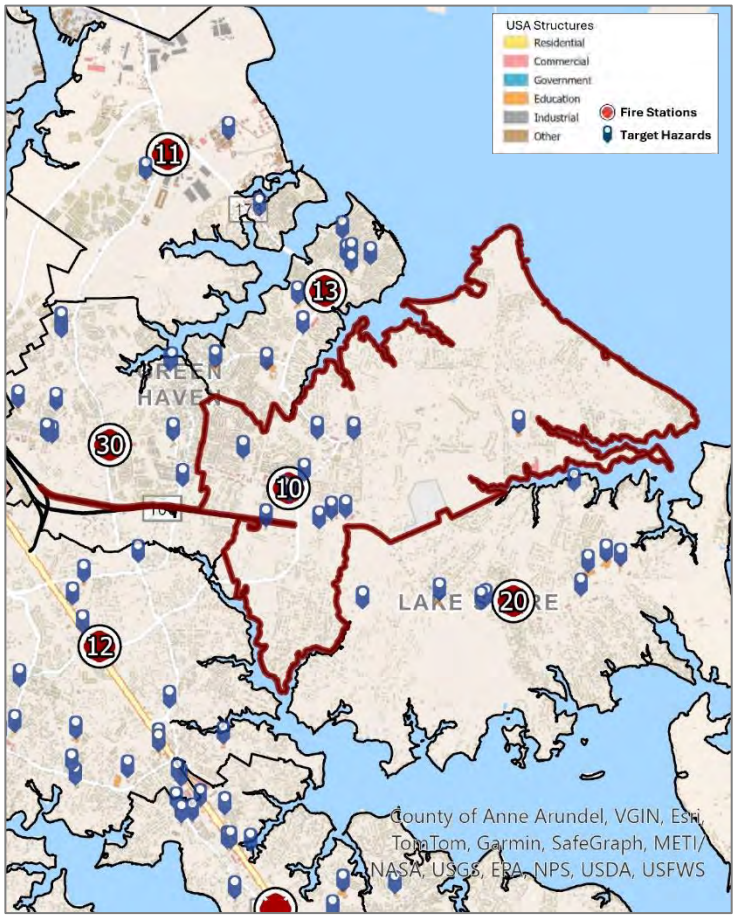
168	81	67
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)



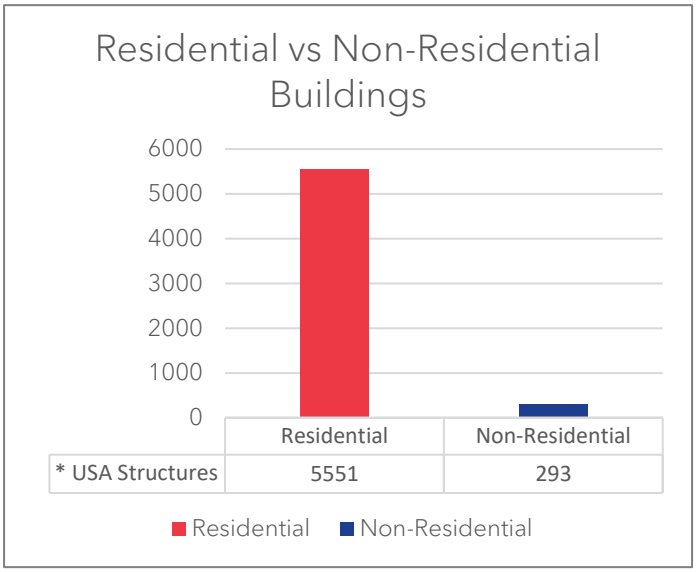
Company 10 Jacobsville





Frequent Responses

ADDRESS	TOTAL RESPONSES
33 MAGOTHY BEACH RD 102	178
24 MAGOTHY BEACH RD LOT A	119
3628 SEAFORD CT	75
8001 MIDDLEBURY DR	60
3708 MOUNTAIN RD	59



COMMUNITY PROFILE

Company: 10

20,239
Population

7,462
Households

2.71
Avg Size Household

AT RISK POPULATION

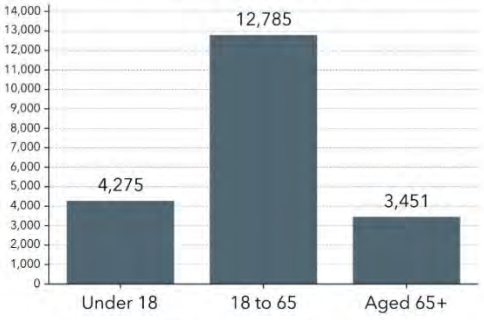
1,542	3,451	134
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

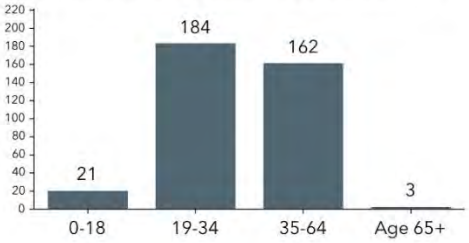
41.2	$120,948	$476,640
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**2,434**	**11,572**	**2,703**	**16,709**
Spanish	**221**	**331**	**7**	**559**
Spanish & English Well	221	258	7	486
Spanish & English Not Well	0	26	0	26
Spanish & No English	0	47	0	47
Indo-European	**12**	**239**	**69**	**320**
Indo-European & English Well	12	238	46	296
Indo-European & English Not Well	0	1	0	1
Indo-European & No English	0	0	23	23
Asian-Pacific Island	**13**	**175**	**60**	**248**
Asian-Pacific Isl & English Well	13	148	54	215
Asian-Pacific Isl & English Not Well	0	27	6	33
Asian-Pacific Isl & No English	0	0	0	0
Other Language	**39**	**6**	**0**	**45**
Other Language & English Well	39	6	0	45
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

14,200	605	4,666
Daytime Population	Total Businesses	Total Employees

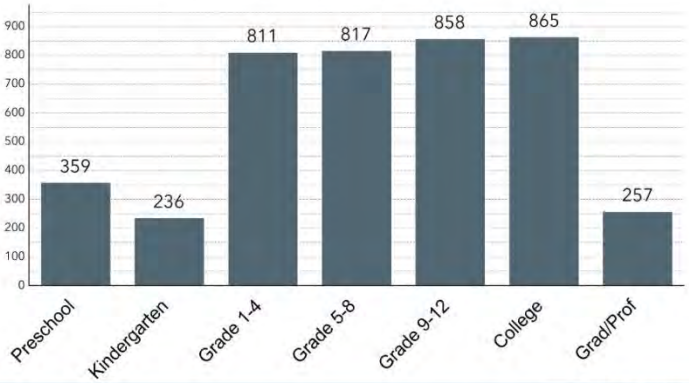
POVERTY AND LANGUAGE

5%	356	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

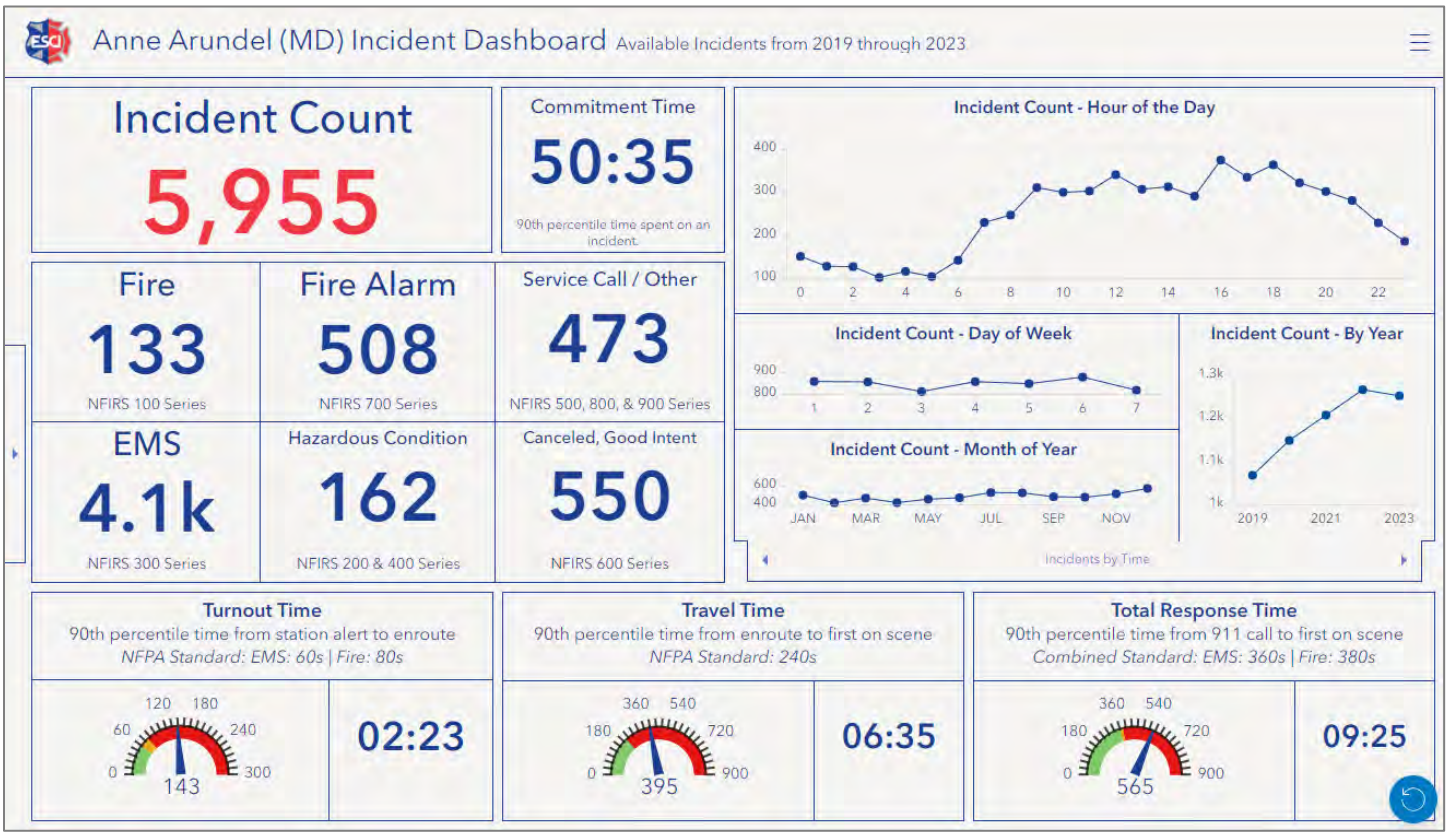
WEALTH PROFILE

157	100	37
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)



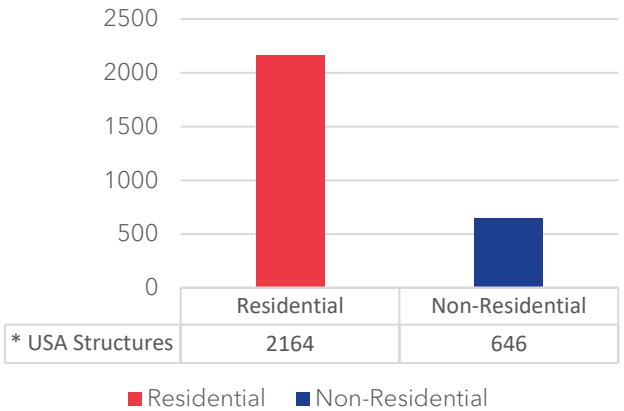
Company 11 Orchard Beach



Frequent Responses

ADDRESS	TOTAL RESPONSES
7501 BRIGHTWATER BEACH RD	139
7549 SOLLEY RD	101
2401 HAWKINS POINT RD	68
8127 PARKWAY DR	55
7341 GREEN ACRES DR	51

Residential vs Non-Residential Buildings



COMMUNITY PROFILE

Company: 11

14,468
Population

5,498
Households

2.62
Avg Size Household

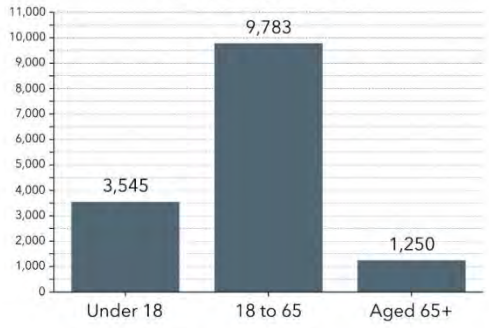
AT RISK POPULATION

641	1,250	69
Households With Disability	Population 65+	Households Without Vehicle

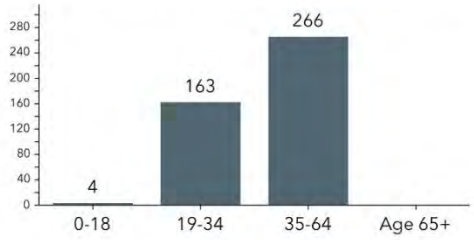
HOUSING PROFILE

35.6	$118,913	$470,833
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

12,581	311	3,798
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

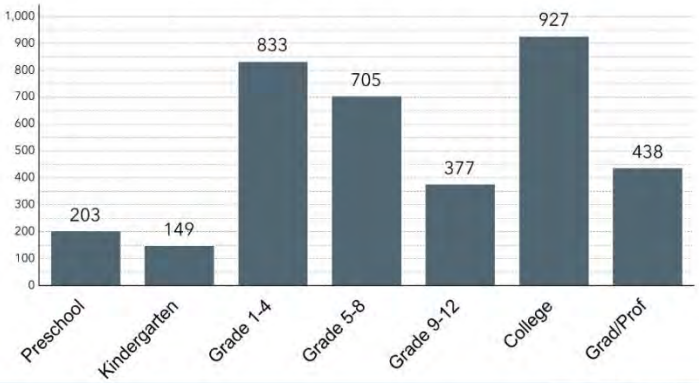
4%	170	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

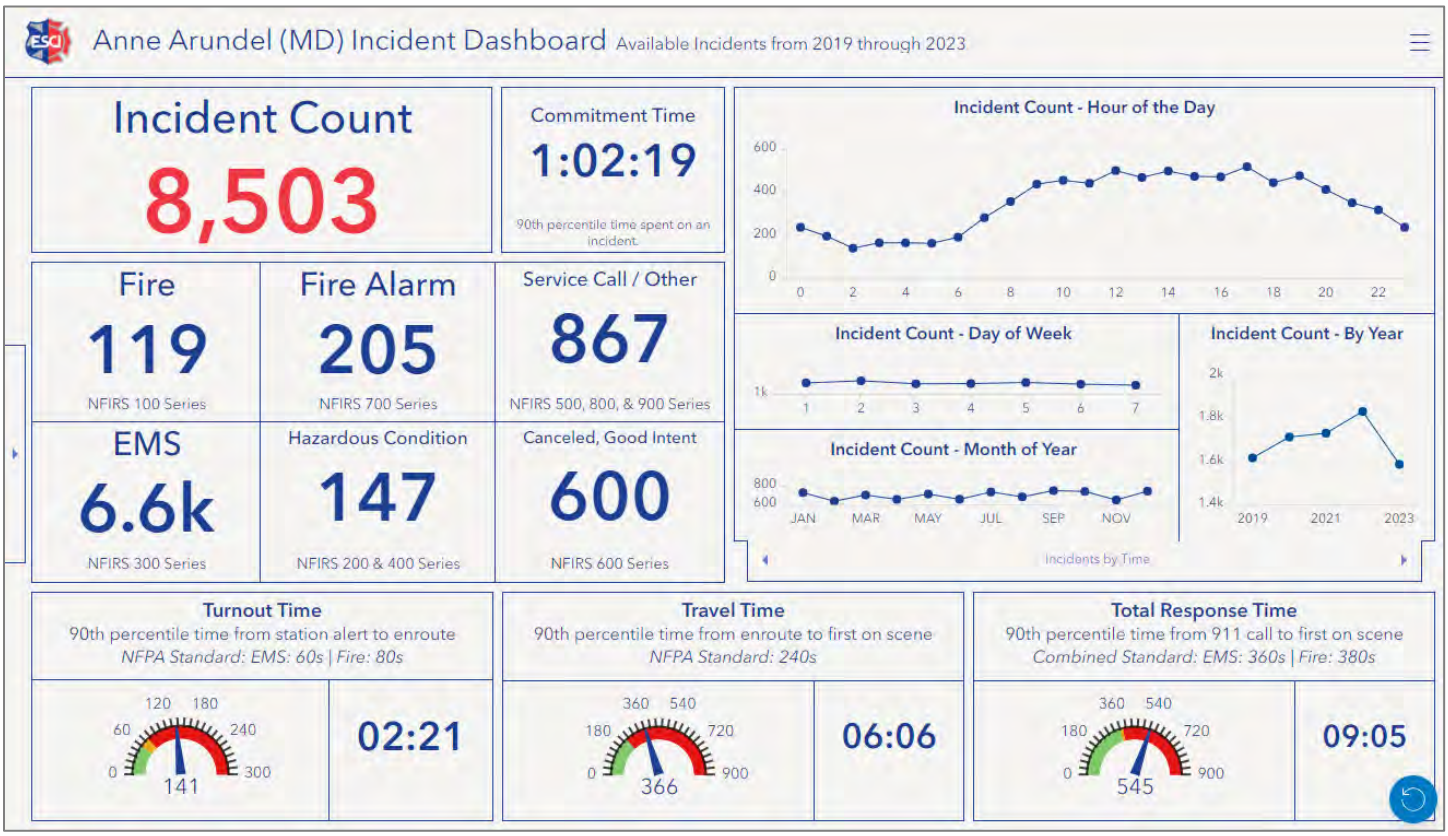
121	100	66
Wealth Index	Housing Affordability	Diversity Index

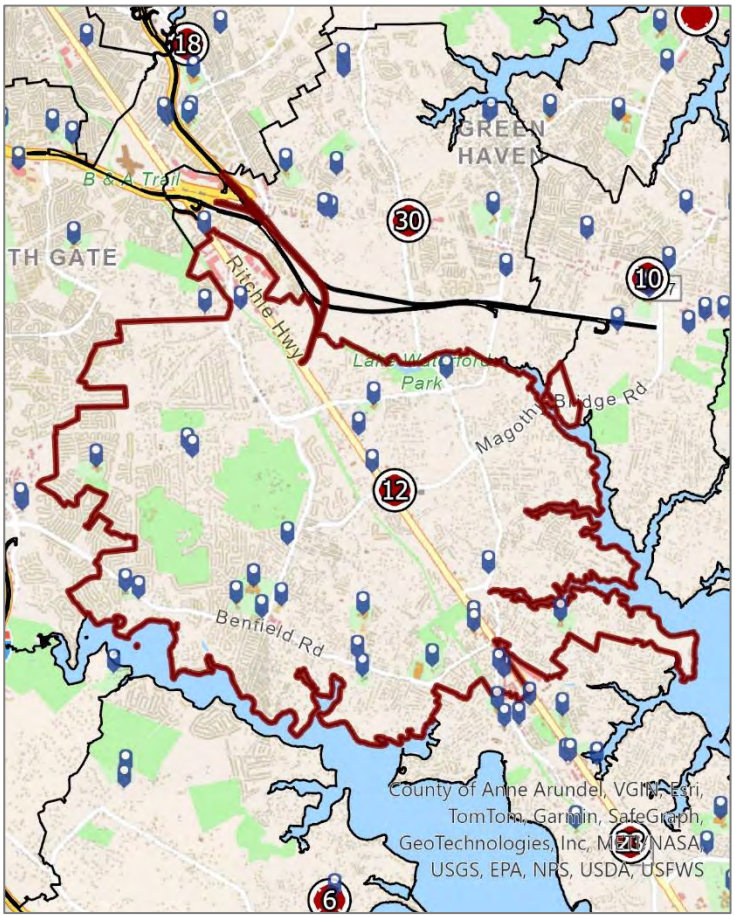
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**1,902**	**7,340**	**787**	**10,029**
Spanish	**12**	**828**	**0**	**840**
Spanish & English Well	0	798	0	798
Spanish & English Not Well	12	30	0	42
Spanish & No English	0	0	0	0
Indo-European	**0**	**114**	**17**	**131**
Indo-European & English Well	0	114	17	131
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**0**	**335**	**0**	**335**
Asian-Pacific Isl & English Well	0	216	0	216
Asian-Pacific Isl & English Not Well	0	119	0	119
Asian-Pacific Isl & No English	0	0	0	0
Other Language	**29**	**84**	**1**	**114**
Other Language & English Well	29	84	1	114
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



Company 12 Earleigh Heights

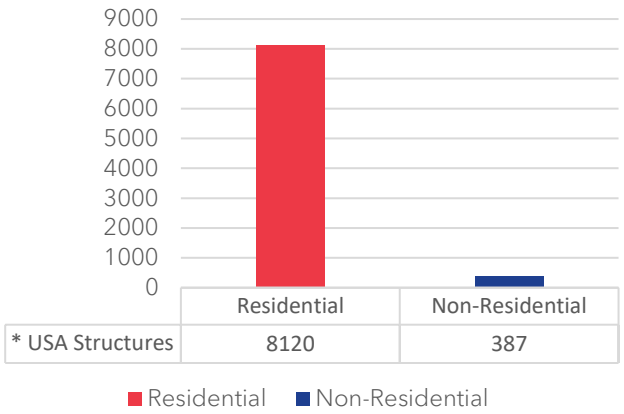




Frequent Responses

ADDRESS	TOTAL RESPONSES
8105 RITCHIE HWY	980
8107 RITCHIE HWY	266
161 RITCHIE HWY	257
8125 RITCHIE HWY LOT H	249
8037 RITCHIE HWY LOT A	237

Residential vs Non-Residential Buildings



COMMUNITY PROFILE

Company: 12

31,111
Population

10,746
Households

2.86
Avg Size Household

AT RISK POPULATION

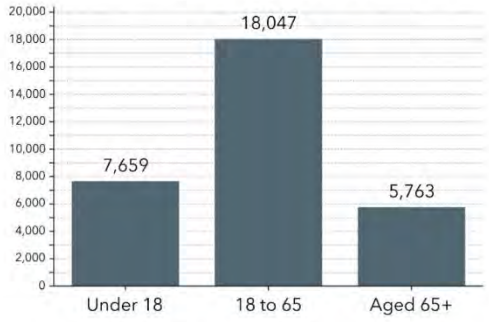
2,360	5,763	197
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

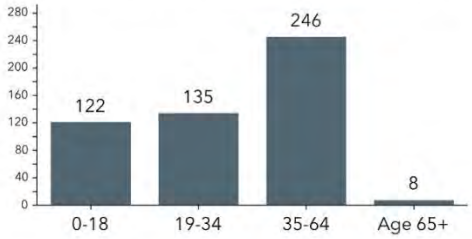
41.7	$161,579	$635,872
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**6,225**	**16,424**	**4,781**	**27,430**
Spanish	**87**	**692**	**65**	**844**
Spanish & English Well	87	635	41	763
Spanish & English Not Well	0	57	24	81
Spanish & No English	0	0	0	0
Indo-European	**12**	**328**	**76**	**416**
Indo-European & English Well	12	328	76	416
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**32**	**274**	**65**	**371**
Asian-Pacific Isl & English Well	31	239	25	295
Asian-Pacific Isl & English Not Well	1	24	8	33
Asian-Pacific Isl & No English	0	11	32	43
Other Language	**6**	**51**	**5**	**62**
Other Language & English Well	6	51	5	62
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

24,097	1,051	8,298
Daytime Population	Total Businesses	Total Employees

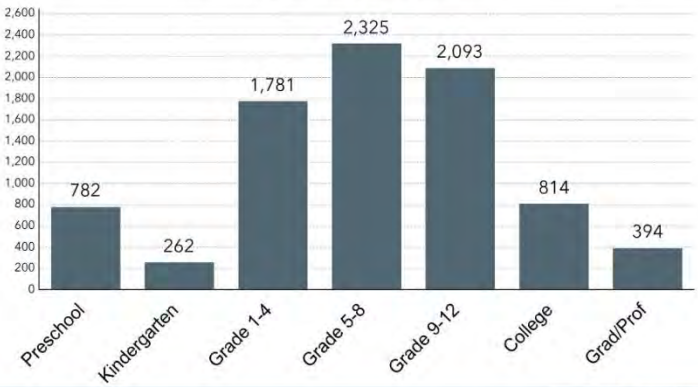
POVERTY AND LANGUAGE

3%	295	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

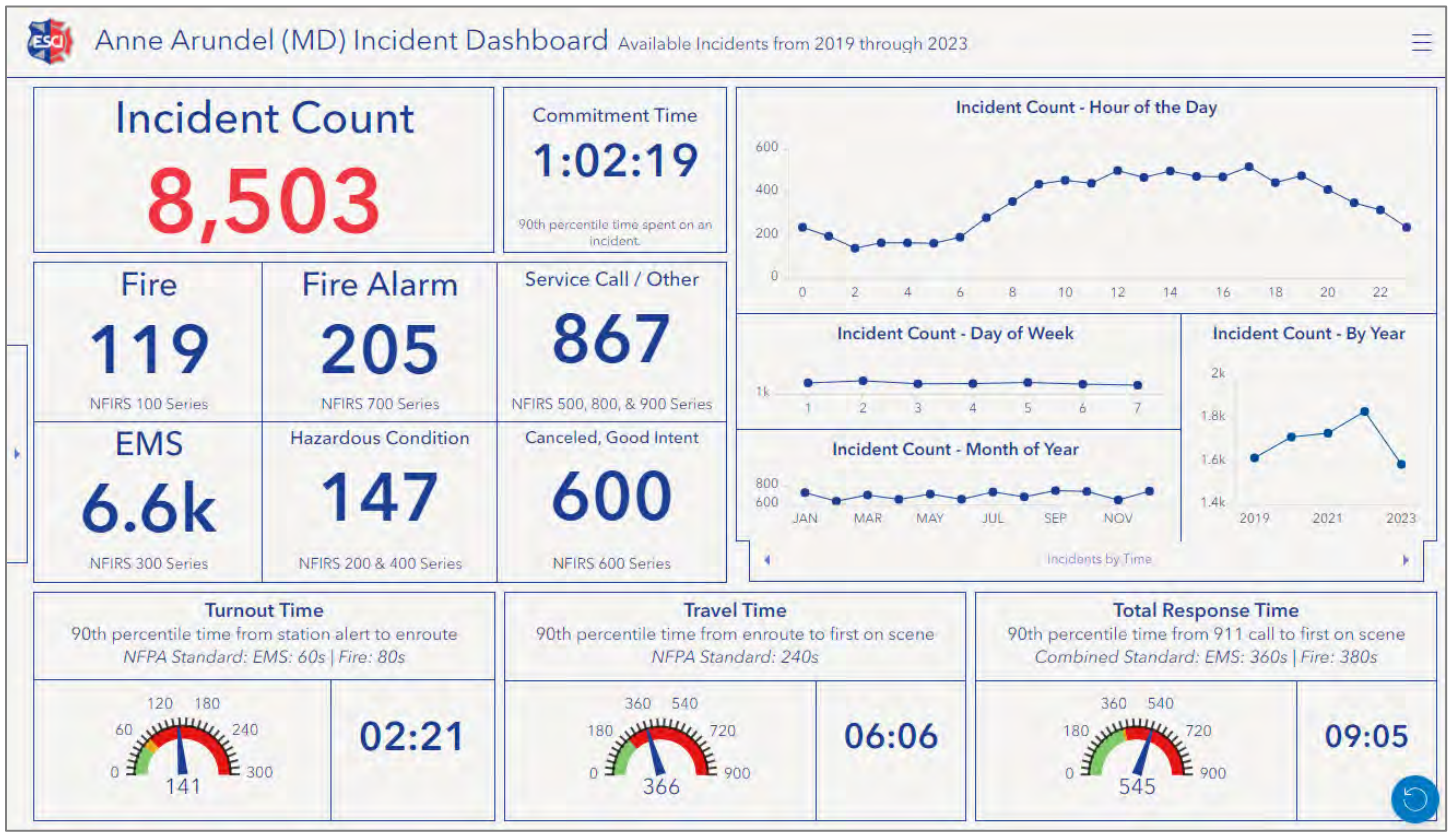
WEALTH PROFILE

223	100	40
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)

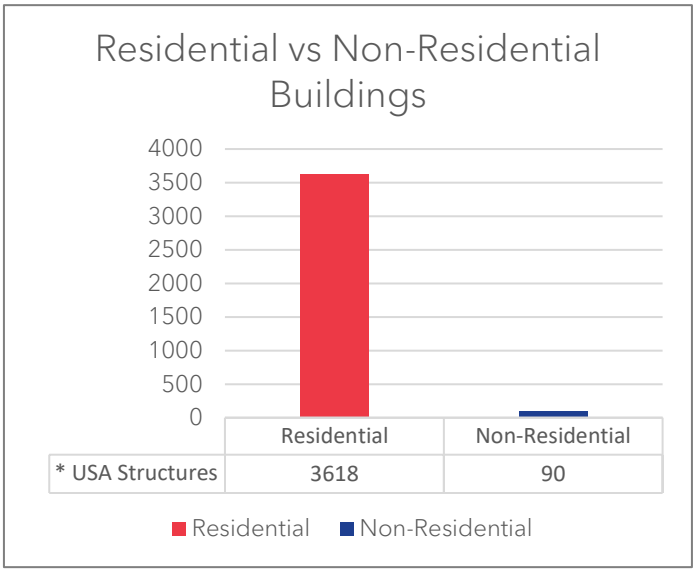


Company 13 Riviera Beach



Frequent Responses

ADDRESS	TOTAL RESPONSES
8506 FORT SMALLWOOD RD	312
1121 DUVALL HWY	90
184 MEADOW RD	81
8489 FORT SMALLWOOD RD	68
7706 QUEENS PARK RD	61



COMMUNITY PROFILE

Company: 13

12,990
Population

4,863
Households

2.67
Avg Size Household

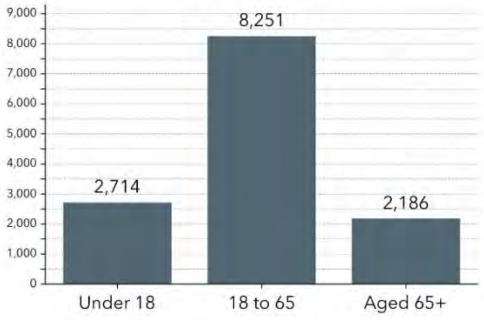
AT RISK POPULATION

1,671	2,186	62
Households With Disability	Population 65+	Households Without Vehicle

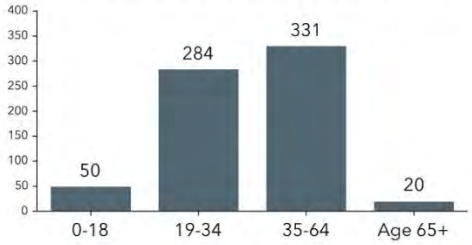
HOUSING PROFILE

39.5	$105,699	$405,337
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

7,728	192	1,310
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

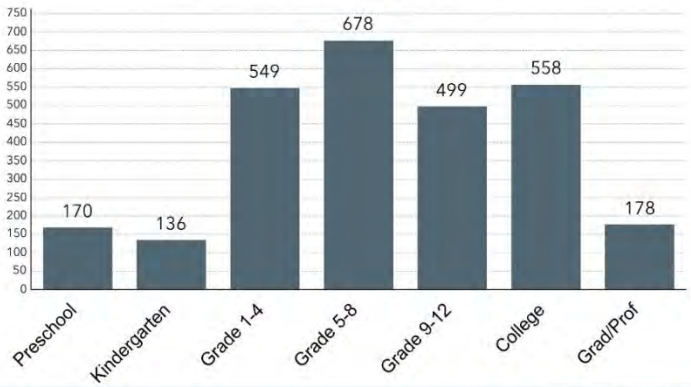
6%	297	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

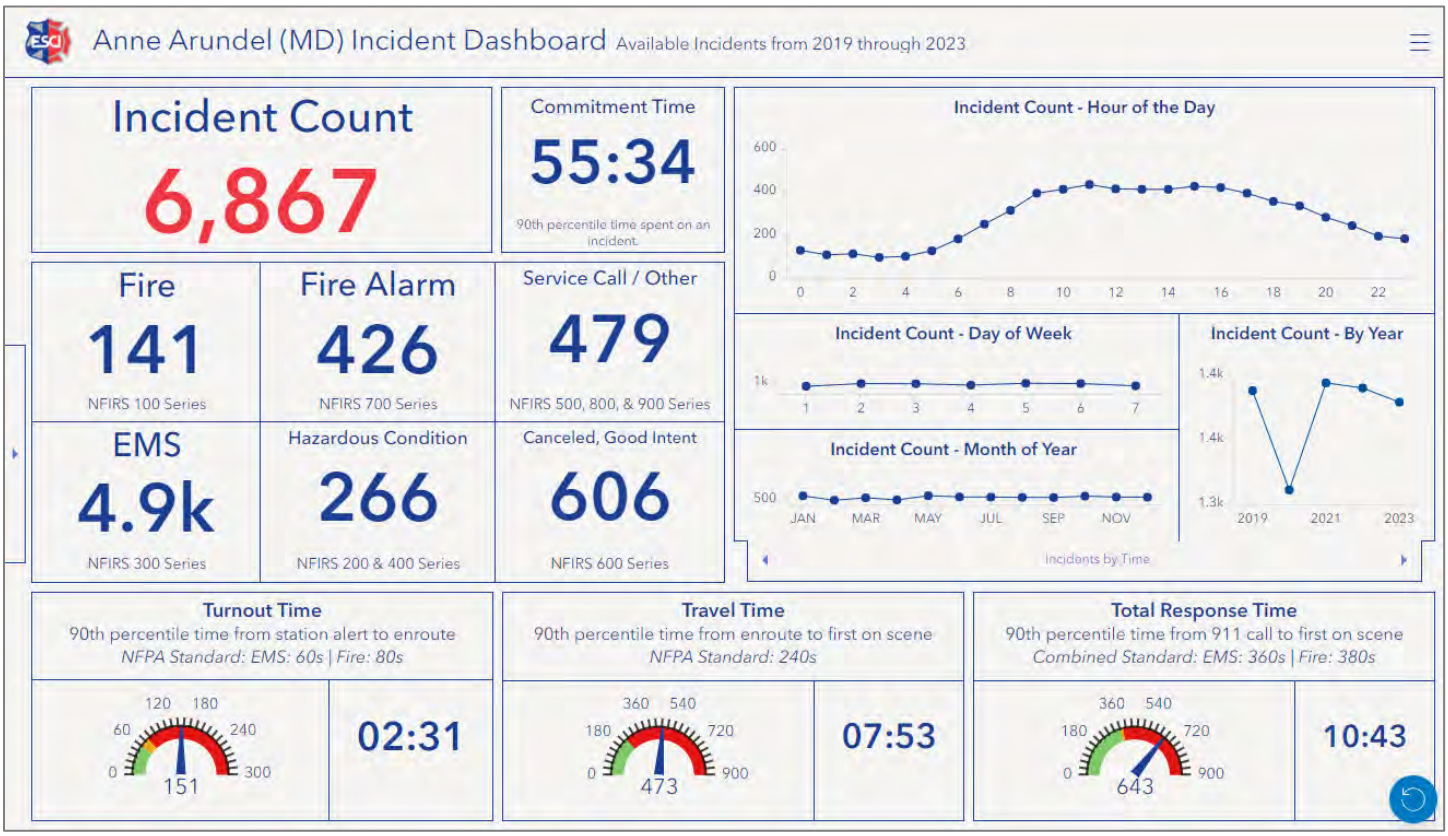
135	103	39
Wealth Index	Housing Affordability	Diversity Index

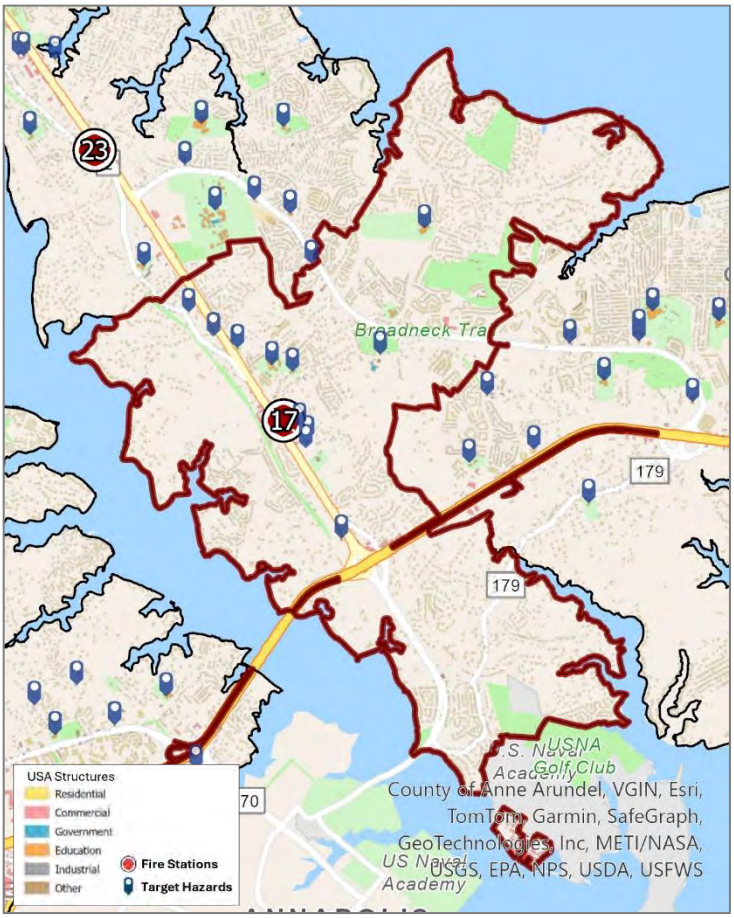
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	1,693	8,269	1,675	11,637
Spanish	63	192	31	286
Spanish & English Well	63	160	31	254
Spanish & English Not Well	0	0	0	0
Spanish & No English	0	32	0	32
Indo-European	35	190	49	274
Indo-European & English Well	35	189	42	266
Indo-European & English Not Well	0	1	0	1
Indo-European & No English	0	0	7	7
Asian-Pacific Island	45	171	82	298
Asian-Pacific Isl & English Well	45	171	45	261
Asian-Pacific Isl & English Not Well	0	0	21	21
Asian-Pacific Isl & No English	0	0	16	16
Other Language	0	38	16	54
Other Language & English Well	0	38	16	54
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



Company 17 Arnold





Frequent Responses

ADDRESS	TOTAL RESPONSES
1349 JONES STATION RD	122
1505 RITCHIE HWY	119
85 MANRESA RD	101
1509 RITCHIE HWY #A	90
1451 RITCHIE HWY	61

Residential vs Non-Residential Buildings

	Residential	Non-Residential
* USA Structures	4161	221

COMMUNITY PROFILE

Company: 17

15,630
Population

5,561
Households

2.77
Avg Size Household

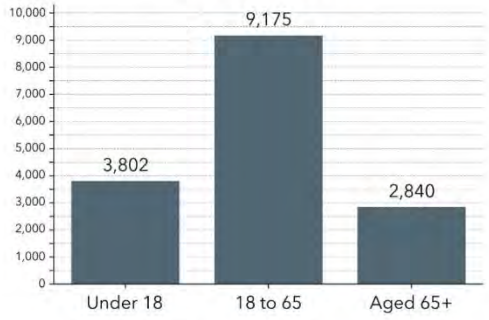
AT RISK POPULATION

964	2,840	132
Households With Disability	Population 65+	Households Without Vehicle

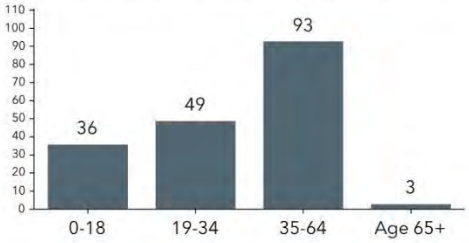
HOUSING PROFILE

41.5	$151,892	$661,337
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

12,473	480	4,738
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

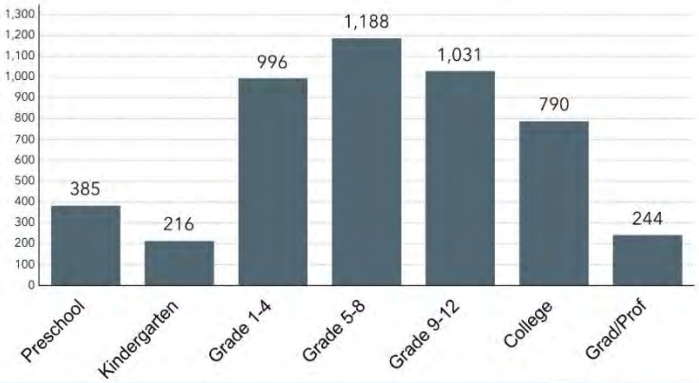
4%	204	5
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

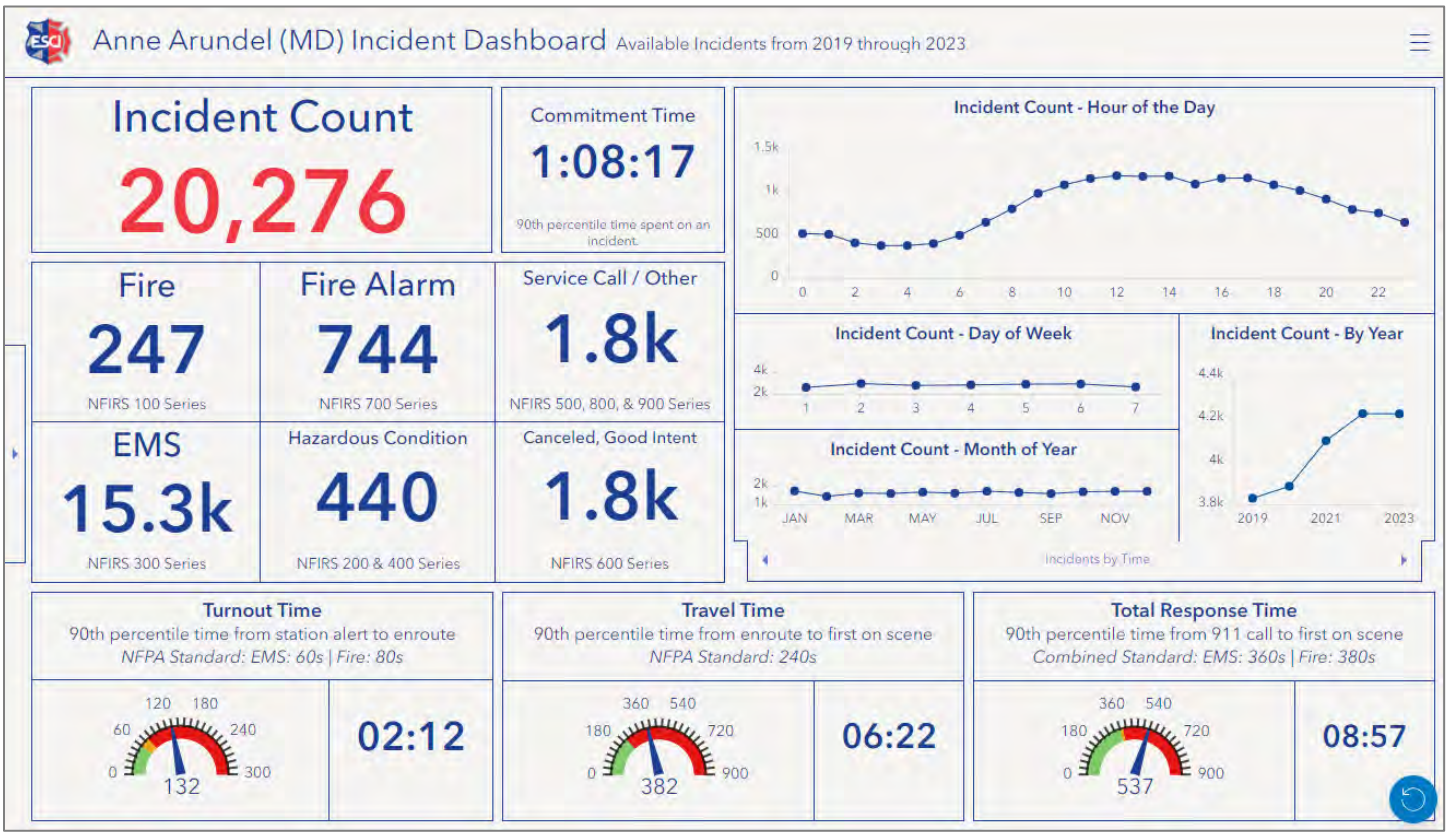
223	91	42
Wealth Index	Housing Affordability	Diversity Index

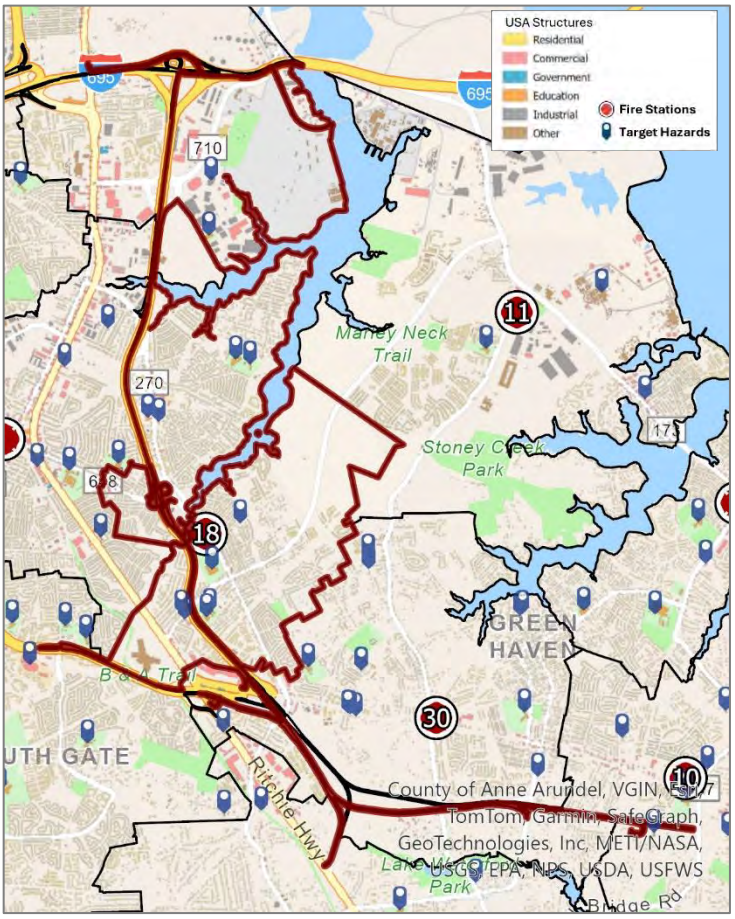
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	3,220	8,090	2,353	13,663
Spanish	83	529	39	651
Spanish & English Well	72	529	33	634
Spanish & English Not Well	11	0	0	11
Spanish & No English	0	0	5	5
Indo-European	40	197	75	312
Indo-European & English Well	40	197	71	308
Indo-European & English Not Well	0	0	4	4
Indo-European & No English	0	0	0	0
Asian-Pacific Island	23	181	99	303
Asian-Pacific Isl & English Well	23	174	99	296
Asian-Pacific Isl & English Not Well	0	6	0	6
Asian-Pacific Isl & No English	0	0	0	0
Other Language	3	36	53	92
Other Language & English Well	3	36	53	92
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



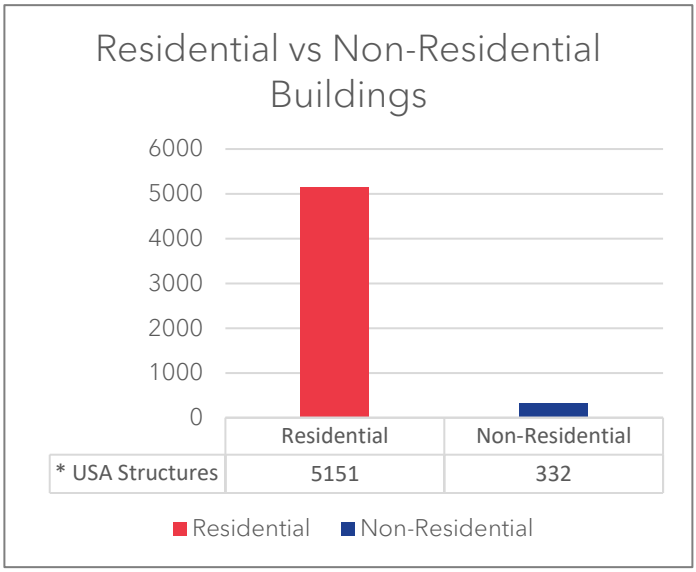
Company 18 Marley





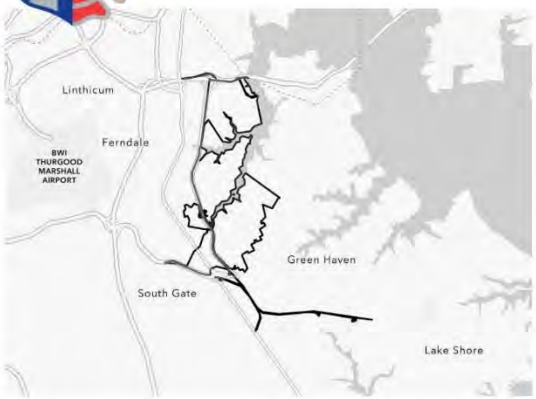
Frequent Responses

ADDRESS	TOTAL RESPONSES
7726 BALTIMORE ANNAPOLIS BLVD	292
410 SUMMIT AVE	183
7900 BENESCH CIR LOT 755	152
7355 FURNACE BRANCH RD E	143
7900 RITCHIE HWY	131



COMMUNITY PROFILE

Company: 18



19,968
Population

7,577
Households

2.59
Avg Size Household

AT RISK POPULATION

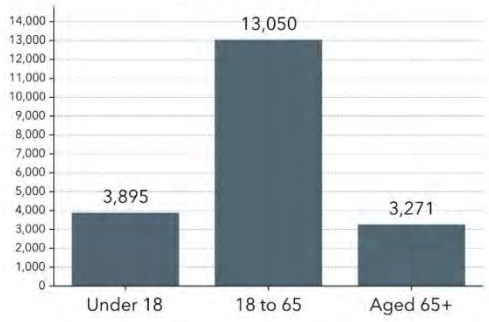
2,588	3,271	604
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

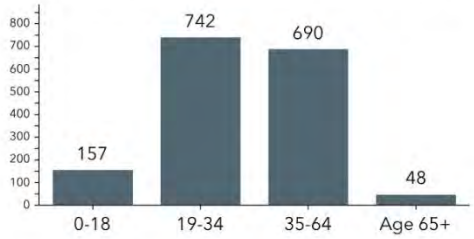
39.0	$85,452	$378,580
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**2,041**	**11,371**	**2,662**	**16,074**
Spanish	**332**	**1,040**	**35**	**1,407**
Spanish & English Well	321	716	35	1,072
Spanish & English Not Well	11	240	0	251
Spanish & No English	0	83	0	83
Indo-European	**62**	**322**	**43**	**427**
Indo-European & English Well	62	290	43	395
Indo-European & English Not Well	0	32	0	32
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**0**	**231**	**278**	**509**
Asian-Pacific Isl & English Well	0	227	278	505
Asian-Pacific Isl & English Not Well	0	3	0	3
Asian-Pacific Isl & No English	0	0	0	0
Other Language	**87**	**491**	**0**	**578**
Other Language & English Well	87	481	0	568
Other Language & English Not Well	0	10	0	10
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

14,925	414	6,969
Daytime Population	Total Businesses	Total Employees

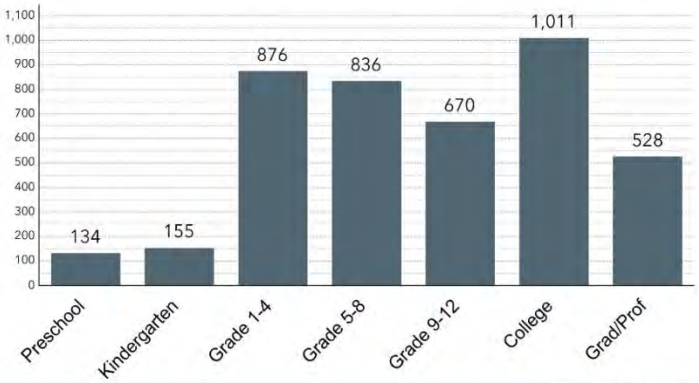
POVERTY AND LANGUAGE

10%	827	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

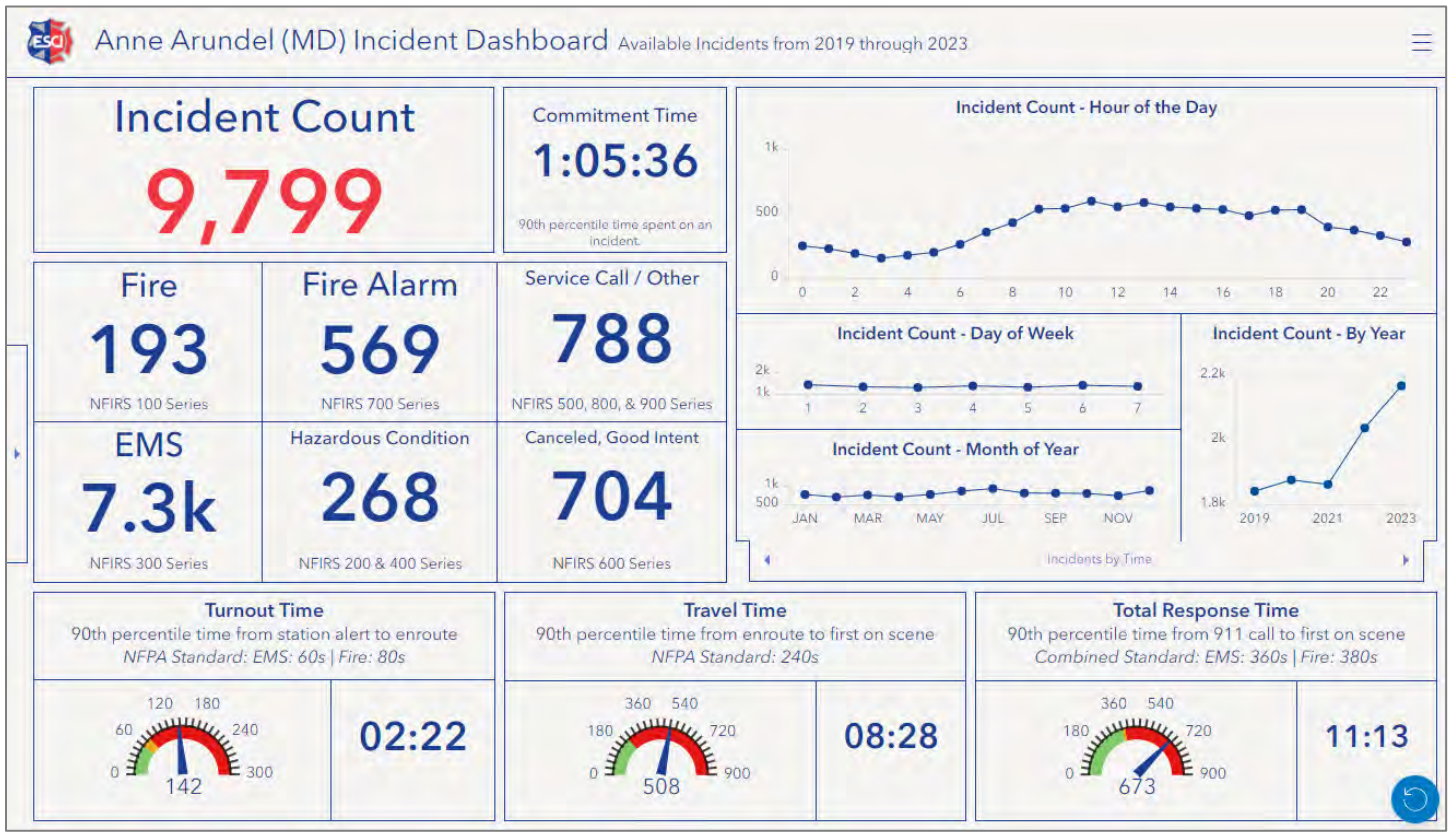
WEALTH PROFILE

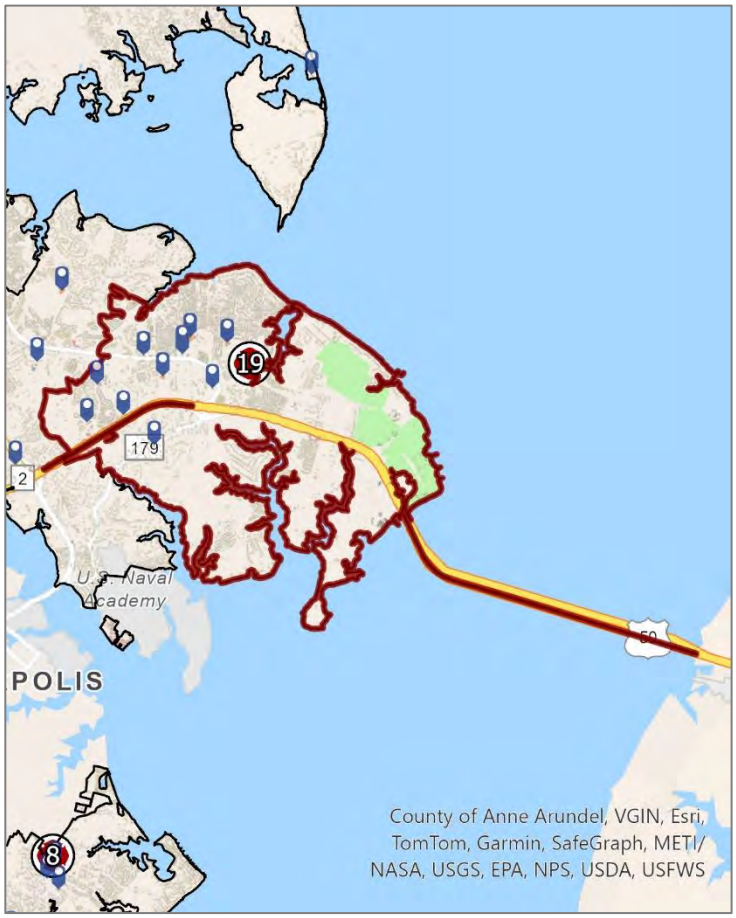
102	89	70
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)



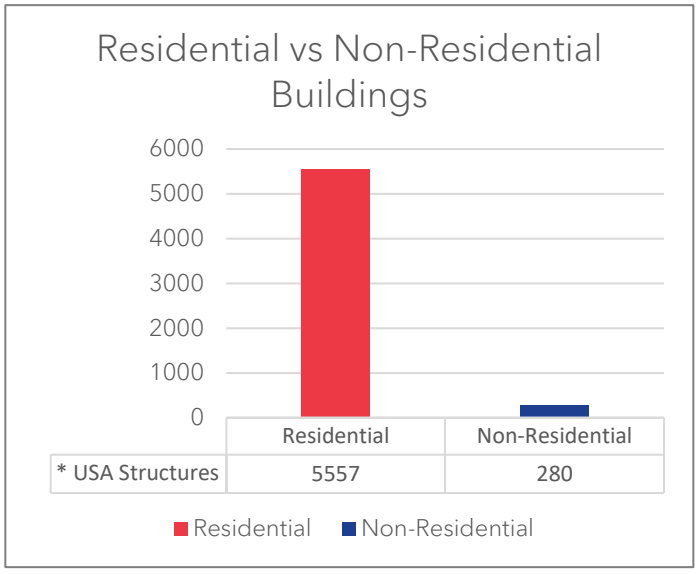
Company 19 Cape St. Claire





Frequent Responses

ADDRESS	TOTAL RESPONSES
84 OLD MILL BOTTOM RD N	208
1100 E COLLEGE PKWY	192
1450 WHITEHALL RD	105
1411 CAPE SAINT CLAIRE RD	103
1265 GREEN HOLLY DR	87



COMMUNITY PROFILE

Company: 19

19,591
Population

7,348
Households

2.65
Avg Size Household

AT RISK POPULATION

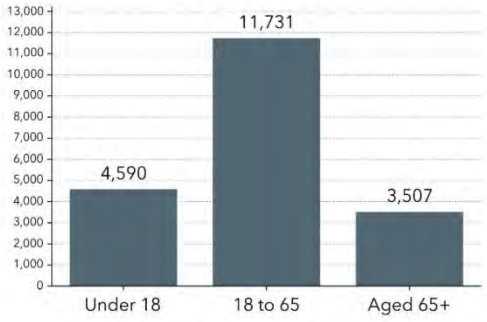
1,801	3,507	67
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

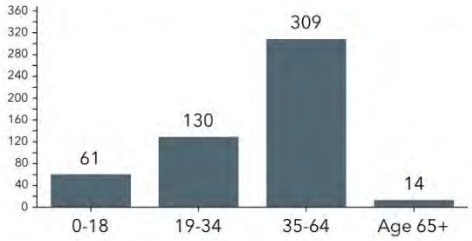
41.2	$134,094	$584,409
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**3,384**	**9,981**	**3,185**	**16,550**
Spanish	**216**	**667**	**50**	**933**
Spanish & English Well	216	655	41	912
Spanish & English Not Well	0	8	0	8
Spanish & No English	0	4	9	13
Indo-European	**109**	**267**	**89**	**465**
Indo-European & English Well	109	267	88	464
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	1	1
Asian-Pacific Island	**111**	**241**	**65**	**417**
Asian-Pacific Isl & English Well	85	227	65	377
Asian-Pacific Isl & English Not Well	26	14	0	40
Asian-Pacific Isl & No English	0	0	0	0
Other Language	**12**	**53**	**0**	**65**
Other Language & English Well	12	53	0	65
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

14,000	440	3,695
Daytime Population	Total Businesses	Total Employees

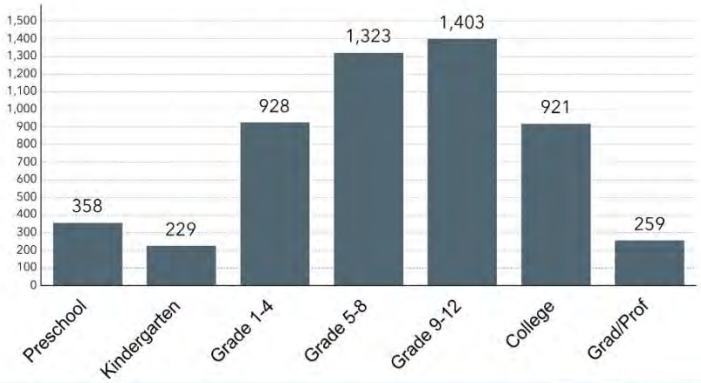
POVERTY AND LANGUAGE

3%	189	9
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

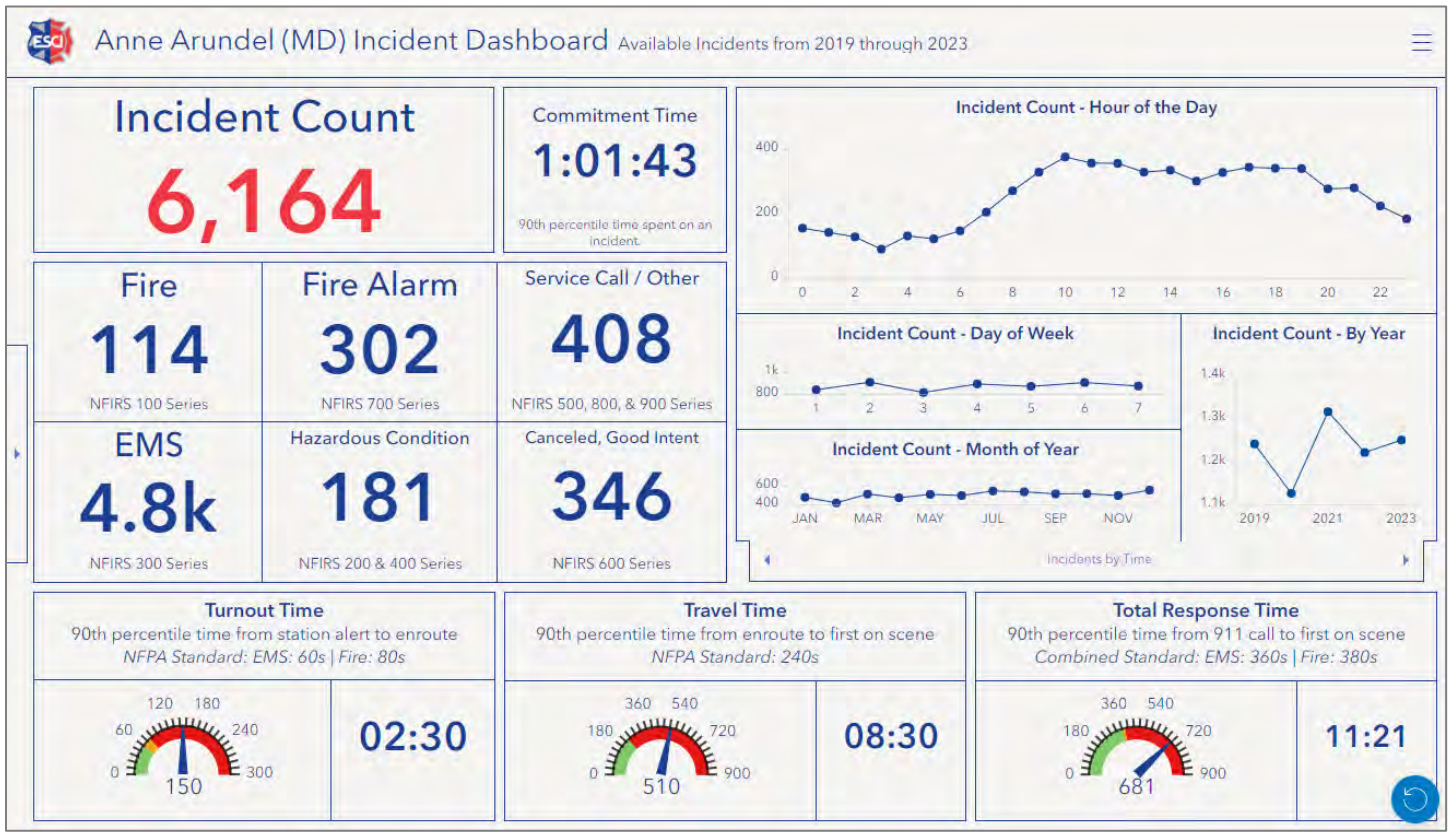
WEALTH PROFILE

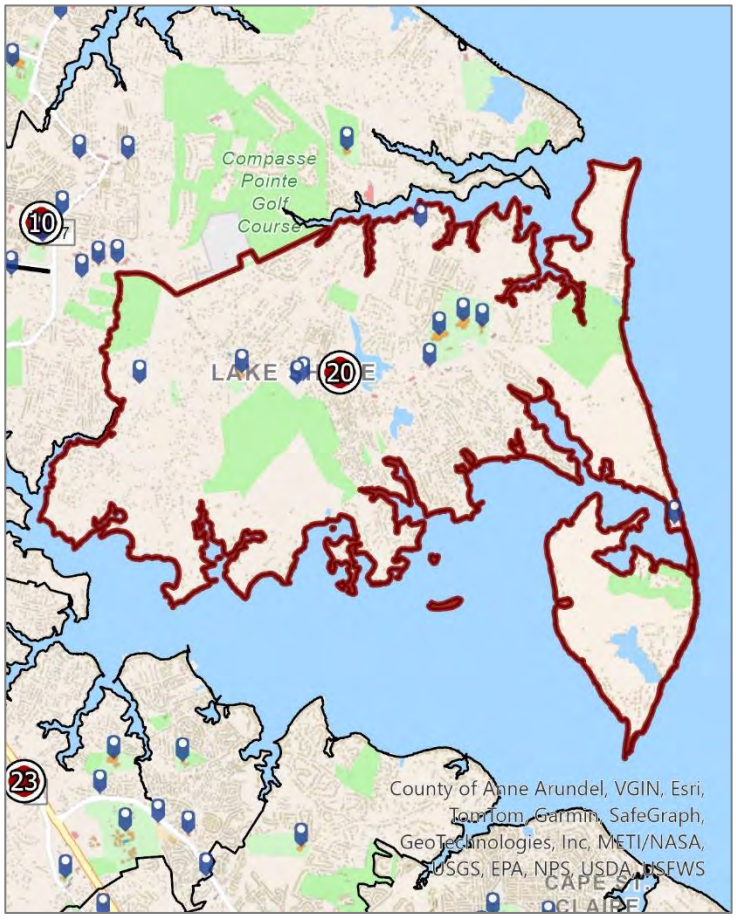
195	91	46
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)



Company 20 Lake Shore

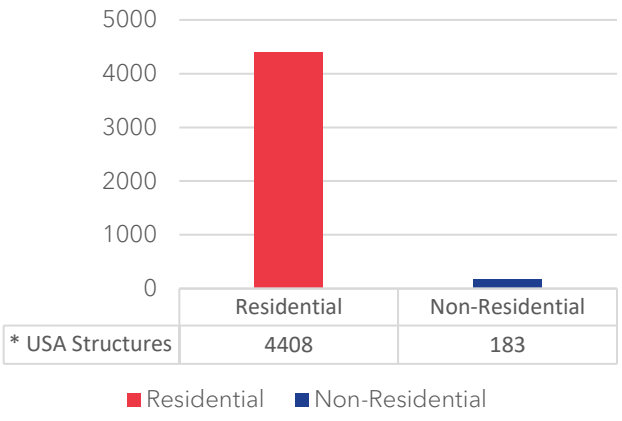




Frequent Responses

ADDRESS	TOTAL RESPONSES
4642 MOUNTAIN RD	112
1992 GOOSE NECK RD	80
4798 MOUNTAIN RD	74
8004 SHADOW OAK LN	72
171A RYAN RD	62

Residential vs Non-Residential Buildings



COMMUNITY PROFILE

Company: 20

11,774
Population

4,277
Households

2.74
Avg Size Household

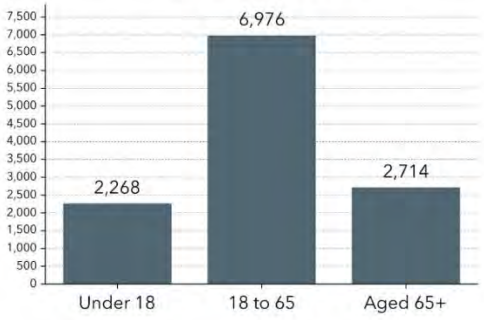
AT RISK POPULATION

1,100	2,714	58
Households With Disability	Population 65+	Households Without Vehicle

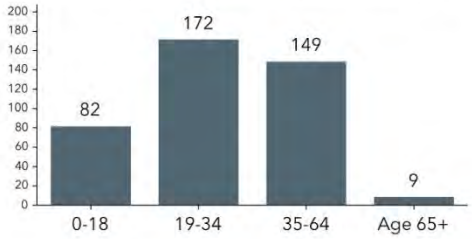
HOUSING PROFILE

46.5	$134,127	$642,791
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

8,156	237	1,724
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

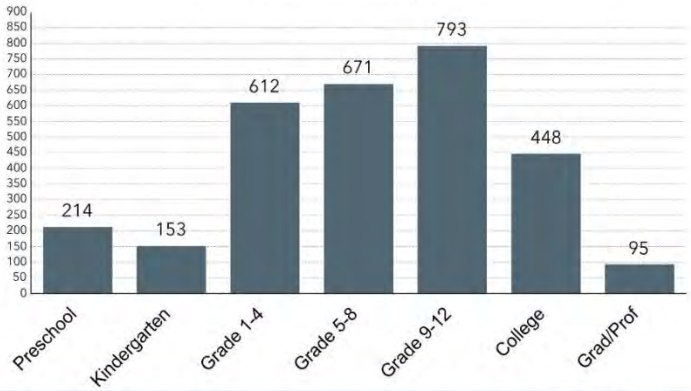
4%	165	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

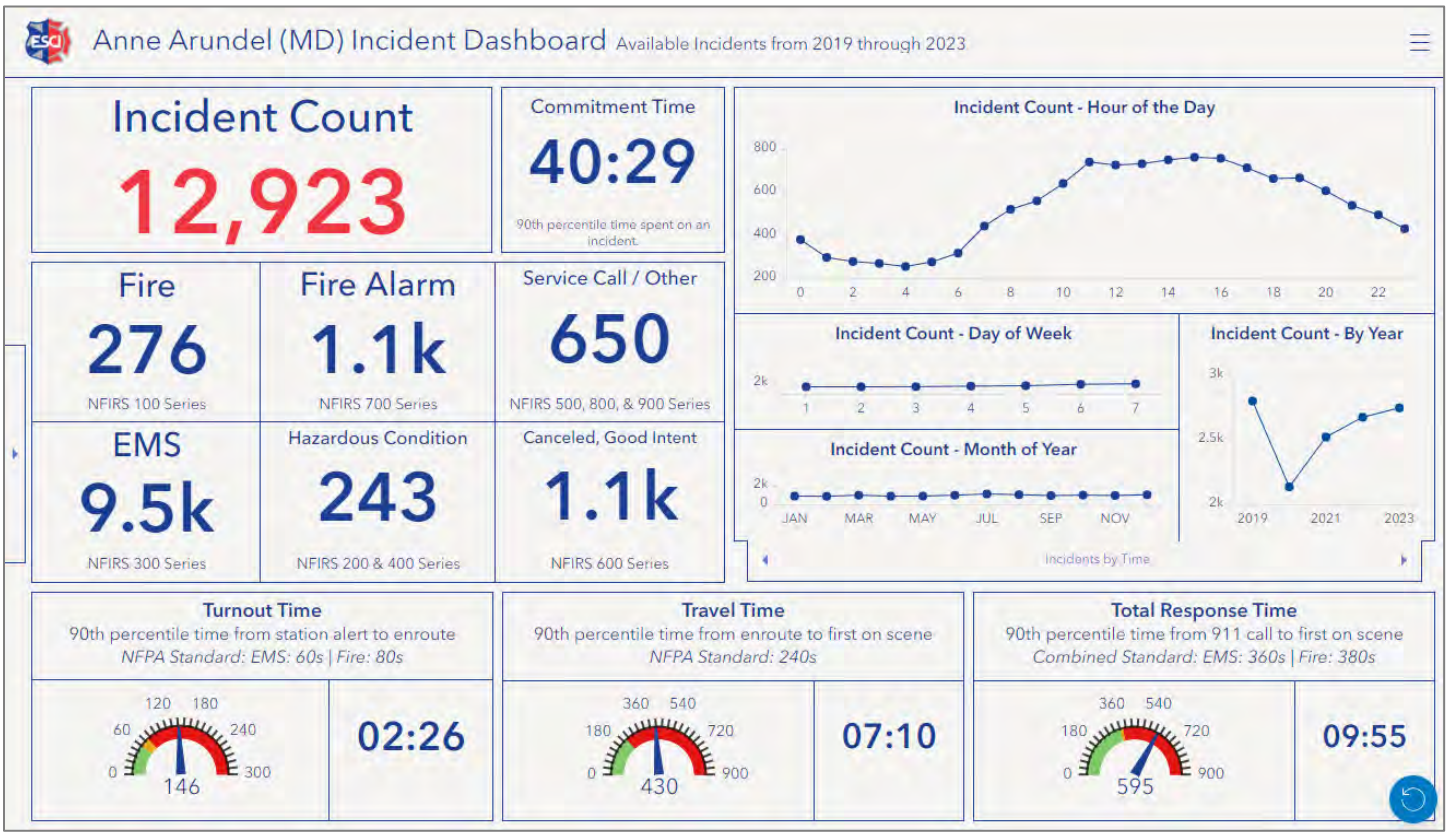
193	82	25
Wealth Index	Housing Affordability	Diversity Index

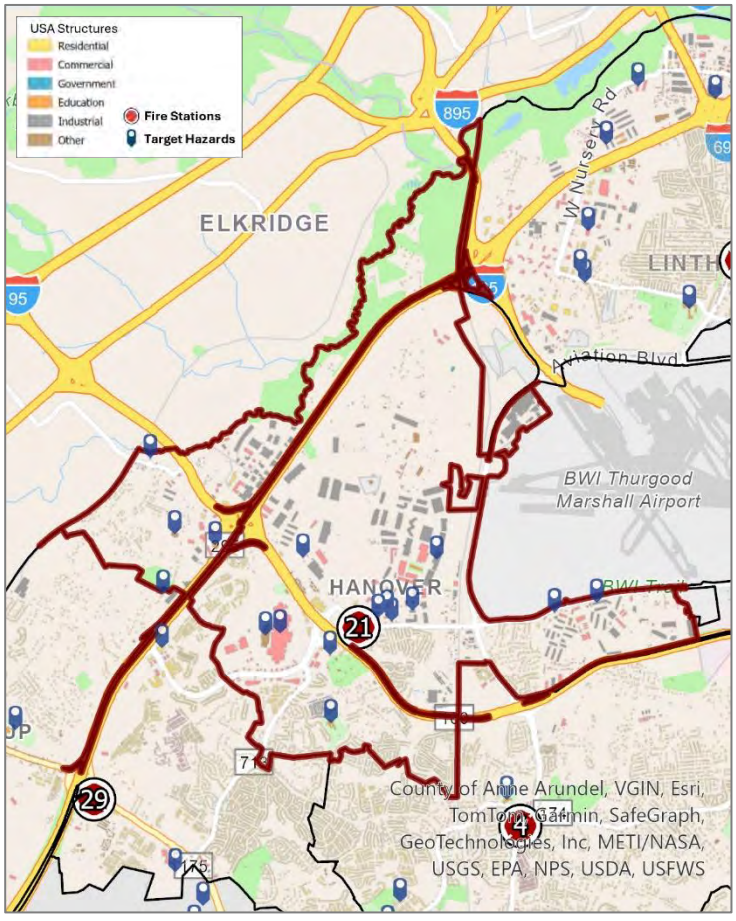
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**2,037**	**6,518**	**2,545**	**11,100**
Spanish	**237**	**321**	**19**	**577**
Spanish & English Well	237	302	19	558
Spanish & English Not Well	0	19	0	19
Spanish & No English	0	0	0	0
Indo-European	**0**	**119**	**59**	**178**
Indo-European & English Well	0	119	59	178
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**12**	**69**	**46**	**127**
Asian-Pacific Isl & English Well	12	56	14	82
Asian-Pacific Isl & English Not Well	0	3	32	35
Asian-Pacific Isl & No English	0	10	0	10
Other Language	**0**	**26**	**46**	**72**
Other Language & English Well	0	26	46	72
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



Company 21 Harmans Dorsey

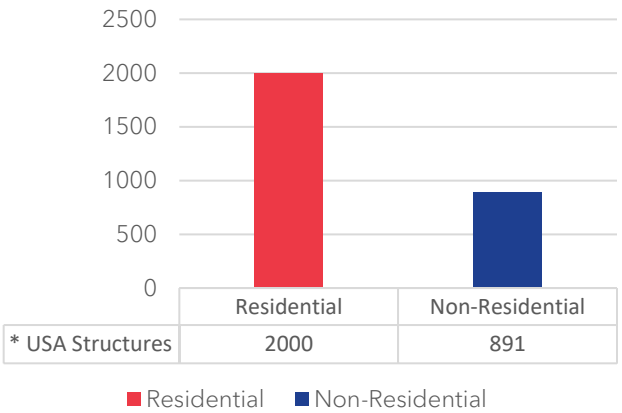




Frequent Responses

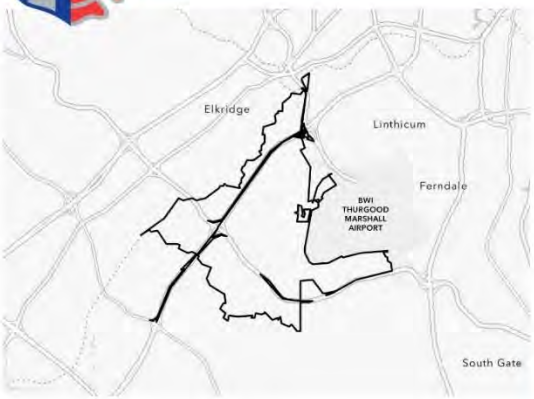
ADDRESS	TOTAL RESPONSES
7002 ARUNDEL MILLS CIR LOT 777	932
7000 ARUNDEL MILLS CIR	304
7002 ARUNDEL MILLS CIR	238
7000 ARUNDEL MILLS CIR LOT C1	176
7323 AVIATION BLVD	144

Residential vs Non-Residential Buildings



COMMUNITY PROFILE

Company: 21



10,726
Population

4,211
Households

2.54
Avg Size Household

AT RISK POPULATION

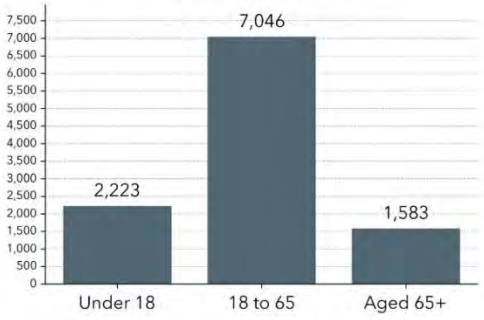
825	1,583	90
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

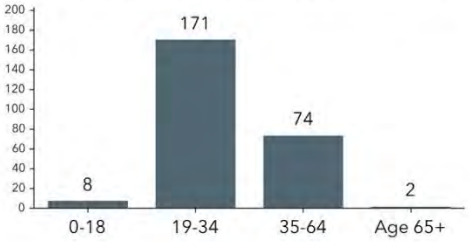
38.5	$121,209	$477,104
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**945**	**5,224**	**1,089**	**7,258**
Spanish	**160**	**265**	**11**	**436**
Spanish & English Well	160	244	11	415
Spanish & English Not Well	0	20	0	20
Spanish & No English	0	0	0	0
Indo-European	**72**	**407**	**26**	**505**
Indo-European & English Well	72	374	26	472
Indo-European & English Not Well	0	33	0	33
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**0**	**362**	**85**	**447**
Asian-Pacific Isl & English Well	0	339	73	412
Asian-Pacific Isl & English Not Well	0	23	12	35
Asian-Pacific Isl & No English	0	0	0	0
Other Language	**118**	**320**	**79**	**517**
Other Language & English Well	118	320	79	517
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

27,056	1,131	22,417
Daytime Population	Total Businesses	Total Employees

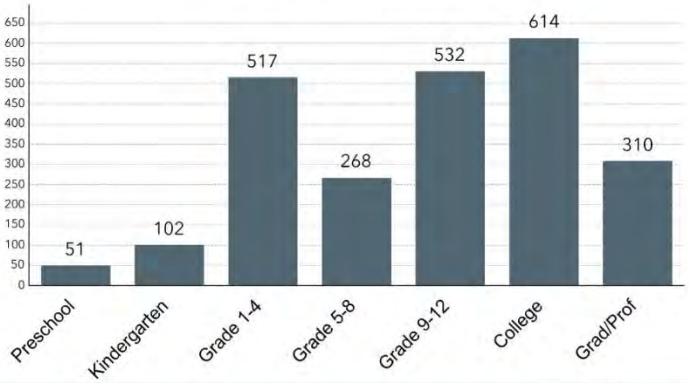
POVERTY AND LANGUAGE

4%	168	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

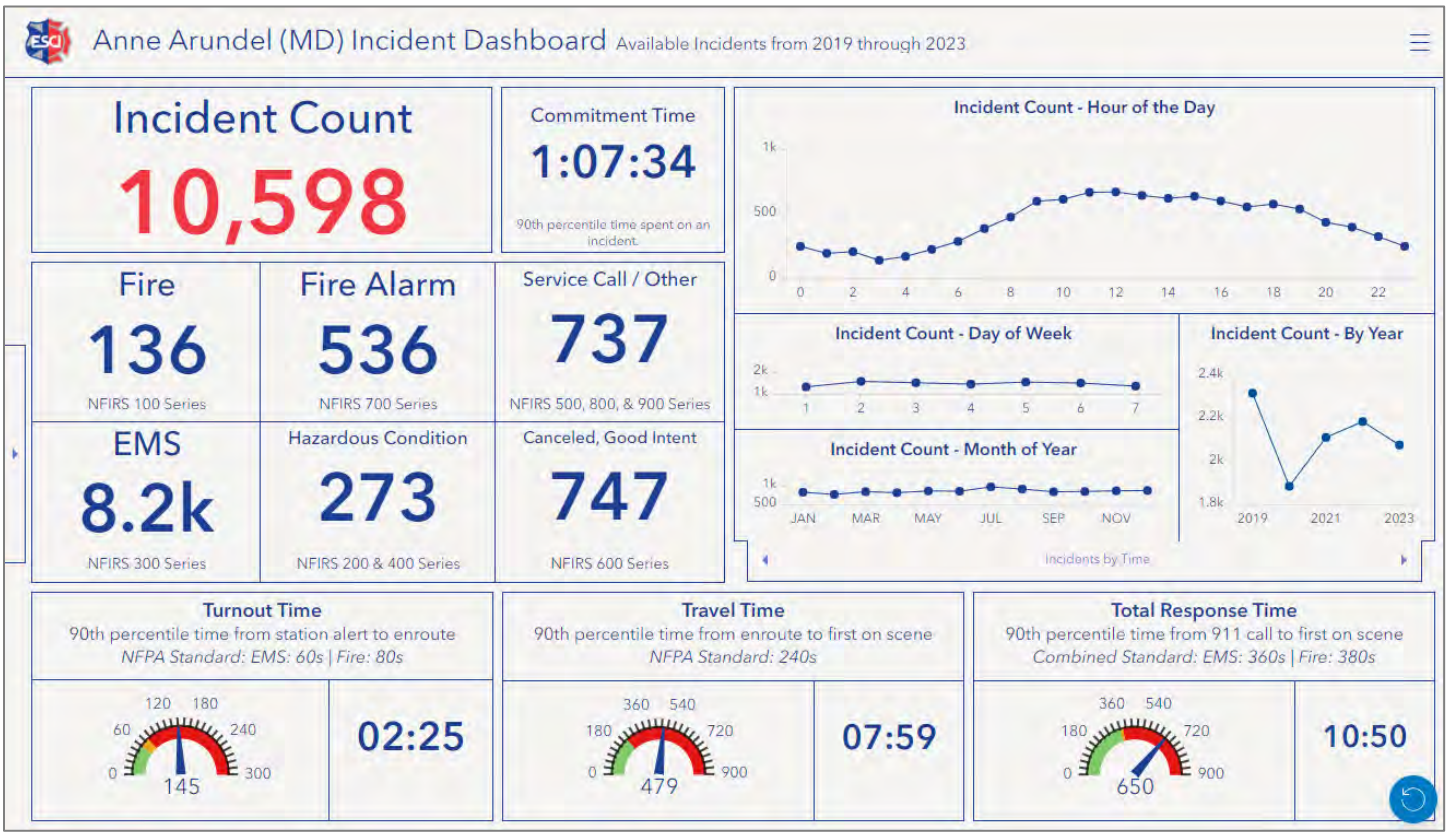
WEALTH PROFILE

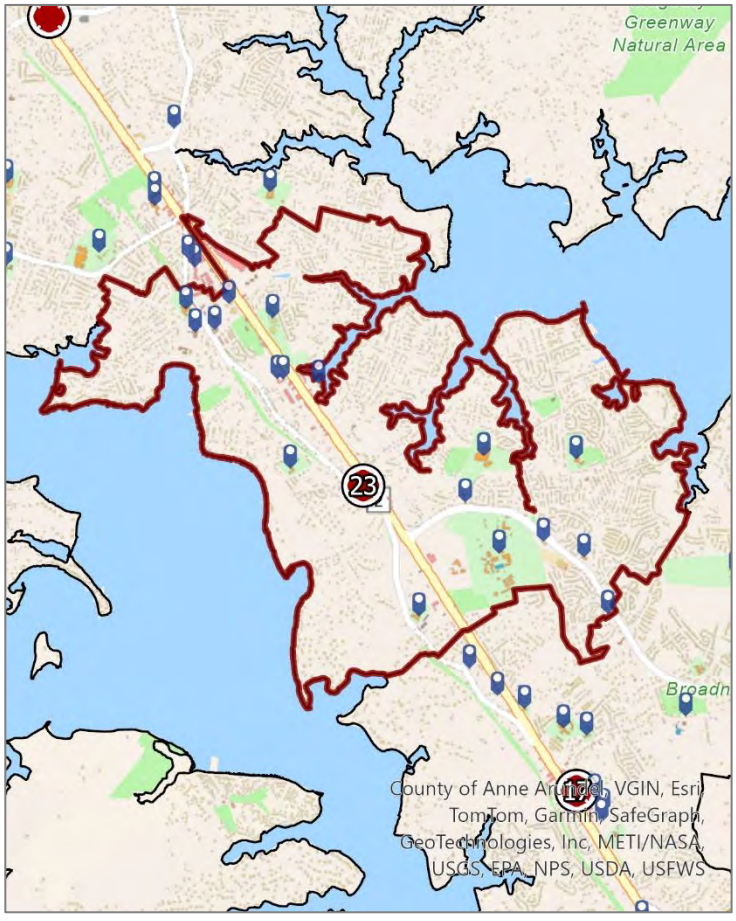
139	100	78
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)



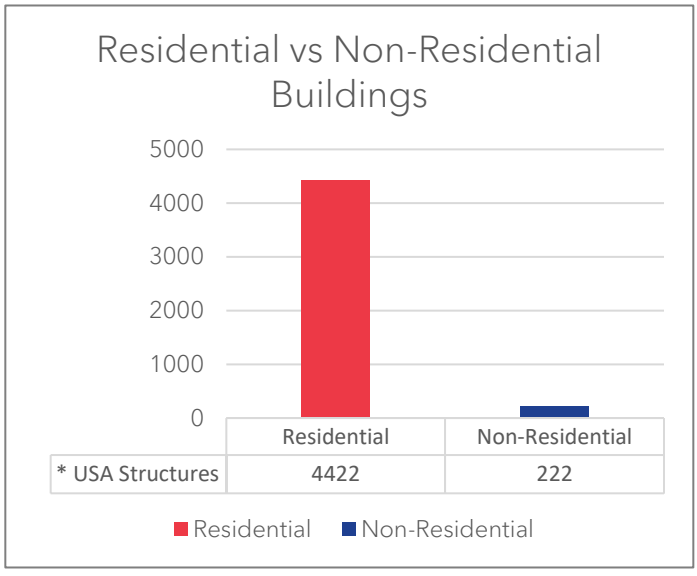
Company 23 Jones Station





Frequent Responses

ADDRESS	TOTAL RESPONSES
305 COLLEGE PKWY	192
41 W MCKINSEY RD	154
831 RITCHIE HWY	125
960 RITCHIE HWY	115
134 CLUB RD	100



COMMUNITY PROFILE

Company: 23

15,123
Population

5,341
Households

2.82
Avg Size Household

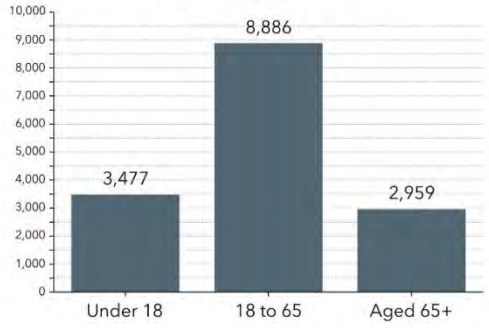
AT RISK POPULATION

1,062	2,959	80
Households With Disability	Population 65+	Households Without Vehicle

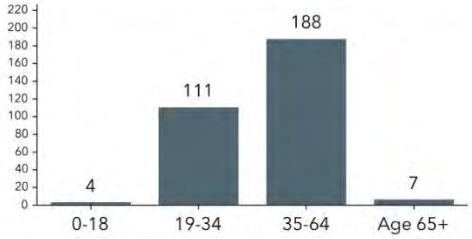
HOUSING PROFILE

42.7	$156,413	$632,984
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

14,154	659	5,485
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

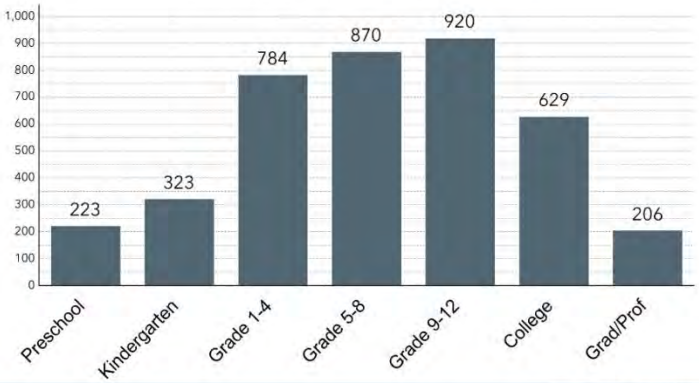
2%	108	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

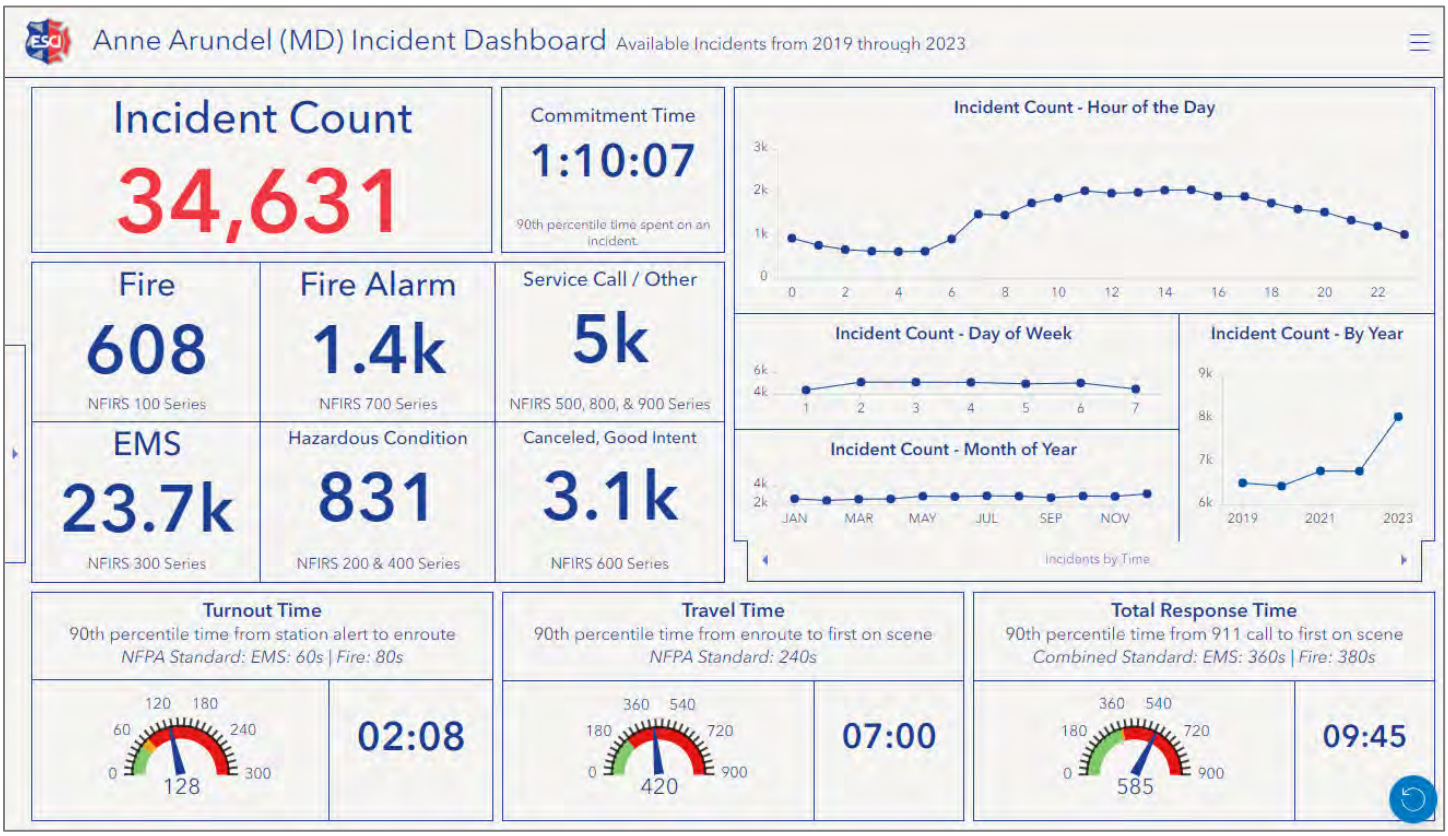
229	98	40
Wealth Index	Housing Affordability	Diversity Index

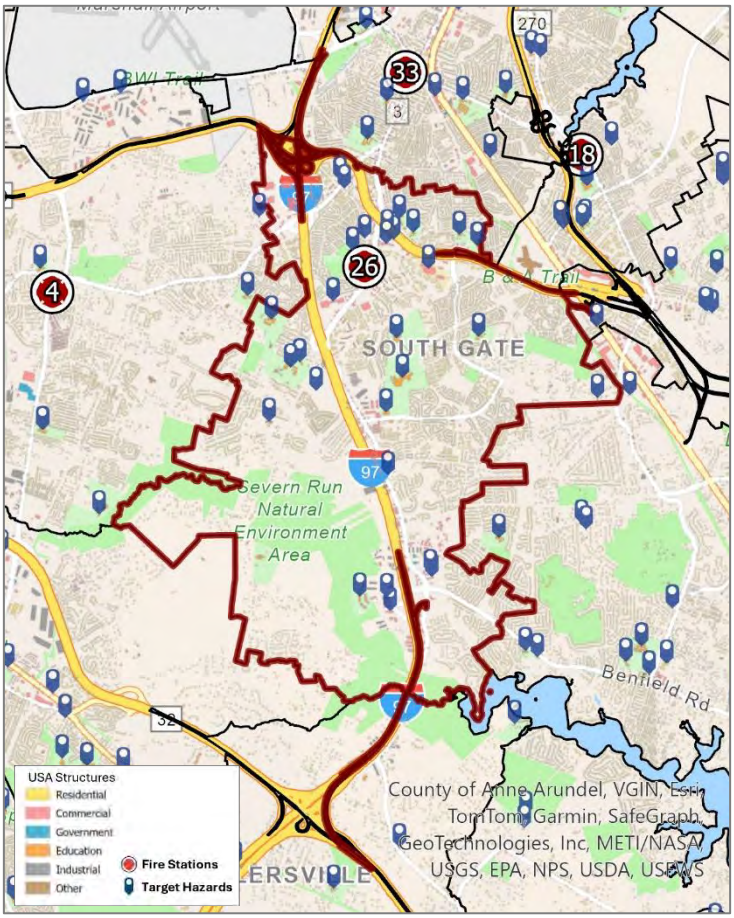
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**2,541**	**8,703**	**2,338**	**13,582**
Spanish	**150**	**510**	**4**	**664**
Spanish & English Well	148	472	4	624
Spanish & English Not Well	2	38	0	40
Spanish & No English	0	0	0	0
Indo-European	**32**	**228**	**95**	**355**
Indo-European & English Well	32	199	95	326
Indo-European & English Not Well	0	29	0	29
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**45**	**104**	**60**	**209**
Asian-Pacific Isl & English Well	45	86	60	191
Asian-Pacific Isl & English Not Well	0	18	0	18
Asian-Pacific Isl & No English	0	0	0	0
Other Language	**0**	**21**	**13**	**34**
Other Language & English Well	0	21	13	34
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



Company 26 South Glen Burnie

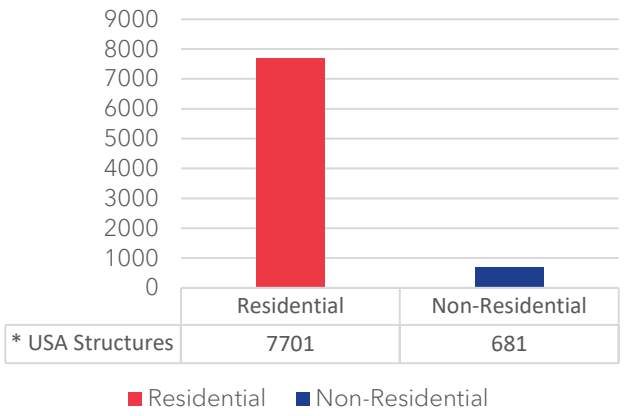




Frequent Responses

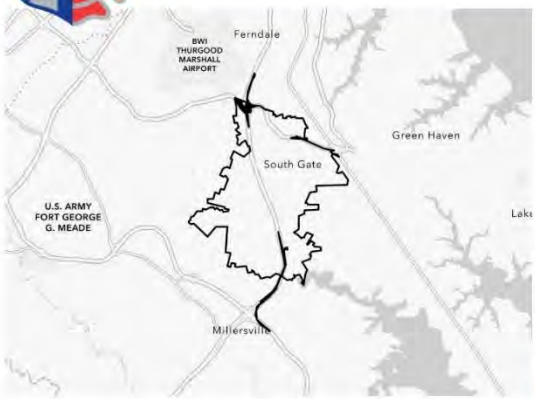
ADDRESS	TOTAL RESPONSES
8501 VETERANS HWY	2900
407 GEORGE CLAUSS BLVD	326
7975 CRAIN HWY S	322
301 HOSPITAL DR	252
7880 CRAIN HWY S	243

Residential vs Non-Residential Buildings



COMMUNITY PROFILE

Company: 26



40,913
Population

15,883
Households

2.57
Avg Size Household

AT RISK POPULATION

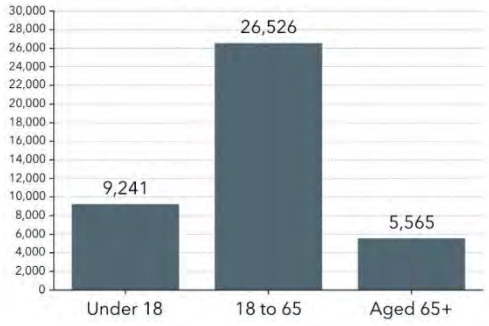
3,954	5,565	1,134
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

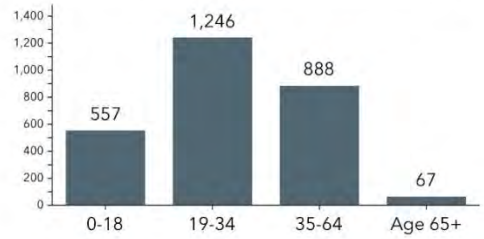
36.5	$90,481	$450,575
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**6,496**	**21,913**	**4,251**	**32,660**
Spanish	**310**	**1,421**	**60**	**1,791**
Spanish & English Well	263	1,131	47	1,441
Spanish & English Not Well	47	205	13	265
Spanish & No English	0	85	0	85
Indo-European	**80**	**715**	**199**	**994**
Indo-European & English Well	80	710	149	939
Indo-European & English Not Well	0	5	50	55
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**162**	**1,050**	**215**	**1,427**
Asian-Pacific Isl & English Well	158	953	199	1,310
Asian-Pacific Isl & English Not Well	4	96	10	110
Asian-Pacific Isl & No English	0	0	6	6
Other Language	**5**	**226**	**0**	**231**
Other Language & English Well	5	217	0	222
Other Language & English Not Well	0	9	0	9
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

35,839	1,415	17,556
Daytime Population	Total Businesses	Total Employees

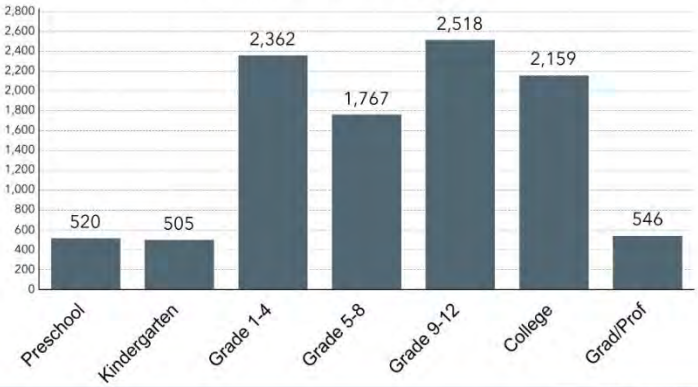
POVERTY AND LANGUAGE

7%	1,154	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

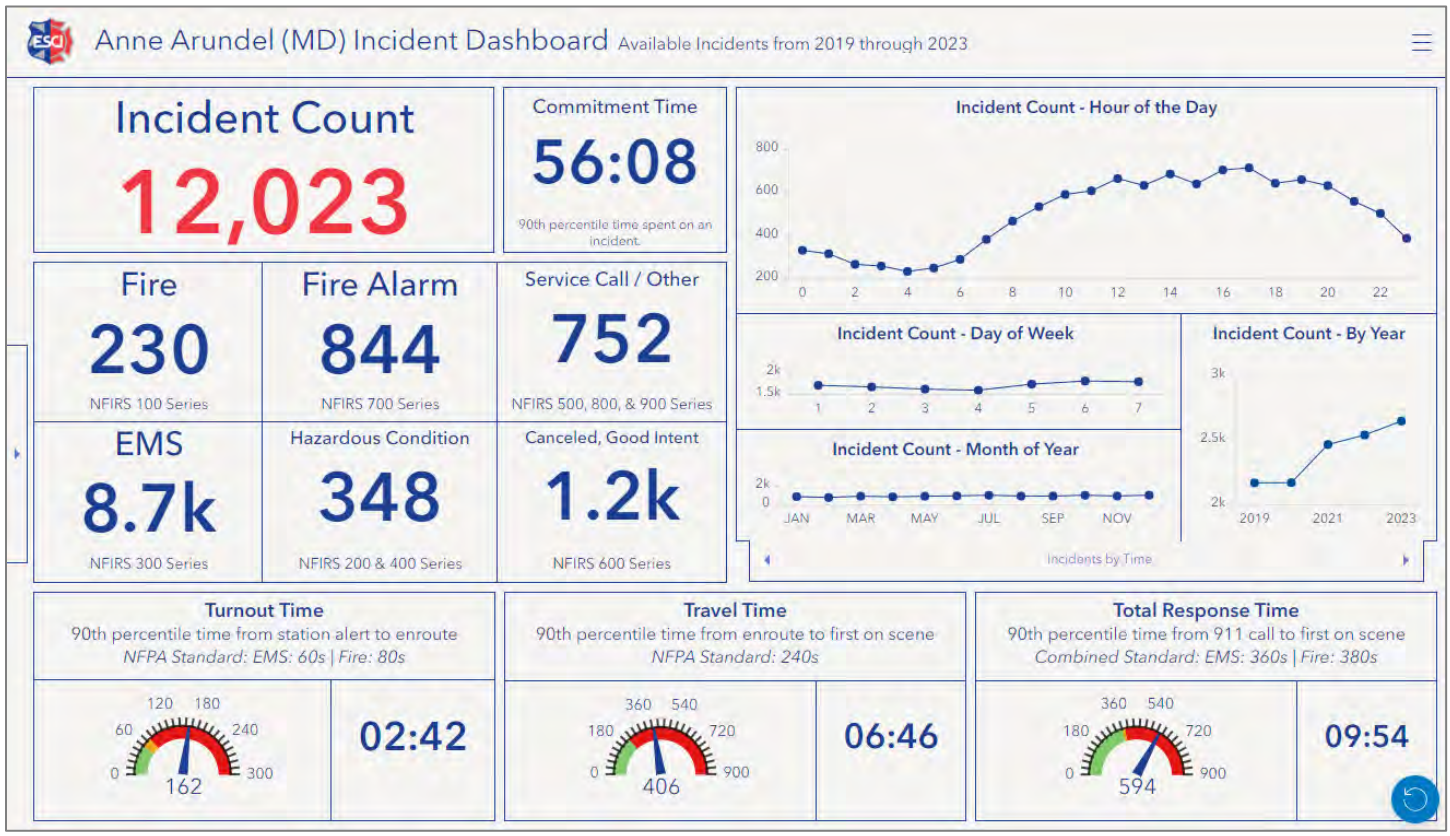
WEALTH PROFILE

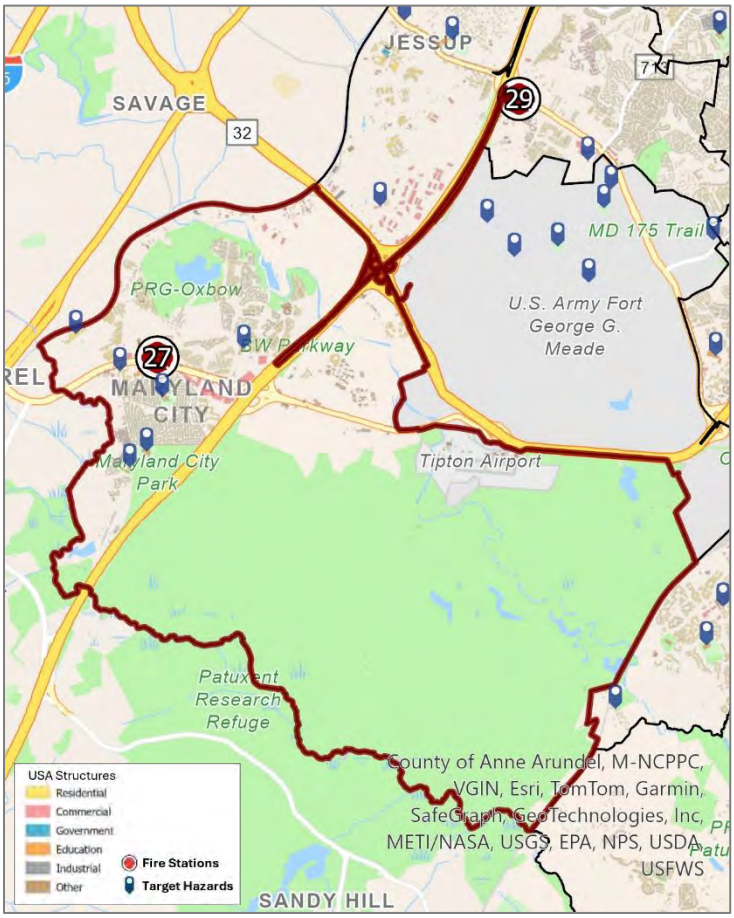
104	79	74
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)



Company 27 Maryland City

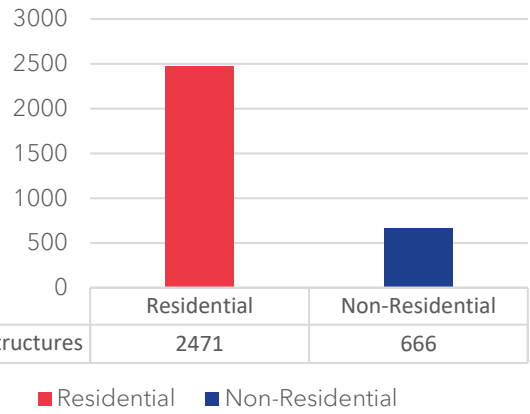




Frequent Responses

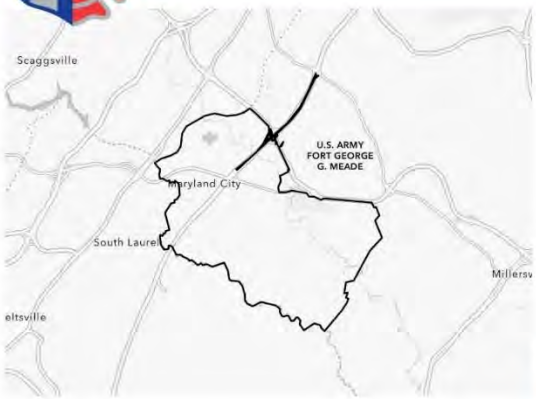
ADDRESS	TOTAL RESPONSES
3357B CORRIDOR MARKETPLACE	620
3549 RUSSETT GRN E	286
3600 LAUREL FORT MEADE RD	243
3498 LAUREL FORT MEADE RD	124
3400 LAUREL FORT MEADE RD	121

Residential vs Non-Residential Buildings



COMMUNITY PROFILE

Company: 27



21,033
Population

7,752
Households

2.71
Avg Size Household

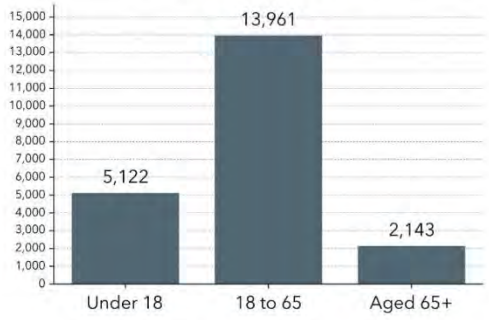
AT RISK POPULATION

1,376	2,143	160
Households With Disability	Population 65+	Households Without Vehicle

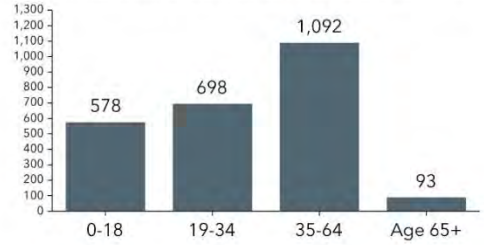
HOUSING PROFILE

35.8	$104,871	$400,185
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

20,289	489	9,849
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

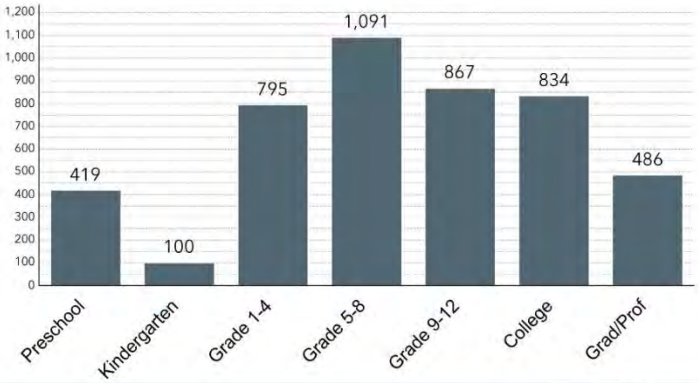
11%	757	59
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

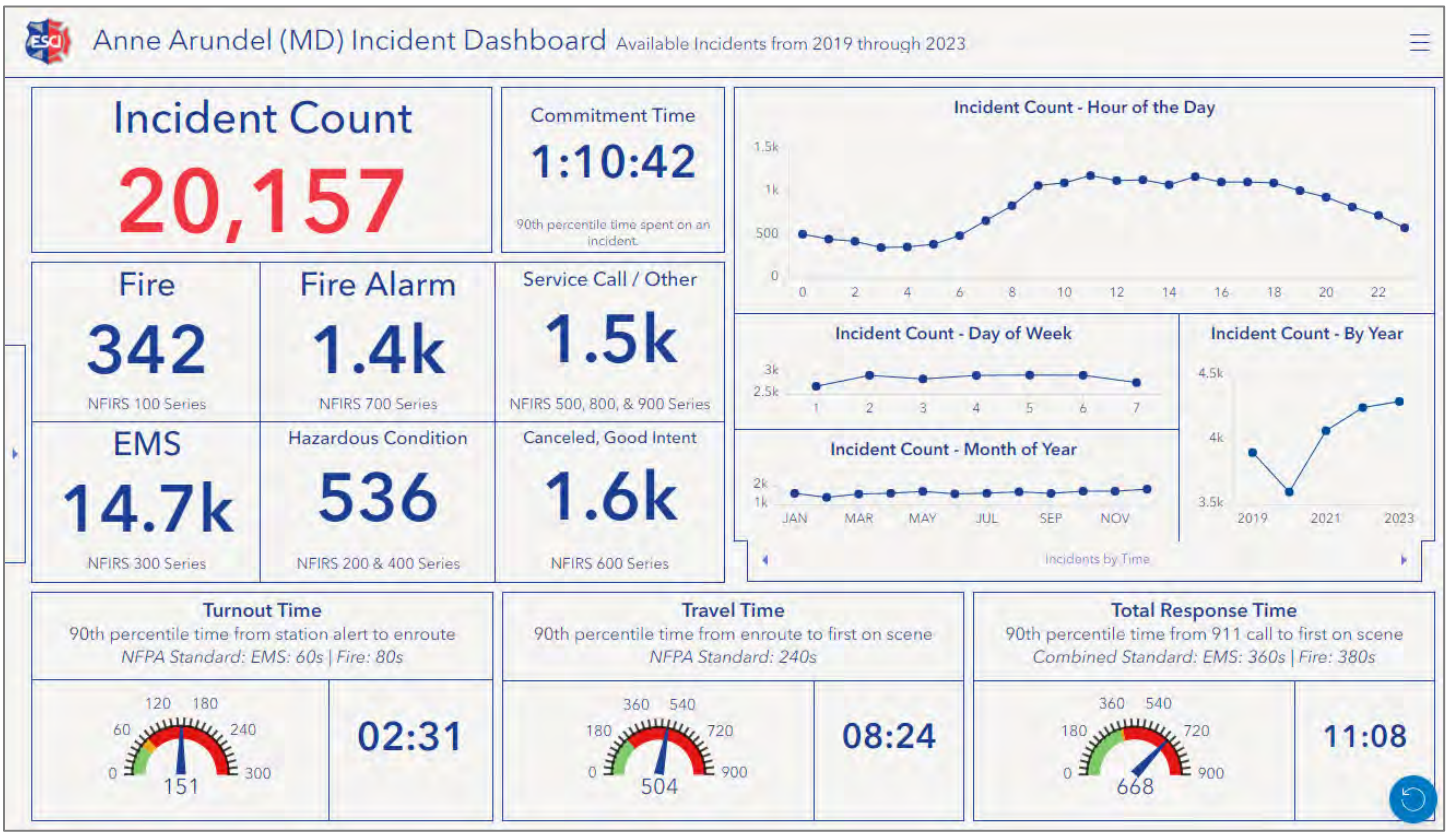
92	104	81
Wealth Index	Housing Affordability	Diversity Index

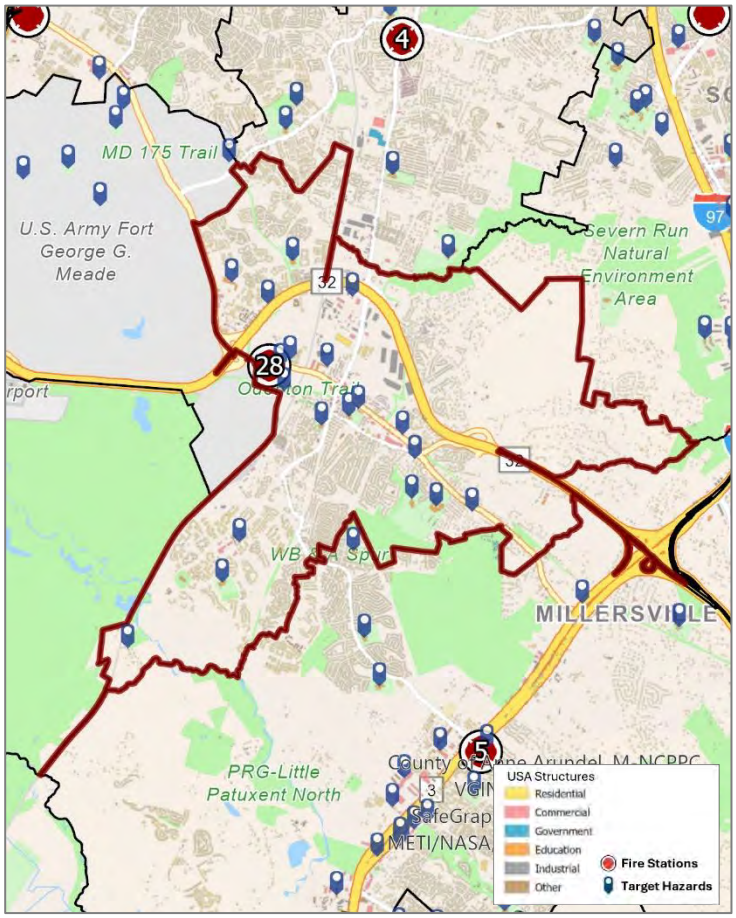
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**2,172**	**9,774**	**1,035**	**12,981**
Spanish	**712**	**1,882**	**86**	**2,680**
Spanish & English Well	650	1,372	27	2,049
Spanish & English Not Well	62	272	0	334
Spanish & No English	0	238	59	297
Indo-European	**35**	**432**	**133**	**600**
Indo-European & English Well	35	397	35	467
Indo-European & English Not Well	0	11	67	78
Indo-European & No English	0	24	31	55
Asian-Pacific Island	**57**	**251**	**41**	**349**
Asian-Pacific Isl & English Well	31	159	41	231
Asian-Pacific Isl & English Not Well	0	92	0	92
Asian-Pacific Isl & No English	26	0	0	26
Other Language	**0**	**528**	**30**	**558**
Other Language & English Well	0	488	30	518
Other Language & English Not Well	0	40	0	40
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



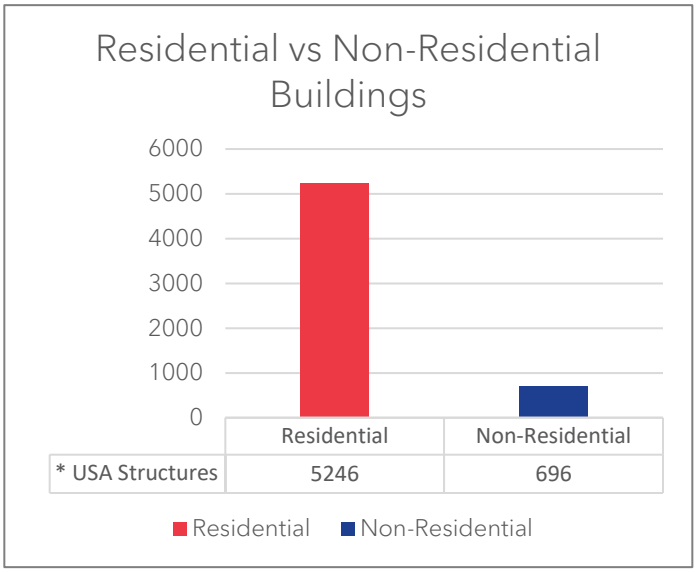
Company 28 Odenton





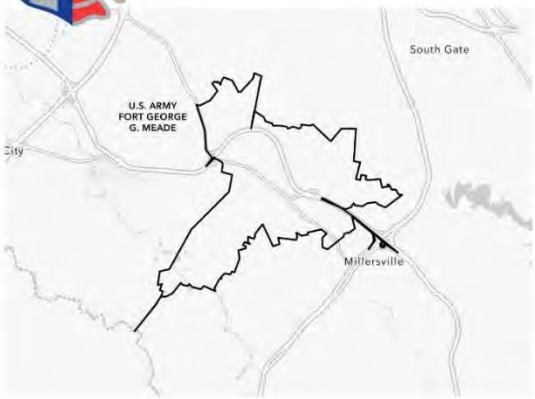
Frequent Responses

ADDRESS	TOTAL RESPONSES
1110 ANNAPOLIS RD	935
1425 ANNAPOLIS RD	201
8273 TELEGRAPH RD	164
2005 TOWN CENTER BLVD	160
1106 ANNAPOLIS RD LOT 310	143



COMMUNITY PROFILE

Company: 28



37,497
Population

15,031
Households

2.49
Avg Size Household

AT RISK POPULATION

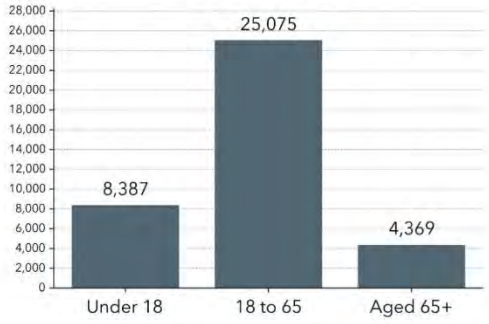
2,900	4,369	648
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

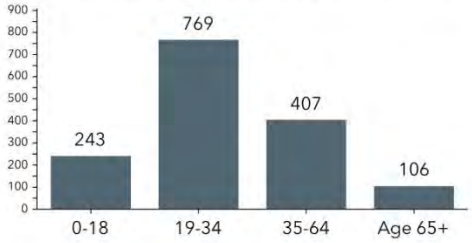
35.7	$106,634	$435,092
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**5,797**	**20,031**	**3,474**	**29,302**
Spanish	**651**	**1,441**	**234**	**2,326**
Spanish & English Well	432	1,285	153	1,870
Spanish & English Not Well	220	156	0	376
Spanish & No English	0	0	80	80
Indo-European	**290**	**1,043**	**132**	**1,465**
Indo-European & English Well	270	1,033	116	1,419
Indo-European & English Not Well	19	10	16	45
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**152**	**923**	**195**	**1,270**
Asian-Pacific Isl & English Well	152	817	122	1,091
Asian-Pacific Isl & English Not Well	0	66	65	131
Asian-Pacific Isl & No English	0	40	8	48
Other Language	**158**	**764**	**11**	**933**
Other Language & English Well	131	764	11	906
Other Language & English Not Well	27	0	0	27
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

24,578	989	7,319
Daytime Population	Total Businesses	Total Employees

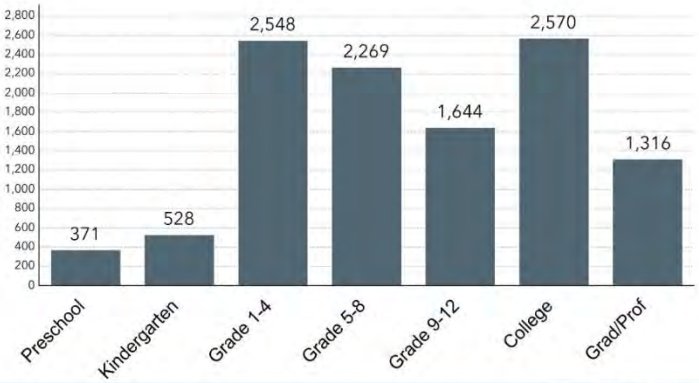
POVERTY AND LANGUAGE

5%	808	80
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

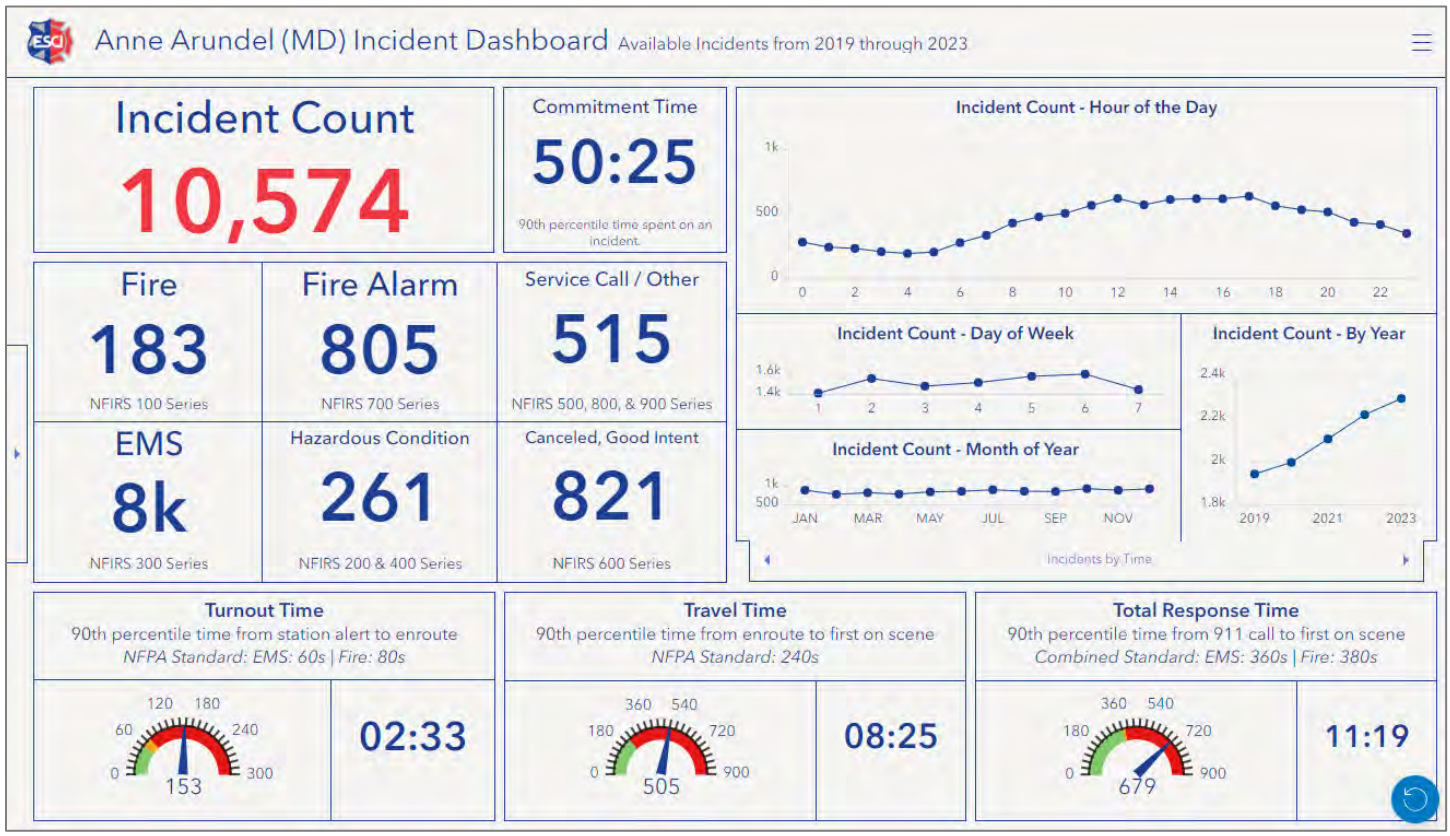
WEALTH PROFILE

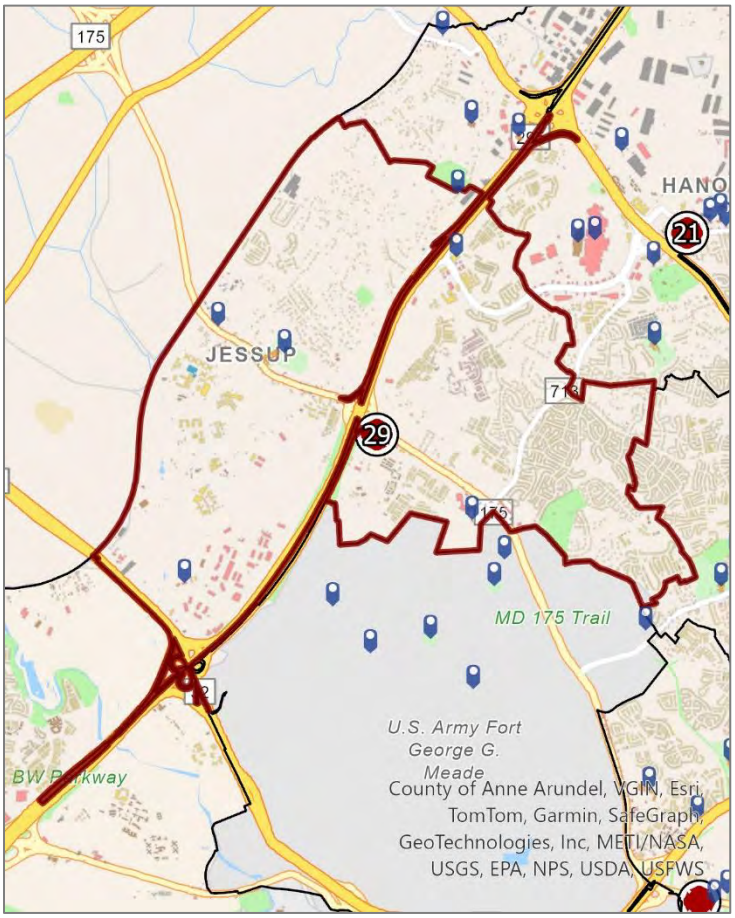
112	97	72
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)



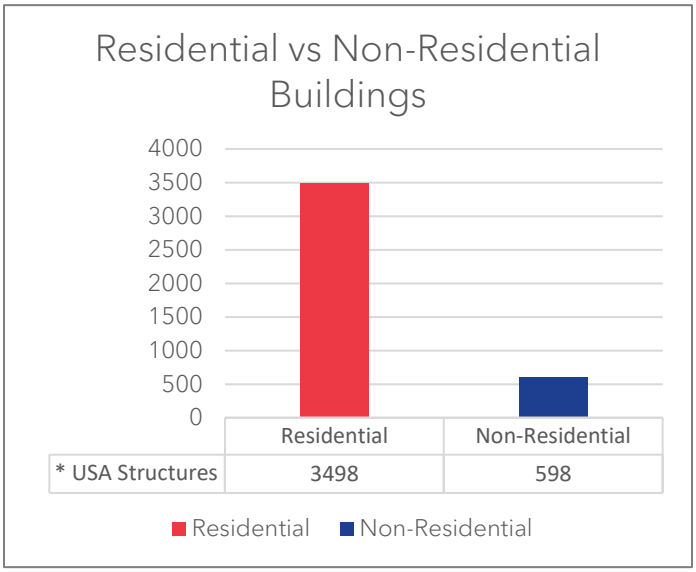
Company 29 Jessup





Frequent Responses

ADDRESS	TOTAL RESPONSES
534 HOUSE OF CORRECTION RD	926
7698 DORCHESTER BLVD 204	406
2020 TOULSON RD	304
549 HOUSE OF CORRECTION RD	274
7943 BROCK BRIDGE RD	213



COMMUNITY PROFILE

Company: 29

23,156
Population

7,530
Households

2.47
Avg Size Household

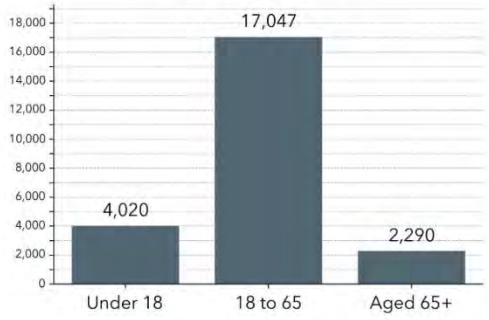
AT RISK POPULATION

1,313	2,290	189
Households With Disability	Population 65+	Households Without Vehicle

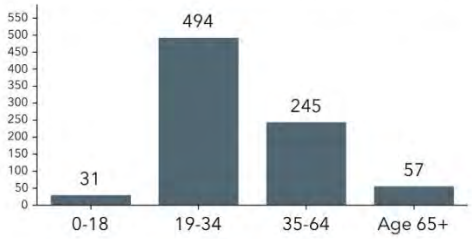
HOUSING PROFILE

37.1	$129,954	$526,622
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

15,588	577	7,498
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

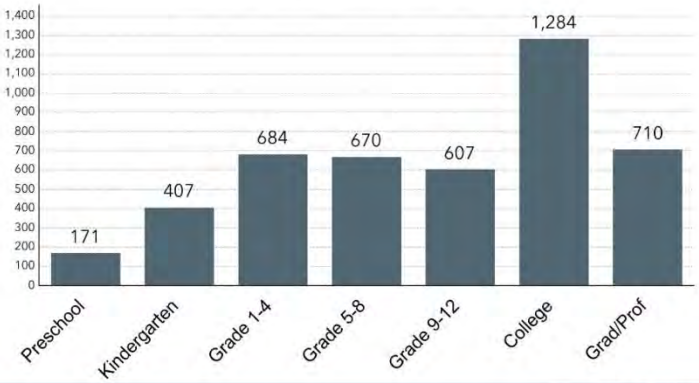
2%	110	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

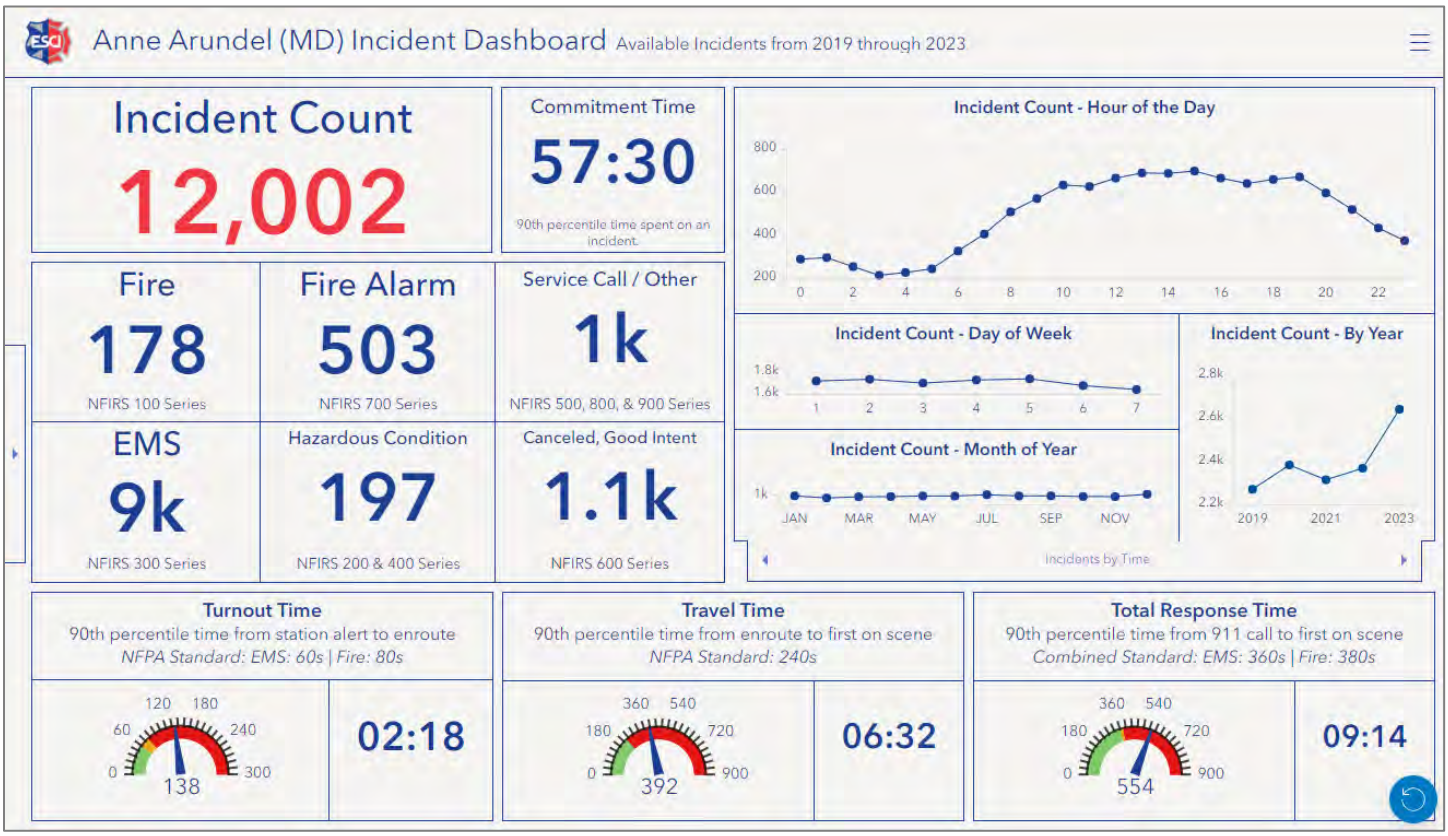
140	97	76
Wealth Index	Housing Affordability	Diversity Index

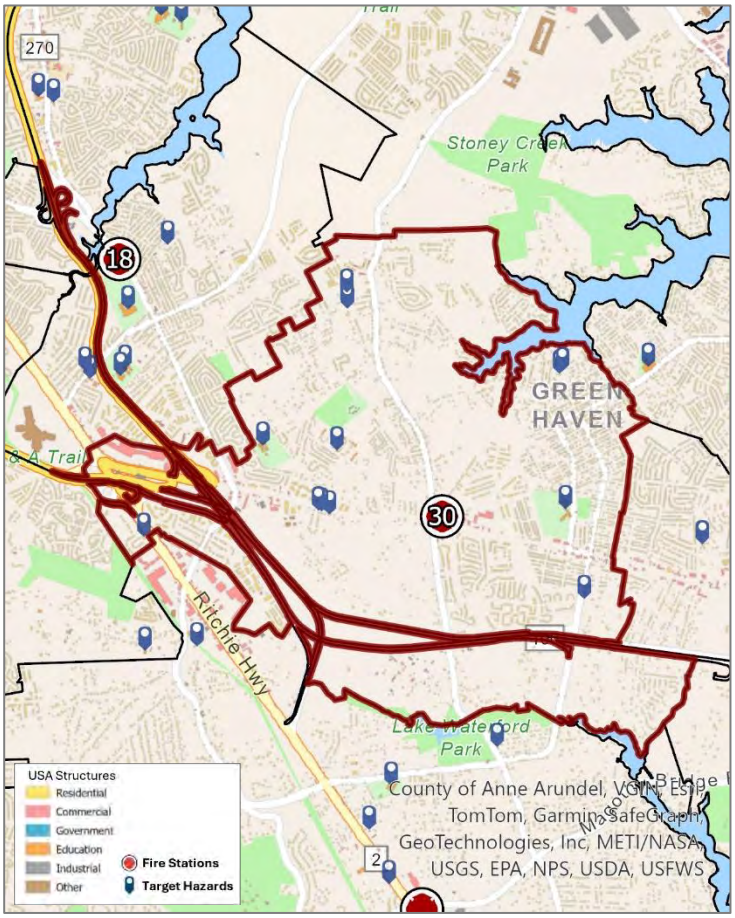
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**1,717**	**12,577**	**1,493**	**15,787**
Spanish	**274**	**1,100**	**157**	**1,531**
Spanish & English Well	271	1,069	157	1,497
Spanish & English Not Well	3	31	0	34
Spanish & No English	0	0	0	0
Indo-European	**100**	**1,150**	**27**	**1,277**
Indo-European & English Well	100	1,124	27	1,251
Indo-European & English Not Well	0	26	0	26
Indo-European & No English	0	0	0	0
Asian-Pacific Island	**28**	**750**	**254**	**1,032**
Asian-Pacific Isl & English Well	28	717	158	903
Asian-Pacific Isl & English Not Well	0	33	38	71
Asian-Pacific Isl & No English	0	0	58	58
Other Language	**60**	**442**	**49**	**551**
Other Language & English Well	60	435	49	544
Other Language & English Not Well	0	7	0	7
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



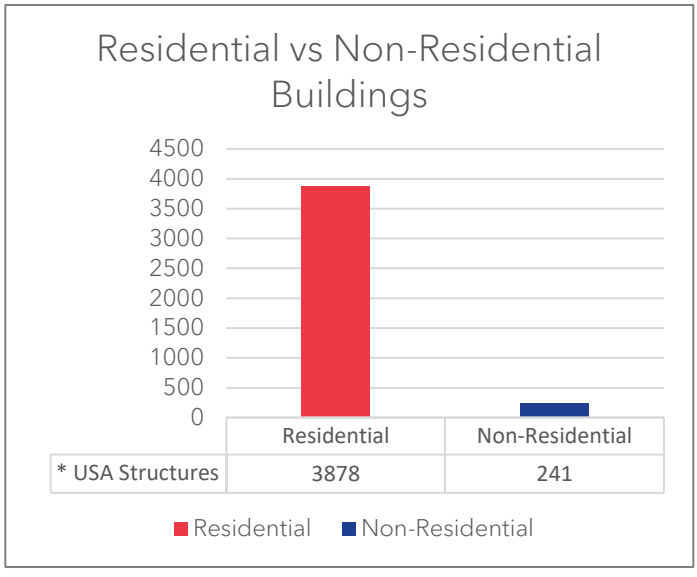
Company 30 Armiger





Frequent Responses

ADDRESS	TOTAL RESPONSES
304 MOUNTAIN RD	209
8139 EVENING STAR DR LOT 167	112
66 MOUNTAIN RD	83
758 209TH ST	74
7931 BALTIMORE ANNAPOLIS BLVD	71



COMMUNITY PROFILE

Company: 30

17,412
Population

6,390
Households

2.71
Avg Size Household

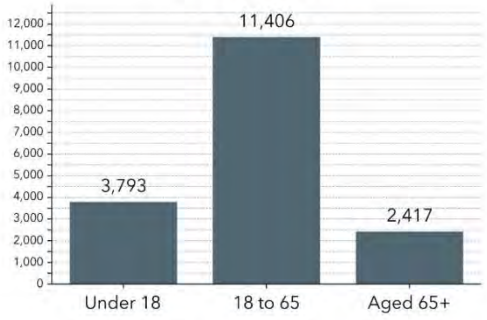
AT RISK POPULATION

1,489	2,417	243
Households With Disability	Population 65+	Households Without Vehicle

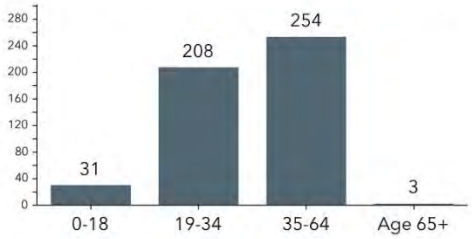
HOUSING PROFILE

38.4	$107,138	$444,896
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

14,847	608	6,152
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

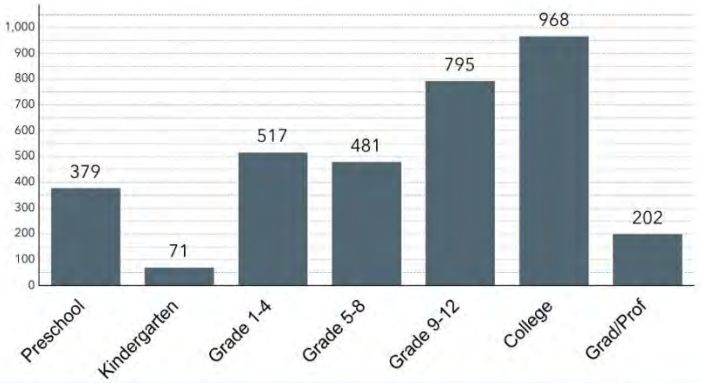
6%	352	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

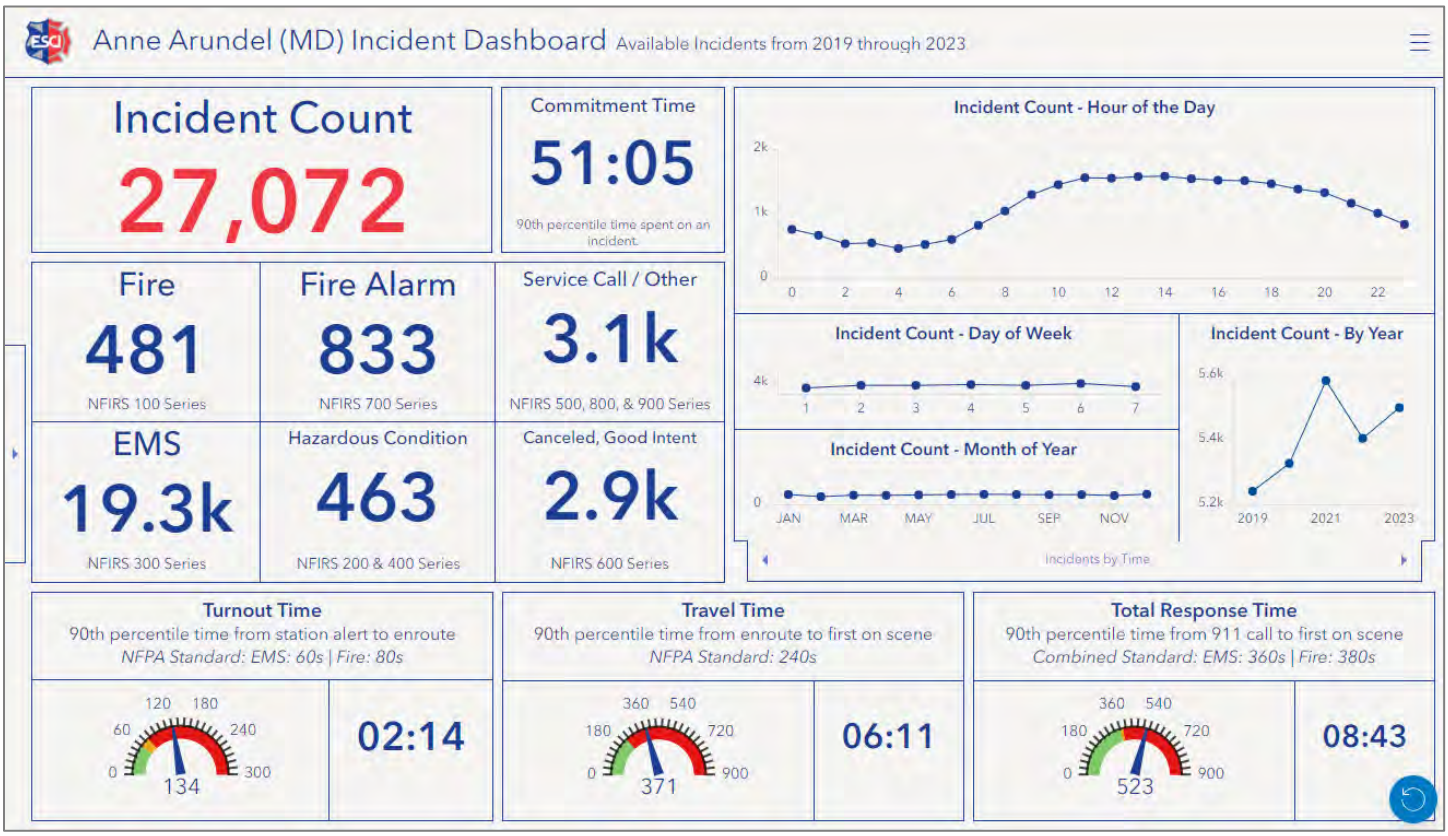
121	95	62
Wealth Index	Housing Affordability	Diversity Index

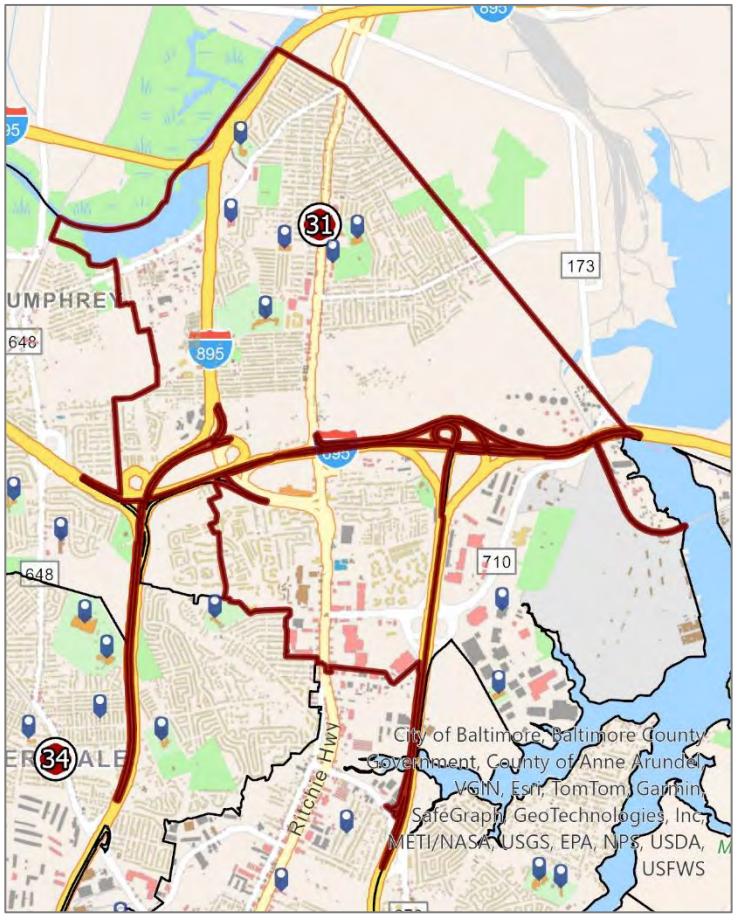
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	**1,747**	**9,887**	**1,742**	**13,376**
Spanish	**80**	**521**	**39**	**640**
Spanish & English Well	60	458	39	557
Spanish & English Not Well	20	34	0	54
Spanish & No English	0	29	0	29
Indo-European	**13**	**276**	**82**	**371**
Indo-European & English Well	13	269	80	362
Indo-European & English Not Well	0	6	2	8
Indo-European & No English	0	1	0	1
Asian-Pacific Island	**19**	**157**	**5**	**181**
Asian-Pacific Isl & English Well	19	133	5	157
Asian-Pacific Isl & English Not Well	0	24	0	24
Asian-Pacific Isl & No English	0	0	0	0
Other Language	**49**	**109**	**1**	**159**
Other Language & English Well	49	109	1	159
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



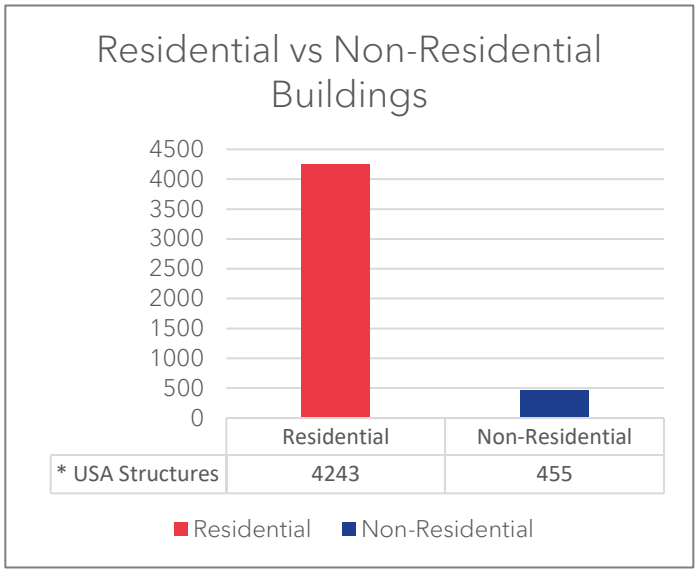
Company 31 Brooklyn





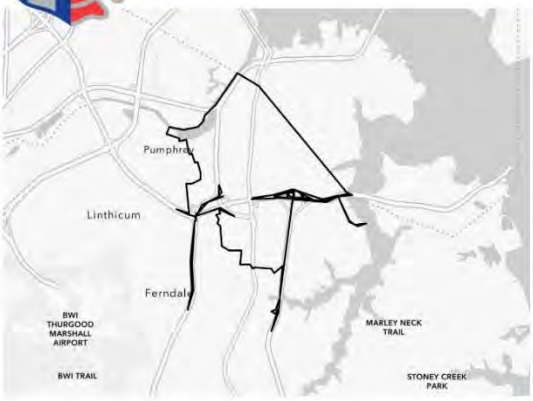
Frequent Responses

ADDRESS	TOTAL RESPONSES
5100 RITCHIE HWY	1305
6721 CHESAPEAKE CTR DR	288
6601 RITCHIE HWY	162
591 TERRACE AVE	161
5400 RITCHIE HWY	157



COMMUNITY PROFILE

Company: 31



22,812
Population

8,478
Households

2.67
Avg Size Household

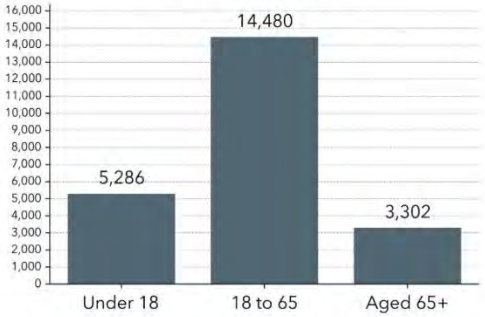
AT RISK POPULATION

2,154	3,302	597
Households With Disability	Population 65+	Households Without Vehicle

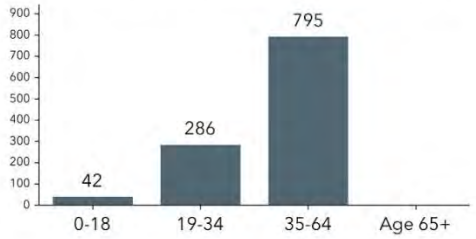
HOUSING PROFILE

36.8	$80,321	$286,997
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

19,336	664	9,332
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

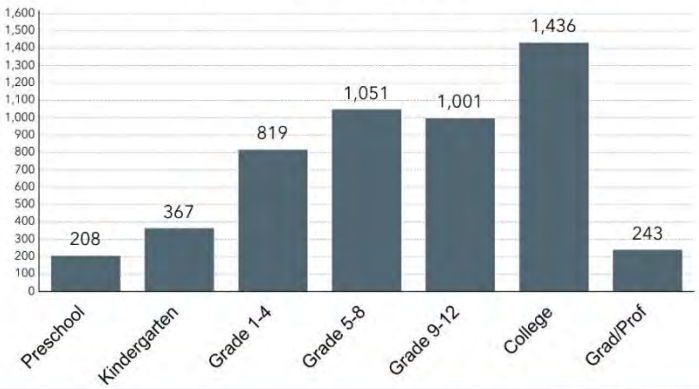
9%	706	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

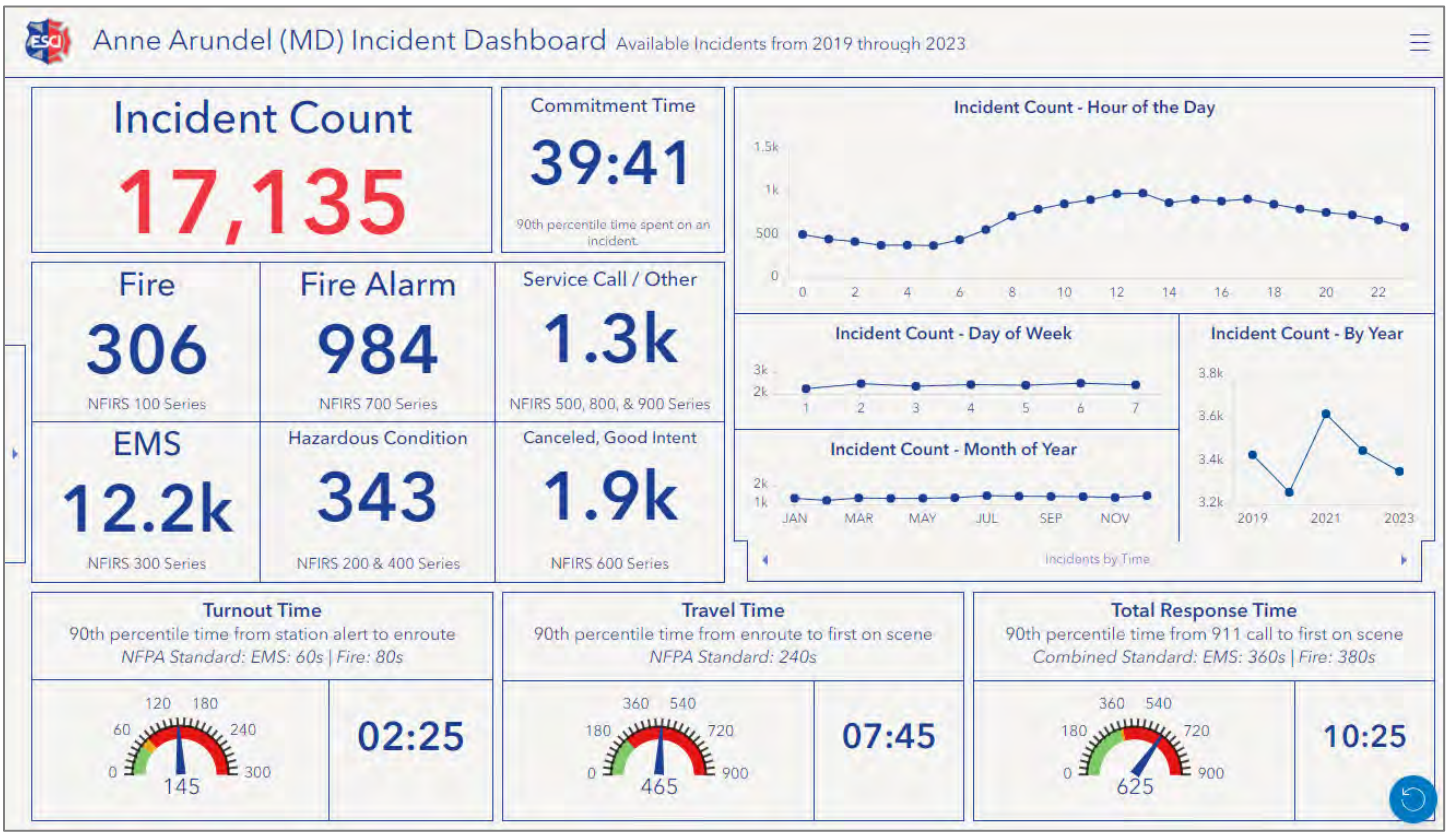
69	111	75
Wealth Index	Housing Affordability	Diversity Index

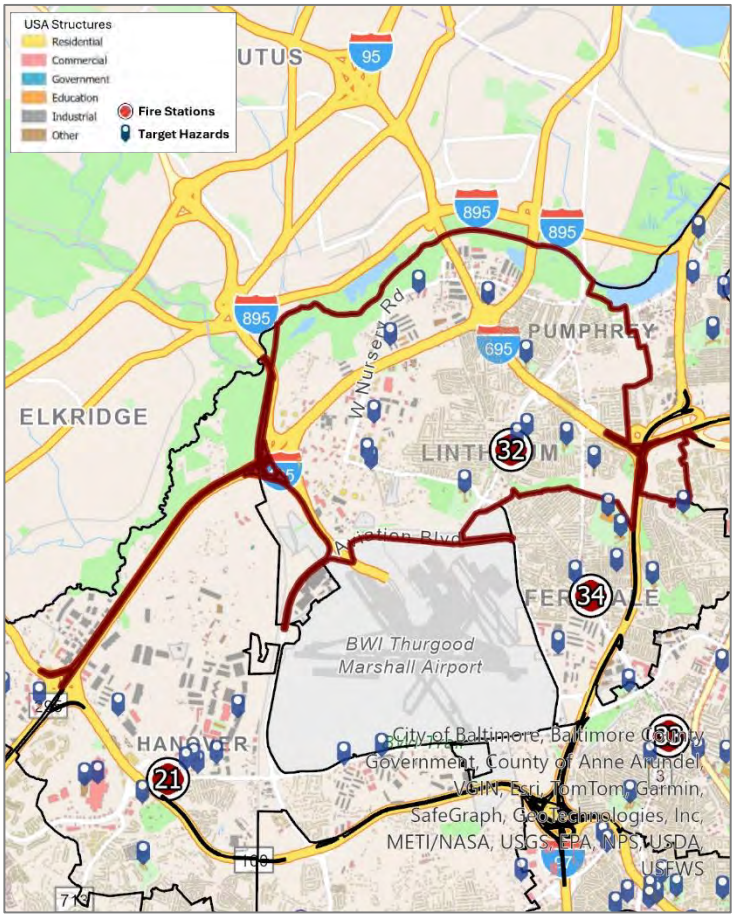
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	2,404	10,658	2,919	15,981
Spanish	533	1,907	21	2,461
Spanish & English Well	533	1,554	21	2,108
Spanish & English Not Well	0	282	0	282
Spanish & No English	0	71	0	71
Indo-European	41	434	30	505
Indo-European & English Well	41	354	28	423
Indo-European & English Not Well	0	80	2	82
Indo-European & No English	0	0	0	0
Asian-Pacific Island	34	299	121	454
Asian-Pacific Isl & English Well	17	250	46	313
Asian-Pacific Isl & English Not Well	17	49	25	91
Asian-Pacific Isl & No English	0	0	50	50
Other Language	31	494	41	566
Other Language & English Well	12	485	41	538
Other Language & English Not Well	0	9	0	9
Other Language & No English	19	0	0	19

SCHOOL ENROLLMENT (ACS)



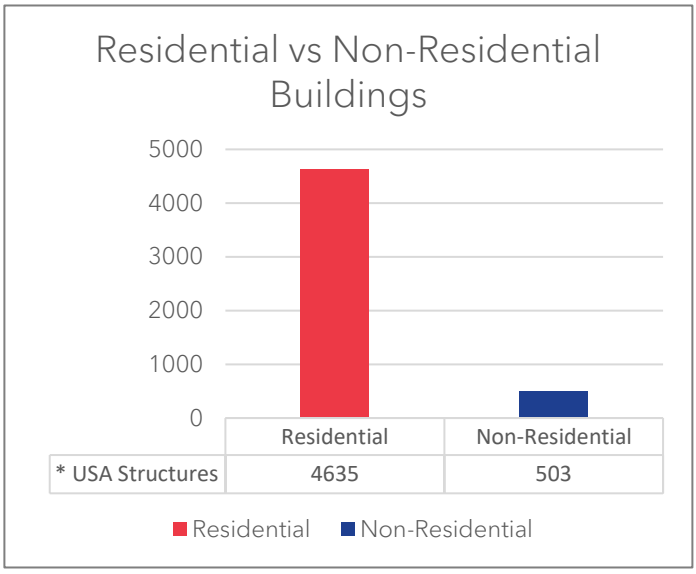
Company 32 Linthicum





Frequent Responses

ADDRESS	TOTAL RESPONSES
817 CAMP MEADE RD S	300
939 HAMMONDS LN	278
309 CAMP MEADE RD S	259
6921 BALTIMORE ANNAPOLIS BLVD	187
6055 BELLE GROVE RD	116



COMMUNITY PROFILE

Company: 32

14,494
Population

5,669
Households

2.54
Avg Size Household

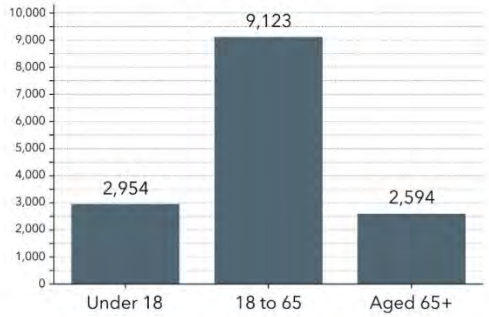
AT RISK POPULATION

1,164	2,594	266
Households With Disability	Population 65+	Households Without Vehicle

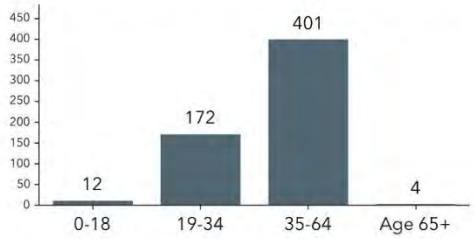
HOUSING PROFILE

39.5	$99,470	$401,270
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

20,162	885	15,023
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

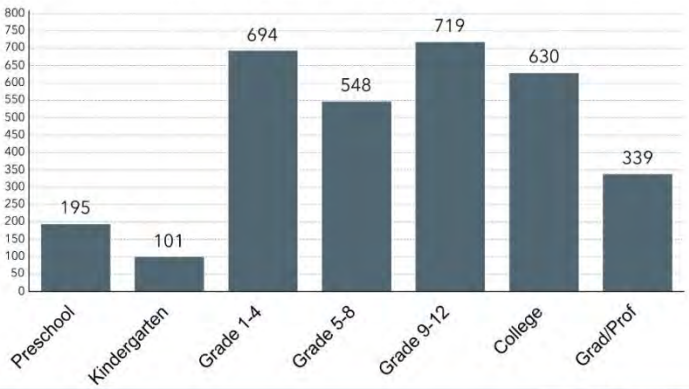
7%	344	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

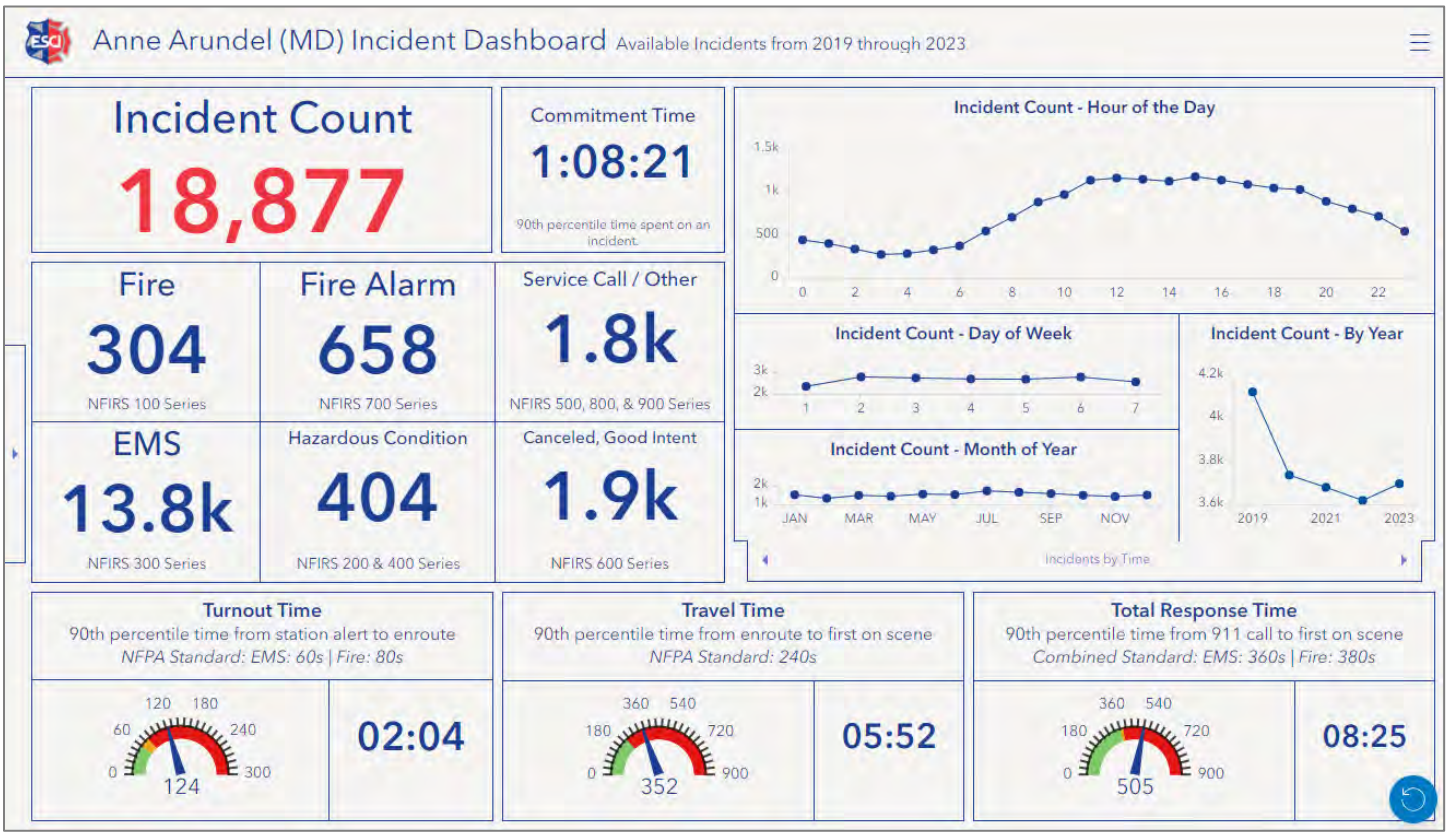
112	98	60
Wealth Index	Housing Affordability	Diversity Index

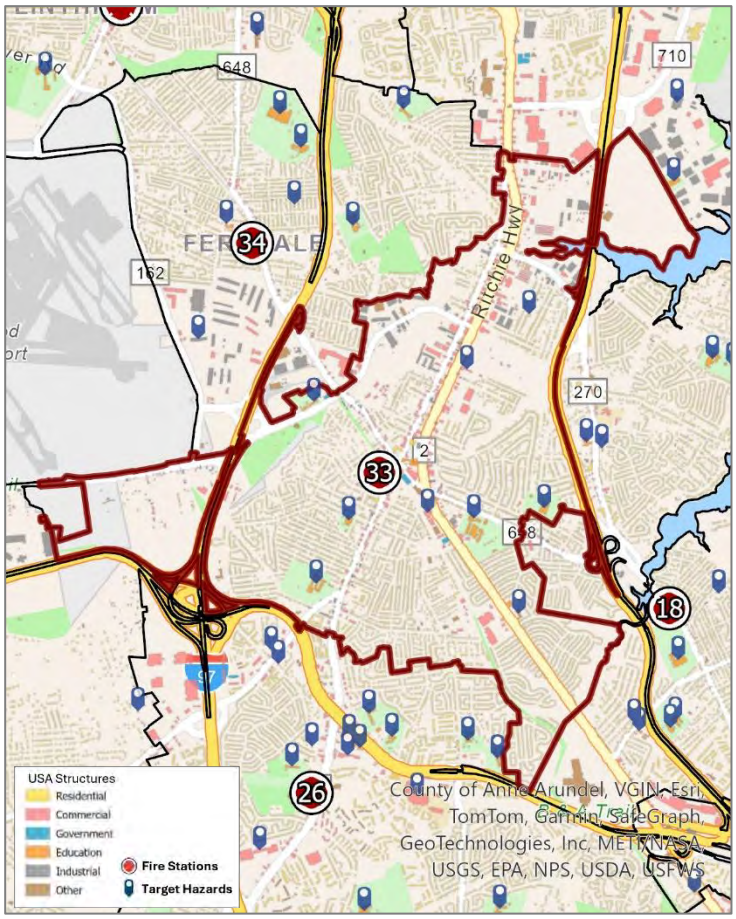
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	1,745	6,956	2,094	10,795
Spanish	260	651	28	939
Spanish & English Well	260	580	15	855
Spanish & English Not Well	0	69	13	82
Spanish & No English	0	3	0	3
Indo-European	66	231	74	371
Indo-European & English Well	56	182	46	284
Indo-European & English Not Well	10	49	3	62
Indo-European & No English	0	0	25	25
Asian-Pacific Island	0	137	43	180
Asian-Pacific Isl & English Well	0	134	43	177
Asian-Pacific Isl & English Not Well	0	3	0	3
Asian-Pacific Isl & No English	0	0	0	0
Other Language	1	73	8	82
Other Language & English Well	0	70	8	78
Other Language & English Not Well	0	3	0	3
Other Language & No English	1	0	0	1

SCHOOL ENROLLMENT (ACS)



Company 33 Glen Burnie

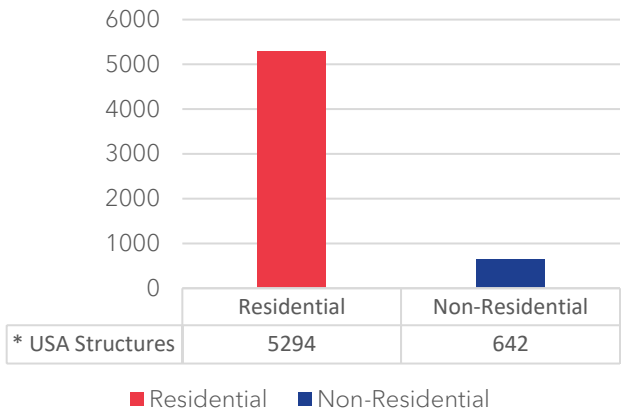




Frequent Responses

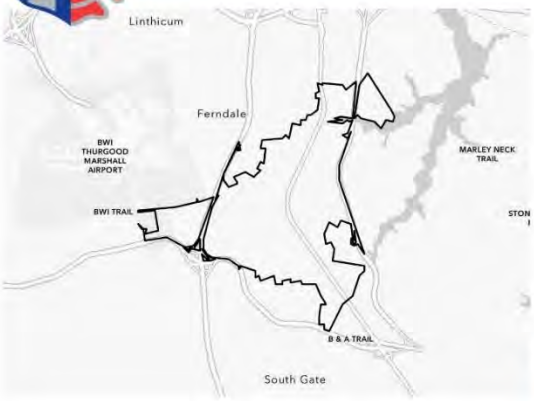
ADDRESS	TOTAL RESPONSES
7116 RITCHIE HWY	1011
15 CENTRAL AVE	638
121 CRAIN HWY N	134
7500 RITCHIE HWY	129
102 CRAIN HWY N	126

Residential vs Non-Residential Buildings



COMMUNITY PROFILE

Company: 33



14,558
Population

5,365
Households

2.70
Avg Size Household

AT RISK POPULATION

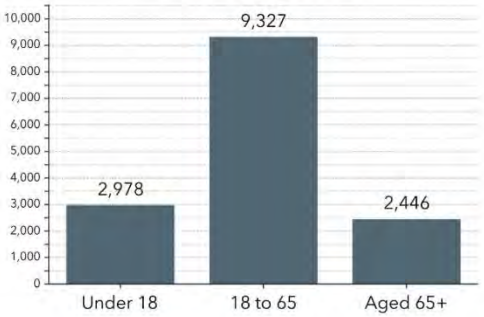
1,727	2,446	373
Households With Disability	Population 65+	Households Without Vehicle

HOUSING PROFILE

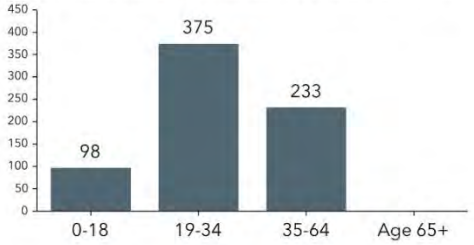
39.4	$82,950	$356,331
Median Age	Median Household Income	Median Home Value

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	1,583	7,151	2,204	10,938
Spanish	176	651	5	832
Spanish & English Well	151	406	5	562
Spanish & English Not Well	25	215	0	240
Spanish & No English	0	30	0	30
Indo-European	87	489	8	584
Indo-European & English Well	87	461	8	556
Indo-European & English Not Well	0	28	0	28
Indo-European & No English	0	0	0	0
Asian-Pacific Island	33	245	45	323
Asian-Pacific Isl & English Well	33	226	38	297
Asian-Pacific Isl & English Not Well	0	19	7	26
Asian-Pacific Isl & No English	0	0	0	0
Other Language	8	79	0	87
Other Language & English Well	8	72	0	80
Other Language & English Not Well	0	7	0	7
Other Language & No English	0	0	0	0

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

20,464	1,048	11,662
Daytime Population	Total Businesses	Total Employees

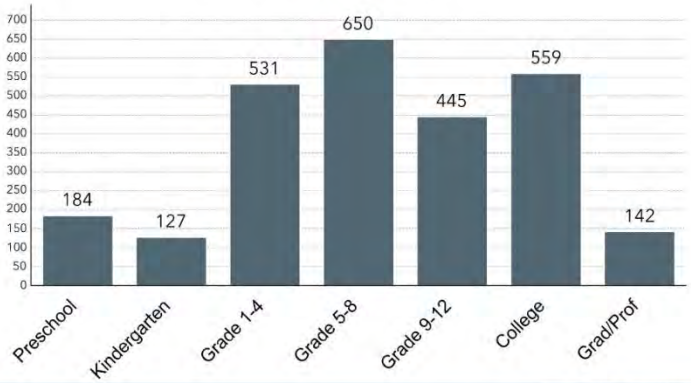
POVERTY AND LANGUAGE

7%	349	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

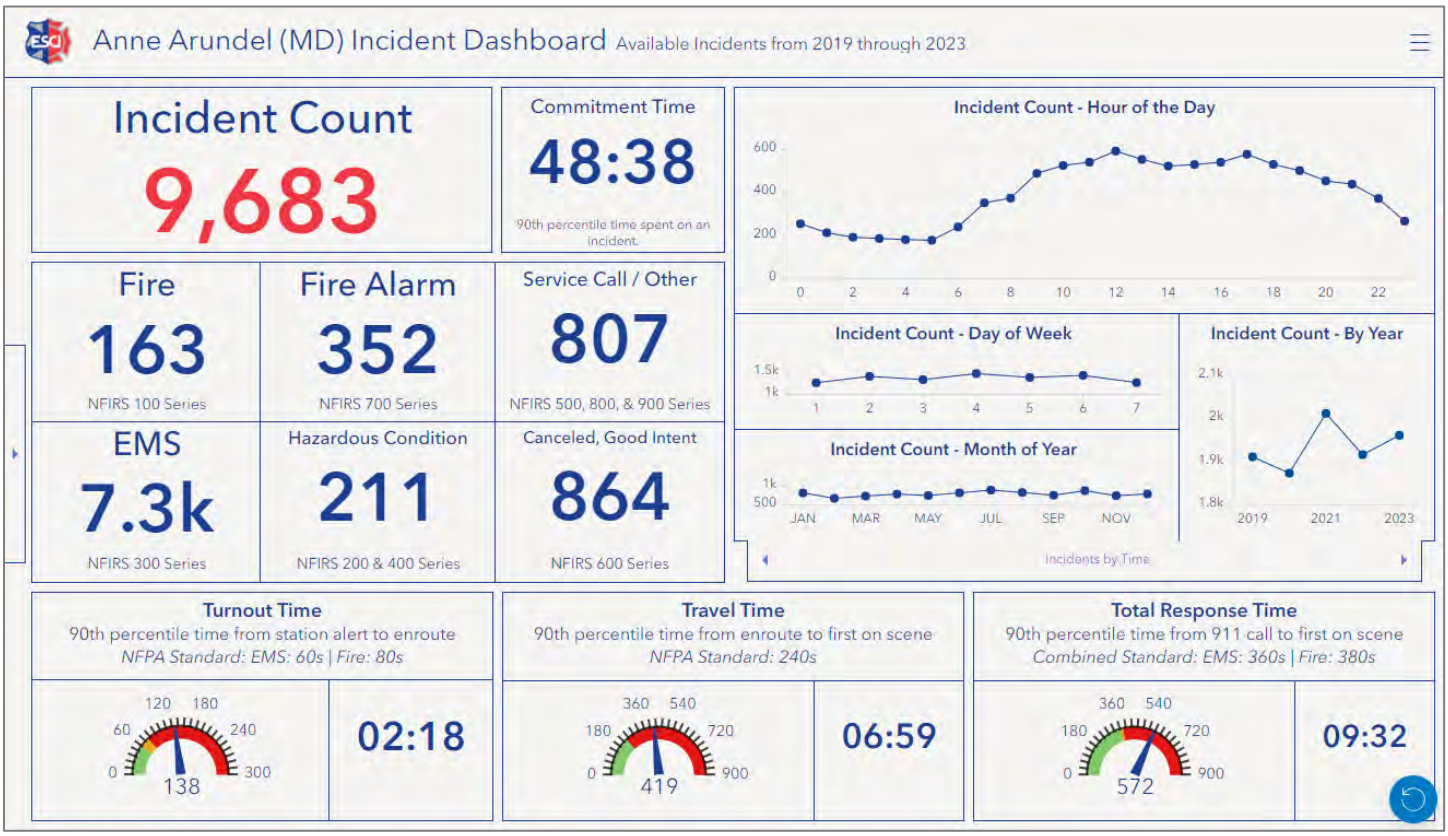
WEALTH PROFILE

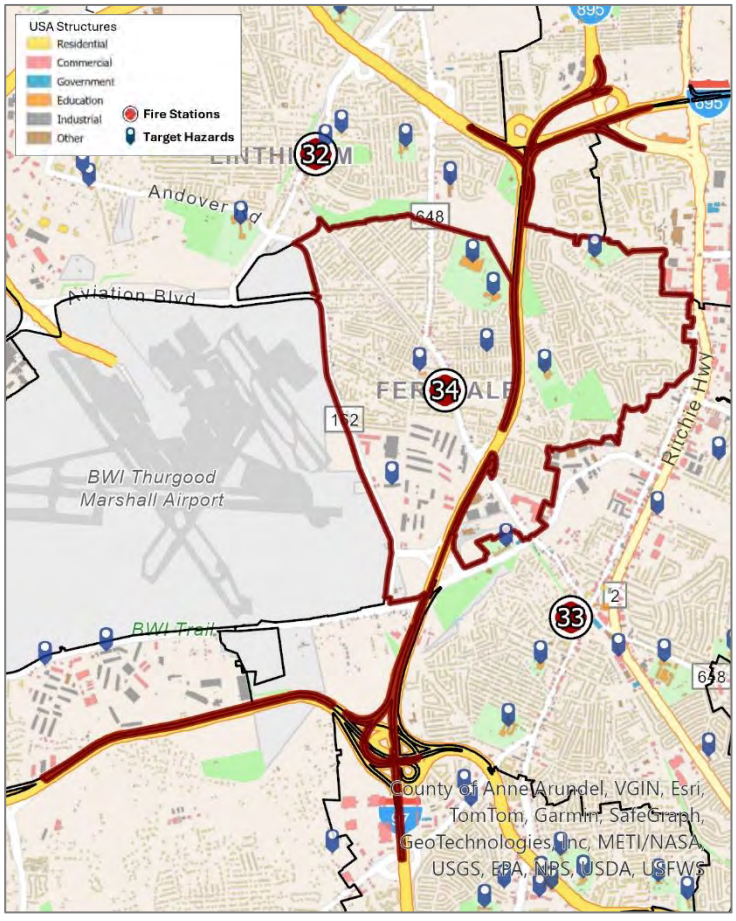
89	92	70
Wealth Index	Housing Affordability	Diversity Index

SCHOOL ENROLLMENT (ACS)



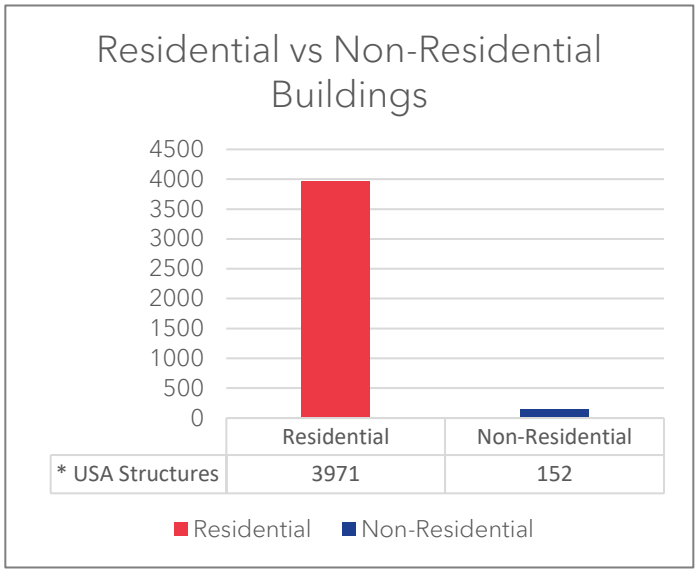
Company 34 Ferndale





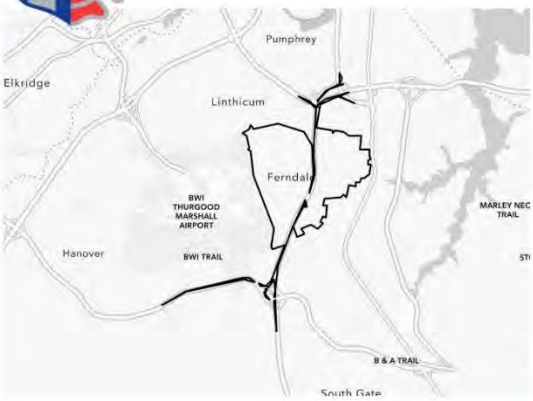
Frequent Responses

ADDRESS	TOTAL RESPONSES
7378 BALTIMORE ANNAPOLIS BLVD	224
4 BROADVIEW BLVD S	217
7379 BALTIMORE ANNAPOLIS BLVD	148
6934 AVIATION BLVD LOT K	147
10 1ST AVE E	134



COMMUNITY PROFILE

Company: 34



11,116
Population

4,096
Households

2.71
Avg Size Household

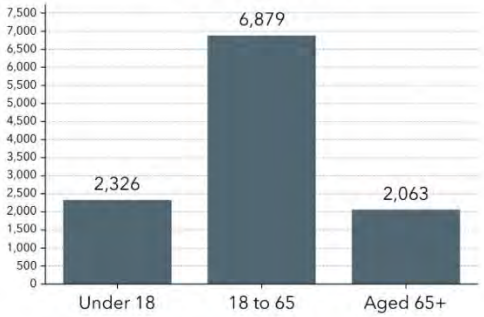
AT RISK POPULATION

1,197	2,063	171
Households With Disability	Population 65+	Households Without Vehicle

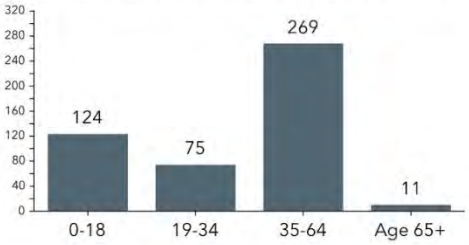
HOUSING PROFILE

40.4	$90,808	$363,103
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

9,846	359	4,901
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

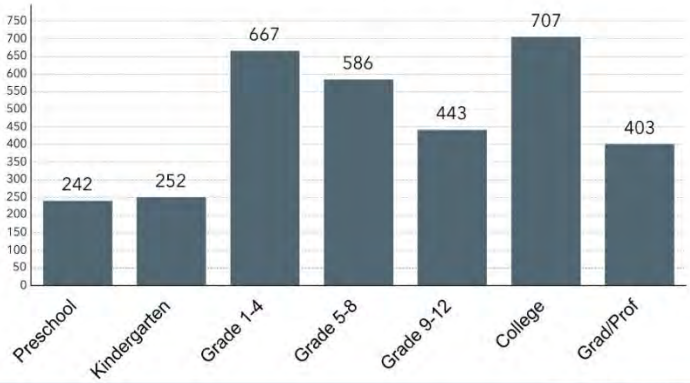
5%	213	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

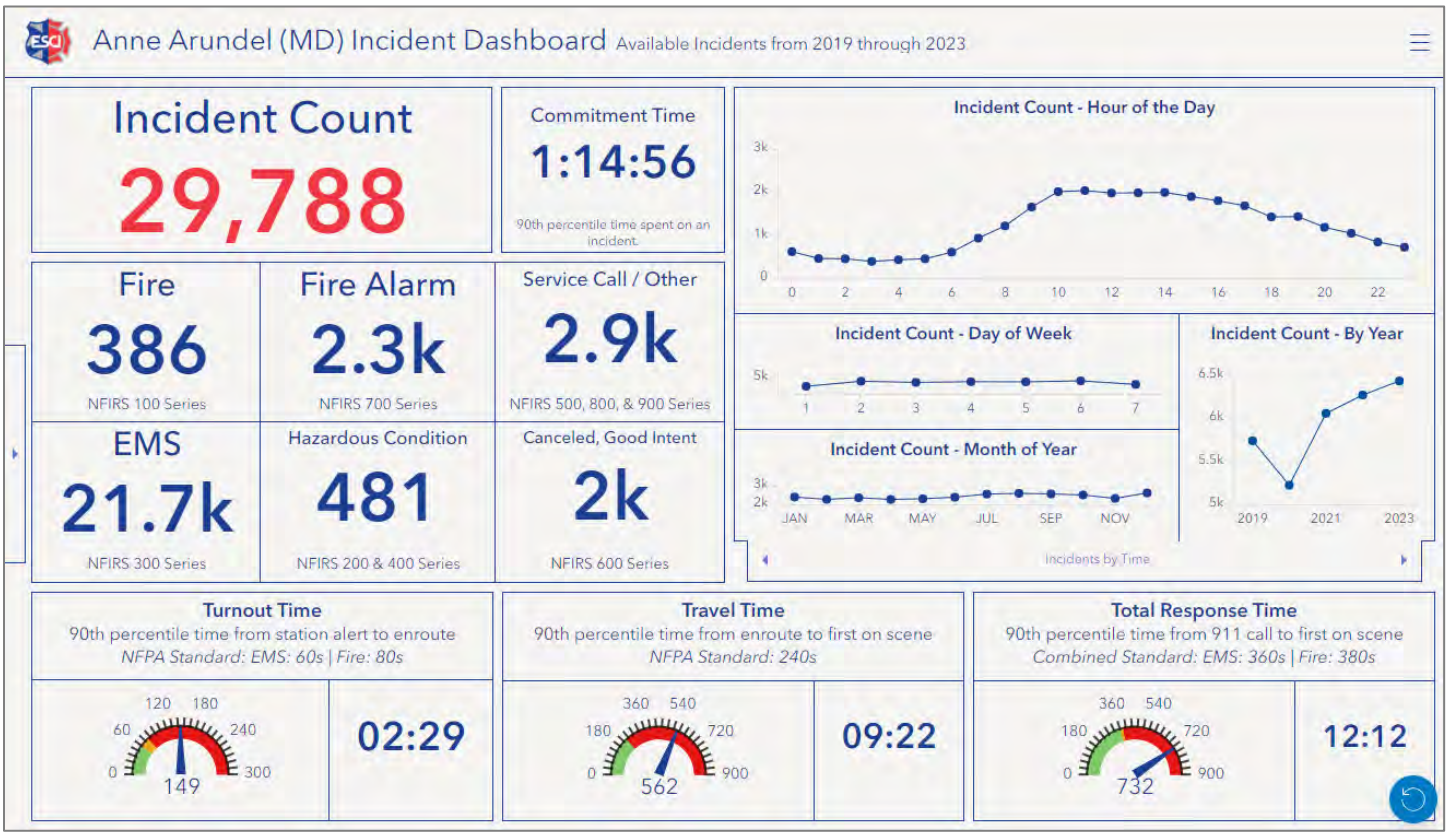
97	99	63
Wealth Index	Housing Affordability	Diversity Index

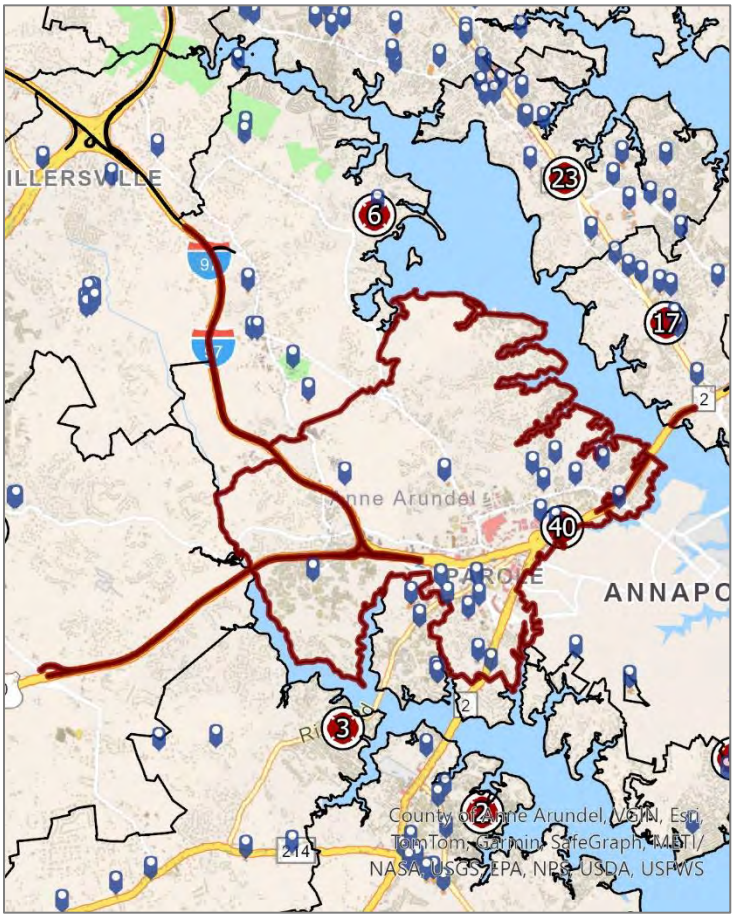
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	1,810	6,053	1,859	9,722
Spanish	119	379	15	513
Spanish & English Well	119	240	0	359
Spanish & English Not Well	0	85	15	100
Spanish & No English	0	53	0	53
Indo-European	0	110	232	342
Indo-European & English Well	0	110	232	342
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	7	68	15	90
Asian-Pacific Isl & English Well	7	68	15	90
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	0	0
Other Language	3	97	0	100
Other Language & English Well	0	95	0	95
Other Language & English Not Well	0	1	0	1
Other Language & No English	3	0	0	3

SCHOOL ENROLLMENT (ACS)



Company 40 West Annapolis

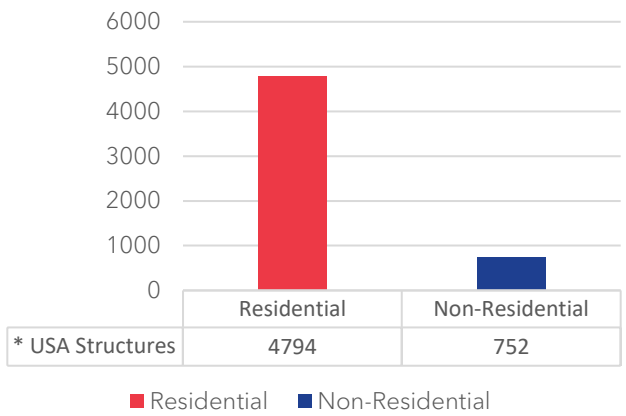




Frequent Responses

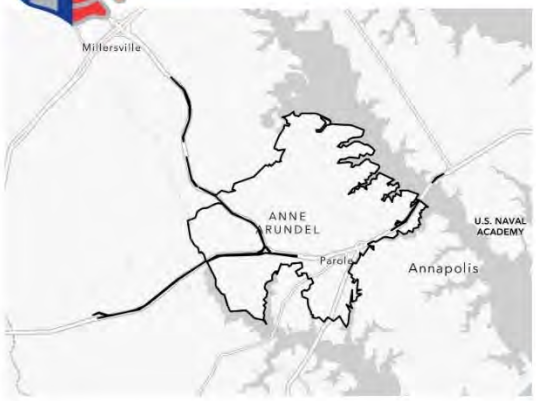
ADDRESS	TOTAL RESPONSES
2051 WEST ST	812
2002 ANNAPOLIS MALL	580
131 JENNIFER RD	405
1785 CROWNSVILLE RD	344
612 ADMIRAL DR LOT 389	305

Residential vs Non-Residential Buildings



COMMUNITY PROFILE

Company: 40



18,860
Population

9,100
Households

2.00
Avg Size Household

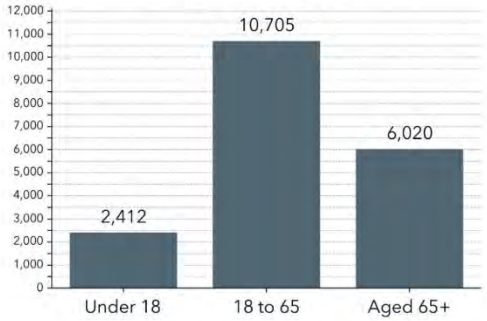
AT RISK POPULATION

1,497	6,020	307
Households With Disability	Population 65+	Households Without Vehicle

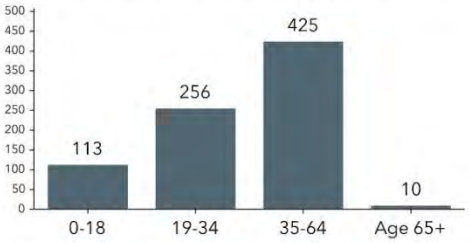
HOUSING PROFILE

50.7	$126,355	$613,665
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

41,781	2,437	41,735
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

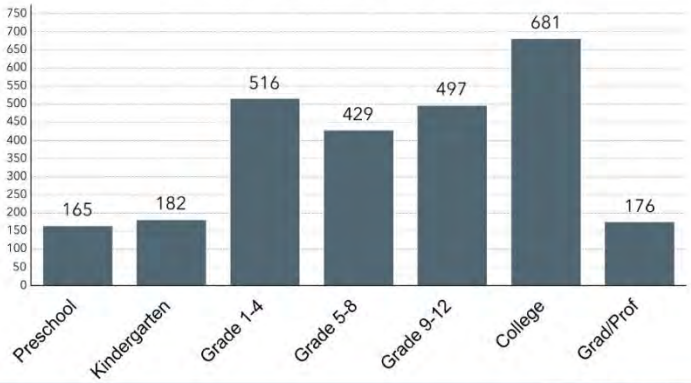
5%	439	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

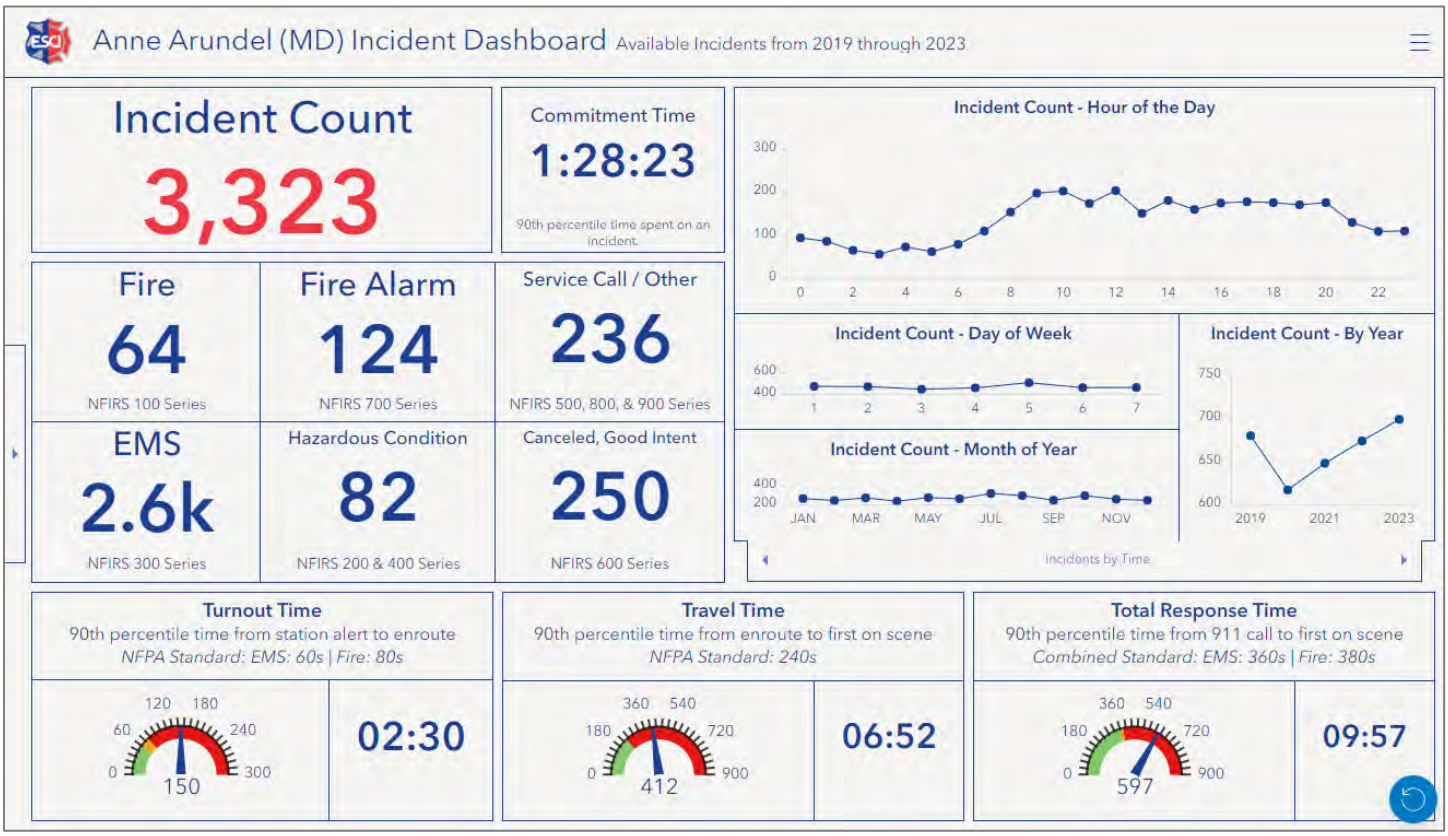
183	81	47
Wealth Index	Housing Affordability	Diversity Index

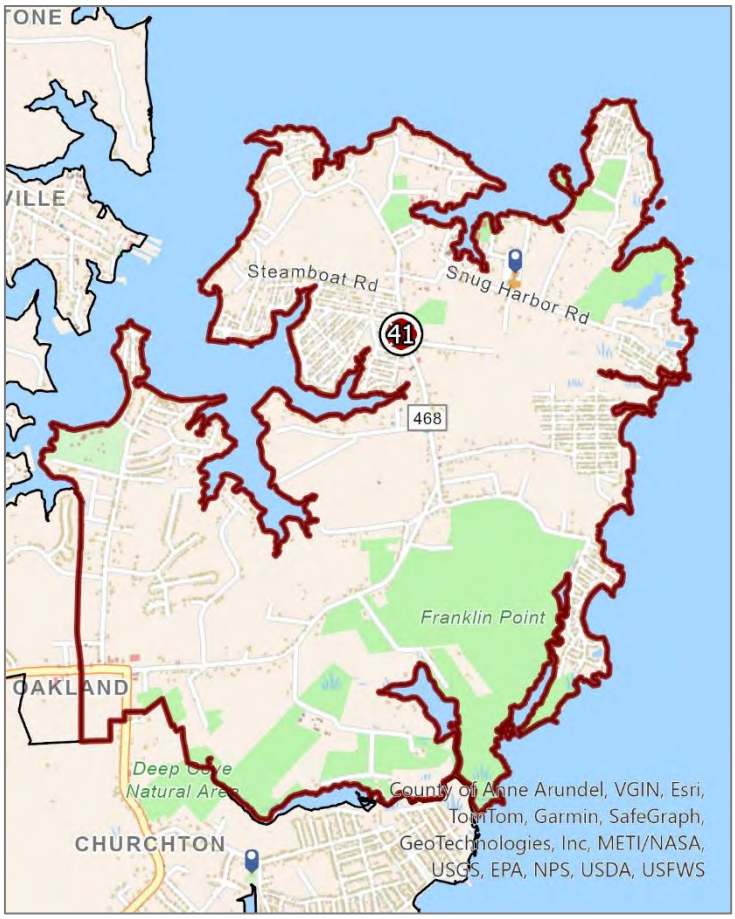
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	1,465	9,650	5,548	16,663
Spanish	154	497	104	755
Spanish & English Well	145	419	104	668
Spanish & English Not Well	8	78	0	86
Spanish & No English	0	0	0	0
Indo-European	0	346	347	693
Indo-European & English Well	0	218	343	561
Indo-European & English Not Well	0	128	3	131
Indo-European & No English	0	0	0	0
Asian-Pacific Island	26	155	55	236
Asian-Pacific Isl & English Well	26	144	41	211
Asian-Pacific Isl & English Not Well	0	0	14	14
Asian-Pacific Isl & No English	0	11	0	11
Other Language	0	156	0	156
Other Language & English Well	0	156	0	156
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



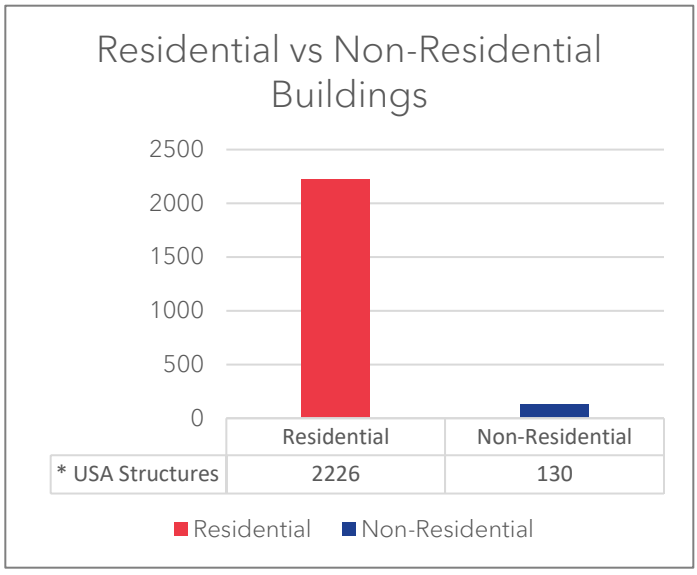
Company 41 Avalon Shores





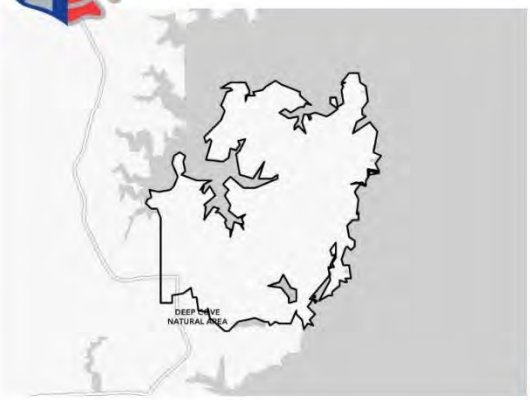
Frequent Responses

ADDRESS	TOTAL RESPONSES
6270 SHADY SIDE RD	213
6131 SHADY SIDE RD	48
5573 SHADY SIDE RD	47
5554 MUDDY CREEK RD	39
6179 SHADY SIDE RD	37



COMMUNITY PROFILE

Company: 41



5,472
Population

2,192
Households

2.50
Avg Size Household

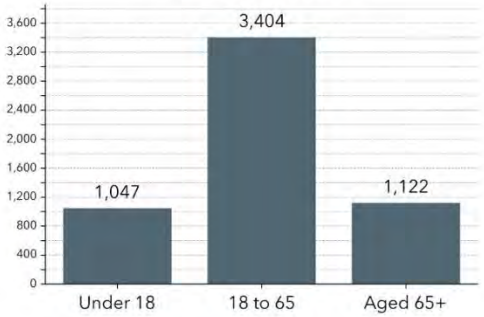
AT RISK POPULATION

352	1,122	0
Households With Disability	Population 65+	Households Without Vehicle

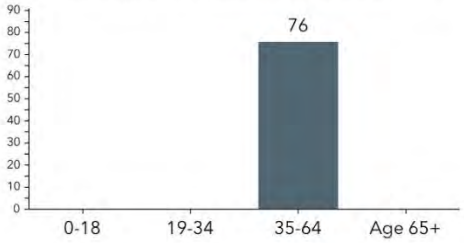
HOUSING PROFILE

44.0	$119,214	$513,792
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

3,398	115	685
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

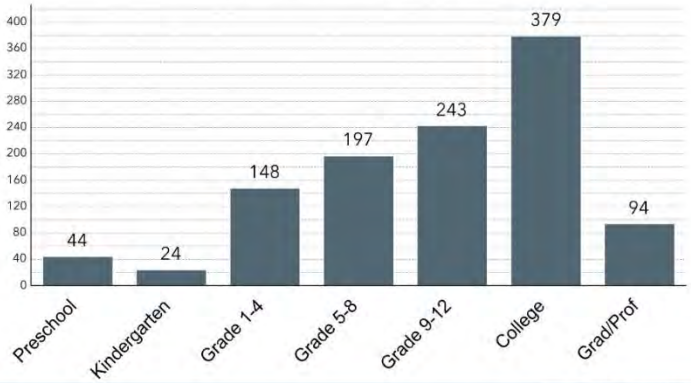
5%	87	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

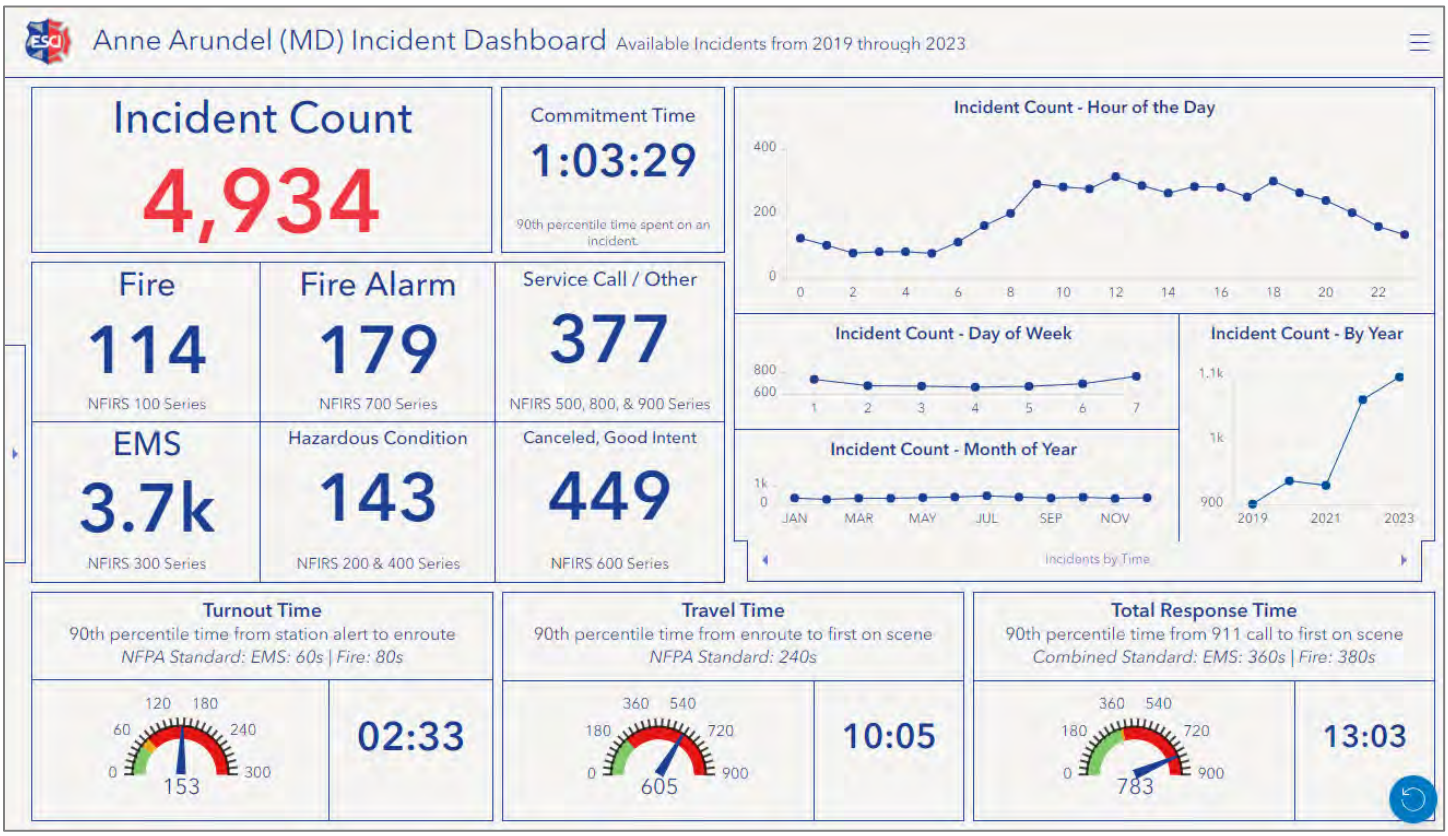
166	92	41
Wealth Index	Housing Affordability	Diversity Index

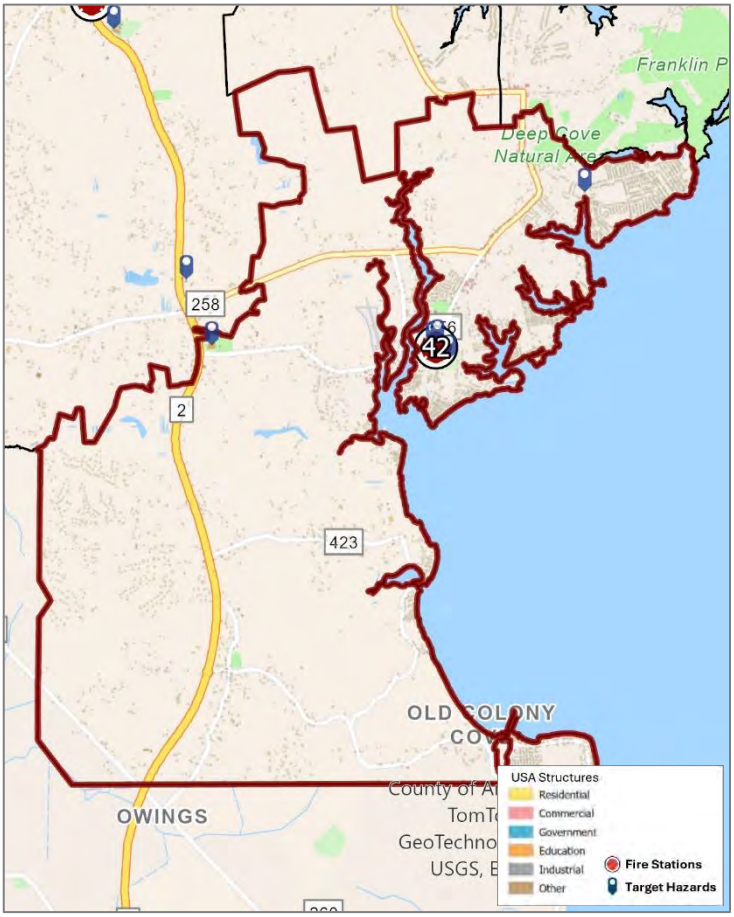
Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	613	2,850	849	4,312
Spanish	0	83	0	83
Spanish & English Well	0	83	0	83
Spanish & English Not Well	0	0	0	0
Spanish & No English	0	0	0	0
Indo-European	12	23	16	51
Indo-European & English Well	12	23	16	51
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	0	0	36	36
Asian-Pacific Isl & English Well	0	0	36	36
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	0	0
Other Language	0	0	0	0
Other Language & English Well	0	0	0	0
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



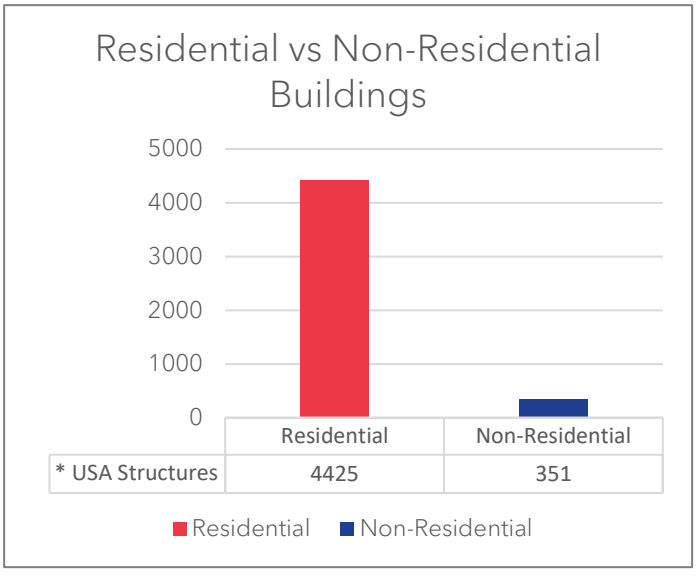
Company 42 Deale





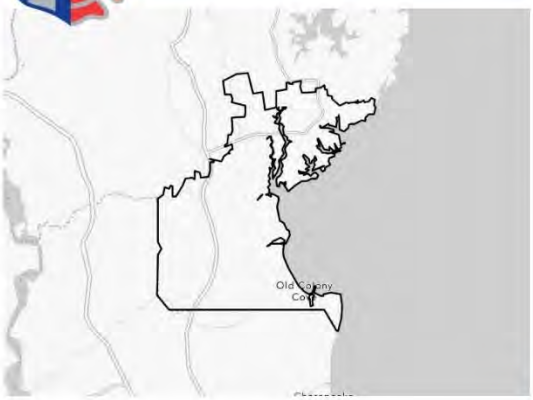
Frequent Responses

ADDRESS	TOTAL RESPONSES
6007 DRUM POINT RD	171
5946 ROCKHOLD DR	50
5458 DEALE CHURCHTON RD	47
7161 LAKE SHORE DR	44
230 JEWELL RD	37



COMMUNITY PROFILE

Company: 42



8,332
Population

3,364
Households

2.48
Avg Size Household

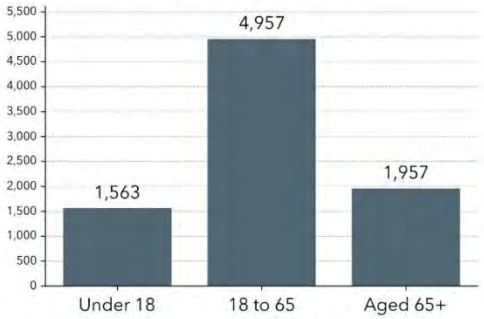
AT RISK POPULATION

629	1,957	30
Households With Disability	Population 65+	Households Without Vehicle

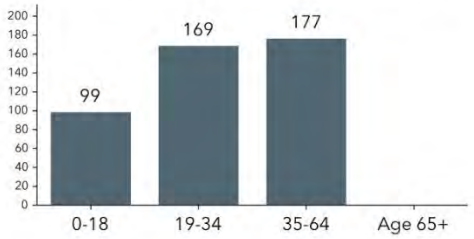
HOUSING PROFILE

46.1	$125,325	$599,619
Median Age	Median Household Income	Median Home Value

POPULATION BY AGE



POPULATION NO HEALTH INSURANCE (ACS)



POPULATION AND BUSINESSES

6,460	291	1,988
Daytime Population	Total Businesses	Total Employees

POVERTY AND LANGUAGE

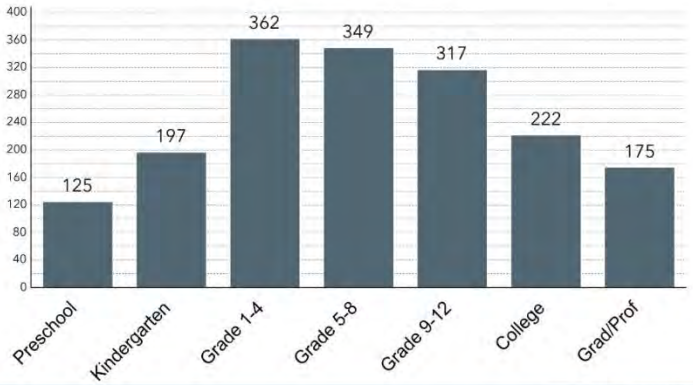
5%	167	0
Households Below the Poverty Level	Households Below the Poverty Level	Pop 65+ Speak Spanish & No English

WEALTH PROFILE

202	83	34
Wealth Index	Housing Affordability	Diversity Index

Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	1,163	4,836	1,405	7,404
Spanish	96	146	43	285
Spanish & English Well	11	102	35	148
Spanish & English Not Well	85	44	8	137
Spanish & No English	0	0	0	0
Indo-European	0	24	17	41
Indo-European & English Well	0	24	17	41
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	0	0	8	8
Asian-Pacific Isl & English Well	0	0	8	8
Asian-Pacific Isl & English Not Well	0	0	0	0
Asian-Pacific Isl & No English	0	0	0	0
Other Language	0	0	0	0
Other Language & English Well	0	0	0	0
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

SCHOOL ENROLLMENT (ACS)



Service Delivery & Performance

A significant component for evaluation of risk within the community is based on service delivery and performance. AACOFD provides a plethora of services to the community and consistently delivers quality services in a timely manner to residents and visitors. For leadership and elected officials to best understand service delivery and performance, the following categories were analyzed and compared to industry best practices and industry standards.

- Service Demand
- Resource Distribution
- Resource Concentration
- Resource Reliability
- Response Performance
- Automatic/Mutual Aid

Service Demand Analysis

When the residents and visitors to Anne Arundel County call 911, AACOFD units respond to provide a variety of services. This process is referred to in the fire service industry as service demand—in other words the incidents to which the fire department responds. Ultimately, regardless of other services offered to the community by AACOFD, this is the primary mission of the department.

Incident Type Analysis

From the origins of fire departments throughout all cultures, the requests for services have morphed greatly from the simple response to fire incidents. With so many types of incidents, fire department leadership are challenged to ensure personnel have the appropriate training, equipment, knowledge, and skills to handle each request for service.

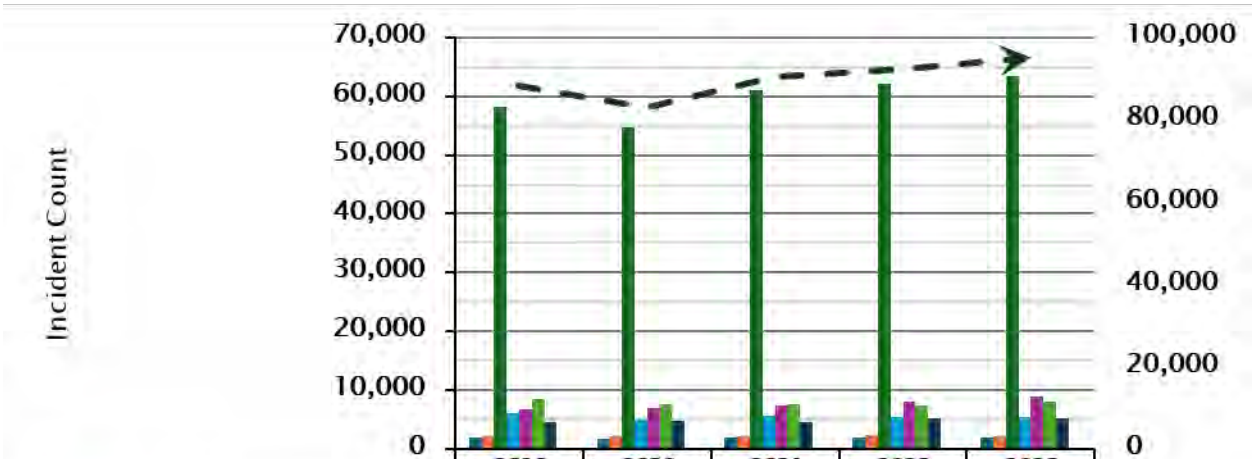
To best prepare fire department leaders throughout the nation with an ability to meet this challenge, the National Fire Incident Reporting System (NFIRS) was developed to create a common basis for quantification and qualification of service demand. Within NFIRS, there are 178 separate incident types which are assigned a three-digit code. These codes are then grouped into series based on the first digit of each code as illustrated in the following figure.

Figure 18. NFIRS Incident Series

Incident Series	Incident Heading
100–Series	Fires
200–Series	Overpressure Rupture, Explosion, Overheat (No Fire)
300–Series	Rescue and Emergency Medical Service (EMS) Incidents
400–Series	Hazardous Condition (No Fire)
500–Series	Service Call
600–Series	Canceled, Good Intent
700–Series	False Alarm, False Call
800–Series	Severe Weather, Natural Disaster
900–Series	Special Incident Type

The first view of incident type considers the year-to-year progression of service demand not just by total number of incidents, but by each NFIRS series. As illustrated in the following figure, there was an overall increase of 7.4% in service demand from 2019 to 2023 which included a decrease of 6.3% in 2020, followed by increases of 9% in 2021, 2.2% in 2022, and 2.9% in 2023. Most departments throughout the nation experienced a similar decline in service demand during 2020 due to impacts from the COVID-19 pandemic.

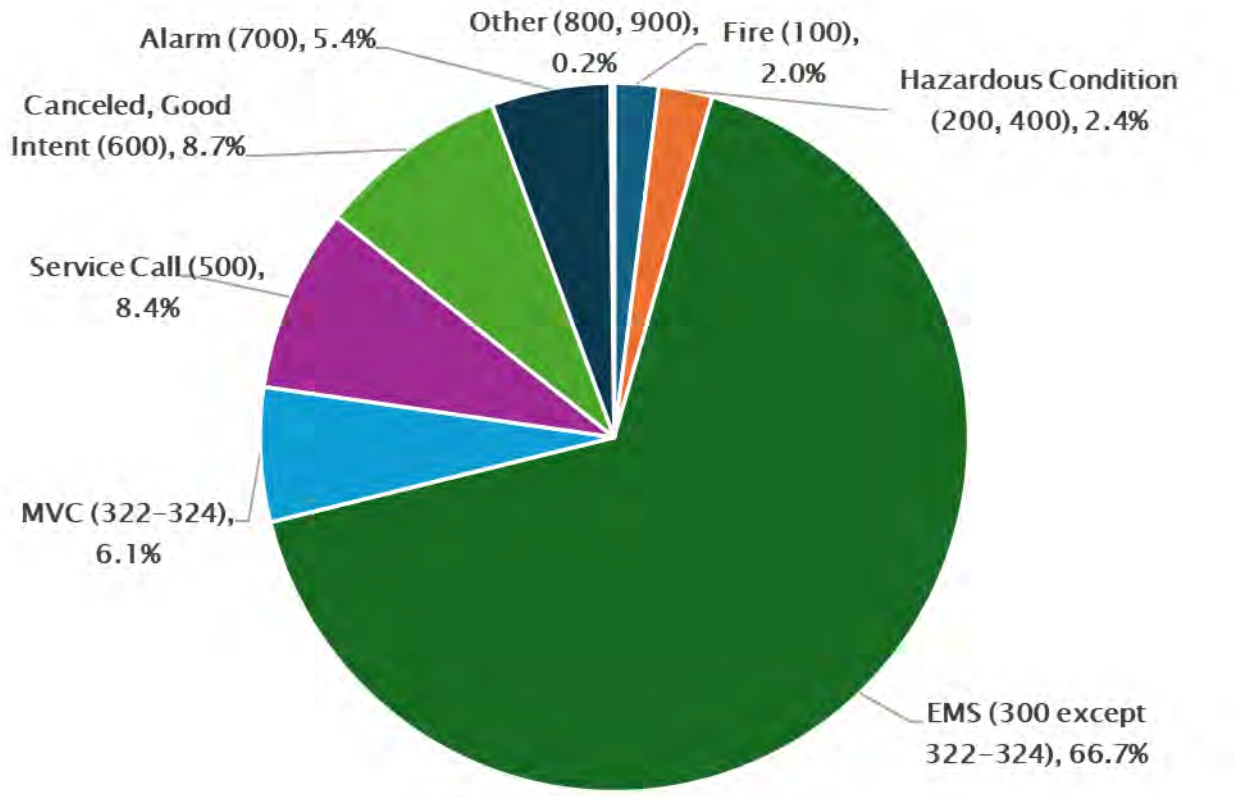
Figure 19. AACOFD Service Demand by NFIRS Series, 2019-2023



	2019	2020	2021	2022	2023
Fire (100)	1,955	1,671	1,827	1,808	1,799
Hazardous Condition (200, 400)	2,178	2,157	2,176	2,261	2,169
EMS (300 except 322-324)	58,268	54,690	61,059	62,184	63,415
MVC (322-324)	6,096	4,963	5,670	5,413	5,374
Service Call (500)	6,642	6,878	7,326	8,003	8,948
Canceled, Good Intent (600)	8,542	7,645	7,529	7,338	7,988
Alarm (700)	4,601	4,721	4,620	5,226	5,213
Other (800, 900)	181	184	157	142	110
Total	88,463	82,909	90,364	92,375	95,016

Another view of the same dataset considers how each NFIRS series compares to the overall service demand, expressed as a percentage. As illustrated in the following figure, the greatest demand for service is for emergency medical services (NFIRS 300 series) at 72.8%, which is within the range found for most fire departments.

Figure 20. AACOFD Service Demand by NFIRS Series, 2019–2023



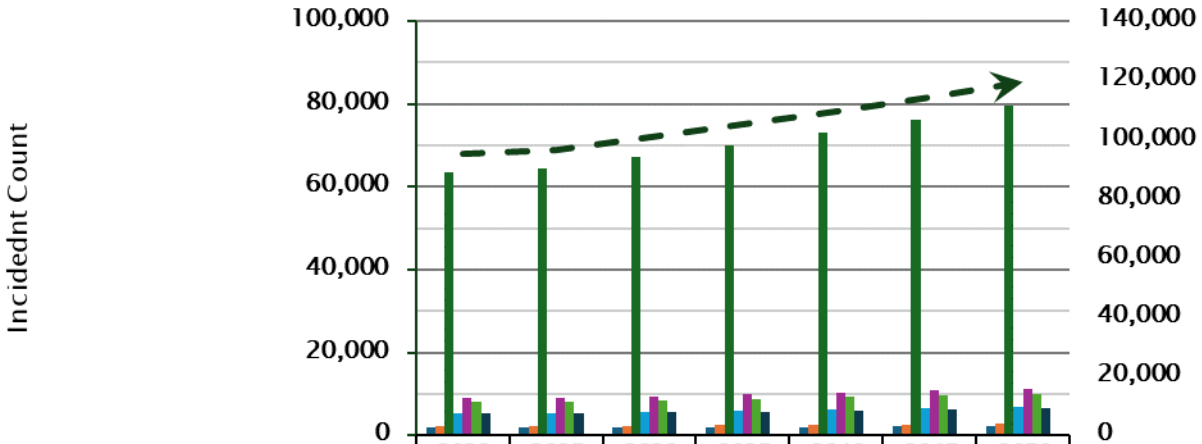
Future Service Demand

One benefit from understanding the current and historical service demand is the ability to predict potential service demand in the future. This prediction enables leadership and elected officials to plan for the resources needed to meet that demand within their community.

Future Service Demand by Population

This method of projecting future service demand analyzes the number of incidents per 1,000 population within the community. Then, through analysis of the historical population changes within the community obtained from the United States Census Bureau, a projection of future population is extrapolated based on the compounded annual growth rate, the incidents/1,000 population is applied to achieve the total number of incidents each year, which is then distributed based on the incident frequency percentages. The following figure illustrates the projected AACOFD service demand based on changes in population and provides the lower estimate.

Figure 21. AACOFD Projected Service Demand by Population Change, 2025–2050

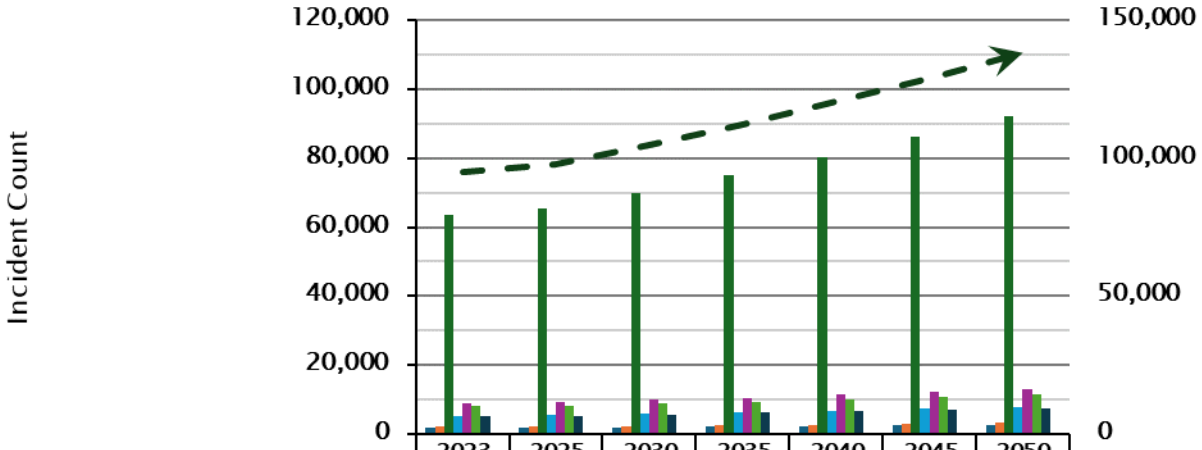


	2023	2025	2030	2035	2040	2045	2050
Fire (100)	1,799	1,830	1,908	1,991	2,076	2,166	2,259
Hazardous Condition (200, 400)	2,169	2,206	2,301	2,400	2,503	2,611	2,724
EMS (300 except 322–324)	63,415	64,494	67,273	70,171	73,194	76,348	79,637
MVC (322–324)	5,374	5,465	5,701	5,947	6,203	6,470	6,749
Service Call (500)	8,948	9,100	9,492	9,901	10,328	10,773	11,237
Canceled, Good Intent (600)	7,988	8,124	8,474	8,839	9,220	9,617	10,031
Alarm (700)	5,213	5,302	5,530	5,768	6,017	6,276	6,547
Other (800, 900)	110	112	117	122	127	132	138
Total	95,016	96,633	100,796	105,139	109,669	114,394	119,322

Future Service Demand by Historical Change

This method of projecting future service demand analyzes the historical percentage of change during the study period to determine the compounded annual growth rate. This figure is then extrapolated over time to provide the total number of incidents each year, which is then distributed based on the incident frequency percentages. The following figure illustrates the projected AACOFD service demand based on historical changes in service demand and provides the upper estimate.

Figure 22. AACOFD Projected Service Demand by Historical Change, 2025–2050



	2023	2025	2030	2035	2040	2045	2050
Fire (100)	1,799	1,851	1,984	2,127	2,280	2,444	2,620
Hazardous Condition (200, 400)	2,169	2,231	2,392	2,564	2,749	2,947	3,159
EMS (300 except 322–324)	63,415	65,241	69,936	74,970	80,366	86,150	92,351
MVC (322–324)	5,374	5,529	5,927	6,353	6,810	7,301	7,826
Service Call (500)	8,948	9,206	9,868	10,578	11,340	12,156	13,031
Canceled, Good Intent (600)	7,988	8,218	8,809	9,444	10,123	10,852	11,633
Alarm (700)	5,213	5,363	5,749	6,163	6,606	7,082	7,592
Other (800, 900)	110	113	121	130	139	149	160
Total	95,016	97,751	104,787	112,329	120,414	129,080	138,371

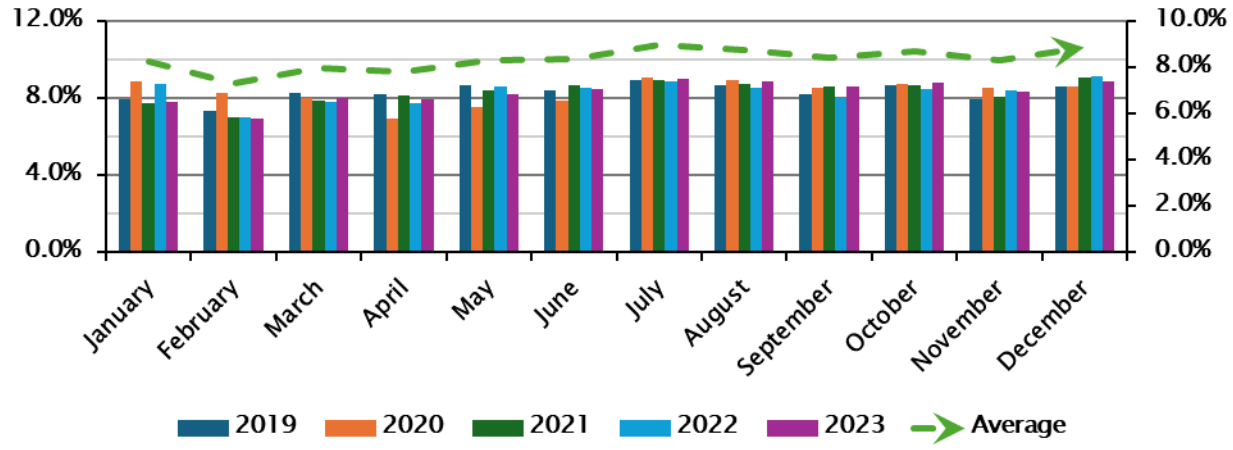
Temporal Analysis

Understanding the types of incidents within the community is a key component when planning for training and equipment. When incidents occur (temporal analysis) is a key component when considering staffing for response and scheduling non-incident activities to lessen their impact on responding to calls for service. Non-incident activities may include, but are not limited to:

- Pre-incident planning
- Training
- Station maintenance
- Apparatus maintenance
- Fire hose testing
- Fire hydrant testing
- Public education

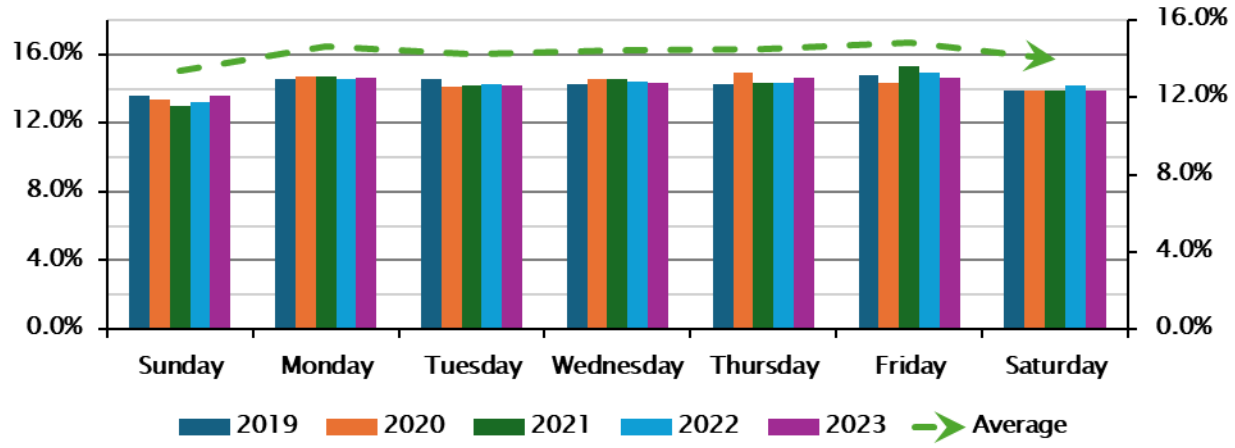
The first view of when incidents occur considers each month of the year compared to overall service demand, is expressed as a percentage. The greatest percentage of service demand occurs in July at 9%, closely followed by August, October, and December. The lowest percentage of service demand occurs in February at 7.3%, closely followed by April.

Figure 23. AACOFD Service Demand by Month, 2019-2023



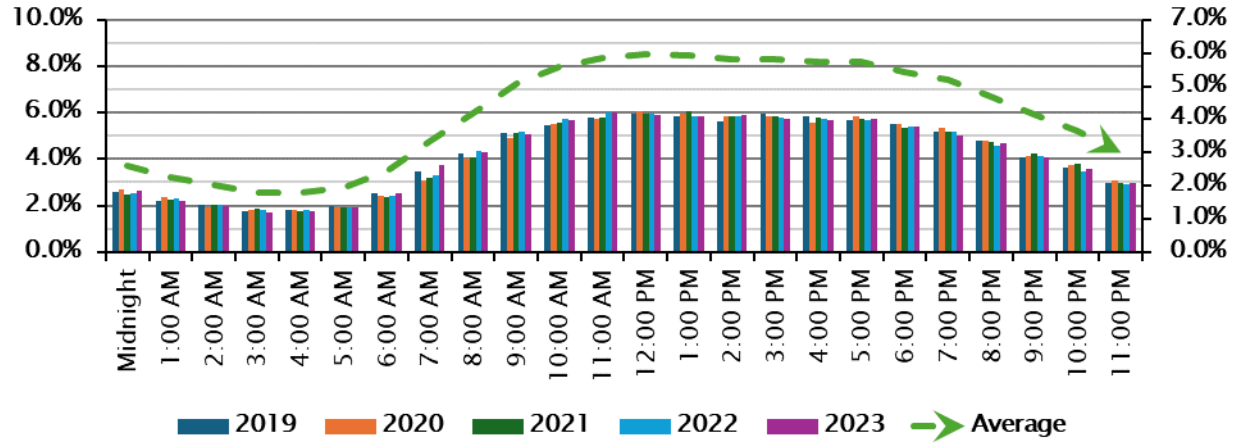
The next view of when incidents occur considers each day of the week compared to overall service demand, expressed as a percentage. The greatest percentage of service demand occurs on Friday at 14.8%. The lowest percentage of service demand occurs on Sunday at 13.4%. Weekdays range between 14.3% and 14.8%.

Figure 24. AACOFD Service Demand by Day, 2019–2023



The final view of when incidents occur considers each hour of the day compared to overall service demand, expressed as a percentage. The lowest percentage of service demand occurs at 3:00 AM at 1.8%, coinciding with the time that the majority of the community is at rest in their homes. Then, as the community begins to prepare for the day, service demand increases slightly, with a greater rate of increase as the community leaves their homes for the day. This trend continues until 12:00 PM, the time that the greatest percentage of service demand occurs, followed by a relatively level demand for service throughout the afternoon. By 6:00 PM, as the community completes their daily tasks and moves into evening events, service demand decreases gradually. Later in the evening, this steepens until returning to the lowest point.

Figure 25. AACOFD Service Demand by Hour, 2019–2023



While the preceding figure illustrates that demand for service is at its lowest during the late night and early hours, leadership should ensure adequate staffing is still in place to quickly respond and mitigate structure fire incidents. Based on a national study recently published, from 2018 to 2020, the occurrence of residential structure fires with fatalities were highest between midnight and 1:00 AM. The 8-hour peak period (11:00 PM to 7:00 AM) accounted for 45% of residential fatal fires[2].

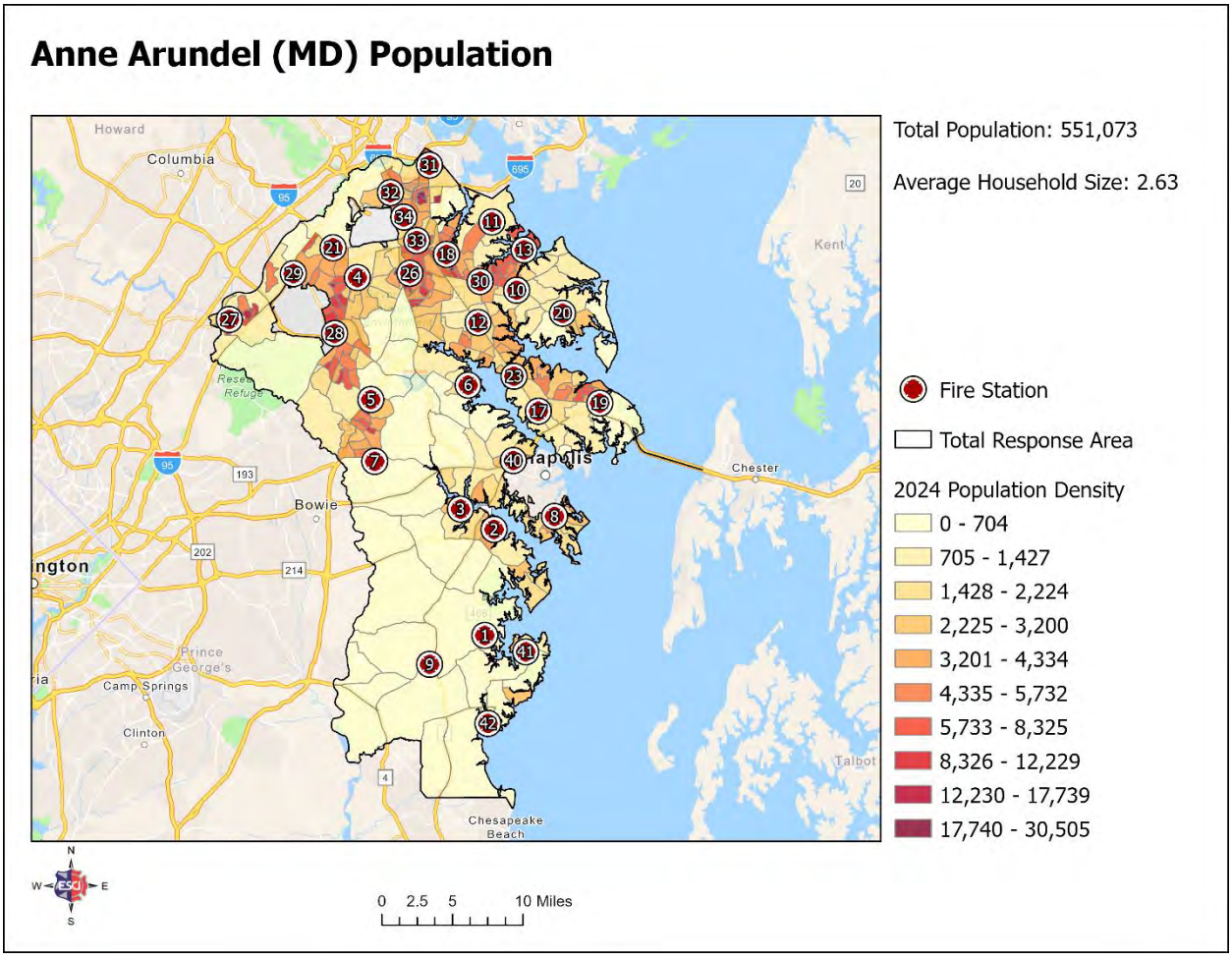
[2] *Fatal Fires in Residential Buildings (2018–2020), Topical Fire Report Series Volume 22, Issue 2 /June 2022, U.S. Department of Homeland Security, U.S. Fire Administration, National Fire Data Center.*

Geographic Analysis

Another essential piece of information for leadership and elected officials is knowledge of where incidents occur within the community. This, along with comparison to industry standards and best practices identified in the next section, are an important factor for consideration location of response resources within the community. When incidents occur, they are closely related to the location of the population, which is a logical correlation, as 72.8% of incidents are for emergency medical services (directly related to people more so than to property). In other words, where there is greater density of population, there is greater density of service demand.

Population density is determined through data obtained from the U. S. Census Bureau, at the census block group level. As illustrated in the following figure, the greater population density is mainly in the northern parts of the service area.

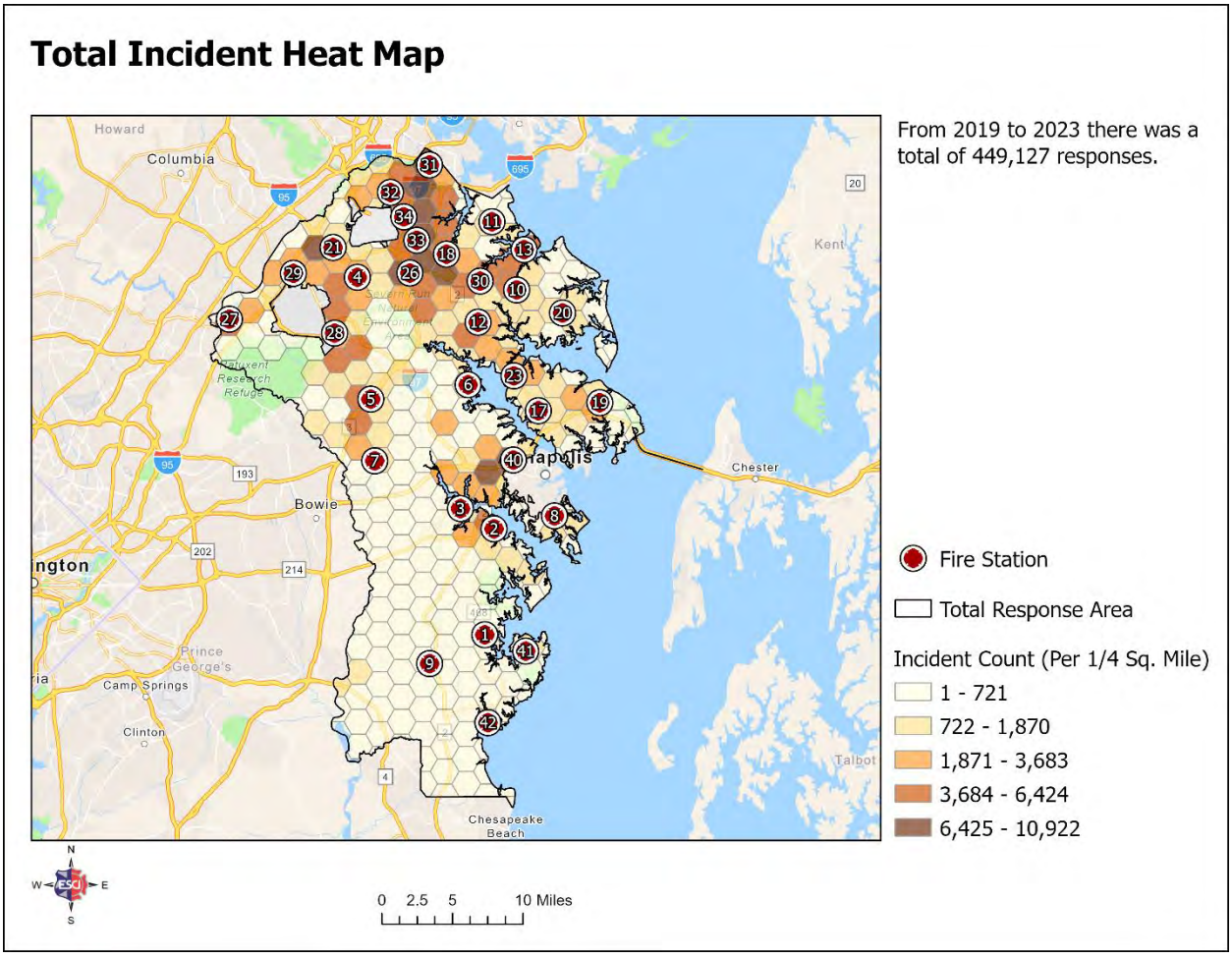
Figure 26. Anne Arundel Population Density, 2024



Incident density is determined through locating all incidents within the dataset provided by AACOFD within geographic information system (GIS) software and then calculating the mathematical density. For each of the incident density figures, hexagons shaded with darker colors are the areas of greatest density and those shaded with lighter colors are the areas of lowest density.

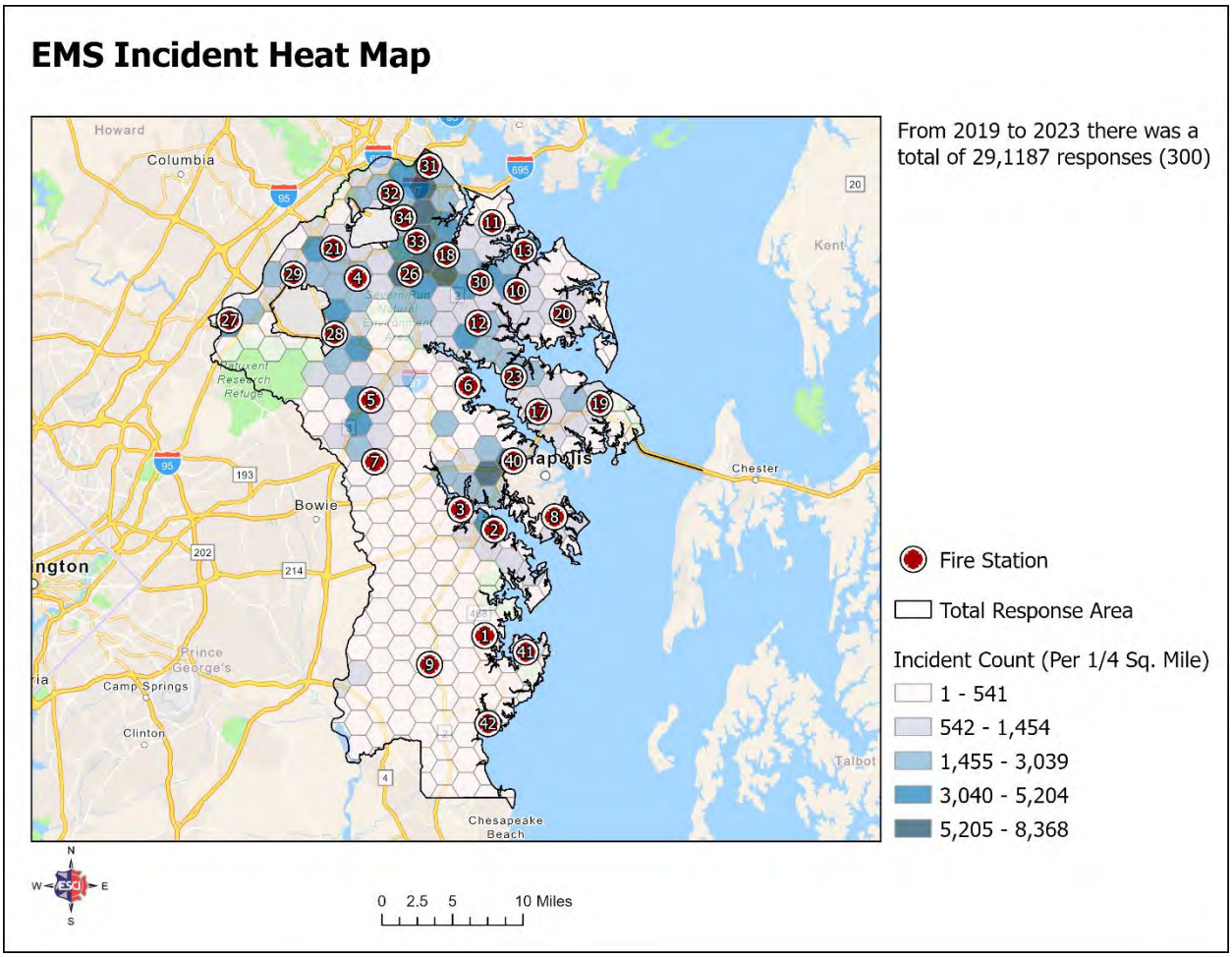
The first view of incident density considers the entirety of service demand (all NFIRS series). As illustrated in the following figure, the areas with a greater incident density are located in the same areas with greater population density.

Figure 27. AACOFD Incident Density (All Incidents), 2019–2023



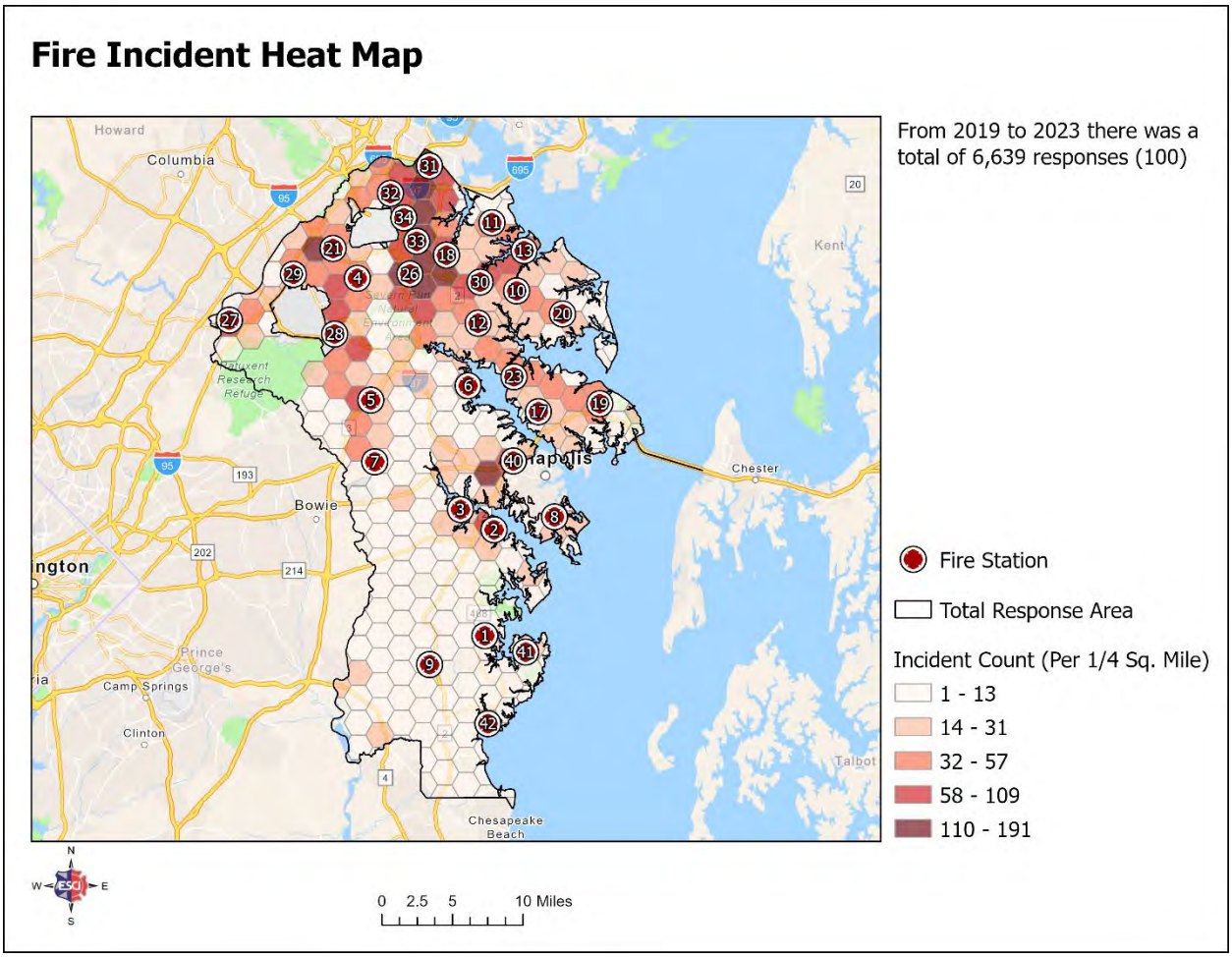
The second view of incident density considers only emergency medical services incidents (NFIRS 300-series). As this is the greatest percentage of service demand, it is a key view of service demand, but it also requires the fewest number of resources per incident response. As illustrated in the following figure, EMS incidents follow the same pattern.

Figure 28. AACOFD Incident Density (EMS Incidents), 2019-2023



The final view of incident density considers only fire incidents (NFIRS 100-series). While this is one of the lowest percentages of service demand, it is also one of the incident series which requires the greatest number of resources per incident response. As illustrated in the following figure, fire incidents follow the same pattern.

Figure 29. AACOFD Incident Density (Fire Incidents), 2019–2023



Resource Distribution Analysis

While location of service demand is a key factor for leadership and elected officials to consider when determining optimum location of resources (people and apparatus), there are also various industry standards and best practices that should be considered as well.

ISO Distribution

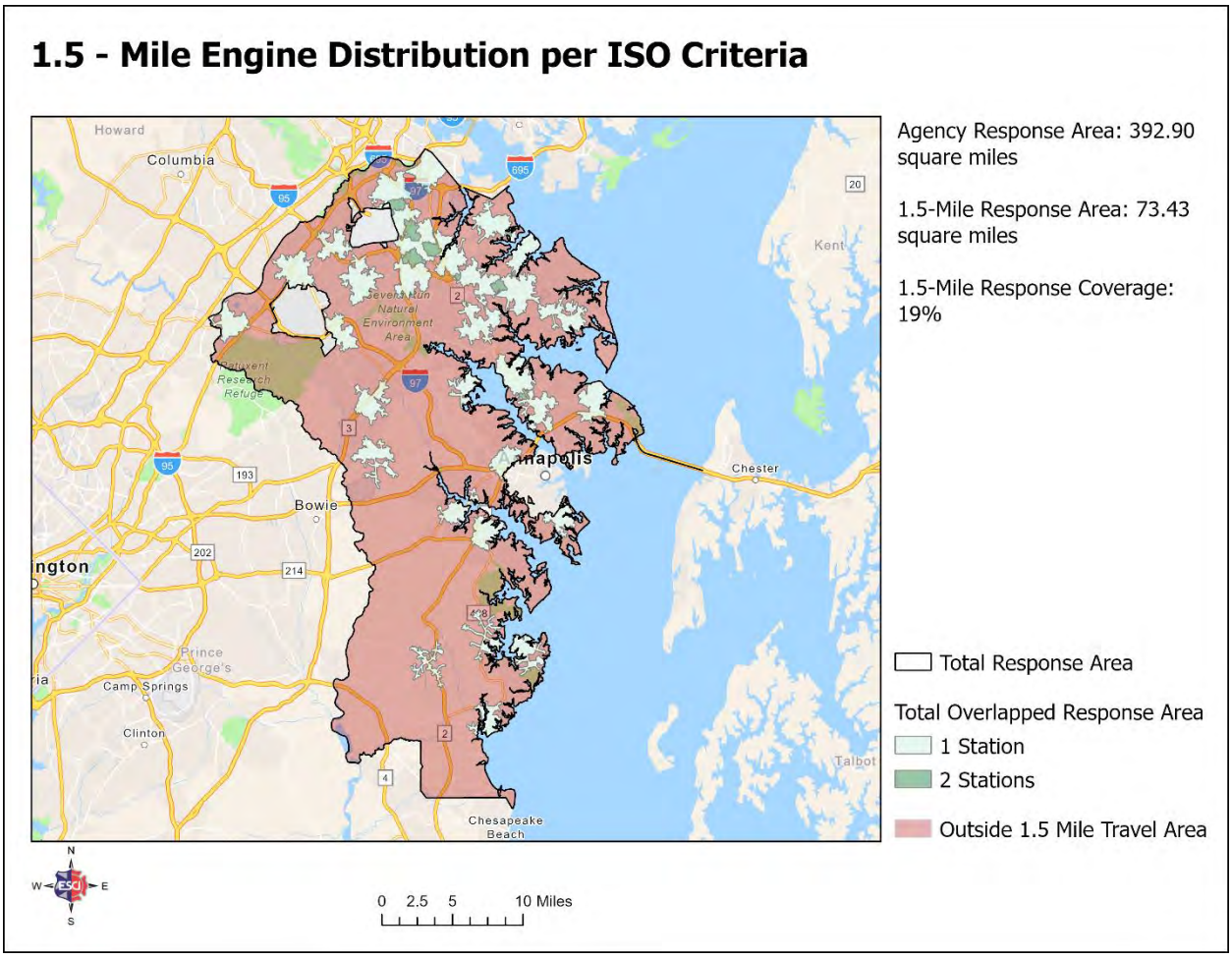
The Insurance Services Office, Inc. (ISO) is a national insurance industry organization that evaluates fire protection for communities across the country. ISO assesses all areas of fire protection as broken down into four major categories including emergency communications, fire department, water supply, and community risk reduction. Following an on-site evaluation, an ISO rating, or specifically, a Public Protection Classification (PPC®) number is assigned to the community ranging from 1 (best protection) to 10 (no protection). The PPC® score is developed using the Fire Suppression Rating Schedule (FSRS), which outlines sub-categories of each of the major four, detailing the specific requirements for each area of evaluation.

A community's ISO rating is an important factor when considering fire station and apparatus concentration, distribution, and deployment due to its effect on the cost of fire insurance for the residents and businesses. To receive maximum credit for station and apparatus distribution, ISO evaluates the percentage of the community (contiguously built upon area) that is within specific distances of fire stations, central water supply access (fire hydrants), engine/pumper companies and aerial/ladder apparatus. The most recent evaluation of AACOFD by ISO was completed in 2017, with a score of 5/10 for the FDS and 3/10 for the FPSA.

1.5-Mile Distribution

Within the evaluation by ISO, analysis determines the percentage of the service area (primarily focused on structures) that are located within a 1.5-mile travel distance of a staffed fire engine. As illustrated in the following figure, 19% of the AACOFD service area is within 1.5-miles of a staffed fire engine.

Figure 30. AACOFD Engine Distribution per ISO Criteria

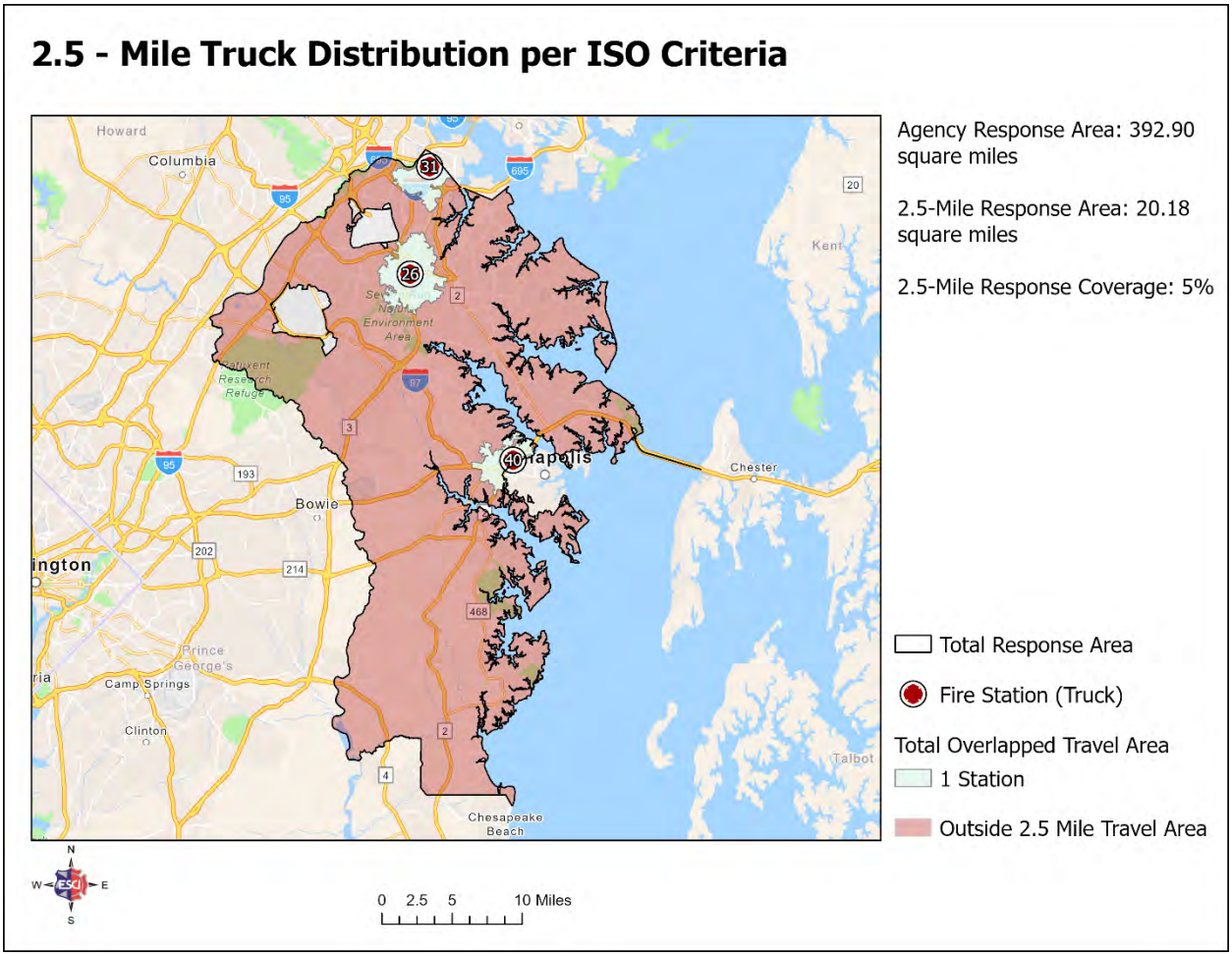


2.5-Mile Distribution

In many jurisdictions, ladder companies are deployed only to certain types of incidents and are not necessarily considered the first due unit for all other incident types. The use of aerial apparatus is more specifically needed in areas of the community where there are five or more buildings of three stories (or 32-feet) or more in height, or with five or more buildings requiring a needed fire flow of greater than 3,500 gallons per minute, or five or more buildings meetings any combination of these requirements.

Within the evaluation by ISO, analysis determines the percentage of the service area (primarily focused on structures) that are located within a 2.5-mile travel distance of an aerial apparatus. As illustrated in the following figure, 5% of the AACOFD service area is within 2.5-miles of an aerial apparatus.

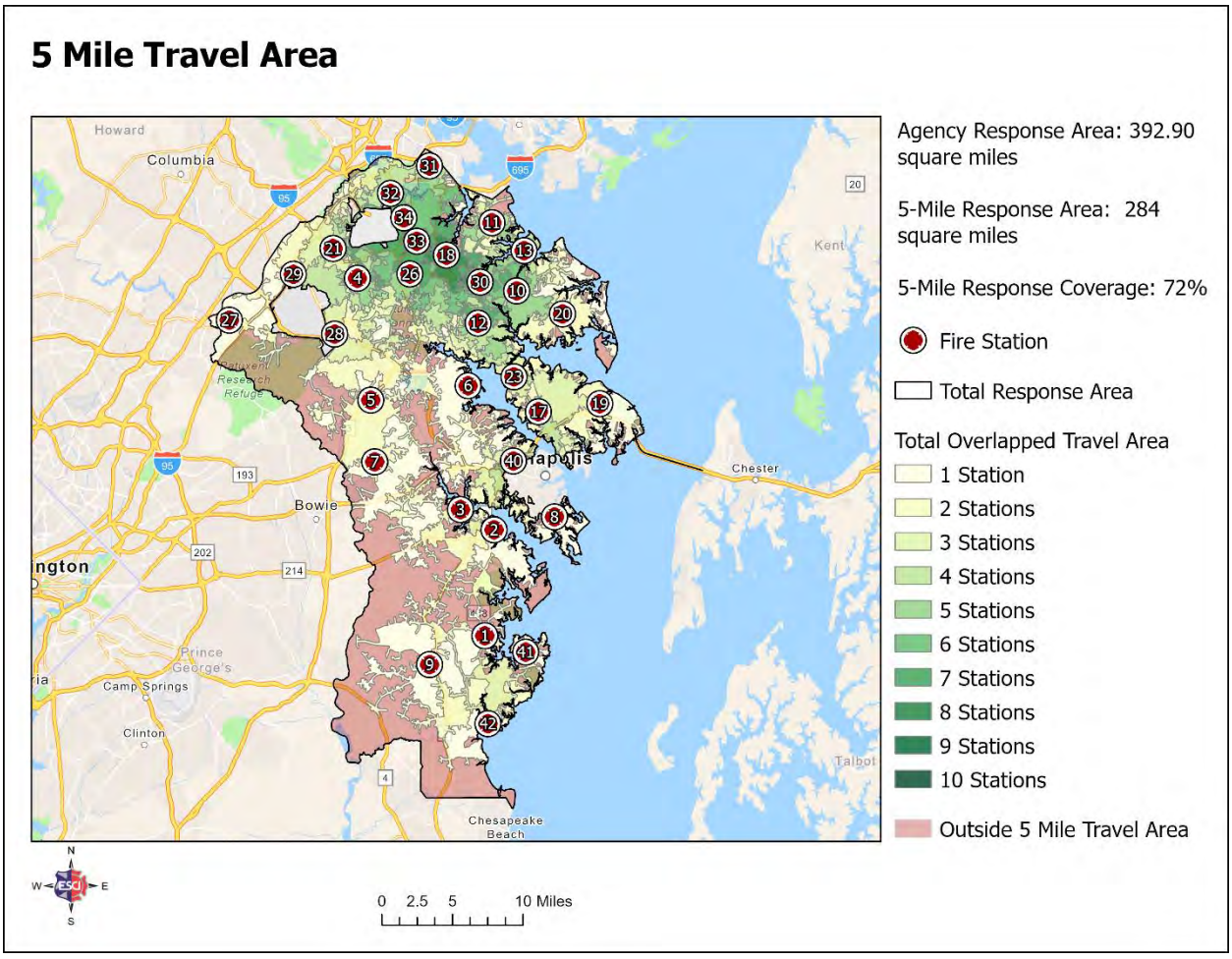
Figure 31. AACOFD Aerial Distribution per ISO Criteria



5-Mile Distribution

Within the evaluation by ISO, analysis determines the percentage of the service area (primarily focused on structures) that are located within a 5-mile travel distance of a fire station. As illustrated in the following figure, 73% of the AACOFD service area is within 5-miles of a fire station.

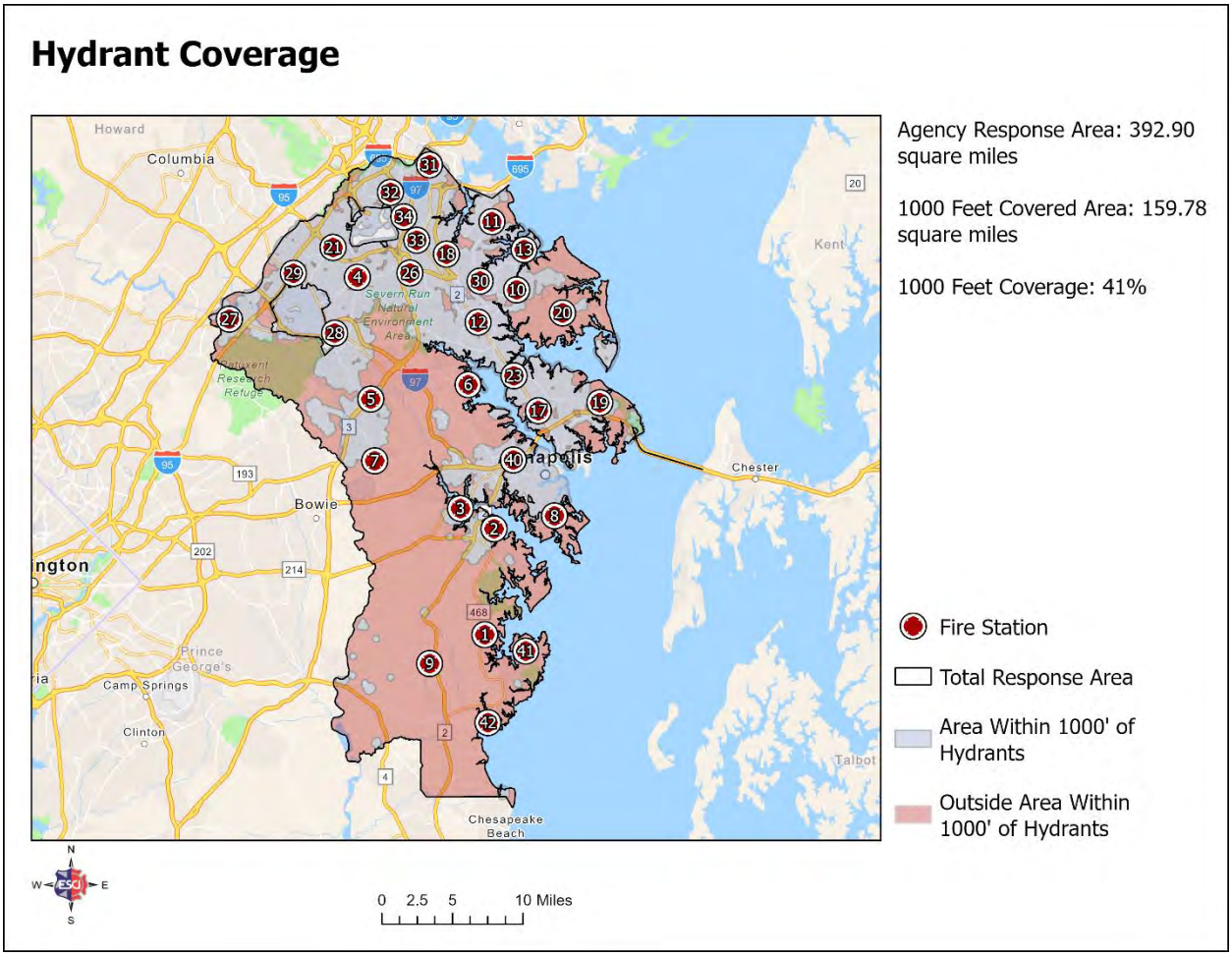
Figure 32. AACOFD Station Distribution per ISO Criteria



Water Supply

Within the evaluation by ISO, analysis determines the percentage of the service area (primarily focused on structures) that are located within a 1,000-foot travel distance of a fire hydrant. Structures outside a 1,000-foot radius of a fire hydrant are subject to a lower Public Protection Classification® rating than areas with adequate hydrant coverage, thus signifying limited fire protection. Exceptions are made when a fire department can show that either a dry hydrant or a suitable water tanker operation is possible to provide the needed volume of water for fire suppression activities for a specific period. The following figure illustrates that 41% of the AACOFD service area is within 1,000 feet of a fire hydrant.

Figure 33. AACOFD Hydrant Distribution per ISO Criteria

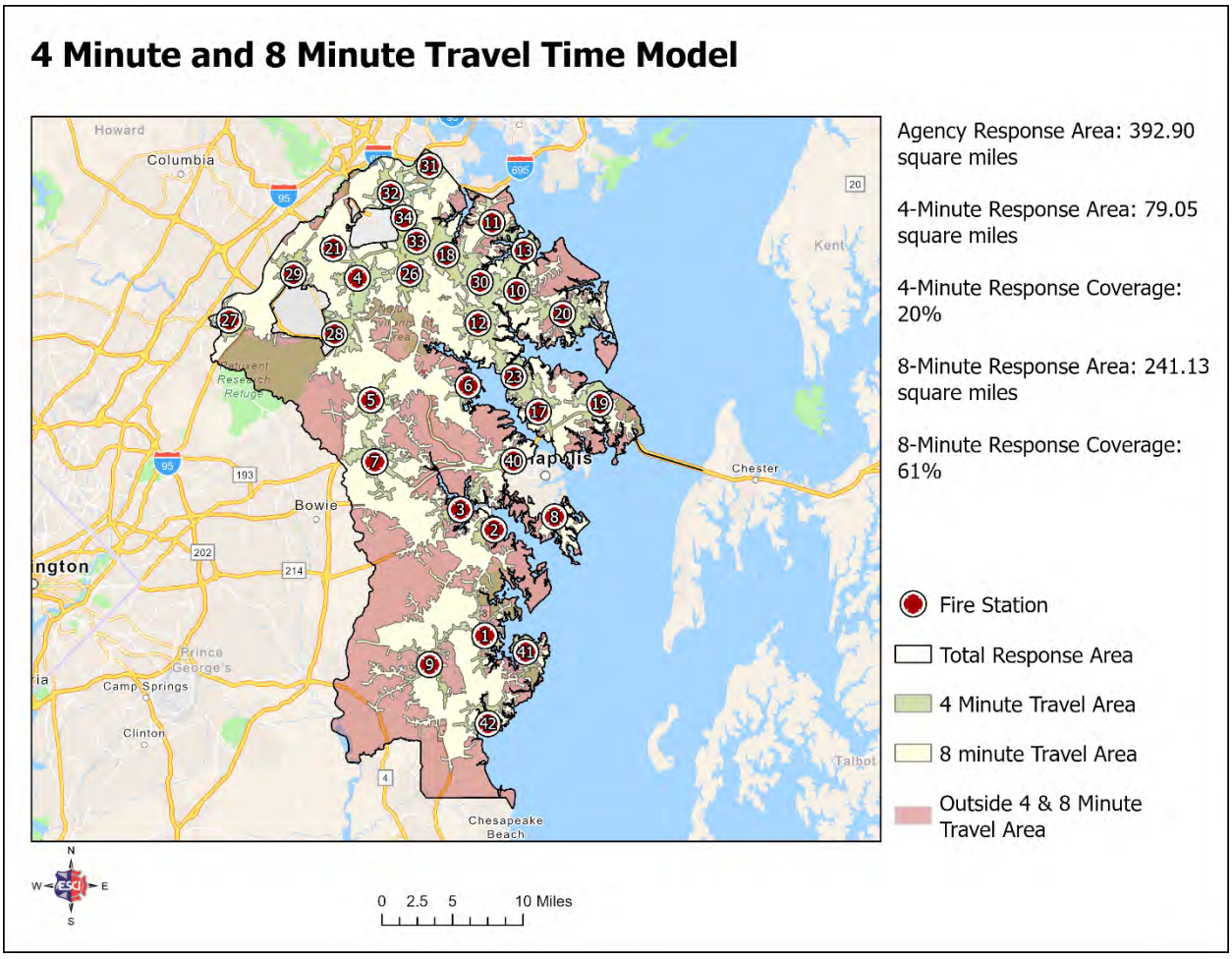


NFPA Distribution

The National Fire Protection Association (NFPA) is an industry trade association that develops and provides standards and codes for fire departments and emergency medical services for use by local governments. One of these standards, 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*, serves as a national consensus standard for career fire department performance, operations, and safety. Within this standard, a travel time of 240 seconds, or 4 minutes, is identified as the benchmark for career departments to reach emergency incidents within their jurisdiction, with the first arriving unit—equivalent to the 1.5-mile travel distance from ISO for fire engines. Additionally, the balance of the response (called the effective response force or ERF) is required to arrive at the incident within 480 seconds, or 8 minutes—equivalent to the 2.5-mile travel distance from ISO for aerial apparatus.

When analyzing this measure, travel time is calculated using the posted speed limits and adjusted for negotiating turns, intersections, and one-way streets. Unshaded pockets indicate that the area falls outside of the model's maximum extension from the road network. Note that other impedance factors, such as traffic congestion, road closures, or weather conditions, are not factored into this analysis. Rarely are conditions perfect. As illustrated in the following figure, 20% of the AACOFD service area falls within the 4-minute travel time of a fire station and 61% falls within the 8-minute travel time of a fire station.

Figure 34. AACOFD 4/8-Minute Travel Time per NFPA Criteria



To provide leadership with a view of actual travel times, the following figure illustrates travel time percentages categorized by 4-minute increments during the calendar year 2023.

Travel Time Category	Percentage
Less than 4 Minutes	61.8%
4-8 Minutes	33%
8-12 Minutes	4.4%
Greater than 12 Minutes	0.8%

Resource Concentration Analysis

When considering higher-risk incidents such as structure fires, the arrival of the first unit is important, but the arrival of sufficient resources is a key factor as well. The arrival of sufficient resources within a specific timeframe is referred to as an effective response force (ERF) and provides the best opportunity to decrease injury, death, and property damage, where possible. The following figure illustrates the ERF recommended through standards such as 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* and the Commission on Fire Accreditation (CFAI) Standards of Cover.

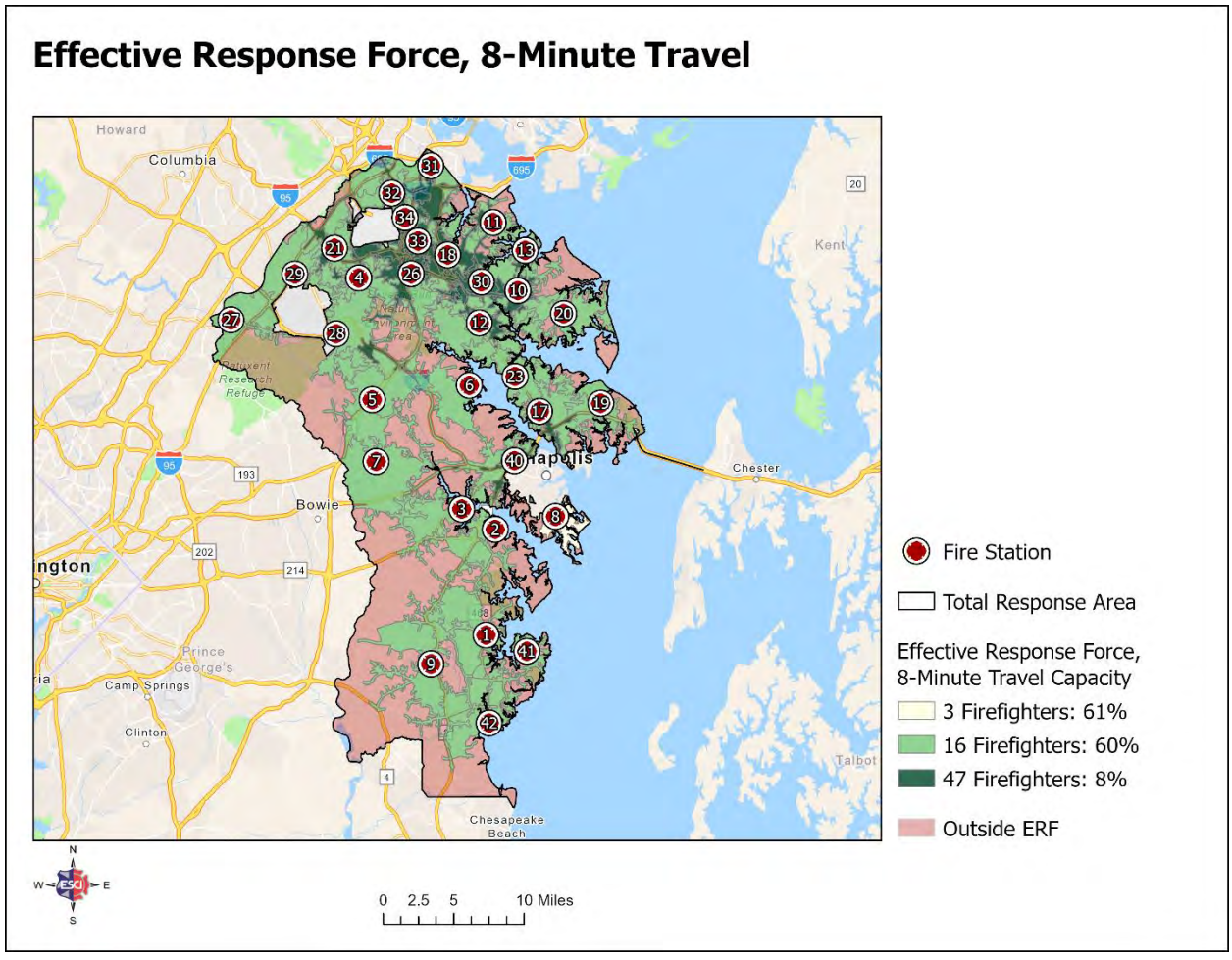
Figure 35. ERF Recommendations Based on Risk

Function/Task	Single-Family Residence (2,000 ft²)	Open Air Strip Shopping Center (13,000-196,000 ft²)	3-Story Garden Apartment (1,200 ft²)
Command	1	2	2
Apparatus Operator	1	2	2
Handlines (2 members each)	4	6	6
Support Members	2	3	3
Victim Search and Rescue team	2	4	4
Ground Ladders/Ventilation	2	4	4
Aerial Ladder Operator (If ladder used)	(1)	(1)	(1)
Initial Rapid Intervention Team	4	4	4
Initial Medical Care Component	N/A	2	2
Total	**16 (17)**	**27 (28)**	**27 (28)**

With consideration of the number of on-duty firefighters located at each station, ESCI determined the density of firefighters that can be assembled within an 8-minute travel time (based on NFPA 1710). Where the 8-minute travel time overlapped between stations, the density increases. When the department is unable to achieve ERF within the 8-minute travel time, the incident commander must determine which tasks may be delayed until arrival of additional units and prioritize order of task completion.

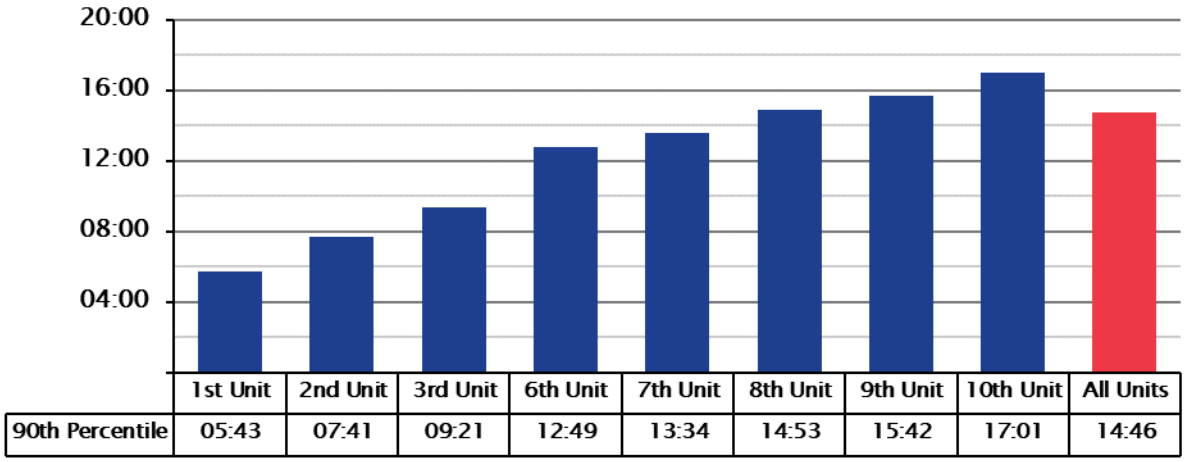
The following figure illustrates the various density values and corresponding percentage of the service area, with the darker colors representing the greatest number of firefighters arriving within the 8-minute travel time.

Figure 36. AACOFD Effective Response Force



As already discussed in reference to the 4/8-minute travel time standard, the ERF illustrated in the preceding figure assumes all units are at their home station at the time of dispatch. To assist leadership in evaluating effectiveness, the following figure illustrates the order of arrival of units to structure fires during the study period. This analysis only included structure fires (NFIRS incident type 111 and 112) to which at least three units arrive, and units that responded emergency response (lights/sirens).

Figure 37. AACOFD Resource Order of Arrival, 2019–2023



	1st Unit	2nd Unit	3rd Unit	6th Unit	7th Unit	8th Unit	9th Unit	10th Unit	All Units
90th Percentile	05:43	07:41	09:21	12:49	13:34	14:53	15:42	17:01	14:46

Resource Reliability Analysis

Geographic location of resources and geographic location of incidents play a significant role in reliability of response within the community. However, two additional factors that may also have a role in reliability of response include workload and first unit arrival by zone units.

Workload

Current best practices within the fire service illustrate that the most valuable measure of workload is to determine the amount of time a unit is committed to incidents—versus just a simple count of incidents. While there are additional tasks that create workload for units and personnel, many of them do not greatly impact the ability of the unit to respond to an incident. The total commitment time is compared to the overall time the unit is in service during the year, expressed as a percentage of the whole.

While there are limited formal performance measures to use as a target measure, in May 2016, Henrico County (VA) Division of Fire published an article after studying their

department's EMS workload.[3] As a result of the study, Henrico County Division of Fire developed a general commitment factor scale for their department. The next figure is a summary of the findings as it relates to commitment factors and may be utilized by AACOFD leadership as a basis for developing internal workload measures.

Figure 38. Commitment Factors | Henrico County (VA) Division, 2016

Factor	Indication	Description
16%–24%	Ideal Commitment Range	Personnel can maintain training requirements and physical fitness and can consistently achieve response time benchmarks. Units are available to the community more than 75% of the day.
25%	System Stress	Community availability and unit sustainability are not questioned. First-due units are responding to their assigned community 75% of the time, and response benchmarks are rarely missed.
26%–29%	Evaluation Range	The community served will experience delayed incident responses. Just under 30% of the day, first-due ambulances are unavailable; thus, neighboring responders will likely exceed goals.
30%	"Line in the Sand"	Not Sustainable: Commitment Threshold—community has less than a 70% chance of timely emergency service and immediate relief is vital. Personnel assigned to units at or exceeding 30% may show signs of fatigue and burnout and may be at increased risk of errors. Required training and physical fitness sessions are not consistently completed.

[3] *How Busy Is Busy?; Retrieved from https://www.fireengineering.com/articles/print/volume-169/issue-5/departments/fireems/how-busy-is-busy.html*

To determine the commitment time for each unit, all incidents to which units responded were analyzed and units were grouped by station locations. While most units are not at a concerning level, as illustrated in the following figures, leadership should consider further evaluation of the following units.

- MU04 at Station 4 (35%)
- MU05 at Station 5 (34.8%)
- MU10 at Station 10 (31.3%)
- MU12 at Station 12 (32.3%)
- MU18 at Station 18 (37.4%)
- A219 at Station 21 (33.4%)
- MU21 at Station 21 (30.8%)
- MU26 at Station 26 (39.9%)
- MU29 at Station 29 (31.8%)
- MU30 at Station 30 (33.3%)
- MU31 at Station 31 (35%)
- MU32 at Station 32 (33%)
- MU33 at Station 33 (37.5%)
- A349 at Station 34 (36.3%)
- A409 at Station 40 (32.1%)
- MU40 at Station 40 (31.9%)

Figure 39. AACOFD Unit Commitment Time (Station 1), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
BC03	4.6%	4.4%	3.9%	2.8%	3.1%	-1.6%
E011	1.4%	1.5%	1.1%	1.4%	1.6%	0.2%
E014	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MU01	6.2%	5.3%	8.1%	9.1%	10.1%	3.8%
RS01	0.5%	0.4%	1.7%	1.4%	1.2%	0.8%
TA01	1.0%	0.7%	0.8%	0.7%	0.6%	-0.4%
TK01	0.0%	0.0%	0.1%	0.4%	0.6%	0.6%
Cross Staffed Units						
E011/RS01	1.9%	1.9%	2.8%	2.8%	2.8%	1.0%
MU01/TA01	7.2%	6.0%	8.9%	9.8%	10.7%	3.4%

Figure 40. AACOFD Unit Commitment Time (Station 2), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A029	1.9%	3.1%	4.3%	3.1%	3.1%	1.2%
E021	7.4%	5.4%	3.5%	5.1%	6.1%	-1.3%
E022	1.2%	1.8%	3.9%	2.7%	1.3%	0.1%
MU02	22.6%	19.7%	22.3%	23.4%	25.4%	2.8%
RS02	1.3%	1.7%	1.2%	1.0%	1.2%	-0.1%
Cross Staffed Units						
E021/RS02	8.7%	7.1%	4.6%	6.1%	6.3%	-1.4%

Figure 41. AACOFD Unit Commitment Time (Station 3), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
E031	2.9%	0.0%	2.6%	4.5%	5.1%	2.1%
E032	2.0%	2.4%	0.2%	0.0%	0.0%	-2.0%
MU03	17.7%	15.3%	18.5%	20.6%	21.9%	4.3%
RE03	0.6%	3.0%	2.4%	1.1%	1.2%	0.6%
SCMD	4.2%	4.0%	3.5%	2.8%	2.4%	-1.8%
TA03	1.3%	0.8%	0.6%	0.6%	0.2%	-1.0%
Cross Staffed Units						
RE03/TA03	1.9%	3.8%	3.0%	1.7%	1.4%	-0.4%

Figure 42. AACOFD Unit Commitment Time (Station 4), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A049	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E041	7.4%	5.8%	6.3%	0.6%	1.5%	-5.9%
MU04	29.9%	27.9%	32.5%	35.2%	35.0%	5.1%
RE04	0.0%	0.0%	1.3%	8.2%	7.0%	7.0%
RS04	4.8%	5.0%	4.2%	4.4%	4.9%	0.1%
TK04	0.0%	0.1%	0.5%	0.0%	0.1%	0.1%
Cross Staffed Units						
RE04/RS04	4.8%	5.0%	5.5%	12.6%	11.9%	7.1%

Figure 43. AACOFD Unit Commitment Time (Station 5), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
BC04	5.0%	4.3%	5.4%	4.9%	4.5%	-0.5%
E051	10.6%	10.5%	12.7%	13.1%	12.1%	1.6%
MU05	34.0%	29.3%	35.8%	37.4%	34.8%	0.8%
MU05B	0.0%	0.0%	0.0%	0.0%	26.3%	26.3%
SAFE05	8.6%	7.8%	8.4%	7.7%	6.7%	-1.8%
TK05	0.1%	0.6%	0.2%	0.9%	0.2%	0.1%
TL05	0.0%	0.0%	0.0%	0.0%	0.6%	0.6%
TW05	1.9%	1.3%	1.9%	1.0%	1.4%	-0.5%
Cross Staffed Units						
E051/TW05	12.5%	11.8%	14.6%	14.1%	13.5%	1.1%

Figure 44. AACOFD Unit Commitment Time (Station 6), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A069	0.7%	0.0%	0.0%	0.7%	1.2%	0.5%
E061	3.0%	0.6%	1.2%	4.8%	4.7%	1.7%
E064	1.7%	4.2%	3.6%	0.2%	0.0%	-1.7%
MU06	14.3%	13.1%	17.9%	18.9%	17.6%	3.4%
TA06	0.0%	0.0%	0.0%	0.4%	0.6%	0.6%
Cross Staffed Units						
MU06/TA06	14.3%	13.1%	17.9%	18.9%	18.2%	4.0%

Figure 45. AACOFD Unit Commitment Time (Station 7), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A079	19.1%	16.2%	20.3%	21.5%	20.7%	1.6%
E071	2.9%	2.0%	3.4%	4.2%	8.8%	5.8%
E073	2.0%	2.1%	2.0%	1.9%	0.8%	-1.2%
RS07	2.2%	2.2%	1.3%	1.2%	4.3%	2.1%
Cross Staffed Units						
E071/RS07	5.1%	4.2%	4.7%	5.4%	13.1%	7.9%

Figure 46. AACOFD Unit Commitment Time (Station 8), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
E081	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
E084	7.6%	8.0%	8.2%	8.3%	8.2%	0.6%

Figure 47. AACOFD Unit Commitment Time (Station 9), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A099	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E091	2.9%	5.3%	5.3%	6.2%	6.7%	3.8%
E092	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E094	3.7%	0.9%	0.1%	0.0%	0.0%	-3.7%
MU09	19.2%	15.8%	17.0%	17.5%	20.5%	1.3%
TA09	0.0%	0.7%	1.0%	1.0%	1.7%	1.7%

Figure 48. AACOFD Unit Commitment Time (Station 10), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A109	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E101	3.3%	6.9%	5.3%	8.4%	8.8%	5.6%
E104	4.7%	1.1%	3.3%	0.1%	0.0%	-4.7%
MU10	28.0%	24.9%	29.5%	32.0%	31.3%	3.2%
TA10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Figure 49. AACOFD Unit Commitment Time (Station 11), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A119	4.0%	3.2%	3.7%	4.9%	2.5%	-1.6%
E112	1.7%	1.2%	0.2%	0.3%	0.0%	-1.7%
E113	1.7%	2.6%	3.8%	4.0%	4.9%	3.2%
E114	0.0%	0.0%	0.0%	0.2%	0.6%	0.6%
MU11	15.9%	14.3%	17.8%	18.9%	19.7%	3.9%
RS11	1.5%	1.4%	1.5%	1.3%	0.2%	-1.3%
Cross Staffed Units						
E113/RS11	3.2%	4.0%	5.3%	5.3%	5.1%	1.9%

Figure 50. AACOFD Unit Commitment Time (Station 12), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A129	2.5%	3.2%	3.2%	2.8%	5.1%	2.5%
E121	2.7%	3.4%	4.1%	2.2%	7.5%	4.8%
E122	7.0%	5.5%	4.9%	7.2%	2.6%	-4.4%
MU12	34.6%	29.0%	31.2%	32.3%	32.3%	-2.2%
RS12	1.5%	1.3%	1.5%	2.0%	4.2%	2.7%
Cross Staffed Units						
E121/RS12	4.2%	4.7%	5.6%	4.2%	11.7%	7.5%

Figure 51. AACOFD Unit Commitment Time (Station 13), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A139	0.9%	2.3%	0.3%	1.3%	1.1%	0.2%
E131	5.8%	6.1%	5.8%	6.0%	5.5%	-0.3%
E134	1.0%	0.7%	1.0%	0.4%	0.0%	-1.0%
MU13	21.2%	20.8%	23.6%	24.2%	24.0%	2.8%
TK13	0.4%	0.2%	0.6%	1.1%	3.7%	3.3%
Cross Staffed Units						
E131/TK13	6.2%	6.3%	6.4%	7.1%	9.2%	3.0%

Figure 52. AACOFD Unit Commitment Time (Station 17), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A179	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E171	6.4%	6.2%	6.4%	7.4%	6.7%	0.3%
E172	0.5%	0.5%	0.5%	0.4%	0.4%	-0.2%
MU17	28.6%	25.0%	24.9%	27.6%	26.0%	-2.6%

Figure 53. AACOFD Unit Commitment Time (Station 18), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A189	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E181	11.4%	11.6%	12.3%	12.7%	13.5%	2.1%
MU18	33.1%	30.3%	34.2%	35.2%	37.4%	4.3%
MU18B	11.3%	11.1%	13.4%	13.0%	13.8%	2.5%

Figure 54. AACOFD Unit Commitment Time (Station 19), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A199	19.6%	17.3%	18.5%	21.0%	14.0%	-5.7%
E191	4.9%	5.6%	4.5%	4.7%	6.2%	1.3%
E194	0.7%	1.0%	1.6%	1.5%	0.9%	0.3%
MU19	0.0%	0.0%	0.0%	0.0%	8.6%	8.6%

Figure 55. AACOFD Unit Commitment Time (Station 20), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A209	16.5%	14.4%	19.6%	20.4%	22.0%	5.4%
E201	3.4%	2.8%	0.3%	1.0%	0.5%	-2.9%
E204	1.0%	1.0%	0.7%	0.8%	1.4%	0.3%
RE20	0.0%	0.1%	3.5%	2.9%	2.6%	2.6%
Cross Staffed Units						
RE20/E204	1.0%	1.1%	4.2%	3.7%	4.0%	2.9%

Figure 56. AACOFD Unit Commitment Time (Station 21), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A219	31.5%	25.7%	29.2%	32.0%	33.4%	1.9%
E211	9.9%	8.1%	10.2%	10.9%	11.4%	1.4%
MU21	28.5%	23.5%	29.2%	30.3%	30.8%	2.3%

Figure 57. AACOFD Unit Commitment Time (Station 22), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A229	5.0%	5.3%	5.8%	6.1%	0.3%	-4.7%

Figure 58. AACOFD Unit Commitment Time (Station 23), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A239	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
E231	4.7%	0.4%	0.5%	0.2%	1.1%	-3.6%
MU23	9.8%	9.7%	24.4%	25.3%	25.8%	16.0%
RE23	3.5%	6.3%	7.2%	7.3%	6.1%	2.6%
TK23	1.3%	1.6%	1.4%	1.9%	1.7%	0.4%

Figure 59. AACOFD Unit Commitment Time (Station 26), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A269	0.1%	0.0%	0.0%	0.0%	0.0%	-0.1%
E261	14.5%	14.1%	15.6%	16.1%	15.9%	1.5%
MU26	37.6%	34.9%	39.3%	40.3%	39.9%	2.3%
TK26	8.2%	8.1%	9.7%	9.9%	5.8%	-2.4%
TL26	0.0%	0.0%	0.0%	0.0%	4.2%	4.2%
TW26	0.0%	0.0%	0.0%	0.1%	0.2%	0.2%

Figure 60. AACOFD Unit Commitment Time (Station 27), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A278	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
A279	4.8%	3.0%	1.9%	1.4%	1.7%	-3.1%
E272	1.9%	3.2%	2.6%	3.1%	1.4%	-0.5%
E273	0.0%	0.2%	0.1%	0.3%	0.3%	0.3%
MU27	19.5%	20.7%	27.1%	28.4%	27.8%	8.3%
RE27	6.7%	4.7%	7.5%	7.1%	8.5%	1.7%

Figure 61. AACOFD Unit Commitment Time (Station 28), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A289	11.6%	14.1%	16.0%	15.6%	27.0%	15.4%
E281	0.3%	1.8%	1.0%	0.2%	0.2%	-0.1%
E282	6.5%	2.9%	8.2%	9.5%	15.9%	9.4%
MU28	32.5%	28.2%	35.7%	36.0%	9.2%	-23.3%
RE28	3.6%	5.1%	1.8%	1.5%	4.1%	0.5%
TK28	1.5%	0.7%	0.8%	0.4%	2.2%	0.7%
Cross Staffed Units						
RE28/TK28	8.0%	3.6%	9.0%	9.9%	18.1%	10.1%

Figure 62. AACOFD Unit Commitment Time (Station 29), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
E291	7.8%	8.2%	8.7%	8.7%	8.5%	0.7%
MU29	28.6%	25.6%	30.3%	31.9%	31.8%	3.2%
TK29	2.5%	2.0%	2.9%	3.1%	3.3%	0.8%
Cross Staffed Units						
E291/TK29	10.3%	10.2%	11.6%	11.8%	11.8%	1.5%

Figure 63. AACOFD Unit Commitment Time (Station 30), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
BC02	0.2%	0.2%	2.4%	5.5%	5.3%	5.1%
E301	6.8%	7.3%	7.8%	7.9%	7.8%	1.0%
MU30	32.1%	29.8%	33.4%	33.8%	33.3%	1.2%
TK30	0.4%	0.0%	0.9%	1.4%	0.8%	0.3%
TW30	2.8%	3.2%	2.3%	2.0%	2.9%	0.1%
Cross Staffed Units						
E301/TW30	9.6%	10.5%	10.1%	9.9%	10.7%	1.1%

Figure 64. AACOFD Unit Commitment Time (Station 31), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
E311	11.8%	11.8%	12.7%	13.2%	12.7%	0.9%
MU31	33.7%	31.9%	36.5%	35.7%	35.0%	1.3%
TK31	7.2%	7.2%	8.5%	8.5%	8.2%	1.1%

Figure 65. AACOFD Unit Commitment Time (Station 32), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A329	0.0%	0.1%	0.1%	0.2%	0.0%	0.0%
E321	11.7%	10.9%	12.1%	12.4%	12.3%	0.6%
MU32	32.1%	28.9%	34.3%	33.9%	33.0%	0.9%
MU32B	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Figure 66. AACOFD Unit Commitment Time (Station 33), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A338	0.1%	0.2%	0.1%	0.0%	0.1%	0.0%
A339	3.9%	2.2%	2.1%	1.3%	1.8%	-2.1%
BC01	5.9%	5.2%	6.6%	6.5%	6.5%	0.6%
E331	10.9%	10.1%	10.6%	11.3%	10.4%	-0.5%
E332	0.5%	1.0%	0.2%	0.8%	1.2%	0.7%
MU33	35.2%	31.4%	35.9%	36.7%	37.5%	2.3%
MU33B	35.0%	31.0%	36.4%	37.8%	36.9%	1.9%
RS33	2.6%	1.7%	3.3%	3.0%	3.7%	1.2%
Cross Staffed Units						
E331/RS33	13.5%	11.8%	13.9%	14.3%	14.1%	0.7%

Figure 67. AACOFD Unit Commitment Time (Station 34), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A349	16.0%	13.4%	16.7%	17.2%	36.3%	20.4%
E342	0.5%	0.0%	0.0%	0.0%	0.0%	-0.5%
E343	2.4%	2.7%	1.5%	1.1%	10.2%	7.8%

Figure 68. AACOFD Unit Commitment Time (Station 40), 2019–2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A409	23.8%	20.9%	23.6%	24.7%	32.1%	8.3%
E401	0.7%	0.5%	0.2%	1.0%	0.6%	-0.1%
E402	8.8%	8.7%	10.4%	10.9%	10.8%	2.1%
MU40	27.4%	24.1%	29.3%	30.8%	31.9%	4.5%
TA40	0.7%	0.8%	0.7%	1.1%	0.9%	0.2%
TK40	1.4%	0.6%	1.3%	1.0%	3.5%	2.1%
TW40	4.5%	4.4%	3.8%	4.6%	2.8%	-1.7%
Cross Staffed Units						
E402/TA40	9.5%	9.5%	11.1%	12.0%	11.7%	2.3%

Figure 69. AACOFD Unit Commitment Time (Station 41), 2019-2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
E411	3.4%	3.6%	3.6%	3.0%	3.3%	-0.1%
MU41	9.8%	8.4%	10.4%	11.0%	11.1%	1.3%

Figure 70. AACOFD Unit Commitment Time (Station 42), 2019-2023

Unit	2019	2020	2021	2022	2023	Change Over Study Period
A429	0.0%	0.2%	0.2%	0.3%	0.3%	0.3%
E421	1.8%	2.3%	2.8%	3.4%	3.6%	1.9%
E422	2.2%	1.1%	0.6%	0.3%	0.2%	-1.9%
E424	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MU42	13.1%	10.5%	11.5%	13.3%	13.4%	0.3%
TA42	0.4%	0.5%	0.6%	0.5%	0.5%	0.1%
TK42	0.5%	0.6%	0.7%	0.9%	0.8%	0.3%
Cross Staffed Units						
E421/TK42	2.3%	2.9%	3.5%	3.9%	4.1%	2.2%
MU42/TA42	13.5%	11.0%	12.1%	13.8%	13.9%	0.4%

Given that sixteen of AACOFD's transport ambulances are operating above the 30% commitment threshold, the current system is clearly under significant strain. Simply adding more transport units may not be a sustainable solution. Instead, a more strategic approach involves altering the system to match resources with demand better.

One effective strategy is implementing peak-time ambulances. By deploying additional units during known high-demand periods, the department can alleviate pressure on the busiest units and improve overall response times. This targeted approach ensures that resources are available when and where they are most needed rather than spreading them thinly across all times.

Additionally, call diversion can play a crucial role in managing workload. The department can focus its resources on true emergencies by redirecting non-emergency calls to appropriate alternative services. This reduces the burden on transport ambulances and ensures that critical care is provided promptly to those in need.

Finally, a thorough analysis of current data to match resources to needs is essential. The department can optimize its operations by continuously monitoring and adjusting deployment based on real-time data. This data-driven approach allows for dynamic

adjustments, ensuring that the system remains responsive to changing demands and maintains high levels of service efficiency.

By adopting these strategies, the AACOFD can enhance its operational effectiveness and ensure sustainable service delivery without the need for an ever-increasing number of transport units.

Zone Unit First Arrival

Ideally, incidents within each fire station zone (or planning zone) would receive initial services from a unit stationed within that zone—meaning the first arriving unit would be a zone unit. Following the same concept as that of the commitment time, this should occur for greater than 75% of incidents—allowing for units that may be committed already, or the first arriving unit that was a closer unit at the time of dispatch. While this is not a specific standard, it is a starting point for AACOFD leadership to consider when evaluating the reliability of units and potential need for additional resources.

The following figure illustrates the zone unit first arrival analysis for AACOFD.

Figure 71. AACOFD Zone Unit First Arrival, 2019–2023

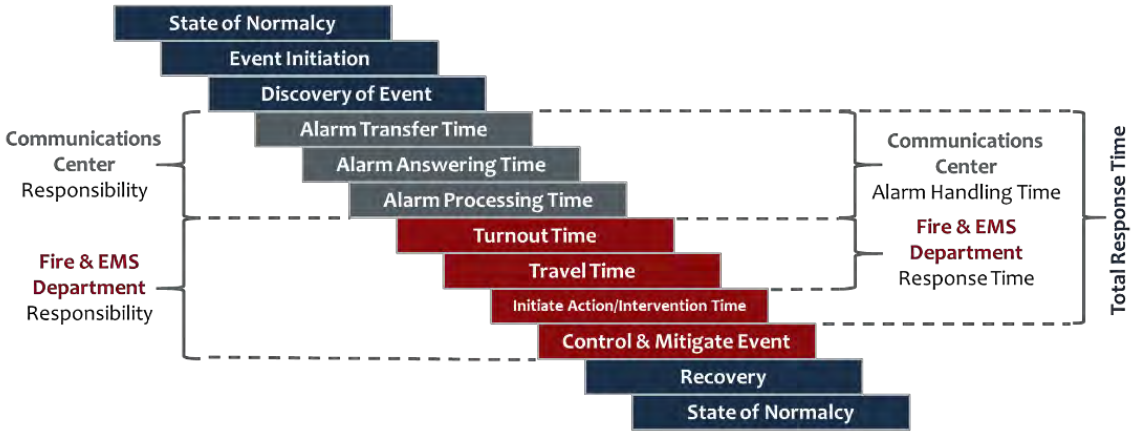
Zone	2019	2020	2021	2022	2023	Change Over Study Period
1	81.08%	83.33%	93.70%	96.58%	89.76%	8.68%
2	86.87%	84.92%	84.14%	83.14%	86.76%	-0.12%
3	87.53%	88.05%	85.93%	84.77%	84.55%	-2.98%
4	65.38%	69.46%	70.86%	68.37%	63.64%	-1.74%
5	70.90%	70.08%	69.79%	70.58%	70.88%	-0.02%
6	91.61%	89.58%	94.33%	92.76%	90.79%	-0.82%
7	85.06%	84.10%	81.56%	81.30%	79.43%	-5.63%
8	92.68%	95.38%	89.66%	90.40%	95.28%	2.60%
9	85.81%	92.25%	92.74%	89.84%	85.63%	-0.18%
10	73.45%	75.76%	70.96%	74.16%	73.67%	0.21%
11	73.03%	77.46%	77.38%	75.57%	78.90%	5.87%
12	79.01%	83.53%	80.72%	76.60%	76.34%	-2.66%
13	85.20%	82.30%	83.68%	82.30%	83.60%	-1.60%
17	81.63%	84.97%	80.88%	78.38%	79.62%	-2.00%
18	77.52%	80.18%	78.50%	76.28%	77.62%	0.09%
19	88.61%	88.33%	85.78%	87.03%	87.24%	-1.37%
20	88.09%	89.09%	87.19%	89.37%	90.00%	1.91%
21	86.67%	88.73%	87.50%	87.55%	83.54%	-3.12%
23	61.96%	67.79%	76.45%	71.96%	71.81%	9.85%
26	67.16%	79.23%	75.76%	76.19%	72.89%	5.73%
27	95.08%	94.11%	90.67%	91.89%	91.06%	-4.01%
28	78.29%	80.13%	74.25%	72.70%	60.46%	-17.82%
29	73.44%	77.47%	74.61%	74.74%	74.59%	1.15%
30	73.25%	74.09%	75.91%	71.08%	73.95%	0.70%
31	88.12%	89.21%	87.12%	86.16%	86.85%	-1.27%
32	77.93%	80.40%	76.18%	76.33%	77.40%	-0.53%
33	72.06%	78.71%	75.67%	74.85%	74.88%	2.83%
34	29.82%	31.19%	20.71%	16.51%	18.40%	-11.42%
40	89.75%	89.72%	89.57%	88.05%	86.16%	-3.59%
41	92.44%	94.40%	95.95%	92.42%	92.81%	0.37%
42	94.51%	91.58%	91.89%	90.34%	90.37%	-4.13%

Response Performance Analysis

A key performance indicator for fire departments is the measure of their ability to arrive on scene within a timely manner. For the residents and visitors to the community, this may be the primary thing used for judging the effectiveness of the agency. From their perspective, the only time measure of importance is the amount of time between calling 911 and arrival of the first unit at the scene, often referred to anecdotally as response time. However, this measure is total response time and comprises the following individual measures, creating the response time continuum.

- Alarm Handling Time: The amount of time between when a call is answered by the 911 Primary Public Safety Answering Point (PSAP) or dispatch center, and when resources are dispatched.
- Turnout Time: The time interval between when response units are notified of the incident and when the apparatus begins to respond.
- Travel Time: The time the responding unit spends on the road traveling to the incident until arrival at the scene. This is a function of speed and distance.
- Response Time: The time from initial alerting of an incident until arrival on the scene. Response Time equals the sum of "Turnout Time" and "Travel Time."
- Total Response Time: This is the most apparent time to the caller requesting emergency services, as the time from when the emergency call is placed until units arrive on the scene.

Figure 72. Response Time Continuum



In analyzing response performance, ESCI generates percentile measurements of time performance. The use of percentile measurement using the components of response

time follows the recommendations of industry best practices. The best practices are derived by the Center for Public Safety Excellence (CPSE), Standard of Cover document and the National Fire Protection Association (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*.

The "average" measure is a commonly used descriptive statistic, also called the mean of a data set. The most important reason for not using the average for performance standards is that it may not accurately reflect the performance for the entire data set and may be skewed by outliers, especially in small data sets. One extremely good or bad value can skew the average for the entire data set.

The "median" measure is another acceptable method of analyzing performance. This method identifies the value at the middle of a data set and thus tends to not be as strongly influenced by data outliers.

Percentile measurements are a better measure of performance because they show that most of the data set has achieved a particular level of performance. The 90th percentile means that 10% of the values are greater than the value stated, and all other data are at or in the following figure this level. This can be compared to the desired performance objective to determine the degree of success in achieving the goal.

Tracking the individual components of response time can help AACOFD leadership identify impediments to timely response, and make operational adjustments to improve, including developing response time goals and standards that are both relevant and achievable. Fire service best practices recommend that fire service organizations monitor and report the components of total response time.

As this report progresses through the performance analysis, it is important to keep in mind that each component of response performance is not cumulative. Each is analyzed as an individual component, and the point at which the percentile is calculated exists in a set of data unto itself. Each of the following analyses only included those incidents where the response was coded as "emergency" priority.

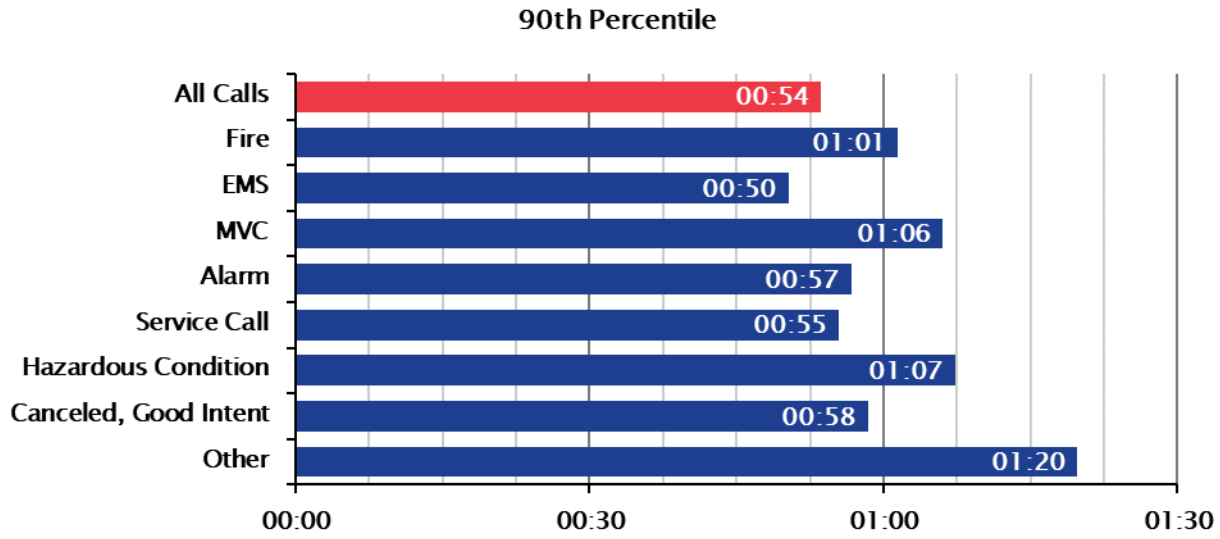
Alarm Handling Time

The measure of time between answering the 911 call and dispatch of the first unit is referred to as alarm handling time, with one applicable standard as illustrated in the following figure.

Standard	Performance
NFPA 1225: *Standard for Emergency Services Communications* (2022 Edition)	60 seconds at the 90th percentile

As illustrated in the following figure AACOFD alarm handling time performance is 54 seconds. When analyzed by NFIRS incident series, performance ranges from 50 seconds for emergency medical service incidents to 1 minute, 20 seconds for other incidents.

Figure 73. AACOFD Alarm Handling Time Performance, 2019–2023



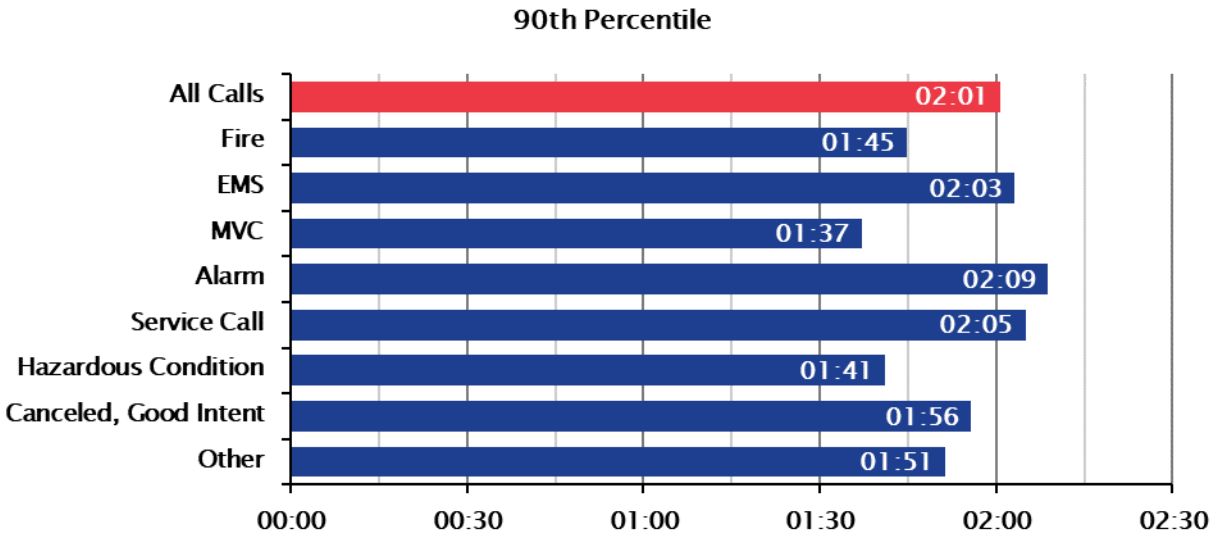
Turnout Time

The measure of time between answering the dispatch and the first unit making forward motion towards the incident is referred to as turnout time, with one applicable standard as illustrated in the following figure.

Standard	Performance
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 recommends*	Fire and Special Operations Incidents 80 seconds at the 90th percentile All Other Incidents 60 seconds at the 90th percentile

As illustrated in the following figure, AACOFD turnout time performance is 2 minutes, 1 second. When analyzed by NFIRS incident series, performance ranges from 1 minute, 37 seconds for motor vehicle collision incidents to 2 minutes, 9 seconds for alarm incidents.

Figure 74. AACOFD Turnout Time Performance, 2019–2023



As this is the first measure under direct control of the fire department, AACOFD leadership may consider the various actions that occur within this measure and determine if there are areas where process changes could improve performance. These factors include:

- Systems used to notify personnel of an incident.
- Station design as it relates to the movement of personnel from living quarters to the apparatus bay.
- Personnel adherence to department policies and acting with appropriate speed towards the apparatus.
- Time required to don protective equipment prior to responding.
- Moving equipment between apparatus when units are cross-staffed.
- Time from starting apparatus to radio system can transmit.

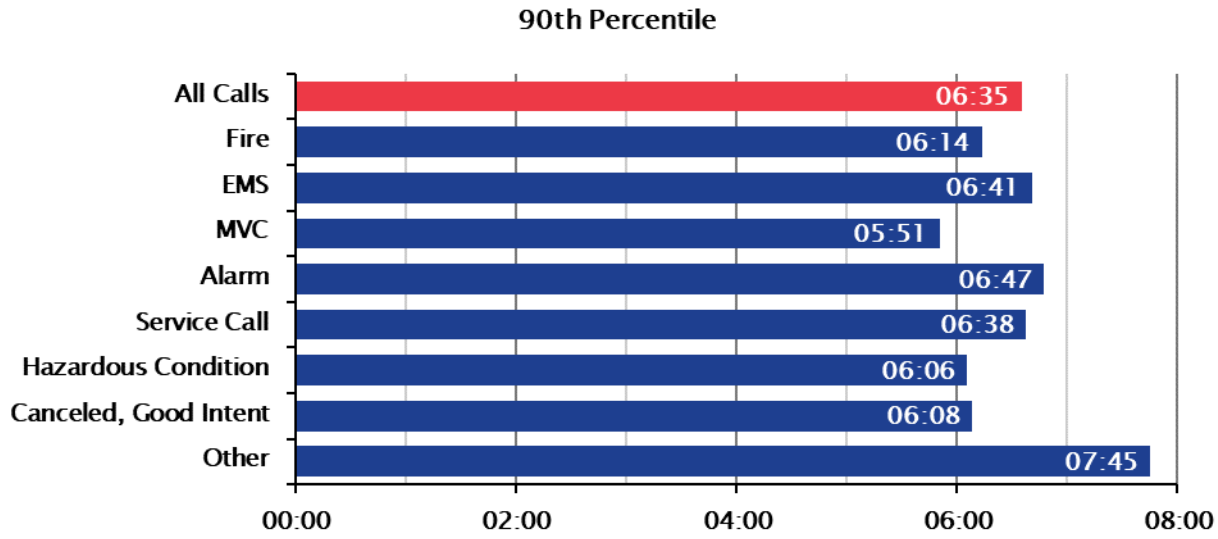
Travel Time

The measure of time between answering the unit making forward motion towards the incident and arrival at the scene is referred to as travel time, with one applicable standard as illustrated in the following figure.

Standard	Performance
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*	4 minutes at the 90th percentile

As illustrated in the following figure, AACOFD travel time performance is 6 minutes, 35 seconds. When analyzed by NFIRS incident series, performance ranges from 5 minutes, 51 seconds for motor vehicle collision incidents to 7 minutes, 45 seconds for other incidents.

Figure 75. AACOFD Travel Time Performance, 2019–2023



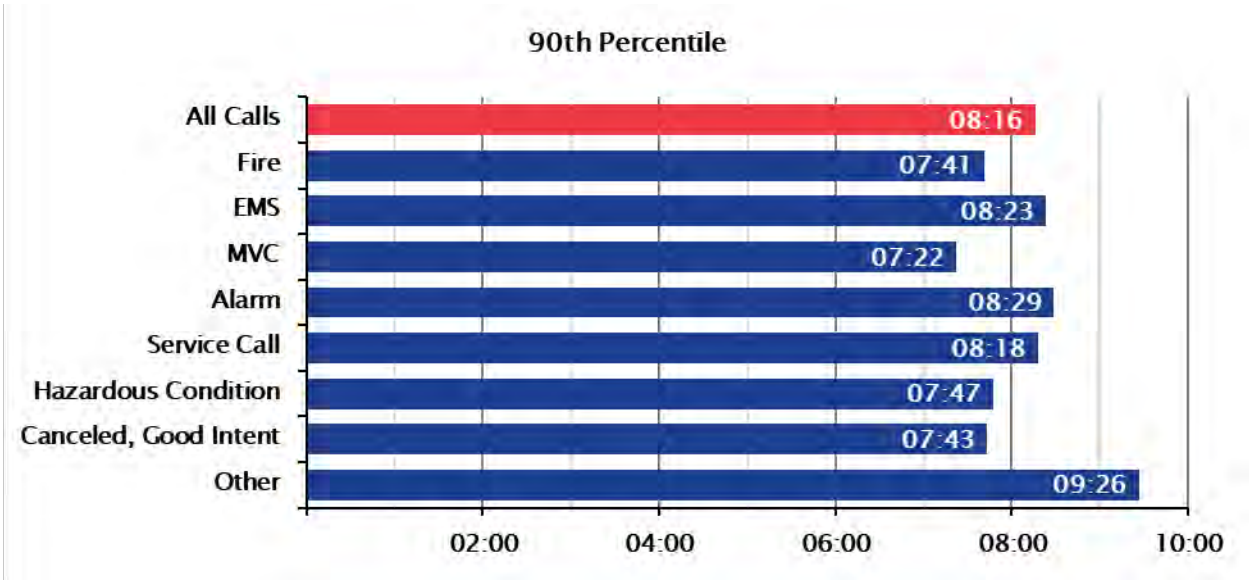
Response Time

The time between dispatch and arrival at the scene is called response time. For this measure, there is not a specific applicable standard. However, by combining the individual component standards, the following figure illustrates expected performance.

Standard	Performance
Turnout Time	Fire and Special Operations Incidents 80 seconds at the 90th percentile All Other Incidents 60 seconds at the 90th percentile
Travel Time	4 minutes at the 90th percentile
Combined	Fire and Special Operations Incidents 5 minutes, 20 seconds at the 90th percentile All Other Incidents 5 Minutes at the 90th percentile

As illustrated in the following figure, AACOFD response time performance is 8 minutes, 16 seconds. When analyzed by NFIRS incident series, performance ranges from 7 minutes, 22 seconds for motor vehicle collision incidents to 9 minutes, 26 seconds for other incidents.

Figure 76. AACOFD Response Time Performance, 2019-2023



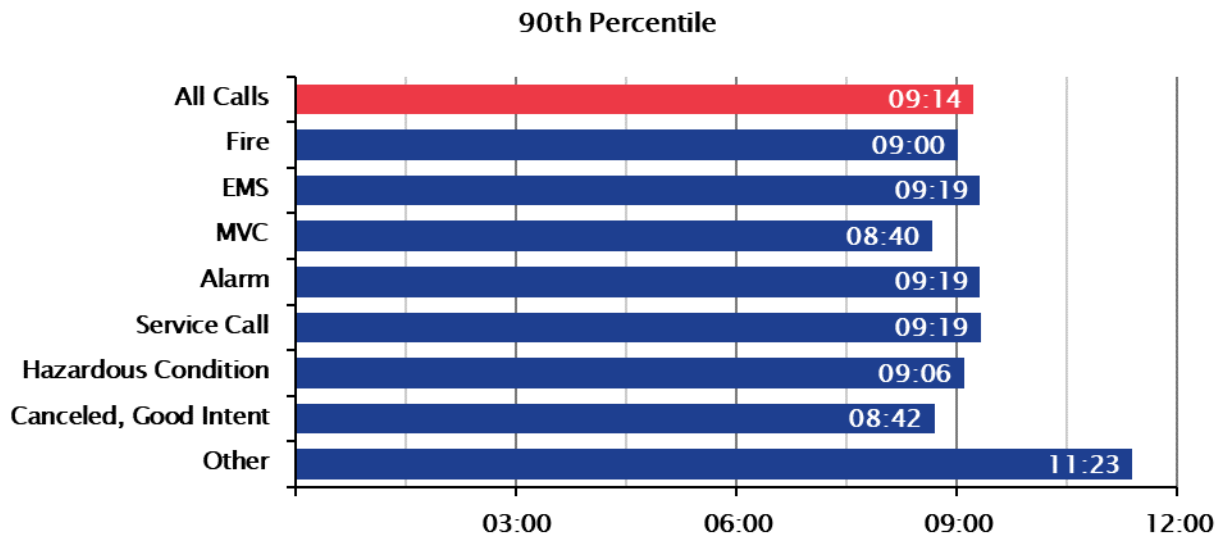
Total Response Time

The measure of time between the answering of the 911 call and the arrival at the scene is referred to as total response time. For this measure, there is not a specific applicable standard. However, by combining the individual component standards, the following figure illustrates expected performance.

Component	Performance
Alarm Handling Time	60 seconds at the 90th percentile
Turnout Time	Fire and Special Operations Incidents 80 seconds at the 90th percentile All Other Incidents 60 seconds at the 90th percentile
Travel Time	4 minutes at the 90th percentile
Combined	Fire and Special Operations Incidents 6 minutes, 20 seconds at the 90th percentile All Other Incidents 6 Minutes at the 90th percentile

As illustrated in the following figure AACOFD, total response time performance is 9 minutes, 14 seconds. When analyzed by NFIRS incident series, performance ranges from 8 minutes, 40 seconds for motor vehicle collision incidents to 11 minutes, 23 seconds for other incidents.

Figure 77. AACOFD Total Response Time Performance, 2019–2023



Mutual Aid & Automatic Aid

Agencies often enter into agreements that are of benefit to their community and the surrounding communities. These provide circumstances where units and personnel from other agencies respond into the jurisdiction to assist in providing needed resources to mitigate a given incident. The two types of agreements are mutual aid and automatic aid, both of which are an integral part of emergency operations. Mutual aid agreements generally include the provision of units and resources only when requested by the incident commander from the agency receiving mutual aid. In contrast, automatic aid agreements provide units and resources through a predefined matrix, and the aid agency units and personnel are included in the initial dispatch to the incident concurrently with the requesting agency units and personnel. The following figure illustrates the existing agreements between AACOFD and other agencies.

Figure 78. AACOFD Aid Agreements

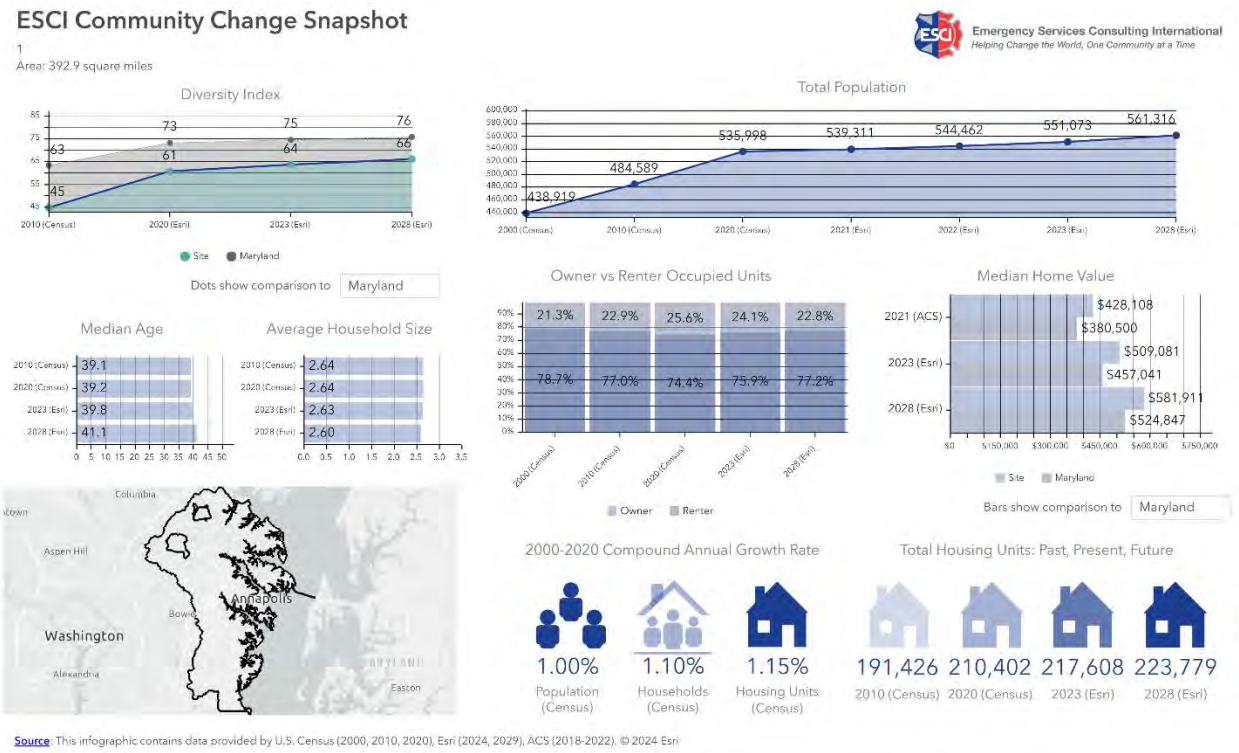
Agency	Agreement Type
Annapolis Fire Department	Automatic Aid
Baltimore County Fire Department	Mutual Aid
Baltimore City Fire Department	Mutual Aid
Baltimore Washington International Airport	Mutual Aid
Calvert County Fire Rescue EMS	Mutual Aid
Fort Meade (US Army) Fire Department	Mutual Aid
Howard County Fire Rescue	Mutual Aid
Naval Academy Fire Department	Mutual Aid
Prince George's County Fire/EMS	Mutual Aid
Queen Anne Fire Rescue	Mutual Aid

The following figure illustrates the aid given/received during the study period.

Figure 79. AACOFD Aid Given/Received, 2019–2023

Description	2019	2020	2021	2022	2023	Total
Mutual aid received	2,815	1,900	2,539	2,576	2,820	12,650

Figure 80. Population Change Profile



Facilities

Locations of Facilities

ESCI evaluated the AACOFD's capital facilities, assisted by information provided by department leadership during a self-assessment of their facilities using a Community Risk Assessment (CRA) worksheet. The department currently operates thirty-one fire stations and five support buildings. Station 6 is being relocated, and Station 29 is scheduled for relocation.

Fire Station 1 – Galesville Volunteer Fire Department

Fire Station 1 is the Galesville Volunteer Fire Department, located at 4680 Muddy Creek Road. It was built in 2019 and is in very good general condition. The station has a personnel capacity of nine and three drive-through bays, an apparatus exhaust removal system, and firefighter PPE extractors.

Fire Station 2 – Woodland Beach (Edgewater) Volunteer Fire Department

Fire Station 2 is the Woodland Beach (Edgewater) Volunteer Fire Department, located at 529 Londontown Road. Constructed in 1947, this three-story station was remodeled at an unknown date and is in poor general condition based largely on the apparatus bays' size, which limits the kind of apparatus that can be stationed there. The station's personnel capacity is eight, and it has an apparatus exhaust removal system for its seven back-in apparatus bays.

Fire Station 3 – Riva Volunteer Fire Department

Fire Station 3 is the Riva Volunteer Fire Department, located at 3123 Riva Road. The station was built in 1966 and was last remodeled in 2014. The general condition of the station is good. The personnel capacity of the station is eight, and it has seven back-in apparatus bays with an apparatus exhaust removal system.

Fire Station 4 – Severn Fire Station

Fire Station 4 is the Severn Fire Station, located at 7870 Telegraph Road. Constructed in 2005 and in good general condition, the station has a ten-person capacity, and three drive-through bays equipped with an apparatus exhaust removal system.

Fire Station 5 – Waugh Chapel Fire Station

Fire Station 5 is the Waugh Chapel Fire Station, located at 1300 Waugh Chapel Road. The station was built in 1977 and remodeled in 2022, but the general condition is fair. The personnel capacity of the station is nine, and there are three drive-through apparatus bays with an apparatus exhaust removal system. The facility also has firefighter PPE extractor systems.

Fire Station 6 – Herald Harbor Volunteer Fire Department/Crossville Fire Station

Fire Station 6 is the Herald Harbor Volunteer Fire Department, located at 401 Hall Road. It was constructed in 1950 and is in fair general condition. The station has a personnel capacity of six and has three drive-through bays equipped with an apparatus exhaust removal system. This station is scheduled to be decommissioned when Fire Station 6 is rebuilt on the new location on Generals Highway in spring/early summer of 2025.

The new Fire Station 6 will be named the Crossville Fire Station and will be located at 1029 Generals Highway. It will have a staffing capacity of 23 and have 4 drive-through apparatus bays with an apparatus exhaust removal system. The station will also be equipped with firefighter PPE extractor systems.

Fire Station 7 – Arundel Volunteer Fire Department

Fire Station 7 is the Arundel Volunteer Fire Department, located at 2380 Davidsonville Road. Originally built in 1976, the station is in fair general condition. The staffing capacity of the station is ten, and it has three back-in apparatus bays with an apparatus exhaust removal system.

Fire Station 8 – Annapolis Neck

Fire Station 8 is Annapolis Neck Fire Company, located at 991 Bay Ridge Road. It was built in 2009 and is in good general condition. The station has a staffing capacity of nine and three drive-through apparatus bays with an apparatus exhaust removal system. It houses the department's dive team and has firefighter PPE extractor systems.

Fire Station 9 – Harwood Lothian

Fire Station 9 is the Harwood Lothian Fire Company, located at 5165 Solomons Island Road. Constructed in 1984, the station's general condition is good. It has a personnel capacity of eight and has three drive-through apparatus bays with an apparatus exhaust removal system.

Fire Station 10 – Jacobsville Fire Station

Fire Station 10 is the Jacobsville Fire Station, located at 3700 Mountain Road. The station was built in 2022 and is in very good general condition. It has a staffing capacity of six and firefighter PPE extractor systems. The station has three drive-through apparatus bays with an apparatus exhaust removal system.

Fire Station 11 – Orchard Beach Volunteer Fire Department

Fire Station 11 is the Orchard Beach Volunteer Fire Department, located at 7549 Solley Road. Constructed in 1988, the station is in good general condition. It has a maximum staffing of 16 and has three drive-through apparatus bays with an apparatus exhaust removal system.

Fire Station 12 – Earleigh Heights Volunteer Fire Department

Fire Station 12 is the Earleigh Heights Volunteer Fire Department, located at 161 Ritchie Highway. The station was originally built in 1956 and was remodeled at an unknown date. It is in fair general condition. With a staffing capacity of 13, the station

also has firefighter PPE extractor systems and 5 back-in bays with an apparatus exhaust removal system.

Fire Station 13 – Riveria Beach Volunteer Fire Department

Fire Station 13 is the Riveria Beach Volunteer Fire Department, located at 8506 Fort Smallwood Road. Constructed in 1930, it was remodeled at an unknown date and is in poor general condition based largely on the seven back-in apparatus bays; four of which are too small for many modern apparatuses. This station has a staffing capacity of 18, although the poor general rating is also partly based on the small size of one of the 3 bedrooms. It is also equipped with an apparatus exhaust removal system.

Fire Station 17 – Arnold Volunteer Fire Department

Station 17 is the Arnold Volunteer Fire Department, located at 1505 Ritchie Highway. The two-story station was built in 1940 and last remodeled at an unknown date. It is in fair general condition, and it has five back-in bays with an apparatus exhaust removal system. The station's staffing capacity is 12.

Fire Station 18 – Marley Fire Station

Fire Station 18 is the Marley Fire Station, located at 7726 Baltimore Annapolis Road. Built in 2012, the station is in good general condition. It has a staffing capacity of ten and has three drive-through bays with an apparatus exhaust removal system.

Fire Station 19 – Cape St. Claire Volunteer Fire Department

Fire Station 19 is the Cape St. Claire Volunteer Fire Department, located at 1409 Cape St. Claire Road. It was originally constructed in 1950 and remodeled sometime in the 1990's. The station has a staffing capacity of seven, and it has five back-in apparatus bays with an apparatus exhaust removal system. This station is projected to be replaced at the same location in the next two to three years.

Fire Station 20 – Lake Shore Fire Station

Fire Station 20 is the Lake Shore Fire Station, located at 4642 Mountain Road. It was built in 2019 and is in good general condition. The staffing capacity of the station is 11, and it has firefighter PPE extractor systems and 4 drive-through bays with an apparatus exhaust removal system.

Fire Station 21 – Harmons Dorsey Fire Department

Fire Station 21 is the Harmons Dorsey Fire Department, located at 1367 Dorsey Road. Constructed in 1974 and remodeled in 2020, the station is in good general condition. It has a maximum staffing of ten, a fire fighter PPE extractor system, and two drive-through bays with an apparatus exhaust removal system.

Fire Station 23 – Jones Station

Fire Station 23 is the Jones Station, located at 960 Ritchie Highway. Originally built in 1977, it was last remodeled in 2024 and is in good general condition. The station's staffing capacity is eight, and it has a firefighter PPE extractor system and four drive-through apparatus bays with an apparatus exhaust removal system.

Fire Station 26 – South Glen Burnie Fire Station

Fire Station 26 is the South Glen Burnie Fire Station, located at 7880 Crain Highway. It was built in 1970 and last remodeled in 2020. It is in good general condition and has a maximum staffing capacity of ten personnel. The station has two drive-through apparatus bays with an apparatus exhaust removal system.

Fire Station 27 – Maryland City Volunteer Fire Department

Fire Station 27 is the Maryland City Volunteer Fire Department, located at 3498 Fort Meade Road. Constructed in 1999, the station is in good general condition. The staffing capacity is 12, and the station has 3 drive-through apparatus bays with an apparatus exhaust removal system.

Fire Station 28 – Odenton Volunteer Fire Department

Fire Station 28 is the Odenton Volunteer Fire Department, located at 1425 Annapolis Road. It was built in 1941 and last remodeled in 2015. The station is in good general condition and has a staffing capacity of 17. There are four back-in apparatus bays with an apparatus exhaust removal system.

Fire Station 29 – Jessup Station

Fire Station 29 is the Jessup Station, located at 7891 Max Blobs Park Road. It was constructed in 1974 and is in fair general condition. The station is scheduled for replacement and relocation to 2840 Jessup Road within approximately five years. It has a maximum staffing of seven, and three drive-through apparatus bays with an apparatus exhaust removal system.

Fire Station 30 – Armiger Station

Fire Station 30 is the Armiger Station, located at 304 Mountain Road. Constructed in 1990, the station's staffing capacity is seven, and it has a firefighter PPE extractor system. It has three drive-through apparatus bays with an apparatus exhaust removal system.

Fire Station 31- Brooklyn Station

Fire Station 31 is the Brooklyn Station, located at 5100 Ritchie Highway. It is a two-story station built in 2004, and it is in good general condition. The station has a maximum staffing capacity of ten and has a firefighter PPE extractor system. It has three drive-through apparatus bays with an apparatus exhaust removal system.

Fire Station 32 – Linthicum Station

Fire Station 32 is the Linthicum Station, located at 309 Camp Meade Road South. The station is the oldest in the department and was originally built in 1938 and last remodeled in 1994. The station is in fair general condition and can support a maximum of ten personnel. It has six back-in apparatus bays with an apparatus exhaust removal system.

Fire Station 33 – Glen Burnie Volunteer Fire Department

Fire Station 33 is the Glen Burnie Volunteer Fire Department, located at 15 Central Avenue. Constructed in 1967, the station is in fair general condition. It has a staffing capacity of 15 and has 8 back-in apparatus bays with an apparatus exhaust removal system.

Fire Station 34 – Ferndale Volunteer Fire Department

Fire Station 34 is the Ferndale Volunteer Fire Department, located at 4 Broadview Boulevard South. The two-story station was originally built in 1946 and was last remodeled at an unknown date. It can support 18 personnel and has 5 back-in bays with an apparatus exhaust removal system.

Fire Station 40 – West Annapolis Volunteer Fire Department

Fire Station 40 is the West Annapolis Volunteer Fire Department, located at 121 Jennifer Road. Constructed in 1974, the station was last remodeled in 2008 and is in good general condition. It has a maximum staffing capacity of 12 and has 5 back-in apparatus bays with an apparatus exhaust removal system.

Fire Station 41 – Avalon Shores Station

Fire Station 41 is the Avalon Shores Station at 6270 Shadyside Road. The station is in fair general condition. It was built in 1966 and last remodeled in the 1990s. It has a six-person capacity and five back-in apparatus bays with an apparatus exhaust removal system.

Fire Station 42 – Deale Volunteer Fire Company

Fire Station 42 is the Deale Volunteer Fire Company and is located at 6007 Drumpoint Road. Originally constructed in 1948, it is in fair general condition. The date of the last remodeling is unknown. The station has a personnel capacity of ten and has six back-in apparatus bays with an apparatus exhaust removal system.

Fire Administration

The Fire Administration Building is located at 2011 Commerce Park Drive in Annapolis. The fire department Command Staff, Human Resources, Payroll, Volunteer Services, Professional Standards, and Special Operations all work out of this location. It was built in 1990 and was last remodeled in 2021. It is a two-story office building with exercise facilities, shower facilities, and a kitchen. The building is in good general condition.

Fire Headquarters

The Fire Headquarters Building is located at 8501 Veterans Highway in Millersville. Originally built in 1964, it was remodeled in 1990 and is in good general condition. A two-story office building, it houses the Information Management Division (E-911 Dispatch Center, GIS, and radio/phone/IT repair), the Health and Safety Division, EMS QA/QI, Records, and Public Education and Recruiting offices. The building includes a sleeping area for the Fire E-911 Center employees; however, there are plans to combine fire and police dispatch centers to Crownsville.

Fire Marshal's Office

The Fire Marshal's Office is in a four-story office building at 2660 Riva Road in Annapolis. The building was constructed in 1985, and the offices are in good general condition. The Fire Marshal's Office staff, fire and explosives investigators, and code enforcement inspectors all work out of this location. The building has kitchen facilities.

Fire Training Academy

The Fire Training Academy is located at 8437 Maxwell Frye Road in Millersville. The two-story building was built in 1966 and remodeled in 1987. It is in fair general condition. The academy includes a classroom/office building, a burn building, and several other buildings, including seven back-in apparatus bays. The facility has exercise facilities, shower facilities, a kitchen, and firefighter PPE extractor systems. The academy is projected to be moved to a new location on Generals Highway and co-located with the new E-911 Dispatch Center under the Office of Emergency Management.

Operations Support Building

The Operations Support Building is located at 8311 Grover Road in Millersville. The large warehouse building was built in 1974 and remodeled in 1995. Fire department purchasing, supply, apparatus purchase and maintenance, facility repair, and other support functions operate from this facility. It is shared with other county departments. The building is in fair general condition and includes exercise workout areas, but no shower or kitchen facilities. This location also houses the department's Candidate Physical Ability Test (CPAT) course for candidate testing.

Facilities Review

The following table represents information gathered through an assessment of AACOFD's facilities. When considering when a facility was last remodeled, some facilities have not been remodeled (N/A) or were remodeled at an unknown date (UNK). Further, it should be noted that remodeling of AACOFD facilities is usually limited to specific areas of the station and is not a comprehensive remodeling. Kitchens, bathrooms, bunkrooms, and bay floors are some of the areas that have been remodeled in facilities.

In 2017, a kitchen remodel program was begun that renovates the kitchen in three stations per year. According to this schedule, all AACOFD fire stations' kitchens will be remodeled every ten years.

Figure 81. Facilities Review Table

Facility	Built	Remodeled	# of Drive Through Bays	Staffing Capacity	General Condition
Station 1	2019	N/A	3	9	Very Good
Station 2	1947	UNK	0	8	Poor
Station 3	1966	2014	0	8	Good
Station 4	2005	(2025)	3	10	Good
Station 5	1977	2022	3	9	Fair
Station 6	1950	UNK	3	6	Fair
Station 6	2025	N/A	4	23	Very Good
Station 7	1976	2022	3	10	Fair
Station 8	2009	N/A	3	8	Good
Station 9	1984	N/A	3	8	Good
Station 10	2022	N/A	3	6	Very Good
Station 11	1988	N/A	3	16	Good
Station 12	1956	UNK	0	13	Fair

Facility	Built	Remodeled	# of Drive Through Bays	Staffing Capacity	General Condition
Station 13	1940	UNK	0	18	Poor
Station 17	1940	UNK	0	12	Fair
Station 18	2012	N/A	3	10	Good
Station 19	1950	1990's	0	7	Poor
Station 20	2019	N/A	4	11	Good
Station 21	1974	2020	2	10	Good
Station 23	1977	2024	4	8	Good
Station 26	1970	2020	2	10	Good
Station 27	1999	(Planning)	3	12	Good
Station 28	1941	2015	0	17	Good
Station 29	1974	2019	3	7	Fair
Station 30	1990	2021	3	7	Fair
Station 31	2004	2023	3	10	Good
Station 32	1938	1994	0	10	Fair
Station 33	1967	2019	0	15	Fair
Station 34	1946	UNK	0	18	Fair
Station 40	1974	2008	0	12	Good
Station 41	1966	1990's	0	6	Fair
Station 42	1948	UNK	2	10	Fair
Academy	1966	1987	0	UNK	Fair
Administration	1990	2021	N/A	UNK	Good
Fire Marshal	1985	UNK	N/A	UNK	Good
Headquarters	1964	1990	N/A	UNK	Good
Ops Support	1974	1995	N/A	UNK	Fair

The oldest fire station is Station 32, which was built in 1938 and remodeled in 1994. The newest fire station will be Station 6, which is being constructed. Of all the AACOFD's facilities, 8.3% were rated as very good, 47.2% were rated as good, 36.1% were rated as fair, and 8.3% were rated as poor. A combined 44.4% of AACOFD's facilities, 14 stations and the Fire Academy and Operations Support Building, were rated either fair or poor. All the facilities rated as fair, or poor, are 50 years old or more, except Fire Station 5 (47 years old), Fire Station 7 (48 years old), and Fire Station 30 (34 years old).

Identified Gaps in Station Placement

ESCI analyzed the potential gaps in fire station placement by focusing on address points and travel time from existing fire stations. ESCI examined the number of address points that could not be reached within specific timeframes, including evaluations of ten and twelve-minute travel times, which are longer than the six-minute travel time standard set by NFPA 1710. This analysis provides information on future fire station locations that aim to achieve NFPA 1710 compliance. The results are visualized in two figures, showing areas outside the optimal response times and potential locations for new fire stations to improve emergency response coverage. This approach can be evaluated routinely as address points are an accurate way to measure population expansion.

Figure 82. 10-Minute Response Gaps with Address Points

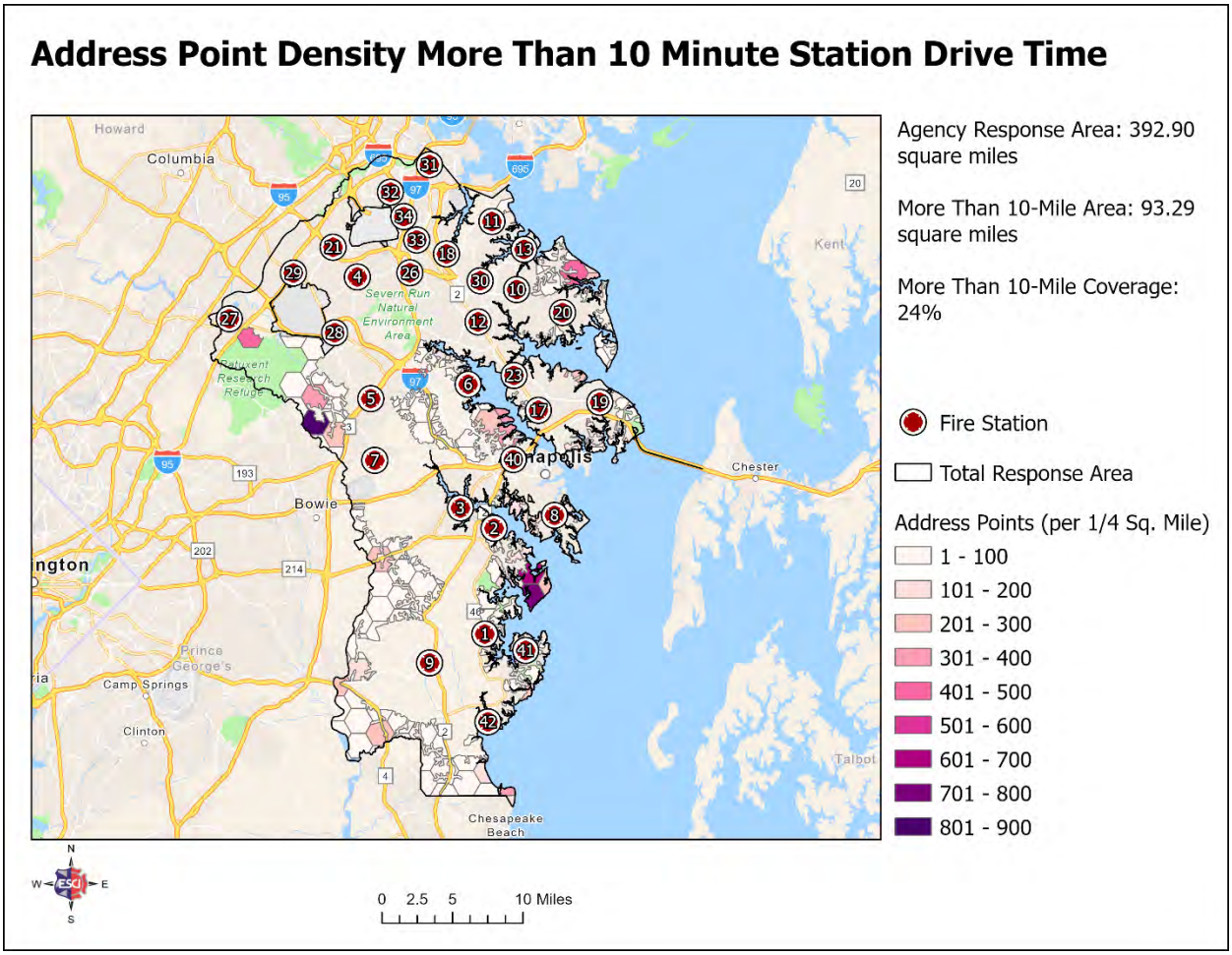
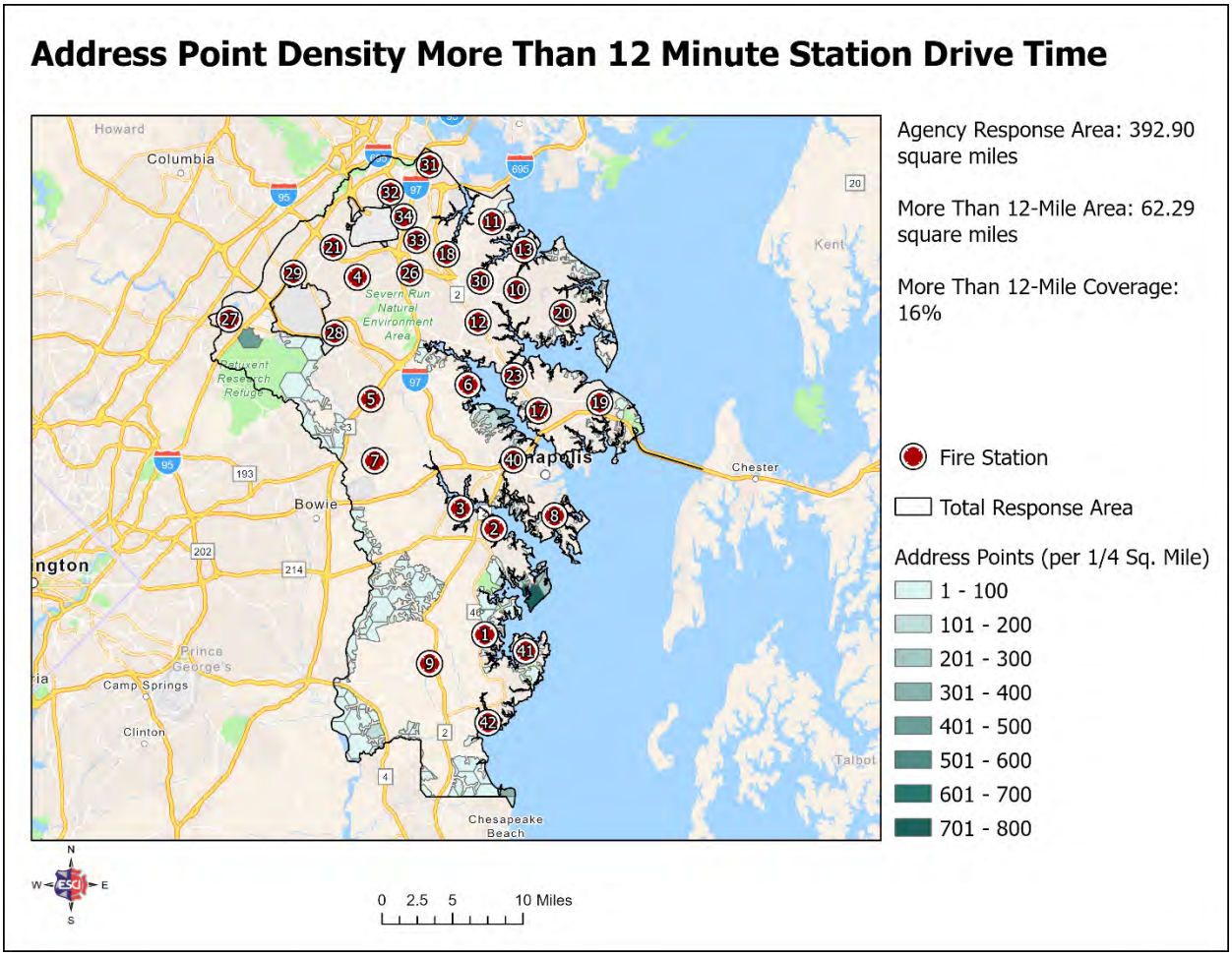


Figure 83. 12-Minute Response Gaps with Address Points



Apparatus

A dependable fleet of apparatus and vehicles to respond to emergencies anywhere within its 393 square miles and over 530 miles of coastline is central to Anne Arundel County Fire Department's mission. AACOFD manages all apparatus and vehicles. To gauge the effectiveness of the emergency response fleet's ability to deliver emergency services, ESCI uses a subjective numerical scoring system ranging from 1 to 5, where 1 signifies "favorable" and 5 denotes "unfavorable." The basis for this scoring system is found within three key characteristics of the fleet: Service (the extent of preventive maintenance), Condition, and Reliability. This system provides information about the current fleet and informs decisions regarding the planning of future replacements.

Apparatus Reviews

The National Fire Protection Association's Standard for Automotive Apparatus (NFPA 1901) addresses fire apparatus. The standard defines the requirements for new automotive fire apparatus and trailers designed to be used under emergency conditions to transport personnel and equipment and to support fire suppression and the mitigation of other hazardous situations. It recommends that fire apparatus 15 years to 25 years old be placed into a reserve status, and that apparatus 25 years old or older be replaced.

AACOFD has 341 response/support apparatus and vehicles in its inventory, with 278 considered frontline and 63 considered reserve. Of AACOFD's frontline inventory, 83.8% are 15 years old or newer. The remaining 16.2% are old enough to be moved into reserve status. Of the current reserve fleet, 100% are 25 years or newer, with 3 units at the 25-year mark.

NFPA 1901 considers other factors than the age of the apparatus when considering the effective lifespan of an apparatus:

- Vehicle road mileage
- Engine operating hours
- The quality of the preventive maintenance program
- The quality of the driver training program
- Whether the fire apparatus was used within its design parameters
- Whether the fire apparatus was manufactured on a custom or commercial chassis

- The quality of workmanship by the original manufacturer
- The quality of the components used in the manufacturing

This section of the report describes AACOFD's frontline apparatus and vehicles. The table below lists the primary response apparatus by resource type, manufacturer, year, mileage, and evaluation scoring. For the Service, Condition, and Reliability scoring, the following scale is used in Figure 85:

- 1 = Excellent
- 2 = Very Good
- 3 = Good
- 4 = Fair
- 5 = Poor

Figure 84. Primary Apparatus Evaluation

Location	Type	Make	Year	Mileage	Service	Condition	Reliability
FS 05	Aerial	Seagrave	2023	6,289	1	1	2
FS 13	Aerial	Seagrave	2012	30,775	1	3	4
FS 23	Aerial	E-ONE	2019	17,869	1	2	2
FS 26	Aerial	Seagrave	2022	15,180	1	1	2
FS 28	Aerial	Seagrave	2008	55,033	1	3	3
FS 29	Aerial	E-ONE	2017	47,864	1	2	2
FS 30	Aerial	E-One	2005	147,911	1	3	3
FS 31	Aerial	E-ONE	2020	56,288	1	2	2
FS 40	Aerial	E-One	2015	82,610	1	2	3
FS 42	Aerial	Pierce	2009	49,005	1	2	2
SHOP	Aerial	E-One	2000	131,543	1	4	4
FS 01	Ambulance	Freightliner/Horton	2020	59,436	1	1	1
FS 02	Ambulance	Ford F-450	2012	96,257	1	2	1
FS 02	Ambulance	Freightliner	2018	164,684	1	2	1
FS 03	Ambulance	Freightliner/Horton	2020	83,584	1	2	1
FS 04	Ambulance	Freightliner/Horton	2020	155,906	1	2	1
FS 05	Ambulance	Freightliner/Horton	2021	154,430	1	2	2
FS 05	Ambulance	Freightliner/Horton	2020	180,485	1	2	3
FS 06	Ambulance	Chevrolet	2009	14,021	1	2	1
FS 06	Ambulance	Freightliner/Horton	2021	75,125	1	1	1
FS 07	Ambulance	Ford	2020	109,384	1	1	2
FS 09	Ambulance	Freightliner/Horton	2021	104,725	1	2	1
FS 10	Ambulance	Freightliner/Horton	2018	174,560	1	2	1
FS 11	Ambulance	Ford	2019	41,401	1	1	1
FS 11	Ambulance	Freightliner	2018	144,322	1	2	1

Location	Type	Make	Year	Mileage	Service	Condition	Reliability
FS 12	Ambulance	FORD	2016	80,183	1	1	1
FS 12	Ambulance	Freightliner/Horton	2024	7,167	1	1	1
FS 13	Ambulance	Sprinter	2014	31,401	1	2	2
FS 13	Ambulance	Freightliner/Horton	2019	137,064	1	2	1
FS 17	Ambulance	Freightliner/Horton	2020	105,606	1	1	1
FS 18	Ambulance	Freightliner/Horton	2021	89,507	1	1	1
FS 18	Ambulance	Freightliner/Horton	2018	116,674	1	2	1
FS 19	Ambulance	Freightliner/Horton	2024	4,321	1	1	2
FS 20	Ambulance	FORD	2016	208,844	1	2	2
FS 21	Ambulance	Ford	2019	194,372	1	1	3
FS 21	Ambulance	Freightliner/Horton	2022	65,417	1	1	1
FS 23	Ambulance	Freightliner/Horton	2021	92,016	1	1	1
FS 26	Ambulance	Freightliner/Horton	2021	93,805	1	1	1
FS 27	Ambulance	Ford	2021	5,576	1	1	1
FS 27	Ambulance	Freightliner/Horton	2024	8,769	1	1	1
FS 28	Ambulance	Ford	2019	109,708	1	1	1
FS 29	Ambulance	Freightliner/Horton	2020	152,096	1	2	1
FS 30	Ambulance	Freightliner/Horton	2022	50,353	1	1	1
FS 31	Ambulance	Freightliner/Horton	2021	88,268	1	1	2
FS 32	Ambulance	Freightliner/Horton	2021	111,400	1	2	1
FS 33	Ambulance	Ford F-450	2013	70,004	1	2	2
FS 33	Ambulance	Freightliner/Horton	2022	48,551	1	1	1
FS 33	Ambulance	Freightliner	2018	168,980	1	2	3
FS 34	Ambulance	Ford	2016	133,128	1	2	2
FS 40	Ambulance	Ford	2022	12,665	1	1	2
FS 40	Ambulance	Freightliner/Horton	2020	77,877	1	2	1
FS 41	Ambulance	Freightliner/Horton	2021	67,397	1	2	2
FS 42	Ambulance	Ford	2016	143,186	1	2	2
FS 42	Ambulance	Freightliner/Horton	2021	74,935	1	2	1
FS 04	Boat	Demaree	2019	N/A	1	N/A	N/A
FS 08	Boat	Munson	2024	N/A	1	1	2
FS 23	Boat	Highfield 21'	2018	N/A	1	2	N/A
FS 23	Boat	Demaree	2019	N/A	1	N/A	N/A
Marina	Boat	Safe Defender	2002	N/A	1	3	2
Marina	Boat	Metal Shark	2024	N/A	N/A	N/A	N/A
Marina	Boat	Metal Shark	2024	N/A	N/A	N/A	N/A
Academy	Brush Truck	Ford	2003	23,033	1	3	2
FS 02	Brush Truck	Ford	2005	14,873	1	4	2
FS 03	Brush Truck	Ford	2001	19,788	1	3	2
FS 06	Brush Truck	Chevrolet	2010	8,326	1	3	2
FS 07	Brush Truck	FORD	2018	8,107	1	2	2
FS 17	Brush Truck	Ford	2012	10,234	1	3	2

Location	Type	Make	Year	Mileage	Service	Condition	Reliability
FS 19	Brush Truck	Ford	2011	12,551	1	3	2
FS 20	Brush Truck	Ford	2013	13,520	1	3	2
FS 27	Brush Truck	Ford	2020	3,873	1	1	2
FS 28	Brush Truck	Ford	2014	7,925	1	3	2
FS 34	Brush Truck	Ford	2001	29,032	1	3	2
FS 40	Brush Truck	Ford	2018	2,269	1	3	2
FS 41	Brush Truck	Ford	2014	6,516	1	3	2
FS 42	Brush Truck	Ford	2018	3,053	1	3	2
Shop	Brush Truck	Ford	2003	23,171	1	4	2
Shop	Brush Truck	Ford	2001	36,846	1	3	2
FS 08	Dive Truck	Freightliner	2001	68,964	1	3	1
FS 01	Engine	Pierce	2021	15,639	1	1	2
FS 02	Engine	E-ONE	2023	10,632	1	1	3
FS 02	Engine	E-One	2006	94,080	1	3	2
FS 03	Engine	Spartan/4 Guys	2020	39,985	1	1	1
FS 03	Engine	Spartan	2006	82,103	1	2	3
FS 04	Engine	E-ONE	2021	43,271	1	2	3
FS 05	Engine	E-ONE	2023	13,581	1	1	3
FS 06	Engine	Pierce	2021	40,435	1	1	2
FS 07	Engine	PIERCE	2016	95,576	1	2	2
FS 07	Engine	Seagrave	2003	124,252	1	3	3
FS 09	Engine	Pierce	2019	87,440	1	2	2
FS 10	Engine	Pierce	2019	56,833	1	1	3
FS 11	Engine	E-ONE	2019	47,130	1	1	2
FS 12	Engine	Pierce	2022	19,823	1	1	2
FS 12	Engine	Pierce	2014	99,280	1	2	4
FS 13	Engine	Seagrave	2010	103,722	1	3	3
FS 17	Engine	E-ONE	2023	11,503	1	1	3
FS 17	Engine	Pierce	2021	4,953	1	1	2
FS 18	Engine	Pierce	2018	115,585	1	2	3
FS 19	Engine	Pierce	2007	183,316	1	3	2
FS 20	Engine	Spartan	2008	76,528	1	3	4
FS 20	Engine	KME	2019	23,124	1	2	3
FS 21	Engine	Pierce	2018	111,542	1	2	4
FS 23	Engine	E-ONE	2019	73,875	1	2	3
FS 26	Engine	E-ONE	2023	7,020	1	1	3
FS 27	Engine	E-One	2008	103,712	1	3	3
FS 27	Engine	Pierce	2017	93,291	1	2	2
FS 28	Engine	Pierce	2012	139,625	1	2	3
FS 28	Engine	Seagrave	2003	6,883	1	3	3
FS 29	Engine	Pierce	2018	76,947	1	2	2
FS 30	Engine	E-ONE	2016	150,637	1	2	3

Location	Type	Make	Year	Mileage	Service	Condition	Reliability
FS 31	Engine	Pierce	2018	94,405	1	2	3
FS 32	Engine	E-ONE	2023	17,399	1	1	3
FS 33	Engine	Pierce	2018	94,883	1	2	3
FS 33	Engine	Pierce	2007	52,184	1	3	2
FS 34	Engine	Pierce	2014	44,634	1	3	2
FS 40	Engine	Pierce	2014	38,664	1	3	2
FS 40	Engine	E-ONE	2016	120,906	1	3	3
FS 41	Engine	E-ONE	2015	65,318	1	3	2
FS 42	Engine	E-ONE	2023	8,357	1	1	3
FS 42	Engine	PIERCE	2016	39,562	1	3	2
FS 21	Mini Pumper	Ford	2019	4,345	1	2	2
FS 08	Pumper Tanker	Pierce	2023	6,535	1	1	2
FS 11	Pumper Tanker	E-One	2005	165,549	1	3	1
FS 19	Pumper Tanker	Pierce	2012	58,217	1	3	4
FS 20	Pumper Tanker	Pierce	2009	126,568	1	3	3
FS 01	Squad	Pierce	2003	80,750	1	3	1
FS 02	Squad	Spartan	2002	82,405	1	4	1
FS 04	Squad	E-ONE	2018	87,154	1	2	1
FS 07	Squad	Seagrave	2023	6,371	1	1	2
FS 12	Squad	Seagrave Attacker/SVI	2021	13,877	1	2	2
FS 33	Squad	Pierce	2021	24,211	1	2	1
FS 34	Squad	Pierce	2011	33,644	1	3	1
FS 01	Tanker	Ferrara/Freightliner ST	2023	3,329	1	1	2
FS 03	Tanker	International	2007	103,008	1	3	2
FS 06	Tanker	Ferrara/Freightliner ST	2023	3,710	1	2	2
FS 09	Tanker	Freightliner/UST	2020	47,717	1	2	2
FS 11	Tanker	Ferrara/Freightliner ST	2023	2,665	1	1	2
FS 40	Tanker	Peterbilt/4 Guys	2017	18,243	1	2	1
FS 42	Tanker	Freightliner/Pierce	2022	5,919	1	1	1

As shown in the figure above, when considering the condition score for each type of frontline apparatus, trends emerge regarding AACOFD's fleet. The condition score considers the general condition of the apparatus, accident history, and anticipated major repairs or updates.

Across primary response apparatus categories, the distribution of condition scores among frontline and reserve apparatus is illustrated in Figure 86.

Figure 85. Score Distribution by Apparatus Type and Deployment.

Apparatus Type	Status	Excellent	Very Good	Good	Fair	Poor
Engine	Frontline	14	15	16	–	–
	Reserve	–	–	16	2	–
Aerial	Frontline	2	5	3	–	–
	Reserve	–	–	–	3	–
Tanker	Frontline	3	3	1	–	–
	Reserve	–	1	–	1	–
Ambulance	Frontline	20	23	–	–	–
	Reserve	–	–	12	–	–

Across the engine category all frontline apparatus received excellent condition review, a very good condition assessment, or good condition rating. The majority of reserve engines are in good condition, while two engines received a fair condition rating. The engine is the "workhorse" of any fire rescue department, and AACOFD's 45 frontline engines are supported with at least 16 reserve engines in good condition. This represents more than a 2.5 to 1 ratio between frontline and reserve engines.

The ten frontline aerial apparatus received excellent, very good, or good condition ratings. However, those units rely on an aerial reserve fleet of three units which were rated as fair condition. The aerial apparatus's role in a fire department is critical to firefighting and victim rescue operations. The ratio of frontline aerials to reserve aerials is slightly more than 3.3 to 1; however, unlike the engine category, the reserve aerial fleet's condition rating is less than good. (Note: there are three quints in reserve status not included in the ratio, which received a fair condition rating).

The Anne Arundel County Fire Department's tanker fleet is critical to firefighting operations in areas not served by a public water system. AACOFD's frontline tankers received excellent and very good condition ratings with only one receiving a good rating. The two reserve tankers received a very good and fair condition rating. The ratio of frontline tankers to reserves is 3.5 to 1.

The frontline ambulance units for AACOFD received either excellent or very good condition ratings, and all units in the reserve fleet were rated as good condition. Additionally, the ratio of frontline ambulances to reserve is 3.6 to 1.

Considering the age and mileage of each primary response apparatus can be helpful to further evaluating the health of a fleet. For this measure, the mileage of the apparatus is divided by an average annual of 10,000 miles. The resulting score can be used to approximate extra years of age on the vehicle, which are not represented in the actual age or condition evaluation.

The following table lists primary apparatus in a frontline status whose adjusted age (accounting for excessive mileage) identifies them as potentially needing to be moved into reserve status ahead of their age.

Figure 86. Transitional Units – Primary to Reserve Status.

Apparatus Name	Actual Age	Mileage	Additional Years Due to Mileage	Adjusted Age
Engine 301	8	150,637	7	15
Ambulance 209	8	208,844	12	20
Ambulance 219	5	194,372	14	19
Medic 2	6	164,684	10	16
Medic 10	6	174,560	11	17
Medic 3	4	155,906	11	15
Medic 4	4	180,485	14	18
Medic 28	3	154,430	12	15
Medic 29	4	152,096	11	15
Medic 33B	6	168,890	10	16

Apparatus Replacement Plan

The Anne Arundel County Fire Department's current annual budget for large response apparatus is $1.8 million. The department is projected to take possession of two engines in 2025 and two engines and four aerials in 2026. AACOFD purchases custom-built fire apparatus.

A review of the apparatus replacement schedule projected through 2035 shows an average of three engines purchased every year, and ten aerials purchased over the ten-year span. These schedules appear to forecast replacing units as they reach the 15-year benchmark for moving to reserve status.

The projection provides a replacement schedule that keeps pace with the current number of engines and aerials. If the department adds stations or an apparatus in the

current fleet is removed from service permanently ahead of schedule (e.g., due to accident where the apparatus is "totaled,") the addition or replacement will be outside of the replacement schedule. The department has experienced two aerial apparatus being taken out of service permanently due to catastrophic incidents.

The replacement schedule budgets approximately $6 million per year to support the plan with an anticipated inflation rate of 5%. From 2014 to 2020, the inflation rate in the United States fluctuated but remained below 2.5%. A spike occurred in 2021 concurrent with COVID, but the inflation rate has settled below 4% since the beginning of 2024. Removing the extraordinary spike, the current plan anticipates and exceeds the historical trends in inflation.

The cost of large fire apparatus has dramatically increased within the last five years across the entire fire service industry. The increase in cost is of particular concern for the volunteer fire companies which have in the past provided AACOFD with apparatus. These volunteer corporations now find themselves potentially unable to raise sufficient funds to replace fire apparatus due to the higher current price of each apparatus. The replacement schedule addresses this possibility by anticipating AACOFD will be required to purchase those units.

It should also be noted that at the current rates of production in the industry, large custom-built fire apparatuses will be delivered approximately three years after the year of purchase. For this reason, AACOFD has chosen to pursue the purchase of "stock" apparatus to decrease delivery times.

Reserve Fleet

The reserve fleet for the Anne Arundel County Fire Department is housed at the Anne Arundel County Central Services Garage at 8435 Maxwell Frye Road. The apparatuses there are stored outdoors and are not protected from the effects of the weather (many units appear sun-bleached). Additionally, these units are stripped of almost all equipment and appliances. Therefore, when crews move into a reserve unit, they must move most of their equipment from their frontline apparatus, requiring more time out of service.

The central location for storage of the reserve fleet is less than ten road miles from 61% of AACOFD's fire stations. Eight fire stations (26%) are 10 to 20 road miles from the storage location, and 4 fire stations (13%) are more than 20 miles from the storage location. Road mile distances may be compounded by traffic. For the farthest, Fire

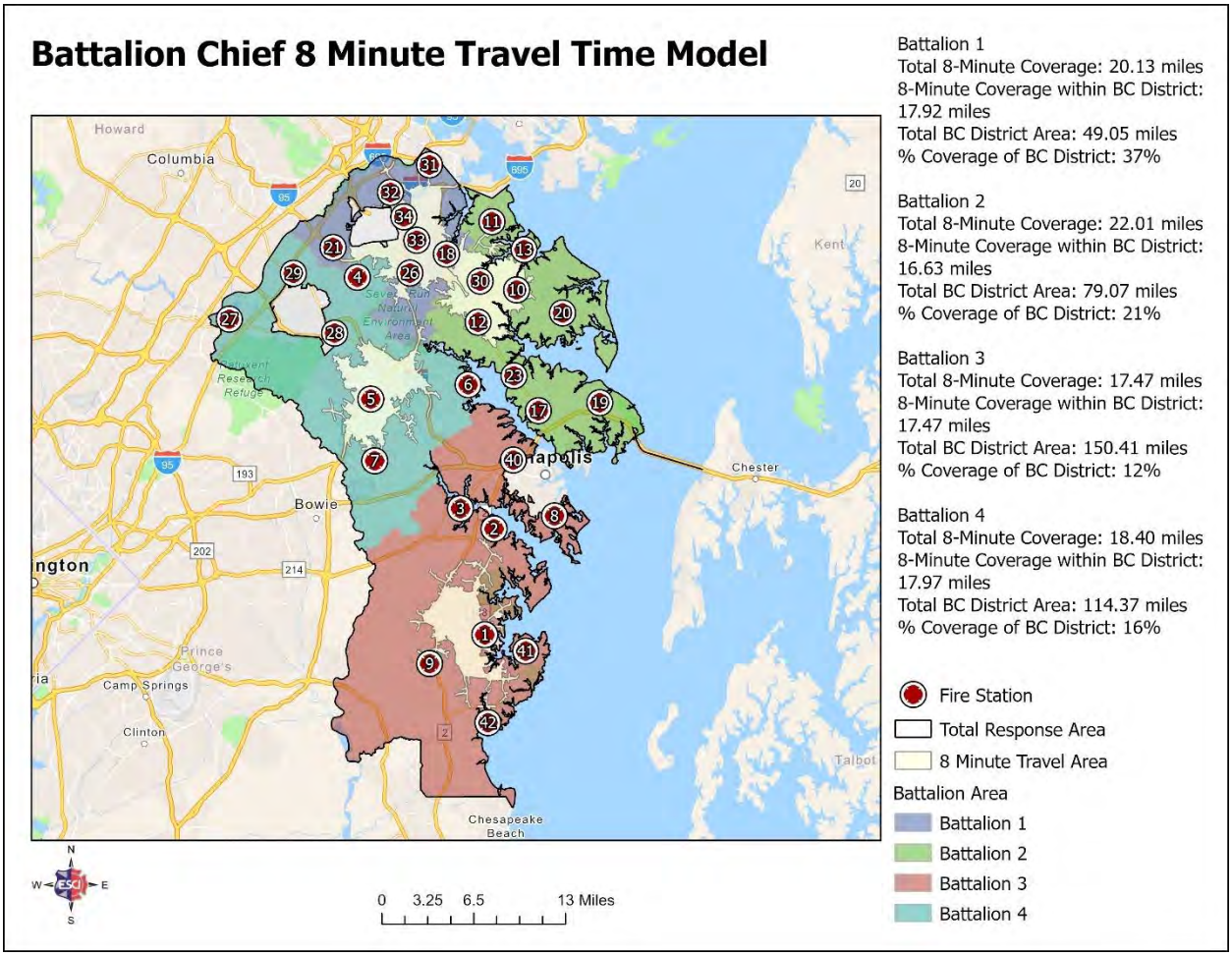
Station 42, which is 28 miles from the reserve fleet storage location, the estimated minimum travel time is 37 minutes one way during ideal conditions. That travel time can be expected to be greater during times of heavy traffic and can impact the time spent out of service while swapping between units.

Recommendations

Operational Response Recommendations

Consider adding a 5th command position to decrease the time for a battalion chief (or similar position) to arrive on the scene and provide oversight and support.

Figure 87. Battalion Chief Travel Time.



To align with NFPA 1710, **all future fire suppression resources** (engines, aerials, rescue squads, fireboats) placed into the emergency response system **should have a dedicated minimum staffing of four personnel.** This recommendation will assist the county in transitioning away from the cross-staffing model currently in place throughout the response system. Implementing a four-person staffing model on all suppression apparatuses, future and existing, will likely require a tiered response. Refer to the following figures for recommendations.

Fully staff a special service resource (aerial, rescue squad) with four personnel in each operational battalion to improve response times and resource availability. As indicated in Figure 31, AACOFD provides dedicated staffing to only three special service resources and provides 5% coverage within the county. ESCI recommends staffing the following additional units: Tower 5, Tower 30, and Rescue Squad 2.

Regarding Figure 5, ESCI recommends **fully staffing one fireboat with four personnel** to reduce the time to deployment. Anne Arundel County boasts more than 500 miles of shoreline within the response area.

Figure 88: Tier I Recommendations

Resources	Number of Resources	Total Required Staff
Ladder (Truck)*	7	84
Squad (Rescue/Heavy Rescue)	7	84
Fireboat	1	12

**Three ladders already have 4-person staffing*

AACOFD's shift to four-person staffing will likely occur gradually. As the fourth crew member is added incrementally, ESCI recommends using the transitional time frame to assign personnel to stations for 4 to 6 months trial periods. During these trials, data should be collected to assess the impact of the added personnel. Repeating this process at various strategic locations will enable AACOFD to evaluate the benefits of increased staffing within the affected station's territory and its effects on response capabilities in neighboring areas.

Consideration should first be given to prioritizing stations that cross-staff specialty units that are also geographically isolated or remote. AACOFD should also consider prioritizing stations that are responsible for staffing multiple units. For example, Station 2 is responsible for cross-staffing an engine, a ladder truck, a fireboat, and a brush truck.

Figure 89: Adding 4th Person to Existing Units

Resources	Number of Resources	Total Required Staff
Engines that cross-staff ladders, squads, and boats*	13	39
Engines serving peninsulas*	3	9
Engines in rural designations*	10	30
Engines remaining**	7	21

**Some engines may apply to multiple categories. **Four engines already have 4-person staffing.*

In reference to Figure 33, ESCI recommends that **AACOFD consistently staff Tanker 10, 40, and 6** to improve the system's operational reliability by providing dedicated resources and reducing the need to cross-staff critical resources.

AACOFD should **adopt urban and rural response zones** as defined by population densities and improved infrastructure. For more information, refer to the Urban vs. Rural Environment Section. Figure 14 outlines a practical approach to fire response zone designation.

As AACOFD moves forward with adopting a four-person minimum staffing on all suppression units, ESCI recommends staffing all new units with four (as mentioned above) and then **increasing staffing in rural response areas** as the density of resources is lower. Thus, adding minimum staffing will help achieve an effective response force to arrive quicker, thus providing a more effective service.

Regarding, Figure 10. Safety Officer Capacity, AACOFD should **define the operational role and performance standard and then consider an additional safety officer** if needed. The current deployment is only able to reach 8% of the county in a timely manner.

Staffing & Response Standards Recommendations

ESCI **recommends that the Anne Arundel County Fire Department adopt standards for staffing and response**. The following sections are the recommended levels of response and staffing that AACOFD may adopt and then use to measure performance routinely.

Emergency Medical Services – Low Risk

Low-risk EMS are those medical calls for service that the emergency medical dispatch process determines are non-emergency. Examples of low-risk EMS incidents may include ground-level falls without injury, general illness, low-acuity abdominal pain, and those incidents classified by ProQA as Alpha and Omega.

Figure 90. EMS Low Response Standard Figure Set

Critical Task	Required Staff
Primary Patient Care & Incident Command	1
Vehicle Operations	1
Effective Response Force:	**2**

Resource Deployment	Minimum Staffing	Recommended Staffing
Transport Ambulance (or Engine)	2 (3)	2 (4)
Total Personnel:	**2 (3)**	**2 (4)**

Area	Alarm Handling	Turnout Time	Travel Time		Total Response Time	
			First Unit	ERF	First Unit	ERF
Urban	1:00	1:00	14:00	N/A	16:00	N/A
Rural	1:00	1:00	16:00	N/A	18:00	N/A

Benchmark Statement | Urban & Rural

For 90% of low-risk emergency medical responses in urban response areas, the total response time for the first arriving fire unit, staffed with at least two emergency medical technicians, shall be the time indicated in the figure above.

The first arriving unit for low-risk emergency medical responses shall be capable of:

- Conducting a rapid size-up of the emergency scene
- Initiating an incident command system
- Assessing the need for additional resources
- Administering emergency medical patient care
- Deploying automatic external defibrillation (AED)
- Performing cardiopulmonary resuscitation (CPR)
- Providing patient transport to the closest appropriate facility

The response model achieves the effective response force with the first arriving unit. There are no additional performance statements for this risk level.

Emergency Medical Services – Moderate Risk

Moderate-risk EMS are those medical calls for service that the emergency medical dispatch process determines are emergent. Examples of moderate-risk EMS incidents may include chest pain, difficulty breathing, stroke, and those incidents classified by ProQA as Bravo and Charlie.

Figure 91. EMS Moderate Response Standard Figure Set

Critical Task	Required Staff
Incident Command	1
Primary Patient Care Provider	1
Secondary Patient Care Provider	1
Vehicle Operations	2
Effective Response Force:	**5**

Resource	Minimum Staffing	Recommended Staffing
ALS Transport Ambulance	2	2
Suppression Apparatus	3	4
Total Personnel:	**5**	**6**

Area	Alarm Handling	Turnout Time	Travel Time		Total Response Time	
			First Unit	ERF	First Unit	ERF
Urban	1:00	1:00	4:00	8:00	6:00	10:00
Rural	1:00	1:00	6:00	10:00	8:00	12:00

Benchmark Statement | Urban & Rural

For 90% of moderate-risk emergency medical responses in the area of responsibility, the total response time for the first arriving fire unit, staffed with at least two emergency medical technicians, shall be the time indicated in the figure above.

The first arriving unit for moderate-risk emergency medical responses shall be capable of:

- Conducting a rapid size-up of the emergency scene
- Initiating an incident command system
- Assessing the need for additional resources
- Obtaining vitals and patient medical history
- Administering advanced life support patient care
- Deploying automatic external defibrillation (AED)
- Performing cardiopulmonary resuscitation (CPR)

For 90% of moderate-risk emergency medical responses in the area of responsibility, the total response time for the arrival of all fire and other EMS units and personnel necessary to complete the first-alarm assignment, otherwise referred to as the Effective Response Force (ERF), shall be the time indicated in the figure above.

The effective response force for moderate-risk emergency medical response shall be capable of:

- Conducting a rapid size-up of the emergency scene
- Initiating an incident command system
- Assessing the need for additional resources
- Obtaining vitals and patient medical history
- Administering advanced life support patient care
- Deploying automatic external defibrillation (AED)
- Performing cardiopulmonary resuscitation (CPR)
- Assisting transport personnel with packaging the patient.
- Providing advanced life support.
- Providing patient transport to the closest appropriate facility

Emergency Medical Services – High Risk

High-risk EMS are those medical calls for service that the emergency medical dispatch process determines are life-threatening. Examples of high-risk EMS incidents may include cardiac arrest, shootings, stabbings, and those incidents classified by ProQA as Charlie, Delta, and Echo.

Figure 92. EMS High Response Standard Figure Set

Critical Task	Required Staff
Incident Command	1
Primary Patient Care Provider	1
Secondary Patient Care Provider	1
Medical Equipment Operator	1
Vehicle Operations	2
Effective Response Force:	**6**

Resource	Minimum Staffing	Recommended Staffing
ALS Transport Ambulance	2	2
Suppression Apparatus	3	4
Supervisor	1	1
Total Personnel:	**6**	**7**

Area	Alarm Handling	Turnout Time	Travel Time		Total Response Time	
			First Unit	ERF	First Unit	ERF
Urban	1:00	1:00	4:00	8:00	6:00	10:00
Rural	1:00	1:00	6:00	10:00	8:00	12:00

Benchmark Statement | Urban & Rural

For 90% of high-risk emergency medical responses in the area of responsibility, the total response time for the first arriving fire unit, staffed with at least two emergency medical technicians, one of which is an advanced life support-level EMT, shall be the time indicated in the figure above.

The first arriving unit for high-risk emergency medical responses shall be capable of:

- Conducting a rapid size-up of the emergency scene
- Initiating an incident command system
- Assessing the need for additional resources
- Obtaining vitals and patient medical history
- Administering advanced life support patient care
- Deploying automatic external defibrillation (AED)
- Performing cardiopulmonary resuscitation (CPR)

For 90% of high-risk emergency medical responses in the area of responsibility, the total response time for the arrival of all fire and other EMS units and personnel necessary to complete the first-alarm assignment, otherwise referred to as the Effective Response Force (ERF), shall be the time indicated in the figure above.

The effective response force for high-risk emergency medical response shall be capable of:

- Conducting a rapid size-up of the emergency scene
- Initiating an incident command system
- Assessing the need for additional resources
- Obtaining vitals and patient medical history
- Administering advanced life support patient care
- Deploying automatic external defibrillation (AED)
- Performing cardiopulmonary resuscitation (CPR)
- Assisting transport personnel with packaging the patient.
- Providing patient transport to the closest appropriate facility

Fire Suppression – Low Risk

Low-risk fire incidents are emergent calls for service that are unlikely to cause injury or significant property damage. Examples may include vehicles, trash, brush, and other non-structural fires.

Figure 93. Fire Low Response Standard Figure Set

Critical Task	Required Staff
Attack Hoseline Deployment	2
Vehicle Operations	1
Effective Response Force:	**3**

Resource	Minimum Staffing	Recommended Staffing
Suppression Apparatus	3	4
Total Personnel:	**3**	**4**

Area	Alarm Handling	Turnout Time	Travel Time		Total Response Time	
			First Unit	ERF	First Unit	ERF
Urban	1:00	1:20	4:00	N/A	6:20	N/A
Rural	1:00	1:20	6:00	N/A	8:20	N/A

Benchmark Statement | Urban & Rural

For 90% of low-risk fire responses in the area of responsibility, the total response time for the first arriving fire unit, staffed with at least four firefighters, shall be the time indicated in the figure above.

The first arriving unit for low-risk fire responses shall be capable of:

- Conducting a rapid size-up of the emergency scene
- Initiating an incident command system
- Assessing the need for and requesting additional resources as needed
- Providing 1,500 GPM water pumping capacity
- Advancing a charged fire suppression attack hose line for fire control or rescue

The response model achieves the effective response force with the first arriving unit. There are no additional performance statements for this risk level.

Fire Suppression – Moderate Risk

Moderate-risk fire incidents are those calls for service that are likely to cause injury and significant property damage. Examples of moderate-risk fire incidents may include single-family homes, utility facilities, commercial & business occupancies, and storage facilities.

Figure 94. Fire Moderate Response Standard Figure Set

Critical Task	Required Staff
Incident Command Team	3
Attack Hoseline Deployment	4
Secondary Hoseline Deployment	4
Search & Rescue	4
Water Supply	2
Engine Operations	2
Aerial Operations	2
Support Functions – Ventilation – Utility Control – Forced Entry	6
Medical Assistance & Rehab	2
Effective Response Force:	**29**

Resource	Minimum Staffing	Recommended Staffing
Suppression Apparatus	3	4
Suppression Apparatus	3	4
Suppression Apparatus	3	4
Suppression Apparatus	3	4
Suppression Apparatus	3	0
Special Service	3	4
Special Service	3	0
Heavy Rescue	4	4
Transport Ambulance	2	2
Command	1	1
Command	1	1
Safety	1	1
Total Personnel:	**29**	**29**

Area	Alarm Handling	Turnout Time	Travel Time		Total Response Time	
			First Unit	ERF	First Unit	ERF
Urban	1:00	1:20	4:00	8:00	6:20	10:20
Rural	1:00	1:20	6:00	10:00	8:20	12:20

Benchmark Statement | Urban & Rural

For 90% of moderate-risk fire responses in the area of responsibility, the total response time for the first arriving fire unit, staffed with at least four firefighters, shall be the time indicated in the figure above.

The first arriving unit for moderate-risk fire responses shall be capable of:

- Conducting a rapid size-up of the emergency scene
- Initiating an incident command system
- Assessing the need for and requesting additional resources as needed
- Providing 1,500 GPM water pumping capacity
- Advancing a charged fire suppression attack hose line for fire control or rescue

For 90% of all moderate-risk structure fire responses within the area of responsibility, the total response time for the arrival on scene of all fire units and personnel necessary to complete a full first-alarm assignment, otherwise referred to as the Effective Response Force (ERF) shall be the time indicated in the figure above.

The effective response force for moderate-risk fire responses shall be capable of:

- Conducting a rapid size-up of the emergency scene
- Establishing an incident command system
- Providing an uninterrupted water supply
- Advancing a charged attack hose line and a backup line for fire control
- Complying with the OSHA requirements of two-in and two-out
- Completing forcible entry
- Searching and rescuing at-risk victims
- Ventilating the structure & controlling utilities
- Placing elevated master streams into service from aerial apparatus.

Fire Suppression – High Risk

High-risk fire incidents are those calls for service that are likely to cause injury or significant property damage. Examples of high-risk fire incidents may include multi-family occupancies, places of assembly, high-rise buildings, large residential, academic, athletic and health buildings, industrial buildings, mixed-use, and railway emergencies.

Figure 95. Fire High Response Standard Figure Set

Critical Task	Required Staff
Incident Command Team	4
Attack Hoseline Deployment	6
Secondary Hoseline Deployment	6
Search & Rescue	6
Water Supply	2
Engine Operations	2
Aerial Operations	2
Support Functions – Ventilation – Utility Control – Forced Entry	6
Medical Assistance & Rehab	4
Effective Response Force:	**38**

Resource	Minimum Staffing	Recommended Staffing
Suppression Apparatus	3	4
Suppression Apparatus	3	4
Suppression Apparatus	3	4
Suppression Apparatus	3	4
Suppression Apparatus	3	0
Suppression Apparatus	3	0
Special Service	3	4
Special Service	3	4
Special Service	3	4
Heavy Rescue	3	4
Transport Ambulance	2	2
Transport Ambulance	2	2
Command	1	1
Command	1	1
Command	1	1
Safety	1	1
Total Personnel:	**38**	**40**

Area	Alarm Handling	Turnout Time	Travel Time		Total Response Time	
			First Unit	ERF	First Unit	ERF
Urban	1:00	1:20	4:00	8:00	6:20	10:20
Rural	1:00	1:20	6:00	10:00	8:20	12:20

Benchmark Statement | Urban & Rural

For 90% of high-risk fire responses in the area of responsibility, the total response time for the first arriving fire unit, staffed with at least four firefighters, shall be the time indicated in the figure above.

The first arriving unit for high-risk fire responses shall be capable of:

- Conducting a rapid size-up of the emergency scene
- Initiating an incident command system
- Assessing the need for and requesting additional resources as needed
- Providing 1,500 GPM water pumping capacity
- Advancing a charged fire suppression attack hose line for fire control or rescue
- Initiating other fire ground operations in accordance with department policies and procedures.

For 90% of all high-risk structure fire responses within the area of responsibility, the total response time for the arrival on scene of all fire units and personnel necessary to complete a full first-alarm assignment, otherwise referred to as the Effective Response Force (ERF) shall be the time indicated in the figure above.

The effective response force for high-risk fire responses shall be capable of:

- Conducting a rapid size-up of the emergency scene
- Establishing an incident command system
- Providing an uninterrupted water supply
- Advancing a charged fire suppression attack hose line and a backup line for fire control
- Complying with the OSHA requirements of two-in and two-out
- Completing forcible entry
- Searching and rescuing at-risk victims
- Ventilating the structure
- Controlling utilities
- Elevated master streams are placed into service from aerial apparatus.

Administration & Organizational Oversight

AACOFD should **measure and report unit hour commitment (UHU) quarterly** and educate the county's leadership and policymakers on how these values affect the system's workload and service delivery.

AACOFD should **consider deploying paramedic recruitment academies** by which fifteen new employees are chosen to be trained as both firefighters and paramedics. This approach will help bolster the paramedic census and decrease the workload of the workforce. In addition, the Public Consulting Group delivered a report in March 2024 outlining broader recommendations for the paramedic challenges. For more information, see the section titled Staff Allocation for Emergency Functions.

AACOFD should **revise the apparatus replacement plan** to better account for future apparatus purchase planning and also adjust the plan based on the current trend in apparatus production time. More information can be found in the section titled Apparatus Replacement Plan.

AACOFD should **address the high commitment values** exhibited by many of the department's transport ambulances. This information can be found in the section titled Workload. The solution is likely to be to alter the system itself rather than continue adding transport units. Evaluating peak-time ambulances, call diversion, and matching resources to needs can achieve higher success.

ESCI recommends **transitioning the sworn public information officer (PIO) position to a civilian Communications Director.** With AACOFD's recent history of staffing changes and future growth, ESCI believes there is an immediate need to address the community's perceptions and perspectives. A skilled communications professional can craft strategies to inform the community and garner support.

Regarding the size of the community, AACOFD should **consider a south fleet garage for minor repairs, reserve apparatus, and automotive supplies** to avoid long travel times for fleet and "just-in-time" repairs. Find more information in the section titled Apparatus.

ESCI recommends **protecting the department's reserve fleet from the environmental elements** and providing shelter. For more information, see the section titled Reserve Fleet.

Regarding the high workload of the fire inspection personnel, ESCI recommends that the **AACOFD explore options for the management of inspection, testing, and maintenance (ITM) reports conducted by third-party** contractors. Managing reports and conducting follow-ups can reduce the likelihood of AACOFD inspectors citing violations and thus initiating a secondary inspection. If requested, ESCI can provide recommendations on reliable resources for this activity.

AACOFD spends a significant amount of time monitoring third-party inspectors and witnessing their activity. ESCI recommends that **AACOFD establish a fee schedule** for these activities much like other DC/Maryland/Virginia metro fire departments issue. Revenue from these fees can offset the county's costs on additional inspectors.

AACOFD should i**nstitute a self-inspection program for P2 and P3 level occupancies** to reduce the workload on the limited staff available.

Table of Figures