

A Fire & EMS Services Master Plan for Harford County, Maryland



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September 12, 2009

Mr. David R. Craig
County Executive
Harford County
220 South Main Street
Bel Air, Maryland 21014

Dear Mr. Craig:

I am pleased to submit with this letter our Report on the Fire and EMS Services Master Plan for Harford County, Maryland.

The Study Team would like to acknowledge the excellent cooperation that we received from your Office, the staff of the Department of Planning and Zoning, leadership of the Harford County Volunteer Fire and EMS Association, and the chiefs, presidents, officers and members of the Harford County Fire and EMS Companies and Fire and EMS Foundation.

If you have any questions concerning this Report, please contact Mr. Les Adams of my office at 301-580-1900.

Sincerely,

Brian Buracker
President
cb/kf

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ACKNOWLEDGMENTS

The Study Team extends genuine appreciation to Harford County officials and staff and members of the fire and EMS agencies for their cooperation and assistance in conducting this Study to develop this Fire and EMS Services Master Plan for Harford County.

This project was unique given the extensive support and assistance provided to the Study Team by Harford County project members. In particular, we would like to extend our appreciation to the following:

- Project Coordinating Committee members;
- President Albert “Cubby” Bair, Harford County Volunteer Fire and EMS Assoc.;
- Vice President Bill Dousa, Harford County Volunteer Fire and EMS Assoc.;
- Chiefs and Presidents of the Fire and EMS Companies; and,
- Janet Gleisner and Bryan Lightner, Department of Planning and Zoning.

A sincere “thank-you” to these individuals for their contribution to the completion of this Fire and EMS Services Master Plan through their guidance, support and assistance.

EVALUATION METHODOLOGY

This Study (also called Plan) was developed through a process of interviews, data collection, research, literature review, on-site observations, analysis of data and comparative evaluations with “Best Business” practices and standards in fire protection and emergency medical services. The Study Team’s experiences as fire and EMS officials in Maryland and fire and EMS consultants in every region of the U.S. were incorporated as appropriate.

STRUCTURE OF THE STUDY REPORT/PLAN

This report contains 14 chapters. To assist the reader, the Study Team has included detailed background information on state-of-the-art fire and EMS practices and standards to assist in understanding the basis for some conclusions and suggestions.



In Chapters Two through Thirteen, there are recommendations at the end of each chapter. The recommendations are numbered to correspond with the subject matter in that chapter.

Chapter Fourteen contains a suggested Implementation Plan/Blueprint for the future with specific abbreviated recommendations from preceding chapters and a suggested timeline for consideration.

For the reader, it is important to note that there are different terms for agencies providing fire and EMS in Harford County, such as departments, companies, squad and team. These terms are used interchangeably or as specifically appropriate in the report for ease of reading.



STUDY TEAM MEMBERS

This Study (Master Plan) of the fire and EMS services in Harford County was conducted by four consultants and three office staff of Carroll Buracker & Associates, Inc. (CBI). Two of the consultants each have more than 20 years of fire and EMS experience in the State of Maryland, and they have supervised and served as volunteers in Maryland fire and EMS. One consultant served as the chief uniformed officer of the Montgomery County, Maryland, Department of Fire and Rescue, and he has served as a volunteer fire and EMS chief in Maryland. Three of the four staff have worked as a "Study Team" for more than 15 years. They are hereinafter referred to as the Study Team.

Leslie D. Adams

Mr. Adams is a former Deputy Fire Chief and second-in-command of the Montgomery County, Maryland Fire and Rescue Department, an agency that served at the time more than 950,000 residents. Mr. Adams was the highest ranking uniform member in that fire department, which had a fire director. With more than 30 years of fire and EMS management experience, Mr. Adams has served as the administration and operations deputy fire chief of a fire and EMS department and was responsible for all duties of fire services, including facilities, apparatus, training, facility placement, administration, dispatch, planning and operations. As a chief officer, he managed 33 stations and 1,600 personnel, 31 engines, 14 trucks, 35 Basic Life Support units, 13 Advanced Life Support units and 120 paramedics.

As a fire consultant with CBI, Mr. Adams has fire, EMS and dispatch consultant experience in more than 60 cities and counties, including Los Angeles, St. Paul, Chicago, Tacoma, Fremont, Port Arthur, Stamford, Greenwich, Hartford, Washington County, Henrico County and Chesterfield County.

He holds a Bachelor of Science degree in Business Administration from the Columbia Union College, and has completed course work on a Master of Science degree in General Administration.



STUDY TEAM (continued)

Mr. Adams has taught at the National Fire Academy on modern techniques in fire services operations and has been on the faculty of Montgomery Community College teaching Fire Science Administration.

During his fire career, he served as the Chairman of the International Association of Fire Chiefs (IAFC) Personnel Management Committee. Mr. Adams **is a certified peer fire department assessor with the Commission on Fire Accreditation International.**

Mr. Mark Davis

Mark Davis has 25 years of fire, EMS and special services experience. He has served as a battalion fire and EMS chief, station commander and unit officer. Mr. Davis has been a member of a number of special operations teams, including Hazmat and USAR.

He is a Certified Fire Protection Specialist and a Certified Fire and Explosive Investigator. As a Level II Instructor and Fire Officer II, Mr. Davis developed instructor and fire officer training programs, as well as, field operations and special operations training programs.

Mr. Davis has 12 years experience as a fire/EMS consultant conducting fire and EMS department assessments and providing a broad range of related specialized and industrial training and certification programs. He has also conducted fire suppression water supply assessments.

Mr. Davis holds a Bachelor of Science degree in Fire Science Education and a Master of Arts degree in State and Local Government.

Carroll Buracker

Carroll Buracker is President and CEO of Carroll Buracker & Associates, Inc. and the Center for Public Safety, Inc. He has served as the project manager for more than 250 public safety plans and reports by CBI, including the corporations' project manager for all fire and EMS consultant services.



STUDY TEAM (continued)

Mr. Buracker has more than 20 years of practical experience in public safety in Fairfax County, Virginia, a community of more than 1,000,000 residents. He served as a chief of police for four of his 20 years, following promotions through eight other ranks. The agency had 1,400 employees at the time. As chief of police, the Fairfax County Board of Supervisors awarded him the county's two highest awards for employees and managers: leadership and management excellence.

During his career, he managed the combined county emergency dispatch center for all public safety services in Fairfax County and was the project director for implementing a new facility and technology upgrades.

He implemented the Fairfax County multiple helicopter police/medevac program that also serves the Washington D. C. Metropolitan area.

Mr. Buracker was assigned by the Washington, D.C. Metropolitan Council of Governments (COG), representing 16 cities/counties, to co-chair development of the Metropolitan Washington, D.C. Disaster Response Plan, which, with updates, has been implemented on three occasions, including the Pentagon tragedy on 9/11.

He has been certified as an Expert Witness in both state and federal courts on public safety matters. Mr. Buracker holds a Bachelor of Science degree and a Master of Science degree from American University in Washington, D.C.

The City of Los Angeles Fire Department selected his firm to redo a study by another consultant company. The City of Chicago selected CBI to evaluate their emergency communications and dispatch operations for 9-1-1 and all police, fire and emergency medical services. This study required an operational review of fire and EMS in Chicago.

He has been a life member of the Alexandria Volunteer Fire Department, the oldest volunteer fire department in the nation.



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The Setting

Harford County is located on the northern end of the Chesapeake Bay, Harford County is bordered by Baltimore County on the west, the Commonwealth of Pennsylvania on the north, the Susquehanna River and Cecil County on the east and the Chesapeake Bay on the south. In addition to the Susquehanna, a number of rivers and major streams flow through the County to the Bay, including Little Gunpowder River, Bush River, Deer Creek, Winters Run, Bynum Run and Gasheys Run.

The County is traversed in a north/south direction by I-95 with five exits that provide access to industrial, commercial and residential development. It is also crossed in a north/south direction by two primary state roadways: MD Routes 1 and 40.

In 2000, the U. S. Census estimated the population of Harford County to be 218,590. County officials estimate the current 2009 population at approximately 247,760 and project that the 2014 population will be 268,692.

There are three municipal governments located within Harford County that include the Town of Bel Air and the Cities of Aberdeen and Havre de Grace.

Harford County Government

Harford County has a council and executive form of government. The County Council is the seven-member legislative branch of the government. Six members of the council are elected in the councilmanic districts where they reside. The seventh member of the council is the council president and may reside anywhere in the County and is elected Countywide.

All executive powers of Harford County are vested in the County Executive, who is the chief executive officer of the County. The County Executive appoints the Director of Administration and the heads of all executive branch agencies, subject to confirmation by the council.



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Fire, Rescue & EMS Service Providers

Twelve Harford County volunteer fire and EMS Companies provide related services in the County with the EMS staffing support of the EMS-qualified employees of the Harford County Volunteer Fire and EMS Foundation. Further, the hazardous materials mitigation qualified staff of the County's Division of Emergency Operations provide the Hazmat Team component of the Harford County fire and EMS services provision.

The County's Division of Emergency Operations also provides fire and EMS communications and dispatch services.

Fire, Rescue and EMS Companies

The following fire and EMS companies provide services:

- Co. 1 - Level Volunteer Fire Company
- Co. 2 - Aberdeen Volunteer Fire Company
- Co. 3 - Bel Air Volunteer Fire Company
- Co. 4 - Abingdon Volunteer Fire Company
- Co. 5 - Susquehanna Hose Company
- Co. 6 - Whiteford Volunteer Fire Company
- Co. 7 - Jarrettsville Volunteer Fire Company
- Co. 8 - Joppa-Magnolia Volunteer Fire Company
- Co. 9 - Darlington Volunteer Fire Company
- Co. 10 - Norrisville Volunteer Fire Company
- Co. 13 - Fallston Volunteer Fire Company

Additionally, Co. 5-9 - Havre de Grace Ambulance Corp. is a volunteer company that specializes in providing only emergency medical services.



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Budget for Fire, Rescue and EMS Services

Funding for the independent volunteer organizations and the Fire and EMS Foundation is provided by Harford County taxpayers. The County budget proposed by the County Executive for FY 2010 for the fire and EMS services totaled \$9,067,456.

The Harford County proposed 2010 capital budget for the fire and EMS Companies totals \$1,600,000 for new fire station design, volunteer fire company facility repairs and two fire station renovation and expansion projects.

Organization of Service Providers

Each of the fire and EMS Companies are incorporated under the laws of the State of Maryland, operates under a set of adopted authorizations, including a constitution, bylaws and other rules and guidelines, and elects and/or appoints a set of administrative and operational officers pursuant to their bylaws. Each of the fire companies are, operationally, under the command of their respective chiefs.

The Harford County Volunteer Fire and EMS Association provides coordinating assistance to the fire and EMS Services and serve as a focal point for communications for the County.

The organization and administration recommendations include:

- A. Maximizing volunteer participation;
- B. Enhancing the role of the Chief Officers Liaison Committee;
- C. Enhancing the role of the Harford County Volunteer Fire and EMS Association by providing it with clear lead responsibility for the Fire and EMS Services;



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- D. Creating a Fire and Emergency Services Commission with the responsibilities as outline in this Report, including monitoring and facilitating the implementation of the suggestions of this Plan and the implementation and ongoing use of the Measures of Performance;
- E. Creating a Department of Fire and Emergency Services headed by a Director with the roles and responsibilities outlined in this Report and including the following elements:
 - 1. Fire and EMS Foundation staffing;
 - 2. Hazmat Team and other specialty teams;
 - 3. Fire and EMS records management system and data analysis capability;
 - 4. Volunteer recruitment and retention;
 - 5. Coordinating fire and EMS training;
 - 6. Fire prevention and education functions;
 - 7. Fire and Emergency Services Commission and Association support;
 - 8. Monitoring, supporting and facilitating the implementation of this Plan;
 - 9. Paid firefighter staffing; and,
 - 10. Other functions and responsibilities, as determined appropriate.
- F. Adopting a comprehensive set of County Code provisions relating to the Fire and EMS Service, including:
 - 1. Statement of legislative intent regarding providing adequate public safety, health and welfare through a fire and emergency medical services that is highly competent and efficiently delivered by a combination of volunteer and paid personnel;
 - 2. Objectives of the combination Fire and EMS System;
 - 3. Maximum participation of volunteer fire and EMS personnel;
 - 4. Fire and Emergency Services Commission, authority;
 - 5. Harford County Volunteer Fire and EMS Association, role and responsibilities;



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6. Independent Volunteer Fire and EMS Companies, roles and responsibilities;
 7. Department of Fire and Emergency Services, headed by the Director, authority and responsibilities;
 8. Additional fire and EMS companies;
 9. Relocation/addition of facilities;
 10. Equitable allocation of funding
 11. Annual fire tax levy; and,
 12. Volunteer Length of Service Awards (currently in existence).
- G. Implementing a public-private partnership memoranda of understanding for the provision of fire and EMS services in Harford County;
- H. Providing tax funds for operations and capital projects based on need;
- I. Providing any tax fund allocations to the Fire and EMS Companies on a quarterly basis;
- J. Considering alternate sources of funding, including a fire tax
- K. Pursuing a potential insurance premium tax through appropriate State of Maryland avenues; and,
- L. Adopting the non-integrated approach with separate fire stations when paid firefighter staffing is implemented.

Measures of Performance

The concept of measurement of performance (MOP) is not new to the private sector. As part of the effort to improve public sector and local government services the concept of measures of performance is implemented gradually. Likewise, MOPs in public safety services have



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been used for a number of years in the delivery of EMS, particularly by private service providers.

While existing methods of measuring performance were considered mainly for internal rather than external use, MOPs currently being rolled out are aimed at enhancing the accountability of local authorities and service providers to stakeholders and other interested parties. Also performance measurement initiatives provide managers and organizations on a regular basis with a systematic means of sharing service related performance data.

As Harford County officials and the leadership of the Harford County Volunteer Fire and EMS Association and Fire and EMS Companies have apparently recognized, the use of measures of performance to monitor service provisions in various categories, including fire, EMS and dispatch, is a state-of-the-art means for managing and improving services. The County and volunteer Fire and EMS Companies and related organizations should be congratulated for including the use of MOPs in this Master Plan for their current and future use.

The measures of performance recommendations include:

- A. Designating the suggested Fire and Emergency Services Commission as a high-level user/stakeholder group from various levels of service providers, County officials and the public to oversee the fire and EMS and related 9-1-1 communications and dispatch MOPs;
- B. Providing and managing appropriate records management systems and subsystems for the Fire and EMS Services; and,
- C. Continuing to benchmark the performance measures developed to identify best practices to ensure continuous improvement.



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Risk Assessment

The fire, rescue and EMS risks within Harford County are similar to those found in many communities of similar size and nature except for the fact that the County is largely surrounded on three sides by waterways.

Harford County is considered a bedroom community, comprised of single- and multi-family residential properties. Many Harford County residents commute to work in the Baltimore, Philadelphia and/or Washington, D.C. metropolitan areas. Harford County also includes a substantial amount of business and industry, as well as government development. Its volunteer fire and EMS companies and special operations teams protect a full range of risks

Workload/Calls

In 2008 the Fire and EMS Companies handled 32,648 fire and EMS calls for service.

HARFORD COUNTY FIRE AND EMS COMPANIES FIRE& EMS INCIDENTS DETAIL Calendar Year 2008

Company	Fire	EMS	Total
Co 1 - Level	335	1,056	1,391
Co 2 - Aberdeen	1,125	3,291	4,416
Co 3 - Bel Air	1,968	5,960	7,928
Co 4 - Abingdon	1,633	3,909	5,542
Co 5 Susquehanna Hose	636		636
Co 5-9 - Havre de Grace		1,860	1,860
Co 6 - Whiteford	313	557	860
Co 7 - Jarrettsville	463	1,003	1,466
Co 8 - Joppa-Magnolia	1,503	3,551	5,054
Co 9 - Darlington	394	735	1,129
Co 10 - Norrisville	223	335	558
Co 13 - Fallston	494	1,304	1,798
Total	9,087	23,561	32,648

Source: Harford County 9-1-1 Center CAD system.



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The Study Team believes the workload should be monitored annually and the response times to calls by the service providers should be monitored for determination in considering future needs of the service providers.

Station Locations

The number and type of fire, rescue and EMS risks, as well as workload, in a municipality typically drives the number and location of stations. As a general rule, response times are utilized in locating fire and rescue stations. In some instances, availability of land and funding have a major bearing on locations of stations.

Current fire, rescue and EMS services in Harford County have been provided from 26 fire and EMS stations. The stations are located as follows:

CURRENT FIRE AND EMS STATIONS

COMPANY	HOUSE	GIS STA. #	LOCATION
1. Co. 1	1	1	3633 Level Village Road, Havre de Grace
2. Co. 2	1	2	21 N. Rogers Road, Abardcen
3. Co. 2	2	22	104 E. Bel Air Road, Aberdeen
4. Co. 2	3	23	643 Aberdeen Thruway, Aberdeen
5. Co. 2	4	24	1437 Perryman Road, Perryman
6. Co. 3	1	3	109 S. Hickory Avenue, Bel Air
7. Co. 3	2	32	27 E. Jarrettsville Road, Forest Hill
8. Co. 4	1	4	3306 Abingdon Road, Abingdon
9. Co. 4*	2	42	Washington Avenue, Long Bar Harbor
10. Co. 4	3	43	3301 Willowby Beach Road, Willowby Beach
11. Co. 5	1	5	911 Revolution Street, Havre de Grace
12. Co. 5	2	52	121 Union Avenue, Havre de Grace



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COMPANY	HOUSE	GIS STA. #	LOCATION
13. Co. 5	3	53	451 N. Juanata Street, Havre de Grace
14. Co. 5	4	54	1542 Chapel Road, Havre de Grace
15. Co. 5	5	55	301 Market Street, Havre de Grace
16. Co. 6	1	6	1407 Pylesville Road, Whiteford
17. Co. 7	1	7	3825 Federal Hill Road, Jarrettsville
18. Co. 7	2	72	4352 Norrisville Road, White Hall
19. Co. 8	1	8	1403 Old Mountain Road, Joppa
20. Co. 8	2	82	88 Trimble Road, Joppa
21. Co. 8	3	83	1601 Hanson Road, Edgewood
22. Co. 9	1	9	2600 Castleton Road, Darlington
23. Co. 9	2	92	3266 Dublin Road, Dublin
24. Co. 10	1	10	2134 Harkins Road, Pylesville
25. Co. 13	1	13	2201 Carrs Mill Road, Falston
26. Co. 13	2	132	3108 Hunt Road, Falston
27. Co. 5-9	1	59	1601 Level Road, Havre de Grace

Note: * Station not currently utilized for the delivery of fire and/or EMS service.

The Study Team met with a number of key development-related County officials with responsibilities related to future County growth and development in an effort to gain a projected “snap-shot picture” of potential growth and development projected for the future—through at least the year 2025. Based on those interviews and documents and data provided to the Study Team, it appears that steady growth and development is expected for the foreseeable future. The exception to this growth pattern relates to the considerable development that may result from the implementation of the recommendations of the Federal Base Closure and Realignment Commission (BRAC) that is expected to have a major impact on Aberdeen Proving Ground and the areas of Harford County along and near the I-95 and US Route 40 corridor.



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In assessing station locations, the Study Team utilized geographic information systems (GIS) tools to identify response time projections from the facilities. Graphic illustrations of the projected response times are included in Chapter Four. The Harford County 9-1-1 Communications Center has a computer aided dispatch system to capture response times. The sharing and utilization of these data are encouraged for the future by all service providers.

The fire and EMS station recommendations include:

- A. Analyzing response time data to determine opportunities for reducing response times;
- B. Continuing to implement new fire and EMS station facilities including the following locations:
 - 1. Patterson Mill Road;
 - 2. Riverside area on MD Route 543 just north of US Route 40;
 - 3. Fountain Green Road / MD Route 543 between Hickory and Fountain Green; and,
 - 4. Churchville / MD Routes 22 and 136.
- C. Conducting a bunkroom facility assessment and placing a priority on providing adequate upgraded bunkroom facilities in all stations to enhance staffing of fire apparatus;
- D. Implementing the deployment and dispatch of fire and EMS resources at the station-level;
- E. Revising response areas to be station-based and determined initially with projected response times;
- F. Implementing the separate fire stations model for volunteer and paid staffing;



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- G. Pursuing the implementation of OPTICOM traffic light control devices for traffic lights controlling high traffic roadways in the County; and,
- H. Considering the approval of capital station requests from the Fire and EMS Services as important tools in the recruitment and retention of their volunteer service provider staffs.

Apparatus

There are four basic types of fire and EMS apparatus: pumpers, aerial devices, specialized rescue trucks and ambulance transport units. These basic apparatus types may be combined, e.g., a quint that is a pumper and ladder and a pumper that may also perform rescue functions.

In Harford County, each Fire and EMS Company determines the maintenance approach to be used to provide the necessary maintenance for their vehicular apparatus. Overall, the vehicular apparatus is in good repair. The volunteer personnel seemed to take pride in the appearance and condition of their apparatus. Viewed generally, the Harford County apparatus fleet is aging with some used apparatus having been purchased. The cost and effort required to maintain an aging fleet is significantly more than that required for a number of modern pieces of apparatus.

The Fire and EMS Companies are encouraged to consider their future apparatus needs carefully. These units are costly to purchase and require a significant commitment of personnel time and effort to maintain. Another consideration in such decisions relates to the relative availability of volunteer personnel to staff the units. If staffing is not normally available there is little justification for retaining or replacing redundant apparatus

The fire and EMS apparatus recommendations include:



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- A. Arranging for in-station apparatus preventative maintenance by either qualified vendor/s or County staff in support of the volunteer service providers;
- B. Adopting the suggested future baseline apparatus fleet;
- C. Considering funding appropriate baseline fire and EMS apparatus if the suggestion is implemented to provide tax funding to Fire and EMS Companies based on need;
- D. Implementing a consistent, preferably computer-based, apparatus maintenance records approach should be implemented County-wide as part of the recommended fire and EMS records management system; and,
- E. Adopting the suggested 20-year apparatus replacement criteria.

Training

The main objective of the fire service is to prevent injury and loss of life and to protect property and the environment. Training is a key element to successful emergency scene operations and organizational effectiveness. Training in the fire, rescue, and EMS disciplines is also a career-long venture starting with recruit and basic training programs and working up to more sophisticated, advanced training and participation in higher education opportunities. Between formal training programs and educational courses, there needs to be ongoing reinforcement of knowledge and skills that apply to all ranks.

It is very apparent from speaking with the members of Harford County fire and EMS companies that the organizations are committed to providing good service to their customers. It is also important for the organizations to remember that their own members are customers as well. Like many other fire departments across the United States, there are some shortfalls in training in the Harford companies, but none so critical that they cannot be overcome in relatively short order.



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The training recommendations include:

- A. Continuing to utilize Maryland Fire Rescue Institute as the primary provider for fire, rescue, and EMS training needs;
- B. Continuing to utilize MFRI as the primary provider for fire, rescue, and EMS training needs;
- C. Creating a Training and Certifications Standards Committee as a sub-committee of the Association;
- D. Developing and implementing the suggested Officer Training Standards;
- E. Utilizing a two-year phase-in plan for implementation of the proposed Officer Training Standards;
- F. Developing and implementing a minimum training standards policy/program that clearly identifies the training requirements for probationary (new) members and that applies equally and equitably to all 12 companies;
- G. Developing and implement an emergency vehicle driver training program and procedure that is based on NFPA 1002;
- H. Requiring all chief officers to complete the NIMS ICS 300 incident command training, and all captains and lieutenants to complete the NIMS ICS 200 incident command training within a one-year time limit from the release date of this Plan;
- I. Establishing a required, minimum attendance level for active members at company drill training sessions;



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- J. Conducting multi-company drills at least six times a year;
- K. Implementing a training certification award system; and,
- L. Providing a training record keeping system for use Countywide.

Emergency Medical Services

The topic of EMS delivery in Harford County is a topic that has been discussed and debated for at least 10 years with much work put forth in terms of examining how the system works, its deficiencies, and potential ways of improving the system. The Study Team found many care providers interested in improving the system and it appears that the “system” – or lack thereof – is actually the problem.

There are many good EMS care providers in Harford County and they are well-equipped with the tools and vehicles of their trade. It is clear that effort has consistently been put forth by the Fire and EMS Companies to provide the tools needed to deliver the service. The deficiency has been in the staffing of the ambulances and medic units so that they may respond in a timely manner to emergency calls.

The bottom line in effective EMS delivery is getting a properly staffed unit to the incident scene in enough time to have a positive outcome on the patient. The present deployment of EMS resources in Harford County is in need of serious overhaul in order to reduce the late responses and failures to respond. No one calling 9-1-1 for an EMS emergency should have to wait for a second or third due EMS unit to be dispatched while the closest EMS unit sits un-staffed.

In order for this overhaul of the EMS system to occur, the HCVFEA and the volunteer Fire and EMS Companies are given a chance to improve their own operations through the implementation of HCVFEA standards. While the standards will certainly be a change in practice, they need to occur if success is expected. If the recommended standards are



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implemented in a timely fashion, then a marked improvement in EMS delivery should be seen. If the standards are not implemented – or implemented standards are not complied with – then the Study Team believes that a transition to a increased paid EMS delivery system will have to occur much sooner than expected.

The EMS recommendations include:

- A. Developing and delivering public education programs focused on injury prevention;
- B. Requiring CPR as required coursework for all high school students in the Harford County school system;
- C. Developing and implement an aggressive, public access AED program;
- D. Implementing the use of an alphanumeric alert paging system in addition to the current voice/tone alert paging system;
- E. Implementing an EMS unit staffing standard that establishes the minimum staffing for a medic unit as one ALS provider and one EMT-B provider (driver) with the role of a First Responder limited to a third or fourth care provider on the unit;
- F. Implementing a plain-speak radio communications standard for use with all radio communications traffic in the fire and EMS system;
- G. Implementing the EMS-related Measures of Performance;
- H. Developing and implementing an EMS resource deployment standard that places at least one ambulance (ALS equipped) in every fire and EMS station in the County with the following considerations:



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1. Aberdeen: Fire and EMS Stations 2 and 2-4;
 2. Abingdon: Fire and EMS Stations 4 and 4-3; and,
 3. Havre de Grace: Operated by Havre de Grace Ambulance Corp at or in the vicinity of Susquehanna Hose Company House 4.
-
- I. Implementing an ALS-staffed transport unit to serve the Route 40 corridor with the possibility of operating out of Abingdon VFC's House 2 on a 6:00 am to 6:00 pm basis, seven days a week;
 - J. Implementing an EMS standard that mandates participation by all companies in the MIEMSS Voluntary Ambulance Inspection Program;
 - K. Discontinuing the practice of "no-go" boxes for the North County Foundation EMS Chase Car;
 - L. Implementing a two-ALS provider minimum staffing standard for the North County Chase Car on a 24-hour, 7-day a week basis;
 - M. Implementing within the next 12 to 24 months a second ALS chase car using the Level VFC as a home operating base and staffed with two, ALS providers 24-hours a day, 7-days a week;
 - N. Transitioning the Aberdeen and Bel Air paid EMS staffing to the Foundation within the next 18 months;
 - O. Creating a part-time, ALS Coordinator that is a paid position responsible for the general overall management of ALS certification, recertification, and continuing education for all ALS providers in Harford County – volunteer and paid;



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- P. Developing and implementing a procedure whereby liaison officers are designated for each hospital in Harford County and the on-duty Foundation Supervisor serves as the initial point of contact for all immediate EMS matters involving patient transfer at local emergency departments - regardless of the EMS crew's company or Foundation affiliation;
- Q. Entering into a written agreement concerning the roles and responsibilities of the Medical Director;
- R. Requiring or providing liability insurance for the medical director, with the coverage and minimum limits clearly listed in the medical director's contract for service;
- S. Implementing an EMS billing standard requiring all companies to charge the same rates;
- T. Utilizing the same EMS billing firm;
- U. Establishing an EMS billing standard that allows the individual Fire and EMS Companies to keep their EMS billing revenues;
- V. Establishing a Standard for Quality Assurance and Quality Improvement for all Fire and EMS Companies in Harford County: the standard must comply with all aspects of the MIEMSS requirements and State regulations;
- W. Requiring quality assurance officers to complete the MIEMSS Quality Improvement Officer training course;
- X. Ceasing the practice of the Foundation charging fees to the Fire and EMS Companies for their service; the County should begin fully-funding the operation of the Foundation;



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Fire Operations

Fire ground operational decisions must be made rapidly and consistently and not by committee after consultation. Even though every fire situation differs, the fire officer must make decisions based on hastily gathered available information.

The organization and operation of the Technical Rescue Team (TRT) appear to be adequate for the present call volume level relating to technical rescue incidents in Harford County. The TRT has many good organizational components in place and seems to have a core group of response personnel who are interested and dedicated to improving the delivery of technical rescue services throughout the county. As with any specialty response force, access to good equipment and training are critical to the success of the organization and the TRT appears to be on track with both.

Fire departments improve their effectiveness and the safety of their firefighters and officers with the initiation of pre-fire planning, incident command systems, policies and procedures and comprehensive firefighter safety programs. Reportedly, the fire companies do not conduct regular pre-fire planning and have not adopted consistent incident command system procedures or important safety-related SOPs in a number of important areas.

When faced with limited resources and expanding calls for service from the community, a fire and EMS department should carefully select the services it provides. Often times a joint effort approach by several neighboring departments is a far more efficient use of resources.

In the case of Harford County, the County and its twelve Fire and EMS Companies and special teams are encouraged to consider the observations and suggestions in this Report. Establishing program goals and mutual aid partnerships will be important for each type of special operation service provided. In some cases, perhaps the best way to meet the



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established goals will be to utilize outside, mutual aid or regional resources instead of trying to be the sole-source provider of the service.

The fire operations recommendations include:

- A. Revising the apparatus standards to include only two types of extrication service vehicles – Rescue Squad and Rescue Engine;
- B. Developing and implementing a minimum training standards policy that requires all personnel (officers and members) who wish to help deliver vehicle extrication services to be trained and certified to the applicable NFPA and/or the MVFSCS certification standards. The Rescue Technician – Vehicle and Machinery Rescue course should be considered the minimum training standard.
- C. Establishing an annual, minimum training requirement for all personnel based upon the principle that team members should have to meet a minimum number of training hours per year in their primary discipline in order to remain on the team;
- D. Directing the TRT to complete a full assessment of team operations in order to determine its NFPA 1670 deficiencies and develop a written plan for compliance;
- E. Developing and implementing a minimum staffing response standard for the Confined Space, Trench Collapse, Structural Collapse, Technical Rope, and K-9 Search disciplines;
- F. Continuing to fund and operate the TRT as it presently exists until a career fire service component is implemented in the County;



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- G. Adopting an ordinance that requires the installation of automatic sprinklers in all new, residential structures;
- H. Appointing a County-wide water supply coordinator;
- I. Identifying and pre-fire planning appropriate buildings as part of a County-wide program;
- J. Reviewing and updating Company policies and SOPs to assure there is not duplication with HCVFEA standards;
- K. Establishing an up-to-dated incident command system standard and assuring consistent command officer coverage of incidents County-wide.
- L. Establishing command duty officer schedules; and,
- M. Establishing consistent box alarm assignments.

Volunteer Recruitment and Retention

Fire and EMS services are provided in Harford County largely by volunteer members who respond to emergencies. The staffing approach involving volunteer members of the communities has provided a cost-effective service in the past. The viability of this volunteer staffing approach in the future will, to a large extent, be based on the level of effort placed on volunteer recruitment and retention by the Fire and EMS Companies and the County. It is quite apparent to the Study Team that Harford County officials and the volunteers of the Association and Fire and EMS Companies have placed substantial emphasis on attracting and retaining volunteers. This Report outlines some potential opportunities to strengthen the current and prior initiatives.



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Recruitment of volunteers for the Fire and EMS Services has been accomplished in a number of ways. Additionally, the volunteer companies have been implementing a number of retention efforts. These programs appear to continue to be successful contributing to the maintenance of the volunteer fire and EMS services in Harford County.

Nationally, there are a number of very successful volunteer recruitment and retention programs in municipalities that continue to assist in providing the essential volunteer personnel for the provision of their fire and EMS services.

The recommendations include:

- A. Continuing to place periodic articles in local newspapers regarding activities of the volunteer fire and EMS service.
- B. Supporting the volunteer recruitment and retention efforts through annual budgetary funding;
- C. Developing a standard exit interview form to be completed by volunteer personnel who leave the program;
- D. Developing a comprehensive volunteer recruitment and retention program;
- E. Implementing property tax incentive and utility cost assistance retention initiatives;
- F. Initiating recommendations for additional volunteer recruitment programs, such as possible medical and dental care;
- G. Establishing official mentor programs for new operational volunteer members;



EXECUTIVE SUMMARY

- H. Developing and implementing additional fire and EMS student live-in programs; and,
- I. Funding a full-time volunteer recruitment and retention coordinator.

Wellness, Health and Safety

The health and safety of firefighters and EMS personnel should be a major concern of those delivering the services, their leadership, those receiving the services and those responsible for the provision of emergency services (elected officials).

Most of the emphasis for firefighter/EMS provider health and safety seems to have been focused on career departments and combination departments with paid staff. This is due, in large part, to the concerns over employer liability and compliance with OSHA regulations. Despite this, many volunteer services in Maryland and other states are reportedly following the regulations.

In recent years, a number of national organizations have developed recommendations and programs to support health and safety of volunteers. They recognize the barriers for implementation of these programs are different in volunteer agencies and have developed resources to assist volunteer services.

There are several national programs, such as the Everyone Goes Home program and National Firefighter Near-Miss Reporting System, which have resources available that could enhance safety in Harford County. It is recommended that the HCFVEA and the Fire and EMS Companies take advantage of these resources and participate in the programs.

A comprehensive health and safety plan which meets OSHA regulations and national standards is needed in Harford County. The plan could address a way to bring the volunteer departments into compliance with the necessary testing of equipment and apparatus as well as provide for programs to enhance the health, fitness and safety of the volunteer members.



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The wellness, health and safety recommendations include:

- A. Appointing a task force to develop a comprehensive safety plan in accordance with OSHA and national standards on Wellness, Health and Safety;
- B. Appointing a Wellness, Health and Safety Committee;
- C. Assigning the Chief's Committee to address development of a policy and procedure to be applied County-wide addressing the use of rapid intervention teams and the accountability system;
- D. Having members take the seat belt pledge;
- E. Implementing the Everyone Goes Home program to enhance safety within their agencies;
- F. Using the near-miss reporting system;
- G. Revising the Management of Communicable Diseases Standard to specify Association responsibilities;
- H. Continuing to upgrade a pandemic plan in situations with appropriate involvement of the Fire and EMS Companies;
- I. Implementing a Countywide rehabilitation policy and procedure; and,
- J. Hiring a full-time health and safety specialist position in the recommended Department of Fire and Emergency Services.

Station and Apparatus Staffing



EXECUTIVE SUMMARY

Harford County Fire and EMS Companies are staffed largely with volunteer personnel. County officials, residents and business owners should be very proud of the current combination volunteer/paid fire and EMS services primarily due to existing volunteer staffing and effort.

For the future, there seems to be an opportunity to place more emphasis on volunteer on-site staffing in some of the stations. Many very successful volunteer organizations, including a number in Harford County, place a high priority on taking actions to maintain volunteers in the stations, such as, standby-by programs, availability of computers and regularly used and well-managed bunkrooms for overnight staff support.

In order for the County and Companies to make appropriate staffing decisions in the future, a goal should be set to collect, correlate, and analyze basic service staffing and response time data.

For the future, the staffing recommendations include:

- A. Developing records procedures to maintain volunteer-related activity data on staffing;
- B. Gathering and analyzing volunteer apparatus staffing data;
- C. Implementing volunteer in-station standby programs;
- D. Continuing with the strong volunteer-based system for the delivery of fire and EMS services; and,
- E. Carefully considering the recommendations for future paid fire and EMS staffing needs as an important support mechanism for avoiding burnout.



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Fire Prevention & Life Safety

A fire prevention program, as part of a fire services delivery effort, is an integral part of a municipality's responsibility to provide for the welfare of the County and its citizens. It is through an effective life and fire safety education, investigation, code administration, application and enforcement effort that a municipality will realize the greatest protection from fire and accident. No number of firefighters, fire stations, apparatus and/or equipment will save the number of lives or reduce the loss of property from fire as well as an educated public. Complement the fire prevention function with an effective suppression force and a municipality has the basis for a proactive, efficient, cost-effective, municipal life and fire safety program.

In a fire services delivery system that relies heavily on volunteer staffing for the delivery of fire and rescue services, an aggressive and effective fire prevention program is essential to the safety of the customers (property owners, residents, business operators and owners). The goal of a county fire prevention program is to stop fires before they occur and prepare customers to play an important part in the prevention effort through becoming well-educated in what to do in the event of fire. **An aggressive fire prevention program goes hand-in-hand with fire and rescue services provision via volunteer staffing and organizations, in that it should reduce the incidence and magnitude of fires.**

The fire prevention recommendations include:

- A. Taking action to enhance the fire building inspections program by implementing an innovative self-inspections program with complete documentation/records maintained;
- B. Enhancing the fire building inspections program by implementing an innovative self-inspections program;



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- .C. Implementing a County-wide pre-fire plan program through a team effort utilizing volunteer staffing from the fire Companies and eventually the paid fire staffing;
- D. Implementing a well-planned and comprehensive public fire education program,
- E. Implementing a state-of-the-art records management fire and EMS records management system interfaced with the CAD system; and,
- F. Providing a new fire prevention programs specialist position in the recommended Department for purposes of supporting the various fire prevention and field records systems.

Communications & Dispatch

An emergency communications center is the nerve center of police, fire, and EMS service delivery agencies. It is the critical link, the lifeline, between the public and its protectors.

Typically, emergency dispatch centers in a municipality are managed by a number of agencies, including fire, separate municipal agencies, regional agencies, or a police department. Predominantly, the public safety dispatch function is the responsibility of the police department. In Harford County the emergency dispatch function is provided by the Division of Emergency Operations' 9-1-1 Communications and Dispatch Center.

The radio system is the backbone of the emergency dispatch system as it is the means for communications between the dispatchers and the service delivery personnel, and among the service delivery personnel—police, firefighters, fire officers, EMTs, and paramedics. Radio systems have progressed technologically through the years to the point where today, many radio systems are computer controlled, digital signal-based radio systems. The Harford public safety agencies utilize a state-of-the-art 800 MHZ digital trunking radio system.



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The provision of emergency medical dispatch and medical pre-arrival instructions for EMS patients is a state-of-the-art dispatch service providing a measurable enhancement to a community's EMS service delivery. Harford residents and business people are provided EMD services by the Harford 9-1-1 Communications and Dispatch Center calltakers.

The facility from which the municipal emergency dispatch function is provided should not simply be upgraded office space. It should be appropriately designed to meet the specific needs of the high-tech systems and 24-hour operations inherent in emergency dispatch centers. A number of critical design areas include false flooring for wiring, uninterruptible power sources, heavy HVAC systems, high quality controllable lighting, and heavy-duty flooring, furniture, and seating to support operations on a long-term basis.

The communications and dispatch recommendations include:

- A. Completing the upgrades to the 2007 CAD system;
- B. Maintaining both the primary and backup 9-1-1 communications and dispatch facilities;
- C. Continuing with the implementation of mobile data computers with associated unit status capability;
- D. Working together in an effort to identify means for reducing response time components in the respective field services and dispatch areas of responsibility;
- E. Implementing a station-based records management system with full CAD interface;
- F. Continuing the planning effort to implement a new dispatch center facility;



EXECUTIVE SUMMARY

- G. Implementing full interoperability with surrounding counties; and,
- H. Completing the installation of “rip and run” printers in all fire and EMS stations.

FISCAL IMPACTS

This report recommends four full-time employees and a department director to provide the necessary staff to implement a number of the recommendations and to strengthen the volunteer-based fire, rescue and EMS services. At approximately \$60,000 with fringe benefits, the estimated personnel costs are approximately \$300,000, excluding vehicles or computer equipment.

As noted in Chapter Two, the citizens of Harford County are reaping major substantial benefits from its volunteer fire, rescue and EMS system. To provide the same level of service with full-time paid personnel in the fire, rescue and EMS stations would require at least \$61 million each fiscal year for personnel wages. This estimate is based on the average cost of personnel, including fringe benefits, of \$57,000 on an annual basis. Of course, the five-year costs would be more than \$305 million.

In charting a course for the future delivery of fire, rescue and EMS, this estimate of a paid system should be uppermost in considerations about funding

Alternate Sources of Funding

The Study Team is aware of a number of potential current and future alternate sources of funding that should be considered by the County, HCVFEA and Fire and EMS Companies and the suggested Fire and Emergency Services Commission and Department of Fire and Emergency Services. These sources include:



EXECUTIVE SUMMARY

- A. United States Fire Administration (USFA) Assistance to Firefighters Grant Program for grants and funding;
- B. U.S. Department of Homeland Security Commercial Equipment Direct Assistance Program for equipment for first responders;
- C. USFA Staffing for Adequate Fire and Emergency Response (SAFER) program;
- D. Federal Office of Hazardous Materials, Hazardous Materials Emergency Preparedness (HMEP) grant program;
- E. Various Maryland State grants and low interest loans;
- F. **County fire tax;**
- G. Fire inspection and plans review fees;
- H. Patient billing for EMS transports;
- I. False alarm registration and enforcement charges;
- J. National Fire Academy Training Assistance funding; and,
- K. **Potential insurance tax on foreign insurance companies..**

The County is encouraged to aggressively research and seek out these and other opportunities for funding.

Fire Tax Option

In particular the County should consider the implementation of a fire tax levied under Maryland Law. A single fire tax rate, as apposed to two or more is suggested given the fire and EMS service deployment approach that could have units responding from one area of the County to another. In the experience of the Study Team, a single fire tax rate is much easier to justify and administer.

A number of Maryland counties have reportedly implemented fire tax/es for financial support of their fire and EMS services, including Alleghany, Charles, Frederick, Garrett, Howard, Montgomery, St. Marys and Wicomico.



EXECUTIVE SUMMARY

Insurance Premium Tax

A number of states have implemented a Foreign Insurance Tax that applies to insurance companies not organized in the state—meaning those out of state. Typically, the tax applies to the gross amount of premiums from policies for state risks during the preceding calendar year, less deductions. Further, the tax rate for foreign insurers is 1.4 percent with a minimum tax of \$250.00. Reportedly, a number of states have implemented a foreign insurance tax, including Pennsylvania, New Jersey, New York, Ohio, West Virginia, Massachusetts, Michigan, Florida, Texas, Illinois, Kentucky and California.

Some states may also have a fire insurance tax which may be an additional 0.75 percent tax levied with some variances amongst the states on the gross premiums derived from fire insurance.

The County may wish to consider pursuing with the State the implementation of a form of foreign insurance or fire insurance tax levied under Maryland Law.

Some of these funding opportunities have the potential for substantial ongoing sources of revenue and others may be one-time project specific grants or funding. Fire and EMS agencies and municipalities that pursue alternate sources of funding find the revenue beneficial to service delivery and many times supplement the normal primary source/s of funding.

Anticipated Outcomes

When conducting a review of the delivery of fire and EMS and projecting the needs of the future, it is not possible to delineate all the positive outcomes. Improving the quality of life in a community and saving lives for service providers and stakeholders do not necessarily involve quantitative analysis.



EXECUTIVE SUMMARY

A number of the anticipated outcomes through implementation of the recommendations in this report/plan and the continuation of the outstanding services by fire/ and EMS volunteers in Harford County are as follows:

- A. Improved public recognition of the volunteer-based service delivery;
- B. Enhanced data collection and utilization for operations, staffing, training, and volunteer participation;
- C. Enhanced management and staff support from four additional employees and a department director for department direction, volunteer recruitment and retention, records management and wellness/health/safety;
- D. Enhanced initiatives to recruit and retain volunteers;
- E. Improved training of officers and supervisors;
- F. Improved safety and efficiency of service providers through upgraded training;
- G. Enhanced teamwork by service providers;
- H. Improved delivery of fire and EMS services through upgraded apparatus;
- I. Improved work environment through rehab and upgrades of stations;
- J. Improved physical condition of members through fitness and health initiatives;
- K. Improved utilization of the volunteer officers by establishing eligibility requirements;
- L. Improved coordinated response through incident command training;
- M. Reduced liability exposure through compliance with a number of national standards, e.g., driver training and other standards;
- N. Improved self-development initiatives by volunteers through awards system for meeting specific certifications;
- O. Improved coordination/management of apparatus-related replacement, records and maintenance programs; and,
- P. Improved apparatus acquisition and timing through apparatus replacement schedule.



EXECUTIVE SUMMARY

Suggested Timeline

This Study Report (Plan and Blueprint) should be considered as a **strategic planning tool for use over the immediate, mid-term and future**. Additional issues may need consideration in the future; therefore, the Plan should be used as a flexible guide for decisions relative to the organization, management and provision of fire and EMS services.

Figure 14.1 depicts a timeline that could be used as a guide for consideration of important changes. After relevant review and input, a final timeline should be established.

Quality of Service Providers

This Blueprint builds on the current strengths of the many men and women providing fire and EMS services in Harford County. This includes all the volunteers, the County staff in the Division of Emergency Operations (dispatch and Hazmat). A number of recommendations in this Study came from volunteers providing the services. These very talented personnel work hard and deserve the trust, support, and respect of the stakeholders in Harford County. **Full County support of these volunteer service providers, financially and programmatically, is essential to retain a volunteer fire and EMS service for the long-term.**



CHAPTER ONE

INTRODUCTION AND BACKGROUND

This chapter provides a brief overview of Harford County, basic information regarding the fire and emergency medical services (EMS) delivery agencies; standards and practices in EMS and fire services; the background and framework for the development of this study; a discussion of current and local fire service trends; fiscal issues; and, a summary review of the scope of services for this study.

THE SETTING

Harford County, which was formed in 1773 from the eastern part of Baltimore County, is located in the northern portion of Maryland at the confluence of the Susquehanna River and the Chesapeake Bay. It was named for Henry Harford, the son of Frederick Calvert, 6th Baron of Baltimore.

Located on the northern end of the Chesapeake Bay, Harford County is bordered by Baltimore County on the west, the Commonwealth of Pennsylvania on the north, the Susquehanna River and Cecil County on the east and the bay on the south. In addition to the Susquehanna, a number of rivers and major streams flow through the county to the Chesapeake Bay, including Little Gunpowder River, Bush River, Deer Creek, Winters Run, Bynum Run and Gasheys Run.

Harford County is traversed in a north/south direction by I-95 with five exits that provide access to industrial, commercial and residential development. The county is also crossed in a north/south direction by two primary state roadways: MD Routes 1 and 40. A number of other state roads are in the county, including MD Routes 7, 22, 23, 24, 74, 138, 145, 147, 152, 161, 165, 439, 440, 543, 624, 646, 755, 851 and 924.

There are also a number of rail lines that cross Harford County, including CSX Transportation and Norfolk Southern freight lines and Amtrak and MARC commuter lines.



INTRODUCTION AND BACKGROUND

THE SETTING (continued)

There are three municipal governments located within Harford County that include:

- Town of Bel Air
- City of Aberdeen
- City of Havre de Grace

From a development perspective, all three of these municipalities are located within the primary developed areas of the county referred to as the “Development Envelope,” which is the I-95 and Route 40 corridor and Route 24 that extends from the southern border with Aberdeen Proving Grounds to and including Bel Air.

Further, from a land use and development pattern perspective, there are a number of community areas in the county that include:

- Greater Aberdeen - Greater Havre de Grace
- Abingdon - Riverside - Emmorton
- Greater Bel Air;
- Churchville - Creswell;
- Dublin - Darlington;
- Edgewood;
- Fallston;
- Forest Hill;
- Jarrettsville;
- Joppa - Joppatowne;
- Norrisville; and,
- Whiteford - Cardiff - Pylesville.

In addition to the three municipalities and the community areas, another major land area adjacent to the Chesapeake Bay is the Aberdeen Proving Ground (APG), which is a federal



INTRODUCTION AND BACKGROUND

THE SETTING (continued)

facility created by Presidential Proclamation in 1917. The federal holdings encompass over 39,000 acres of land. The majority of the APG-related facility is located on the two peninsulas by the Bush and Gunpowder Rivers and encompassing the majority of the county's border with the Chesapeake Bay—the areas known as APG and Edgewood.

DEMOGRAPHICS

In 2000, the U. S. Census estimated the population of Harford County to be 218,590. County officials estimate the current 2009 population at approximately 247,760 and project that the 2014 population will be 268,692.

The Harford County Demographic Data & Growth Trends document, revised December, 2008, projects that the future population of the county in five-year increments through 2030 will be:

<u>Year</u>	<u>Population</u>
2015	265,700
2020	276,500
2025	281,000
2030	283,600

The current 2009 Harford County Economic Development website provided the following additional population, household and general demographic characteristics:

- 91,849 total households
- 2.68 persons per household
- \$85,934 average household income
- \$278,100 average house sales price
- 130,848 civilian labor force



INTRODUCTION AND BACKGROUND

HARFORD COUNTY GOVERNMENT

Harford County has a council and executive form of government. The County Council is the seven-member legislative branch of the government. Six members of the council are elected in the councilmanic districts where they reside. The seventh member of the council is the council president and may reside anywhere in the county and is elected countywide.

All executive powers of Harford County are vested in the County Executive, who is the chief executive officer of the County. The County Executive appoints the Director of Administration and the heads of all executive branch agencies, subject to confirmation by the council. The Director of Administration for the county performs administrative duties and exercises general supervision over the agencies of the executive branch as directed by the County Executive.

Budgets

The current total FY 2009 budget of Harford County, including all funds, is \$886,044,142. The County Executive's proposed FY 2010 budget for the county, including all funds, is \$811,556,090—a decrease of \$74,488,052. This decrease is attributed to the fiscal slowdown being experienced in Harford County and across the nation.

This budget is funded through a number of sources, including property taxes and income taxes, which respectively provides 57 percent and 34 percent of the revenue necessary for the funding of the proposed FY 2010 county budget.

FIRE AND EMS SERVICE PROVIDERS

Twelve Harford County volunteer fire and EMS companies provide related services in the county with the EMS staffing support of the EMS-qualified employees of the Harford County Volunteer EMS Foundation. Further, the hazardous materials mitigation qualified staff of the



INTRODUCTION AND BACKGROUND

FIRE AND EMS SERVICE PROVIDERS (continued)

County's Division of Emergency Operations provide the Hazmat Team component of the Harford County fire and EMS services provision.

Fire and Emergency Medical Services

The following fire and EMS companies provide services:

- Co. 1 - Level Volunteer Fire Company
- Co. 2 - Aberdeen Volunteer Fire Company
- Co. 3 - Bel Air Volunteer Fire Company
- Co. 4 - Abingdon Volunteer Fire Company
- Co. 5 - Susquehanna Hose Company
- Co. 6 - Whiteford Volunteer Fire Company
- Co. 7 - Jarrettsville Volunteer Fire Company
- Co. 8 - Joppa-Magnolia Volunteer Fire Company
- Co. 9 - Darlington Volunteer Fire Company
- Co. 10 - Norrisville Volunteer Fire Company
- Co. 13 - Fallston Volunteer Fire Company

Additionally, Co. 5-9 - Havre de Grace Ambulance Corp. is a volunteer company that specializes in providing only emergency medical services.

Paid EMS Services

The Harford County Volunteer Fire and EMS Foundation (hereafter called Foundation) is a paid-staff corporation. The purpose of the Foundation, as stated in its charter, is "to raise funds and hire employees to augment volunteer fire fighting and emergency medical services currently provided to the citizens of Harford County, Maryland."



INTRODUCTION AND BACKGROUND

FIRE AND EMS SERVICE PROVIDERS (continued)

The current paid employees of the Foundation either staff volunteer fire and EMS company patient transport units (e.g., ambulances) or manage/administer the organization.

Hazardous Materials Services

The county's Division of Emergency Services (hereafter called Division) staff provide the Hazmat Team response services for Harford County in a team approach with the fire and EMS companies and the Volunteer Fire and EMS Foundation.

Organization of Service Providers

The fire and EMS companies are independent, and are largely staffed and managed by volunteers. Each was incorporated under Maryland state law and is directed by a chief or president and other operational and administrative officers, as individually determined.

The Harford County Volunteer Fire and EMS Foundation is managed under the direction of a 13-member Board of Trustees formed from representatives from the 12 volunteer fire and EMS companies and "at large" non-fire company individuals elected by the company representatives.

The Foundation is also independently organized and chartered under the laws of the State of Maryland.

The staff of the Harford County Hazmat Team are under the supervision of the manager of the county's Division of Emergency Operations.

All Harford County fire and EMS companies are members of the Harford County Volunteer Fire and Emergency Medical Services Association (hereafter called Association), which is also independently chartered under the laws of the State of Maryland. The mission and



INTRODUCTION AND BACKGROUND

FIRE AND EMS SERVICE PROVIDERS (continued)

purpose of the Association, as stated in its bylaws, is to encourage, promote and foster a number of aspects of the Harford County fire and EMS services, as well as exercise the powers and all duties contained in Harford County Ordinance 76-105 that relate to the establishment and compliance with various standards. Reportedly, the Association is referred to as the “Harford County Fire Chief’s Association” in this ordinance.

Tax-Funding for the Fire and EMS Companies

Substantial funding for the independent volunteer organizations is provided by Harford County taxpayers. The county budget proposed by the County Executive for FY 2010 for the fire and EMS services totaled \$9,067,456. See Figure 1.1.

Figure 1.1
HARFORD COUNTY FIRE AND EMS COMPANIES
FY 2010 TOTAL BUDGETED FUNDING LEVELS

Expenditure	Amount	Total
Company		
Bel Air	\$911,182	
Abingdon	\$760,279	
Joppa	\$724,668	
Aberdeen	\$639,532	
Susquehanna	\$394,598	
Havre de Grace Ambulance	\$219,284	
Jarrettsville	\$466,444	
Fallston	\$482,374	
Darlington	\$382,929	
Whiteford	\$371,722	
Level	\$403,448	



INTRODUCTION AND BACKGROUND

FIRE AND EMS SERVICE PROVIDERS (continued)

Expenditure	Amount	Total
Norrisville	\$358,304	
Sub-Total of Expenditures to Companies	\$6,114,764	\$6,114,764
Workers Compensation Insurance		\$385,000
Grant to Shock Trauma Capital Camp		\$50,000
Fire/Rescue/EMT Training Program		\$42,000
EMS Foundation Funding		\$2,247,814
Funds for Support Services		\$227,878
TOTAL		\$9,067,456

Source: Harford County, MD.

Reportedly, overall, the County Executive's recommended budgeted funding for the fire and EMS companies increased by 10 percent from FY 2009 to FY 2010.

The Harford County proposed 2010 capital budget for the fire and EMS/companies totals \$1,600,000 for new fire station design, volunteer fire company facility repairs and two fire station renovation and expansion projects.

Additionally, the state provides quarterly funding via a grant program, and the volunteer organizations conduct various fund-raising activities throughout each year to raise donation funds for their support.

TRENDS IN EMERGENCY SERVICES DELIVERY

The fire, rescue and EMS services have been evolving nationwide for a number of reasons, not the least of which are the changing fiscal issues and complexities of the communities served. A variety of trends and issues in local government are requiring municipalities and emergency service providers to consider changes in the nature and level of services as part



INTRODUCTION AND BACKGROUND

TRENDS IN EMERGENCY SERVICES DELIVERY (continued)

of an overall strategy to solve a number of problems. While the issue of recruitment and retention of volunteers in the fire, rescue and EMS services is a complex and challenging problem for local communities served by volunteers, a brief review of several other trends and issues affecting local municipalities and their emergency services is outlined in the next few sections.

More than any period in recent history, changes in local governments are having, and will continue to have, a significant impact on the fire, rescue and EMS service. The fire, rescue and EMS service, known for its traditionalism, is having to confront these changes at an unprecedented rate. Certain trends for the next decade are becoming more apparent.

These trends can be categorized into five general headings:

1. Concerns about the environment;
2. Scientific and technological advancements;
3. Fire and injury prevention, and public education;
4. Fiscal constraint; and,
5. Role of fire departments, especially post 9/11.

Concern about the Environment

During the 1980s, worldwide concern about the environment impacted every facet of life. In 2009, substantial initiatives relative to the environment by various groups are ongoing. Businesses and industries are responding responsibly by adapting their way of doing business to protect the environment. "Changes in the natural environment may necessitate revolutionary changes in the fire, rescue and EMS service," stated Herman W. Brice, Chief Fire Administrator, Palm Beach County Fire Rescue. Brice, a noted fire expert, referred to water shortages and concern about water runoff as issues which may force the fire, rescue and EMS service to develop alternate means of extinguishment. With a perceived increase



INTRODUCTION AND BACKGROUND

TRENDS IN EMERGENCY SERVICES DELIVERY (continued)

in global warming among major scientists, there may be an increase in the number of natural disasters to which the fire, rescue and EMS service must respond.

Part of this attitude about the environment stems from an overall concern of people toward their safety. The public is demanding that risks be lowered, and that they be shielded from potential harm. This results in legislation and regulations regarding hazardous materials, and increased pressure for code enforcement.

The concern for personal safety extends beyond the general public. Fire, rescue and EMS service personnel who previously showed little concern for their own well-being, especially in emergency situations, are increasingly aware of the dangers inherent in their work. They are demanding that their risks of injury and illness be reduced through standards, regulations, training, safe equipment, and personal protection. These demands are increasing personnel and other costs associated with the fire, rescue and EMS service, and are necessitating changes in the way fire suppression is conducted. The demands are also resulting in greater focus by management on the employee as a valuable resource.

Concerns for the employee are extending beyond fireground safety issues. Employee assistance programs, wellness programs, physical fitness programs, and critical incident stress debriefings (CISD) are emerging as common approaches to employee health and safety.

Changes in the American workforce also affect the fire, rescue and EMS service. Increasingly, women and minorities are becoming vital members of the fire, rescue and EMS service. While many fire departments have started addressing these overdue workforce changes, many still have the attitude that "it won't happen to my department." The impact of the Americans with Disabilities Act (ADA) still is yet to be fully recognized by the fire, rescue and EMS service; legislation may cause the service to rethink its philosophy regarding qualifications to be a firefighter in today's world.



INTRODUCTION AND BACKGROUND

TRENDS IN EMERGENCY SERVICES DELIVERY (continued)

Proliferation of regulations is having a significant impact on the fire, rescue and EMS service. Occupational safety and health organizations have started enforcing regulations pertaining to the fire, rescue and EMS service and other public service agencies. New regulations regarding hazardous materials and the recent regulations on blood-borne pathogens have placed significant requirements on the fire, rescue and EMS service with regard to training of personnel, providing proper protection, and providing the resources necessary to fully implement the regulations. For the future, the work environment in the fire, rescue and EMS service will become more regulated from both outside and inside the fire protection community. While most of these regulations should enhance the fire, rescue and EMS service's preparedness, there will be additional costs associated with operating a 21st century fire department.

Scientific and Technological Advancements

The technological trends will make the work of persons involved in fire and safety services easier and yet more challenging. The increasing sophistication of electronic detection and early activation of suppression systems will reduce the risk of devastating fires. Computer technology will enhance not only notification and dispatch specialties, but also the response sequence and maintenance of data. With improved data management systems brought about by the increased utilization of computers, the fire, rescue and EMS service will be able to provide more timely and complete evaluation of community needs, and the appropriate response to meet these needs.

Improvements in technology may also enhance the ability of fire personnel to perform certain functions, such as fire inspections, plans reviews and dispatching. Further, technology is likely to impact the staffing requirements to perform these functions. Overall, improved technology may help in preventing fires and in providing more efficient work performance. The end result is an anticipated decrease in the number of personnel in the fire, rescue and EMS service work force.



INTRODUCTION AND BACKGROUND

TRENDS IN EMERGENCY SERVICES DELIVERY (continued)

Fire/Injury Prevention and Public Education

Fire/injury prevention and public education has become one of the main activities to which more time, attention, and resources will be devoted in the fire, rescue and EMS service in the future. Over the past several decades, the fire, rescue and EMS service has been very effective in reducing the number of fires and losses due to fires, through fire prevention programs and public education. Many fire, rescue and EMS service leaders now feel that the same lessons learned in developing effective public education programs can be applied to injury prevention programs. A significant reduction in the number of injuries is a goal. Public education programs can help reduce the number of injuries; moreover, public education should help individuals become more aware of early warning signs for various illnesses, so that timely intervention can occur and prevent complications.

Part of the public interest in health has centered around the ability to provide assistance during a crisis situation. For quite some time, fire, rescue and EMS companies have been looked upon as a source for public training to handle emergencies. For example, self help programs such as citizen CPR and “what to do before an ambulance arrives” are programs provided by fire/EMS services personnel. These programs not only serve to enhance the safety of the community and save lives, but are also excellent methods for fire departments to market their services. As funding of public agencies continues to be a major constraint on local government, the fire, rescue and EMS service must recognize the need for promoting its services to the community to secure support for sufficient funding of its mission.

One challenge of the next decade in public education and prevention programs will be in reaching target groups that are experiencing the most significant problems with life safety. These groups include the very young and the elderly as well as low-income and minority populations.



INTRODUCTION AND BACKGROUND

TRENDS IN EMERGENCY SERVICES DELIVERY (continued)

Fiscal Constraints

In local government, municipal administrators and elected officials have become frustrated with the loss of revenues and fiscal constraints imposed at the state and federal level. While revenues are being reduced, labor costs in combination volunteer/paid departments and equipment costs in all fire and EMS agencies continue to rise. This has caused significant pressures on the municipalities to reduce other services to an even greater extent or raise taxes. Unfortunately, fiscal constraints can create tension and friction between administrators/elected officials and service providers as funding priorities are pursued and established.

Across the board decreases in tax revenues at all levels of government—federal, state and local—and increases in legal action and litigation have also negatively impacted the availability of revenues to reward good program managers and employee performance or enhance services.

These examples are only a few of the fiscal constraints that are negatively impacting local governments and causing officials to search for viable alternatives for maintaining strong volunteer fire, rescue and EMS services.

Role of Fire and EMS Departments

The future of the fire, rescue and EMS service will include not only an expanded role for fire departments, but also a more complex one. As noted earlier, fire, rescue and EMS service personnel will be increasingly required to protect the environment, promote public safety and education, and become/remain emergency care providers. Moreover, emergency medical services in the fire, rescue and EMS service (e.g., EMS first responder service) will become more important as the fire problems decrease, and the population in the United States becomes older.



INTRODUCTION AND BACKGROUND

TRENDS IN EMERGENCY SERVICES DELIVERY (continued)

The post 9/11 era has placed major challenges on local public safety service providers to work as a team in responding to emergencies, especially in the area of interoperability of radio communications. Additional resources and training will be required for these new challenges.

Additionally, fire, rescue and EMS service personnel will require excellent interpersonal skills to interact well with the public. Customer service, a key to success in business, has become a more important part of the fire, rescue and EMS service.

Increasingly, Americans are demanding satisfaction, not only in consumer products, but also in public services. In the future, fire departments will likely be held more accountable to the citizens of their community for the services provided.

This concept of accountability is likely to evolve into a quality assurance program, where a fire department's performance will be evaluated and measured against standards set by the community.

At the national level, progressive municipal officials and fire administrators are recognizing the inevitable changes. In making predictions about the future of fire, rescue and EMS service, Chief Brice of Palm Beach stated that "due to budget constraints, increased demand for service, and increased levels of training and certification requirements by state and federal agencies, emergency services providers and local governments will find it necessary to consolidate smaller departments into regional service providers to take advantage of broader tax bases." Chief Brice also stated that more cooperation will be required in certain functional areas, such as training, to be cost-effective in providing the support services.

With the faltering economy currently affecting all levels of government, the impact of fiscal issues will linger into the future. The recent financial crisis has forced local governments to closely examine resources allocated to various services. Managers, including fire, rescue and



INTRODUCTION AND BACKGROUND

TRENDS IN EMERGENCY SERVICES DELIVERY (continued)

EMS service managers, are being challenged with providing better and more services with fewer resources. Progressive leaders are accepting this challenge by working with government and the community in a partnership to provide and sometimes expand necessary services without an increase in resource allocation.

The trends impacting the fire, rescue and EMS service today and in the future should result in an improved fire, rescue and EMS service, safer communities, more teamwork, safer work environment, and an informed customer. Professional fire personnel, both paid and volunteer, should be prepared for these future challenge.

This study and plan for Harford County includes suggestions for Harford County to consider in the future delivery of fire and rescue services.

STUDY FRAMEWORK

The Study Team utilizes a modern industry-based framework for its analyses that is comprehensive and systematic. The framework incorporates the model developed by the Accreditation Committee of the International Association of Fire Chiefs (IAFC), a program of accreditation for and by fire, rescue and EMS agencies and personnel that is now a key part of the Center for Public Safety Excellence (CPSE).

This fire department accreditation process is currently under the auspices of the Commission on Fire Accreditation International (CFAI). Employing this model as a framework for this plan provides established criteria for review and will provide the reader with information on the latest thinking in the fire, rescue and EMS service.

It should be noted that the lead CBI Study Team member is a certified Peer Assessor with the CFAI.



INTRODUCTION AND BACKGROUND

STUDY FRAMEWORK (continued)

The analysis categories included in this model and utilized as a general guide during this study are as follows:

- Governance and Administration
- Community Assessment
- Goals and Objectives
- Programs;
- Physical Resources
- Human Resources
- Training and Competency
- Essential Resources
- External Systems Relations

Within each of these categories are criteria and considerations that were weighed by the Study Team in conducting this analysis. Criteria in these categories that were applicable were utilized.

In addition, the Study Team has developed a significant amount of customized material, applicable specifically to local fire departments, especially in all volunteer and combination volunteer-paid departments. At the same time, there are several generic components that do not, based on their nature, vary from one system to the next, such as the description of the basic types of apparatus and equipment, the fire station location analysis model, and basic apparatus maintenance guidelines. As applicable, the Study Team has employed these basic criteria.

Standards and Accepted Practices

The Study Team utilized published fire protection standards and information on accepted principles and practices for the operations and management of fire, rescue and EMS services



INTRODUCTION AND BACKGROUND

STUDY FRAMEWORK (continued)

as background and guidelines for the conduct of this study. Some of the key organizations with standards and publications utilized, as appropriate, as part of this planning effort include:

- National Fire Protection Association
- Insurance Service Office (ISO) Commercial Risk Services, Inc.
- International Association of Fire Chiefs
- Maryland Institute for Emergency Medical Services
- Maryland State Firemen's Association
- International City Management Association
- Federal and State OSHA

The National Fire Protection Association (NFPA) follows a nationally-recognized process for the establishment of many standards that are applicable to fire protection operations and administration. In many jurisdictions, some of the NFPA standards have been adopted and fully implemented while other NFPA standards are utilized as general guidelines for pursuing further improvement in safety and services. The following list includes some of the key NFPA standards:

<u>Name of Standard</u>	<u>NFPA Number</u>
Standard for Fire Fighter Professional Qualifications	1001
Standard for Fire Apparatus Driver/Operator Professional Qualifications	1002
Standard for Fire Officer Professional Qualifications	1021
Standard for Professional Qualifications for Fire Inspector, Fire Investigator, and Fire Education Officer	1031
Developing Fire Protection Services for the Public	1201
Fire Training Reports and Records	1401



INTRODUCTION AND BACKGROUND

STUDY FRAMEWORK (continued)

Fire Department Occupational Safety and Health Program	1500
Fire Department Incident Management System	1561
Standard for the Organization and Deployment of Resources	1720
Pumper Fire Apparatus	1901
Aerial Ladder and Elevating Platform Fire Apparatus	1904

These and other written standards and nationally-recognized documents, such as the current edition of the NFPA Fire Protection Handbook, were utilized by the Study Team as a framework for this planning project.

PREVIOUS PLANS AND STUDIES

The Study Team requested a copy of any prior fire and EMS studies, plans and/or memorandum. Copies of the following documents were provided:

- A. Fire EMS Future Study Committee Report, 1990
- B. Report to the County Executive, Report of the Harford County Volunteer Fire and Ambulance Association, An Outlook On the Next Five Years "Maintaining Volunteer Emergency Services"
- C. Fire Protection in Harford County, A Preliminary Report to the Honorable James M. Harkins, Harford County Executive, April 26, 1999, prepared by Giffin B. Nichol and Gary D. Metzbower
- D. Staffing Study for 911, Fire and Police Dispatch Final Report, Concepts to Operations, Inc., December 20, 1999
- E. Standardizing Fire and EMS (Dispatch) Procedures, a Memorandum to Mr. Ernie Crist and Deputy Chief Larry Mabe, February 24, 2000, and related subsequent documents
- F. Phase 1 Report, Harford County Medical System Task Force, April 26, 2000



INTRODUCTION AND BACKGROUND

PREVIOUS PLANS AND STUDIES (continued)

- G. Phase 2 Report, Harford County Medical System Task Force, October 25, 2000
- H. Phase 3 Report, Harford County Medical System Task Force, March 12, 2002
- I. Interim Report, Harford County EMS Task Force, 2004, March 4, 2004
- J. Series of documents related to the Interim Report, Harford County EMS Task Force, 2004, March 4, 2004
- K. EMS Initiatives Meeting, Harford County, February, 21, 2006

These plans were utilized as background for the development of this Fire and EMS Services master plan.

SCOPE OF SERVICES FOR THIS STUDY

The following is the scope of services areas for this study that is to address all aspects of the provision of fire and EMS services in Harford County, including:

- 1. 911/Dispatch
 - a. 911 call taking
 - b. Emergency medical dispatch
 - c. Emergency fire dispatch
 - d. Operations support to the fire service
 - e. Administrative support to the fire service
- 2. Operations
 - a. Fire response
 - b. EMS response
 - c. Hazmat response
 - d. Technical rescue response
 - e. Mass casualty/pandemic training



INTRODUCTION AND BACKGROUND

SCOPE OF SERVICES FOR THIS STUDY (continued)

3. Training
 - a. Fire training
 - b. EMS training
 - c. Specialty training
 - d. Leadership training
 - e. Mass casualty/pandemic training

4. Administration
 - a. Recruitment and retention
 - b. Leadership
 - c. Reporting/record keeping
 - d. Preplanning
 - e. Building inspections
 - f. Plans review
 - g. Investigations
 - h. Public education
 - I. Vehicle and building maintenance

Generally speaking, as described in Harford County budget documents and initial discussions with project officials and the Study Team, the broad scope of this study planning effort is to assist the County and volunteer and paid leaders and services providers in comprehensive planning for the implementation of a state-of-the-art combination volunteer and paid fire and EMS service while maintaining and strengthening the volunteer component of this essential Harford County public safety service.



CHAPTER TWO

ORGANIZATION AND ADMINISTRATION

This Chapter includes a review of general aspects of the organization and administration of fire and EMS services in Harford County to include legal authority, current structure of the various component organizations, and observations and recommendations.

OVERVIEW

One of the most important functions of local government is to provide efficient and cost effective delivery of adequate quality fire and EMS services. Many fire and EMS agencies were developed and organized throughout history on the basis of local neighborhood needs and initiatives. As communities have become increasingly suburban and urban, calls for service have increased with a resulting need for increased coordination, consistency, and direction of fire and EMS services and resources.

A key fire and EMS organizational principle relates to the basic responsibility for public safety within the community. It is widely accepted that the fire and EMS service provision is considered to be a local government responsibility in most areas of the United States. Local government is broadly interpreted to include municipalities, such as counties, cities, towns, villages, and townships.

To attain the delivery of optimum fire and EMS service, it is considered essential that local government recognize and accept responsibility and fulfill the obligation of providing appropriate guidance and direction by:

- A. Overseeing the formation process of the organization of fire and EMS services;
- B. Ensuring that the fire and EMS organizations reflect the public interest;
- C. Protecting the service from undesirable external interference;



ORGANIZATION OF FIRE AND EMS SERVICE

OVERVIEW (continued)

- D. Determining basic policies for providing services; and,
- E. Defining the legal duties and responsibilities of service providers.

ACCEPTED PRINCIPLES AND PRACTICES - ORGANIZATION

Both the National Fire Protection Association (NFPA) standards and Commission on Fire Accreditation International (CFAI) criteria provide guidance to municipalities and fire and EMS companies relating to organization structure.

NFPA 1201 - Standard for Developing Fire Protection Services

NFPA 1201 provisions relate further to the organization structure of fire and EMS departments providing guidance to this Study as follows:

Identification of broad authority and responsibility for the establishment and operation of the fire protection service/s is addressed in Section 3-1 of NFPA 1201, Developing Fire Protection Services for the Public, as follows:

“Chapter 3: Governmental Responsibilities

3-1 Local Government.

3-1.1 Purpose. The government agency responsible for establishment and operation of the fire department shall adopt a formal statement (bylaw/statute) of purpose and policies for the fire department that includes the type and levels of services that are to be provided, the area to be served, and the delegation of authority to the fire chief and other officers to manage and operate the fire department.”



ORGANIZATION OF FIRE AND EMS SERVICE

ACCEPTED PRINCIPLES AND PRACTICES - ORGANIZATION (continued)

More specifically, NFPA 1201 includes the following provisions relating to the organization structure of the fire protection agency/s:

“Chapter 5: Organizational Structure of the Fire Department

5-1 Purpose. The fire department shall have an organizational structure that facilitates efficient and effective management of its resources to carry out its mandate.

5-2 Management/Fire Chief.

5-2.1 The manager of the fire department shall be the fire chief. The fire chief shall be governed in the development of regulations and orders by the provisions of all applicable laws or ordinances and shall maintain a file of such documents.

5-2.2 The fire chief shall be appointed on the basis of merit and ability.

5-2.3 The fire chief shall communicate closely with the local government chief executive and governing body.

5-2.4 The governing body shall establish only the primary policies of the fire department and shall not act as an administrative agency or direct day-to-day management of the department.”

CFAI Governance and Administration Criteria

The governance and administration category of the Commission on Fire Accreditation International’s categories and criteria defines governance as follows, as it relates to the local government’s responsibilities in the provision of fire and EMS services:



ORGANIZATION OF FIRE AND EMS SERVICE

ACCEPTED PRINCIPLES AND PRACTICES - ORGANIZATION (continued)

“Governance is defined as the recognition of the authority that allows an organization or agency to legally operate. In fulfilling its responsibility, the legal entity that oversees this formation process reflects the public interest, protects the agency from undesirable external interference, determines basic policies for providing services and interprets the agency’s activities to its constituency.”

The CFAI accreditation criteria related to fire department organization governance and administration that is relevant to this Study is as follows:

The governing board and/or agency manager has been legally established to provide general policies to guide the agency, approve programs and services, and appropriated financial resources.

1. The agency has been legally established.
2. The governing body having jurisdiction over the fire service organization or agency periodically reviews and approves programs and ensures compliance with basic agency policies.
3. The governing body approves the administrative structure that carries out the agency’s mission.

There is an established administrative structure and environment for achievement of the agency’s mission, purpose, goals, strategies and objectives.

1. There exists an administrative structure which reflects the agency’s mission, goals, objectives, size and complexity.
2. Allocation of resources reflects the agency’s mission, goals and objectives.
3. The agency administration demonstrates compliance with legal requirements of local, state, and federal governments.
4. Personnel functions, roles and responsibilities are defined in writing and a current organization chart exists.



ORGANIZATION OF FIRE AND EMS SERVICE

ACCEPTED PRINCIPLES AND PRACTICES - ORGANIZATION (continued)

The Study Team carefully considered these criteria as the organization of the Harford County Fire and EMS Service was reviewed. In assessing the applicability of each of these criteria, the Study Team kept in mind the nature of Harford County's volunteer nature of the Fire, and EMS service.

The remainder of this Chapter addresses current authority to operate fire and emergency medical services in Harford County, current organizations and appropriate conclusions and recommendations.

COUNTY LEGAL AUTHORITY

The following sections outline and discuss the County Charter and County Code provisions related to the Harford County Fire and EMS Services.

County Charter Provisions

The following are the sections of the Harford County Charter that describe the nature and authority of the County as a Maryland county.

Body Corporate and Politic

“Harford County as it now exists constitutes a body corporate and politic. Under this Charter it shall have all rights and powers of local self-government and home rule as are now or may hereafter be provided or necessarily implied by this Charter and by the Constitution and laws of the State of Maryland. The County shall have all such rights and powers as completely as though they were specifically enumerated in this Charter and no enumeration of rights or powers in this Charter shall be deemed exclusive or restrictive.”



ORGANIZATION OF FIRE AND EMS SERVICE

COUNTY LEGAL AUTHORITY (Continued)

Exercise of Powers

“The powers mentioned in the preceding section shall be exercised only by the County Council, the County Executive, and other officers, agents, and employees of the County acting under their respective authorities. In the exercise of such powers, all citizens of Harford County shall be accorded equal treatment in all matters under the jurisdiction of the County government.”

These sections of the Harford County Charter seem to provide the County Council and County Executive with all the rights and powers of self-government and home rule, including the area of delivery of the priority service delivery areas of public safety services.

County Code Provisions

The following sections are the Harford County Charter and Code related to Fire and EMS organization and administration.

The following is the Harford County Code related to Fire and EMS organization and administration.

“CHAPTER 28. FIRE, AMBULANCE AND RESCUE

ARTICLE II. General Regulations

28-10. Compliance with standards.

- A. Equipment, stations and vehicles. All emergency fire-fighting, ambulance and rescue equipment, stations and vehicles shall comply with the standards for such equipment, stations and vehicles as established by the County Fire Chiefs' Association.



ORGANIZATION OF FIRE AND EMS SERVICE

COUNTY LEGAL AUTHORITY (Continued)

- B. **Manpower.** All manpower training and manning requirements shall be in accordance with applicable County Fire Chiefs' Association standards.
- C. **Location.** The standard for the establishment and operation of substations of the County Fire Chiefs' Association shall be the governing standards in establishing and locating any substation. A new station site, not an element of any other established county fire, ambulance or rescue organization, shall be approved by the County Fire Chiefs' Association, and such approval shall be based upon current standards of the County Fire Chiefs' Association and other applicable laws and standards. Such approval shall be subject to final approval by the County Executive after a public hearing held by the Director of Administration. Other than manpower availability, the primary factor in establishing and locating a new station shall be that of providing improved protection to areas heretofore classified as unprotected, i.e., areas more than five (5) miles by paved roadway from an existing approved fire station.
- D. **Compliance with Charter provisions.** All standards referred to in this Article shall be established in accordance with Section 807 of the Charter.

28-11. Administration.

- A. The County Fire Chiefs' Association shall be responsible for administering this Article and for ensuring that the standards contained herein are current and reflect the best available fire, ambulance and rescue services.
- B. The County Fire Chiefs' Association shall advise the Director of Administration on the management of personnel of the central alarm system for the county.



ORGANIZATION OF FIRE AND EMS SERVICE

COUNTY LEGAL AUTHORITY (Continued)

- C. All personnel of the county central alarm system shall be directly responsible to the Director of Administration and subject to the applicable county personnel rules and regulations.

28-12. Noncompliance; funding of organizations.

- A. Failure of a station to comply with this Article may result in withdrawal of financial support by the county, and any station failing to comply may not be recognized in the county emergency protection assignments.
- B. All allotment requests for all organizations subject to this Article and the budget request for the county central alarm system shall be processed through the County Fire Chiefs' Association for submission to and approval of the county.
- C. Any new organization coming under the purview of this Article shall be eligible for partial funding for a period of five (5) years from admission to the County Fire Chiefs' Association and shall, after that time, be eligible for further funding by the county if it meets the standards set forth by the County Fire Chiefs' Association and by law.”

These fire and EMS -related sections of the County Code reference the “County Fire Chiefs' Association”. The Study Team noted that there is no organization presently with this name. In questioning this point, County officials advised that the present name of the organization referenced in these sections of the County Code relate to the Harford County Volunteer Fire and EMS Association.



ORGANIZATION OF FIRE AND EMS SERVICE

COUNTY LEGAL AUTHORITY (Continued)

Charter Provision Referenced in County Code Section 28-10

According to County Code Section 28-10, Compliance with standards, all standards referred to in this Article II, Section 28, are to be established in accordance with Section 807 of the County Charter. That section of the Charter reads as follows:

Charter Article VIII, Section 807

“In order for any administrative rules and regulations by an agency of the Executive Branch to be effective they must have been the subject of at least one advertised public hearing and be on file with the President of the Council and the Director of Administration. Administrative rules and regulations shall be codified in the Harford County Code or an annual cumulative supplement thereto.”

The Study Team was advised by Association officials that standards adopted by the Harford County Fire and EMS Association have not been advertized as part of the process of being adopted by the HCVFEA.

It is of note that, as currently written, the fire and EMS -related provisions of the Harford County Code seem to focus on subjects that may have been originally adopted to deal with issues of concern at the time they were written. The County Code does not address the broader aspects of the provision of fire and EMS services within Harford County to include:

- A. Continuing to provide fire and EMS services through a combined system of public and private resources;
- B. Intent to maximize volunteer participation;
- C. Defining organization of fire and EMS services;



ORGANIZATION OF FIRE AND EMS SERVICE

COUNTY LEGAL AUTHORITY (Continued)

- D. Defining legal duties and responsibilities of service providers;
- E. Defining the authority for providing services;
- F. Determining key policies for providing services;
- G. Providing adequate accountability to the citizens and taxpayers; and,
- H. Defining the service area/s.

HARFORD COUNTY FIRE AND EMS ORGANIZATIONS

This section outlines the organization of the Harford County Fire and EMS Service as a primarily volunteer combination paid/volunteer fire and EMS services delivery system.

Harford County Volunteer Fire and EMS Association

The Harford County Fire and Emergency Medical Services Association (HCVFEA or Association) is made up of members of each of the 12 Harford County Fire and EMS Companies. The Association is considered the primary Fire and EMS organization in Harford County.

HCVFEA Mission and Purpose

According to Article II of the HCVFEA, the Mission and Purpose of the Association is as follows:

- “Sec. 1 To encourage the development of better and more efficient fire departments in Harford County; to foster and encourage public awareness of fire hazards and prevention; to promote the principals and



ORGANIZATION OF FIRE AND EMS SERVICE

FIRE AND EMS ORGANIZATIONS (Continued)

objectives of efficient fire prevention, fire fighting, mutual aid, and assistance between fire companies of Harford County; to promote and coordinate for public good and assistance between fire companies of Harford County all activities and services rendered by the respective companies for fire fighting, fire prevention, and all other emergencies.

- Sec. 2 To encourage the development of better and more efficient emergency medical services for Harford County and to practice the best emergency medical training possible.
- Sec. 3 To promote the science of modern fire fighting and rescue tactics, emergency medical systems, and mutual aid for all companies, to support a Division of Emergency Operations (DEO) while maintaining responsibility for dispatch procedures and related operational matters, and to act in an advisory capacity for all other matters pertaining to emergency operations so that the response to an alarm of fire or an emergency may be more efficiently handled.
- Sec. 4 To exercise all powers and perform all duties contained in, but not limited to, Harford County Ordinance 76-105.”

The By-Laws further specifies that the voting membership of the organization is comprised of the Volunteer Fire and EMS Companies having first due responsibilities in Harford County, Maryland. Further, the By-Laws states that the representatives to the Association shall be limited to all past and present chiefs, assistant chiefs, deputy chiefs, highest ranking ambulance officers, presidents and/or representatives of member companies designated by their boards of directors.

The officers of the Association, according to the By-Laws, are the President, Vice-President, Secretary and Treasure.



ORGANIZATION OF FIRE AND EMS SERVICE

FIRE AND EMS ORGANIZATIONS (Continued)

HCVFEA Board of Directors

The Association Board of Directors, commonly referred to as the “Trustees”, are comprised the President and Vice-President of the Association and one appointed or alternate appointed by each member company. The President chairs meetings of the Board of Directors.

According to the Association By-Laws, the Board of Directors have the following duties and responsibilities:

- A. Managing and controlling the fire and EMS dispatch center of Harford County in accordance with Harford County Bill 76-105 (reviewed later in this Section);
- B. Review minutes and reports of standing committees and report findings to the Association;
- C. Recommending disciplinary action against any member company for failure to comply with standards outlined in Harford County Bill 76-105; and,
- D. Maintaining adequate insurance at all times.

The By-Laws specify that a quorum of the Board is eight (8) member companies. Further, actions of the Board of Directors are to be reported at the next meeting of the Association and may be rejected with a two-thirds vote of companies voting.

HCVFEA Standing Committees

Pursuant to the By-Laws the President is to annually appoint and give direction to the following standing committees:

- 1. Budget Committee;
- 2. Standards Committee;
- 3. Chief Officers Liaison Committee (COLC);



ORGANIZATION OF FIRE AND EMS SERVICE

FIRE AND EMS ORGANIZATIONS (Continued)

4. Length of Service Awards Program Committee (LOSAP);
5. Training Committee;
6. By-Laws Committee;
7. Public Relations Committee;
8. Fire and Injury Prevention;
9. EMS Liaison Committee; and,
10. Recruitment and Retention Committee.

It is of note that the primary By-Laws-stated responsibility of the Standards Committee is to update minimum standards for the Association.

The Chiefs Officers Liaison Committee, according to the By-Laws, is to review dispatching and related operational procedures and periodically recommend changes deemed necessary to the Board of Directors. Although not stated as a responsibility of the Chief Officers Liaison Committee by the Association ByLaws, the Study Team was advised that the COLC also is to address operational issues and develop related policies to be utilized County-wide.

The Study Team also noted that the Association ByLaws do not include a listing of member Fire and EMS Companies. Further, there is no mention of an established safety-related committee.

Harford County Volunteer Fire and EMS Foundation

In 2000, due reportedly to substantial EMS response issues involving long response times, failure to respond on calls and level of care issues the EMS Task Force Study process was initiated to identify and recommend solutions. As a result, it was determined that due to increasing workload there was a need to hire paid EMS staff to supplement volunteers in a number of Fire and EMS Companies.



ORGANIZATION OF FIRE AND EMS SERVICE

FIRE AND EMS ORGANIZATIONS (Continued)

At the time, the goal was to implement a means of providing paid EMS staff that did not result in Harford County hiring the personnel. The subsequent process utilized by the EMS Task Force to develop recommendations for solutions is discussed in detail in the Emergency Medical Services chapter of this Study report.

In 2005, the Harford County Volunteer Fire and EMS Foundation, Inc. (Foundation) was created for the primary purpose of providing paid EMS staff to assist the Fire and EMS Companies in the County with the provision of EMS pre-hospital service. The Foundation officially commenced operations in 2006 under the auspices of the Foundation Trustees and direction of the Operations Manager.

According to the Foundation's Articles of Incorporation, the purposes for which the Corporation is formed are "for educational and charitable purposes" and for the following:

"To raise funds and hire employees to augment volunteer firefighting and emergency medical services currently provided to the citizens of Harford County, Maryland."

The Fire and EMS Foundations seems to have been a very innovative means to providing essential paid staffing to support the effort of the volunteers and the Fire and EMS companies to continue to provide essential EMS-related service in Harford County. **The Fire and EMS leaders, Association, companies and County should be commended for their initiative and progressive approach to providing for needed paid EMS staffing in an ever-increasing workload environment.**

Although likely not a permanent solution, creation of the Foundation has been fulfilling a critical need for paid staffing need in the delivery of EMS in Harford County. The role and importance of the Foundation in the provision of EMS in Harford County is discussed in more detail in the Emergency Medical Services Chapter of this Report.



ORGANIZATION OF FIRE AND EMS SERVICE

FIRE AND EMS ORGANIZATIONS (Continued)

Volunteer Fire and EMS Companies

Each of the 12 volunteer Fire and EMS Companies are incorporated under the laws of the State of Maryland, operates under a set of adopted authorizations including a constitution, bylaws and other rules and guidelines, and elects and/or appoints a set of administrative and operational officers pursuant to their bylaws.

The volunteer Fire and EMS Companies that are part of the Harford County Fire and EMS Service are as follows:

1. Co. 1 - Level Volunteer Fire Company;
2. Co. 2 - Aberdeen Volunteer Fire Company;
3. Co. 3 - Bel Air Volunteer Fire Company;
4. Co. 4 - Abingdon Volunteer Fire Company,
5. Co. 5 - Susquehanna Hose Company;
6. Co. 6 - Whiteford Volunteer Fire Company;
7. Co. 7 - Jarrettsville Volunteer Fire Company;
8. Co. 8 - Joppa-Magnolia Volunteer Fire Company;
9. Co. 9 - Darlington Volunteer Fire Company;
10. Co. 10 - Norrisville Volunteer Fire Company;
11. Co. 13 - Fallston Volunteer Fire Company; and,
12. Co. 5-9 - Havre de Grace Ambulance Corp.

Fire and EMS Company Incorporation

The Fire and EMS Companies were separately incorporated under the laws of the State of Maryland when originally established. The articles of incorporation for each of the companies typically include:



ORGANIZATION OF FIRE AND EMS SERVICE

FIRE AND EMS ORGANIZATIONS (Continued)

1. Certification as to the name of the corporation;
2. Statement as to the purpose of the corporation;
3. Listing of the powers of the corporation;
4. Identification of the location of the offices of the corporation; and,
5. Certification as to the general management approach---committee, etc.

As the name of a number of companies have changed through the years, these articles of incorporation may have been modified.

Fire and EMS Company By-Laws

Each of the fire and ambulance companies originally adopted a constitution and/or by-laws which have been subsequently revised, as considered appropriate by the membership of each company. Although the constitution/by-laws of the companies vary, a number of sections/articles/subjects comprising these documents, including:

1. Name and address;
2. Membership;
3. Meetings;
4. Nominations and elections of officers;
5. Board of directors/trustees;
6. Executive committee;
7. Officers - qualifications and terms of office;
8. Expulsion and discipline; and,
9. Amendment of constitution and/or by-laws.

Each of the Fire and EMS Companies are, operationally, under the command of their respective chiefs.



ORGANIZATION OF FIRE AND EMS SERVICE

FIRE AND EMS ORGANIZATIONS (Continued)

Organizational Structure of Fire and EMS Companies

A review of the constitution and/or bylaws of the volunteer Fire and EMS Companies indicate that the Companies are organized into two primary organizational elements: administration and operations.

Administration

The volunteer Fire and EMS Companies are administered by a number of elected or appointed administrative officers. The administrative officers of each volunteer organization generally include:

1. President
2. Vice president
3. Recording secretary
4. Financial secretary
5. Treasurer

The volunteer Companies normally include a board of directors that typically provide overall policy and administrative direction to the department.

Operations

The typical operational officers of each of the volunteer Companies include the following ranks of elected or appointed operational officers:

1. Fire chief
2. Assistant Chief
3. Deputy fire chief
4. Captain



ORGANIZATION OF FIRE AND EMS SERVICE

FIRE AND EMS ORGANIZATIONS (Continued)

5. Lieutenant
6. Sergeant

The Study Team has provided planning assistance, managed or participated as a member of more than 50 volunteer fire and EMS companies in the State of Maryland. In the view of the Study Team the Fire and EMS Companies in Harford County are organized in a similar manner to many fire companies in the State.

INPUT FROM FIRE AND EMS PERSONNEL

During the course of the conduct of this fire and EMS planning process the Study Team concentrated a considerable amount of effort in obtaining the opinions and input from volunteer and paid fire and EMS members, officers and officials of the Fire and EMS Companies, Foundation and Association. This effort was pursued through both personal interviews and a confidential member survey form.

Personal Interviews

The Study Team elicited comments and input through personal and group interviews and discussions. Fire and EMS members and operations and administrative officers of the Fire and EMS Companies, Fire and EMS Foundation service providers and managers and 911 Center dispatchers and managers and stakeholders were interviewed on the subject of the organization, administration and fire and EMS service delivery in Harford County.

These individuals were asked their opinion on the major problem areas and suggestions to improve the fire and EMS organization and services delivery. This input was solicited through interviews by Study Team members of more than 100 individual and a number of group meetings.



ORGANIZATION OF FIRE AND EMS SERVICE

INPUT FROM FIRE AND EMS PERSONNEL (Continued)

Confidential Member Survey Form

Further, input was elicited through offering service providers the opportunity to complete a multi-page Confidential Member Survey form that asked for a broad cross-section of information requesting each member to provide input and feedback in a number of areas to include their thoughts relating to strengths, weaknesses and opportunities for improvement.

It should be noted that the Study Team was provided with completed survey forms by 360 firefighter and EMS service providers and 147 operations and administrative officers and officials of the 12 Fire and EMS Companies. **More than 500 Harford County fire and EMS service providers provided input in this manner.** The reader will observe throughout this Study report, selected applicable thoughts and input from these Study participants is included in appropriate sections to provide the perspective of the various service providers.

The Study Team appreciates the time and effort of the more than 500 individuals who chose to give of their time and effort to provide this valuable input and feedback through the survey tool and individual and group interviews and meetings. This information was invaluable to the development of the conclusions and recommendations contained in this Study report and played a key role in formulating the suggestions for the future of the Harford County Fire and EMS Service. The Study Team expresses its sincere appreciation to the Study participants for their substantial contribution/s to this Fire and EMS Master Plan.



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL OBSERVATIONS

The following sections are general observations about the organization of the Harford volunteer fire, rescue and EMS services from both a company and County-wide perspectives.

Individual Company Perspective - Member Perceptions

The companies were organized under state chartered certificates of incorporation, as are many volunteer fire companies across the nation. They are governed internally by constitution and/or bylaws the membership adopted and modified. The fire companies also operate under policies and/or procedures approved by either their chief, president and/or governing board. These policies vary significantly in terms of quality, detail and currency.

The charter, bylaws and policies of each of the fire and EMS company organizations generally focus internally on their organization, structure and operation. They do not generally relate to the other companies or the overall County-wide Fire and EMS service.

Operationally, the Fire and EMS Companies appear to generally focus many of their service needs assessments, decision making and strategies for staffing, apparatus and equipment in their first-due response area in an effort to try to provide all services.

Company-Level Positive Points

In considering their own Fire and EMS Companies many firefighters, EMTs, paramedics and officers discussed a number of strong points from a company perspective. Many positive aspects of the Fire and EMS Companies discussed/mentioned by members of the various companies include the following:

1. Well-organized;
2. Know what they have and need;
3. Streamlined new-member training;



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ORGANIZATIONAL OBSERVATIONS (Continued)

4. Realistic policies;
5. Level of commitment of members;
6. Recruitment and retention efforts;
7. Fire prevention at community events;
8. HS MAD program participation;
9. Open house participation;
10. Festival in the park;
11. Progressive website;
12. Increased level of call response activity;
13. Funding from the city;
14. Local newspaper support for volunteers;
15. Increased volunteer members recruited;
16. Depth of members experience;
17. Participation by paid fire/EMS employed outside of Harford;
18. Age diversity of membership;
19. Positive attitude of members;
20. Few complaints from public;
21. Good daytime staffing;
22. Good relations with other companies;
23. Training participation with other companies;
24. Family orientation of company;
25. Older members serving as mentors;
26. Mentoring new members;
27. Community event involvement;
28. Birthday parties for community kids at fire stations;
29. Crab feast for crews;
30. Improvements in fire station funded by County;
31. Members proud of company;
32. Excellent facility'
33. Strong training program;



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ORGANIZATIONAL OBSERVATIONS (Continued)

34. Strong leadership;
35. Financially strong;
36. Comprehensive standard operating procedures;
37. Active live-in program;
38. Awards banquet;
39. New member committee;
40. Softball team;
41. Recognition of new member training achievement;
42. Staffing at every station;
43. Good selection and appointment of officers;
44. Baby sitters offered for members;
45. Strong officer standards;
46. Members live in area;
47. Firehouse is hub of area;
48. Known for quick response times;
49. Assigned safety officers;
50. Automatic external defibrillators on all apparatus;
51. Have comprehensive SOPs (standard operating procedures) and policies; and,
52. Do not fail to respond on calls.

These are only a small number of the many positive points relating to their own fire and EMS company discussed by members interviewed by the Study Team. In the view of the members, the Fire and EMS Companies in Harford County have much to be proud of. The Study Team is of the opinion that, **as volunteers of Fire and EMS Companies, they have a long history and tradition of volunteerism which has been serving the County and its residents and businesses well for many decades.**



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL OBSERVATIONS (Continued)

Company-Level Improvements Needed

The Study Team was impressed with the fact that many volunteer members and leaders, while proud of their Fire and EMS Companies, knew there were substantial improvements needed, both in their own companies as well as County-wide. A number of the primary areas where members mention their own companies need for improvement included:

1. Improved benefits and incentives for volunteer members;
2. In-station training drills need for improvement;
3. Need more volunteers in station;
4. Duplication of apparatus and equipment;
5. High volunteer turnover rate;
6. Number of slow unit responses;
7. Prevalent burnout of volunteer members;
8. Volunteers holding multiple positions;
9. Company tries “to do it all”;
10. Company difficulty meeting workload demand;
11. Limited and outdated policies and procedures;
12. Daytime staffing problem;
13. Number of failures to responds on calls;
14. Improvement in deployment of volunteer staffing; and,
15. Long response times.

These as well as other areas of potential opportunities for improvement mentioned by members or observed by the Study Team will be discussed later in this Chapter other relevant chapters of this report.



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL OBSERVATIONS (Continued)

County-wide Perspective

Possibly, the most difficult issue that hinders progress and teamwork in the fire and EMS services is the total independency on the part of many of the current organizations and their leaders. A dangerous safety situation exists because there are limited consistent firefighting protocols in place. Many protocols are outdated for various important fire and EMS strategies and tactics. There are 12 different approaches rather than one and, as elections occur annually, these approaches may change overnight as a new chief is elected.

Input from Members Via the Confidential Member Survey

The following comments and input was provided by Fire and EMS Company members regarding organization and administration issues via the Confidential Member Survey form

Organization

1. Very few volunteer agencies are accountable for such a large county and population;
2. At present, each company does its own thing;
3. There is no individual responsible County-wide for fire/EMS issues;
4. Being honest, there is not much else happening right now that I agree with, leadership is poor;
5. There needs to be a single person responsible for overall operations;
6. There needs to be stricter leadership in the fire and EMS companies;
7. There needs to be a fire “official”, County fire chief or director of Fire and EMS to oversee Fire and EMS operations, dispatch issues, fire/EMS budget allotments, approve/disapprove funding for apparatus, gear or operations items;
8. The Fire/EMS Association needs “officials” to handle day-to-day operations that cannot be handled by volunteers;



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL OBSERVATIONS (Continued)

9. Teamwork needs to be promoted;
10. A County Fire Administrator is needed;
11. Need to start a career department to form a combination fire/EMS/rescue department to support/supplement the volunteers;
12. Either replace the Association or provide a hierarchy in the Association with the ability to have the authority to dictate policy and procedures, both operational and administrative;
13. The County fire service needs to be more unified;
14. Egos and pride need to stop getting in the way;
15. Need an administrator to oversee all companies;
16. The biggest problem I see is that there is no one authority overseeing the fire and EMS services;
17. Individual companies are free to do what they want as far as response, running assignments and purchasing of equipment;
18. A fire administrator with authority to enforce standards and rules is needed;
19. There needs to be fire/EMS management for the county;
20. There needs to be someone with a final say—there are too many hoops to jump through today;
21. The volunteer fire companies need to be directly supervised by a county fire chief or fire administrator;
22. There needs to be someone to oversee all operations with authority to crack down on mismanaged companies;
23. Each company is its own kingdom where they have their own rules for incident command system, apparatus operational running assignments and training;
24. Someone needs to be in charge that will see that the minimum standards are enforced;
25. There needs to be a chief position for the county, hired from the outside with fire and EMS experience;
26. There is nothing in place to hold the companies accountable; and,



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL OBSERVATIONS (Continued)

27. There is no accountability and oversight of the fire and EMS service by the county.

Administration

1. Purchasing should be handled the same for all;
2. Budgets should be handled the same for all with the same guideline so there is accountability for all;
3. Continue funding the fire service at current or higher levels and continue funding the EMS Foundation;
4. There is a need to standardize basic purchasing, hose, gear and maintenance contracts;
5. There is a need to require those claiming to be “active” volunteer members to actually ride fire and EMS calls;
6. Lack of spending accountability from the fire and EMS companies to the County Government and taxpayers for the considerable amount of tax funds received;
7. Fire and EMS companies should be provided training and orientation on how to run their company’s business;
8. We need to work as “one department”;
9. Too much tax funds are given to companies for the return that is given;
10. Fire companies do as they please, if they want to purchase a costly vehicle, they do;
11. Companies do not want to give up their area to closer companies due to loss of donation revenue;
12. The donation area could remain or phased from current to closest;
13. The County funding allotment is antiquated—no one knows how originally determined, clear cut formula/approach should be used;



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ORGANIZATIONAL OBSERVATIONS (continued)

14. Either phase out the authority of the Association, or provide it with the authority and ability to dictate policy and procedures, both operational and administrative;
15. Fire companies do as they please;
16. There is too much discrepancy between the various fire companies;
17. There is no main leadership;
18. There is the Association, the chief officers and Trustees, everyone with their own agenda; and,
19. Many companies do not follow the standards of the Association.

Study Team Observations

From a County-wide point of view, Harford County is being served by a number of volunteer Fire and EMS Companies operating, although well-intentioned, with various autonomous approaches to the following important aspects of the Fire and EMS service delivery and management:

1. Chain of command;
2. Budgeting and accounting for tax funds;
3. Operational policies, procedures and SOPs;
4. Apparatus purchases and fleet size;
5. Apparatus deployment dispatch procedures;
6. Apparatus and personnel utilization on emergency incidents;
7. Public fire education;
8. Personnel training program/s;
9. Officer promotional requirements;
10. Determination of specific goals and objectives;
11. Firefighter supervision and discipline;
12. Tax funding level needed from County;
13. Tactics and strategy on emergency incidents;



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL OBSERVATIONS (continued)

14. Station staffing;
15. Apparatus staffing;
16. Apparatus maintenance;
17. Services provided;
18. Utilization of other Fire and EMS Companies for emergency response;
19. Volunteer recruitment and retention;
20. Accountability for actions and the quality of services rendered;
21. Command implementation on incidents;
22. Maintaining incident response times as short as possible;
23. Compliance with adopted Association standards;
24. Utilization and supervision of Foundation units and staff;
25. Service expansion/improvement planning; and,
26. Safety of personnel.

There are 12 service delivery teams in Harford County rather than a one-team approach. Each of the companies, to a greater or lesser extent, seems to focus on its own organization and response area thus creating duplication of effort and apparatus and equipment in a number of areas. Some members mentioned the existence of “fiefdoms” and “egos” on the part of some fire and EMS company leaders and service providers.

As with most communities across the nation, Harford County and its Fire and EMS services are dealing with limited resources. In addition, a number of the Fire and EMS Companies are having difficulty recruiting and retaining members to serve as volunteer firefighting and EMS personnel. This same difficulty has been observed by the Study Team in volunteer fire/EMS organizations nationwide.

The effort most Fire and EMS Companies expend to provide as many services as possible further strains limited fiscal resources and places unnecessary financial demands on the community for taxes and donation funds.



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL OBSERVATIONS (continued)

This is not to say that there is not a desire on the part of many in the Harford County Fire and EMS services to provide consistent high quality service to the public. **The Study Team noted many individual efforts at different levels aimed at trying to develop and encourage a cohesive team.**

An organizational framework to facilitate the creation of a team approach to the provision of services in Harford County does not require the hiring of an all-paid staff, establishment of one fire department and/or the desolation of the volunteer organizations. There are many other alternatives to providing a team approach in communities that have proven to be effective in a number of other jurisdictions. Those alternatives do not have to drive away the volunteer staffing and spirit. In many cases alternatives strengthen volunteerism and the quality of service delivery.

Fragile Nature of Volunteer Fire and-EMS Organizations

It is a known trend, nationally and state-wide, that attracting and retaining volunteer members in fire and EMS organizations is a significant problem. Most volunteer fire companies and EMS companies across the United States are having to deal with the issue of loss of volunteers. In some regions, such as the Commonwealth of Pennsylvania, volunteer fire departments are “closing their doors” and disbanding their organization. This is causing significant issues for many municipalities. As a result, many studies and assessments locally, regionally and nationally have and are being conducted to determine the causes and solutions to this problem. Further, many municipalities and first responder organizations are conducting volunteer recruitment and retention studies and implementing appropriate programs and incentives.

Considering this trend in reduced volunteer participation, Harford County is very fortunate to continue to be served by many dedicated volunteers and Fire and EMS Company organizations. This continued service seems due to the recognition on the part of the County and the Foundation of the need to provide important staff support and



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL OBSERVATIONS (continued)

coordination of support functions to the volunteers to allow them to concentrate their efforts on service provision related activities.

In developing recommendations for consideration by the County, Association and the volunteer organizations, the Study Team has considered this fragile nature of the volunteer services in an effort to provide constructive suggestions for the future.

The Study Team firmly believes that in the case of volunteer fire and EMS companies serving growing counties such as Harford County, **there is strength through cooperation and teamwork.**

ORGANIZATIONAL ALTERNATIVES

The following sections will discuss and propose options for Harford County, the Harford County Volunteer Fire and EMS Association and the Fire and EMS Companies to consider in assuring the survival and the strengthening of the volunteer approach to service provision through improving teamwork and cooperation.

It should be noted that a pre-eminent goal of this Plan will be to, where possible, strengthen the volunteer nature of fire and EMS service delivery while at the same time maintaining and, where possible, upgrading the quality of service delivery as the County develops.

The initial suggested options and recommendations in this Section will lay a good foundation taking into consideration what may develop into the future as it relates to the organization of the Harford County Fire and EMS Services to the year 2025 and beyond.

Organizational Models Involving Volunteer-Staffed Agencies

The Study Team has managed or conducted planning projects for more than 130 fire, rescue and EMS organizations with some level of volunteer staffing in counties and cities. In their



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ORGANIZATIONAL ALTERNATIVES (Continued)

experience there are a number of organizational approaches. These models, which have been seen by the Study Team in more than ten Maryland Counties, could involve all-volunteer staffing or a combination of volunteer and paid staffing, such as that in Harford County. Although not totally inclusive, these models include the following:

1. All-volunteer staffing;
2. All-volunteer staffing with a fire and rescue/EMS association;
3. All-Volunteer with a communications director providing support to the volunteer organization/s;
4. All-volunteer staffing with a fire/rescue/EMS commission, council or board;
5. All-Volunteer staffing with a fire/rescue/EMS coordinator, with or without a fire/rescue/EMS commission, council or board;
6. **Combination volunteer/paid staffing with a fire/rescue/EMS association (the current Harford County model considering the Foundations paid EMS staffing);**
7. Combination volunteer/paid with a fire/rescue/EMS association and with a fire/rescue/EMS commission, council or board;
8. Combination volunteer/paid with a fire/rescue/EMS coordinator and with or without a fire/rescue/EMS commission, council or board;
9. Combination volunteer/paid with a civilian director and with or without a fire/rescue/EMS commission, council or board; and,
10. Combination volunteer/paid with a paid fire chief and with or without a fire/rescue/EMS commission, council or board.

Any of these models could include a fire/rescue/EMS association, depending on the practice in the state or region.

It has been the Study Teams observation that, although there may be variations on this list of fire services models that include volunteer staffing, developing counties and cities tend



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ORGANIZATIONAL ALTERNATIVES (Continued)

to progress through these model generally in the order listed. A developing county or city fire services model would not normally progress in the reverse order of the models are listed.

Harford Fire & EMS Organizational Alternatives

For the immediate future, the options and recommendations suggested consider basic restructuring to build on and strengthen a number of very good aspects of today's organizations.

A timeline for the suggested implementation of the organizational alternatives outline is included as part of the Implementation Chapter of this Report.

A number of possible organizational alternatives for consideration for the future:

- A. Enhance and strengthen the role of the Harford County Volunteer Fire and EMS Association;
- B. Create a Fire and Emergency Services Commission;
- C. Create a Department of Fire and Emergency Services;
- D. Establish the position of Director to head the Department;
- E. Upgrade the role of the Chief Officers (Liaison) Committee.

The following sections provide a further description of these organizational alternatives as envisioned by the Study Team.



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL ALTERNATIVES (Continued)

Role of the Harford County Volunteer Fire and EMS Association

The role of the HCVFEA could be enhanced and strengthened by:

1. Revising County Code to designate the HCVFEA as the lead agency in the Harford County Fire and EMS Services;
2. Providing the HCVFEA with enforcement authority relating to established policies, procedures and SOPs;
3. Developing and implementing individual fire and EMS service delivery agreements between all Fire and EMS Companies, the HCVFEA and Harford County; and,
4. Providing the support and assistance of the Department Director and staff.

Fire and Emergency Services Commission

1. Monitoring, supporting and facilitating the implementation of this Fire and EMS Master Plan;
2. Monitoring and reporting on established Measures of Performance (MOPs) and implementing revisions and additions as determined appropriate;
3. Monitoring and making recommendations regarding the establishment of a comprehensive County-wide fire and EMS data collection and analysis system;
4. Reviewing policies, procedures and standard operating procedures of the Fire and EMS Services and make recommendations;
5. Serving as an advocate for the Fire and EMS services;
6. Advising the County Executive and County Council on matters relating to the Fire and EMS Service;
7. Reviewing the financing of the fire and EMS organizations and making related recommendations;



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL ALTERNATIVES (Continued)

8. Distribute funds appropriated by the Board to the Fire and EMS Companies and withhold funds as deemed necessary to enforce compliance with the procedures, policies and standards created or adopted by the Council; and,
9. Redistribute funds allocated to a Fire or EMS Company not complying within a reasonable time with the procedures, policies and standards created or adopted by the Association to Fire and EMS Companies assuming coverage of the respective area of the noncomplying fire, rescue or EMS company;

Department of Fire and Emergency Services

As envisioned by the Study Team, the general mission of the Department from a broad perspective would be:

To protect and preserve the volunteer Harford County Fire and EMS System. To support the high quality fire protection, rescue and emergency medical services to the citizens of Harford County; by providing this service in the most effective, professional and efficient manner possible, while upholding the County's policies, procedures and directives. To promote teamwork within the various Fire and EMS service delivery organizations. To promote partnerships within the public safety community, providing the citizens a high level of service and protection. To promote recruitment and retention of volunteer personnel by providing education, training and benefit opportunities.

Headed by the Director this new Department could provide support services and functions for the Commission, Association, Chief Officers and Fire and EMS Companies to include the following current organizational elements:

1. Fire and EMS Foundation staffing;
2. Hazmat Team and other specialty teams;
3. Fire and EMS records management system and data analysis capability;



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ORGANIZATIONAL ALTERNATIVES (Continued)

4. Volunteer recruitment and retention;
5. Coordinating fire and EMS training;
6. Fire prevention and education functions;
7. Fire and Emergency Services Commission and Association support;
8. Monitoring, supporting and facilitating the implementation of this Plan;
9. Paid firefighter staffing; and,
10. Other functions and responsibilities, as determined appropriate.

Fire and EMS Department Director

The responsibilities of the Director of the Department of Fire and Emergency Services should include the following:

1. Manage and direct the Department;
2. Supervise and assign all Department uniformed and non-uniformed staff;
3. Assist and provide support to the Fire and Emergency Services Commission;
4. Assist and provide support to the HCVFEA;
5. Serve as an advocate for the Harford County Fire and EMS Service,
6. Serve as a focal point for the Fire and EMS Service in regard to communications and dispatch matters;
7. Provide advice and input to the County Executive and County Council in matters related to the Fire and EMS Service; and,
8. Represent the Department and Fire and EMS Service as appropriate in a team approach with the HCVFEA.

When this position is implemented the County Executive is encouraged to hire a highly experienced individual with senior fire and EMS officer experienced in successful combination volunteer/paid county fire and EMS system management with no prior background or involvement relating to the Harford County. This department head should “serve at the pleasure” of the County Executive.



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL ALTERNATIVES (Continued)

Chief Officers Committee

The Chief Officers Committee should take a proactive role in the planning, development and implementation of operations related service matters.

These suggested organizational changes are intended to maintain and strengthen the organizational elements with substantial operational reliance on the volunteer staffing approach that exists and functions today while at the same time facilitating and providing a more County-wide perspective to the operations and administration of Harford County Fire and EMS services.

Public Safety Organizational Model for the Future

As outlined, a County-wide public safety foundational structure could be implemented to include law enforcement (Sheriff, today), fire and EMS service and emergency support services in three separate organizational elements as follows:

- A. Law enforcement – obviously not part of this Plan, but one of the three public safety elements;
- B. Fire and EMS Service that would be comprised of the Association, Foundation, Fire and EMS Companies and a County Department support and coordination agency; and,
- C. A public safety support services agency to include the 911 Center, Emergency Management and related functions possibly named the Division of Public Safety Support Services.

This may seem to some to be an aggressive approach, however, it is the Study Team's assessment that, although the Fire and EMS Company leadership and members are very



ORGANIZATION OF FIRE AND EMS SERVICE

ORGANIZATIONAL ALTERNATIVES (Continued)

dedicated and well-intentioned, major components, particularly in the development envelope of the County are overwhelmed and experiencing burnout. There is good leadership on the part of the Association, however, it is subject to change. And there is a multiplicity of organizations with limited decision making capability creating slow or lack of decision-making potential.

Philosophically, the first goal of this approach would be to provide a strong County fire and EMS coordinating agency that would be customer oriented, supporting the volunteers, and include all staffed fire and EMS –related service delivery functions. Secondly, this approach could provide a firm foundation for future growth and development of the fire and EMS services as further paid EMS and paid firefighting staff may be added to meet the growing County Fire and EMS Service delivery needs.

Looking to 2025 and beyond, this organizational approach be similar to the Baltimore County Fire and EMS model, although with much fewer paid staff and many more volunteers, if the right actions are implemented to support the volunteers through selectively implemented paid approaches, such as occurred with the Foundation.

Paid Staffing Implementation Model

There are two primary paid staffing models that could be implemented in Harford County as paid firefighter staffing is implemented in the future. These models are:

- A. Integrated approach involving all paid fire and EMS staff working in the volunteer fire stations and riding the apparatus along with available volunteer members; and,
- B. Non-integrated “Baltimore County approach” which involves most paid fire and EMS staff working in separate paid and volunteer -staffed stations.



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ORGANIZATIONAL ALTERNATIVES (Continued)

The Study Team suggests the long-term implementation of the non-integrated paid-staffing approach since this deployment model generally results in reduced volunteer/paid staff friction and conflict. Moreover, this paid staff deployment approach was mentioned to the Study Team as the preferred model by nearly every volunteer member and leader in either the personal interviews or their Confidential Member Survey form.

Implementation of Organizational Alternatives

The following sections suggest an approach towards implementation of the suggested Fire and EMS organizational alternatives.

Harford County Fire & EMS -Related Statute

The implementation of the fire, EMS and other organizational options suggested in this Chapter could be implemented through the adoption of a comprehensive revision in the County Code.

A County fire and EMS organization statute could include primary sections relating to:

- A. Statement of legislative intent regarding providing adequate public safety, health and welfare through a fire and emergency medical services that is highly competent and efficiently delivered by a combination of volunteer and paid personnel;
- B. Objectives of the combination Fire and EMS System;
- C. Maximum participation of volunteer fire and EMS personnel;
- D. Fire and Emergency Services Commission, authority;
- E. Harford County Volunteer Fire and EMS Association, role and responsibilities;
- F. Independent Volunteer Fire and EMS Companies, roles and responsibilities;



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ORGANIZATIONAL ALTERNATIVES (Continued)

- G. Department of Fire and Emergency Services, headed by the Director, authority and responsibilities;
- H. Additional fire and EMS companies;
- I. Relocation/addition of facilities;
- J. Equitable allocation of funding
- K. Annual fire tax levy; and,
- L. Volunteer Length of Service Awards (currently in existence).

The adoption of a state-of-the-art statute/s as envisioned by the Study Team could lay the foundation for the Harford County Fire and EMS Service to remain a vibrant, progressive and highly motivated volunteer-based service into the future.

Public-Private Fire and EMS Services Memoranda of Understanding (MOU)

Another implementation option that could be an important element of the successful implementation of a strong public-private fire and EMS service for the long-term would be fire and EMS service memoranda of understanding (MOU). Such MOUs could assist in the implementation of a strong bond of understanding related to mutual roles and responsibilities. These MOUs could be signed by the HCVFRA and Fire and EMS Companies individually as independent corporations and the County.

The suggested public-private services delivery MOUs could include the following types of subjects:

- A. Intent and recognition;
- B. Maximum volunteer utilization;
- C. Volunteer recruitment and retention;
- D. Mutual roles and responsibilities;
- E. Services to be provided;
- F. Communications and dispatch;



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ORGANIZATIONAL ALTERNATIVES (Continued)

- G. Recordkeeping;
- H. Response area/s;
- I. Funding and expenses;
- J. Training and certification;
- K. Compliance and enforcement; and,
- L. Duration of agreement.

Could be an important aspect of implementation that would solidify a team approach to service provision.

FUNDING

The County has assumed an increasing role in the financial support of the Fire and EMS operations, administration and capital requirements of the Fire and EMS Companies.. This approach has been justified as increased support has been necessary to maintain the volunteer nature of the services. In today's fiscal environment, it would be practically impossible for the Harford County Fire and EMS Companies to be financially self-supporting.

Each of the companies reportedly conducts various fund raising efforts that, to a greater or lesser extent, are successful in providing support funding. However, depending on the area served and the fund raising efforts undertaken, the revenue from these efforts may be relatively limited when compared to the funds needed for the operations and administration of each of the companies.

The following figure illustrates the current operating funding to be provided to the Fire and EMS Companies by the County. See Figure 2.1.



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FUNDING (Continued)

Figure 2.1
HARFORD COUNTY FIRE AND EMS COMPANIES
FY 2010 TOTAL PROPOSED BUDGETED FUNDING LEVELS

Budgeted Funding Levels	Amount
Funds to Each Fire Company	
Bel Air	\$911,182
Abingdon	\$760,279
Joppa	\$724,668
Aberdeen	\$639,532
Susquehanna	\$394,598
Havre de Grace Ambulance	\$219,284
Jarrettsville	\$466,444
Fallston	\$482,374
Darlington	\$382,929
Whiteford	\$371,722
Level	\$403,448
Norrisville	\$358,304
Total Funds to Companies	\$6,114,764

Source: Harford County, MD.

As shown in Figure 2.1, substantial funding for the independent volunteer organizations is provided by Harford County taxpayers. The County budget proposed by the County Executive for FY 2010 for the fire and EMS services totaled \$9,067,456. This 2010 budget for the Fire and EMS Service includes amounts provided to the companies as well as funding for, Workers Compensation Insurance, a grant to the Shock Trauma capital campaign, the training program, Fire and EMS Foundation and support services funds for the HCVFEA.



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FUNDING (Continued)

The Study Team noted that there is no known formula or calculated approach utilized to determine the annual tax-funded budget to be provided to each of the Fire and EMS Companies. Given the amount of tax funds committed to the Fire and EMS Companies, consideration should be given to provide funds based on justified need. A needs approach is used for the determination of County tax funding for capital projects. The allocation of resources should reflect the company's mission, goals and objectives. A similar budget submission approach should be used for determination of the level of operating funds to be provided to each Fire and EMS Company.

Reportedly, the operations tax fund allotments are provided to the Fire and EMS Companies by the County on an annual basis. It would seem that increased accountability involving the Companies could be attained by the provision of these funds on a quarterly basis.

There is a requirement that the County conduct an annual audit of the accounting books maintained by the companies. This audit requirement is very appropriate and should be continued, given the involvement of County tax funds.

Alternate Sources of Funding

The Study Team is aware of a number of potential current and future alternate sources of funding that should be considered by the County, HCVFEA and Fire and EMS Companies and the suggested Fire and Emergency Services Commission and Department of Fire and Emergency Services. These sources include:

- A. United States Fire Administration (USFA) Assistance to Firefighters Grant Program for grants and funding;
- B. U.S. Department of Homeland Security Commercial Equipment Direct Assistance Program for equipment for first responders;
- C. USFA Staffing for Adequate Fire and Emergency Response (SAFER) program;



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FUNDING (Continued)

- D. Federal Office of Hazardous Materials, Hazardous Materials Emergency Preparedness (HMEP) grant program;
- E. Various Maryland State grants and low interest loans;
- F. **County fire tax;**
- G. Fire inspection and plans review fees;
- H. Patient billing for EMS transports;
- I. False alarm registration and enforcement charges;
- J. National Fire Academy Training Assistance funding; and,
- K. **Potential insurance tax on foreign insurance companies..**

The Association and County are encouraged to aggressively research and seek out these and other opportunities for funding.

Fire Tax Option

In particular the County should consider the implementation of a fire tax levied under Maryland Law. A single fire tax rate, as apposed to two or more is suggested given the fire and EMS service deployment approach that could have units responding from one area of the County to another. In the experience of the Study Team, a single fire tax rate is much easier to justify and administer.

A number of Maryland counties have reportedly implemented fire tax/es for financial support of their fire and EMS services, including Allegany, Charles, Frederick, Garrett, Howard, Montgomery, St. Marys and Wicomico.

Insurance Premium Tax

A number of states have implemented a Foreign Insurance Tax that applies to insurance companies not organized in the state—meaning those out of state. Typically, the tax applies to the gross amount of premiums from policies for state



ORGANIZATION OF FIRE AND EMS SERVICE

FUNDING (Continued)

risks during the preceding calendar year, less deductions. Further, the tax rate for foreign insurers is 1.4 percent with a minimum tax of \$250.00. Reportedly, a number of states have implemented a foreign insurance tax, including Pennsylvania, New Jersey, New York, Ohio, West Virginia, Massachusetts, Michigan, Florida, Texas, Illinois, Kentucky and California.

Some states may also have a fire insurance tax which may be an additional 0.75 percent tax levied with some variances amongst the states on the gross premiums derived from fire insurance.

The County may wish to consider pursuing with the State the implementation of a form of foreign insurance or fire insurance tax levied under Maryland Law.

Some of these funding opportunities have the potential for substantial ongoing sources of revenue and others may be one-time project specific grants or funding. Fire departments that pursue alternate sources of funding find the revenue beneficial to service delivery and many times supplement the normal primary source/s of funding.

SUMMARY

The organization of the fire and EMS services in a community is a very important factor in the delivery of quality services. An important aspect of the establishment of an efficient and effective fire and EMS delivery system team relates to local government fulfilling its role in guiding its formation to ensure that the fire and EMS delivery organization/s reflect the public interest.

As is the case with many Maryland Counties and other local governments throughout the Nation, the largely volunteer fire and EMS services in Harford County evolved through the years with limited involvement and guidance by the County. Various volunteer fire and EMS



ORGANIZATION OF FIRE AND EMS SERVICE

SUMMARY (continued)

organizations were established and developed based on local neighborhood initiative with both single and multiple fire station fire and EMS organizations.

Currently, Harford County is being served by 12 Fire and EMS Companies that are largely staffed by volunteer members. Each of these companies are directed operationally by a chief and administratively by a president. The Harford County Volunteer Fire and EMS Association, comprised of representatives from each of the Fire and EMS Companies, serves as a focal point for communications and basic decisions made from a County-wide perspective.

The chief of each company serves on the Chief Officers Liaison Committee, a committee of the Association, to bring some County-wide focus to operational matters. Further, there is a Standards Committee responsible for producing policies, procedures and SOPs to be followed by the Fire and EMS Companies. There has been limited success in establishing these comprehensive written directives given the fact that all Companies vote on any standards or directives to be adopted. Further, there has been even less success in the Association's effort to establish an "enforcement" tool to be used to bring about compliance with County-wide standards.

It is important to note that the men and women in the Fire and EMS Companies have saved the taxpayers of Harford County a substantial amount of tax money: A fact that the citizens, County and volunteer Fire and EMS service providers should be proud of. Therefore, it is very important to maintain and strengthen the volunteer system at this time in order to maintain the volunteer nature of the services.

As a result of ongoing development and growth in the County the provision of EMS in the late 1990s became increasingly difficult with slow responses and failures to respond. Therefore, in recognition of this service delivery issue the Harford County Volunteer Fire and EMS Association leadership and the County officials planned and implemented the Fire and EMS Foundation in 2005. This largely County tax and Fire and EMS Company funded



ORGANIZATION OF FIRE AND EMS SERVICE

SUMMARY (continued)

private organization is staffed by paid emergency medical services providers (paramedics and EMTs) to staff Fire and EMS Company ambulances and Foundation quick response vehicles. This action has been providing an important support mechanism to the volunteers of the Fire and EMS Companies in their valiant effort to provide EMS service in the County.

The County has continued to develop in recent years, particularly in the Development Corridor of I-95 and Route 40 from Baltimore to Cecil Counties and Route 24 to Bel Air. The population is now estimated to be over 247,000 in 2009. Additionally, major further development and increased increase are expected as a result of dramatic changes expected at the Aberdeen Proving Grounds associated with implementation of the recommendations of the Federal Base Realignment and Closure Planning Advisory Commission (BRAC)---to be discussed in the Fire and EMS Stations chapter of this Study report.

A number of alternatives were presented in this Chapter that are intended to provide enhanced support to the currently overworked Fire and EMS Service providers in dealing with current and expected future service delivery demands. The suggestions provided are made with the intent of providing support and strengthening the volunteer nature of service provision.

RECOMMENDATIONS

- 2.1 The County Executive and County Council are encouraged to continue to take actions to maximize volunteer participation through the maintenance and expansion of participation of volunteer personnel in fire, rescue and emergency medical service operations, administration and policy-making.
- 2.2 The Harford County Volunteer Fire and EMS Association is encouraged to enhance the role of the Chief Officers Liaison Committee relating to fire and EMS operations.



ORGANIZATION OF FIRE AND EMS SERVICE

RECOMMENDATIONS (continued)

- 2.3 The County should continue to conduct the required financial annual audits of the Fire and EMS Companies.
- 2.4 The Harford County Volunteer Fire and EMS Association should consider revising its ByLaws to incorporate the names of all member companies and such other changes necessary to implement the organizational alternatives included in this Chapter.
- 2.5 The County Executive and County Council are encouraged to enhance the role of the Harford County Volunteer Fire and EMS Association by providing it with clear lead responsibility for the Fire and EMS Services.
- 2.6 The Harford County Volunteer Fire and EMS Association should consider adopting a comprehensive set of policies and standard operating procedures in compliance with County Charter Article VIII, Section 807.
- 2.7 The County is encouraged to create a Fire and Emergency Services Commission with the responsibilities as outline in this Chapter, including monitoring and facilitating the implementation of the suggestions of this Plan, including the implementation and ongoing use of the Measures of Performance.
- 2.8 The County is encouraged to create a Department of Fire and Emergency Services headed by a Director with the roles and responsibilities outlined in this Chapter and including the following elements:
 - A. Fire and EMS Foundation staffing;
 - B. Hazmat Team and other specialty teams;
 - C. Fire and EMS records management system and data analysis capability;
 - D. Volunteer recruitment and retention;
 - E. Coordinating fire and EMS training;
 - F. Fire prevention and education functions;
 - G. Fire and Emergency Services Commission and Association support;



ORGANIZATION OF FIRE AND EMS SERVICE

RECOMMENDATIONS (continued)

- H. Monitoring, supporting and facilitating the implementation of this Plan;
 - I. Paid firefighter staffing; and,
 - J. Other functions and responsibilities, as determined appropriate.
- 2.9 The Fire and EMS Companies are encouraged to participate fully in the implementation of applicable alternatives for the organization of the Fire and EMS Services.
- 2.10 The County Council should consider adopting a comprehensive set of County Code provisions relating to the Fire and EMS Service, including:
- A. Statement of legislative intent regarding providing adequate public safety, health and welfare through a fire and emergency medical services that is highly competent and efficiently delivered by a combination of volunteer and paid personnel;
 - B. Objectives of the combination Fire and EMS System;
 - C. Maximum participation of volunteer fire and EMS personnel;
 - D. Fire and Emergency Services Commission, authority;
 - E. Harford County Volunteer Fire and EMS Association, role and responsibilities;
 - F. Independent Volunteer Fire and EMS Companies, roles and responsibilities;
 - G. Department of Fire and Emergency Services, headed by the Director, authority and responsibilities;
 - H. Additional fire and EMS companies;
 - I. Relocation/addition of facilities;
 - J. Equitable allocation of funding
 - K. Annual fire tax levy; and,
 - L. Volunteer Length of Service Awards (currently in existence).



ORGANIZATION OF FIRE AND EMS SERVICE

RECOMMENDATIONS (continued)

- 2.11 The County, HCVFEA and Fire and EMS Companies are encouraged to implement public-private partnership memoranda of understanding for the provision of fire and EMS services in Harford county.
- 2.12 The County is encouraged to provide tax funds for operations and capital projects based on need with the Fire and EMS companies submitting annual budgets via the HCVFEA and Fire and Emergency Services Commission as part of the County's annual budget preparation process.
- 2.13 The County should consider providing any tax fund allocations to the Fire and EMS Companies on a quarterly basis.
- 2.14 The County is encouraged to consider alternate sources of funding, including a fire tax.
- 2.15 The County is encouraged to pursue a potential insurance premium tax through appropriate State of Maryland avenues.
- 2.16 The County should consider adopting the non-integrated approach with separate fire stations when paid firefighter staffing is implemented.
- 2.17 The County Executive should consider revising the name of the current Division of Emergency Operations to Division of Public Safety Support Services.
- 2.18 All elements of the Harford County Fire and Rescue Service are encouraged to take actions appropriate to the implementation of a cooperative team effort at all levels, as outlined in this Study report.



CHAPTER THREE

MEASURES OF PERFORMANCE

This Chapter provides general information and reviews suggested measures of performance for Harford County Fire and EMS service as developed by the Study Team and the Coordinating Committee.

Measures of Performance and relevant, related and available data on current attainment levels will be discussed in subsequent chapters of this Study report.

INTRODUCTION

The concept of measurement of performance (MOP) is not new to the private sector. As part of the effort to improve public sector and local government services the concept of measures of performance is implemented gradually. Likewise, MOPs in public safety services have been used for a number of years in the delivery of EMS , particularly by private service providers.

While existing methods of measuring performance were considered mainly for internal rather than external use, MOPs currently being rolled out are aimed at enhancing the accountability of local authorities and service providers to stakeholders and other interested parties. Also performance measurement initiatives provide managers and organizations on a regular basis with a systematic means of sharing service related performance data.

Reasons to Adopt MOPs

In the context of providing enhanced fire and EMS services, there are a number of reasons why it is important for the Harford County Fire and EMS Services to utilize measures of performance:

- A. Ensure that customer requirements are met;
- B. Justify the use of resources;



MEASURES OF PERFORMANCE

INTRODUCTION (Continued)

- C. Provide visibility as well as a mechanism for stakeholders and service providers to monitor fire and EMS performance levels;
- D. Target problem areas that require priority attention;
- E. Provide feedback for further improvement; and,
- F. Provide standards and data for establishing comparisons.

What Should Be Measured?

What should be ultimately measured depends on what the stakeholders, customers and service providers consider to be important. Measurements provide the link between customer-oriented strategies and organizational goals. They should provide the basis for reviewing performance at various levels and be an indicator of required actions. Performance measures in the fire and EMS service should reflect organizational objectives, plans and policies.

There are a number of general characteristics that proactive performance measures should include:

- A. Appropriate - the stakeholder and service provider should be able to relate the measure of performance to one or more strategic goals or objectives being reported;
- B. Accurate - the measure should be precise depending on availability of the data and as error free as possible, ;
- C. Comprehensive - covering a broad range of aspects of performance;
- D. Consistent / Reliable - should help stakeholders and service providers to compare performance over time;
- E. Cost Effective - benefit of gathering the data justifies the cost of collecting and maintaining the data;



MEASURES OF PERFORMANCE

INTRODUCTION (Continued)

- F. Relevant / Useful - provides needed information that the stakeholder and service providers actually need and provide a basis for feedback and action for change or improvement;
- G. Timely - uses most recently available data and ensures the measure is updated regularly and frequently;
- H. Verifiable - stakeholders and service providers must be satisfied the data is accurate, objective with the results standing up to independent examination; and,
- I. Valid - should cover actual performance.

These important characteristics assure that the performance measurement process is successful and has the desired impact on service delivery.

FIRE AND EMS MEASURES OF PERFORMANCE

The establishment, measurement and use of measures of performance in the management and deployment of resources is not new to the fire and EMS in the United States. In fact, it is the state-of-the-art approach for municipalities and fire and EMS agencies to monitor and revise as needed management and deployment policies and procedures. There are a number of sources of measures of performance utilized that include:

- Fire services deployment standards, e.g. NFPA 1710 and 1720;
- Commission on Fire Accreditation International;
- ISO - Insurance Service Office guidelines;
- Safety and health standards, e.g. NFPA 1500;
- Fire apparatus driver / operator standards, e.g. NFPA 1002;
- Fire officer qualifications standards, e.g. NFPA 1021;
- Developing fire protection services, e.g. NFPA 1201;
- Fire service communications standards, e.g. NFPA 1221;
- Incident management systems standards, e.g. NFPA 1561



MEASURES OF PERFORMANCE

FIRE AND EMS MOPS (Continued)

- Maryland State Fireman's Association;
- International Association of Fire Chiefs;
- Maryland Institute for EMS;
- U. S. Fire Administration;
- Federal Emergency Management Agency;
- Other fire and EMS agencies and organizations; and,
- Federal and state OSHA.

These primary sources were referenced in the development of the Measures of Performance utilized in this Fire and EMS Services Master Plan.

NFPA 1720 - Deployment of Volunteer Fire Departments

National Fire Protection Association (NFPA) Standard 1720, is the Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments. NFPA 1720 is the result of a considerable amount of work and tenacity by Technical Committee members and the organizations they represented. In the case of this standard, their work was the first organized National approach to defining deployment capabilities for those "substantially" volunteer-staffed fire departments. As stated in the introduction to the NFPA 1720 document:

"The uniqueness of the volunteer fire service, the different services they provide, and how they deploy and respond are being left up to the authority having jurisdiction (AHJ) to determine.

The work of the Committee will provide the user a template for developing an implementation plan on the standard. Most importantly, it will provide the body politic and the citizens a true picture of what the risks are in their community, and the fire department's capabilities to respond to and manage their risks."



MEASURES OF PERFORMANCE

FIRE AND EMS MOPS (Continued)

NFPA 1720 includes provisions in the following categories:

1. Fire Suppression Organization;
2. Fire Suppression Operations;
3. Inter-community Organization;
4. Emergency Medical Services;
5. Quality Management;
6. Special Operations;
7. Safety and Health Systems;
8. Incident Management System;
9. Training Systems;
10. Communications Systems; and,
11. Pre-Incident Planning.

It should be noted that NFPA standards utilize the term Authority Having Jurisdiction (AHJ) to describe “the organization, office, or individual responsible for approving equipment, materials, an installation, or procedure.” In the case of Harford County, the Authority Having Jurisdiction would be the organization/s, office/s and/or individual/s who may be delegated by Harford County (implicitly and/or explicitly) to be responsible for the various aspects of the Fire and EMS Services.

The following are a number of the fire services deployment components included in NFPA 1720:

1. Adequate personnel, equipment and sufficient/efficient/effective resources;
2. Organization, operations, deployment, written rules/regulations, SOPs Orders;
3. Identify minimum staffing required;
4. Maintain standard reports for responses;
5. Mutual aid response and agreements;
6. Incident command assignments;



MEASURES OF PERFORMANCE

FIRE AND EMS MOPS (Continued)

7. Number and type of units assigned to respond by risk;
8. Assumption and identification of command communicated to all responding units;
9. Incident command responsible for coordination and direction of all activities;
10. Procedures clearly state succession of command;
11. Have capability to safely initiate attack within two minutes, 90% of time;
12. Health and safety to be provided in accordance with NFPA 1500;
13. Incident management system provided in accordance with NFPA 1561; and,
14. Incident personnel accountability assured.

NFPA 1720 was a key standard and guideline utilized by the Study Team in the development the MOPs for this Fire and EMS Master Fire and EMS Services Master Plan.

HARFORD PERFORMANCE MEASURES

As Harford County officials and the leadership of the Harford County Volunteer Fire and EMS Association and Fire and EMS Companies have apparently recognized, the use of measures of performance to monitor service provisions in various categories, including fire, EMS and dispatch, is a state-of-the-art means for managing and improving services. The County and volunteer Fire and EMS Companies and related organizations should be congratulated for including the use of MOPs in this Master Plan for their current and future use.

Project MOP-Related Scope of Services

The Request for Proposals for this Fire and EMS Services Master Plan stipulated the following as it relates to Measures of Performance:

1. The Plan would be based on Measures of Performance;



MEASURES OF PERFORMANCE

HARFORD MOPS (Continued)

2. The Measures of Performance would be mutually agreed upon between the Project Coordinating Committee and the Study Team;
3. The Measures of Performance would be based on accepted standards and principles and practices, e.g. NFPA 1720; and,
4. The Measures of Performance would be prioritized based on citizen needs.

The following sections define in detail the MOPs selected as part of this Fire and EMS Master Plan development process for use by Harford County and its Fire and EMS Companies. Each section provides the detailed definition for each measure of performance (MOP), defines where it applies to the system, what the measure assigned to that MOP should be and action if that metric is not met.

911 Dispatch

9-1-1 Answer Time

Definition: Time from the initial 9-1-1 ring until the call is answered by the Call Taker in Dispatch.

Where it applies: 9-1-1 Communications and Dispatch Center

Measure of Performance assigned: answer fire and EMS 9-1-1 calls, within 30 seconds, 95% of the time.

Source of Measurement Data: 9-1-1 Communications and Dispatch Center

Action if not met: County to require a third-party assessment to determine action/s to be taken to meet goal.

Internal Call Taking Processing Time on ECHO Calls

Definition: time from the initial 9-1-1 call answered until the Call Taker completes sending sufficient information on ECHO fire and EMS calls to allow the Dispatcher to dispatch the call.

Where it applies: 9-1-1 Communications and Dispatch Center

Measure of Performance assigned: 30 seconds, 95% of the time



MEASURES OF PERFORMANCE

HARFORD MOPS (Continued)

Source of Measurement Data: 9-1-1 Communications and Dispatch Center
Action if not met: County to require a third-party assessment to determine action/s to be taken to meet goal.

Initial Dispatch Time

Definition: time from initial 9-1-1 call answer until the Dispatcher completes the alert radio and data transmission to dispatch fire and EMS ECHO calls.

Where it applies: 9-1-1 Communications and Dispatch Center

Measure of Performance assigned: 60 seconds, 95% of the time

Source of Measurement Data: 9-1-1 Communications and Dispatch Center

Action if not met: County to require a third-party assessment to determine action/s to be taken to meet goal.

Total Call Processing Time

Definition: time from 9-1-1 call answer until the alert and data transmission for all assigned units is complete.

Where it applies: 9-1-1 Communications and Dispatch Center

Measure of Performance assigned: 90 seconds, 95% of the time

Source of Measurement Data: 9-1-1 Communications and Dispatch Center

Action if not met: County to require a third-party assessment to determine action/s to be taken to meet goal.



MEASURES OF PERFORMANCE

HARFORD MOPS (Continued)

Fire/EMS Companies and Foundation

Turnout Time

Definition: time from initial alert message is complete until the initial unit is en route on all calls.

Where it applies: Fire and EMS Units dispatched.

Measure of Performance assigned: fire and EMS 3 minutes, 90% of the time - goal 1 minutes, 90% of the time.

Source of Measurement Data: 9-1-1 Communications and Dispatch Center

Action if not met:

- Failure to Respond Single Incident (fire) – next due unit of same type dispatched. If the initially dispatched unit responds at the appropriate level of training and will arrive prior to the next due unit, the next due unit will be cancelled, otherwise it will continue to respond.
- Failure to Respond Single Incident (EMS) – next due unit of same type dispatched and dispatch the closest available attended unit for priority 1 patients. If the initially dispatched unit responds at the appropriate level of training and will arrive prior to the next due unit and attended unit, the next due unit will be cancelled, otherwise it will continue to respond.
- Failure to Respond Multiple Incidents (fire) – a company dropped call rate of 12% for a quarter shall automatically initiate a dual dispatch process (dispatching the next due company simultaneously) for one month and then continue on a month by month basis until remedied.
- Failure to Respond Multiple Incidents (EMS) - a company dropped call rate of 12% for a quarter shall automatically initiate a dual dispatch process (dispatching the next due company simultaneously) for one month and then continue on a month by month basis until remedied.



MEASURES OF PERFORMANCE

HARFORD MOPS (Continued)

Travel Time -Development Envelope

Definition: time from unit en route message until unit announces that it has arrived on scene with in the development envelope as defined by Harford County.

Where it applies: Fire and EMS units dispatched.

Measure of Performance assigned: fire and EMS 4 minutes, 90% of the time

Source of Measurement Data: 9-1-1 Communications and Dispatch Center

Action if not met: Build new fire station/s.

Travel Time - Non-Development Envelope

Definition: time from unit en route message until unit announces that it has arrived on scene with in the non-development envelope area as defined by Harford County.

Where it applies: Fire and EMS units dispatched.

Measure of Performance assigned: fire and EMS 8 minutes, 90% of the time

Source of Measurement Data: 9-1-1 Communications and Dispatch Center

Action if not met: Build new fire stations.

Response Assignments Related

Failure to Respond

Definition: failure of an assigned unit to respond within the time set in the MOP. This may be further defined to include responses of “driver only”, “short staffed unit” or a “late response” according to the MOPs.

Where it applies: Fire and EMS units dispatched.

Measure of Performance assigned:

- **Failure to Respond (fire)** – failure of properly staffed dispatched unit



MEASURES OF PERFORMANCE

HARFORD MOPS (Continued)

to respond within 3 minutes and does not respond within 10 minutes of dispatch is considered a failure to respond.

- Failure to Respond (EMS) – failure of dispatched unit to respond within 3 minutes (at what level – per EMD, IV, BLS, driver only) is considered a failure to respond.

Source of Measurement Data: 9-1-1 Communications and Dispatch Center
Action/s if not met:

- Failure to Respond Single Incident (fire) – next due unit of same type dispatched. If the initially dispatched unit responds at the appropriate level of training and will arrive prior to the next due unit, the next due unit will be cancelled, otherwise it will continue to respond.
- Failure to Respond Single Incident (EMS) – next due unit of same type dispatched and dispatch the closest available attended unit for priority 1 patients. If the initially dispatched unit responds at the appropriate level of training and will arrive prior to the next due unit, the next due unit will be cancelled, otherwise it will continue to respond.
- Failure to Respond Multiple Incidents (fire) – a company dropped call rate of 12% for a quarter shall automatically initiate a dual dispatch process (alerting the next due company simultaneously) for one month and then continue on a month by month basis until remedied.
- Failure to Respond Multiple Incidents (EMS) – a company dropped call rate of 12% for a quarter shall automatically initiate a dual dispatch process (alerting the next due company simultaneously) for one month and then continue on a month by month basis until remedied.

Late Response

Definition: an assigned unit responding after time set in the MOP on all calls.

Where it applies: Fire and EMS units dispatched.

Measure of Performance assigned:



MEASURES OF PERFORMANCE

HARFORD MOPS (Continued)

- Late Response (fire) – an assigned unit responding after 3 minutes (at what level – full crew, short crew, light crew, driver only) is considered a late response.
- Late Response (EMS) – an assigned unit responding after 3 minutes (at what level – per EMD, IV, BLS, driver only) is considered a late response.

Source of Measurement Data: 9-1-1 Communications and Dispatch Center
Action if not met:

- Late Response and Short Crew Response Multiple Incidents (fire) – a company with a combined inadequate response call rate of 30% for a quarter shall automatically initiate a dual dispatch process (alerting the next due company simultaneously) for one month and then continue on a month by month basis until remedied.
- Late Response and Inadequate Level of Response Multiple Incidents (EMS) - a company with a combined inadequate response rate of 30% for a quarter shall automatically initiate a dual dispatch process (alerting the next due company simultaneously) for one month and then continue on a month by month basis until remedied.

Short Staffed Unit

Definition: an assigned unit responding with less than a qualified crew. This may include “driver only”, “light crew”, or “short crew” responses or possibly sufficient personnel but with inadequate training on all calls.

Where it applies: Primarily Fire and EMS units dispatched.

Measure of Performance assigned: (fire) – an assigned unit responding with less than a full crew (at what level – full crew, short crew, light crew, driver only) is considered a short staffed unit or with insufficiently trained fire, rescue or specialty personnel is considered a short staffed unit.

Source of Measurement Data: 9-1-1 Communications and Dispatch Center



MEASURES OF PERFORMANCE

HARFORD MOPS (Continued)

Action if not met: Late Response and Short Crew Response Multiple Incidents (fire) – a company with a combined inadequate response call rate of 30% for a quarter shall automatically initiate a dual dispatch process (alerting the next due company simultaneously) for one month and then continue on a month by month basis until remedied.

Level of Training (and/or Certification) of Personnel on Units

Definition: failure of a unit to respond with assigned level of training on all calls.

Where it applies: Fire and EMS units other specialty units dispatched.

Measure of Performance assigned: (EMS) – an assigned unit responding with a crew of less than the EMD recommendation without an upgrade en route is considered a unit with inadequate training.

Source of Measurement Data: 9-1-1 Communications and Dispatch Center

Action if not met: Failure to Respond, Late Response and Inadequate Level of Response Multiple Incidents (EMS) - a company with a combined inadequate response rate of 30% for a quarter shall automatically initiate a dual dispatch process (alerting the next due company simultaneously) for one month and then continue on a month by month basis until remedied.

Standards Related

Equipment Standards

Definition: the unit specifications and required equipment as defined by the Harford County Volunteer Fire and EMS Association's Standards for each type of unit or equipment.

Where it applies: Equipment and Units

Measure of Performance assigned: the unit specifications and required



MEASURES OF PERFORMANCE

HARFORD MOPS (Continued)

equipment as defined by the Harford County Volunteer Fire and EMS Association's Standards for each type of unit or equipment.

Source of Measurement Data: Harford County Volunteer Fire and EMS Association.

Action if not met: Implement appropriate provisions of Harford County Volunteer Fire and EMS Association By-Laws.

Personnel Training Standards - Association

Definition: the level of training required by the Harford County Volunteer Fire and EMS Association's Standards for each fire, EMS and administrative position.

Where it applies: Fire and EMS Companies

Measure of Performance assigned: – the level of training required by the Harford County Volunteer Fire and EMS Association's Standards for each fire, EMS and administrative position.

Source of Measurement Data: Fire and EMS Companies.

Action if not met: Implement appropriate provisions of Harford County Volunteer Fire and EMS Association By-Laws.

Personnel Training Standards - Foundation

Definition: the level of training required by the Harford County Volunteer Fire and EMS Foundation's Standards for each fire, EMS and administrative position.

Where it applies: Fire & EMS Foundation

Measure of Performance assigned: the level of training required by the Harford County Volunteer Fire and EMS Foundation's Standards for each fire, EMS and administrative position.



MEASURES OF PERFORMANCE

HARFORD MOPS (Continued)

Source of Measurement Data: Fire and EMS Foundation.

Action if not met: Foundation removes personnel who do not meet training standards and hire appropriately trained personnel.

County-wide Fire and EMS Standard Operational Procedures (SOP)

Definition: County-wide fire and EMS operations SOPs to be developed and implemented by the Association.

Where it applies: Association and Fire and EMS Companies.

Measure of Performance assigned: Develop and implement fire and EMS standard operating procedures as recommended by the Fire and EMS Master Plan.

Source of Measurement Data: Association and Fire and EMS Companies.

Action if not met:

- If Association does not adopt needed operational SOPs then other AHJ is given responsibility.
- If Fire and EMS Company is non-compliant then implement appropriate provisions of Harford County Volunteer Fire and EMS Association By-Laws.

County-wide Safety-Related Policies

Definition: County-wide fire and EMS safety-related SOPs to be developed and implemented by the Association.

Where it applies: Association and Fire and EMS Companies.

Measure of Performance assigned: Develop and implement fire and EMS standard safety-related policies and procedures as recommended by the Fire and EMS Master Plan.

Source of Measurement Data: Association and Fire and EMS Companies.

Action if not met:



MEASURES OF PERFORMANCE

HARFORD MOPS (Continued)

- If Association does not adopt needed operational SOPs then other AHJ is given responsibility.
- If Fire and EMS Company is non-compliant then implement appropriate provisions of Harford County Volunteer Fire and EMS Association By-Laws.

County-wide Consistent Dispatch Box Assignments

Definition: County-wide consistent dispatch of fire and EMS units using standard box assignments.

Where it applies: Association in cooperative effort with 9-1-1 Communications and Dispatch Center.

Measure of Performance assigned: Establishment of standard County-wide box assignments based on nature of incident and risk category.

Source of Measurement Data: Association and 9-1-1 Communications and Dispatch Center.

Action if not met: Other AHJ is given responsibility.

MEASURE OF PERFORMANCE GOALS

The following are a number of MOP-related goals for the future:

- Dispatch the closest available unit of the proper type on all emergency incidents;
- Turn out time of one (1) minute;
- Fire/EMS travel time goal in development zone of four (4) minutes—90%;
- Fire/EMS travel time goal in non-development zone of (8) minutes—90%;
- Philosophy of full Harford County fire and EMS services provision team.



MEASURES OF PERFORMANCE

TRIGGER POINTS

This section provides the County and Fire and EMS Services with points at which major changes to the system should occur.

1. Fire and EMS company is not in substantial compliance with standards.
Action: Enforcement policy actions taken against company;
2. Fire and EMS Association is substantially unable to adopt and assure implementation of comprehensive standards within two years.
Action: Another authority is to be given responsibility;
3. EMS Foundation Board is substantially unable to implement standards within two years.
Action: Another authority is to be given responsibility; and,
4. Failure to meet travel time measure of performance goals, in and out of development zone, by 80% or less.
Action: Consider implementing new fire station with paid staffing model.

FUTURE MEASURES OF PERFORMANCE

This section includes MOP's for activities not included in the current Harford County Fire service operations.

1. Command Officer Response Time;
2. Command Officer Level of Training;
3. Level of patient care compliance on EMS calls;
4. Patient outcome-related MOPs—potential goal of 80% improvement;
5. Number of new/renovation plans reviewed;
6. Number of fire building inspections;
7. Fire loss data;
8. Pre-fire plans developed;
9. Defibrillator availability; and,
10. Extrication tool availability.



MEASURES OF PERFORMANCE

MOP-BASED INCENTIVES AND REWARDS

In pursuing MOP compliance every effort should be made in the implementation of Harford fire and EMS MOPs to identify and utilize incentives and rewards. To that end, in the various chapters of this Study Report the Study Team will explore and recommend these types of alternatives to other less positive approaches. Examples of MOP-based incentives and rewards include:

1. Attended fire unit coverage;
2. Attended EMS unit coverage;
3. Fire & EMS station in-station standby coverage;
4. Company/station volunteer staffing level compliance-related; and,
5. Company/station training/certification-related.

IMPLEMENTATION OF MEASURES OF PERFORMANCE

There are a number of tasks or steps that may be performed in effectively implementing and maintaining and supporting established MOP's to include:.

1. Implementation of MOP-related options and recommendations outlined in this Fire and EMS Master Plan;
2. Implementation of standard County-wide fire and EMS records management system integrated with the CAD system;
3. Comprehensive County-wide monthly fire and EMS incident response data generated monthly by the CAD system provided in a user friendly format to all components of the Harford County Fire and EMS Service;
4. Computer Aided Dispatch (CAD) and dispatch procedures revised to accommodate fire and EMS station-level dispatching;
5. Develop and execute a service delivery agreement between Harford County and the Harford County Fire and EMS Association and the Harford County Fire and EMS Companies and EMS Foundation;



MEASURES OF PERFORMANCE

IMPLEMENTATION OF MOPs (Continued)

6. Fire and EMS Commission appointed the task to monitor, report on and oversee implementation of the Measures of Performance task;
7. Fire and EMS Coordinator hired to report to the County Executive and support Harford County Volunteer Fire and EMS Association; and,
8. Essential support staff hired to assist the Fire and EMS Coordinator and Association in records management and policy development, and other duties as assigned.

There are a number of components to the successful implementation of Harford MOPs that include:

1. Adoption by the Authority Having Jurisdiction;
2. Implementation through a process of orientation and training;
3. Comprehensive data collection, management and analysis;
4. Thorough distribution of relevant data;
5. Continued orientation and training during use and analysis;
6. Compliance with applicable aspects of MOP documentation and assessment;
7. Monitoring and revision, as needed, of MOPs to maintain applicability; and,
8. Enforcement and/or incentive rewards of staff and organizations, as appropriate.

RECOMMENDATIONS

- 3.1 The County is encouraged to designate a high-level user/stakeholder group from various levels of service providers, County officials and the public to oversee the fire and EMS and related 9-1-1 communications and dispatch MOPs by finalizing, implementing, monitoring, reporting and revising in the future, as appropriate.



MEASURES OF PERFORMANCE

RECOMMENDATIONS (Continued)

- 3.2 The County should consider providing and managing appropriate records management systems and subsystems for the Fire and EMS Services that are integrated, as appropriate with the 9-1-1 Communications and Dispatch Center computer aided dispatch system.
- 3.3 The County and the Harford County Volunteer Fire and EMS Association should assure that the MOP measurement systems produce accurate and reliable performance measures.
- 3.4 The County and all Harford County elements of the Fire and EMS Service should continue to benchmark the performance measures developed to identify best practices to ensure continuous improvement.



CHAPTER FOUR

FIRE AND EMS STATIONS

This Chapter reviews of the general concepts for fire and EMS station location planning, a risk analysis specific to Harford County, a review of response times, an overview of the Study Team's approach to developing fire station location recommendations—including Insurance Services Office (ISO) criteria, NFPA criteria, current fire and EMS station facilities, and options and recommendations for current and future fire, rescue and EMS stations in Harford County.

CFAI FIXED FACILITIES CRITERIA

The Study Team considered criteria from the Commission on Fire Accreditation International (CFAI) as the Harford fire and EMS facilities were assessed as part of this Master Plan effort.

The CFAI accreditation criteria related to fire department fixed facilities are as follows:

Fixed facility resources are designed, maintained, managed and adequate to meet the agency's goals and objectives.

1. Space allocations are adequate for agency functions such as operations, fire prevention, training, support services and administration.
2. Buildings and grounds are clean and in good repair. Maintenance is conducted in a systematic and planned fashion.
3. Physical facilities are adequate and properly distributed in accordance with stated service level objectives and standards of cover.
4. Facilities are in compliance with federal, state and local regulations.



FIRE AND RESCUE STATIONS

MEASURES OF PERFORMANCE

The following MOPs and trigger points seem applicable to subjects contained in this Chapter.

Measures of Performance

The Measures of Performance -related categories that apply to this Fire and EMS Stations Chapter include the following.

Travel Time -Development Envelope

Definition: time from unit en route message until unit announces that it has arrived on scene with in the development envelope as defined by Harford County.

Where it applies: Fire and EMS Units

Measure of Performance assigned: fire and EMS 4 minutes, 90% of the time

Source of Measurement Data: 9-1-1 Communications and Dispatch Center

Action if not met: Build new fire station/s.

Travel Time - Non-Development Envelope

Definition: time from unit en route message until unit announces that it has arrived on scene with in the non-development envelope area as defined by Harford County.

Where it applies: Fire and EMS Units

Measure of Performance assigned: fire and EMS 8 minutes, 90% of the time

Source of Measurement Data: 9-1-1 Communications and Dispatch Center

Action if not met: Build new fire stations.



FIRE AND RESCUE STATIONS

MEASURES OF PERFORMANCE (Continued)

Trigger Point

Failure to meet travel time measure of performance goals, in and out of development zone, by 80% or less consider implementing new fire station with paid staffing model.

These MOPs and trigger point outlined in the Measures of Performance Chapter were considered by the Study Team in the development of conclusions and recommendations contained in this Chapter.

FIRE STATION LOCATION DETERMINATION

Overview

The location of the fire, rescue and EMS stations from which fire, rescue and EMS service is provided is a key element in the level of fire protection and rescue service provided by local governments. The decision to locate a new fire or rescue station or relocate an existing station has many components other than its siting. These include:

- A. Cost of the facility and equipment;
- B. Apparatus;
- C. Staffing;
- D. Annual operating costs; and,
- E. Public reaction and support.

There is no magic formula for determining the location of fire, rescue and EMS stations in a community. While computerized programs can assist officials in these important decisions, the final determinations require human-based consideration of many factors.



FIRE AND RESCUE STATIONS

FIRE STATION LOCATION DETERMINATION (continued)

Computerized Fire Station Locator System

In the National Fire Protection Association (NFPA) NFPA Fire Protection Handbook, one chapter entitled “Fire Department Facilities and Fire Training Facilities” notes a general trend in fire station planning. The authors, Emmanuel Mesagna and John Baroni relate:

“Over the past decade, fire station planning for location and design has become increasingly sophisticated and complex. With the use of computer programs and computer model studies, travel time analysis and fire station site evaluation has allowed the fire service to become more precise in its decision-making procedures.”

The Study Team typically utilizes a computer model for purposes of conducting fire station location analysis. This Section describes the methods typically used for this analysis.

The Study Team’s computerized fire station locator system is a geo-based planning tool that calculates and displays street network data. The street data resides in tables to include all the information necessary to perform fire station location studies. This street data is similar to the database typically used in Geographic Information System (GIS) for analysis and computer aided dispatch systems used for the dispatch of police, fire, and EMS units. The latitude/longitude coordinate system used is accurate to one millionth of a degree.

Fire stations and other points of interest are added to the database by entering an address or pointing to a location on a map. The travel possibilities are calculated from each fire station and every street block in the county. The number and type of apparatus in each fire station are noted and the travel time for the first, second and third arriving fire apparatus is calculated.

Using this computer program, a travel time analysis typically involves every street in the city, town or county being studied. Average travel time, total miles of roadway, average travel



FIRE AND RESCUE STATIONS

speed and “first in” response areas are generally developed for each fire station with color maps illustrating those areas. In addition, fire station location alternatives are modeled where appropriate. Data and maps developed as part of this modeling analysis are typically included by the Study Team to support the conclusions and recommendations of fire station location studies conducted.

It should be noted that all response area maps and charts generated by this program are based on travel time as projected by the Study Team’s computer program. The travel time calculated by the program are based on the following:

1. An estimated 45 seconds for turnout time for each of the fire stations;
2. A 15-second intersection turn delay for each intersection in the response route;
3. Street segment speeds are set from 25 to 55 miles per hour, in 5 mile per hour increments. For example, interstate highways are set at 55 miles per hour, while a street segment 300 feet long would be set at 25 miles per hour.

Based on these criteria, the computer program calculates response paths from the fire station sites entered in the computer to every street location. The program then projects each fire station’s response area and calculates average apparatus travel time, average travel speed and total miles of streets in each fire station travel time-projected response area.

MAXIMUM TOTAL RESPONSE TIME

A key consideration in determining a fire, rescue and EMS station location for fire-related services is the maximum acceptable total response time. This section discusses fire response time concepts and components.

Fire-Related Response Time

One of the primary criteria used in determining adequate response time (and thus the location of a fire station) is the time from ignition to flashover (simultaneous ignition of all



FIRE AND RESCUE STATIONS

MAXIMUM TOTAL RESPONSE TIME (continued)

combustibles), at which time the spread of the fire will increase dramatically. The Study Team's experience, supported by various studies and research, has shown that the time from ignition to flashover in a structural fire will vary from six to nine minutes. To arrive on the scene within this time frame, the following time factors need to be taken into consideration:

1. Ignition to detection to communication notification;
2. Communications notification to fire department dispatch;
3. Fire department dispatch until apparatus is en route;
4. Travel time to the scene; and,
5. Initiation of service, e.g., placing hose lines in service.

A description of these five factors may be useful for the reader.

1. Ignition to Detection to Communication Notification

Great strides have been made in reducing the time from ignition to detection of fires. For example, inexpensive smoke detectors, heat detectors, monitored alarm systems and sprinkler systems have become standard in most residential, commercial and industrial buildings.

This time factor can be reduced if the automatic suppression and detection system simultaneously notify the occupants and the communications center. This time factor can be significantly controlled by changing the local codes to require detection devices in all residential, commercial and industrial buildings, with automatic notifications in those facilities with large life or property loss potential.

2. Communications Notification to Fire Department Dispatch

The internal dispatch center processing time of a call for assistance is dependent upon the call load, the level of expertise of the communications operators and the type of



FIRE AND RESCUE STATIONS

MAXIMUM TOTAL RESPONSE TIME (continued)

communications equipment. Processing time of less than 60 seconds is the ideal and should be the goal of fire department communication and dispatch centers.

3. Fire Department Dispatch Until Apparatus is En Route (Turnout Time)

Once a notification is received in a fire, rescue and EMS station, personnel must stop their activity, note the location and nature of the call, in some cases involving volunteers who respond to the station, don any protective clothing, open the doors, board the apparatus, start the apparatus, and exit the station. These factors are fairly stable and only small amounts of time can be saved by automating the door opening process with the station alert, and placing information about the nature and location of the call on computer terminals in the vehicle.

4. Travel Time to the Scene

Travel to the scene generally requires the most time. It is dependent upon:

- A. Fire, rescue and EMS station location;
- B. Weather factors;
- C. Road conditions;
- D. Traffic conditions;
- E. Street layout and special access impediments;
- F. Size of service area;
- G. Training of personnel; and,
- H. Apparatus staffing approach.

Response time may be lessened as a result of installation of traffic control preemption devices.

5. Initiation of Service, e.g., Placing Hose Lines in Service (Set-up Time)



FIRE AND RESCUE STATIONS

MAXIMUM TOTAL RESPONSE TIME (continued)

Upon arrival on the scene, water supply must be established, self-contained breathing apparatus donned, and attack hose lines stretched to the location of the fire. The effectiveness of the department's operation on the fire ground is dependent upon, among other things, the level of training and the physical condition of the personnel and the number of personnel arriving at the scene. Firefighting personnel then enter the structure, approach the fire, and initiate fire suppression activities while, at the same time, performing search and rescue activities, as necessary. The amount of time required for setup can vary significantly from one incident to another. For purposes of this analysis, a two-minute set-up time after arrival on the scene is the goal.

EMS-Based Response Time Goal

Time is one of the most important factors relating to patient outcomes in emergency medical situations. Rapid delivery of EMS is essential in the acute situation of cardiorespiratory arrest; a measurable factor is the time from heart stoppage and cessation of breathing (clinical death) to when irreversible brain damage begins (biological death). Although the time varies with patients and conditions, **the generally recognized intervention time to prevent biological death is four to six minutes.**

Data from Other Communities

The establishment of response times for a specific community depends upon the geography, demographics, and distribution of commercial, industrial and residential properties.

The National Fire Protection Association (NFPA) has established criteria which state that in urban/suburban developed areas a pumper should be located within:

1. 2 miles of residential property;
2. 1-1/2 miles of commercial areas; and,



FIRE AND RESCUE STATIONS

MAXIMUM TOTAL RESPONSE TIME (continued)

3. 1 mile of major industrial development which would require a flow of water of 5,000 gallons per minute or more.

While these are very conservative estimates, the problem with using mileage alone is that weather and road conditions are not taken into account.

Another way of approaching this issue is to define five levels of risk and then assign a response time requirement to each risk, rather than use just straight mileage response. These risks can be defined as follows:

1. Highest - Refineries, large industry, hospitals, school dormitories, lumber yards, and propane storage facilities without built-in suppression or detection systems.
2. High - High-rise hotels and residential, large shopping centers, and industrial facilities.
3. Medium - Commercial and industrial facilities with sprinkler systems, small shopping centers, and high density low-rise residential buildings.
4. Low - Single family dwellings with a separation of at least 100 feet between buildings.
5. Minimum - Wide separation of single family dwellings and farm land.

In the International City Management Association's (ICMA) study on Fire Station Location Analysis: A Comprehensive Approach, the following data on the response time requirements of some municipalities were provided in an article by Susan B. Benton and Neal B. Carpenter



FIRE AND RESCUE STATIONS

entitled, "A Computerized Approach to Fire Station Location." While these are large municipalities, the data can be useful indicators.

<u>City</u>	<u>Risk Category</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
	<u>Minutes</u>				
San Antonio, TX	2.5	3.0	3.5	4.0	6.0
Salt Lake City, UT	2.5	3.0	3.5	4.0	6.0
Lynchburg, VA	3.0	4.0	5.0	6.0	7.0
Memphis, TN	2.3	2.7	3.3	4.3	5.8
Davenport, IA	3.0	3.5	4.0	4.5	5.0

AVAILABILITY OF RESPONSE TIME DATA

The availability of detailed response time data is an essential part of the process of analyzing the adequacy of fire protection service. A reduction in actual response times to emergency incidents is a measurable improvement in the service being delivered. For that reason, assessment of response time is not only an essential component of fire, rescue and EMS station location determination, it is an important ongoing function of fire, rescue and EMS department management and operations.

Response Time Components

Complete verified comparative response time data are not available at the national level. In addition, terms used to define the various time segments of response time vary among fire departments. One of the key elements of the International Association of Fire Chiefs (IAFC) National Fire Service Accreditation Project is response time analysis. In fact, one of the



FIRE AND RESCUE STATIONS

AVAILABILITY OF RESPONSE TIME DATA (continued)

anticipated goals of this IAFC project is to establish valid national response time data for use by all fire departments.

For response time data to be available for comparison and service level evaluation purposes, consistent terminology must be used and detailed accurate response time data must be maintained and summarized.

This section provides definitions for the various components of response time. These definitions are those used by the IAFC Accreditation Project. For ease and accuracy of comparison of data from other fire, rescue and EMS departments, the Study Team considered it beneficial to outline nationally-accepted definitions in this Study.

Notification of Event - Notification of event is the point in time when the first electrical impulse or indicator that can be identified and recorded by the public safety agency occurs.

Alarm Processing and Dispatch - The period of time required for the communications center to identify that an emergency is in progress, collect pertinent information to dispatch and to assess the methodology used by the agency to deploy resources.

Turnout Time - The period of time for on-duty emergency system personnel to discontinue their present activity, properly attire themselves and board the vehicle. This includes the elapsed time between being notified that an emergency is in progress and the vehicle beginning to respond to the identified location.

Travel Time - The period of time between the apparatus wheels beginning their uninterrupted response to the incident and the actual time that the emergency vehicle arrives at the address or location to which it was dispatched. Travel time includes driving distance, delays caused by misinformation in the dispatch, traffic obstruction,



FIRE AND RESCUE STATIONS

AVAILABILITY OF RESPONSE TIME DATA (continued)

and geographic obstacles. Travel time ends when the vehicle is declared on-scene by the first arriving unit.

On-Scene Time - The point in time that the first arriving responding emergency vehicle or responsible command officer arrives at the scene of an emergency and who can begin to take immediate action or take command of the rest of the response.

Initiation of Action - The period of time of actual involvement by the individual crew members or companies in the reduction of the state of emergency at the scene. This period of time does not end until such time as the fire officer or other individual with jurisdiction, determines that the organized fire unit can be placed back in service and/or respond to an additional emergency.

Termination of Incident - The point in time when an emergency incident is declared terminated, and all deployed agency resources are available for another assignment.

Time Segment Responsibility

The responsibility for the various components of response time in Harford County is shared between the emergency dispatch function (Harford County 9-1-1) and the fire, rescue and EMS service providers. The components shared by each of these agencies are as follows:

Communications Center Responsibility

1. Event occurs and continues until detected by human, electronic or mechanical means.
2. Emergency communications center receives notification of event.
3. Call taker qualifies the call; must determine type of incident, extent of event, location of event, and other pertinent information.



FIRE AND RESCUE STATIONS

AVAILABILITY OF RESPONSE TIME DATA (continued)

4. Call taker enters data and reviews, and transfers incident to dispatcher.*
5. Information reviewed, response sequence reviewed and dispatch made.
6. Dispatch information received in fire, rescue and EMS station or on the fire apparatus.

Fire/Rescue/EMS Departments Responsibility

1. Turnout time: Personnel move to apparatus, don protective clothing, get on apparatus and advise the communications center that the unit is responding;
2. Travel time;
3. On scene time; and,
4. Setup time.

This listing of responsibilities is outlined to emphasize that the County and the fire, rescue and EMS service providers should participate in the review and analysis of their response time responsibilities so as to reduce processing time and errors.

Harford County Response Times

The Harford County fire, rescue and EMS departments and special operations units (dive, hazmat, etc.) are dispatched by the Harford County 9-1-1 Center. As part of this Study, the Study Team observed this emergency dispatch center and interviewed a number of dispatch officials and supervisors.

The Harford Control Center seems to be very progressive, with up-to-date automated technology, including a new computer-aided dispatch system being implemented. Computer-aided dispatch systems typically maintain extensive time-related information, including comprehensive response time data. Although the County's current computer-aided dispatch (CAD) system must track valuable response time data, that data apparently is not



FIRE AND RESCUE STATIONS

AVAILABILITY OF RESPONSE TIME DATA (continued)

directly provided to fire, rescue and EMS service providers dispatched by the Center due to the old CAD systems design. Reportedly, the new CAD system being implemented by the County will facilitate such reporting of response time data. A more detailed discussion of the 9-1-1 Center is included in a later chapter of this report.

Significant benefits may be obtained when the dispatch center and fire, rescue and EMS service providers review and assess comprehensive response time data to determine challenges and opportunities for reduced response times.

FIRE AND EMS RISKS

This section outlines the fire, rescue and EMS risks associated with the provision of fire, rescue and EMS services by the Harford County fire and EMS services.

Risk Categories

The fire, rescue and EMS risks within Harford County are similar to those found in many communities of similar size and nature except for the fact that the County is largely surrounded on three sides by waterways.

Harford County is considered a bedroom community, comprised of single- and multi-family residential properties. Many Harford County residents commute to work in the Washington, D.C. metropolitan area. Harford County also includes a substantial amount of business and industry, as well as government development. Its volunteer fire and EMS companies and special operations teams protect a full range of risks, including:

- A. Places of assembly;
- B. Educational institutions;
- C. Motels to accommodate local tourist and business travelers;



FIRE AND RESCUE STATIONS

FIRE AND EMS RISKS (Continued)

- D. Housing for senior citizens;
- E. Light industrial processing facilities;
- F. Major commercial shopping areas;
- G. Multi-family residential areas;
- H. Single-family residential areas;
- I. Major park and recreation areas;
- I. Large areas of brush and grass;
- J. Large bodies of water, river and other smaller waterways and ponds;
- K. Boating related industries;
- L. Marinas and boat storage facilities; and,
- M. Medical hospitals and treatment facilities.

Specific Risks and Hazards

The following are examples of the types of fire, rescue and EMS risks in Harford County, by category:

Buildings

Figure 4.1 provides the type and number of various types of buildings located in each Fire and EMS Company's response area.



FIRE AND RESCUE STATIONS

FIRE AND EMS RISKS (Continued)

Figure 4.1
BUILDINGS BY TYPE IN HARFORD COUNTY

FIRE COMPANY	Aberdeen	Abingdon	Bel Air	Darlington	Fallston	Jarrettsville	Joppa Magnolia	Level	Norrisville	Susq Hose & Amb Corp	Whiteford
SHOPPING CENTERS/ STRIP CENTERS	10	16	38	1	5	2	15	2	0	10	2
COMMERCIAL BUILDINGS	233	177	581	58	56	70	149	51	5	222	36
INDUSTRIAL BUILDINGS	54	66	117	22	10	20	37	11	1	42	10
MULTI-FAMILY DWELLINGS	56	151	239	1	2	0	97	0	0	101	2
OFFICE BUILDINGS	31	34	184	6	7	12	12	2	0	39	2
SINGLE FAMILY HOMES	5862	15818	22611	1998	4372	4880	8822	2381	1001	4058	1805

Source: Harford County Department of Planning and Zoning

The fire and EMS companies that are shaded in this figure serve the Development Envelope area of the County. Figure 4.2 illustrates the location of the Development Envelope of the County in relation to the response areas of these five companies which are therefore the busiest in terms of the number and nature of emergency fire and EMS incidents.

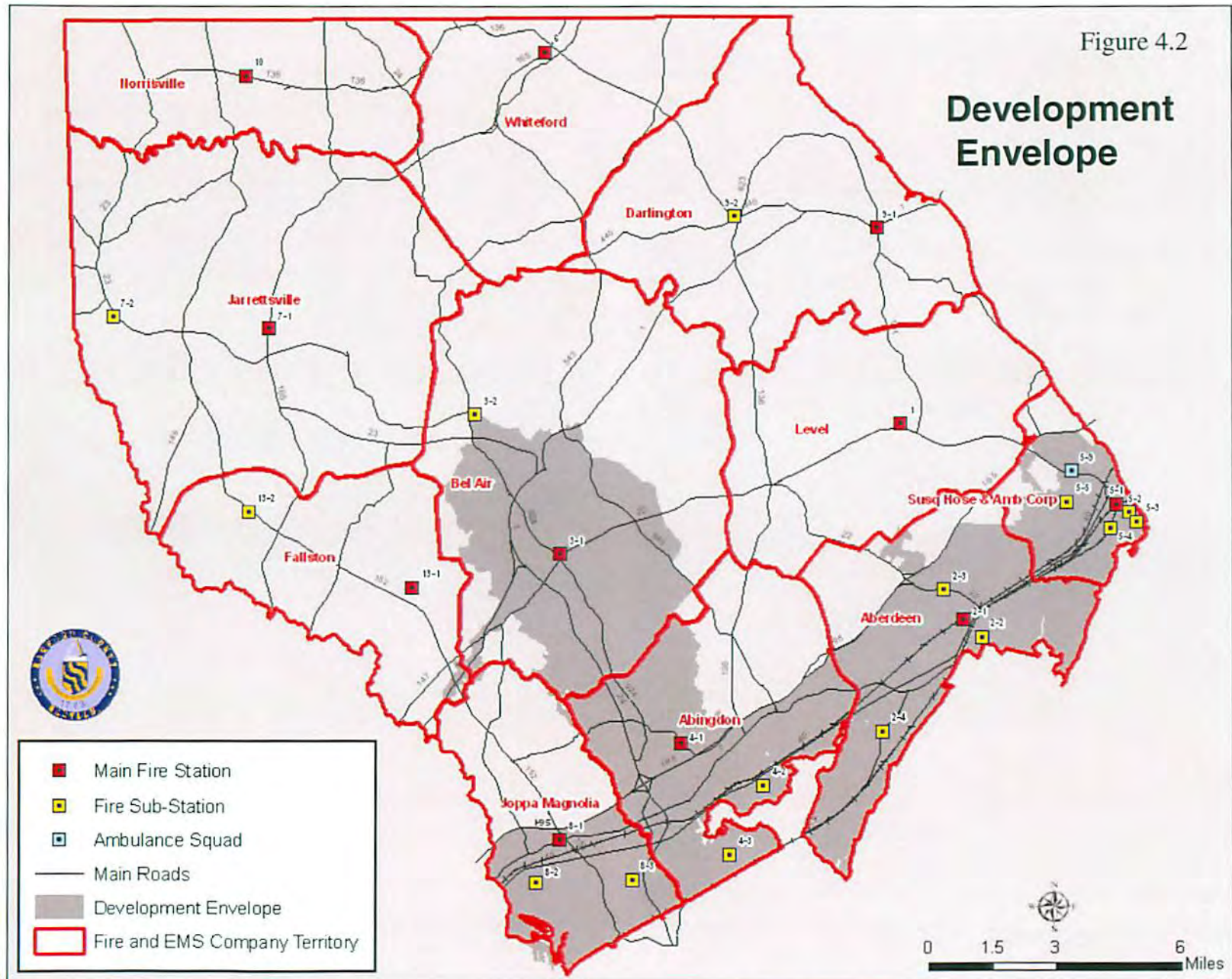
Vehicular Highways

Interstate-95 traverses the eastern end of Harford County from Baltimore County in the south to Cecil County in the north. There is approximately 22 miles of I-95 in the County with five exits at MD routes 152, 24, 543, 22 and 155. It carries heavily vehicular traffic with an estimated 141,281 vehicles traversing on I-95 daily between the exits for MD 152 and 24, including a substantial number of tractor-trailer trucks.



Figure 4.2

Development Envelope



Source: Harford County Department of Planning and Zoning

FIRE AND RESCUE STATIONS

FIRE AND EMS RISKS (Continued)

The County is also crossed in a north/south direction by two primary State roadways: MD Routes 1 and 40. A number of other State roads are in the County, including MD Routes 7, 22, 23, 24, 74, 138, 145, 147, 152, 161, 165, 439, 440, 543, 624, 646, 755, 851 and 924.

Railroad Routes

There are a number of rail lines that cross the County. including CSX Transportation and Norfolk Southern freight lines and Amtrak and MARC commuter lines.

The daily passenger train trips through Harford County by train line and router are:

AMTRAK:

Acela - Boston - New York - Philadelphia - Washington, DC

85 Northbound, 88 Southbound

Cardinal / Hoosier State - New York - Washington, DC - Cincinnati

2 Northbound, 3 Southbound

Silver Service / Palmetto - New York - Washington, DC - Charleston - Savannah

5 Northbound, 5 Southbound

Vermont - St. Albans - Burlington - Springfield - New York - Washington, DC

2 Northbound, 2 Southbound

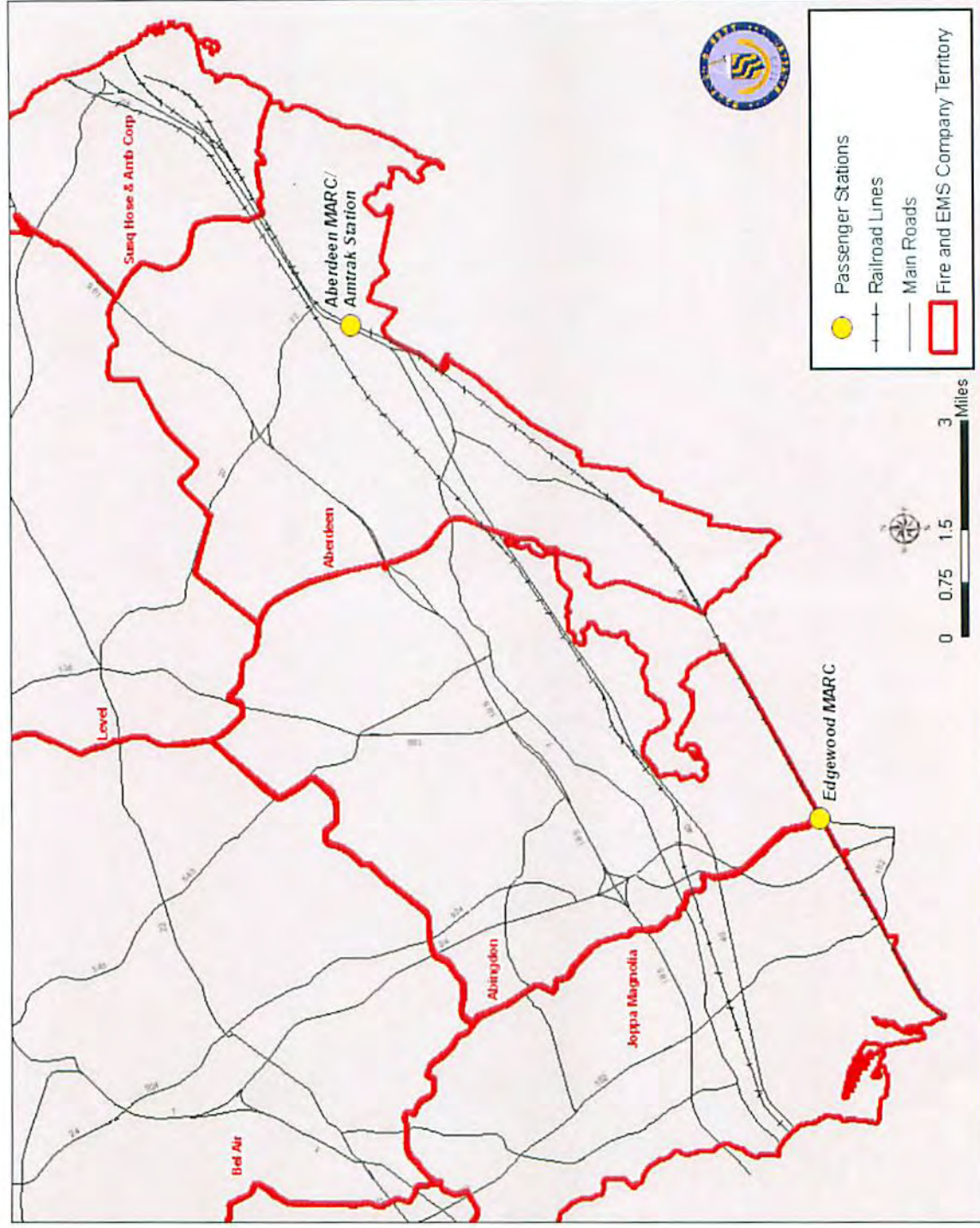
MTA MARC Penn Line - 6 Northbound and 5 southbound daily.

Figure 4.3 illustrates the various rail lines and two rail stations located in Aberdeen and Edgewood and the Fire and EMS Company response areas where they are located.



Rail Lines in Harford County

Figure 4.3



Source: Harford County Department of Planning and Zoning



FIRE AND RESCUE STATIONS

FIRE AND EMS RISKS (Continued)

Air Travel

The County is served by air services at the Aldino, Fallston and Forest Hill Airports.

Public and Private Schools

The Study Team was provided documentation as to 62 public and private educational institutions located in Harford County, as follows:

- 32 Elementary schools;
- 8 Middle Schools;
- 10 High Schools;
- 7 Private schools of various levels;
- 2 Colleges; and,
- 3 Other types of schools.

Figure 4.4 illustrates the location of these schools in each Fire and EMS Company response area.

Harford County's Enterprise Zones

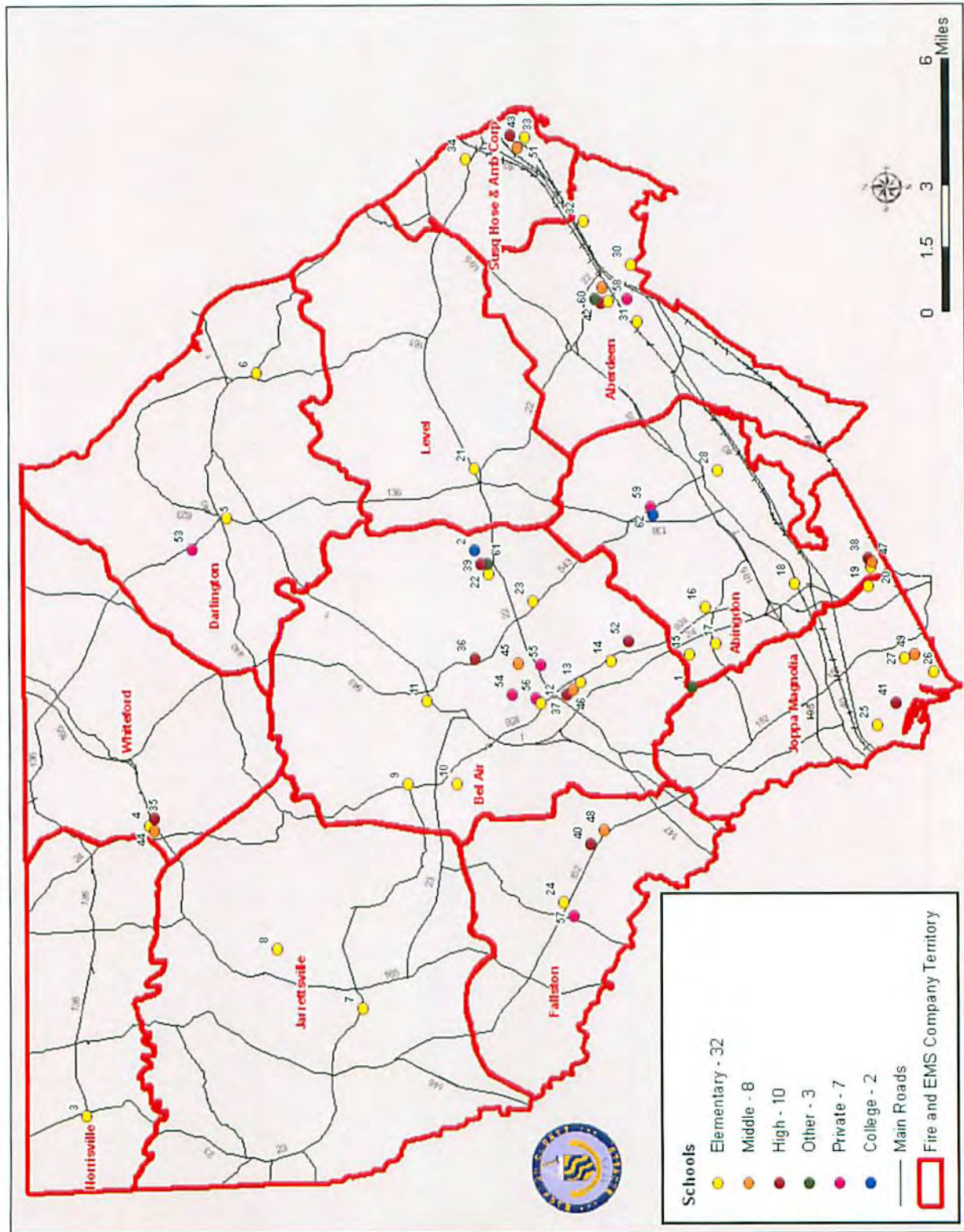
Harford County and the State of Maryland have partnered in establishing two Enterprise Zones located on sites in Harford County. These designated areas comprise over 10,000 acres and are:

Edgewood/Jappa comprises 3,900 acres including properties in the southeastern part of the County along U.S. 40, MD 24, MD 7 and MD 755.



Figure 4.4

Schools by Company Area



Source: Harford County Department of Planning and Zoning



FIRE AND RESCUE STATIONS

The business/industrial parks included are the Clayton Station, Emmorton Business Park, Fashion Park, Magnolia Business Park, Lakeside Business Park, William Paca Business Park and the Joppa Commerce Center.

Greater Aberdeen/Havre de Grace comprises 8,900 acres covering the Cities of Aberdeen and Havre de Grace, and portions of Harford County and Aberdeen Proving Ground.

The business/industrial parks included are Advantage Business Center, HEAT Center, Chesapeake Industrial Park, Cranberry Run Business/Office Center Enterprise Business Park, Hickory Ridge Industrial Park, Hardee's Industrial Park, Harford Gateway, Perryman Industrial Park, Rock Glen Business Park, Water's Edge Corporate Campus, 40 East Industrial Park and Aberdeen Industrial Center

Figure 4.5 illustrates the geographic areas in the County where these two Enterprise Zones are located and the Fire and EMS Companies serving these areas on a first due basis.

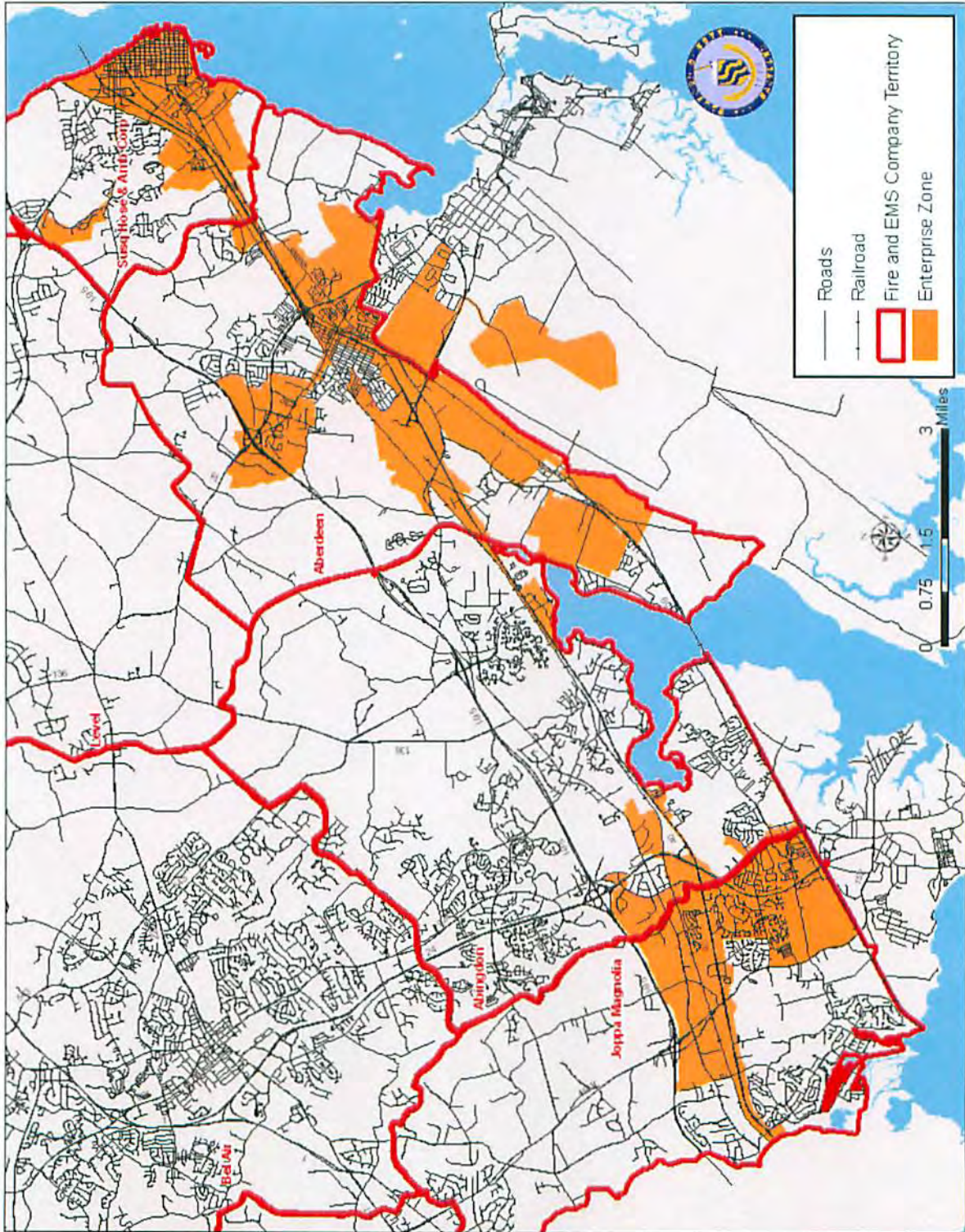
Summary of Risk Assessment

This list description of selected major aspects of the fire and EMS risks is intended to provide an example of the extent and types of properties reportedly located in Harford County. The County clearly includes a broad range of moderate to significant fire, rescue and EMS risks that must be protected and served by the County and its combination volunteer and career fire, rescue and EMS service providers.



Enterprise Zones

Figure 4.5



Source: Harford County Department of Planning and Zoning



FIRE AND RESCUE STATIONS

DETERMINING FIRE STATION LOCATIONS

There are a number of criteria utilized in considering the location of fire, rescue and EMS stations.

Insurance Services Office (ISO) Criteria

The fire suppression rating schedule utilized by the Insurance Services Office (ISO) in its evaluation of the performance of municipal fire suppression capabilities includes fire station location analysis with objective mileage-based criteria. Item 560 in the Fire Suppression Grading Schedule, Edition 6-80, reads as follows:

“The built-upon area of the city should have a first-due engine company within 1.5 miles and a ladder-service company within 2.5 miles.”

The ISO considers the optimum physical location of engine companies and ladder companies essential to earning the maximum number of credits under the fire department item in the rating schedule. Obviously, engine companies and ladder companies are placed in fire stations. Therefore, it is the location of the fire station that is imperative in important to the evaluation process used by the ISO.

Fire Risks

The time from ignition until water is applied to a fire should be no longer than the six to nine minutes it takes for flashover to occur with a free-burning fire. Again, flashover is defined as essentially the instant burning of an explosive mixture of heated air, smoke and gases which flashes back through openings around the fire area, such as doors and windows. This does not consider a smoldering fire, which can burn for hours before breaking out into the free-burning stage.



FIRE AND RESCUE STATIONS

DETERMINING FIRE STATION LOCATIONS (continued)

Flashover is a critical stage of fire growth for two reasons. First, no living thing in the room of origin will survive, so the chances of saving lives drops dramatically. Second, flashover creates a quantum jump in the rate of combustion, and a significantly greater amount of water is needed to reduce the burning material below its ignition temperature.

A fire that has reached flashover means it is generally too late to save anyone in the room of origin, and substantially more staffing is required to handle the larger hose streams needed to extinguish the fire. A post-flashover fire burns hotter and moves faster, compounding the search and rescue problems to the remainder of the structure. At the same time more firefighters are needed for fire attack and the chance of injury to the firefighters increasing.

For these reasons, it is critical that fire suppression forces reach a fire structure and initiate effective suppression efforts prior to flashover.

NFPA 1720 Standard

There are a number of applicable NFPA standards and practices that include response time considerations important to fire officials nationwide.

NFPA 1720 is an industry standard that serves as a benchmark for the fire department organization and deployment of services offered by firefighters. It is the standard for combination volunteer/paid and volunteer fire departments that describes the requirements for delivery of services, response capabilities, incident management, and strategy.

This standard includes the following benchmarks related to call receipt and processing time, turnout time, and response (travel) time:

1. Turnout time of one minute on fire suppression and EMS calls; and,



FIRE AND RESCUE STATIONS

DETERMINING FIRE STATION LOCATIONS (continued)

2. The fire department's fire suppression resources deployed to provide for the arrival of an engine company within a four-minute response time and/or the initial full alarm assignment within an eight-minute response time to 90 percent of the incidents.

It should be noted that the various standards and criteria discussed in previous sections placed a high priority on both the effective delivery of fire and EMS service and the protection of life and property. Moreover, the safety of the firefighters and officers delivering the services and the safety of the customer and stakeholder were important considerations to the development of these standards and criteria and to their application for Harford County by the Study Team.

Harford County Travel Time Goal

Based on the response time-related criteria and standards outlined above, the Study Team utilized the following travel time goals outlined in the Measures of Performance.

Development Envelope: Four minutes for the first arriving unit---engine, truck, or squad in the Development Envelope built-up areas of the County.

Non-Development Envelope: Eight minutes for the first arriving unit—engine, truck or squad in the more rural Non-Development Envelope areas of the County.

It should be noted that for purposes of this Plan “travel time” is the projected time for apparatus to travel to the scene of the reported incident.

The reader should note that the review and analysis of other response time-related time segments, e.g. dispatch center processing time and unit-related turnout time, will be discussed in other chapters of this Plan report.



FIRE AND RESCUE STATIONS

DETERMINING FIRE STATION LOCATIONS (continued)

Turnout time and related alternatives, goals and recommendations that deal with the time between incident dispatch and apparatus “turning wheels” enroute responding to the incident (the beginning of travel time) will be discussed in other chapters of this Study report. Therefore, the travel time projection analysis and results discussed in the following sections of this Chapter will not include turnout time.

CURRENT STATION LOCATIONS

Current fire and EMS services in Harford County are being provided from twenty-seven fire and EMS stations:

Fire, Rescue & EMS Stations

The following table (Figure 4.6) is a listing of the current fire and EMS stations and their location in Harford County.

Figure 4.6
CURRENT FIRE AND EMS STATIONS

COMPANY	HOUSE	GIS STA. #	LOCATION
1. Co. 1	1	1	3633 Level Village Road, Havre de Grace
2. Co. 2	1	2	21 N. Rogers Road, Abardeen
3. Co. 2	2	22	104 E. Bel Air Road, Aberdeen
4. Co. 2	3	23	643 Aberdeen Thruway, Aberdeen
5. Co. 2	4	24	1437 Perryman Road, Perryman
6. Co. 3	1	3	109 S. Hickory Avenue, Bel Air
7. Co. 3	2	32	27 E. Jarrettsville Road, Forest Hill
8. Co. 4	1	4	3306 Abingdon Road, Abingdon



FIRE AND RESCUE STATIONS

CURRENT FIRE & EMS STATION LOCATIONS (Continued)

COMPANY	HOUSE	GIS STA. #	LOCATION
9. Co. 4*	2	42	Washington Avenue, Long Bar Harbor
10. Co. 4	3	43	3301 Willowby Beach Road, Willowby Beach
11. Co. 5	1	5	911 Revolution Street, Havre de Grace
12. Co. 5	2	52	121 Union Avenue, Havre de Grace
13. Co. 5	3	53	451 N. Juanata Street, Havre de Grace
14. Co. 5	4	54	1542 Chapel Road, Havre de Grace
15. Co. 5	5	55	301 Market Street, Havre de Grace
16. Co. 6	1	6	1407 Pylesville Road, Whiteford
17. Co. 7	1	7	3825 Federal Hill Road, Jarrettsville
18. Co. 7	2	72	4352 Norrisville Road, White Hall
19. Co. 8	1	8	1403 Old Mountain Road, Joppa
20. Co. 8	2	82	88 Trimble Road, Joppa
21. Co. 8	3	83	1601 Hanson Road, Edgewood
22. Co. 9	1	9	2600 Castleton Road, Darlington
23. Co. 9	2	92	3266 Dublin Road, Dublin
24. Co. 10	1	10	2134 Harkins Road, Pylesville
25. Co. 13	1	13	2201 Carrs Mill Road, Falston
26. Co. 13	2	132	3108 Hunt Road, Falston
27. Co. 5-9	1	59	1601 Level Road, Havre de Grace

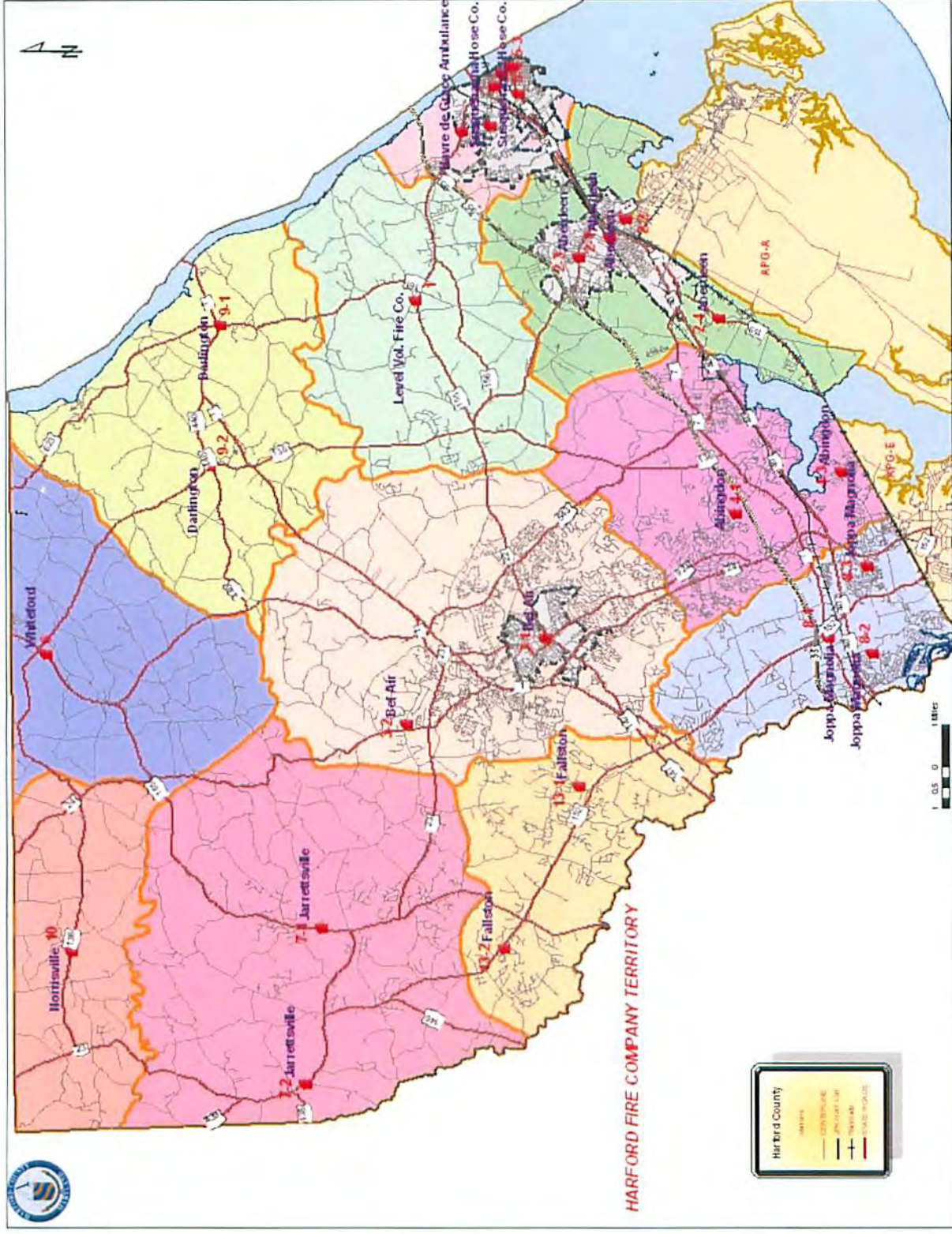
Note: * Station not currently utilized for the delivery of fire and/or EMS service.

Figure 4.7 illustrates the fire stations located in Harford County.



Current Fire & EMS Stations and Company Areas

Figure 4.7



Source: Harford County Division of Emergency Operations



FIRE AND RESCUE STATIONS

CURRENT FIRE & EMS STATION LOCATIONS (Continued)

APG Fire Stations

It should be noted that the Aberdeen Proving Grounds includes two fire stations; one located at Aberdeen and the second in Edgewood. Both include fire and EMS apparatus fully staffed with paid firefighters and officers. These resources are utilized on a daily basis in Harford County on a mutual aid basis.

Particularly during weekday daytime hours when volunteer staffing may be limited, the APG Fire Department units fulfill a very important function. They arrive on the scene in a timely manner and work with the Harford County Fire and EMS Company units to handle emergency fire and EMS incidents.

Figure 4-8 illustrates the proximity of the APG Fire Department to the Jappa-Magnolia and Aberdeen areas in particular.

FIRE AND EMS COMPANY & STATION RESPONSE AREAS

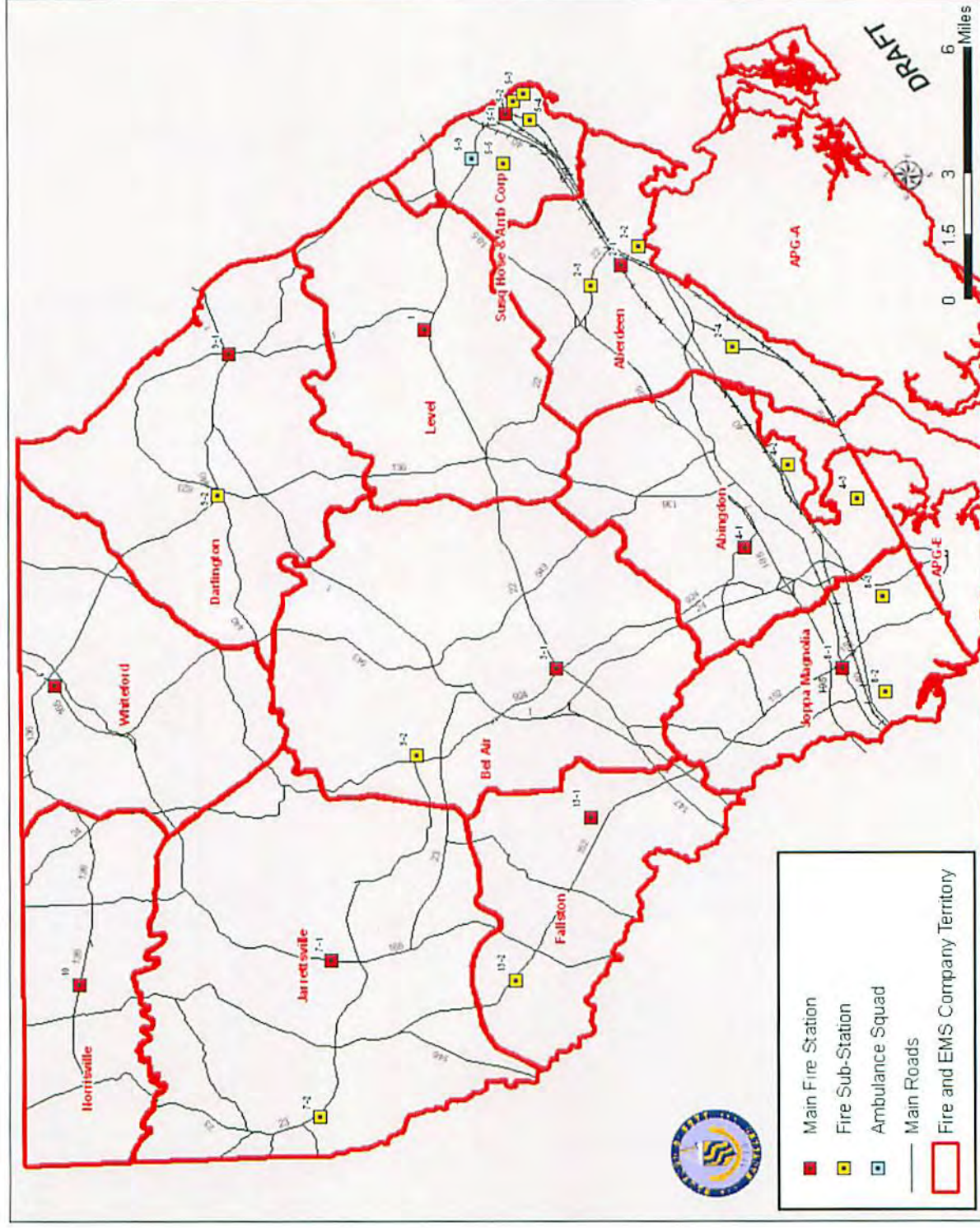
The determination of location and use of fire and EMS company and fire station response areas is a very important aspect of the delivery of timely fire and EMS services. It is understood that a critical piece of information determined by of the 9-1-1 calltaker is the location of the emergency. Once the location is known the dispatch staff can determine in which fire and EMS company response area the incident is located and then the proper type of fire and/or EMS apparatus to be dispatched.

Given the importance of striving for low apparatus travel time on fire and EMS emergencies a critical criteria to attaining the lowest possible travel time is to dispatch the closest available proper type of unit. Since the boundary lines of response areas determine which units are dispatched a very important factor in the ability to dispatch the closest unit/s relates to the location of the response area boundaries in relation to the fire station/s.



Current Company Areas with APG

Figure 4.8



Source: Harford County Department of Planning and Zoning



FIRE AND RESCUE STATIONS

COMPANY/STATION RESPONSE AREAS (Continued)

There are a number of ways that fire company and station response areas have been determined, whether the staffing approach is volunteer, combination volunteer/paid or paid, including:

1. Location of municipal boundaries;
2. Arbitrary agreement or understanding between fire companies/departments or municipalities;
3. Mileage from fire and EMS stations;
4. Projected travel time from fire and EMS stations; and,
5. Actual travel time typically documented by state-of-the-art computer aided dispatch systems in 9-1-1 centers.

Reportedly, the current response area boundaries used for emergency dispatch were determined by agreement many years ago. The original boundary lines have been adjusted in recent years, also by agreement, with the addition of new fire companies, such as the Whiteford and Norrisville Fire Companies. The Study Team noted that in Harford County the response areas have been determined for each fire and EMS Company based on the location of each Fire and EMS Company's main fire station rather than based on the fire station within the Company.

Figure 4.9 also illustrates the current Fire and EMS Company response area boundary lines utilized by the 9-1-1 Center for dispatching emergency calls in Harford County.

During the course of Study-related interviews and survey form information was collected. The Study Team became aware of considerations causing increased travel time as a result



FIRE AND RESCUE STATIONS

COMPANY/STATION RESPONSE AREAS (Continued)

of the original arbitrary approach to the determination of the current Fire and EMS Company response areas.

The issues described and noted by the Study Team in reviewing the current boundary maps include:

1. Geographic areas where units from the currently designated first due company must transit through another company/s response area to arrive at an incident in their response area;
2. Response area of one company where the second due company is closer by mileage; and,
3. Response area of one company where the second due company's units consistently arrive on the scene when both companies had left their respective stations at the same time.

The Study Team has found in former fire and EMS plan development processes that it is not unusual to find these types of issues when response areas were previously determined in a reportedly arbitrary or historical manner with little or no consideration given to a measurable approach, e.g., mileage and/or projected or actual travel times.

In an effort to verify these stated response area problems the GIS-based computerized analysis system previously described in this Chapter was utilized. The Study Team conducted an analysis that projected Fire and EMS Company response areas based on projected travel time from each Company's main station, the stated basis for the current response areas and dispatch deployment approach.



FIRE AND RESCUE STATIONS

COMPANY/STATION RESPONSE AREAS (Continued)

Figure 4.10 is a map graphic that illustrates the current Fire and EMS Company response areas with an overlay of the projected response areas that would be in effect based on GIS projected travel time. This figure indicates that **there are substantial areas of the County currently being serviced on a first due basis by Fire and EMS Companies that are likely not arriving on the scene in potentially as short a travel time as another company could.**

Figures 4.11 and 4.12 are bar chart graphics that illustrate current and projected response area average travel times respectively by Fire and EMS Company. These comparative travel time illustrations indicate that the **average travel time of two companies could be reduced by as much as two minutes each.** The projected average travel time of the remaining eleven (11) companies are being projected not to experience a noticeable change in their average travel time, if response areas were determined on the basis of projected travel time.

This comparative analysis of current and projected Fire and EMS Company response areas seems to clearly indicate that the long-standing determined company response areas should be revised to better service the residents and businesses of Harford County by more consistently dispatching the closest available emergency apparatus.

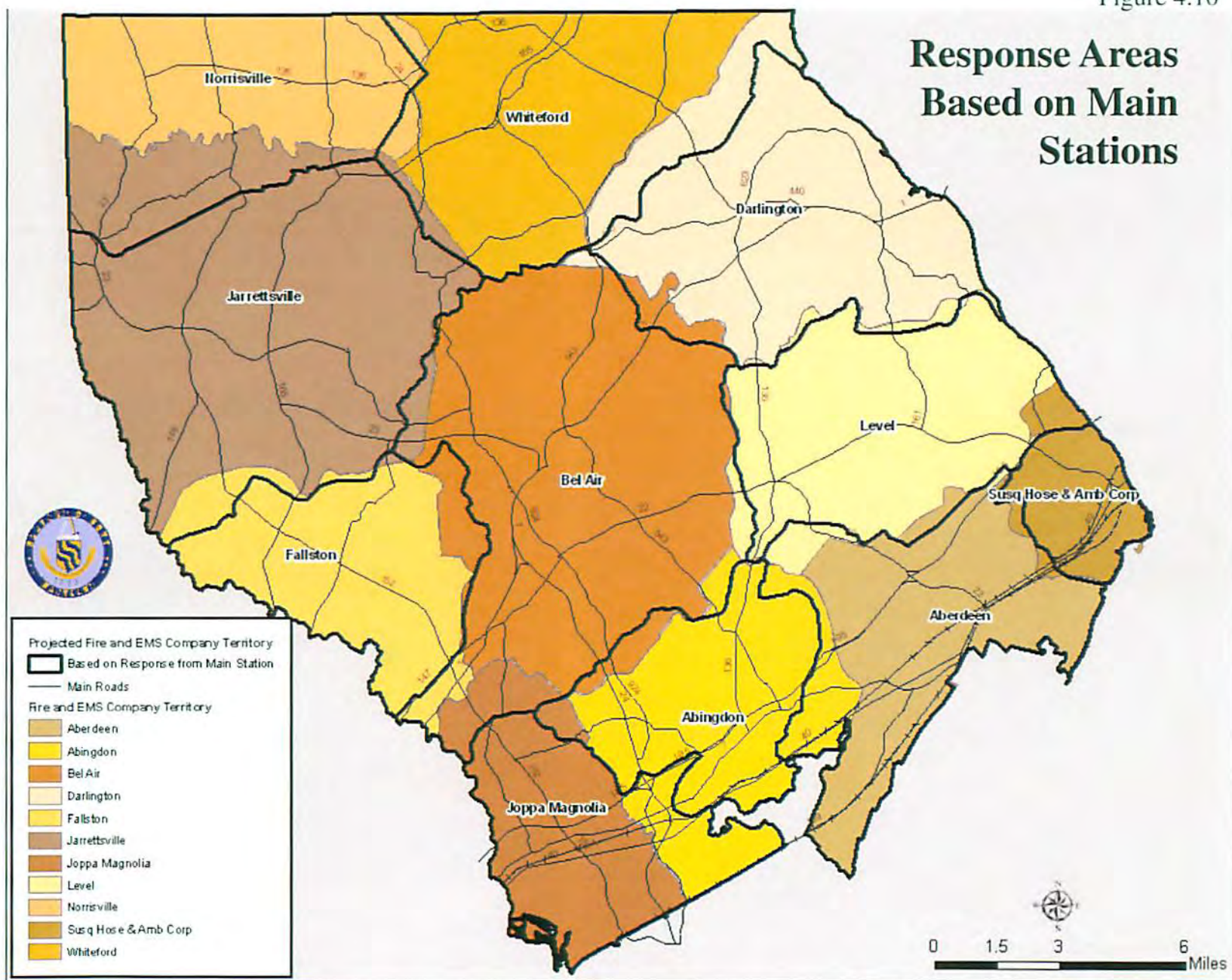
For those companies that conduct fund raising through a mailing approach to residents and businesses in their designated response area, a change in their mailing lists would likely be needed and there could be a change in potential revenue based on the actual service area and related development involved in the boundary revision. Given the reduced travel time and related improvement in fire and EMS services delivery this change seems well justified.

Company vs. Station-Based Deployment

As previously discussed, Fire and EMS Company response areas have been determined on company basis. Therefore, the 9-1-1 Center dispatches apparatus to emergencies within the County on a company basis. In the experience of the Study Team it is unusual for the



Figure 4.10



FIRE AND RESCUE STATIONS

COMPANY/STATION RESPONSE AREAS (Continued)

emergency fire and EMS apparatus of a substantially developed county with a population of nearly 250,000 , such as Harford, to dispatch its units to emergencies on a company-level basis.

Deployment and dispatch of emergency apparatus is typically done predominantly on a station basis, whether the staffing is volunteer or paid. This is due to the fact that station-level deployment and dispatch of apparatus is much more effective in providing the shortest travel time. This is due to the fact that with company-level dispatch of apparatus units are generally either actually or projected to be responding longer distances from one central location, the main station. Whereas with station-level dispatching and the deployment of apparatus and staffing from two or more fire stations in the companies response area, the unit would generally be either actually or projected to be responding from consistently closer locations—the neighborhood fire station/s in lieu of the company main station.

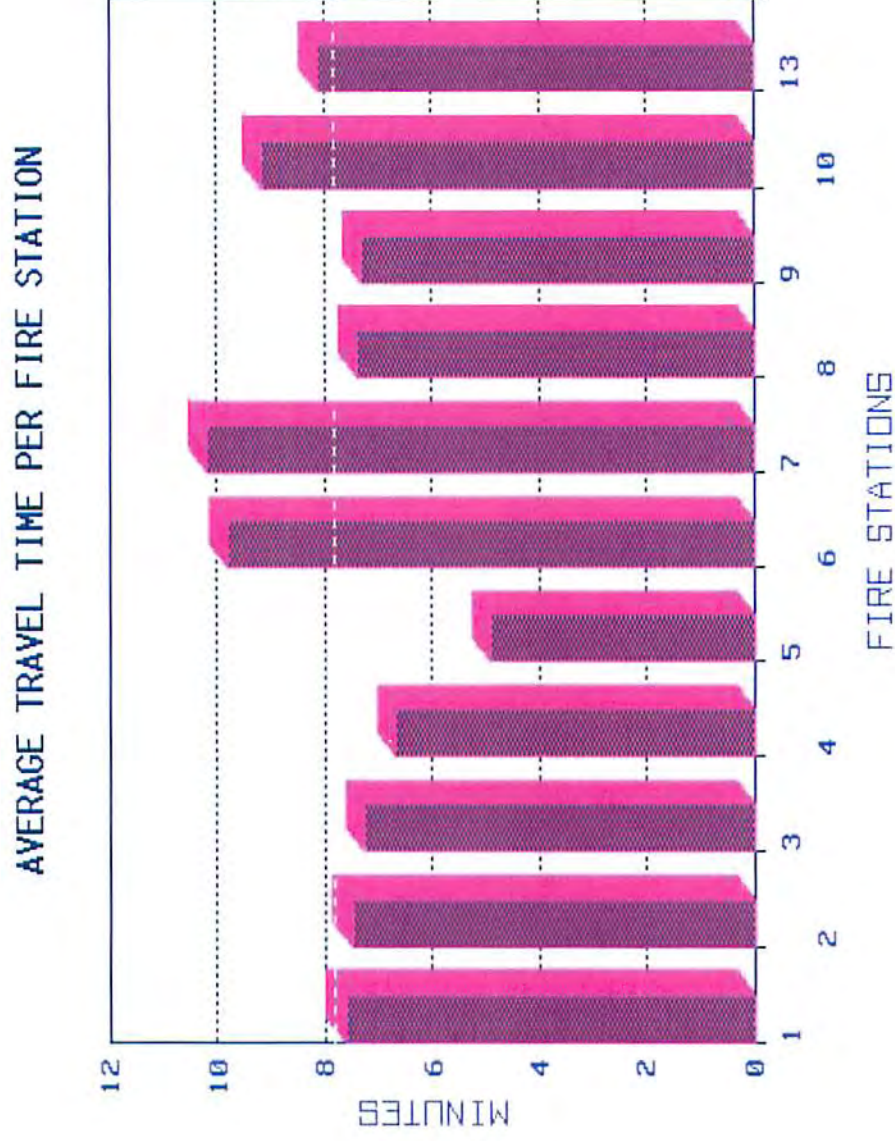
The County Fire and EMS Services utilize a unique approach to station numbering that is not numerically sequenced in order. The station designation approach relates to the fact that the numbering of the company is largely in numerical sequence, e.g. 1, 2, 3, etc., however, the stations are referred to as either main or sub-stations. A company's main station would typically be referred to by the company number and the number one, so that Jarrettsville's main station would be referred to as "Company Seven House One" as apposed to a specific station number. Further, Jarrettsville's sub-station would be referred to as "Company Seven House Two".

The Study Team's GIS system utilizes a fixed approach to station numbering so accepts only numerical station numbers up to three digits in length. Therefore, the reader will note that in the map and bar chart graphics generated by the GIS system the Study Team designated company main and sub-stations with the first digit being the company number and the second digit is the sub-station number. Therefore, using the Jarrettsville example, the Jarrettsville



Figure 4.11

Travel Time for Current Fire & EMS Company Areas From Main Stations



Projected Travel Time for Current Fire & EMS Company Areas From Main Stations

Figure 4.12

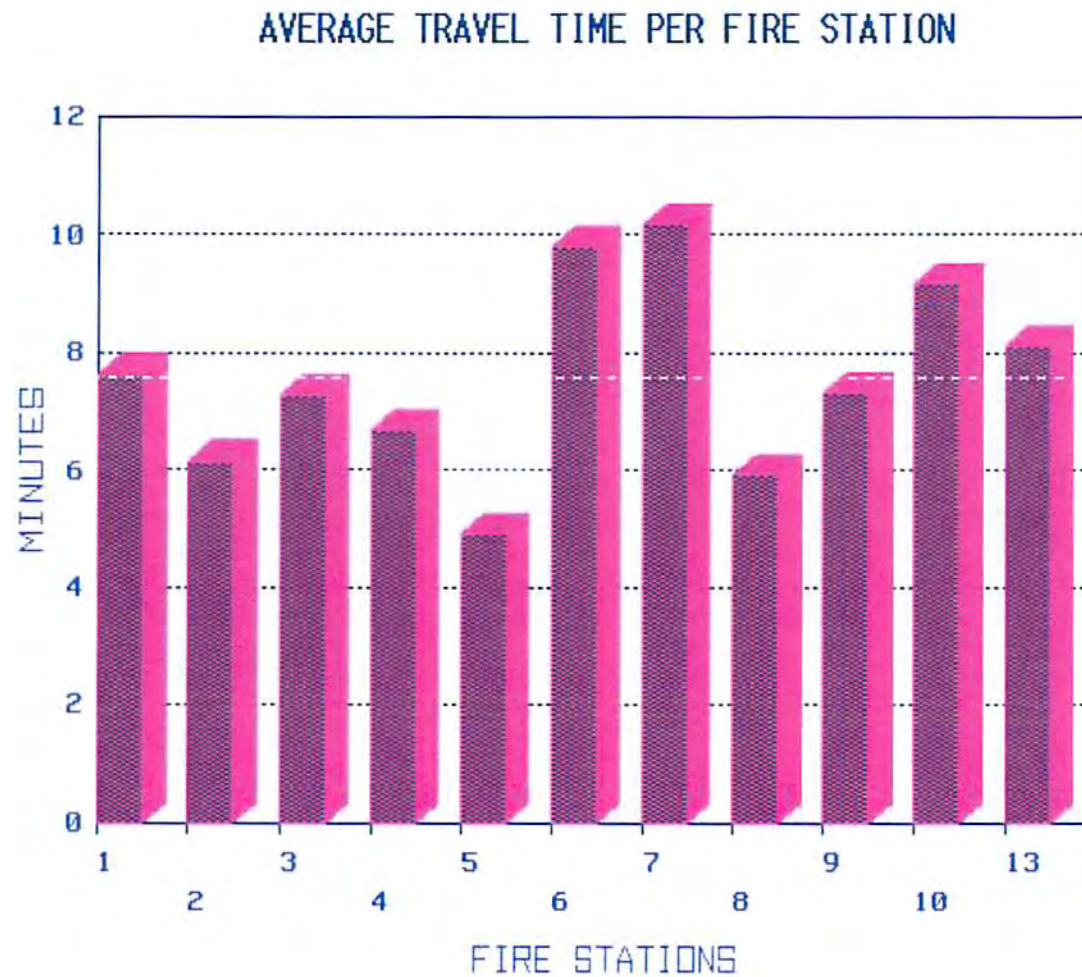
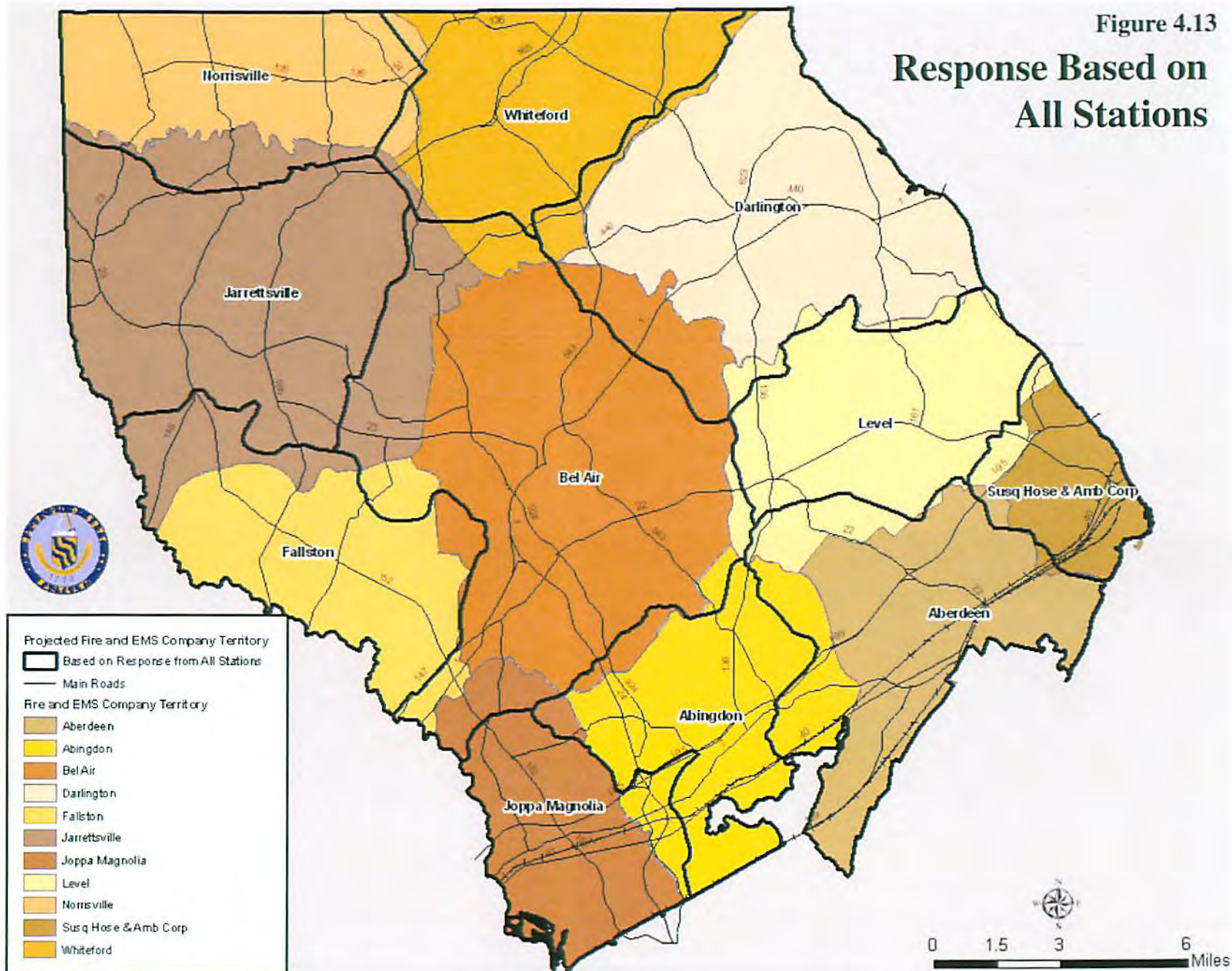


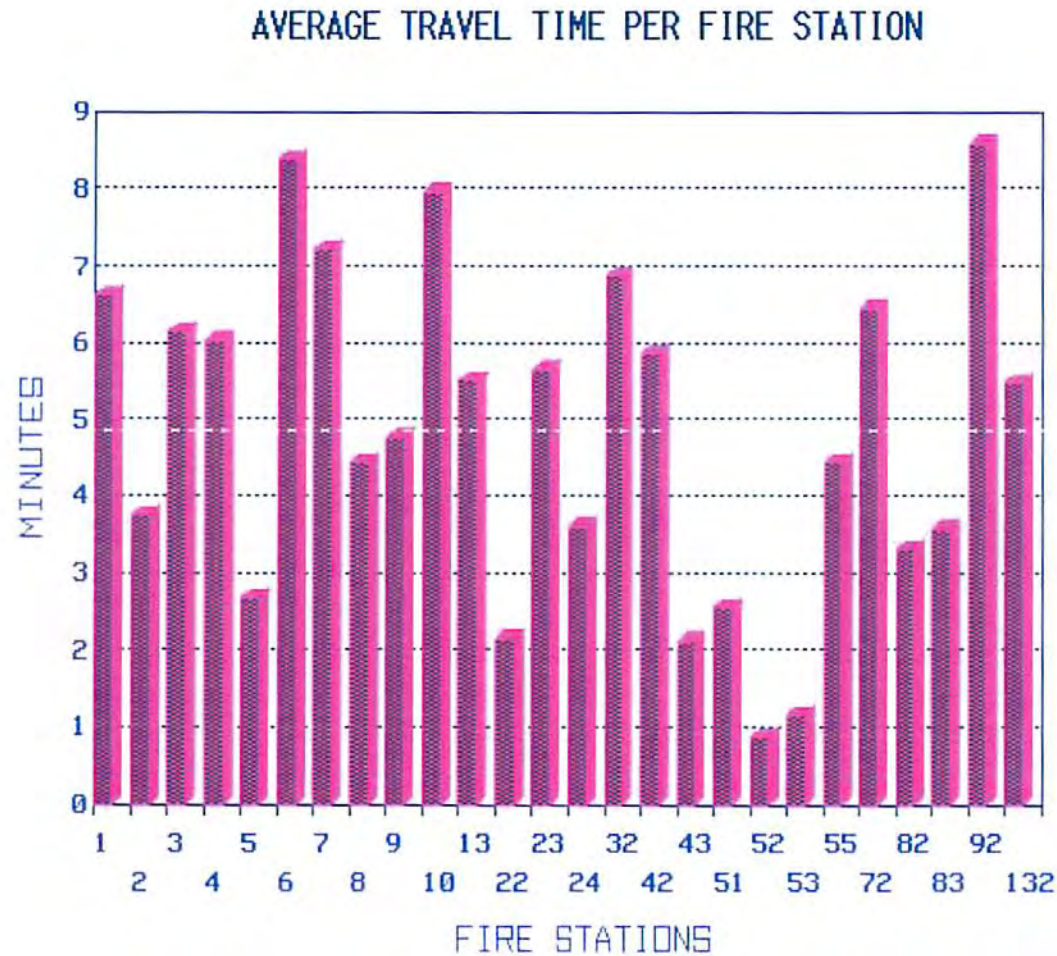
Figure 4.13

Response Based on All Stations



Projected Travel Time for Current Fire & EMS Company Areas From All Stations

Figure 4.14



Projected Travel Time for Current Fire & EMS Company Areas From All Stations w/o Co. 4 House 2

Figure 4.15

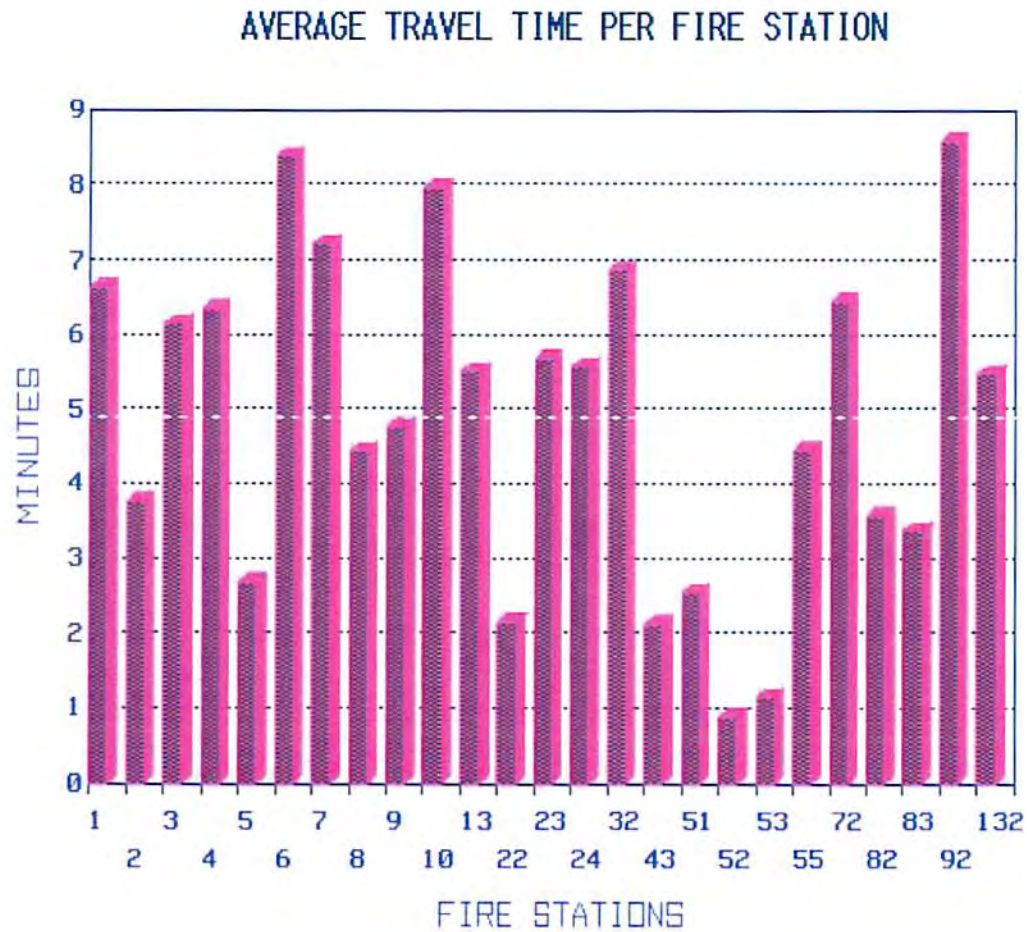
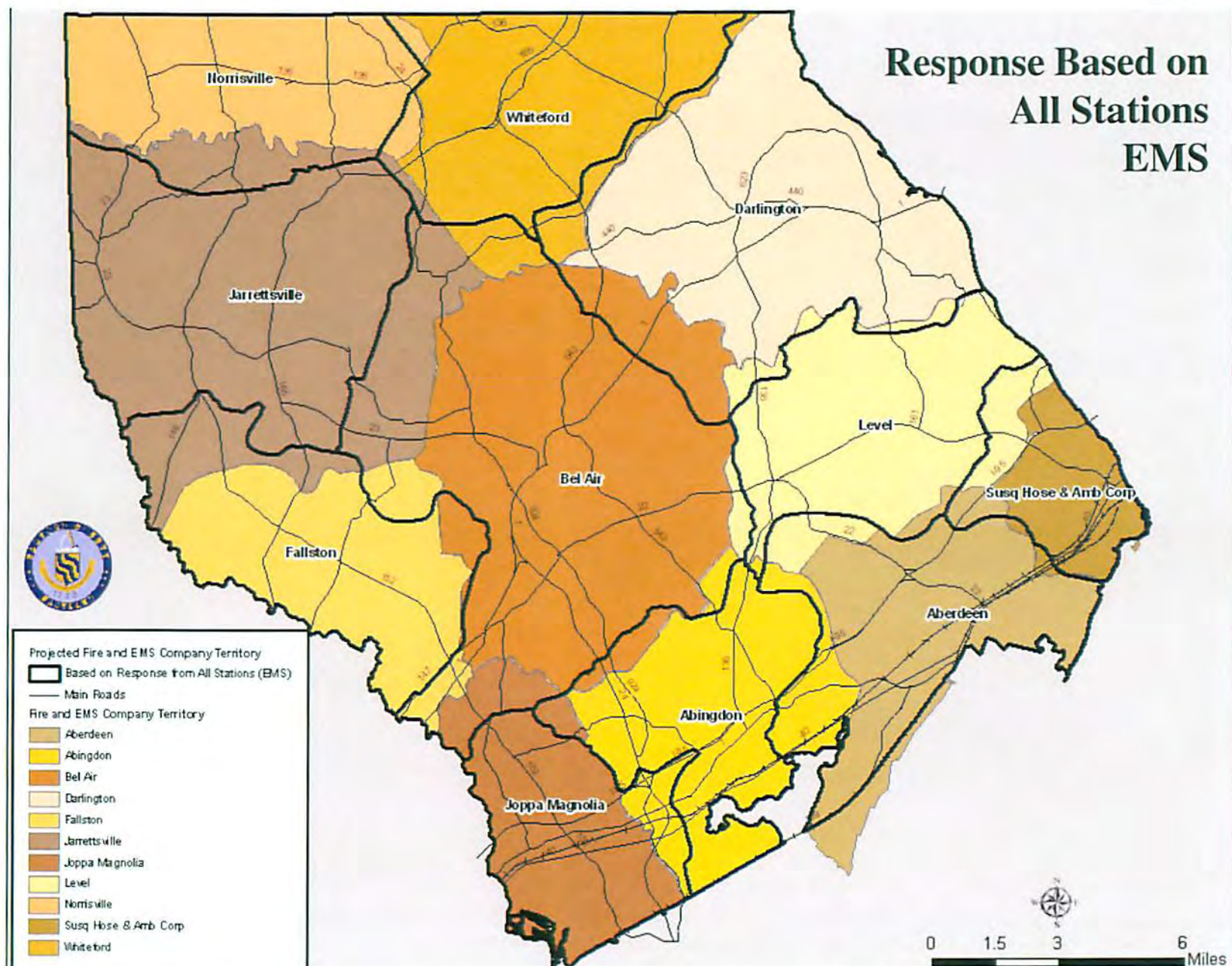


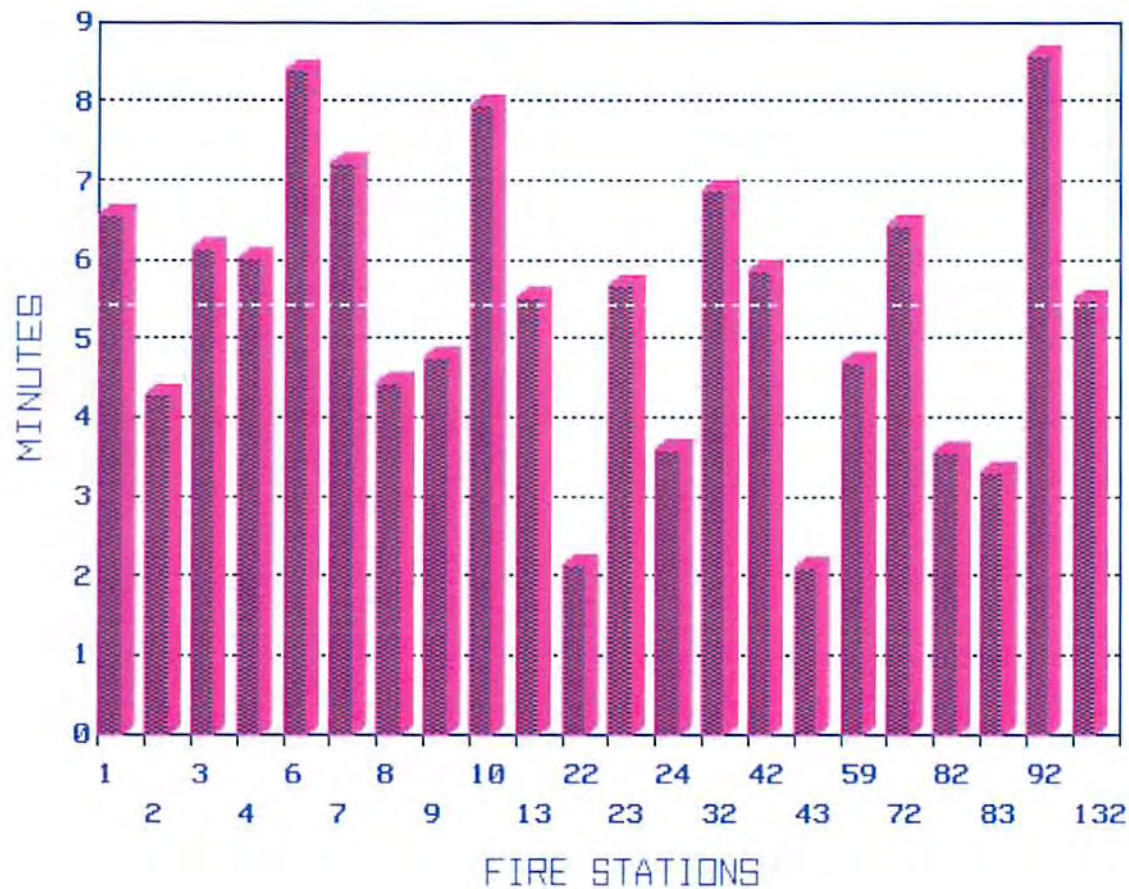
Figure 4.16



Projected Travel Time for Current Fire & EMS Company Areas From All Stations w/ EMS

Figure 4.17

AVERAGE TRAVEL TIME PER FIRE STATION



FIRE AND RESCUE STATIONS

COMPANY/STATION RESPONSE AREAS (Continued)

station numbers shown on the graphic illustrations are "7" for the main station and "72" for their sub-station.

As a point of information, of the 12 Fire and EMS Companies in the County eight companies have one or more sub-stations. There are 12 main stations and 15 sub-stations, one of which is reportedly not operational for fire and EMS service provision as it is being utilized by the County Sheriff for a specialty function.

The Study Team conducted a GIS-based projected travel time analysis involving the station-based deployment and dispatch of emergency fire and EMS apparatus. The following figures illustrate the results of that comparative analysis.

Figure 4.13 illustrates the revised company response areas based on projected response time from each company's fire station/s, as apposed to only from the company's main station. The current company response areas with the overlay of the revised response areas based on projected response from each fire station in the company's area is shown.

Figures 4.14 is a bar chart that graphically illustrates current and projected response area average travel times respectively by Fire and EMS Company station. These average travel time illustrations indicate that the **average travel time for units deployed and dispatched from fire and EMS stations would substantially reduce the travel time incidents in all station areas**. Figure 4.15 illustrates the same average travel time for all stations without Abingdon House #2, since it is not in service as a fire station.

Figure 4.16 illustrates the revised company response areas with response from each company's fire station/s on EMS calls. And, Figure 4.17 is a bar chart that illustrates current and projected response area travel times by Fire and EMS Company station



FIRE AND RESCUE STATIONS

COMPANY/STATION RESPONSE AREAS (Continued)

on EMS calls (shows Havre de Grace Ambulance rather than Susquehanna Hose).
Again, **all station areas indicate substantially reduced projected travel times.**

It seems clear to the Study Team based on the potential for substantial average reduction in travel time that Harford County residents and businesses benefit from the implementation of station-based deployment and dispatching.

Implementation of Station-Level Deployment

All single-station Fire and EMS Companies in the County, which include Level, Havre de Grace Ambulance, Norrisville and Whiteford are currently deployed and dispatched on a station-level basis. Therefore, a change to station-level approach would only involve the multi-station companies which include Aberdeen, Abingdon, Bel Air, Darlington, Falston, Jarrettsville, Susquehanna Hose, and Jappa-Magnolia. The extent of the impact would of course depend on each company's actual current deployment approach. For those company stations that currently staff and deploy at the station-level, e.g., Susquehanna Hose and a number of selected company stations, the adjustments needed to implement this change could primarily involve the 9-1-1 Center policies and procedures and computer aided dispatch system.

A number of action items could be needed or desired to successfully implement station-level deployment and dispatching. A limited focused transition plan with associated tasks to be accomplished at company, station and county levels could include the following:

- Determine to change to station-based deployment and dispatching;
- Initiating volunteer staffing assignment adjustments, if needed;
- Concentrating on any needed station level volunteer recruitment;
- Making station officer assignments, if needed;



FIRE AND RESCUE STATIONS

COMPANY/STATION RESPONSE AREAS (Continued)

- Determining station-based response areas based on travel time projections; and,
- Revise 9-1-1 Center dispatch policies, procedures and CAD system.

The Harford County Fire and EMS related services should take bold action to plan and implement the deployment and dispatch of apparatus on a fire station basis to achieve the shortest travel time and improved quality of services for their residents and businesses.

FUTURE STATION LOCATION NEEDS

The following sections provide information, analysis, conclusions and options for potential future fire and EMS station facilities.

Fire Station Location Factors

To determine future fire, rescue and EMS station facility needs in the County where consideration may need to be given to adding, relocating or eliminating a fire or rescue station, the Study Team considered a number of factors, including:

- A. Current and projected County development;
- B. Volunteer nature of the staffing of apparatus;
- C. Location of the homes of responding volunteer staffing;
- D. Estimated typical turn-out time from dispatch to first unit responding;
- E. Potential limited number of volunteer drivers during certain hours;



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

- F. Historical nature of involvement of fire stations in communities;
- G. Current and projected service provider workload data;
- H. Response time projections using geographic information system (GIS) tools;
- I. Service provision by mutual aid companies; and,
- J. Input from service providers.

Potential Future County Development

The following sections provide information regarding selected potential future growth and development of Harford County for the future.

Future Population Growth Projections

Comprehensive future projected population growth information through 2025 was provided to the Study Team by the County. Figure 4.18 illustrates the current and project population growth by Fire and EMS Company response area.

As would be expected, future population increases are projected to occur substantially in the response areas of the Fire and EMS Companies providing services to the Development Envelope which includes the Bel Air, Joppa-Magnolia Abingdon, Aberdeen and Susquehanna Hose (Havre de Grace) Fire Companies.

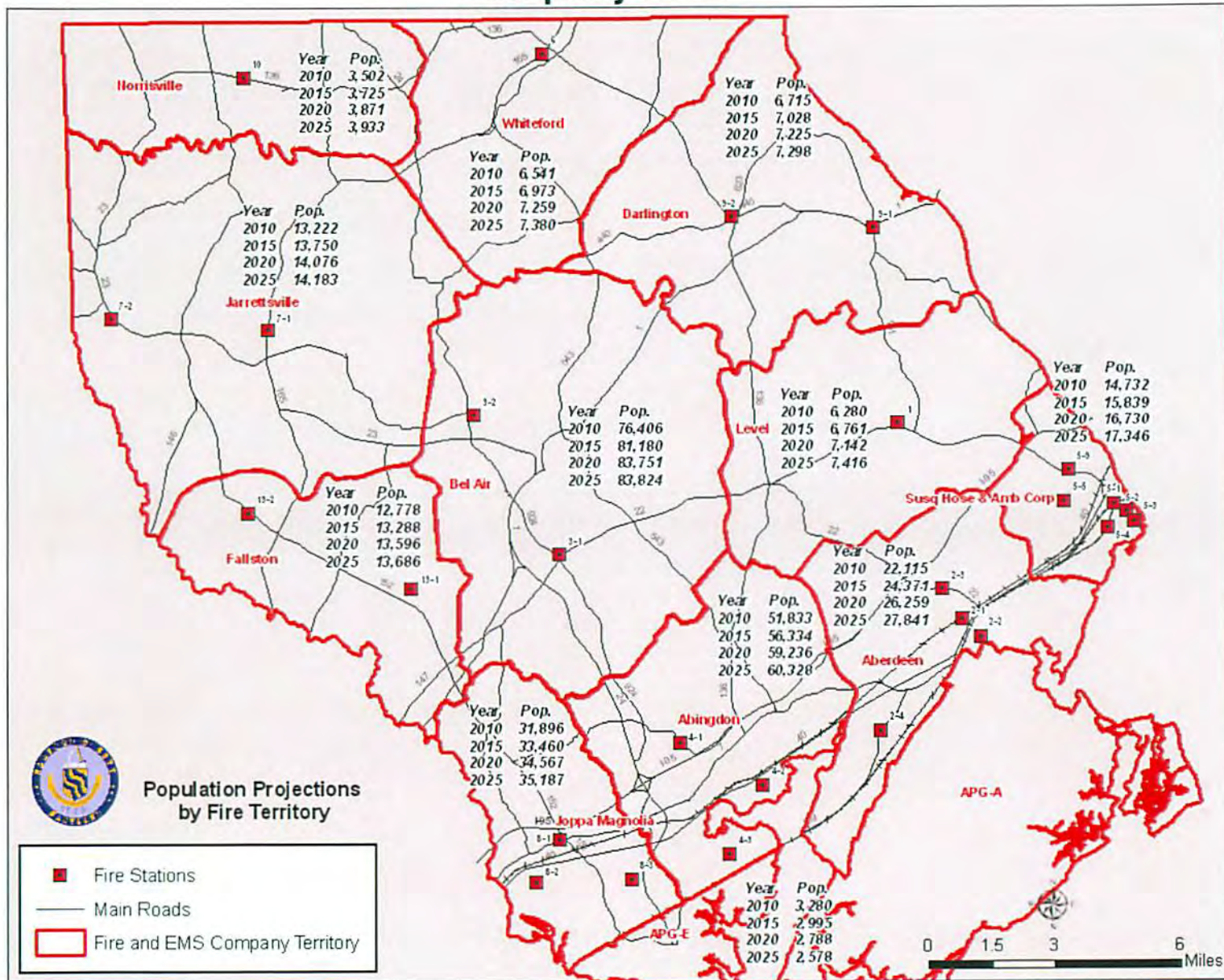
Major Subdivision Development

Figure 4.19 provides the status of major subdivision activity in the Development Envelope..



Projected by Current Fire & EMS Company Area

Figure 4.18



Source: Harford County Department of Planning and Zoning



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

Figure 4.19

MAJOR SUBDIVISION ACTIVITY IN THE DEVELOPMENT ENVELOPE

HARFORD COUNTY MAJOR SUBDIVISION ACTIVITY IN THE DEVELOPMENT ENVELOPE										
Location	SUBDIVISION	UNITS PLANNED				UNITS REMAINING				TOTAL PERMITS ISSUED
		SFD	TH	APT/ CONDO	TOTAL	SFD	TH	APT/ CONDO	TOTAL	
1	3105/3109 ABINGDON ROAD	8	0	0	8	8	0	0	8	0
2	3303 PHILADELPHIA ROAD (LOTS 1-33)	33	0	0	33	33	0	0	33	0
3	ABINGDON ADDITION	45	0	0	45	22	0	0	22	23
4	ABINGDON MANOR (LOTS 1-21)	21	0	0	21	21	0	0	21	0
5	ALLY'S MEADOW	14	0	0	14	6	0	0	6	8
6	APPLE TREE ORCHARD (LOTS 1-17)	17	0	0	17	17	0	0	17	0
7	ASHBY PLACE II	0	122	0	122	0	12	0	12	110
8	AUTUMN RUN	0	207	0	207	0	42	0	42	165
9	BEECHTREE ESTATES	349	397	0	746	349	397	0	746	0
10	BENTLEY (LOTS 1-23)	0	23	0	23	0	23	0	23	0
11	BRITTANY QUARTERS (SECTION 2 - LOTS 1-68)	68	0	0	68	67	0	0	67	1
12	CEDAR DAY	313	0	0	313	103	0	0	103	210
13	EVERGREEN FARMS	0	0	198	198	0	0	198	198	0
14	FALLSTON COMMONS	0	221	0	221	0	221	0	221	0
15	FLYING POINT MARINA	0	0	200	200	0	0	200	200	0
16	FOSTERS RUN (LOTS 1-236)	236	0	0	236	236	0	0	236	0
17	GABLER'S SHORE	50	0	0	50	39	0	0	39	11
18	GLENANGUS (SECTIONS 10, 11, 12A, 12B, 13B, 13C & 14)	71	74	0	145	14	36	0	50	95
19	GREENBRIER HILLS (SECTION 8, PHASE 1)	0	0	300	300	0	0	159	159	141
20	HACKLEY'S RESERVE (LOTS 1-301)	0	301	0	301	0	301	0	301	0
21	HARBORSIDE III	0	0	84	84	0	0	84	84	0
22	HOLLYWOODS (AREAS 1, 2, 4 (PH. 2) & 6)	0	394	432	826	0	113	394	507	319
23	LESANDER MANOR	14	0	0	14	14	0	0	14	0
24	MACPHAIL WOODS	5	0	114	119	0	0	74	74	45
25	MANY HEIGHTS (LOTS 1-117)	117	0	0	117	117	0	0	117	0
26	MELISSA MANOR (LOTS 1-9)	9	0	0	9	9	0	0	9	0
27	MONMOUTH MEADOWS (PHASE 5)	0	213	180	393	0	165	152	317	76
28	OAK GROVE/STANCILLS	270	0	0	270	270	0	0	270	0
29	OLD TRAILS	0	56	0	56	0	47	0	47	9
30	PACA MEADOWS	0	75	96	171	0	75	96	171	0
31	ROCK HALL FARMS	53	0	0	53	37	0	0	37	16
32	ROGERS FORD (LOTS 1-90)	89	0	0	89	89	0	0	89	0
33	ROSS, LANDS OF (PHASES 1 & 2)	12	0	0	12	12	0	0	12	0
34	TOLLGATE VILLAGE	0	104	0	104	0	23	0	23	81
35	TRIMBLE KNOLL (LOTS 1-16)	16	0	0	16	16	0	0	16	0
36	TRIMBLE MEADOWS	6	175	0	181	6	131	0	137	44
37	TUCKER, LAND OF (LOTS 1-25)	25	0	0	25	25	0	0	25	0
38	VALE MEADOWS (SECTION 1)	0	107	0	107	0	62	0	62	45
39	VALE WOODS	4	33	0	37	3	14	0	17	20
40	VAN BIBBER	9	0	0	9	9	0	0	9	0
41	VILLAGE GREEN (PHASE 4)	49	0	0	49	17	0	0	17	32
42	WASHINGTON COURT REDEVELOPMENT	44	104	100	248	44	104	100	248	0
43	WOODLAWN	103	0	0	103	103	0	0	103	0
TOTALS		2,050	2,808	1,704	6,360	1,886	1,766	1,457	4,909	1,451



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

Notes: 1. Key: SFD = Single Family Detached, TH = Townhouse, Apt/Condo = Apartment/Condominium.

2. Mobile Home Parks not included. Includes major subdivisions with greater than 5 units remaining.

Source: Demographic Data & Growth Trends, Harford Department of Planning and Zoning, December 2008.

The location of this subdivision development activity in the Development Envelope is illustrated in Figure 4.20.

Base Closure and Realignment Commission (BRAC)

The Federal Defense Base Closure and Realignment Commission issued a final report in 2005 that included recommendations impacting the Aberdeen Proving Grounds facility through the closure of a number of APG functions and the realignment of other Defense facilities resulting in increased functions, facilities and jobs at APG.

As a result of these planned Federal actions the Harford County Executive established the Base Realignment and Closure Planning Advisory Commission (BRAC) to assess the potential impact on Harford County and to plan and make recommendations to prepare the County for projected changes resulting from the BRAC report recommendations and actions in a broad range of areas, including public safety, health and community services.

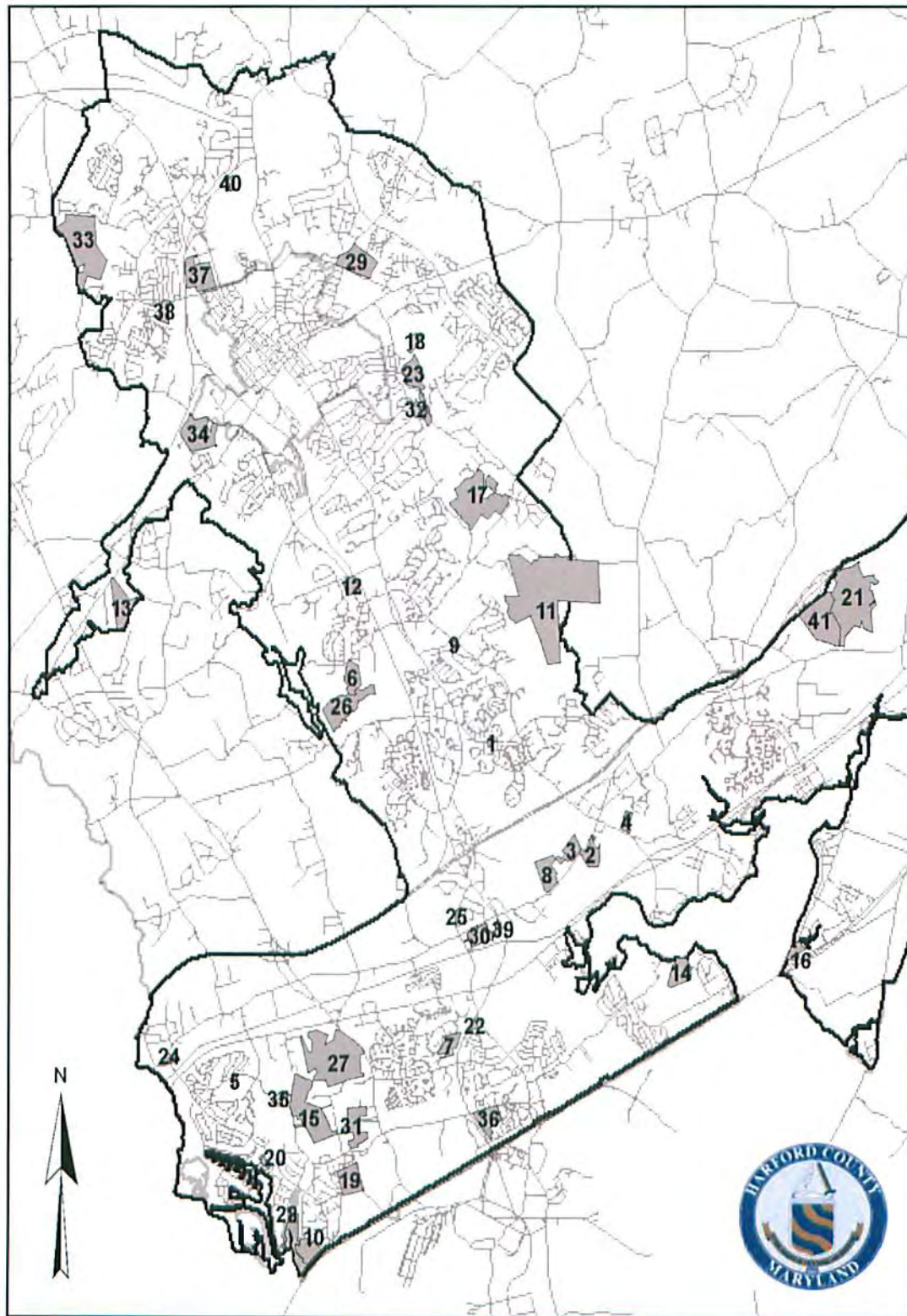
BRAC implementation is projected to have a series of impacts that may be problematic to the Fire and EMS Services. These include issues involving:

- Increased population;
- Increased traffic on roadways;
- Increased incident workload;
- Increased need for fire station facilities;



Figure 4.20

HARFORD COUNTY
MAJOR SUBDIVISION ACTIVITY IN THE DEVELOPMENT ENVELOPE



Source: Harford County Department of Planning and Zoning, June 2008



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

- Increased staffing needs; and,
- Increased funding needs;

As an example, one of the areas of impact relates to the intersections of major roadways that will require upgrading due to BRAC near Aberdeen Proving Ground. Priority intersections were selected for improvement based on projected increased traffic loads including:

- US 40 & MD 715, including Philadelphia Road;
- US 40 & MD 155 7A;
- MD 22 @ Old Post Road;
- MD 22 @ MD 462 (Paradise Rd.); and,
- MD 22 @ Beards Hill Road.

The scope of work for this fire and EMS planning project includes considering the potential impact of the BRAC and BPAC recommendations on the Harford fire and EMS services in the development of this Study.

The development of this Plan considered the potential impact of BRAC implementation in a number of areas, including:

1. Organization of the Fire and EMS Services;
2. Fire station location needs;
3. Traffic-related strategies;
4. Apparatus needs;
5. Recruitment and retention of staffing;
6. Communications and dispatch;
7. Development of staffing plan; and,
8. Future building inspection requirements.



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

As it relates to these and other fire and EMS aspects of being aware and prepared to address issues relating to BRAC, this Plan should assist the County and Fire and EMS Services by fulfilling a number of action elements of the County's BRAC Action Plan, revised May 1, 2008.

The Study Team met with a number of key development-related County officials with responsibilities related to future County growth and development in an effort to gain a projected "snap-shot" picture of potential growth and development projected for the future—through at least the year 2025. Based on those interviews and documents and data provided to the Study Team, it appears that steady growth and development is expected for the foreseeable future. The factors that appear to be driving forces in future growth relate primarily to the following:

- A. Location of the County near the Baltimore/Washington/Philadelphia metro areas;
- B. Normally expected growth in a county which is a desirable residential and business location; and,
- C. BRAC implementation at APG having a predicted substantial impact particularly on the Development Envelope of the County.

Input from Service Providers

As a point of information to the reader, the members of the Fire and EMS Services provided input to the Study Team relating to fire and EMS stations.



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

Input Related to Stations

The following are points made to the Study Team via interviews and/or the Member Survey Form.

1. Patterson Mill planned station should be first paid station, with lease to Bel Air until paid staffing added;
2. Areas for future fire station include Rt. 543 at Rt. 136, and Churchville;
3. The firehouse is no longer the center of the community;
4. When it comes time for paid firefighters, use the Baltimore County system with separate paid and volunteer stations; and,
5. Opticom traffic preemption devices should be installed in the high traffic corridors of the County.

Suggested Locations for Future Fire Station Locations

A number of specific locations or areas perceived to need a new fire and EMS station were mentioned to the Study Team, including:

1. Patterson Mill - Bel Air south;
2. West Aberdeen/Riverside/ Church Creek Area (Routes 152/40);
3. Long Bar / Crestwell area;
4. Hickory -Fountain Green area;
5. Churchville - Granery area
6. Aberdeen-Perryman; and,
7. Vicinity of Routes 543 and 136.

These and other potential locations or areas were considered by the Study Team as the detailed GIS modeling analysis was conducted.



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

Potential Future Fire Station Facilities

In assessing the current and future fire and EMS station needs the Study Team considered a number of factors including current and future projected development and projected level of service delivery, particularly in or near the Development Envelope. With this background the Study Team conducted GIS modeling “what if” scenarios to determine where new stations might be needed in the future and in the vicinity of what location/s in the County.

The modeling which was done assumed station-based deployment, substantially supported the opinions of many current fire and EMS service providers in that it seems to support the need for new fire and EMS stations to be implemented in the foreseeable future in four locations as follows:

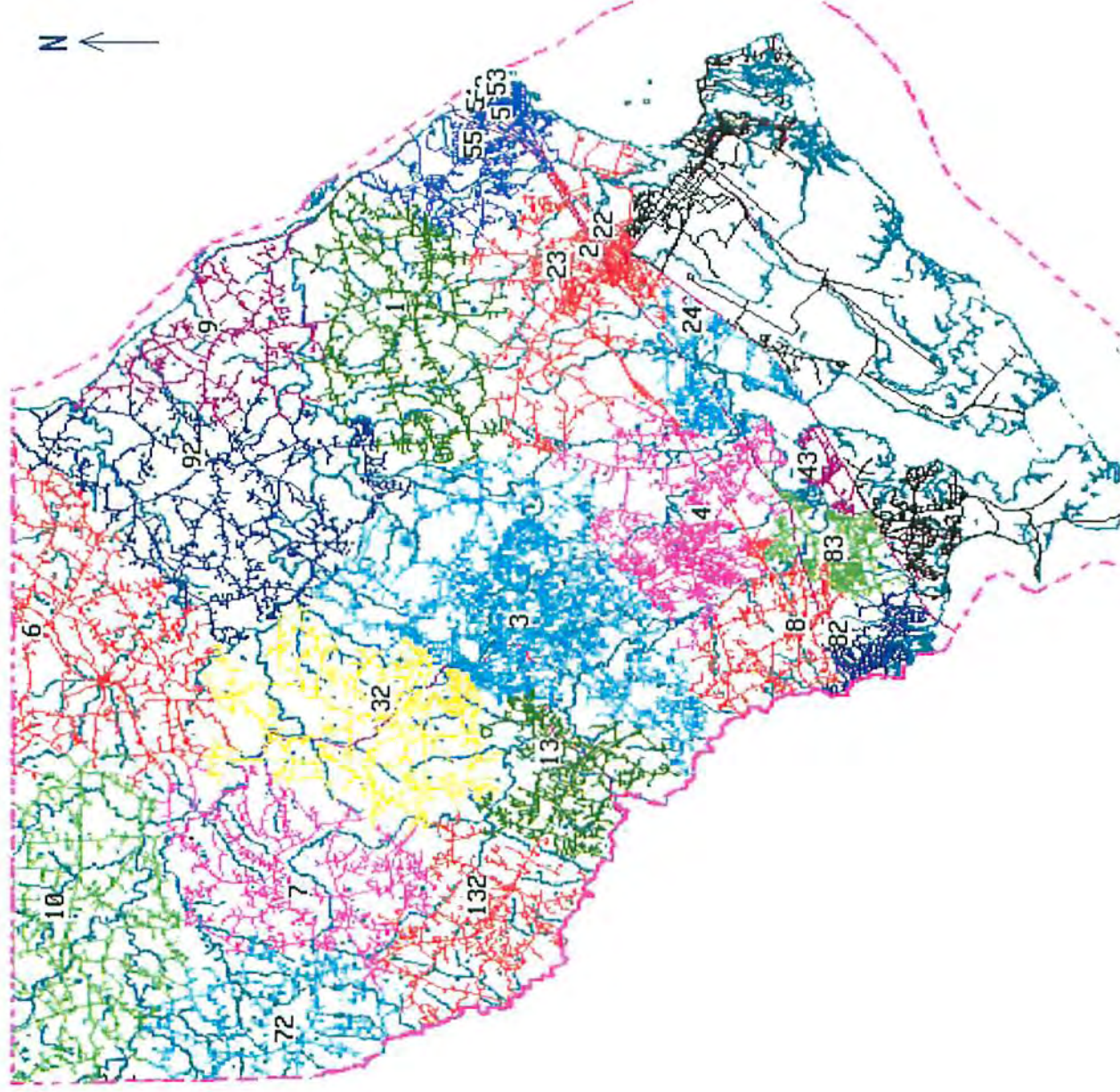
1. Patterson Mill Road near MD Route 24 (39 on the GIS maps);
2. Riverside area on MD Route 543 just north of US Route 40 (49 on the GIS maps);
3. On MD Route 543 (Fountain Green Road between Hickory and Fountain Green (69 on the GIS maps; and,
4. Churchville near the intersection of MD Routes 22 and 136 (29 on the GIS maps.

In considering these alternatives, the reader should note that Figure 4.21 illustrates projected response areas and Figure 4.22 the baseline projected average travel time total miles and average projected average travel speed of apparatus for fire service apparatus responses from the current stations.



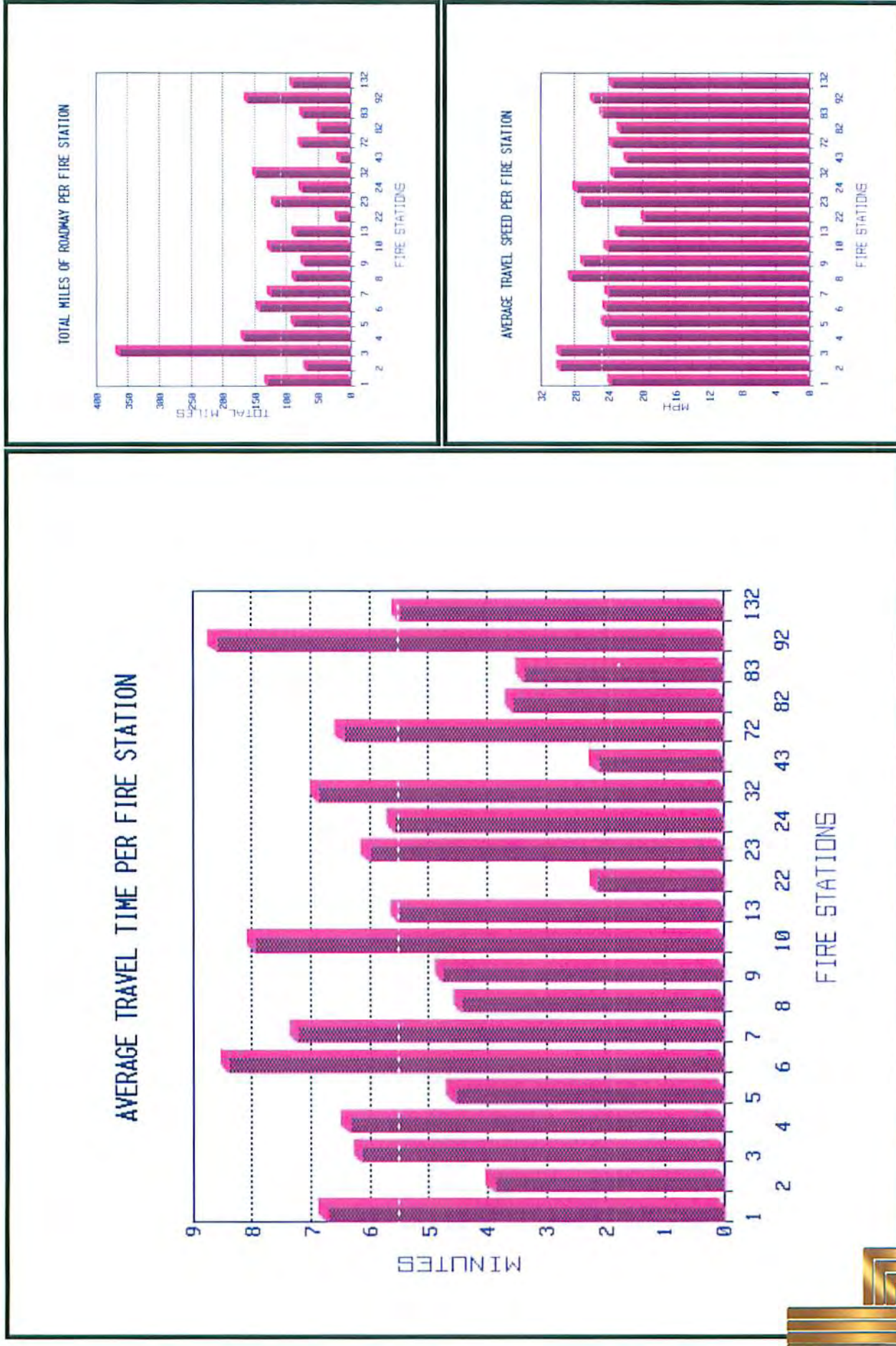
Projected Current Fire Station Response Areas

Figure 4.21



Projected Current Fire Station Response Statistics

Figure 4.22



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

Figures 4.23, 4.24, 4.25 and 4.26 were generated from the GIS modeling analysis conducted by the Study Team. The modeling progressively illustrate the response areas for the four stations suggested in this list to be implemented in the order listed above. Each of these GIS maps illustrates the improvement in coverage in and/or around the Development Envelope resulting from the implementation of each additional fire and EMS station.

Further Figures 4.27, 4.28 and 4.29 are comparative bar chart graphics of the average projected travel time, total miles of roadway and projected apparatus travel speed in each current and suggested fire and EMS station area. In reviewing the illustrations of the average travel time and total miles in response area a steady measurable decrease in projected travel time and road miles in response areas for the existing stations is noted as each new station alternative is added.

In reviewing the travel time projected for current stations (Figure 4.22) there appears to be only five fire stations that are projected to meet the MOP goal of four-minute travel time for stations in the Development Envelope and five stations that have projected response times between four and five minutes. With the implementation of the suggested new fire stations six fire stations are projected to meet the MOP four-minute goal and eight fire stations would have projected average travel times of between four and five minutes. See Figure 4.27. With increased population and development, response times for current stations would typically be expected to increase with workload increases.

The suggested timeline for implementing additional fire and EMS stations in Harford County is outlined as part of the Implementation Chapter.

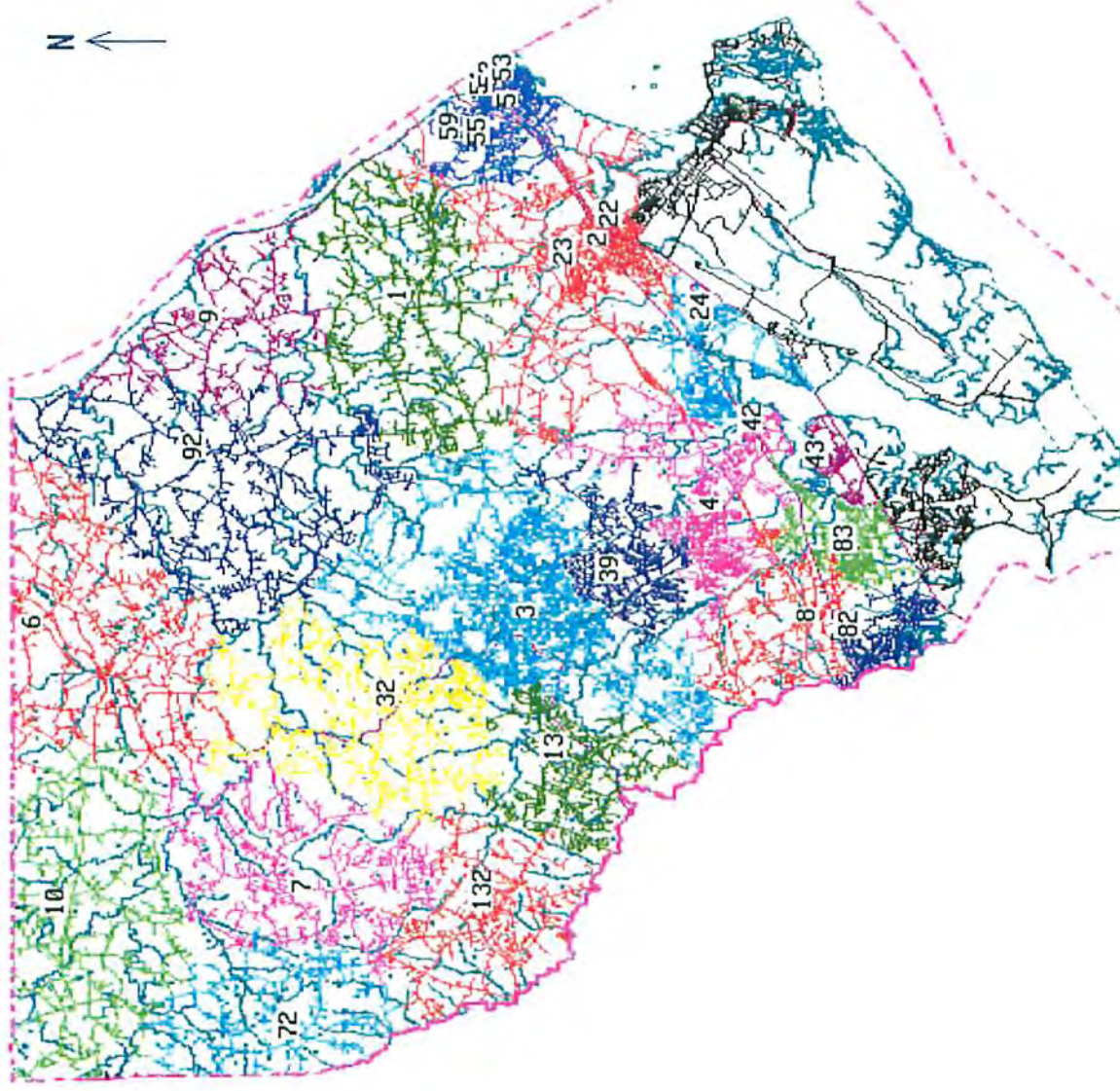
Paid-Staffed Stations

The evaluation in the previous sections was intended to establish the locations of the first due engine or truck company and initial attack resources (typically engines). The station



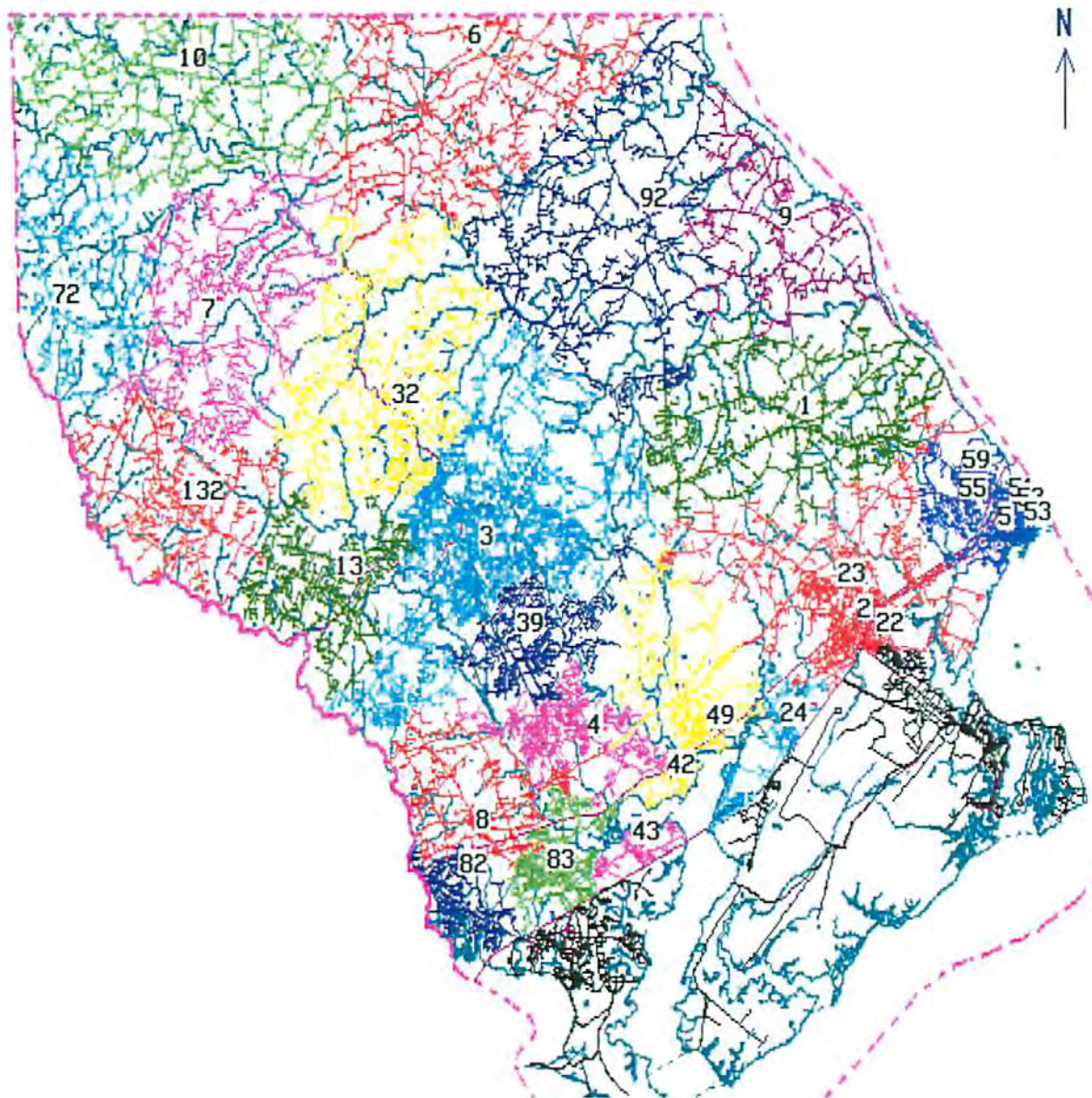
Projected Current Fire Station Response Areas w/ Patterson Mill Fire Station

Figure 4.23



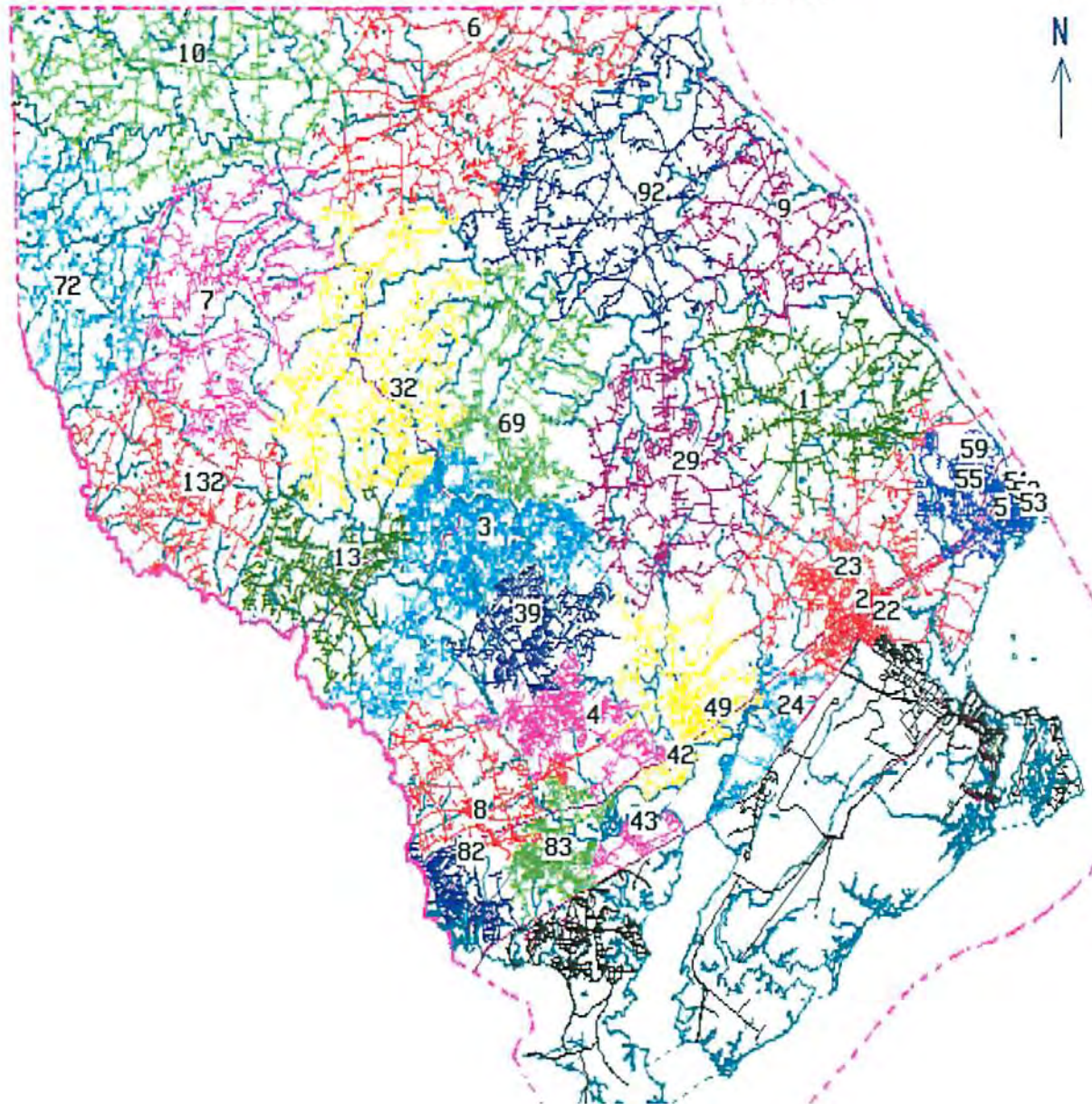
Projected Current Fire Station Response Areas w/ Riverside Fire Station

Figure 4.24



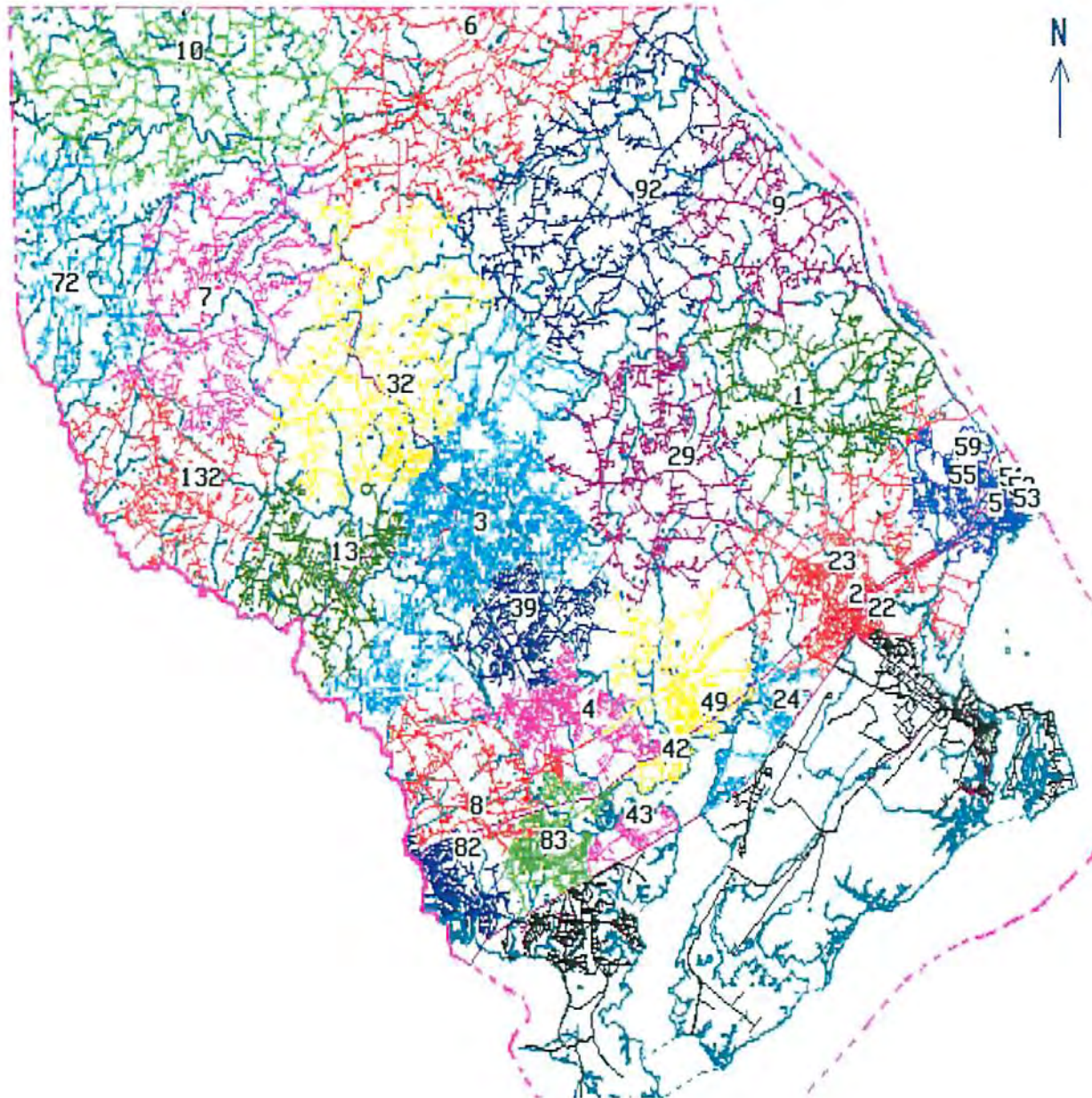
Projected Current Fire Station Response Areas w/ Fountain Green Fire Station

Figure 4.25



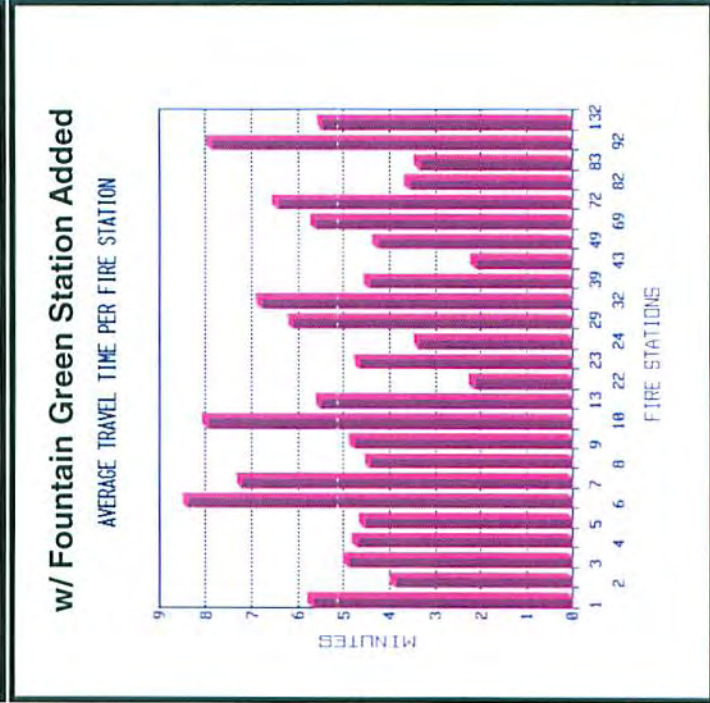
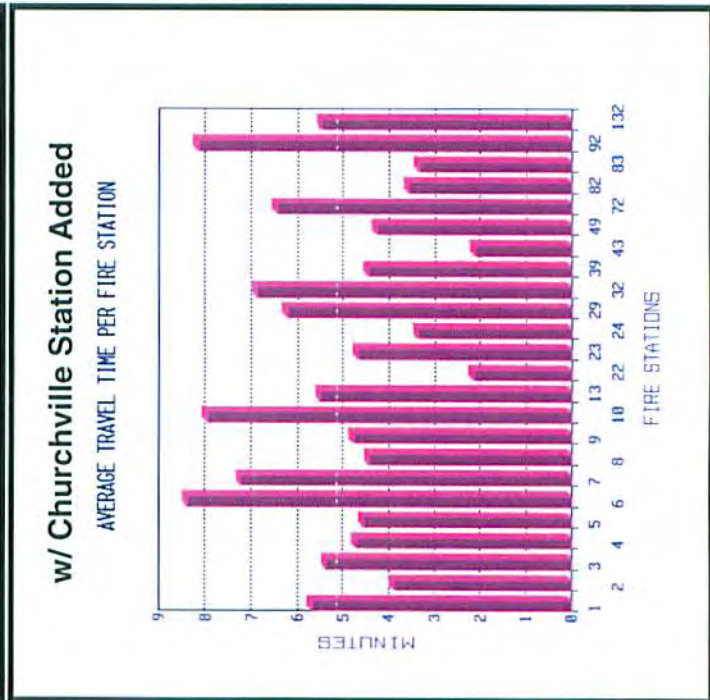
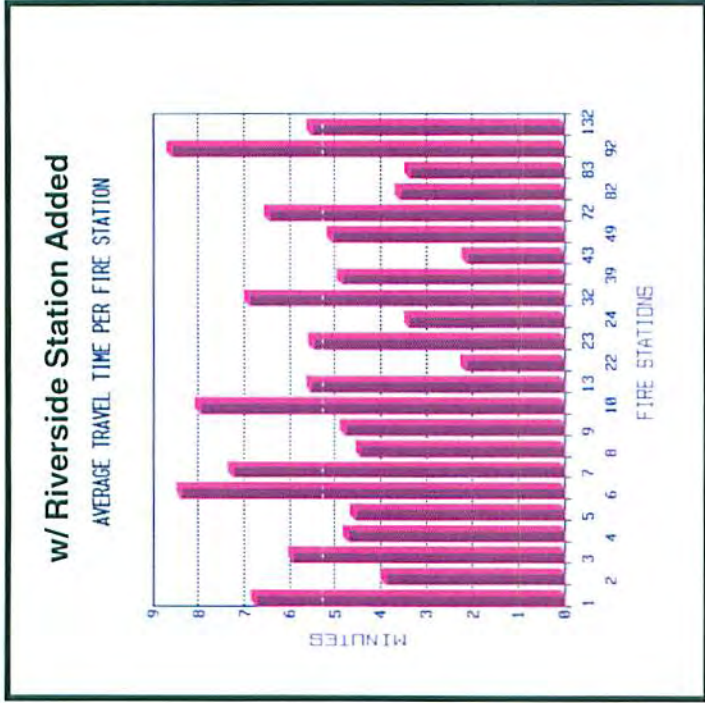
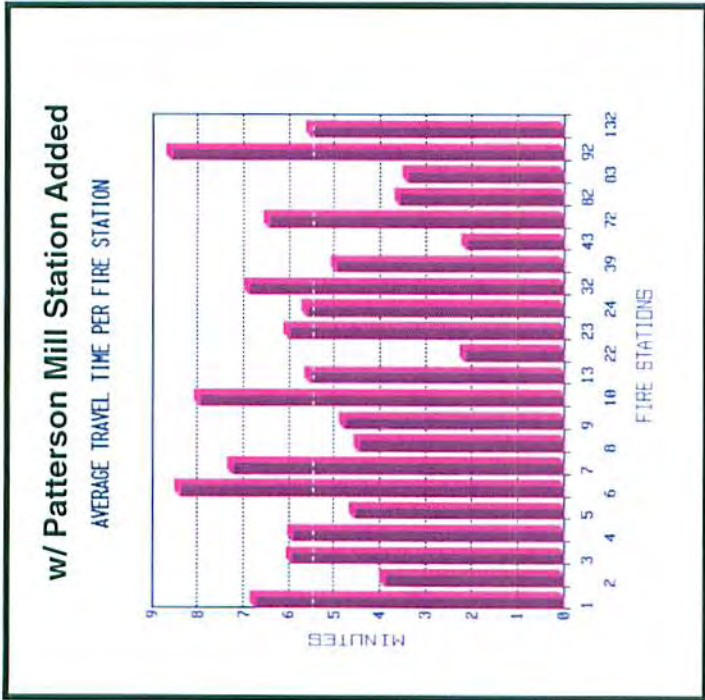
Projected Current Fire Station Response Areas w/ Churchville Fire Station

Figure 4.26



Average Travel Time

Figure 4.27



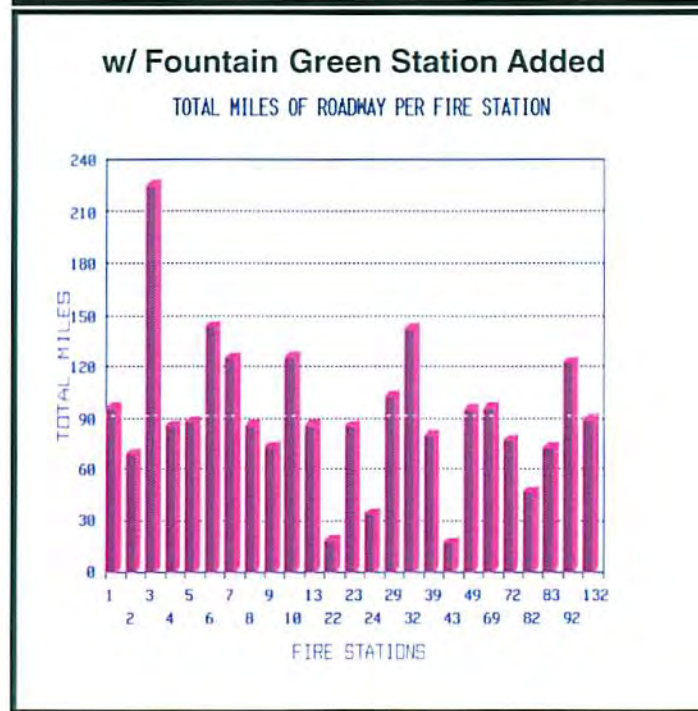
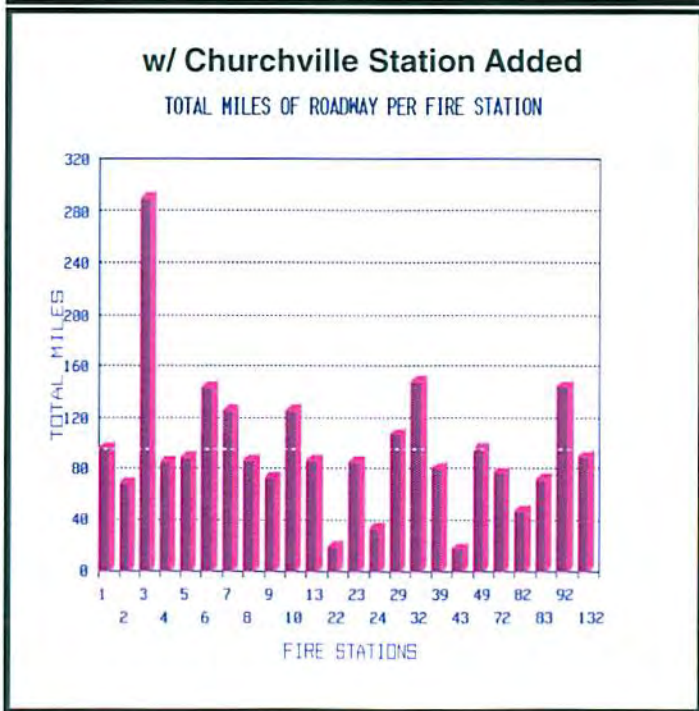
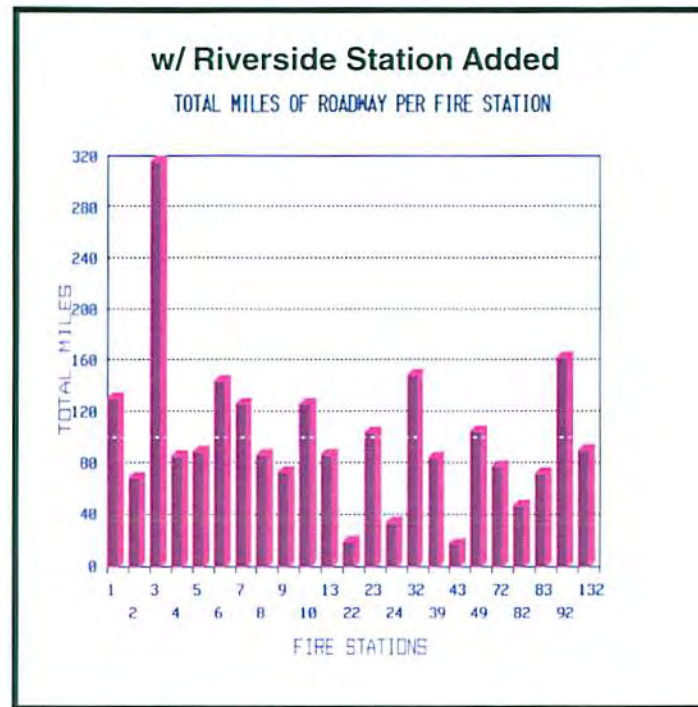
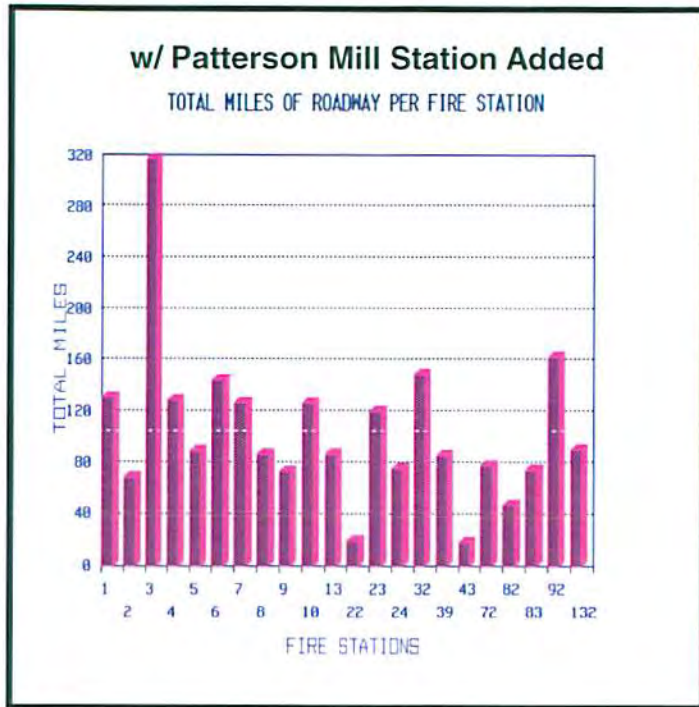
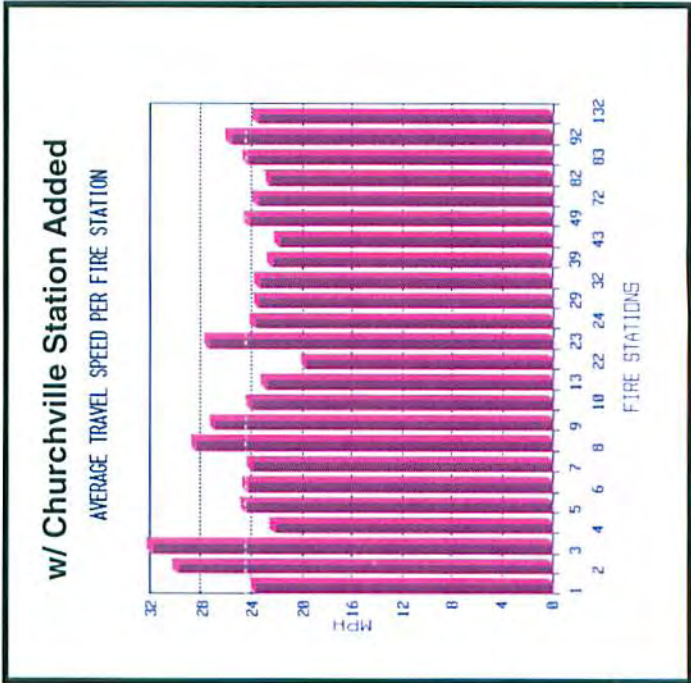
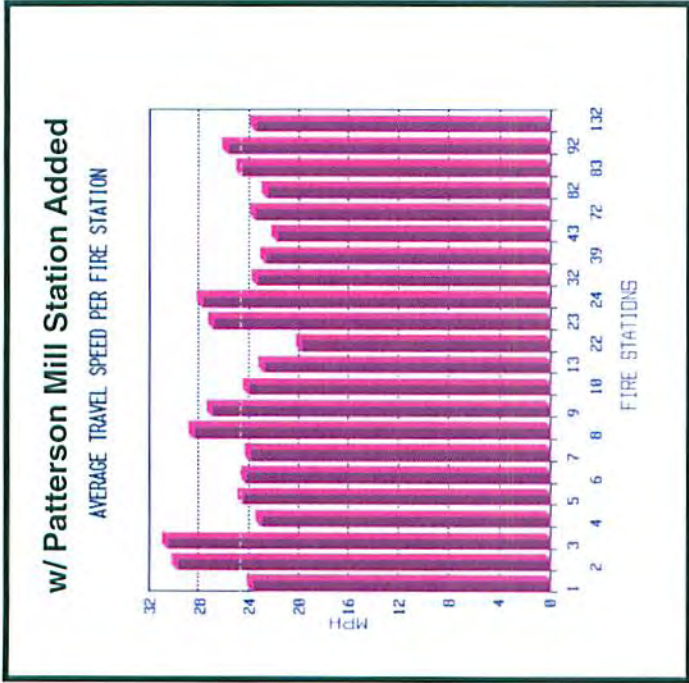
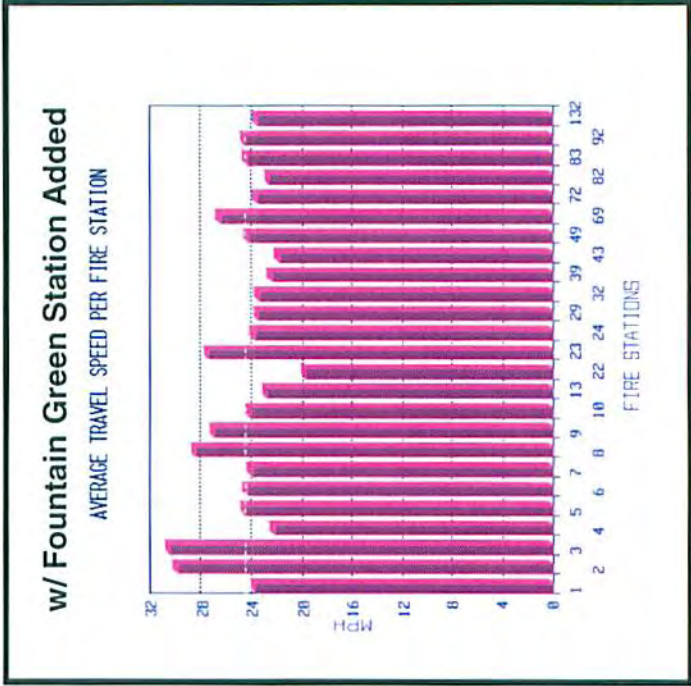
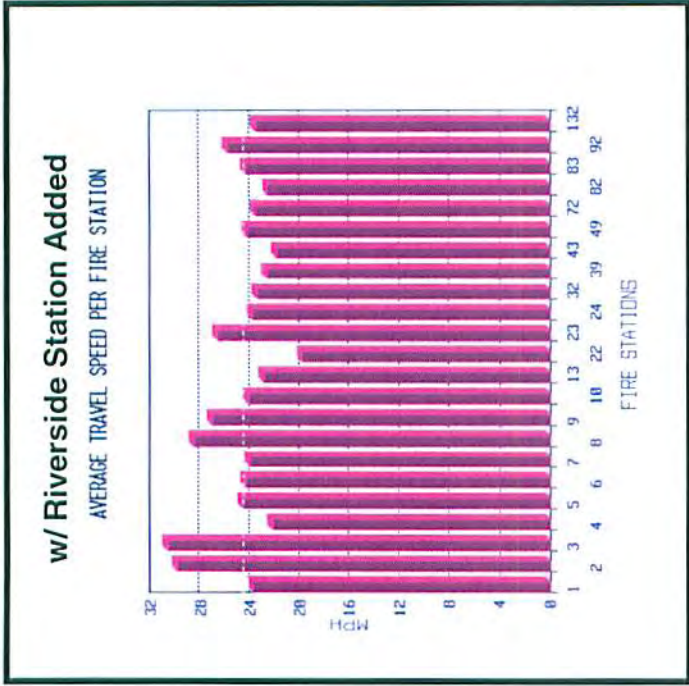


Figure 4.28

**Total
Miles
of
Roadway**

Average Travel Speed

Figure 4.29



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

locations are needed to assure rapid deployment to minimize and terminate routine emergencies. Beyond the location of resources a key issue in the delivery of fire and EMS services relates to reliability and utilization of resources, which is rather complex. Reliability and the measurement of resource use are especially important in cities and counties that have and/or are facing continued growth.

Reliability of fire resources, response and use is also particularly important in volunteer-staffed fire services systems serving large well-populated municipalities. Volunteer recruitment and retention by fire services provider agencies may have its “ups and downs” in terms of availability and reliability from one day, month or year to the next. Further, economic conditions in the municipality or region involved typically impacts volunteer availability and reliability which in-turn may create fire apparatus response capability issues in a combination volunteer/paid service delivery model, such as Harford’s.

With the implementation of the paid EMS staffing of the Fire and EMS Foundation, the Harford County Fire and EMS Services became a “combination” volunteer/paid services delivery model. Based on the input from Harford service providers it seems to be understood that paid firefighters and officers are needed in Harford to assure the reliability of the provision of services.

For the future, the input from the members to the Study Team was a nearly-unanimous opinion is that when paid firefighting staff are implemented they should be housed in separate fire and EMS stations rather than integrated with volunteer staff at volunteer fire stations. This is the Baltimore County approach to the station deployment of volunteer and paid members. The Study Team agrees and suggests that the separate station, or non-integrated model, be implement in Harford County.

It is important when implementing paid staffing in an established fire and EMS system with substantial volunteer staffing, such as in Harford County, that selective paid station



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

placement be accomplished in a manner to support and supplement the existing volunteer resources by placing paid stations amongst the various existing volunteer fire stations in a manner to provide an important service response reliability factor. For Harford County this is particularly important as it relates to providing consistent and reliable fire services response in and around the Development Envelope areas.

With the potential implementation of the four suggested new stations, Harford County and its Fire and EMS Services have the opportunity to substantially upgrade the consistency and reliability of emergency service response. For that reason the Study Team suggests that at a minimum three of the new suggested fire stations be planned as paid-staffed fire and EMS stations. Consideration should be given to implementing the new Patterson Mill, Riverside and Fountain Green fire and EMS stations with paid firefighters and officers.

Fire/Ambulance Station Site Selection Criteria

In the experiences of the Study Team, fire and EMS station sites are selected based on a number of criteria that should be considered, including the following:

1. Geographic layout of the area of the community to be served;
2. Location of primary roadway arteries;
3. Traffic patterns and related issues, known traffic bottlenecks;
4. Emergency apparatus response experience;
5. Impact on the community;
6. Response time data and projections;
7. Impact on response areas;
8. Sites available;
9. Size and topography of available sites;
10. Location of major intersections;



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

11. Location of possible response barriers, including railroad lines, drawbridges, creeks, rivers and flood prone areas;
12. Projected construction costs; and,
13. Location of one-way streets.

In selecting specific sites for future Harford fire and EMS stations consideration should be given to these selection criteria.

BUNKROOM PROJECT

Providing bunkroom space for volunteers may have a direct impact on the ability of each fire, rescue and EMS company to respond immediately with apparatus that is adequately staffed. The availability of bunkroom space for “live-in” volunteers, as well as volunteers on overnight standby status, is an essential element to encourage the volunteers to remain at the fire station and be available to respond on apparatus.

In the experience of the Study Team who have lived in fire and EMS station bunkrooms and managed and assessed volunteer agencies with successful service delivery records, the design and condition of the station bunkroom and related facilities is very important. State-of-the-art station bunkrooms and facilities that encourage volunteers to sleep at the station periodically or live-in the station for extended periods of time include many of the following features and components:

1. Comfortable full-size substantial single beds;
2. Quality mattresses and bedding;
3. Separate men’s and women’s bunkroom areas;
4. Privacy bunk area partitions;
5. Shower facilities;
6. Locker room facilities;



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

7. High quality HVAC systems and air w/ separate controls in each area;
8. Separately assignable bunkrooms for live-ins;
9. Appropriate call alerting systems;
10. Upgraded kitchen and eating areas;
11. Separate refrigerator/freezer appliances for live-ins;
12. Library study areas;
13. Computer room area;
14. Adequate TV & lounge areas; and,
15. Proper oversight and rules for bunkroom and facility use.

These and other bunkroom-related features should be considered in planning improvements to Harford County stations to enhance volunteer participation and interest in spending increased time at the station—an important goal in providing immediate apparatus response from the fire, rescue and EMS station.

A priority should be placed on assessing the current bunkroom facilities at all Harford County fire stations and providing funding to expand/enhance those important areas. The provision of bunkroom facilities in all fire stations for volunteer utilization is, in the view of the Study Team, of critical importance to the future of the volunteer nature of the Harford County fire and EMS delivery of services.

IMPACT OF FACILITIES ON VOLUNTEER STAFFING

As previously discussed in this report, all fire, rescue and EMS service provision by Harford County fire, rescue and EMS departments is accomplished by professional volunteer personnel. Harford County officials, residents and business owner/operators are fortunate to have such dedicated volunteers providing these valuable emergency services.

Through the years, the Study Team has noted that the condition of the apparatus and station facilities has an impact on the level of volunteerism in many fire, rescue and EMS services.



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

It should not be surprising to know that up-to-date apparatus, equipment and station facilities have a very positive impact on volunteer recruitment and retention. Volunteer staff tend to spend more time at the stations if the facilities and apparatus are in good condition. There seems to be more of a desire on the part of people to spend time in and around newer facilities and equipment than would be the case if the facilities and apparatus were old and not well maintained. Many volunteer fire, rescue and EMS organizations have found that a new, or newly renovated, station facility is a very good recruitment and retention tool.

Harford County is encouraged to consider this potential impact on volunteer recruitment and retention as requests for station and apparatus upgrades are reviewed in the future. The Study Team noted that significant facility upgrades have been accomplished in the past through Harford County support and hard work by the volunteer departments. The County and fire, rescue and EMS service providers should be commended for these past accomplishments. The County and volunteer service providers are encouraged to continue this joint effort, as appropriate, in the future.

PREEMPTIVE TRAFFIC CONTROL DEVICES

National experience has shown that travel time may be lessened as a result of installation of traffic control preemption devices.

The Study Team noted that Opticom Traffic Control System equipment has been installed or planned for a number of intersections controlled by traffic lights in the County to include a number in Bel Air and Abingdon areas . This approach to expediting emergency vehicles is a progressive program by the State and/or County. **The State and/or County and Fire and EMS Services should be complimented for this outstanding system of expediting emergency vehicles. There are a myriad of safety benefits from the Opticom system, both for the firefighters and the public.**



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

The Opticom system provides the means for switching red or yellow traffic lights to green. Studies have shown that the Opticom system provides for a safer and more timely response by fire apparatus; moreover, the Opticom system has reduced travel time from 8 to 16 percent in municipalities that have implemented the system.

Figure 4.30 illustrates the primary roadways in the County with heavy traffic and shows the estimated daily traffic on selected roadways in the more developed areas of the County. The amount of traffic and fire and EMS apparatus response on these various roadways should be considered in establishing a prioritized list of intersections where traffic light preemption equipment should be installed.

Harford County should pursue continuing the process of installing Opticom equipment for the Harford County Fire and EMS service providers.

STATION NUMBERING APPROACH

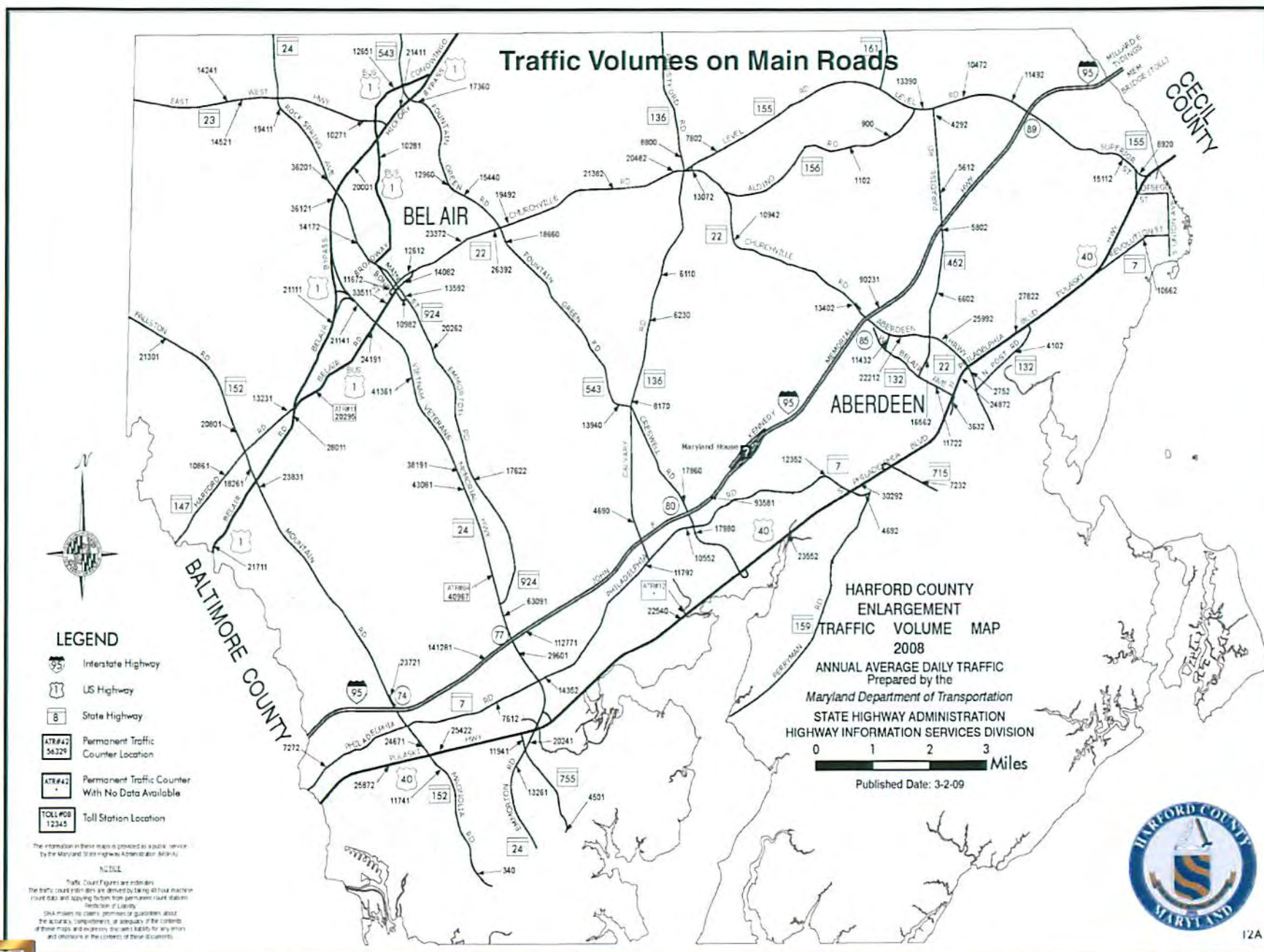
The fire and EMS station numbering approach used in Harford County does not seem to involve a sequential numbering approach.

The station and unit verbal designation approach is not sequential and appears to lengthen verbal radio communications by using more words than would otherwise be needed. Examples are using the radio designations of "Tower three-thirty-one", Truck eight-thirty-one and "Company Four House One" instead of potentially "Tower three", "Truck eight" and "Station Four".

Many Harford fire and EMS members expressed concern regarding the amount of time the 9-1-1 call taking and emergency dispatch process seems to take. In the opinion of the Study Team there may be a number of causes for longer than necessary communications processes.



Figure 4.30



FIRE AND RESCUE STATIONS

FUTURE FIRE STATION NEEDS (Continued)

One of the causes seems to be unnecessarily verbose communications policies and procedures, including station and unit designations.

In conducting the GIS response time analysis previously described, the Study Team utilized a station numbering system that essentially built on the company numbering system. The Harford Fire and Rescue Services may wish to adopt this or another similar numerically sequenced station numbering approach to simplify the numbering system while at the same time potentially significantly reducing the length of radio transmission time when units from the various stations are transmitting or being transmitted to during emergency and non-emergency radio communications.

SUMMARY

The location of station facilities is a key element in the level of fire protection, rescue and EMS service. The decision to build a new station or relocate an existing one has many components other than its location. While computerized programs can assist officials in making decisions relative to station location, there is no magic formula for determining the location of fire/rescue stations. The final determinations require human-based consideration of many factors.

One key consideration in determining a fire, rescue and EMS station location for fire-related services is the maximum total response time (travel and turnout time) which is acceptable. In fires, response time should be kept short enough to ensure that the total average time does not exceed the six- to nine-minute flashover time.

The availability and assessment of detailed response time data is an essential part of the process of analyzing the adequacy of the service. A reduction in actual response times to emergency incidents is a measurable improvement in service being delivered. For that reason, assessment of response time is not only an essential component of fire, rescue and EMS



FIRE AND RESCUE STATIONS

SUMMARY (continued)

station location determination, it is an important ongoing function of fire and EMS management and operations. For the future, Harford County fire, rescue and EMS service providers should participate in the review and analysis of their response times; the goal should be to reduce response times, to the extent possible

Fire, rescue and EMS services in Harford County have been provided from 27 stations. A review of the location of these facilities indicates a need to implement a number of additional fire and EMS stations in the future.

The condition of current fire station facilities seems adequate. A priority should be placed on the development of bunkroom facilities in all Harford County fire stations to support and facilitate in-station volunteer staffing 24 hours per day.

RECOMMENDATIONS

- 4.1 The County 9-1-1 Center, Harford County, Fire and EMS Services and chiefs are encouraged to analyze response time data to determine opportunities for reducing response times.
- 4.2 The County and Fire and EMS Services should consider continuing to implement new fire and EMS station facilities including the following locations:
 - A. Patterson Mill Road;
 - B. Riverside area on MD Route 543 just north of US Route 40;
 - C. Fountain Green Road / MD Route 543 between Hickory and Fountain Green; and,
 - D. Churchville / MD Routes 22 and 136.



FIRE AND RESCUE STATIONS

RECOMMENDATIONS (continued)

- 4.3 The County, Harford County Fire and EMS services are encouraged to conduct a bunkroom facility assessment and place a priority on providing adequate upgraded bunkroom facilities in all stations to enhance staffing of fire apparatus.
- 4.4 The Fire and EMS Services are encouraged to consider re-establishing fire and EMS response areas based on projected travel times for current stations facilities now and periodically in the future as new stations are built.
- 4.5 The County and Fire and EMS Services should consider implementing the deployment and dispatch of fire and EMS resources at the station-level.
- 4.6 The Fire and EMS Services are encouraged to revise response areas to be station-based and determined initially with projected response times.
- 4.7 The County and Fire and EMS Services should implement the separate fire stations model for volunteer and paid staffing.
- 4.8 The County and Fire and EMS Services are encouraged to pursue the implementation of OPTICOM traffic light control devices for traffic lights controlling high traffic roadways in the County.
- 4.9 The Fire and EMS Services are encouraged to implement a sequential station numbering system with related changes to apparatus and station designation changes.
- 4.10 Harford County is encouraged to consider the approval of capital station requests from the Fire and EMS Services as important tools in the recruitment and retention of their volunteer service provider staffs.



CHAPTER FIVE

FIRE AND EMS APPARATUS

This Chapter provides a review of fire and EMS apparatus, NFPA standards and general maintenance requirements, Fire and EMS Company apparatus maintenance, the current inventory of apparatus and a proposed baseline apparatus fleet and replacement schedule.

The findings and suggestions made in this Chapter relating to the apparatus fleet are based on County-wide risk and fire protection coverage considerations.

CFAI CRITERIA ON APPARATUS AND VEHICLES

The Study Team considered criteria from the Commission on Fire Accreditation International (CFAI) as the current and future apparatus needs were assessed as part of this Study.

The CFAI accreditation criteria related to fire department apparatus are as follows:

Apparatus resources are designed and purchased to be adequate to meet the agency's goals and objectives.

- A. Apparatus is located to accomplish the stated standards of response coverage and service level objectives.
- B. Apparatus types are appropriate for the functions served, i.e. operations, staff support services, specialized services and administration.
- C. There is a replacement schedule for apparatus and other tools and equipment.
- D. There is a program in place for writing apparatus replacement specifications.

The inspection, testing, preventative maintenance, replacement schedule, and emergency repair of all apparatus is well established and meets the needs for service and reliability of emergency apparatus.



FIRE AND EMS APPARATUS

CFAI APPARATUS AND EQUIPMENT (continued)

- A. The apparatus maintenance program has been established. Apparatus is maintained in accordance with manufacturer's recommendations, with the activity conducted on a regular basis. Attention is given to the safety-health-security aspects of equipment operation and maintenance.
- B. The maintenance and repair facility is provided with sufficient space and equipped with appropriate tools.
- C. A system is in place to ensure the inspection, testing, fueling, preventative maintenance and emergency repair for all fire apparatus and equipment.
- D. There are an adequate number of trained and certified maintenance personnel available to meet the objectives of the established program.
- E. There are standard procedures and methods in place for the apparatus maintenance program.
- F. There is adequate supervision to manage the program.
- G. There is a management information system in place that supports the apparatus maintenance program and provides for analysis of the program.



FIRE AND EMS APPARATUS

INPUT FROM SERVICE PROVIDERS

As a point of information to the reader, the members of the Fire and EMS Services provided input to the Study Team relating to fire and EMS apparatus, including the following:

- A. The distribution of equipment may be a bit “clumpy”;
- B. Widespread duplication of specialized equipment/apparatus;
- C. Number and type of pieces of apparatus expanding while response force/staffing decreases;
- D. There is lack of standardized types of equipment/locations on units that makes inter-operations of fire and EMS personnel difficult and time consuming;
- E. Most companies have too much apparatus for what staff they can respond with;
- F. There is too much specialized apparatus, e.g., rescue’s at companies 2, 3, 4, 5, 6 and 13, each with a large rescue, and companies 1, 7 and 9 are awaiting delivery of rescue units;
- G. We need more standardization of equipment between companies, e.g. all one SCBA and rescue equipment, for better interoperability;
- H. If a fire company wants to purchase a vehicle, they do, whether needed or not;
- I. A fire company near the PA line where it is very rural purchased a ladder truck;
- J. Companies balk at making a policy that if a company adds a service that they would first have to receive approval from the Chief Officers Committee and Trustees of the HCVFEA;
- K. Most fire companies have too much apparatus;
- L. They purchase from whom they want;
- M. Purchasing and maintenance on response equipment as well as related budgets should be handled the same for all; and,
- N. There needs to be apparatus accountability.



FIRE AND EMS APPARATUS

INPUT FROM SERVICE PROVIDERS (Continued)

Input points considered relevant to this Study were considered by the Study Team in the development of this Plan.

APPARATUS DESCRIPTIONS

Some readers may not be familiar with the differences in the primary types of apparatus, therefore, a review is provided.

There are four basic types of fire and EMS apparatus:

1. Pumpers deliver water from an internal tank, pressurized public system, or static source (river or pond) to the fire scene;
2. Aerial devices are vehicles with long extension ladders or platforms;
3. Specialized rescue trucks are equipped to remove individuals from vehicles, underground entrapment, high locations, entanglement in machinery, and difficult transportation accidents; and,
4. EMS transport units are ambulances with basic and advanced life support supplies and equipment.

In addition, a single vehicle can include a number of these functions. For example, a pumper and ladder truck can be on a single chassis—referred to as a “quint.” Further, a pumper or ladder truck, properly equipped with specialized vehicle extrication and rescue equipment, may provide both firefighting and extrication/rescue service—typically referred to as a rescue-pumper or rescue-truck. Combination units of these types are often utilized to attain the maximum service delivery capability with a limited number of available staff and funding constraints.



FIRE AND EMS APPARATUS

APPARATUS DESCRIPTIONS (continued)

Pumpers

To deliver water to the fire scene, a pumper must connect to a water source and function to develop pressure into the hose lines. The amount of water which a pumper delivers is measured in gallons per minute (gpm). The smallest size pumper currently made is 500 gpm, while the largest standard pumper is 2,000 gpm.

Pumpers also carry various size hoses and nozzles to get the water to the scene and apply it to the fire. In addition, the amount of water flowing determines the number of personnel at the incident who are required to stretch the hose line/s. There are large flow devices known as master stream nozzles which require a large number of personnel to set up, and a few individuals to see that the flow continues.

Aerial Devices

Aerial devices carry an elevating ladder or basket, which extends normally to at least 75 feet in length with a maximum height of 200 feet. A ladder truck has an extension ladder fixed to the chassis, while a platform has a basket which can extend from ground level to its maximum height. Several manufacturers also make a combination of a platform and a ladder truck.

In addition to the fixed extension device, ladder trucks also carry fixed and extension ladders in varying lengths (12, 14, 20, 24, 28, 35, 40 and 50 feet). Responsibilities of personnel assigned to this type of apparatus might require that entry, ventilation, and salvage equipment also be carried.



FIRE AND EMS APPARATUS

APPARATUS DESCRIPTIONS (continued)

Rescue/Extrication Apparatus

Emergency services providers become involved with the rescue of individuals in very difficult situations. These rescues can involve heights, below-grade problems, entanglements in machinery, entrapment in vehicles, and exposure to chemicals. Each of these problems require that specialized equipment be carried. The type of apparatus and equipment will vary with the specific needs of a municipality.

EMS Transport Units

Fire and EMS Companies that provide EMS transport service operate ambulances that are equipped with basic and advanced life support supplies and equipment. These units respond to the scene of EMS incidents, support the provision of the appropriate level of EMS care, and, as necessary, are used to transport one or more patients to the appropriate care facility or air transfer unit.

FUNCTIONS OF PRIMARY FIRE APPARATUS

It is important for the reader to understand the functions of the various types of fire apparatus since the personnel on each different type of vehicular apparatus must perform different functions at an emergency fire incident in order for the incident to be handled in a timely, safe, efficient and successful manner. For this reason, the functions typically performed by each type of fire apparatus is discussed in this section.

It should be understood that, in the absence of the normal type of apparatus (pumper, ladder, rescue and ambulances, etc.), each unit may perform other essential functions to accomplish the overall objectives of the incident at hand. However, emergency incidents are mitigated in a much more timely, safe, efficient and successful manner when the appropriate number and type of apparatus and personnel are dispatched.



FIRE AND EMS APPARATUS

FUNCTIONS OF PRIMARY FIRE APPARATUS (continued)

Pumpers/Engines

Pumper apparatus has essentially one function: the delivery of water to the fire. Despite many technological advances in the fire rescue field, fire departments still extinguish nearly all fires with water. Therefore, the function of the pumper apparatus and the staff on each pumper is to carry, deliver, and put water on the fire. Pumpers assume the tasks of taking water from available sources and applying it to the fire. In addition to pumps, pumpers carry hoses and nozzles of various types and sizes and other related equipment.

Ladder Trucks

Even in the early days of American firefighting, the personnel assigned to apply water to the fire were separated from those needed to perform the various other duties required on the fireground. Other primary units, designated “hook and ladder” companies, were assigned the remaining firefighting jobs. Today, the other primary firefighting units are referred to as ladder companies or truck companies.

Regardless of the name or designation, the duties are generally the same in all fire departments. Ladder truck companies perform all of the functions necessary to the extinguishment of the fire in support of the pumpers. In summary, the job of the ladder truck is to perform rescue, overhaul, ventilation, entry, and reconnaissance.

Ladder truck duties can be itemized as follows:

- Opening locked doors to permit entry for search, rescue ventilation, and application of water;
- Opening windows, skylights, doors, and other coverings to allow the escape of smoke, heat, and fire gasses;



FIRE AND EMS APPARATUS

FUNCTIONS OF PRIMARY FIRE APPARATUS (continued)

- Cutting holes in the roof of the fire building to speed the escape of heat, smoke, and fire gasses;
- Using smoke ejectors to aid in the ventilation described in the first two items above;
- Searching for persons overcome by smoke or otherwise in need of assistance;
- Removing persons in danger to safety;
- Searching for extension of the fire;
- Opening partitions, ceiling, etc., to allow engine companies to put water on the fire in concealed spaces
- Raising ladders when needed to accomplish all of the above items and to allow engine companies to take hose lines to upper floors;
- Overhauling, i.e., opening ceiling, walls, floors, and examining burned furniture, stock, and other contents of the premises to make certain the fire is completely extinguished, and restoring the occupancy to a condition as reasonably close to its pre-fire status as circumstances allow; and,
- Performing salvage duties to minimize loss by removing furniture and goods from a building on fire, or threatened by fire.

These are essential tasks that are critical to the extinguishment of fires and must be performed many times in support of and at the same time that water is being used by the pumper crew to suppress the fire.



FIRE AND EMS APPARATUS

NATIONAL FIRE PROTECTION ASSOCIATION

There are a number of standards and guidelines that apply to fire and rescue vehicular apparatus; most developed through a standards development and approval process by various committees of the National Fire Protection Association (NFPA).

As an example, Standard 1901 specifies the design, equipping, and testing of fire apparatus. The ISO grading schedule references this standard and requires the apparatus and equipment in a fire department be tested yearly and proper records of the tests be maintained.

NFPA 1901 requires that pumpers be tested from draft (pond, tank, lake) and meet the levels of performance detailed in Figure 5.1:

Figure 5.1
PUMPER TESTING REQUIREMENTS - NFPA 1901

PUMP FLOW (GPM)	DURATION OF FLOW (minutes)	NET PUMP PRESSURE (PSI)
100% of Capacity	20	150
70% of Capacity	10	200
50% of Capacity	10	250
100% of Capacity	5	165

Another required test is the dry prime measurement. This procedure requires that all valves and drains be closed, the primer operated until a reading of 22 inches of mercury is obtained on the master intake gauge, and the motor is shut down. At the end of 10 minutes, this gauge must still read at least 12 inches of mercury.

The calculations for net pump pressure necessary for conducting the tests, the test layout, the test equipment, and the test procedure can be found in a number of fire service text books



FIRE AND EMS APPARATUS

NATIONAL FIRE PROTECTION ASSOCIATION (continued)

including *Fire Service Pump Operators Handbook* by the late Chief Warren E. Isman (a fire chief in Maryland and Virginia, as well as a former CBI fire/rescue consultant).

This is one example of a number of NFPA apparatus-related standards that apply to the design, maintenance and testing of the various types of fire and rescue apparatus. The following other NFPA standards are to be used as the basis of testing the different types of fire apparatus:

- A. NFPA 1901, Standard for Pumper Fire Apparatus;
- B. NFPA 1904, Standard for Aerial Ladder and Elevating Platform Fire Apparatus;
- C. NFPA 1911, Standard for Service Tests of Pumps on Fire Department Apparatus;
- D. NFPA 1914, Standard for Testing Fire Department Aerial Devices;
- E. NFPA 1932, Standard on Use, Maintenance, and Service Testing of Fire Department Ground Ladders;
- F. NFPA 1914, Standard for Fire Apparatus Refurbishing; and,
- G. NFPA 1915, Standard for Fire Apparatus Preventative Maintenance.



FIRE AND EMS APPARATUS

APPARATUS MAINTENANCE

Both the ISO grading schedule and the various NFPA standards require that a complete repair and preventive maintenance program be in place. Items that need to be included in such a program are:

Pump

- Clearance rings
- Packing
- Primer oil reservoir
- Primer rotary vane or gear clearance
- Impeller balance
- Impeller waterway clearance
- Valve gaskets and controls
- Transfer valve changeover equipment
- Gauges for accuracy, needle deflection, and fluid levels
- Relief valve equipment
- Clean intake screens

Chassis

- Braking system
- Air brake adjustment and air reservoir system
- Tire pressure
- Tire tread
- Springs
- Lubrication points
- Steering linkages
- Attachment points
- Clutch linkages



FIRE AND EMS APPARATUS

APPARATUS MAINTENANCE (continued)

- Gear boxes and pump transfer case

Engine

- Engine oil and filter
- Transmission oil
- Coolant condition
- Coolant fluid level
- Auxiliary cooling equipment
- Leaks from any lines
- Radiator and cooling system
- Engine oil
- Transmission oil
- Belts
- Joints, flanges, and hose condition
- Electrical system
- Battery fluid level
- Battery connection
- Alternator

Cab

- Switches and gauges
- Warning devices
- Safety equipment
- Horns
- Windshield wipers and washers
- Parking brake
- Inside lights



FIRE AND EMS APPARATUS

APPARATUS MAINTENANCE (continued)

- Outside lights, including high beams
- Back-up lights and audible warning device
- Rust or worn parts on the cab or cabinetry

Ladders and Trucks

- Hydraulic level in the system
- Leaks in the hydraulic system
- Condition of the hydraulic lines
- Operation of the controlling valves
- Extension, elevation, rotation
- Ladder locks
- Hydraulic closure systems
- Manual override systems
- Cracks in ladder and base
- Remote starter device
- Pressure gauges

Maintenance work covering these items that must be performed on typical fire apparatus is illustrated for the reader to have an understanding of the complexity and extensive maintenance requirements of this type of specialty vehicular apparatus. Most general fleet maintenance staffs are not trained or experienced to handle the extent of this type of work.

Fire Apparatus Preventative Maintenance

An important part of any apparatus maintenance program is the preventative maintenance component. Typically, fire and EMS vehicular apparatus preventative maintenance programs include the following aspects:



FIRE AND EMS APPARATUS

APPARATUS MAINTENANCE (continued)

1. Process for checking and inspecting apparatus, daily, weekly and monthly;
2. Approach for reporting deficiencies and problems determined during the checking and inspection process;
3. A knowledgeable individual to manage and oversee the effort;
4. An established list of criteria for placing units out of service;
5. A schedule for the conduct of actual preventative maintenance and repairs;
6. Qualified/interested members to conduct the preventative maintenance and repairs; and,
7. Systematic method for keeping maintenance records for the life of each unit in the fleet.

A preventative maintenance program would include checking/replacing/repairing such items as:

1. Light bulbs;
2. Fan belts;
3. Lubricants, including oil;
4. Filters;
5. Pump packing;
6. Water levels; and,
7. Air pressure.

A preventative maintenance program would also include annual testing of apparatus functional elements, e.g., water pumps, aerial ladders/towers and small tools and equipment (powered and non-powered) including extension and other ladders.



FIRE AND EMS APPARATUS

APPARATUS MAINTENANCE (continued)

Apparatus Fleet Maintenance Programs in Harford

The Study Team was advised that each Fire and EMS Company in Harford County determines the maintenance approach to be used to provide the necessary maintenance for their vehicular apparatus. Generally, the procedures involve:

- A. Routine preventative maintenance and limited basic repairs performed in the station by volunteer personnel or by local shops; and/or,
- B. Maintenance and repair work generally performed by contractors for the individual agency.

The vehicular apparatus operated by the Fire and EMS Companies appear to be generally in good repair and well-maintained. The volunteer personnel obviously take pride in the appearance and condition of their apparatus.

Several Fire and EMS Companies are fortunate to have one or more qualified members who may serve in chief engineer or assistant chief engineer capacities to provide apparatus and equipment maintenance. In this case, these individuals may be responsible for conducting vehicle inspections and minor repairs (e.g. light bulbs, cracked lenses, etc.) and preventative maintenance items such as oil changes.

Other Fire and EMS Companies may not have members qualified and/or interested in being responsible for performing preventative apparatus maintenance given the complexity of such unit. In that eventuality Harford County is encouraged to arrange for in-station apparatus preventative maintenance by either qualified vendor/s or County staff in support of the volunteer service providers.



FIRE AND EMS APPARATUS

APPARATUS MAINTENANCE (continued)

Additionally, the Companies are fortunate that a number of apparatus maintenance shops operate in the Harford County and Baltimore/Washington D.C. areas. These facilities are utilized by some of the Fire and EMS Companies.

Harford County provides funding that the Fire and EMS Companies that may be used for apparatus maintenance in the yearly allocation to each Company. In a previous chapter of this Study report the Study Team recommended that the County fund the Fire and EMS Companies based on need. Therefore, it is suggested that the County fund apparatus maintenance costs for the Companies based on justified need.

Maintenance Records for Apparatus

Keeping detailed records of all maintenance work performed on vehicular apparatus is an essential function that needs to be performed for the life of each vehicle. Such records help to document work performed, costs and repeated problems. Well kept maintenance records may assist in identifying potentially serious mechanical and safety problems to assist with accident avoidance and in determining the relative condition of apparatus for consideration when the replacement schedule indicates replacement.

Reportedly, apparatus maintenance records are kept to varying degrees using different approaches by the Fire and EMS Companies. A consistent, preferably computer-based, apparatus maintenance approach should be implemented County-wide as part of the recommended fire and EMS records management system.



FIRE AND EMS APPARATUS

CURRENT APPARATUS INVENTORY

The following figures provide specific information reported to the Study Team regarding the current inventory of fire and EMS motorized vehicular apparatus at each of the fire Companies stations in Harford County. Figure 5.2 reflects the Fire and EMS Company non-EMS apparatus fleet inventory.

Figure 5.2
PRIMARY APPARATUS INVENTORY
FIRE VEHICLES

COMPANY	STA	PUMP	LDDER TRUCK	RESC TRCK	TNKR	BRSH UNIT	BOAT	UTIL	SPCL	CHIEF	TOTAL
Co 1 - Level	1	3			1	1		1	1	1	9
Co 2 - Aberdeen	4	5	1	1		1	1	1			14
Co 3 - Bel Air	2	5	2	1		2	3	2	1	4	22
Co 4 - Abingdon	3	3	1	1		1		2		3	14
Co 5 - Susquehanna	5	5	1	1		1		3	2	4	22
Co 6 - Whiteford	1	2	1	1		1		3	3	3	15
Co 7 - Jarrettsville	2	4				2		3	2	1	14
Co 8 - Joppa	3	4	1			1				4	13
Co 9 - Darlington	2	3				1	2	1	2	3	14
Co 10 - Norrisville	1	2		1	1	1			1	2	9
Co 13 - Fallston	2	2	1	1	1	1		1	1	3	13
TOTAL	26	38	8	7	3	13	6	17	13	28	159

Source: Harford County Volunteer Fire and EMS Association.

The primary EMS vehicle fleet is illustrated in Figure 5.3.



FIRE AND EMS APPARATUS

CURRENT APPARATUS INVENTORY (continued)

Figure 5.3
PRIMARY APPARATUS INVENTORY
EMS VEHICLES

COMPANY	STA	AMBULANCES	EMS CHASE	EMS UTILITY	EMS CHIEF	TOTAL
Co 1 - Level	1	2	1			3
Co 2 - Aberdeen	4	2		1		3
Co 3 - Bel Air	2	3	1		1	5
Co 4 - Abingdon	3	3	1		1	5
Co 5-9 - Havre de Grace	1	2	3	1	2	8
Co 6 - Whiteford	1	2	1			3
Co 7 - Jarrettsville	2	2	1			3
Co 8 - Joppa	3	3	3		1	7
Co 9 - Darlington	2	2	1			3
Co 10 - Norrisville	1	1	1			2
Co 13 - Fallston	2	2	1		1	4
Foundation			2			2
TOTAL	22	24	16	2	6	48

Source: Harford County Volunteer Fire and EMS Association.

This apparatus fleet inventory listing reflects the status as of April, 2009. It is understood that some Fire and EMS fleet changes could have been made since that date due to mechanical or unit replacement or refurbishing actions. The Study Team has been advised by Harford officials that the basic inventory of apparatus remains as listed.



FIRE AND EMS APPARATUS

BASELINE APPARATUS FLEET OPTIONS

This proposal envisions a baseline apparatus fleet that could eventually be funded by the County as part of the suggest budgeting of tax fund expenditures based on need, as outlined in Chapter Two, Organization and Administration. Additions to this baseline fleet could be determined and funded by the Fire and EMS Companies, at their discretion. Of course, the County could also choose to adjust the proposed baseline fleet as part of their respective capital budget programs. The baseline fleet envisioned by the Study Team is summarized as follows:

Retaining in the fleet that apparatus justified by workload, nature of geographic area covered in the County and which can reasonably be staffed by available volunteer personnel.

For current and near future (10 years) apparatus needs, the following is suggested:

1. Two Class A pumpers each for fire station;
2. Seven aerial ladder/tower trucks in the County at their current locations, except for Whiteford;
3. Six heavy rescue squads located at stations to be determined;
4. Four tankers located strategically;
5. Two ambulance transport units at each Fire and EMS station;
6. Three ambulance transport units for Companies 3, 4, and 8;
7. Two ALS chase vehicles to be operated in north County
8. A primary brush unit for each fire station (1,2, 3, 5, 6 and 7) with DNR units assigned as available;
9. A utility vehicle for each Fire and EMS Company;
10. A chief's vehicle and a command vehicle for each Fire and EMS Company;
11. Reserve apparatus requirements determined on the basis of one reserve unit per each 4-6 in service units, depending on the extent of the maintenance program and age of the in-service units;



FIRE AND EMS APPARATUS

FUTURE BASELINE APPARATUS FLEET (continued)

12. Paid staffed stations to include an engine and ALS ambulance with a paid staffed ladder truck at the suggested Riverside station;

This suggested baseline fleet of apparatus is projected to meet both the current and future apparatus requirements based on projected future workload and growth and development.

Tax Funding by Harford County

It is suggested that the County fund the replacement, insurance, fuel and maintenance for the suggested baseline apparatus vehicles outlined in the previous section.

If the volunteer involvement in service delivery drops significantly County-wide or in one or more fire and/or EMS company, this suggested baseline apparatus fleet could be reduced as service delivery is provided by paid staffing complement. This eventuality would be dependent upon the volunteer component of the Harford County service providers. Periodically, a reassessment should be made in order to determine any related fleet adjustments that could be needed.

APPARATUS LIFE EXPECTANCY & REPLACEMENT

In reviewing the age of Fire and EMS apparatus listed previously, the Study Team noted some first-line and a number of secondary pieces of apparatus that are beyond the normal expected life of these types of vehicles. Further, it was noted that a number of vehicles have accrued higher mileage than normally seen by the Study Team in other planning efforts. As apparatus becomes older, it not only becomes more of a maintenance liability as costs of maintenance increases, but, it also becomes increasingly unreliable and potentially accident prone.



FIRE AND EMS APPARATUS

APPARATUS REPLACEMENT SCHEDULE (Continued)

To avoid these types of problems, and, especially to assure reliability, many municipalities and fire and rescue departments **nationally** have adopted and follow apparatus replacement plans for unit replacement.

Proposed 20-Year Apparatus Replacement Schedule

There are a number of national fire apparatus organizations that have promulgated suggested replacement schedules for fire and EMS apparatus, including the National Association of Emergency Vehicle Technicians (NAEVT), Fire Department Safety Officers Association (FDSOA) and the Fire Apparatus Manufacturer's Association (FAMA). FAMA developed the Fire Apparatus Duty Cycle White Paper that was produced in 2004. That publication was an in-depth analysis of many aspects of apparatus replacement, including the key factors that may influence typical apparatus replacement schedules, including:

1. Type of department;
2. Fire department workload;
3. Population served;
4. Demographics served; and,
5. Topography of region served.

The replacement schedule suggested by the Study Team takes into consideration a number of printed documents from national organizations, including FAMA and the Study Team's apparatus fleet replacement schedule development experience.

The apparatus replacement schedule suggested by the Study Team is as follows:

Ambulances

Type I - Medium Duty Chassis: Replacement on an 8-year service life cycle.



FIRE AND EMS APPARATUS

APPARATUS REPLACEMENT SCHEDULE (Continued)

Type III - Standard Duty Van Chassis: Replacement on a 6-year service life cycle.

Automobiles Replacement on an 8-year service life cycle.

Boat-Fire Replacement on a 20-year service life.

Boat-Inflatable Replacement on a 7-year service life.

Brush units Replacement on a 15-year service life cycle.

Command SUVs Replacement on a 6-year service life cycle.

EMS Chase Units Replacement on a 6-year service life cycle.

Ladder Trucks Replacement on a 20-year service life cycle with rehabilitation occurring in year 10.

Mini-Pumpers Replacement on a 20-year service life cycle..

Pumpers Replacement of first line units on a 10-year service life cycle with
Rescue/Pumpers rehabilitation, if appropriate, during year 10 prior to placement in secondary status during year 11—a 20-year service life cycle.

Rescue Squads Replacement on a 15-year service life cycle with rehabilitation occurring in year 10.

Tankers Replacement on a 20-year service life cycle.



FIRE AND EMS APPARATUS

APPARATUS REPLACEMENT SCHEDULE (Continued)

Utility Vehicles Replacement on a 10-year service life cycle.

It should be noted that planning and decision making leading to the replacement of apparatus should begin nearly two years prior to the planned replacement year and based on either years of service or unusually poor condition of the unit. The intent is that the unit should in fact be physically replaced in the service life year. Experience has shown that it may take nearly two years to plan, obtain approval/s and take delivery of the new unit from the manufacturer.

SUMMARY

There are four basic types of fire and EMS apparatus: pumpers, aerial devices, specialized rescue trucks and ambulance transport units. These basic apparatus types may be combined, e.g., a quint that is a pumper and ladder and a pumper that may also perform rescue functions.

In Harford County, each Fire and EMS Company determines the maintenance approach to be used to provide the necessary maintenance for their vehicular apparatus. Overall, the vehicular apparatus is in good repair. The volunteer personnel seemed to take pride in the appearance and condition of their apparatus. Viewed generally, the Harford County apparatus fleet is aging with some used apparatus having been purchased. The cost and effort required to maintain an aging fleet is significantly more than that required for a number of modern pieces of apparatus.

The Fire and EMS Companies are encouraged to consider their future apparatus needs carefully. These units are costly to purchase and require a significant commitment of personnel time and effort to maintain. Another consideration in such decisions relates to the relative availability of volunteer personnel to staff the units. If staffing is not normally available there is little justification for retaining or replacing redundant apparatus.



FIRE AND EMS APPARATUS

SUMMARY (Continued)

If the County HCVFEA implements the funding approach for Fire and EMS Companies that provides tax budget funding based on need consideration should be given to County funding an appropriate baseline number of vehicular apparatus.

A comprehensive fire and rescue apparatus replacement schedule is suggested for consideration and use.

RECOMMENDATIONS

- 5.1 Harford County is encouraged to arrange for in-station apparatus preventative maintenance by either qualified vendor/s or County staff in support of the volunteer service providers.
- 5.2 The Harford County Volunteer Fire and EMS Association and Fire and EMS Companies are encourage to adopt the suggested future baseline apparatus fleet.
- 5.3 Harford County should consider funding appropriate baseline fire and EMS apparatus if the suggestion is implemented to provide tax funding to Fire and EMS Companies based on need.
- 5.4 The Harford County Volunteer Fire and EMS Association, with County support, should implement a consistent, preferably computer-based, apparatus maintenance records approach should be implemented County-wide as part of the recommended fire and EMS records management system.
- 5.5 The Harford County Volunteer Fire and EMS Association and the Fire and EMS Companies should consider adopting the suggested 20-year apparatus replacement criteria for purposes of making their capital outlay program requests to the County.



CHAPTER SIX

PERSONNEL AND STAFFING

This Chapter presents information regarding the determination of fire apparatus, firefighter utilization on apparatus and three primary staffing options. Harford County fire station and apparatus staffing and volunteer availability is reviewed. Additionally, alternative volunteer utilization and records are discussed.

Potential determination of future paid staffing needs are outlined and appropriate findings and recommendations are presented.

CFAI CRITERIA ON STAFFING

The Study Team considered criteria from the Commission on Fire Accreditation International (CFAI) as current and future staffing needs were reviewed as part of this Study.

The CFAI accreditation criteria related to fire department staffing are as follows:

“Criterion 5A: Fire Suppression”

“5A/2 There is adequate staffing to meet objectives established by the agency...”

“Criterion 5G: Emergency Medical Services”

“5G.2 There is adequate staffing to meet the agency objectives.”

These points and related details of the CFAI accreditation assessment process were considered by the Study Team as part of this effort.



PERSONNEL AND STAFFING

INPUT FROM SERVICE PROVIDERS

As a point of information to the reader, the members of the Fire and EMS Services provided input to the Study Team relating to fire and EMS staffing, including the following:

- A. I am a strong supporter of the volunteers, but can't help but think that some type of career service should be on the horizon;
- B. Several companies need supplemental (paid) staffing 24-hours per day, some need daytime and some night time;
- C. Phase in paid staffing through Foundation approach until structure in place;
- D. Immediately provide Abingdon and Joppa four paid firefighter staff 24/7 and Aberdeen two personnel 24/7 until paid stations/structure in place;
- E. Some type of career service is on the horizon;
- F. Need to supplement the struggling volunteer companies with firefighter/vehicle operators;
- G. Paid fire personnel are needed to support the fire companies to ensure sufficient adequate response of equipment and personnel 24/7; and,
- H. The County is in need of a combination paid/volunteer fire staffing system due to the volume of calls and population.

DETERMINING STAFFING NEEDS

In a career fire service, the major costs are associated with personnel. In Harford County, firefighting services are performed predominantly by volunteer personnel. In this type of system, the major costs relate to apparatus, equipment, and stations, as the staffing is accomplished by volunteer personnel. Notwithstanding the consideration of salaries, there is a need to fully and properly staff fire, rescue and EMS apparatus to ensure that an incident can be handled safely and effectively.

Depending on which of the various fire service philosophies is utilized, staffing has been justified from three individuals per piece of apparatus to as many as six. Through the years, debate has continued over crew size. The focus of this debate has been the effort by



PERSONNEL AND STAFFING

DETERMINING STAFFING (continued)

firefighting groups to develop nationally recognized standards mandating firefighting crew sizes. Such standards have yet to be established. Crew size remains a local fire department or municipal decision to allow appropriate flexibility in dealing with the local environment. Whether the crew is formed in the fire station and responds to the scene on the apparatus or is formed at the scene as personnel arrive is also a local decision.

The variables in this crew size decision process involve a number of the following considerations:

- A. Demographics of the community;
- B. Numbers of fire and EMS calls to which the units respond;
- C. Location of the fire stations and distance of travel for back-up;
- D. Availability of mutual aid;
- E. Type and age of buildings in the community;
- F. Type of manufacturing and commerce which exists within the community;
- G. Funding availability for staffing;
- H. General physical condition of firefighter personnel;
- I. Level and type of training provided to the firefighter personnel; and,
- J. Operational strategies and procedures utilized by the fire department.



PERSONNEL AND STAFFING

DETERMINING STAFFING (continued)

These are some of the key factors that should be considered by a fire department or community to determine acceptable crew size. The decision regarding acceptable apparatus crew size is critical because of its direct impact on the level of fire and rescue service provided to the public and the safety of emergency response personnel. The size of the crew determines what life/property saving evolutions (fire attack, search and rescue and/or exposure protection, or EMS service) can be performed at the emergency incident and how quickly the evolutions can be completed.

A discussion of some examples of firefighter utilization may assist the reader to understand what types of functions they must perform and the impact of the crew size.

Firefighter Utilization

One might assume that if there are three personnel on an engine or truck, all three of those personnel are available for interior fire attack when they arrive on the scene of a working fire. That perception is not accurate. Most often, the unit driver/firefighter remains with the unit to operate the pump or the aerial ladder and set up equipment to support fire fighting operations.

In a real situation, using engine company operations as an example, these are the functions initially performed by a crew of three:

Driver

1. Remains with the pumper and sets and operates the pump;
2. Develops water supply;
3. Provides equipment to part of building;
4. Relays radio communications; and,
5. Guides apparatus placement for incoming units.



PERSONNEL AND STAFFING

Officer

1. Provides initial incident command;
2. Sizes up the incident;
3. Performs circle check of building;
4. Directs crew of one in interior attack;
5. Is part of two-person interior fire attack crew;
6. Handles radio communications for crew; and,
7. Provides interior command as necessary.

Third Person

1. Lays out supply line;
2. Pulls and advances hand lines; and,
3. Begins interior fire attack with officer as crew of two.

This example presumes there are no immediate incident complexities, such as medical or rescue emergencies. A similar example could be outlined for the staffing of a ladder truck. Raising ladders for rescue requires two to three firefighters, depending upon the length of the ladder. Ground ladders longer than 35 feet, such as those carried on an aerial truck, require as many as four firefighters to raise in place. If a rescue is to be made, ground ladders must be removed from their storage by firefighters, carried to the correct location and raised in place. Without sufficient personnel, this activity can be delayed, resulting in injury or death to civilians.

The purpose of these examples is to point out the justification for the on-scene staffing of engines and ladder trucks with three personnel as the absolute minimum. Personnel on units staffed by one or two crew members cannot function as independent crews on the scene of emergencies. The firefighters must join with personnel from other units or await the arrival of volunteer personnel responding in personal vehicles to develop crews for fire attack.



PERSONNEL AND STAFFING

STAFFING OPTIONS (continued)

The approach to unit staffing of one or two firefighters can seriously hinder successful fire attack operations, in addition to creating significant safety risks for firefighter injuries and liability exposure for the municipality. A study conducted by the Johns Hopkins University concluded that there were 38 percent more injuries per 100 alarms on companies (engines and trucks) where fewer than four firefighters are involved as the attack crew—the crew initiating the interior fire attack.

STAFFING OPTIONS

The Study Team has been asked about career staffing, volunteer staffing and combined staffing. To provide the reader with information on which to base opinions, the following information may be useful. Conceptually, there appears to be three basic alternatives for staffing fire and rescue units in Harford County. These are:

- A. All paid staffing;
- B. Combination of career and volunteer personnel; and,
- C. All volunteer staffing.

Option A - Provide all paid staffing of fire and rescue units.

The Harford County fire companies are staffed with largely volunteer personnel at the fire and EMS stations. If the fire companies were to become fully paid, it would conservatively entail fully staffing twenty-six pumpers, seven ladder trucks, eight heavy rescue squads, three tankers, six BLS ambulances, four ALS chase units and five command officers. This staffing level would need to be maintained 24 hours a day, seven days a week. To staff one position on a 24-hour basis and allow time off for training, vacations and sick leave and on the on-the-job injuries requires 4.8 employees.



PERSONNEL AND STAFFING

STAFFING OPTIONS (continued)

Estimated at the current primary apparatus level the number of paid personnel required for this option would be:

26 pumpers x 4 staff x 4.8	=	499.2 staff
8 ladder trucks x 4 staff x 4.8	=	153.6 staff
7 rescue squads x 4 staff x 4.8	=	134.4 staff
24 ALS/ALS Ambulances x 2 staff x 4.8	=	230.4 staff
2 ALS chase units x 2 staff x 4.8	=	19.2 staff
3 tankers x 1 staff x 4.8	=	14.4 staff
5 chief officers x 4.8	=	<u>24.0 staff</u>
TOTAL	=	<u>1,075.2 staff</u>

If the average cost of personnel, including fringe benefits, is \$57,000, the annual personnel costs would be approximately \$61,286,000.

The significant advantage of this alternative are:

1. There would be adequate personnel available at all times to immediately respond to an emergency;
2. Because they are available in the station, training could be conducted on a continuing basis and pre-planning could be completed; and,
3. Officers would be available at all times to supervise the on-duty personnel.

The disadvantages to this alternative are:

1. The cost of providing fire and EMS service;
2. It would most likely eliminate volunteer involvement in the system.

Since Harford County volunteers have provided substantial service, the disadvantages are even more compelling.



PERSONNEL AND STAFFING

STAFFING OPTIONS (continued)

Option B - Combination of volunteer and paid staffing of units.

Under this alternative, some paid firefighting personnel would be placed in the fire and rescue stations to ensure that there is a rapid initial response to calls, with the volunteers supplying the additional personnel to handle the incident. To ensure continuity of supervision, career officers could be assigned; they would ensure that all station work is performed, the career personnel conduct training, pre-planning is completed, discipline is enforced, and career personnel conduct the required building inspections.

The advantages of this alternative are:

1. Some savings - allows for maintaining part of the major cost savings since volunteers are utilized;
2. Ensures a rapid response for some of the emergency fire/EMS apparatus;
3. Allows the career personnel to handle small incidents without having to call out the volunteers; and,
4. Allows the career personnel to do the pre-planning and then train the volunteers.

The disadvantages of this alternative are:

1. More costly than an all volunteer system;
2. No assurance that volunteers would be available at any given time to provide minimum staffing;
3. Potential conflict between paid and volunteer personnel in the station; and,
4. A possible reduction in volunteers responding because they feel the career personnel will handle it.

With the paid staffing of the Fire and EMS Foundation and of two Harford Fire and EMS Companies, Option B is the current organizational model of the Harford County Fire and



PERSONNEL AND STAFFING

STAFFING OPTIONS (continued)

EMS Services. Based on the experience of other similar jurisdictions, including a number in Maryland, this alternative can realistically work in Harford County for the long-term if a action plan to provide supportive actions to encourage maintaining strong volunteer activity in Harford.

Option C - Provide fire protection with an all-volunteer system

This alternative provides fire protection using only volunteers. Sometimes there will be volunteers in the stations when a call is received and the initial apparatus will respond quickly. At other times, firefighters would respond from home or work to staff the apparatus and take it to the scene of the emergency. On occasion, particularly during weekday daytime hours, the apparatus may not immediately respond, may respond without adequate staff or may possibly not respond.

The advantage of this alternative are:

1. The costs are maintained at a very low level
2. The volunteers maintain their interest in continuing to provide service; and,
3. There is community involvement in the provision of fire, rescue and EMS service delivery in Harford County.

The major disadvantages of this alternative are:

1. The potential inability to rapidly respond to a call. The citizens of the community have no assurance that there will always be a rapid response to a call for help or that sufficient equipment to handle the incident will actually respond.



PERSONNEL AND STAFFING

STAFFING OPTIONS (continued)

In summary, the citizens of Harford County are reaping major substantial benefits from its combination volunteer/paid fire, rescue and EMS system. To provide the same level of service with full-time paid personnel in the fire, rescue and EMS stations would require at least \$61 million each fiscal year for personnel wages.

STATION AND APPARATUS STAFFING

The following sections discuss fire station and apparatus staffing in Harford County by the Fire and Ems Companies.

Station Staffing

It appears that most of the Harford County Fire and EMS Companies place a high priority on volunteer onsite staffing of the stations. There are limited records available regarding station staffing by volunteers.

Fire Apparatus Staffing

An important measure of the level of fire service delivery is the staffing on responding apparatus (engines, trucks and heavy rescue squads, etc.). The Fire and EMS Companies apparently vary in regard to the maintenance of consistent records regarding apparatus staffing.

It has been the Study Team's experience that, nationally, most volunteer fire companies do not maintain and analyze specific apparatus and incident scene staffing data; however, for the future, collecting and analyzing this data will be very important. For example, Company and County officials need to be aware of the level of service provided, based on unit staffing data. When staffing shortages are identified based on specific data, action can then be considered, e.g., recruiting additional volunteer personnel or assigning paid firefighters.



PERSONNEL AND STAFFING

STATION AND APPARATUS STAFFING (continued)

The chiefs are encouraged to revise and/or make full use of their respective emergency incident response staffing-related records management systems to include the following:

1. Number of firefighters responding on each unit;
2. Number of officers responding on each unit;
3. Number and type of personnel responding in personal vehicles, and arrival times; and,
4. Number and type of personnel responding to the station during an incident, and remaining in the station to staff other apparatus not responding to the incident.

In addition, the Harford County Volunteer Fire and EMS Association should consider a County-wide policy requiring the gathering and periodic analysis of station and apparatus staffing data.

ALTERNATIVE UTILIZATION OF VOLUNTEERS

The following sections discuss alternatives available for improvement in the utilization of volunteer staffing.

In-Station Standby Programs

There are a number of organized programs, such as in-station standby programs, in place in the stations to encourage or require volunteers to remain in the station. Standby refers to remaining at the station, available to respond. A standby can include a sleep-in, which refers to staying at the station overnight and responding to alarms that occur during that period.

The fire protection services in Harford County serve both a developed suburban area and developing upscale residential and commercial areas. It is the Study Team's observation that many volunteer fire and EMS companies serving similar communities organize their



PERSONNEL AND STAFFING

ALTERNATIVE UTILIZATION OF VOLUNTEERS (continued)

volunteer apparatus staffing by planning in-station standby programs and relying on the immediate response of volunteers on apparatus to the emergency scene.

The chiefs who have not already done so are encouraged to implement volunteer in-station standby programs to ensure proper and consistent staffing levels.

The establishment of in-station standby programs improves the consistency of station staffing and provides the opportunity for volunteer members to plan the use of their available time. Many successful in-station volunteer standby programs require each volunteer to serve on a volunteer crew and remain, for example, in the station from 5:00 p.m. to 7:00 a.m., one night a week. Each of the seven standby crews (Monday night crew, Tuesday night crew, etc.) would cover a weekend day shift (7:00 a.m. to 5:00 p.m.) on rotation to cover all weekend hours.

Implementation of volunteer standby programs decreases attrition of volunteer members by reducing "burn-out," which results from excessive time expectations. Expecting a small number of volunteer members to respond to all emergency incidents on a 24-hour basis, every day, places significant pressures on individuals. Over a period of time, this type of demand can result in experienced, trained volunteers leaving the service.

The chiefs should also consider implementing other programs that encourage personnel to remain in the fire stations on a scheduled basis. Some items for consideration include:

1. Offering a standby food program to supplement the cost of meals for volunteers serving on standby crews;
2. Upgrading physical fitness equipment in the station;
3. Providing access to computer equipment for study or other productive uses;
4. Establishing library and study areas in the station; and,
5. Upgrading the bunkroom facilities.



PERSONNEL AND STAFFING

ALTERNATIVE UTILIZATION OF VOLUNTEERS (continued)

The objective of any such programs should be to encourage volunteer personnel to remain at the station in order to provide timely response.

Bunkroom Facilities

There are several bunkroom facilities in Harford County stations that seem to support sufficient personnel to staff the primary apparatus operating from the stations. There are other stations that reportedly lack adequate bunkroom facilities. Inadequate bunkrooms in stations is a deficiency that should be remedied as soon as possible to encourage volunteers to sleep at the stations and thereby improve the current station staffing situation. Chapter Four, Fire and Rescue Stations, discusses the need for upgraded fire and EMS station bunkrooms.

Predictable station staffing is critical; therefore, the chiefs should maintain daily and hourly records of the staffing of the stations by active volunteer personnel. In addition, records should be maintained regarding the personnel sleeping at the stations. This data should be summarized monthly and yearly to have a more precise picture of station staffing and associated needs.

PAID FIRE AND EMS STAFFING

The following sections discuss paid staffing generally and, more specifically, the potential future need for paid staffing in Harford County. Many Harford fire and EMS service providers providing input to the Study Team via interview or Confidential Survey Form indicated the need for paid firefighter and officer staffing, particularly in and around the Development Envelope. Further, the Study Team observed indications that paid staffing is needed or would likely be needed in the near future.



PERSONNEL AND STAFFING

PAID FIRE AND EMS STAFFING (continued)

Implementation of Paid Firefighters

It is known that the implementation of paid firefighter staffing in a municipality that has historically been served by an all-volunteer service is a very sensitive issue. There can be very negative impacts on future levels of volunteer participation, if the decision to utilize paid staffing is not carefully considered.

There are significant costs associated with the hiring of paid personnel that must be clearly justified during a time of fiscal constraints. Such a decision needs to be based on the evidence that such a step is essential. And, to ensure success, such a decision should be made with the involvement and support of the volunteer leadership.

There are three key data elements that may be used to help determine the need for paid firefighter staffing:

- A. The number of personnel responding on individual pieces of apparatus;
- B. The time from department dispatch until apparatus is en route; and,
- C. The rate of primary apparatus failure to respond when dispatched.

The high frequency of response of under-staffed apparatus, long times from dispatch to en route and failures of apparatus to respond are strong indicators that additional volunteer personnel or paid firefighter staffing is needed to maintain a reasonable level of fire and EMS service to the public.

Paid firefighters should perform productive functions in addition to responding to emergency incidents. Several important functions within the fire service include:

- 1. Maintaining apparatus and equipment;



PERSONNEL AND STAFFING

PAID FIRE AND EMS STAFFING (continued)

2. Providing maintenance and upkeep of fire stations;
3. Training, including performing their own training and assisting the volunteers with in-service training programs;
4. Developing building and target hazard pre-plans;
5. Conducting an in-service building inspection program as part of the code enforcement function of the municipality;
6. Responding to routine-type incidents, such as automatic fire alarms, thus allowing the volunteer staffing to concentrate their efforts on the more serious emergency incidents;
7. Providing basic life support first responders and additional staffing on life threatening emergency medical incidents when they are the closest fire and rescue personnel; and,
8. Supporting and coordinating other projects as determined by management.

As the number of emergency incidents increases, it becomes more difficult for volunteer personnel to meet the service demands, particularly during the daytime hours when many volunteers have their own full-time jobs.

In the judgment of the Study Team, the key data elements discussed above are available, but, may not be made available at this time to the Companies. In order for the County and the volunteer leadership to make appropriate staffing decisions in the future, a goal should be set to collect, correlate, and analyze this type of data.



PERSONNEL AND STAFFING

PAID FIRE AND EMS STAFFING (continued)

As indicated previously, criteria should be established to determine the point at which paid firefighters would need to be hired in the future. In essence, these criteria represent the level at which the service to the public is considered to be sufficiently impacted by lack of staffing to justify the hiring of paid firefighters.

When paid firefighting personnel are hired at some point in the future in Harford County to staff paid fire, rescue and/or EMS stations, they should be supported by tax funds and should be County employees. This approach should assure consistent personnel administration and budgeting since all fire and EMS employees paid for by County tax funds could function under policies and procedures established by the County for all County employees and under policies and standard operating procedures established for all Harford Fire and EMS Services.

SUMMARY

Harford County Fire and EMS Companies are staffed largely with volunteer personnel. County officials, residents and business owners should be very proud of the current combination volunteer/paid fire and EMS services primarily due to existing volunteer staffing and effort.

For the future, there seems to be an opportunity to place more emphasis on volunteer, on-site staffing in some of the stations. Many very successful volunteer organizations, including a number in Harford County, place a high priority on taking actions to maintain volunteers in the stations, such as, standby-by programs, availability of computers and regularly used and well-managed bunkrooms for overnight staff support.

In order for the County and Companies to make appropriate staffing decisions in the future, a goal should be set to collect, correlate, and analyze basic service staffing and response time data.



PERSONNEL AND STAFFING

RECOMMENDATIONS

- 6.1 The Harford County Volunteer Fire and EMS Association should consider the establishment of a County-wide policy requiring the gathering and periodic analysis of volunteer apparatus staffing data.
- 6.2 The Fire and EMS Companies should provide the Harford County Volunteer Fire and EMS Association with quarterly and annual volunteer activity information in summary form to identify any trends in the levels of activity.
- 6.3 The Fire and EMS Companies are encouraged to implement volunteer in-station standby programs to ensure that a minimum level of volunteer personnel are available in the station.
- 6.4 Harford County should continue with its strong volunteer-based system for the delivery of fire and EMS services. Although the volunteer system should remain the goal, the recommendations should be carefully considered by the County and the Companies for future paid staff fire and EMS station needs.

