



**CABARRUS COUNTY
BOARD OF COMMISSIONERS**

**RECESSED MEETING
MULTIPURPOSE ROOM
APRIL 26, 2012
4:00 P.M.**

-
1. **Call to Order – Chairman**
 2. **Fire Protection Study: Public Safety Solutions, Inc. – Les Adams**
 3. **Other Business (If any.)**
 4. **Adjourn**



Cabarrus County Government

April 24, 2012

To: Cabarrus County BOC
Cabarrus County Manager

From: Bobby Smith, EM Director

Subj: Draft County-wide Fire Protection Study

Attached please find a draft of the county-wide fire protection study for your review. This draft and additional information will be presented to you at your meeting scheduled April 26, 2012.

Our intent was to have this draft to you well before the meeting scheduled this Thursday, however, the contractor experienced circumstances that delayed this report being sent to Emergency Management staff until April 23, 2012. Please be advised that we have not had the opportunity to completely review this document as we had intended before the presentation. Our staff is continuing to review the study before it is presented to you, and have already notified the contractor of areas of concern we have concerning data analysis and review. We are in no way asking the contractor to omit or change anything found in this study, We are, however, asking for clarification and inclusion of data we have not located thus far in the report.

As you review this draft, please do so with the understanding that additional data and information will be available to you during the presentation. Mr. Les Adams, with PSSI, will be at the meeting to go over this draft and address your questions.

Thank you for your commitment to this process of analyzing our current fire protection delivery system here in Cabarrus County and to plan for the enhancement of that delivery service for the future.

Kindest regards,

Bobby Smith, Director
Cabarrus County Emergency Management

Fire Protection Study Cabarrus County, North Carolina



Fire Protection Study Cabarrus County North Carolina

Submitted by:
Public Safety Solutions, Inc.
Public Safety Management Consultants
Fire/EMS Division
106 Schooner Way, Suite 110
Chester, MD 21619
(301) 580-1900



CORPORATION (History)

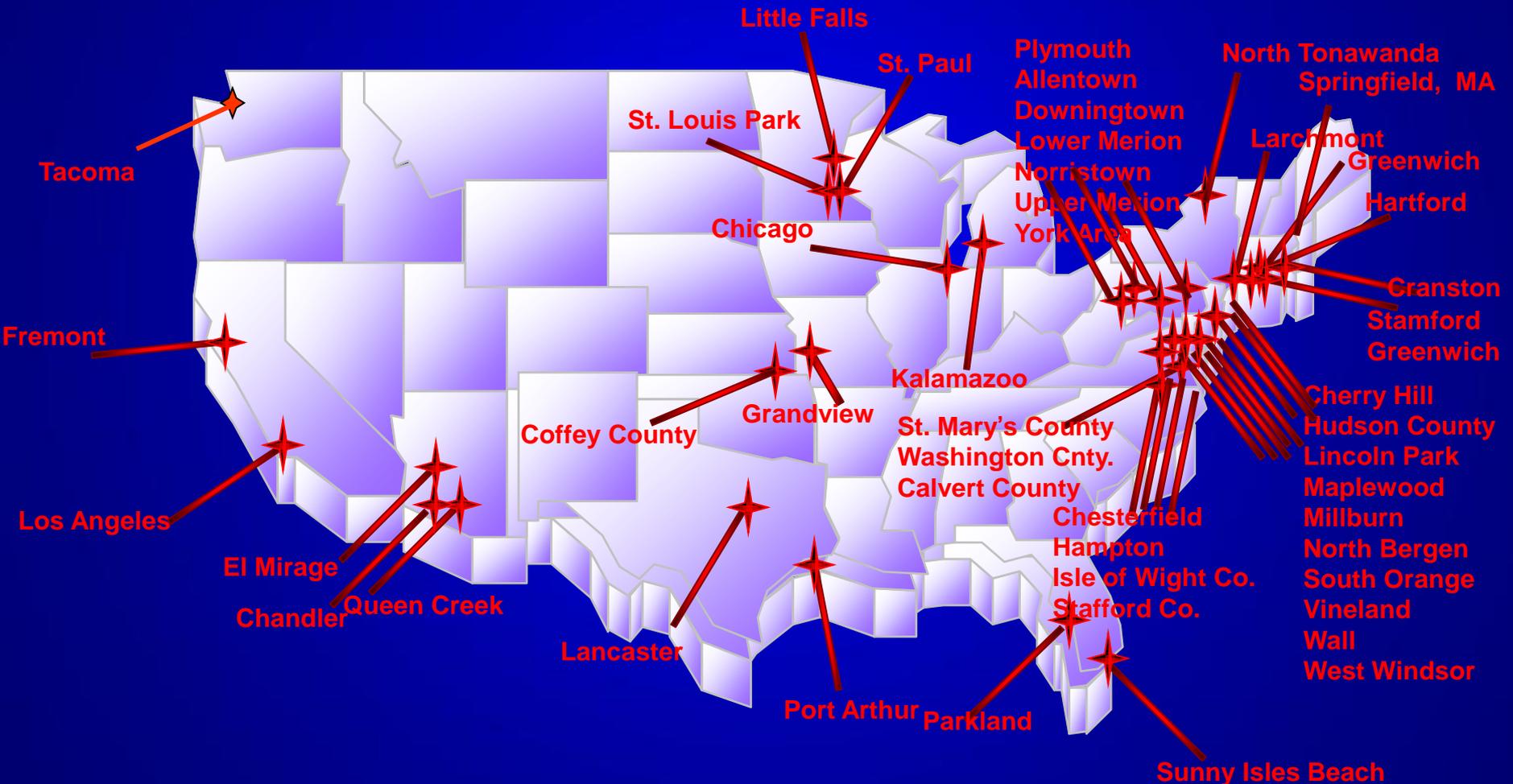
Nationwide Experience



**22 Years of
Experience in More Than
140 Counties & Cities**

Fire/Rescue Department Studies/Plans

50 of 140+



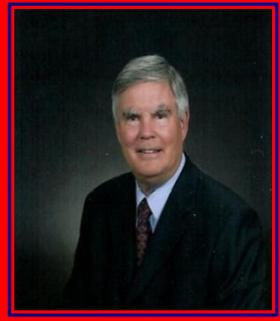
Cabarrus County Staff

Fire, EMS & Dispatch Management Consultants



Les Adams, President & CEO

Project Manager/Author for 120+ Public Safety Studies/Master Plans/Reports on Police, Fire, EMS, Communications, Emergency Preparedness
Consultant in more than 130 Municipalities over 22 Years
22 Years in Fire & EMS Service (Montgomery County, MD)
Deputy Chief of Operations



John Best Consultant

Fire Chief – Disney World FD
Fire/EMS Consultant – 22 Yrs.
Strategic Planning
County Fire Marshal
& Arson Chief



William (Bill) Ale

Fire Chief --- Greenville, SC
Fire Chief --- Spartanburg, SC
Fire-EMS County Training Officer
Fire-EMS Dispatch Supervisor
NFPA Standards Development Comm.



Mark Davis

Battalion Fire Chief, Mont. Co. MD
24 Years of Service in Fire Dept.
Consultant 14 Years
ISO & Water Supply expert



Kari Foster

Consultant 40+ Agencies
PSSi Consultant for 12 Years



Bob McNally

Geo Info Systems
20 yrs. Vol & career EMS provider
Consultant 110 counties & cities
Masters in GIS U of NC - Charlotte

PHILOSOPHY

✦ **Provide Open & Honest Assessment**

✦ Offer Objective Approach

✦ Give Attention to
Specific Agency Mission

✦ **Value Customer Input**

✦ Seek Out Member Ideas

✦ Relate to Management's Concerns & Goals

✦ **SAFETY FIRST: Customer & Provider**

✦ Place Priority on Human Element

✦ Consider Laws & Established
Standards (OSHA, NFPA, State)

✦ Remain Mindful of Customer Service

✦ **Build on Strengths**

✦ Offer Constructive Recommendations

SCOPE OF WORK

Project Goals

Evaluating the Current Fire Services Delivery Model and Developing Long-Range Strategic Plan

Assessment Developed with Input from All Fire Protection Providers

Guidance to the County Board and Community in Developing A Balanced Fire Services Delivery Model

Scope of Work – Baseline Areas - RFQ

Assist Fire Departments Create Schedule of Equipment Replacement to Aid in Budget Preparation

Help Determine Adequacy of Fire Station Locations and Future Placement of Fire Facilities

Assist Fire Departments Develop Improvement Plans, Analyze Training Records, Response Times & Water Supply

**Help Fire Departments with Rescue Service Delivery Ability
Make Recommendations for County-wide Response Policies**

Scope of Work – Baseline Areas - RFQ

Review Current Fire Protection Contracts and Relationship To Each Departments Operating Policies

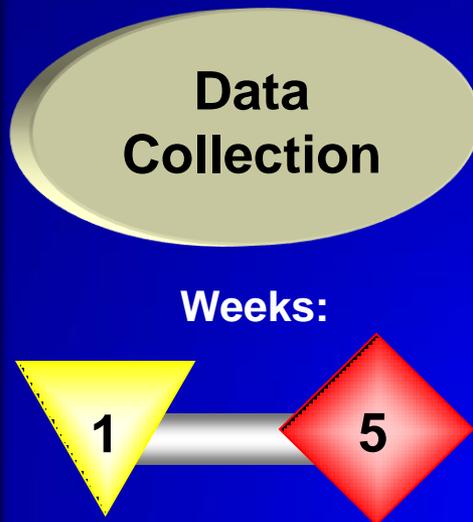
Evaluate the Training Programs and Suggest Adequacy Of Qualifications

Analyze the Operating Cost of Each Fire Department and Determine if Taxing Levels are Adequate for Each District

Consider and Offer Services Delivery Options, e.g. Mergers Consolidations and Contracting with Municipal Departments

CABARRUS COUNTY PROJECT METHODOLOGY

A P P R O A C H

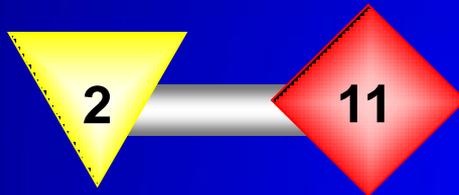


- Organization Structures
- **Management Structure**
- Rank Structure
- Planning for Fire Protection
- Personnel Data
- Staffing and Workload
- **Capital Improvement Needs**
- Suppression/Rescue/EMS Delivery
- **Location & Number of Fire Stations**
- Apparatus and Equipment
- **Training Program**
- Apparatus & Buildings Maintenance
- Volunteer Utilization & Scheduling
- Volunteer Surveying
- Admin & Performance Guidelines
- **Communications & Dispatch**
- Record Keeping
- Fire & EMS Policies Structure

A P P R O A C H



Weeks:

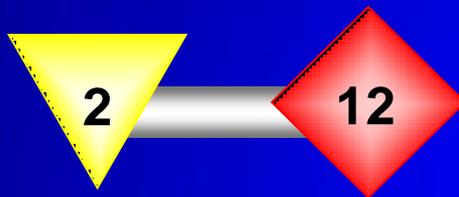


- Association Officials
- County Department Heads
- County Planning Staff
- Volunteer and Paid Chiefs
- Law Enforcement Officials
- Emergency Operations Manager
- Fire Marshal Staff
- Communications Center Staff
- Fire-Rescue-EMS Members
- Training Officers

A P P R O A C H

On-Site Observations & Fact Finding

Weeks:

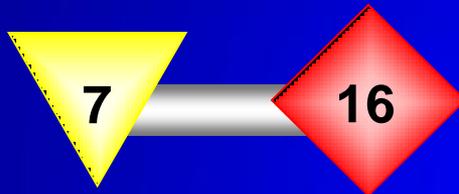


- On-Site Reviews
- Visit All Facilities
- Observe Service Delivery
- Work Nights and Weekends
- Attend Meetings @ Fire Stations

A P P R O A C H



Weeks:



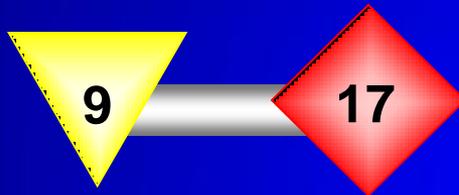
- Risk Analysis
- Determine Geographic Decision Areas
- Interview Data
- Response Times
- Staffing
- Facilities
- Apparatus
- Equipment
- Identify Resource Baselines

- Fire Stations
- Apparatus
- Specialty Units
- Staff Deployment Approach
- Fire & Rescue Workload by Response Area
- Onsite Inspection of Fire Stations & Resources

A P P R O A C H

Comparative Analysis

Weeks:



- Benchmarking with State-of-the-Art Programs, Practices & Stds.
- Recognize Existing Strengths of Orange Companies/Agencies
- National Standards and Accepted Principles & Practices (e.g. NFPA 1500 and 1710/20)
- OSHA

A P P R O A C H

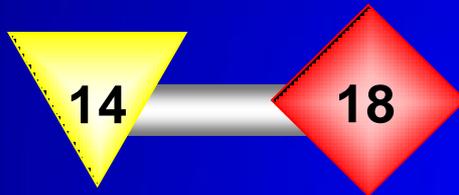


- Individual Companies/Service
- Facility Condition and Locations
- Apparatus Condition & Use
- Resource Requirements
- Optimal and Minimal Resource Deployment Models
- Protection/Suppression
- Demands Per Service/Company
- Funding & Expenditures
- Organizational Structure
- County Role
- Potential for Improvements
- Anticipated Fiscal Impacts

A P P R O A C H

Comprehensive Written Report

Weeks:



- Analysis
- Findings
- Recommendations
- Timelines
- Color Illustrations

A P P R O A C H

Report & Oral Briefing

22

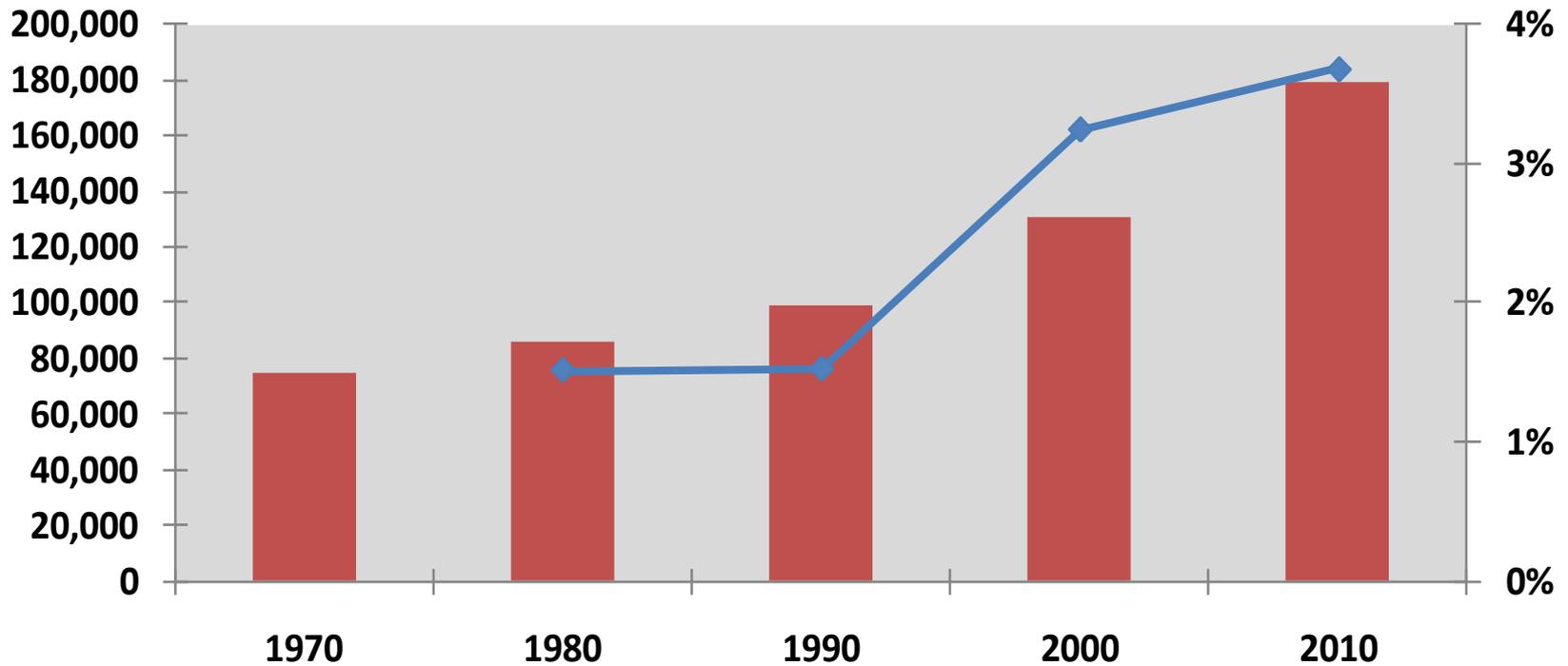
- **Submission of Written Report**
- **In-depth Briefing**
- **Including PowerPoint Presentation**

SELECTED GRAPHIC DEPICTION OF FINDINGS

RISK ASSESSMENT

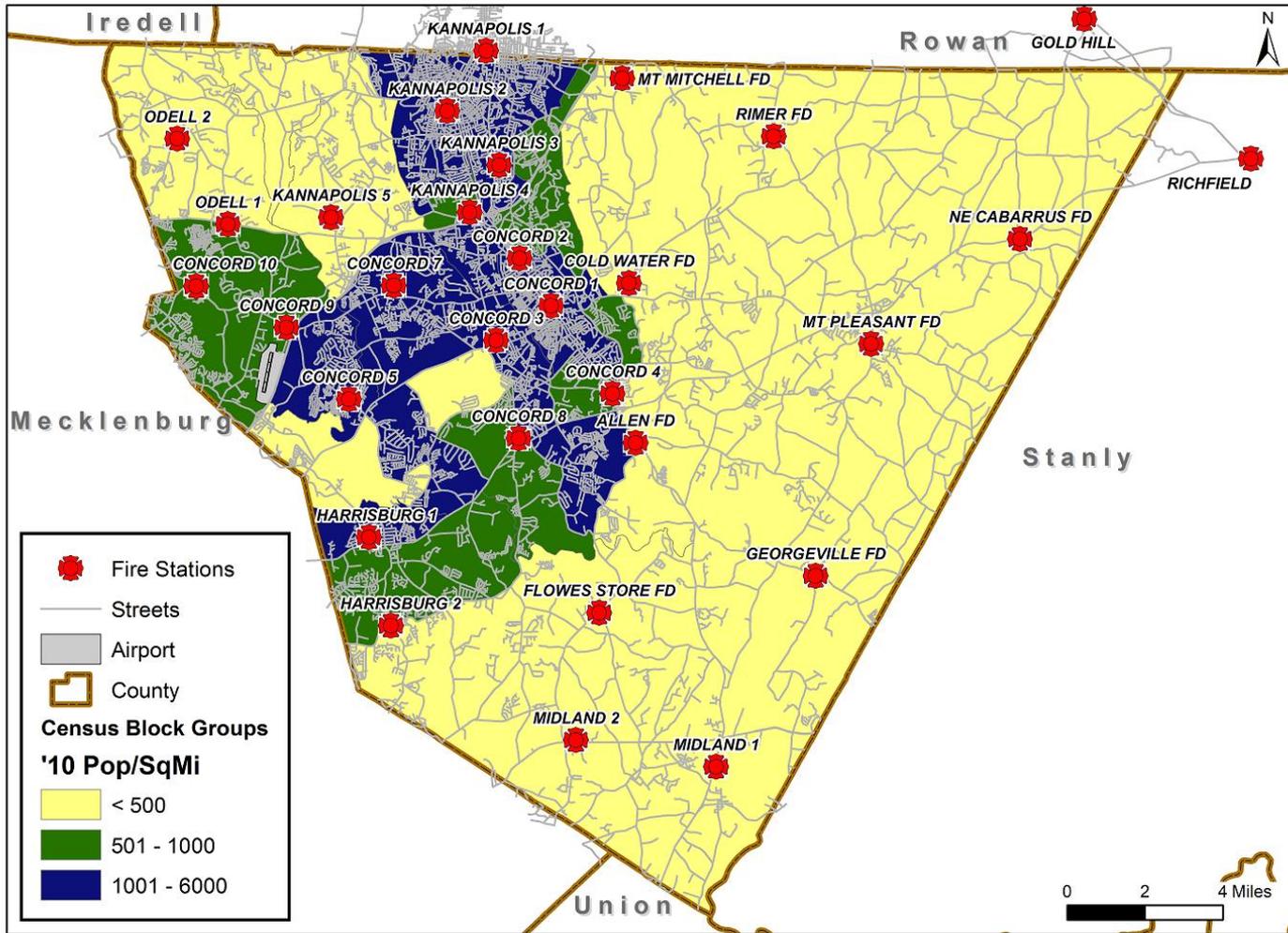
Population History; 1970-2010

Population Annualized Rate



Cabarrus County Population Growth

Cabarrus County, North Carolina

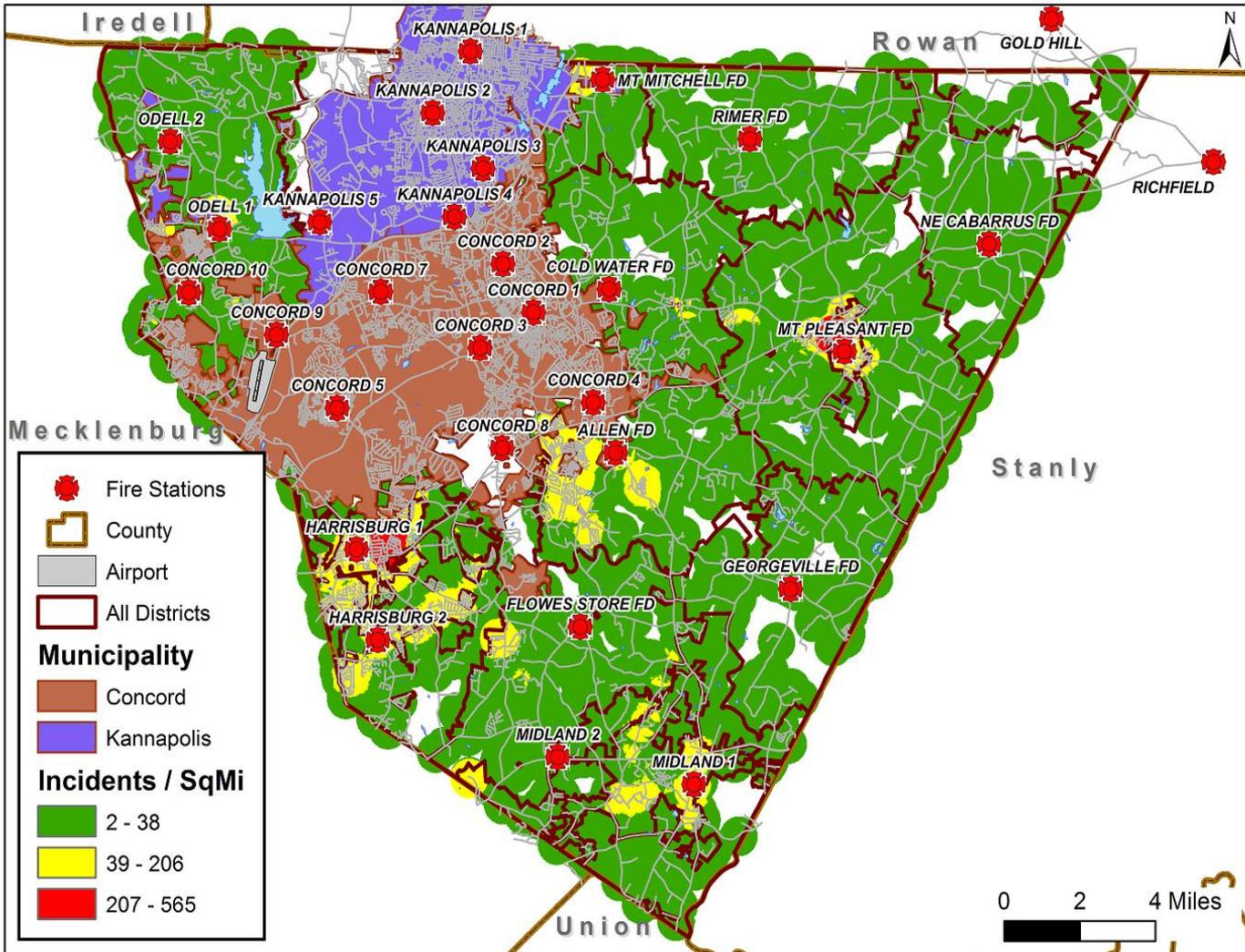


Population per Square Mile



CALLS & WORKLOAD

Cabarrus County, North Carolina



SERVICE DEMAND CONCENTRATION



RESPONSE TIMES



FIRES – RESPONSE TIMES



FIRES

FLASHOVER- 6 to 9 minutes

Pre-Flashover

- Limited to One Room
- Requires Smaller Attack Lines
- Search & Rescue Is Easier
- Initial Assignment Can Handle

Post-Flashover

- May Spread Beyond One Room
- Requires Larger, More Attack Lines
- Compounds Search & Rescue
- Requires Additional Companies



SIGNIFICANCE OF RESPONSE TIMES

Assessing The Location Of Fire/EMS Stations And Apparatus

FIRES

6 to 9 minutes Flashover



EMS

4 to 6 minutes to Brain Death
in Cardiac Arrest

CRITERIA

✓ NFPA 1710/20:

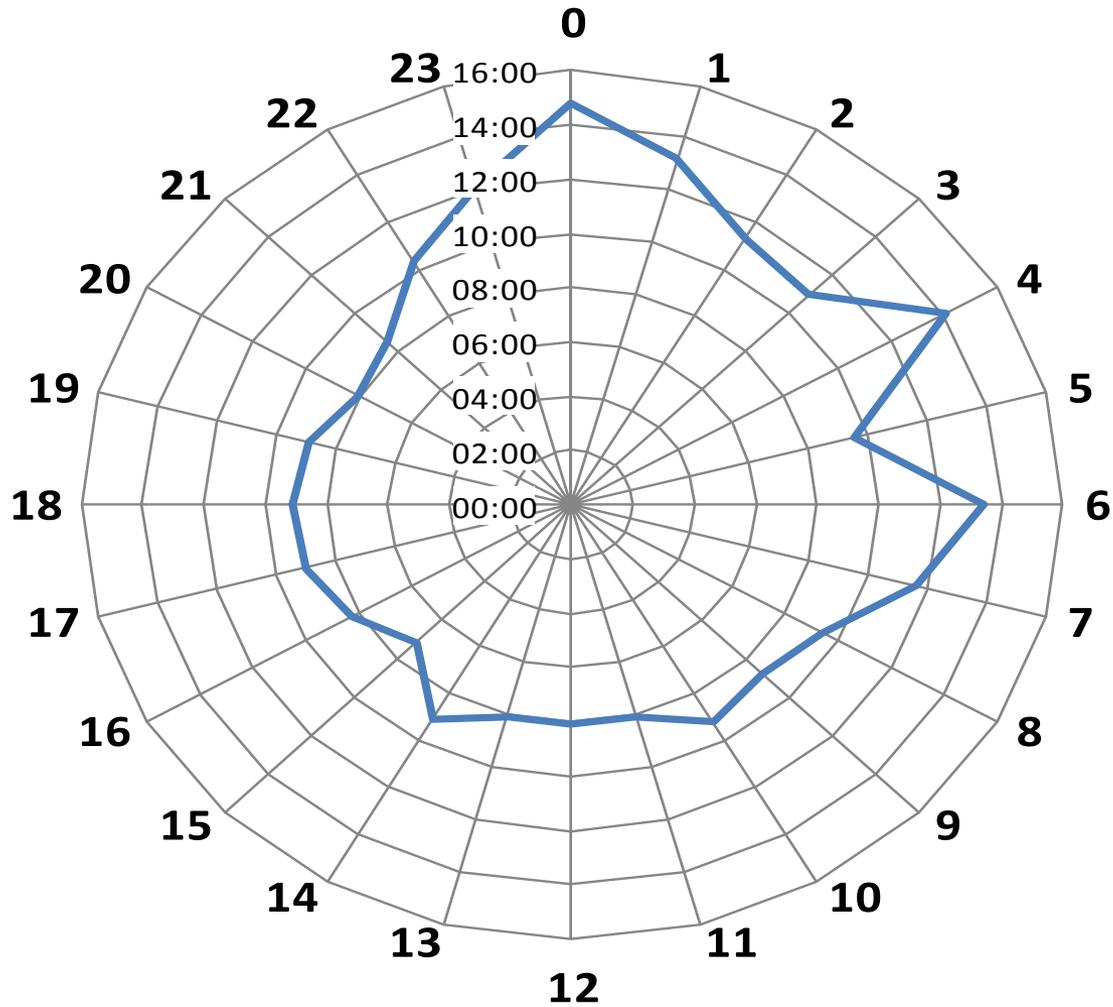
✓ Public Safety Solutions, Inc:

Utilize 5 minutes*

Utilizes 5 minutes*

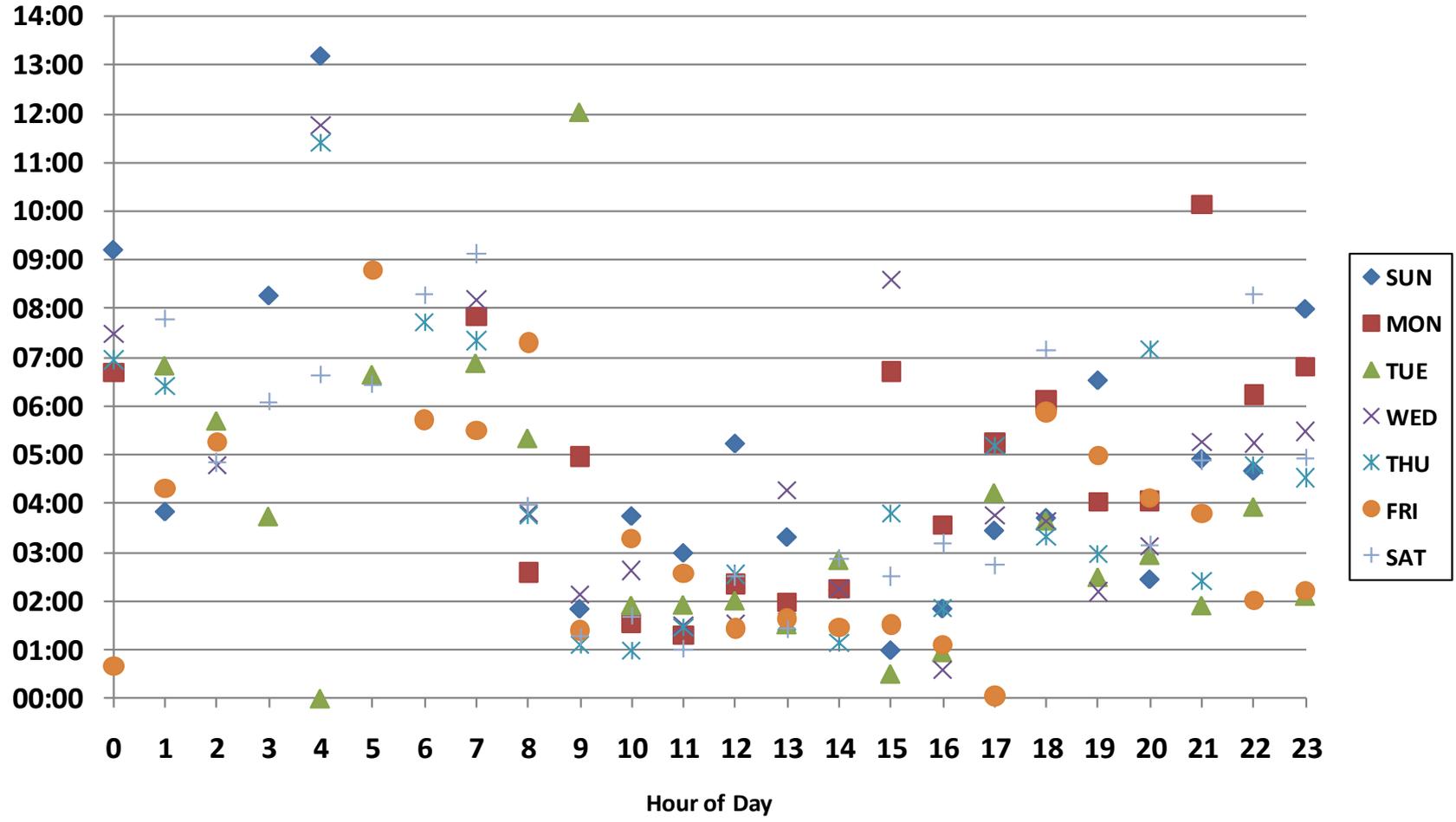
*Note: Includes turnout time.

Allen: 80th Percentile Response Time



80TH PERCENTILE RESPONSE TIME

Allen: Apparatus Avg. Turnout Time Performance

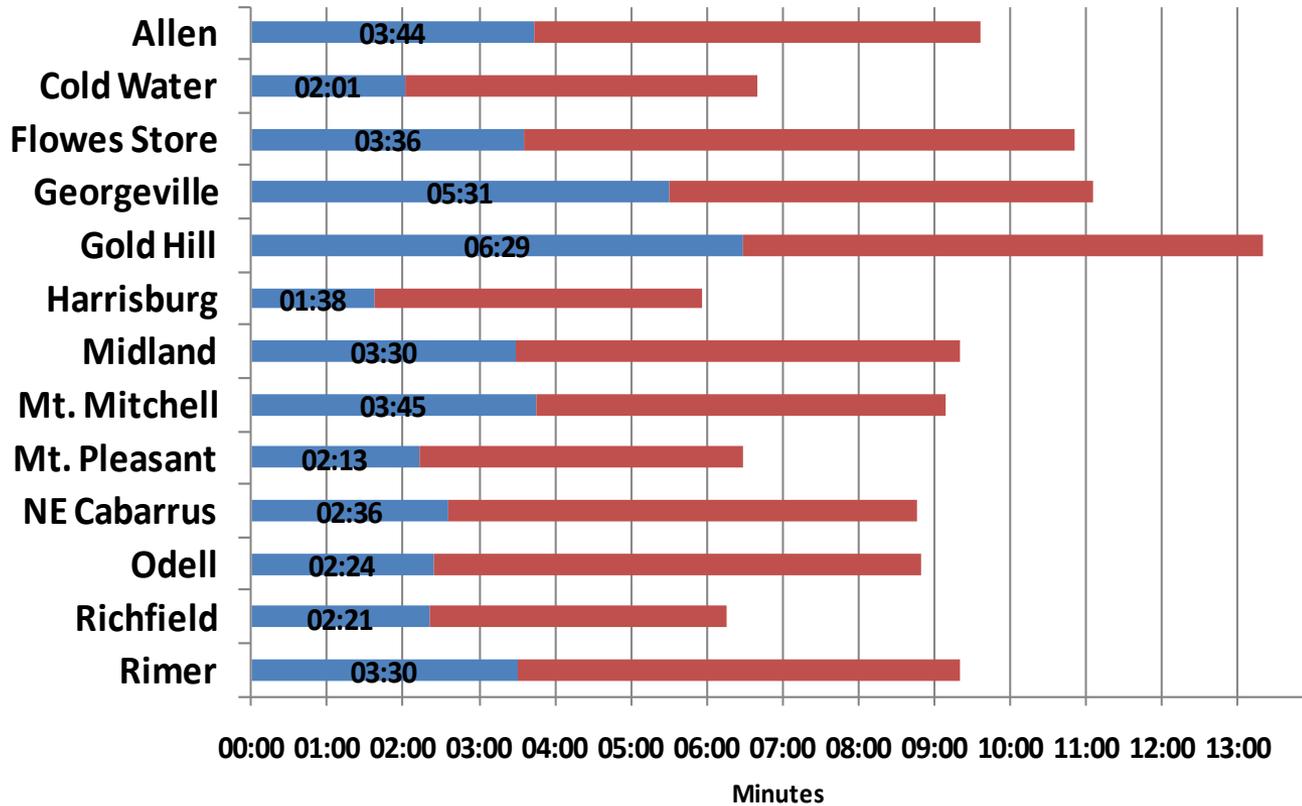


AVERAGE TURNOUT TIME FOR FIRST APPARATUS



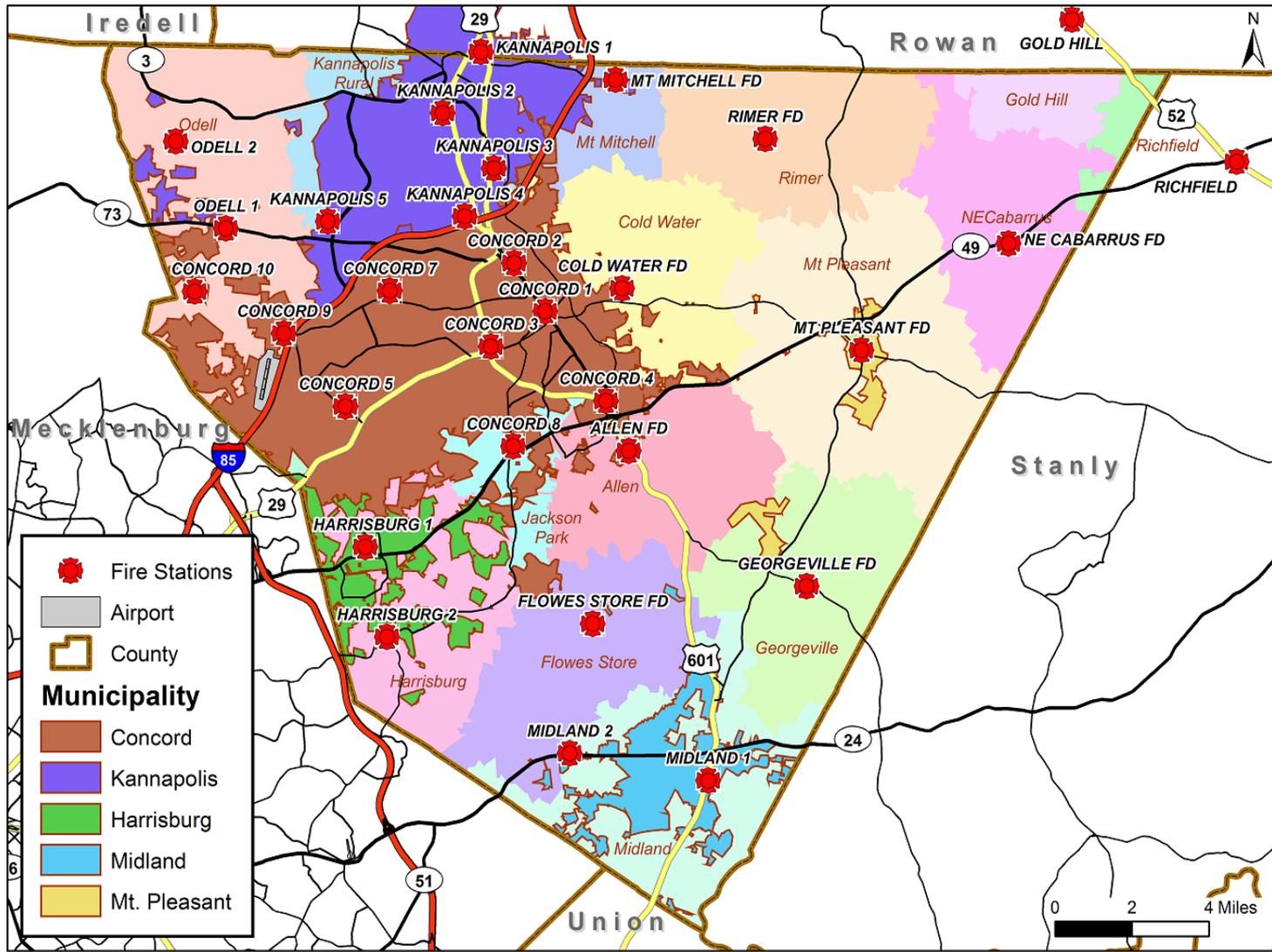
80th Percentile Response Times

■ Turnout ■ Travel



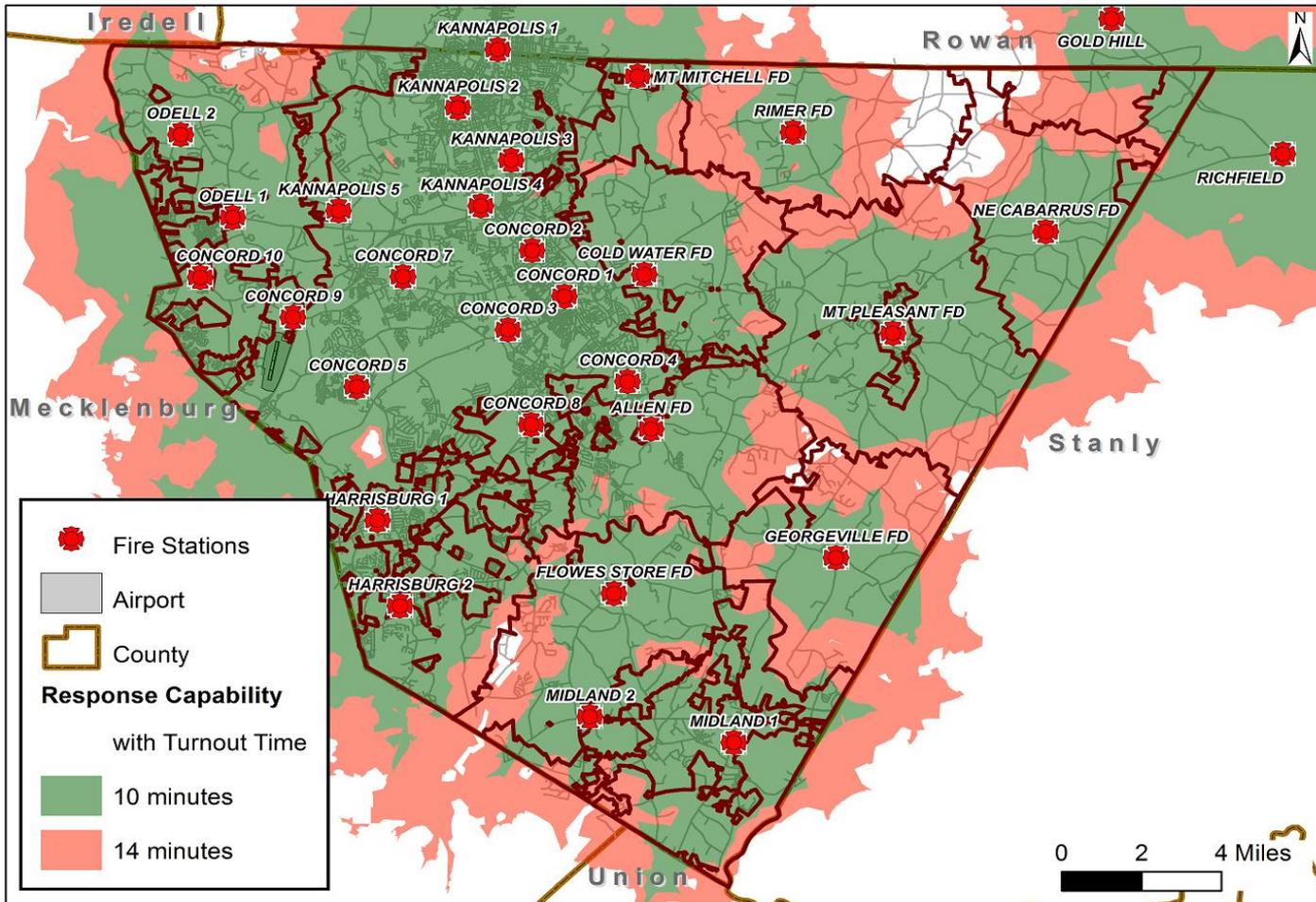
80TH PERCENTILE RESPONSE TIMES

STATIONS



Service Area Districts & Stations

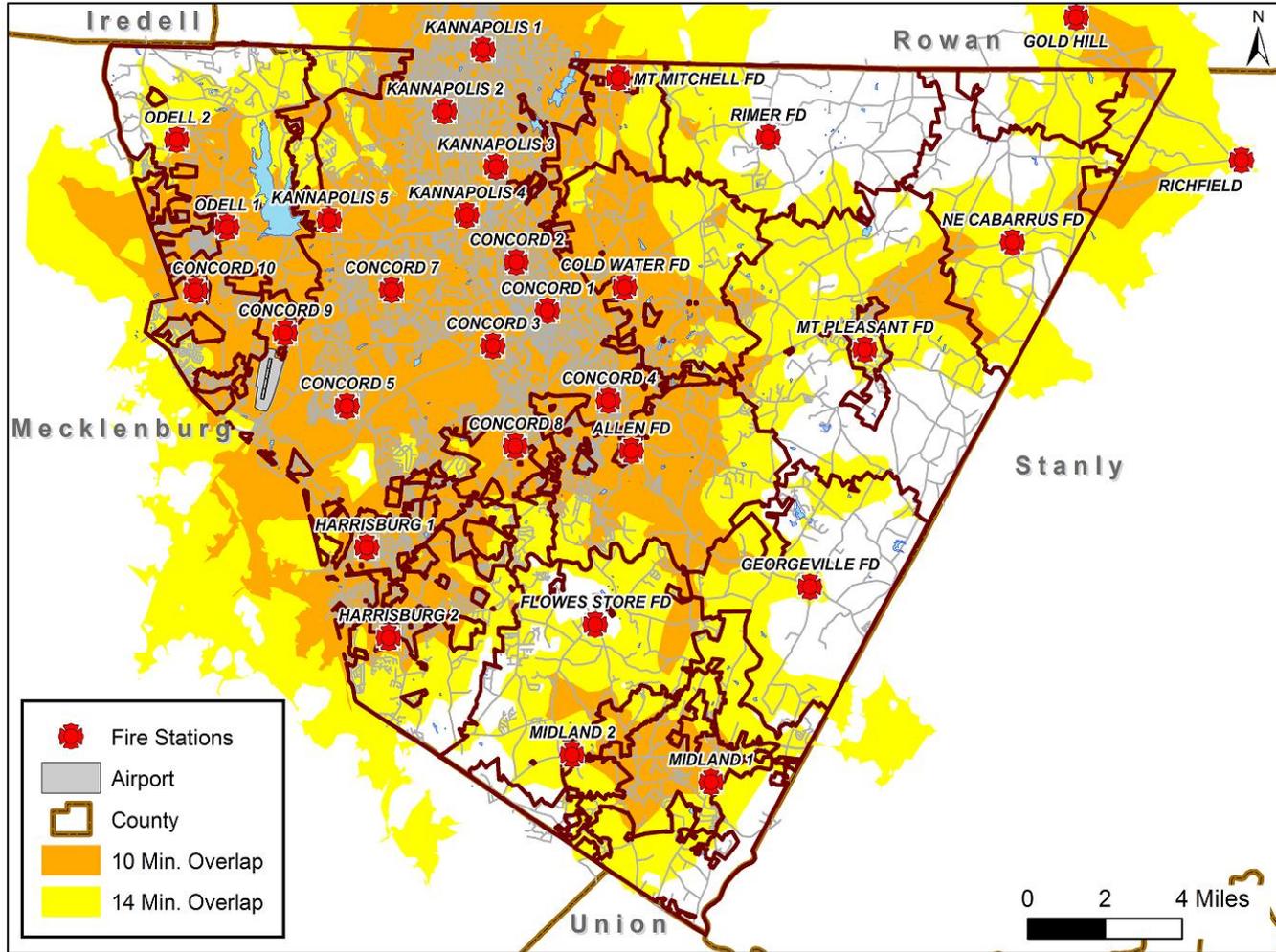
Cabarrus County, North Carolina



RESPONSE AREA CAPABILITY



Cabarrus County, North Carolina



PSSi
PUBLIC SAFETY SOLUTIONS, INC.

RESPONSE COVERAGE OVERLAP

ORGANIZATION

SELECTED RECOMMENDATIONS

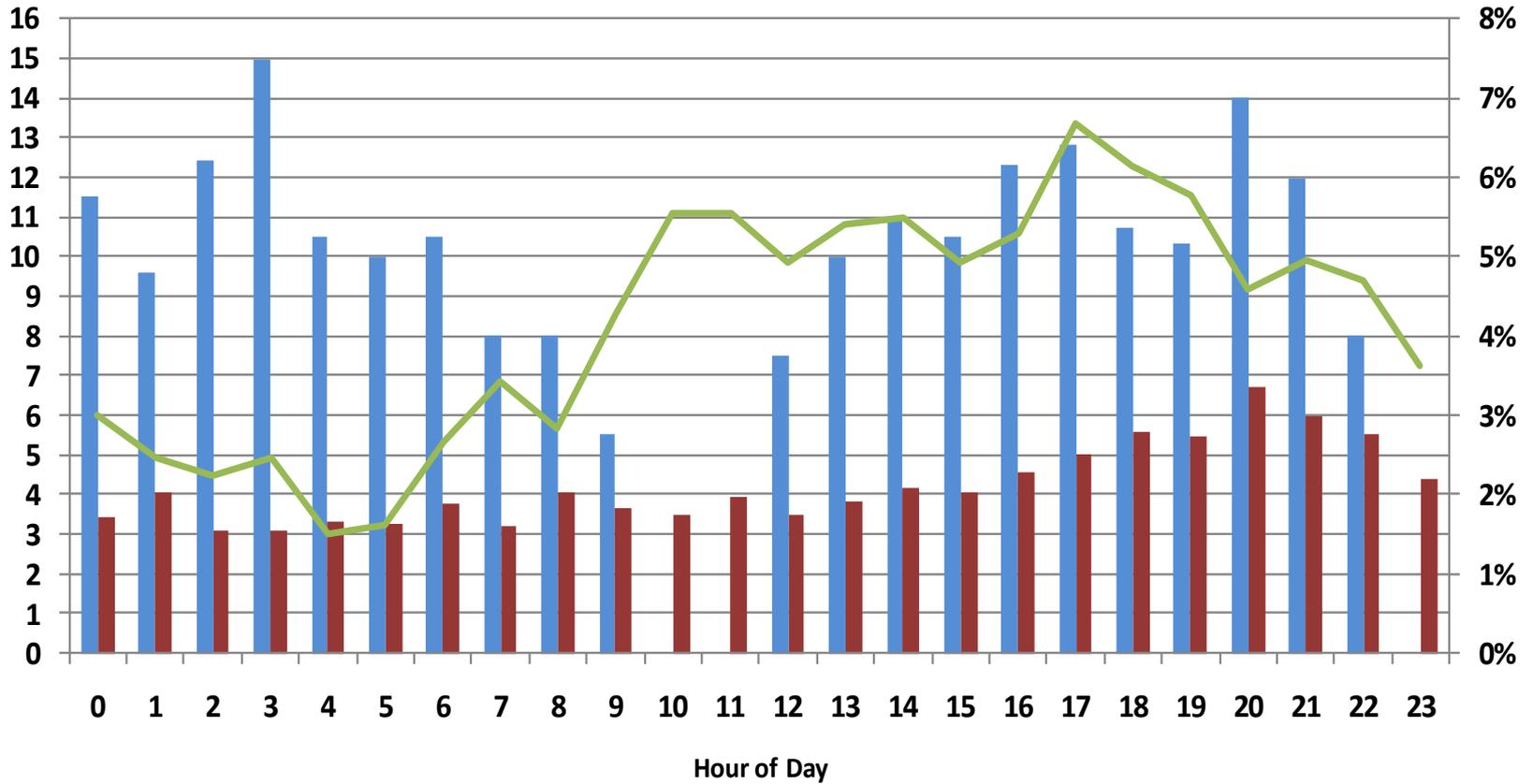
ORGANIZATION RECOMMENDATIONS

- 1. Taking Actions to Maximize Volunteer Participation**
- 2. Utilizing the Firemen's Association as Lead Agency**
- 3. Implementing Joint Purchasing**
- 4. Revising/Adopting Comprehensive Fire Ordinance**
- 5. Continuing to Rely on Fire Marshal**
- 6. Considering Fire Marshal Staffing Needs**
- 7. Upgrading County / Fire District Contracts**

STAFFING

Allen: Hourly Staffing vs. Demand

■ Avg. Staff (Fire Calls)
 ■ Avg. Staff (all other calls)
 — Demand %



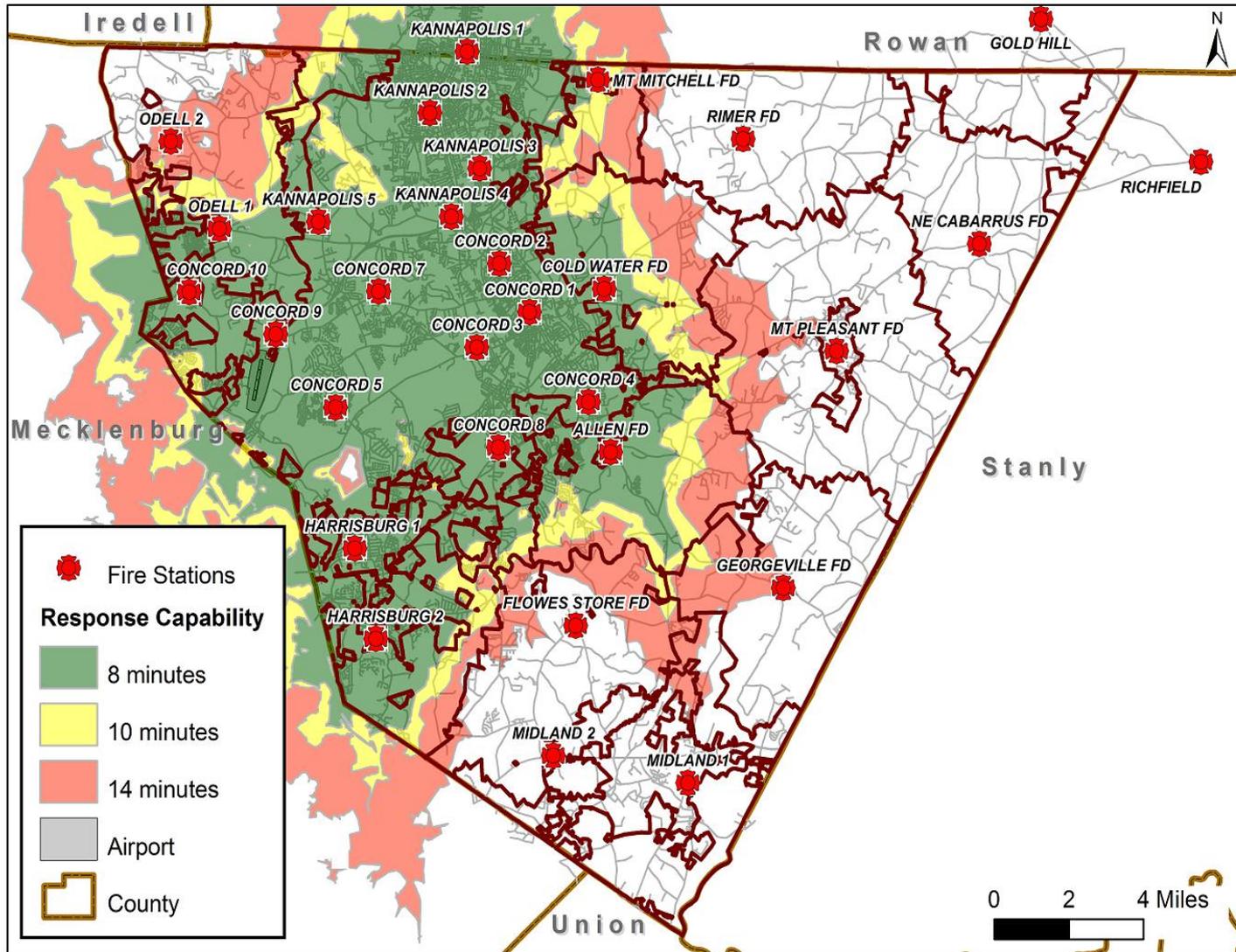
HOURLY STAFFING ANALYSIS

STAFFING RECOMMENDATIONS

1. Analyzing Apparatus **Volunteer Staffing Data**
2. In-Station Standby Programs
3. Upgrading Fire Station Bunkrooms
4. **Strategically Fund Staffing Grants**
5. Assessing Apparatus Response Times for Staffing Needs

FIRE STATION ANALYSIS

Cabarrus County, North Carolina

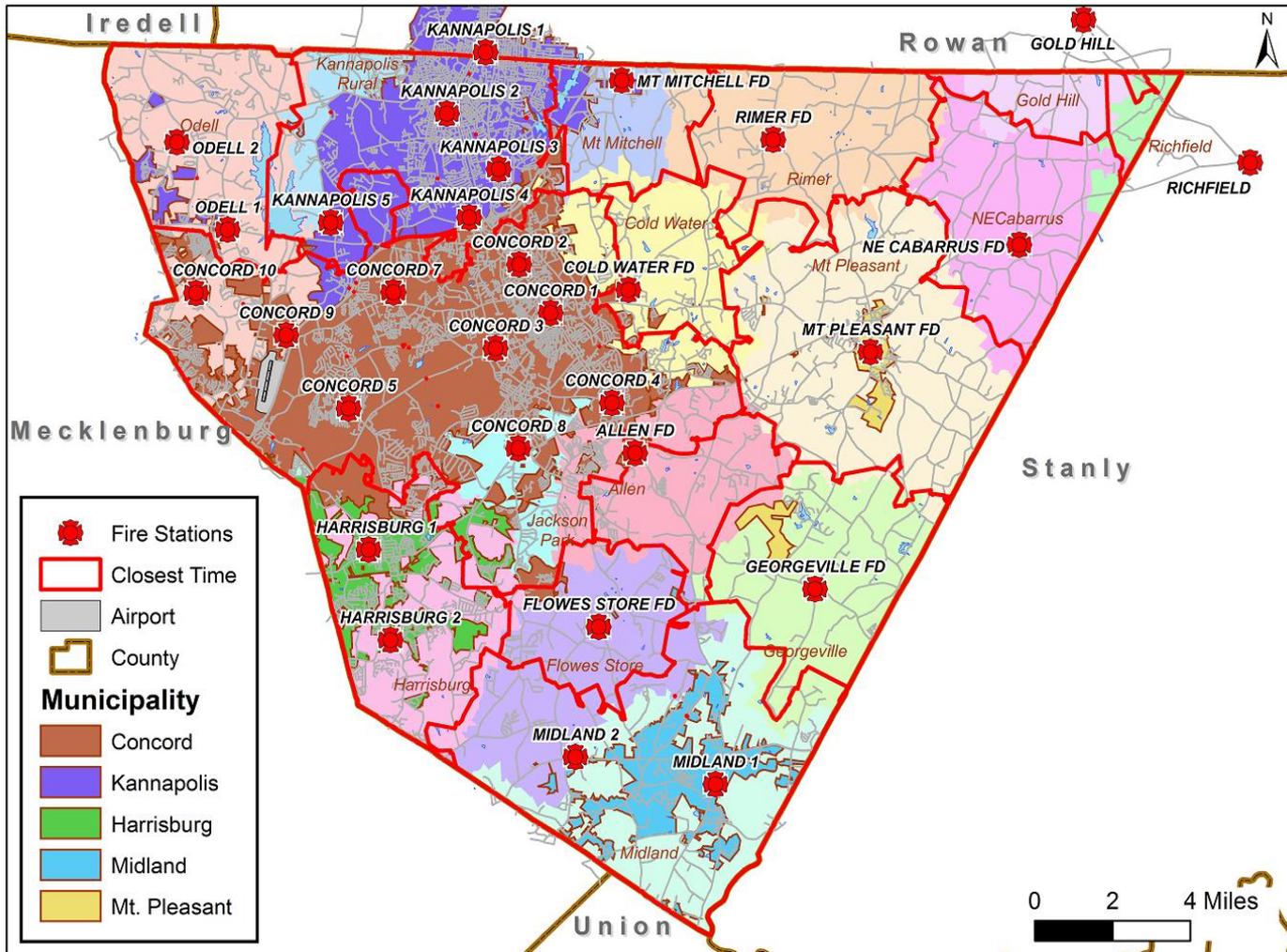


MUNICIPAL FIRE DEPARTMENT ONLY RESPONSE CAPABILITY

CFD/KFD vs. Allen VFD				CFD/KFD vs. Cold Water VFD			
Range Minutes	Call Count	Modeled City Avg	District Actual	Range Minutes	Call Count	Modeled City Avg	District Actual
8	427	5.61	7.47	8	80	6.41	5.05
10	98	8.86	7.71	10	64	8.91	5.26
14	76	11.10	8.00	14	60	11.26	5.38
CFD/KFD vs. Mt. Mitchell VFD				CFD/KFD vs. Odell VFD			
Range Minutes	Call Count	Modeled City Avg	District Actual	Range Minutes	Call Count	Modeled City Avg	District Actual
8	60	7.24	6.24	8	337	5.73	6.36
10	46	8.80	6.70	10	52	9.03	6.23
14	27	11.02	8.78	14	101	11.60	6.84

CITY VS. FIRE DISTRICT RESPONSE CAPABILITY RESULTS

Cabarrus County, North Carolina



CLOSEST RESPONSE AREAS



Fire Station Location Recommendations

1. **Eliminate “Catch-All” Call Designations in Dispatch**
2. **Adopt Response Time Performance Measurements**
3. **Maintain Current Fire Station Locations**
4. **Enhance Fire Prevention and Safety Programs**

APPARATUS

APPARATUS RECOMMENDATIONS

1. Confirm Primary **Apparatus Equipped to Meet NFPA**
2. Develop Standard Apparatus/Equipment Specifications
3. Develop County-wide **Apparatus Replacement** Program
4. Develop County-Wide **Equipment Replacement** Program
5. Develop Apparatus/Tool **In-Station Maintenance**
6. Develop Apparatus/Tool **Maintenance Records System**

TRAINING

TRAINING RECOMMENDATIONS

1. Implement **Officer Certification Levels** – Off. 1, 2, & 3
2. Require **Driver/Operator Certifications**
3. Review/Update ISO “Improvement Statements”
4. Implement Training/Education Certification **Awards**
5. Proceed with **a Cabarrus County Training Academy**
6. Expand **High School Cadet Program**

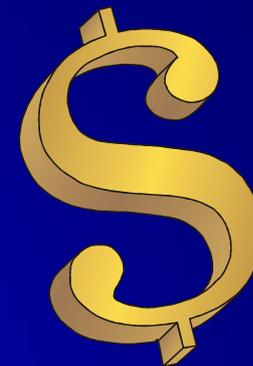
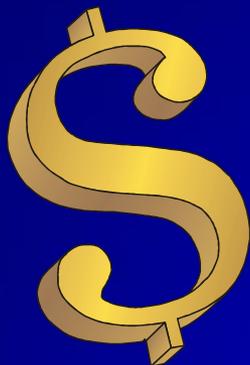
COMMUNICATIONS & DISPATCH



COMMUNICATIONS RECOMMENDATIONS

1. Adopt Dispatch **Performance Measurements**
2. SOP & Practice **Secondary Dispatch Method**
3. SOPs & Practice **PSAP Failure**
4. “Horizontal” Fire Dispatch –**Call-taker/Dispatcher**
5. Implement **Unit Level Fire Dispatching**
6. **“Engine One”**
7. Continue Implementing **Charlotte Region Radio**
8. Policy – Level Dispatch **Oversight Board**
9. Feasibility Study for **Co-Location of 3 Dispatch Centers**

VOLUNTEER RECRUITMENT & RETENTION



16

**MILLION ANNUAL
SAVINGS**

VOLUNTEER RECOMMENDATIONS

1. **Fund Recruitment & Retention**
2. **Implement “Exit” Interviews**
3. **Comprehensive Recruitment & Retention Program**
4. **New-Member Mentor Programs**
5. **Recruitment & Retention Coordinator**

MAIN ISSUE

TEAMWORK

DETAILED BUDGET ANALYSIS

SUGGESTED TIMELINE



Fire Protection Study

Cabarrus County, North Carolina

Suggested Timeline

Page One of Three

Figure

2012

Recommendations	May	June	July	Aug.	Sep.- Oct.	Nov.- Dec.	2013	2014	2015	2020
1. Review Study/Plan for 90-120 Days, Gain Input from Service Providers and Stakeholders	▼		◆							
2. Clarify any Observations, Conclusions, Recommendations based on Input from Providers	▼			◆						
3. Re-affirm the Goal of Maximizing and Strengthening Volunteer Fire/EMS Providers	▼			◆						
Organization and Administration										
4. Continue to Require Annual Financial Audits	▼				◆					
5. Determine to Utilize Cabarrus County Firemen's Association as Lead Fire Agency	▼			◆						
6. Revise/Adopt Comprehensive County Ordinance Provisions Related to Fire Services	▼				◆					
7. Consider Need for Fire Services Commission for Advice and Oversight	▼					◆				
8. Implement Joint Purchasing Policy	▼					◆				
9. Continue to Rely on Fire Marshal & Staff for Coordination and Advice	▼			◆						
10. Provide Fire Marshal Staff Member as Fire Services Coordinator	▼				◆					
Staffing of Fire Units										
11. Establish County-wide Program to Gather/Analyze Volunteer Activity Data	▼							◆		
12. Establish Volunteer In-Station Standby Programs	▼					◆				
13. Upgrade Selected Fire Station Bunkrooms for Student Live-In Staffing	▼						◆			

Legend





Fire Protection Study

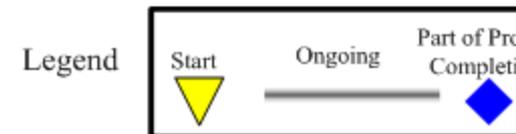
Cabarrus County, North Carolina

Suggested Timeline

Page Two of Three

2012

Recommendations	May	June	July	Aug.	Sept.-Oct.	Nov.-Dec.	2013	2014	2015	2016
14. Enhance the Staffing Grant Program	Start			Part of Project Completed						
15. Assess Apparatus Response and Turnout Time for Improved Effectiveness	Start					Part of Project Completed				
Fire Station Locations										
16. Modify Categorization of Emergency Calls to Eliminate "catch-all" Call Designations	Start				Part of Project Completed					
17. Adopt Response Time Performance Objectives	Start					Part of Project Completed				
18. Modify Scheduled Utilization of Staffing Grant Funded Personnel	Start				Part of Project Completed					
19. Maintain Current Fire Station Locations	Start				Part of Project Completed					
20. Continue and Enhance Fire Prevention and Safety Education Programs	Start				Part of Project Completed					
Fire Apparatus										
21. Confirm Primary Apparatus Equipped As Specified by the NC Fire Marshal's Office	Start					Part of Project Completed				
22. Develop Standard Apparatus, Equipment, Tools and Appliance Specifications	Start						Part of Project Completed			
23. Develop a County-wide Apparatus Replacement Program	Start							Part of Project Completed		
24. Develop and Implement a County-wide In-Station Apparatus & Equipment Maintenance Prog.	Start								Part of Project Completed	
25. Develop and Implement a County-wide, Computer-based Maintenance Records Program	Start						Part of Project Completed			
Training										
26. Implement Supervisory Officer Certification Levels w/ Fire Officer I, II & III	Start							Part of Project Completed		





Fire Protection Study

Cabarrus County, North Carolina

Suggested Timeline

Page Three of Three

Figure 9

2012

Recommendations	May	June	July	Aug.	Sept.- Oct.	Nov.- Dec.	2013.	2014	2015	2020
27. Establish Driver/Operator Certification Requirements to Drive/Operate	▼						◆			
28. Review and Update ISO "Improvement Statements" for Each Fire Department	▼							◆		
29. Implement a County-wide Training/Education Certification Award Recognition System	▼						◆			
30. Proceed with the Design, Location, Funding and Construction of a Cabarrus Tng. Facility	▼				◆					
Communications and Dispatch										
31. Adopt Dispatch Performance Measurements	▼						◆			
32. Practice/Exercise the SOP for a Secondary Dispatch Method in Case of CAD Failure	▼							◆		
33. Adopt SOPs for Operating when a Catastrophic Failure of PSAP Occurs	▼						◆			
34. Implement "Unit-level" Dispatch for Fire Calls for Closest Available Unit/s	▼							◆		
35. Implement the Expansion of the Charlotte Regional Radio System	▼				◆					
36. Establish Policy-Level Oversight Board for Co-Location of Three Dispatch Centers	▼				◆					
37. Conduct a Comprehensive Feasibility Study for Possible Co-Location of Dispatch Centers	▼					◆				
Volunteer Recruitment & Retention										
38. Develop and Fund Comprehensive Volunteer Recruitment & Retention Program	▼							◆		
39. Establish Volunteer New-Member Mentor Programs	▼					◆				
40. Fund and Employ Volunteer Recruitment and Retention Coordinator	▼						◆			

Legend



RETURNS ON INVESTMENT

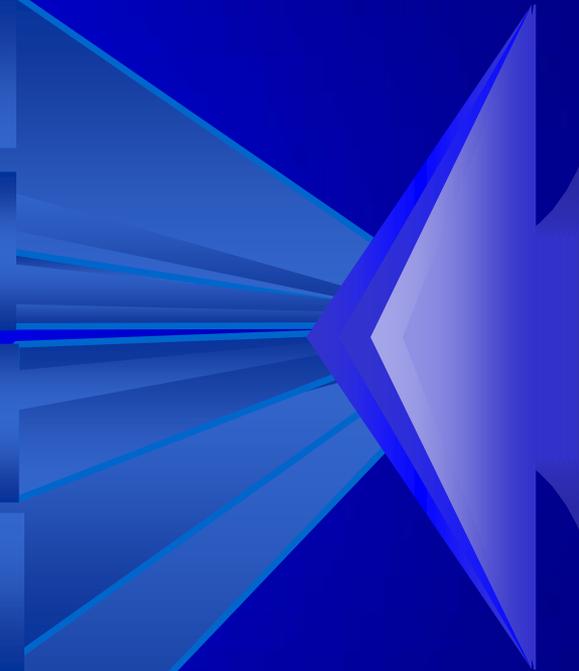
**Enhanced
Accountability**

Improved Management

Increased Pride in Services

Enhanced Training

**Optimum Apparatus
Fleet**



Recommend Fire Services System

**Seamless Approach
Recommended**

CONSIDER

Models and Recommendations

CONSIDER

Relevant Input

MAKE AN INFORMED DECISION

DISCLAIMER

THANK
YOU

Public Safety Solutions, Inc

Public Safety Management Consultants



301-580-1900