U.S. Fire Administration

West Virginia: Four Years Later

A Second Needs Assessment of the U.S. Fire Service

January 2007

Homeland Security

January 2007

Four Years Later – A Second Needs Assessment of the U.S. Fire Service WEST VIRGINIA

A Cooperative Study Authorized by U.S. Public Law 108-767, Title XXXVI

Homeland Security

NFPA

A cooperative study between:

US Fire Administration (USFA)
Directorate for Preparedness
Department of Homeland Security
and
National Fire Protection Association (NFPA)

ACKNOWLEDGEMENTS

NFPA Project Manager: John R. Hall, Jr., Ph.D.
NFPA Senior Statistician: Michael J. Karter, Jr.
USFA Project Officer: Mark A. Whitney

This second needs assessment of the U.S. fire service used the unaltered survey instrument developed in the first needs assessment, with the aim of supporting valid timelines on all questions. Once again, America's fire departments rose to the challenge, carefully reviewed their departments' capabilities and described those capabilities in forms submitted to us for use in this study.

We received essential comments at several stages from colleagues at NFPA and from the staff at USFA, and we greatly appreciate their insights.

Lastly, we want to thank the administrative personnel at NFPA, whose painstaking attention to detail and extended hours of work were instrumental in transforming a set of questions and a stack of forms into a unique database and this analysis report:

- John Baldi
- John Conlon
- Frank Deely
- Norma Candeloro
- Helen Columbo

EXECUTIVE SUMMARY

Public Law 108-767, Title XXXVI – Assistance to Firefighters, included a requirement for new information in a study and report on assistance to firefighters. (Section 3603)

The 2005 Fire Service Needs Assessment survey was conducted as a stratified random sample by size of community. A stratified sample was selected with all larger departments (protecting over 50,000 population) included, and a random sample of departments protecting smaller communities was also selected. It was estimated that a response of approximately 4,500 fire departments would be sufficient to make reliable national estimates and state estimates as long as it included a good response from larger departments.

The NFPA used its own list of local fire departments as the sampling frame of all fire departments in the U.S. In all, 27,166 fire departments were listed on the NFPA Fire Service Inventory. Response rates were quite similar to response rates achieved from the *first* mailing of the 2001 Fire Service Needs Assessment Survey (the final response rate in the 2001 survey was 46%) and annually achieved in the annual NFPA Fire Experience Survey. Response rates varied considerably by size of community protected, with larger communities responding at a rate of 67% to 85%, medium sized communities at a rate of 44% to 52%, and smaller communities (less than 10,000) responding at a rate of 19% to 31%. Low response rates for smaller departments (comprised mostly of volunteers) occur for a number of reasons, including lack of personnel to complete surveys.

Response rates of larger communities were bolstered by a second mailing to all departments that protect communities of 50,000 or more that had not responded to the initial mailing. Also, states with unusually low response rates were sent a second mailing. Approximately 300 departments responded to the second mailing to small states, and this had minimal impact on national estimates. A second mailing was not sent to all nonrespondents from the first mailing due to the time constraints of the project. The results presented in the national report were based on 4,709 fire departments, or 30% of the sample, that responded to the 2005 Fire Needs Assessment Survey.

The results for West Virginia presented in this report are based on 72 fire departments that responded, or 29% of the 247 departments in West Virginia that were sent forms as part of the 2005 Fire Needs Assessment Survey.

Personnel and Their Capabilities in West Virginia

- An estimated 28% of fire departments are involved in structural firefighting but have not formally trained all involved firefighters in those duties.

- An estimated 54% of fire departments are involved in delivering emergency medical services (EMS) but have not provided formal training in those duties to all involved personnel.

- An estimated 72% of fire departments have no program to maintain basic firefighter fitness and health.

Facilities, Apparatus and Equipment in West Virginia

- An estimated 35% of total fire stations are at least 40 years old, an estimated 69% have no backup power, and an estimated 81% are not equipped for exhaust emission control.

- An estimated 16% of all engines are 15 to 19 years old, another 21% are 20 to 29 years old, and another 7% are at least 30 years old. Therefore, 44% of all engines are at least 15 years old.

- An estimated 60% of fire departments do not have enough portable radios to equip all emergency responders on a shift.

- An estimated 51% of fire departments do not have enough self-contained breathing apparatus (SCBA) to equip all firefighters on a shift.

- An estimated 38% of fire departments do not have enough personal alert system (PASS) devices to equip all emergency responders on a shift.

- An estimated 6% of fire departments do not have enough personal protective clothing to equip all firefighters.

Ability to Handle Unusually Challenging Incidents in West Virginia

- 11% of fire departments reported they were responsible for a <u>technical rescue with EMS at a structural collapse of a building with 50 occupants</u> and had enough specially trained people locally.

  - 22% of fire departments reported that such incidents were not within the department's responsibility.

  - 10% of fire departments reported they were responsible for such an incident and had enough specialized equipment locally.

  - Including departments which reported local personnel and equipment were enough, 30% of fire departments reported that they had a written agreement for obtaining non-local resources to respond.

- 10% of fire departments reported they were responsible for a hazmat and EMS incident involving chemical/biological agents and 10 injuries and had enough specially trained people locally.

  - 23% of fire departments reported that such incidents were not within the department's responsibility.

  - 6% of fire departments reported they were responsible for such an incident and had enough specialized equipment locally.

  - Including departments which reported local personnel and equipment were enough, 17% of fire departments reported that they had a written agreement for obtaining non-local resources to respond.

- 23% of fire departments reported they were responsible for a wildland/urban interface fire affecting 500 acres and had enough specially trained people locally.

  - 31% of fire departments reported that such incidents were not within the department's responsibility.

  - 19% of fire departments reported they were responsible for such an incident and had enough specialized equipment locally.

  - Including departments which reported local personnel and equipment were enough, 31% of fire departments reported that they had a written agreement for obtaining non-local resources to respond.

- 15% of fire departments reported they were responsible for mitigation of a developing major flood and had enough specially trained people locally.

  - 31% of fire departments reported that such incidents were not within the department's responsibility.

  - 16% of fire departments reported they were responsible for such an incident and had enough specialized equipment locally.

  - Including departments which reported local personnel and equipment were enough, 17% of fire departments reported that they had a written agreement for obtaining non-local resources to respond.

TABLE OF CONTENTS

Acknowledgements	i
Executive Summary	iii
Table of Contents	vii
List of Tables and Figures	ix
Introduction	1
The US Fire Service	7
Personnel and Their Capabilities	9
Facilities, Apparatus and Equipment	21
Ability to Handle Unusually Challenging Incidents	31
Appendix: Survey Form	51

LIST OF TABLES AND FIGURES

Table A – For West Virginia, Number of Fire Departments Selected and Responding by Community Size 3
Table 1. Department Type 7
Table 2. For All- or Mostly-Volunteer Departments, Average Number of Volunteer Firefighters Who Respond to a Mid-Day House Fire 11
Table 3. For All- or Mostly-Career Departments, Number of Career Firefighters Assigned to an Engine/Pumper Apparatus 12
Table 4. Does Department Provide Structural Firefighting? 13

Table 5. For Departments That Provide Structural Firefighting, How Many Personnel Who Perform This Duty Have Received Formal Training? 14
Table 6. Does Department Provide Emergency Medical Service (EMS)? 15
Table 7. For Departments That Provide Emergency Medical Service, How Many Personnel Who Perform This Duty Have Received Formal Training? 16
Table 8. Does Department Provide Hazardous Material Response? 17
Table 9. Does Department Provide Technical Rescue Service? 18

Table 10. Does Department Have a Program to Maintain Basic Firefighter Fitness and Health? 19
Table 11. Number of Fire Stations and Selected Characteristics 25
Table 12. Average Number of Engines/Pumpers and Ambulances in Service and Age of Engine/Pumper Apparatus 26
Table 13. How Many of Department's Emergency Responders on a Single Shift Are Equipped With Portable Radios? 27
Table 14. How Many Emergency Responders on a Single Shift Are Equipped With Self-Contained Breathing Apparatus (SCBA)? 28

Table 15. What Fraction of Emergency Responders on a Single Shift Are Equipped With Personal Alert Safety System (PASS) Devices? 29
Table 16. What Fraction of Emergency Responders Are Equipped With Personal Protective Clothing? 30
Table 17. Is Technical Rescue and EMS for a Building With 50 Occupants After Structural Collapse Within the Responsibility of Department? 34
Table 18. For Departments Where Technical Rescue and EMS for a Building With 50 Occupants After Structural Collapse Is Within Their Responsibility, How Far Do They Have to Go to Obtain Sufficient People With Specialized Training to Handle Such an Incident? 35
Table 19. For Departments Where Technical Rescue and EMS for a Building With 50 Occupants After Structural Collapse Is Within Their Responsibility, How Far Do They Have to Go to Obtain Sufficient Specialized Equipment to Handle Such an Incident? 36

LIST OF TABLES AND FIGURES (Continued)

Table 20. For Departments Where Technical Rescue and EMS for a Building With 50 Occupants After Structural Collapse Is Within Their Responsibility, Do They Have a Plan for Working With Others? 37
Table 21. Is a Hazmat and EMS Incident Involving Chemical/Biological Agents and 10 Injuries Within the Responsibility of Department? 38
Table 22. For Departments Where a Hazmat and EMS Incident Involving Chemical/Biological Agents and 10 Injuries Is Within Their Responsibility, How Far Do They Have to Go to Obtain Sufficient People With Specialized Training to Handle Such an Incident? 39
Table 23. For Departments Where a Hazmat and EMS Incident Involving Chemical/Biological Agents and 10 Injuries Is Within Their Responsibility, How Far Do They Have to Go to Obtain Sufficient Specialized Equipment to Handle Such an Incident? 40
Table 24. For Departments Where a Hazmat and EMS Incident Involving Chemical/Biological Agents and 10 Injuries Is Within Their Responsibility, Do They Have a Plan for Working With Others? 41

Table 25. Is a Wildland/Urban Interface Fire Affecting 500 Acres Within the Responsibility of Department? 42
Table 26. For Departments Where a Wildland/Urban Interface Fire Affecting 500 Acres Is Within Their Responsibility, How Far Do They Have to Go to Obtain Sufficient People With Specialized Training to Handle Such an Incident? 43
Table 27. For Departments Where a Wildland/Urban Interface Fire Affecting 500 Acres Is Within Their Responsibility, How Far Do They Have to Go to Obtain Sufficient Specialized Equipment to Handle Such an Incident? 44
Table 28. For Departments Where a Wildland/Urban Interface Fire Affecting 500 Acres Is Within Their Responsibility, Do They Have a Plan for Working With Others? 45
Table 29. Is Mitigation of a Developing Major Flood Within the Responsibility of Department? 46

Table 30. For Departments Where Mitigation of a Developing Major Flood Is Within Their Responsibility, How Far Do They Have to Go to Obtain Sufficient People With Specialized Training to Handle Such an Incident? 47
Table 31. For Departments Where Mitigation of a Developing Major Flood Is Within Their Responsibility, How Far Do They Have to Go to Obtain Sufficient Specialized Equipment to Handle Such an Incident? 48
Table 32. For Departments Where Mitigation of a Developing Major Flood Is Within Their Responsibility, Do They Have a Plan for Working With Others? 49

INTRODUCTION

Notes to the Reader

The following considerations should be kept in mind when using this report:

- This is a fire department self-assessment survey. It defines needs by comparing self-reported resources to available standards or other guidance (which are identified where they are used) on what is needed to do a safe and effective job. These estimates may not be the same as would be produced by using DHS hazard/risk assessment methods or asking local authorities for their judgments of priority local needs.

- This survey was sent out shortly after Hurricane Katrina, which probably affected response rates from those areas involved.

- The response rates varied by stratum with departments protecting smaller communities responding at lower rates than those protecting larger communities. Lower response rates increase the risk for nonresponse bias in estimates. Weighting factors based on response rates and sampling fractions are used to combine results across strata. See the next section entitled 'Survey Methodology' for a breakdown of response rates by stratum.

- Results from all surveys are subject to both sampling and non-sampling error. When a sample, rather than the entire population, is surveyed, there is a chance that the sample estimates may differ from the "true" population values they represent. This "sampling error" or "standard error" varies depending on the particular sample selected . In addition, the survey data are also affected by non-sampling errors, which can occur for many reasons including failure to sample a segment of the population, inability to obtain information for all respondents in the sample, the inability or unwillingness of respondents to provide correct information, and errors made in the collection or processing of the data.

Survey Methodology

The 2005 Fire Service Needs Assessment survey was conducted as a stratified random sample by size of community. A stratified sample was selected with all larger departments (protecting over 50,000 population) included, and a random sample of departments protecting smaller communities was also selected. It was estimated that a response of approximately 4,500 fire departments would be sufficient to make reliable national estimates and state estimates as long as it included a good response from larger departments.

The NFPA used its own list of local fire departments as the sampling frame of all fire departments in the U.S. In all, 27,166 fire departments were listed on the NFPA FSI*. Response rates were quite similar to response rates achieved from the *first* mailing of the 2001 Fire Service Needs Assessment Survey (the final response rate in the 2001 survey was 46%) and annually achieved in the annual NFPA Fire Experience Survey. Response rates varied considerably by size of community protected, with larger communities responding at a rate of 67% to 85%, medium sized communities at a rate of 44% to 52%, and smaller communities (less than 10,000) responding at a rate of 19% to 31%. Low response rates for smaller departments (comprised mostly of volunteers) occur for a number of reasons, including lack of personnel to complete surveys.

Response rates of larger communities were bolstered by a second mailing to all departments that protect communities of 50,000 or more that had not responded to the initial mailing. Also, states with unusually low response rates were sent a second mailing. Approximately 300 departments responded to the second mailing to small states, and this had minimal impact on national estimates. A second mailing was not sent to all nonrespondents from the first mailing due to the time constraints of the project. The results presented in the national report were based on 4,709 fire departments, or 30% of the sample, that responded to the 2005 Fire Needs Assessment Survey.

The results for West Virginia presented in this report are based on 72 fire departments that responded, or 29% of the 247 departments in West Virginia that were sent forms as part of the 2005 Fire Needs Assessment Survey. The number of fire departments selected and responding as well as response rates by community size can be seen in Table A.

Total state results in the survey report were made by summing up the weighted estimates for each stratum, and the stratification methodology adjusted for response rates by community size.

Most of the results in this report are for a percent (e.g., percent of fire departments that provide EMS services). The results in this report are based on standard statistical methodology for a stratified random sample, and it was assumed that P equals 50%.** In general for West Virginia, the standard error will not exceed +/-5% for overall state results. (It will be smaller for percents close to 0 or 100%).

* The NFPA Fire Service Inventory (FSI) file is a listing of all known fire departments in the U.S. The file is continuously maintained by a three year cycle survey which surveys one third of the country each year. The survey is also updated by review of fire marshal listings by state, other NFPA mailings, and other data sources.

** William G. Cochran, Sampling Techniques, John Wiley & Sons, New York, NY, 1977.

Results for individual community size strata have larger standard errors and can be seen when there was sufficient data to calculate them in the last column in Table A.* The standard error accounts for sampling variability but not for other issues, e.g., bias due to non-response or other non-sampling errors.

* Because a census was conducted of communities over 50,000, there is technically no "sampling error" per se for them. However, not all of the departments responded, so there is uncertainty in how well the sample estimate reflects the true population value due to weighting and potential bias. To estimate potential error for estimates by strata, we computed the standard error as if all of the respondents for these communities were in fact a random sample selected from that population (with finite population corrections applied). The standard errors for the other strata reflect standard calculations.

Table A – For West Virginia
Number of Fire Departments Selected and
Responding by Community Size

Population Of Community	Number of Fire Departments in Sample	Number of Fire Departments Responding	Response Rate (%)	Standard Error (+/-%)
50,000 to 99,999	2	1	50	NS
25,000 to 49,999	9	3	33	NS
10,000 to 24,999	26	13	50	12
5,000 to 9,999	60	15	25	12
2,500 to 4,999	85	22	26	10
under 2,500	65	18	28	11
Total	247	72	29	5

The NFPA Fire Service Inventory (FSI) file is a listing of all known fire departments in the U.S. The file is continuously maintained by a three year cycle survey which surveys one third of the country each year. The survey is also updated by review of fire marshal listings by state, other NFPA mailings, and other data sources.

Most of the results in this report are for a percent (e.g., percent of fire departments that provide EMS services). The results in this report are based on standard statistical methodology for a stratified random sample, and it was assumed that P equals 50%.* In general for West Virginia, the standard error will not exceed +/-5% for overall state results. (It will be smaller for percents close to 0 or 100%). Results for individual community size strata have larger standard errors and can be seen in the last column above. The standard error accounts for sampling variability but not for other issues, e.g., bias due to non-response or other non-sampling errors.

* William G. Cochran, Sampling Techniques, John Wiley & Sons, New York, NY, 1977.

NS- Standard errors are not provided when the number of fire departments responding is less than 5.

FEMA Survey Project on Needs of the US Fire Service

Public Law 108-767, Title XXXVI – Assistance to Firefighters, included a requirement for new information in a study and report on assistance to firefighters. (Section 3603)

The content of the survey was developed by NFPA in the first survey, in collaboration with an ad hoc technical advisory group consisting of representatives of the full spectrum of national organizations and related disciplines associated with the management of fire and related hazards and risks in the U.S. The survey form was used without modification in order to maximize comparability of results and development of valid timelines.

See Appendix for a copy of the questionnaire.

Glossary

Here are standard definitions for some of the specialized terms used in this report:

Advanced Life Support. Functional provision of advanced airway management, including intubation, advanced cardiac monitoring, manual defibrillation, establishment and maintenance of intravenous access, and drug therapy. [from NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, 2001 edition.]

Basic Life Support. Functional provision of patient assessment, including basic airway management; oxygen therapy; stabilization of spinal, musculo-skeletal, soft tissue, and shock injuries; stabilization of bleeding; and stabilization and intervention for sudden illness, poisoning and heat/cold injuries, childbirth, CPR, and automatic external defibrillator (AED) capability. [from NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, 2001 edition.]

Emergency Medical Care. The provision of treatment to patients, including first aid, cardiopulmonary resuscitation (CPR), basic life support (EMT level), advanced life support (Paramedic level), and other medical procedures that occur prior to arrival at a hospital or other health care facility. [from NFPA 1581, *Standard on Fire Department Infection Control Program*, 2000 edition] In this report, reference is made to "EMS" or "emergency medical service," which is the service of providing emergency medical care.

First Responder (EMS). Functional provision of initial assessment (i.e., airway, breathing, and circulatory systems) and basic first-aid intervention, including CPR and automatic external defibrillator (AED) capability. [from NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, 2001 edition.]

Hazardous Material. A substance that presents an unusual danger to persons due to properties of toxicity, chemical reactivity, or decomposition, corrosivity, explosion or detonation, etiological hazards, or similar properties. [from NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 1997 edition.]

Structural Fire Fighting. The activities of rescue, fire suppression, and property conservation in buildings, enclosed structures, aircraft interiors, vehicles, vessels, aircraft, or like properties that are involved in a fire or emergency situation. [from NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 1997 edition.]

Technical Rescue. The application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations. [from NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents*, 1999 edition.]

Wildland/Urban Interface. The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. [from NFPA 295, *Standard for Wildfire Control*, 1998 edition]

THE US FIRE SERVICE

Career and Volunteer Fire Departments

Most fire departments are volunteer fire departments, but career firefighters account for a much larger share of population protected than of departments. Table 1 provides an overview of West Virginia fire departments by type of department and population protected.

Volunteers are concentrated in rural communities, while career firefighters are found disproportionately in large communities. All- or mostly-career departments account for half or more of departments down to communities of at least 25,000 population.

Community size is related to the US fire service not only in terms of the relative emphasis on career vs. volunteer firefighters but also in terms of the challenges faced by local departments. However, it is possible to exaggerate those differences. Even a rural community can have a large factory complex, a large stadium, or even a high-rise building, with all the technical complexities and potential for high concentration of people or valued property that such a property entails. Even a large city can have a wildland/urban interface region and exposure to the unique fire dangers attendant on such an area. It is likely that every fire department will need to have some familiarity with every type of fire and every type of emergency, if not as part of protecting their own community, then at least in their role as a source of mutual aid or a component of regional or even national response to a major incident.

In any community, fire burns the same way in open or in enclosed spaces. Fire harms people and property in the same ways. And the resources and best practices required to safely address the fire problem – or any other major emergency – tend to be the same everywhere. What may differ is the defined responsibility of the local fire department and the quality and quantity of resources available to the department to perform those responsibilities.

Table 1
Department Type, by Community Size
(Q. 1, 7, 8)

Population of Community	All Career Number Depts	All Career Percent	Mostly Career Number Depts	Mostly Career Percent	Mostly Volunteer Number Depts	Mostly Volunteer Percent	All Volunteer Number Depts	All Volunteer Percent	Total Number Depts	Total Percent
25,000 to 99,999	6	75.0%	0	0.0%	0	0.0%	2	25.0%	8	100.0%
10,000 to 24,999	7	15.4%	7	15.4%	7	15.4%	24	53.8%	45	100.0%
5,000 to 9,999	5	6.7%	0	0.0%	9	13.3%	57	80.0%	71	100.0%
2,500 to 4,999	0	0.0%	0	0.0%	5	4.5%	103	95.5%	108	100.0%
Under 2,500	0	0.0%	0	0.0%	0	0.0%	181	100.0%	181	100.0%
Total	18	4.3%	7	1.7%	21	5.2%	367	88.9%	413	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated questions. Type of department is broken into four categories. All-career departments are comprised of 100% career firefighters. Mostly-career departments are comprised of 51 to 99% career firefighters, while mostly-volunteer departments are comprised of 1 to 50% career firefighters. All-volunteer departments are comprised of 100% volunteer firefighters. Numbers may not add to totals due to rounding.

The Fire Service Needs Assessment Survey was sent only to departments with administrative and reporting responsibilities, in order to minimize double-counting. This means that the total number of departments we contacted may be much lower than the total number of departments in the state, as reflected in the state's own records.

Q. 1: Population (number of permanent residents) your department has primary responsibility to protect (excluding mutual aid areas)
Q. 7: Total number of full-time (career) uniformed firefighters
Q. 8: Total number of active part-time (call or volunteer) firefighters

PERSONNEL AND THEIR CAPABILITIES

Adequacy of Number of Firefighters Responding

Tables 2-3 provide statistics on the percentage of all- or mostly-career fire departments that assigned less than 3, 3, 4, or more than 4 career firefighters to an engine/pumper apparatus and the percentage of all- or mostly-volunteer fire departments that responded with less than 3, 3-4, or more than 4 volunteer firefighters to a mid-day house fire.

In the national report, the indicators of response profiles were compared to recently adopted standards regarding the minimum complement of firefighters to permit an interior attack on a structural fire with adequate safeguards for firefighter safety. The comparisons were complicated, however, because most fire departments have both career and volunteer firefighters, while the survey asked only about responses by career firefighters alone or volunteer firefighters alone.

Also, in considering the results below, keep in mind that "adequacy" is being assessed here relative to only one of the several objectives of a fire department confronted with a serious fire – the protection of the firefighters themselves from unreasonable risk of injury or death. Relative success in meeting this objective will not necessarily imply anything about the department's ability to reliably achieve the other departmental suppression objectives, whether those be preventing conflagrations, preventing fire from involving an entire large structure, or intervening decisively before the onset of flashover in the room of fire origin.

In addition, success in meeting any of these objectives involves more than a sufficiency of personnel. Equipment of many types is also needed, as are skills and knowledge, as achieved through training and certification. Each of these areas of need is addressed in different parts of the survey.

While the gap between assignments and the new requirements can be made up by volunteers or in other ways, an analysis was done on the national data of the estimated total gap in career firefighters, assuming that the gap represented a real need for additional staff. That estimate came out to a need for about one additional career firefighter for every five now serving. Estimates were not possible for volunteers even at the national level, though it was clear that gaps exist there as well. And the proportional need tended to be greater the smaller the community size.

The need for career firefighters can be estimated as a 33% increase for departments that respond with 3 firefighters (adding 1 to 3 to make 4 is a 33% increase) and a 50% increase for departments that respond with 1-2 firefighters (adding 2 to 2 to make 4 is a 50% increase).

Extent of Training, by Type of Duty

Structural Firefighting

For West Virginia, Table 4 indicates whether structural firefighting is within the responsibility of the fire department. No departments say no. Table 5 asks how many of the personnel responsible for structural firefighting have received formal training.

An estimated 28% of the state's fire departments have structural firefighting within their responsibility and have not formally trained all involved firefighters. The percentage for the state's rural communities (population less than 2,500) is 38%. The national percentage for departments serving all sizes of communities is 53%, the highest state percentage is 91%, and the lowest state percentage is 0%.

Emergency Medical Service

For West Virginia, Table 6 asks whether emergency medical service (EMS) is within the responsibility of the fire department. More than one-quarter (28%) of departments say no. Table 7 asks how many of the assigned personnel in departments responsible for EMS have received formal training.

An estimated 54% of the state's fire departments have EMS within their responsibility but have not formally trained all involved personnel. The national percentage is 36%, the highest state percentage is 60%, and the lowest state percentage is 8%.

Hazardous Material Response

Table 8 asks whether hazardous material response is within the responsibility of the fire department. One-eighth (12%) of departments say no.

Technical Rescue

For West Virginia, Table 9 asks whether technical rescue is within the responsibility of the fire department. One-third (33%) of departments say no. Even for rural fire departments, protecting fewer than 2,500 population, two-thirds of fire departments now provide technical rescue.

Programs to Maintain and Protect Firefighter Health

Table 10 indicates whether departments have a program to maintain basic firefighter fitness and health, such as is required in NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*. In West Virginia, an estimated 72% of fire departments indicate that they do not have such a program. The national percentage of fire departments with no such programs is 76%, the highest state percentage is 94%, and the lowest state percentage is 33%.

Table 2
For All- or Mostly-Volunteer Departments
Average Number of Volunteer Firefighters Who Respond to a Mid-Day House Fire
Percent of Departments by Community Size
(Q. 10)

Average Number of Volunteer Firefighters Responding

Population of Community	1-2	3-4	5-9	10-14	15-19	20 or More	Total
10,000 to 24,999	0.0%	0.0%	9.1%	9.1%	0.0%	81.8%	100.0%
5,000 to 9,999	0.0%	0.0%	0.0%	0.0%	7.1%	92.9%	100.0%
2,500 to 4,999	0.0%	0.0%	0.0%	9.1%	9.1%	81.8%	100.0%
Under 2,500	0.0%	0.0%	5.6%	11.1%	22.2%	61.1%	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 66 departments reporting on the indicated question.

A mostly-volunteer department might respond with some career firefighters as well, but this question asked only about volunteers responding.

Numbers may not add to totals due to rounding.

Q. 10: Average number of call/volunteer personnel who respond to a mid-day house fire (blank for actual number).

Table 3
For All- or Mostly-Career Departments
Number of Career Firefighters Assigned to an Engine/Pumper Apparatus
Percent of Departments by Community Size
(Q. 11)

	Number of Career Firefighters Assigned to Engine/Pumper				
Population of Community	**1-2**	**3**	**4**	**5 or More**	**Total**
25,000 to 99,999	33.3%	66.7%	0.0%	0.0%	100.0%
10,000 to 24,999	33.3%	66.7%	0.0%	0.0%	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 11: Number of on-duty career/paid personnel assigned to an engine/pumper (answers given as ranges shown).

Table 4
Does Department Provide Structural Firefighting?
by Community Size
(Q. 13a)

	Yes		No		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	11	100.0%	0	0.0%	11	100.0%
10,000 to 24,999	41	100.0%	0	0.0%	41	100.0%
5,000 to 9,999	81	100.0%	0	0.0%	81	100.0%
2,500 to 4,999	104	100.0%	0	0.0%	104	100.0%
Under 2,500	200	100.0%	0	0.0%	200	100.0%
Total	437	100.0%	0	0.0%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 13a: Is [structural firefighting] a role your department performs?

Table 5
For Departments That Provide Structural Firefighting
How Many Personnel Who Perform This Duty Have Received Formal Training?
by Community Size
(Q. 13b)

	All		Most		Some		None		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	11	100.0%	0	0.0%	0	0.0%	0	0.0%	11	100.0%
10,000 to 24,999	41	100.0%	0	0.0%	0	0.0%	0	0.0%	41	100.0%
5,000 to 9,999	65	80.0%	16	20.0%	0	0.0%	0	0.0%	81	100.0%
2,500 to 4,999	71	68.2%	33	31.8%	0	0.0%	0	0.0%	104	100.0%
Under 2,500	125	62.5%	50	25.0%	25	12.5%	0	0.0%	200	100.0%
Total	313	71.6%	99	22.7%	25	5.7%	0	0.0%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 70 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 13a or 14a) and also reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 13b: If [structural firefighting is a role your department performs], how many of your personnel who perform this duty have received formal training (not just on-the-job)?

Table 6
Does Department Provide Emergency Medical Service (EMS)?
by Community Size
(Q. 14a)

Population of Community	Yes: Number Depts	Yes: Percent	No: Number Depts	No: Percent	Total: Number Depts	Total: Percent
25,000 to 99,999	11	100.0%	0	0.0%	11	100.0%
10,000 to 24,999	32	76.9%	9	23.1%	41	100.0%
5,000 to 9,999	70	86.7%	11	13.3%	81	100.0%
2,500 to 4,999	71	68.2%	33	31.8%	104	100.0%
Under 2,500	133	66.7%	67	33.3%	200	100.0%
Total	317	72.5%	120	27.5%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 14a: Is [emergency medical service] a role your department performs?

Table 7
For Departments That Provide Emergency Medical Service
How Many Personnel Who Perform This Duty Have Received Formal Training?
by Community Size
(Q. 14b)

Population of Community	All		Most		Some		None		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	7	66.7%	4	33.3%	0	0.0%	0	0.0%	11	100.0%
10,000 to 24,999	16	50.0%	6	20.0%	9	30.0%	0	0.0%	32	100.0%
5,000 to 9,999	16	23.1%	22	30.8%	32	46.2%	0	0.0%	70	100.0%
2,500 to 4,999	19	26.7%	28	40.0%	24	33.3%	0	0.0%	71	100.0%
Under 2,500	24	18.2%	24	18.2%	85	63.6%	0	0.0%	133	100.0%
Total	82	26.0%	84	26.6%	150	47.4%	0	0.0%	317	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 52 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 13a or 14a) and also reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 14b: If [emergency medical service is a role your department performs], how many of your personnel who perform this duty have received formal training (not just on-the-job)?

Table 8
Does Department Provide Hazardous Material Response?
by Community Size
(Q. 15a)

Population of Community	Yes: Number Depts	Yes: Percent	No: Number Depts	No: Percent	Total: Number Depts	Total: Percent
25,000 to 99,999	11	100.0%	0	0.0%	11	100.0%
10,000 to 24,999	38	92.3%	3	7.7%	41	100.0%
5,000 to 9,999	70	86.7%	11	13.3%	81	100.0%
2,500 to 4,999	90	86.4%	14	13.6%	104	100.0%
Under 2,500	178	88.9%	22	11.1%	200	100.0%
Total	387	88.5%	50	11.5%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 15a: Is [hazardous materials response] a role your department performs?

Table 9
Does Department Provide Technical Rescue Service?
by Community Size
(Q. 17a)

Population of Community	Yes: Number Depts	Yes: Percent	No: Number Depts	No: Percent	Total: Number Depts	Total: Percent
25,000 to 99,999	11	100.0%	0	0.0%	11	100.0%
10,000 to 24,999	35	84.6%	6	15.4%	41	100.0%
5,000 to 9,999	59	73.3%	22	26.7%	81	100.0%
2,500 to 4,999	57	54.5%	47	45.5%	104	100.0%
Under 2,500	133	66.7%	67	33.3%	200	100.0%
Total	295	67.5%	142	32.5%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 17a: Is [technical rescue] a role your department performs?

Table 10
Does Department Have a Program to Maintain Basic Firefighter Fitness and Health? by Community Size
(Q. 18)

Population of Community	Yes Number Depts	Yes Percent	No Number Depts	No Percent	Total Number Depts	Total Percent
25,000 to 99,999	3	25.0%	8	75.0%	11	100.0%
10,000 to 24,999	19	46.2%	22	53.8%	41	100.0%
5,000 to 9,999	32	40.0%	49	60.0%	81	100.0%
2,500 to 4,999	24	22.7%	80	77.3%	104	100.0%
Under 2,500	44	22.2%	156	77.8%	200	100.0%
Total	122	28.0%	315	72.0%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 18: Does your department have a program to maintain basic firefighter fitness and health (e.g., as required in NFPA 1500)?

FACILITIES, APPARATUS AND EQUIPMENT

Fire Stations

Table 11 describes the average number of fire stations per department by size of community. Note that a community may have two or more fire stations, and each fire station may have two or more firefighting companies, each attached to a particular apparatus, such as an engine/pumper. Table 11 also describes the fraction of stations with characteristics that indicate potential needs, specifically age of station over 40 years, a lack of backup power, or a lack of exhaust emission control equipment.

An estimated 34% of the state's fire stations are over 40 years old. The national percentage is 36%, the highest state percentage is 73%, and the lowest state percentage is 8%.

An estimated 59% of the state's fire stations have no backup power. The national percentage is 54%, the highest state percentage is 87%, and the lowest state percentage is 4%. An estimated 70% of the state's fire stations are not equipped for exhaust emission control. The national percentage is 72%, the highest state percentage is 100%, and the lowest state percentage is 28%.

In addition to needs associated with the condition of fire stations, there are also questions about needs with respect to the number and coverage of fire stations. The number and coverage needed are those required to achieve response with sufficient fire suppression flow within a target period of time. The information contained in the Needs Assessment Survey is not sufficient to perform such a calculation, but a simplified version is possible. This calculation was considered too complex to repeat separately for each state, but because it is an important issue, the logic used and the primary overall conclusions are repeated here.

The *Fire Suppression Rating Schedule* of the Insurance Services Office includes a number of guidelines and formulas to use in performing a complete assessment of the adequacy of fire department resources, but for this simplified calculation on adequacy of number of fire stations, Item 560 has a basis: "The built-upon area of the city should have a first-due engine company within 1-½ miles and a ladder-service company within 2-½ miles."* For this simplified calculation, we can use these two numbers as a range for the maximum distance from any point in the community to the nearest fire station.

NFPA 1710 states its requirements in terms of time, specifically, a requirement that 90% of responses by the initial arriving company shall be within 4 minutes. If the first-response area is considered as a circle with the fire station in the middle, and if emergency calls are evenly distributed throughout the response area, then 90% of responses will be within 95% of the distance from the fire station to the boundary of the

* *Fire Suppression Rating Schedule*, New York: Insurance Services Office, Inc., August 1998, p. 28.

response area.* If the average speed of fire apparatus is 21 mph, as it might be in the downtown area of a city, then the 4-minute requirement corresponds to a 1.5-mile requirement. If the average speed of fire apparatus is 36 mph, as it might be in a suburban or rural area, then the 4-minute requirement corresponds to a 2.5-mile requirement. In a very rural community, the average speed could be even higher, and the allowable distance would be even greater.

Note the limitations in this assumption: Item 560 implies that a larger maximum distance is acceptable for parts of the community that are not "built-upon"; this will be especially relevant for smaller communities. This larger maximum distance may or may not be on the order of the 2 ½ miles cited for ladder-service companies responding in the built-upon area, so the use of 2 ½ miles as an upper bound for calculation is done for convenience rather than through any compelling logic. Item 560 does not reflect variations in local travel speeds or the need for adequate fire flow by the responding apparatus; those issues are addressed elsewhere in the *Fire Suppression Rating Schedule*. This guideline is not a mandatory government requirement or a consensus voluntary standard.

To use this guideline with the data available from the Needs Assessment Survey, it is necessary to have a formula giving the maximum distance from fire station to any point in the community as a function of data collected in the survey. The Rand Institute developed such a formula for expected (i.e., average) distance as part of its extensive research on fire deployment issues in the 1960s and 1970s.**

The formula has been developed and tested against actual travel-distance data from selected fire departments for both straight-line travel and the more relevant right-angle travel that characterizes the grid layout of many communities. It has been developed assuming either a random distribution of fire stations throughout the community or an optimal placement of stations to minimize travel distances and times.

The formula is called the square root law: Expected distance = $k\sqrt{(A/n)}$

where k is a proportionality constant
A is the community's area in square miles
n is the number of fire stations

Note the limitations of this approach, cited by the Rand authors: Most importantly, it ignores the effect of natural barriers, such as rivers or rail lines. It assumes an alarm is equally likely from any point in the community. It assumes a unit is always ready to respond from the nearest fire station.

* If r is the distance from station to boundary, then the size of the response area is πr^2, and the radius of a circle with area equal to $0.9\pi r^2$ will be $r\sqrt{0.9}$ or approximately 0.95r.

** Warren E. Walker, Jan M. Chaiken, and Edward J. Ignall, eds., *Fire Department Deployment Analysis*, Publications in Operations Research series of the Operations Research Society of America, New York: Elsevier North Holland, 1979, pp. 180-184.

If one further assumes that response areas can be approximated by circles with fire stations at the center, then expected distance equals one-half of maximum distance. If response areas are more irregularly shaped, expected distance will be a smaller fraction of maximum distance.

With these assumptions, the number of fire stations will be sufficient to provide acceptable coverage, defined as a maximum travel distance that is less than the ISO-based value, if the following is true:

$$A - \frac{1}{2}(n)(D_{max})^2/(k^2) < 0$$

where

A is the community's area in square miles

n is the number of fire stations

D_{max} is the maximum acceptable travel distance (1-½ miles or 2-½ miles)

k is the Rand proportionality constant, which is assumed to be for right-angle travel and is 0.6267 for random station location and 0.4714 for optimal station location

It may be appropriate to use the shorter maximum distance for larger communities and the larger maximum distance for smaller communities. In fact, as noted, if the average speed achievable by fire apparatus is well above 36 mph, an even larger maximum distance is justified under NFPA 1710. Note also that NFPA 1720, the standard for volunteer fire departments, has no speed of response or distance requirement, reflecting the fact that very low population densities in the smallest communities mean the number of people exposed to long response times may be very small.

Also, while few if any communities will have optimal station locations, it is likely that most will have placements that are considerably better than random. Based on these observations and calculations, the national report concluded that, in <u>every</u> population interval, roughly two-thirds to three-fourths of fire departments have too few stations to provide the indicated coverage. Specifically, if 1.5 miles is used for communities of 10,000 or more and 2.5 miles is used for smaller communities, with optimal location used for both, then the national study found that 65-76% of departments have too few stations, except for communities of 500,000 to 999,999 population, where the percentage was 82%.

Apparatus

Table 12 characterizes the size of the engine/pumper fleet inventory, overall and by age of vehicle.

An estimated 16% of all engines are 15 to 19 years old, another 21% are 20 to 29 years old, and another 7% are at least 30 years old. Therefore, 44% of all engines are at least 15 years old. For the percentage of engines that are at least 15 years old, the national percentage is 49%. For the percentage of engines that are at least 30 years old, the

national percentage is 13%, the highest state percentage is 34%, and the lowest state percentage is 0%.

Vehicle age alone is not sufficient to confirm a need for replacement, but it is indicative of a potential need, which should be examined.

Personal Protective Equipment and Clothing

Table 13 indicates what percentage of emergency responders on a single shift are equipped with portable radios.

In West Virginia, an estimated 60% of fire departments do not have enough radios to equip all emergency responders on a shift. The national percentage is 36%, the highest state percentage is 90%, and the lowest state percentage is 29%.

Table 14 estimates how many emergency responders on a shift or otherwise on-duty are equipped with self-contained breathing apparatus (SCBA).

In West Virginia, an estimated 51% of fire departments do not have enough SCBA units to equip all emergency responders on a shift. The national percentage is 60%, the highest state percentage is 85%, and the lowest state percentage is 0%.

Table 15 indicates what fraction of emergency responders on a single shift are equipped with Personal Alert Safety System (PASS) devices.

In West Virginia, an estimated 38% of fire departments do not have enough PASS devices to equip all emergency responders on a shift. The national percentage is 48%, the highest state percentage is 74%, and the lowest state percentage is 0%.

Table 16 indicates how many emergency responders are equipped with their own personal protective clothing.

In West Virginia, an estimated 6% of fire departments do not have personal protective clothing for all firefighters. The national percentage is 8%, the highest state percentage is 22%, and the lowest state percentage is 0%.

Table 11
Number of Fire Stations and Selected Characteristics by Community Size
(Q. 23)

Population of Community	Average Number of Stations	Percent Stations Over 40 Years Old	Percent Stations Having Backup Power	Percent Stations Equipped for Exhaust Control
25,000 to 99,999	5.8	65.2%	8.7%	56.5%
10,000 to 24,999	1.9	26.3%	63.2%	26.3%
5,000 to 9,999	1.4	33.4%	55.5%	33.4%
2,500 to 4,999	1.3	42.3%	19.2%	3.8%
Under 2,500	1.1	26.7%	20.0%	6.6%
Total	1.4	35.4%	30.8%	18.8%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 61 departments reporting on the indicated questions.

Total row is for all communities and is not the sum of the other rows.

Q. 23: Number of fire stations, number over 40 years old, number having backup power, number equipped for exhaust emission control (e.g., diesel exhaust extraction).

Table 12
Average Number of Engines/Pumpers in Service and Age of Engine/Pumper Apparatus by Community Size
(Q. 24)

Population of Community	Average Number of Engines	Engines 0-14 Years Old	Engines 15-19 Years Old	Engines 20-29 Years Old	Engines 30 or More Years Old
25,000 to 99,999	5.75	4.25	1.25	0.25	0.00
10,000 to 24,999	3.54	2.39	0.38	0.62	0.15
5,000 to 9,999	3.00	1.42	0.43	0.86	0.29
2,500 to 4,999	2.60	1.43	0.48	0.53	0.16
Under 2,500	2.44	1.39	0.39	0.50	0.17
Total	2.93	1.66	0.46	0.61	0.19

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 69 departments reporting on the indicated questions.

Total row is for all communities and is not the sum of the other rows.

Q. 24: Number of engines/pumpers in service, number 0-14 years old, number 15-19 years old, number 20-29 years old, number 30 or more years old, number unknown age.

Table 13
How Many of Department's Emergency Responders on a Single Shift Are Equipped With Portable Radios? by Community Size (Q. 27a)

Population of Community	All		Most		Some		None		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	6	50.0%	6	50.0%	0	0.0%	0	0.0%	11	100.0%
10,000 to 24,999	32	76.9%	6	15.4%	3	7.7%	0	0.0%	41	100.0%
5,000 to 9,999	32	40.0%	43	53.3%	5	6.7%	0	0.0%	81	100.0%
2,500 to 4,999	19	18.2%	71	68.2%	14	13.6%	0	0.0%	104	100.0%
Under 2,500	78	38.9%	56	27.8%	67	33.3%	0	0.0%	200	100.0%
Total	166	40.3%	181	44.4%	89	15.3%	0	0.0%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 27a: How many of your emergency responders on-duty on a single shift can be equipped with portable radios?

Table 14
How Many Emergency Responders on a Single Shift Are Equipped With Self-Contained Breathing Apparatus (SCBA)? by Community Size (Q. 28a)

Population of Community	All		Most		Some		None		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	11	100.0%	0	0.0%	0	0.0%	0	0.0%	11	100.0%
10,000 to 24,999	35	84.6%	6	15.4%	0	0.0%	0	0.0%	41	100.0%
5,000 to 9,999	27	33.3%	43	53.3%	11	13.3%	0	0.0%	81	100.0%
2,500 to 4,999	28	27.3%	71	68.2%	5	4.5%	0	0.0%	104	100.0%
Under 2,500	100	50.0%	67	33.3%	33	16.7%	0	0.0%	200	100.0%
Total	201	48.6%	187	43.1%	49	8.3%	0	0.0%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 28a: How many emergency responders on-duty on a single shift can be equipped with self-contained breathing apparatus (SCBA)?

Table 15
What Fraction of Emergency Responders on a Single Shift Are Equipped With Personal Alert Safety System (PASS) Devices? by Community Size (Q. 29)

Population of Community	All		Most		Some		None		Total	
	Number of Depts	Percent	Number of Depts	Percent	Number of Depts	Percent	Number of Depts	Percent	Number of Depts	Percent
25,000 to 99,999	11	100.0%	0	0.0%	0	0.0%	0	0.0%	11	100.0%
10,000 to 24,999	41	100.0%	0	0.0%	0	0.0%	0	0.0%	41	100.0%
5,000 to 9,999	49	60.0%	27	33.3%	5	6.7%	0	0.0%	81	100.0%
2,500 to 4,999	43	40.9%	43	40.9%	14	13.6%	5	4.5%	104	100.0%
Under 2,500	106	52.9%	59	29.4%	35	17.6%	0	0.0%	200	100.0%
Total	249	62.0%	128	26.8%	55	9.9%	5	1.4%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 71 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 29: How many of your emergency responders on-duty on a single shift are equipped with Personal Alert Safety System (PASS) devices?

Table 16
What Fraction of Emergency Responders Are Equipped With Personal Protective Clothing? by Community Size
(Q. 30a)

Population of Community	All		Most		Some		None		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	11	100.0%	0	0.0%	0	0.0%	0	0.0%	11	100.0%
10,000 to 24,999	41	100.0%	0	0.0%	0	0.0%	0	0.0%	41	100.0%
5,000 to 9,999	70	86.7%	11	13.3%	0	0.0%	0	0.0%	81	100.0%
2,500 to 4,999	95	90.9%	9	9.1%	0	0.0%	0	0.0%	104	100.0%
Under 2,500	200	100.0%	0	0.0%	0	0.0%	0	0.0%	200	100.0%
Total	417	94.4%	20	5.6%	0	0.0%	0	0.0%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 30a: How many of your emergency responders are equipped with personal protective clothing?

ABILITY TO HANDLE UNUSUALLY CHALLENGING INCIDENTS

Questions 36-39 were designed to check the capabilities of fire departments, in communities of various sizes, to handle unusually severe and challenging incidents, only one of which involved a fire. These have to do with the increasingly important first responder role of fire departments.

In addition to asking whether such incidents were within the department's responsibility, the survey asked whether fire departments could handle such incidents with local personnel and equipment and whether a plan existed to support effective coordination with non-local resources and partners.

Technical Rescue and EMS at Structural Collapse With 50 Occupants

Table 17 indicates whether a technical rescue with EMS at a structural collapse of a building with 50 occupants is within the responsibility of the department.

Tables 18-20 address, for the departments that consider such a rescue within their responsibility, how far they have to go for specially trained people and specialized equipment and what type of plan they have for obtaining assistance, respectively.

In West Virginia, 22% of fire departments reported that such incidents were not within the department's responsibility. The national percentage is 34%, the highest state percentage is 50%, and the lowest percentage is 0%.

In West Virginia, 11% of fire departments reported they were responsible for such an incident and had enough specially trained people locally. The national percentage is 11%, the highest state percentage is 25%, and the lowest percentage is 0%.

In West Virginia, 10% of fire departments reported they were responsible for such an incident and had enough specialized equipment locally. The national percentage is 10%, the highest state percentage is 25%, and the lowest percentage is 0%.

In West Virginia, including departments which reported local personnel and equipment were enough, 30% of fire departments reported that they had a written agreement for obtaining non-local resources to respond. The national percentage is 26%, the highest state percentage is 62%, and the lowest percentage is 6%.

Hazmat and EMS for Incident Involving Chemical/Biological Agents and 10 Injuries

Table 21 indicates whether hazmat and EMS for an incident involving chemical/ biological agents and 10 injuries is within the responsibility of the department. (Note that

casualty counts of 100 to 1,000 are not unusual in chemical/biological agent weapons of mass destruction.)

Tables 22-24 address, for the departments that consider such a rescue within their responsibility, how far they have to go for specially trained people and specialized equipment and what type of plan they have for obtaining assistance, respectively.

In West Virginia, 23% of fire departments reported that such incidents were not within the department's responsibility. The national percentage is 32%, the highest state percentage is 46%, and the lowest percentage is 0%.

In West Virginia, 10% of fire departments reported they were responsible for such an incident and had enough specially trained people locally. The national percentage is 12%, the highest state percentage is 29%, and the lowest percentage is 0%.

In West Virginia, 6% of fire departments reported they were responsible for such an incident and had enough specialized equipment locally. The national percentage is 10%, the highest state percentage is 28%, and the lowest percentage is 0%.

In West Virginia, including departments which reported local personnel and equipment were enough, 17% of fire departments reported that they had a written agreement for obtaining non-local resources to respond. The national percentage is 30%, the highest state percentage is 66%, and the lowest percentage is 0%.

Wildland/Urban Interface Fire Affecting 500 Acres

Table 25 indicates whether a wildland/urban interface fire affecting 500 acres is within the responsibility of the department.

Tables 26-28 address, for the departments that consider such a rescue within their responsibility, how far they have to go for specially trained people and specialized equipment and what type of plan they have for obtaining assistance, respectively.

In West Virginia, 31% of fire departments reported that such incidents were not within the department's responsibility. The national percentage is 27%, the highest state percentage is 66%, and the lowest percentage is 0%.

In West Virginia, 23% of fire departments reported they were responsible for such an incident and had enough specially trained people locally. The national percentage is 24%, the highest state percentage is 52%, and the lowest percentage is 2%.

In West Virginia, 19% of fire departments reported they were responsible for such an incident and had enough specialized equipment locally. The national percentage is 21%, the highest state percentage is 50%, and the lowest percentage is 1%.

In West Virginia, including departments which reported local personnel and equipment were enough, 31% of fire departments reported that they had a written agreement for obtaining non-local resources to respond. The national percentage is 40%, the highest state percentage is 78%, and the lowest percentage is 12%.

Mitigation of a Developing Major Flood

Table 29 indicates whether mitigation of a developing major flood is within the responsibility of the department.

Tables 30-32 address, for the departments that consider such a rescue within their responsibility, how far they have to go for specially trained people and specialized equipment and what type of plan they have for obtaining assistance, respectively.

In West Virginia, 31% of fire departments reported that such incidents were not within the department's responsibility. The national percentage is 52%, the highest state percentage is 66%, and the lowest percentage is 0%.

In West Virginia, 15% of fire departments reported they were responsible for such an incident and had enough specially trained people locally. The national percentage is 11%, the highest state percentage is 33%, and the lowest percentage is 0%.

In West Virginia, 16% of fire departments reported they were responsible for such an incident and had enough specialized equipment locally. The national percentage is 9%, the highest state percentage is 33%, and the lowest percentage is 0%.

In West Virginia, including departments which reported local personnel and equipment were enough, 17% of fire departments reported that they had a written agreement for obtaining non-local resources to respond. The national percentage is 18%, the highest state percentage is 53%, and the lowest percentage is 2%.

Table 17
Is Technical Rescue and EMS for a Building With 50 Occupants After Structural Collapse Within the Responsibility of Department? by Community Size
(Q. 36a)

	Yes		No		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	11	100.0%	0	0.0%	11	100.0%
10,000 to 24,999	41	100.0%	0	0.0%	41	100.0%
5,000 to 9,999	65	80.0%	16	20.0%	81	100.0%
2,500 to 4,999	66	63.6%	38	36.4%	104	100.0%
Under 2,500	144	72.2%	56	27.8%	200	100.0%
Total	327	77.8%	110	22.2%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 36a: Is [technical rescue and EMS for a building with 50 occupants after structural collapse] within your department's responsibility?

Table 18
For Departments Where Technical Rescue and EMS For a Building With 50 Occupants After Structural Collapse Is Within Their Responsibility, How Far Do They Have to Go to Obtain Sufficient People With Specialized Training to Handle Such an Incident? by Community Size (Q. 36b)

	Local		Regional		State		National		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	6	50.0%	0	0.0%	6	50.0%	0	0.0%	11	100.0%
10,000 to 24,999	13	30.8%	19	46.2%	9	23.1%	0	0.0%	41	100.0%
5,000 to 9,999	11	16.7%	11	16.7%	43	66.7%	0	0.0%	65	100.0%
2,500 to 4,999	5	7.1%	38	57.1%	19	28.6%	5	7.1%	66	100.0%
Under 2,500	11	7.7%	89	61.5%	44	30.8%	0	0.0%	144	100.0%
Total	45	13.7%	156	47.8%	122	37.1%	5	1.4%	327	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 56 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 36b: If [technical rescue and EMS for a building with 50 occupants after structural collapse is within your department’s responsibility], how far would you have to go to obtain enough people with specialized training for this incident?

Table 19
For Departments Where Technical Rescue and EMS For a Building With 50 Occupants After Structural Collapse Is Within Their Responsibility, How Far Do They Have to Go to Obtain Sufficient Specialized Equipment to Handle Such an Incident? by Community Size (Q. 36c)

	Local		Regional		State		National		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	6	50.0%	0	0.0%	6	50.0%	0	0.0%	11	100.0%
10,000 to 24,999	6	15.4%	25	61.5%	6	15.4%	3	7.7%	41	100.0%
5,000 to 9,999	5	8.3%	22	33.3%	32	50.0%	5	8.3%	65	100.0%
2,500 to 4,999	5	7.1%	47	71.4%	14	21.4%	0	0.0%	66	100.0%
Under 2,500	22	15.4%	56	38.5%	56	38.5%	11	7.7%	144	100.0%
Total	44	13.5%	150	45.7%	114	34.8%	20	6.0%	327	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 56 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 36c: If [technical rescue and EMS for a building with 50 occupants after structural collapse is within your department’s responsibility], how far would you have to go to obtain enough specialized equipment to handle this incident?

Table 20
For Departments Where Technical Rescue and EMS for a Building With 50 Occupants After Structural Collapse Is Within Their Responsibility, Do They Have a Plan for Working With Others? by Community Size (Q. 36d)

	Yes – Written Agreement		Yes – Informal		Yes – Other		No		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	11	100.0%	0	0.0%	0	0.0%	0	0.0%	11	100.0%
10,000 to 24,999	19	46.2%	16	38.5%	3	7.7%	3	7.7%	41	100.0%
5,000 to 9,999	16	25.0%	38	58.3%	0	0.0%	11	16.7%	65	100.0%
2,500 to 4,999	14	21.4%	24	35.7%	14	21.4%	14	21.4%	66	100.0%
Under 2,500	67	46.2%	44	30.8%	22	15.4%	11	7.7%	144	100.0%
Total	127	38.8%	122	37.2%	40	12.1%	39	12.0%	327	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 56 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 36d: Do you have a plan for working on others on [technical rescue and EMS for a building with 50 occupants after structural collapse]?

Table 21
Is a Hazmat and EMS Incident Involving Chemical/Biological Agents and 10 Injuries Within the Responsibility of Department? by Community Size (Q. 37a)

	Yes		No		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	11	100.0%	0	0.0%	11	100.0%
10,000 to 24,999	41	100.0%	0	0.0%	41	100.0%
5,000 to 9,999	59	73.3%	22	26.7%	81	100.0%
2,500 to 4,999	71	68.2%	33	31.8%	104	100.0%
Under 2,500	141	70.6%	59	29.4%	200	100.0%
Total	323	77.5%	114	22.5%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 71 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 37a: Is [hazmat and EMS for an incident involving chemical/biological agents and 10 injuries] within your department's responsibility?

Table 22
For Departments Where a Hazmat and EMS Incident
Involving Chemical/Biological Agents and 10 Injuries Is Within Their Responsibility
How Far Do They Have to Go to Obtain Sufficient People
With Specialized Training to Handle Such an Incident?
by Community Size
(Q. 37b)

	Local		Regional		State		National		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	6	50.0%	3	25.0%	3	25.0%	0	0.0%	11	100.0%
10,000 to 24,999	16	38.5%	16	38.5%	9	23.1%	0	0.0%	41	100.0%
5,000 to 9,999	5	9.1%	27	45.5%	27	45.5%	0	0.0%	59	100.0%
2,500 to 4,999	5	6.7%	43	60.0%	14	20.0%	9	13.3%	71	100.0%
Under 2,500	12	8.3%	82	58.3%	47	33.3%	0	0.0%	141	100.0%
Total	43	13.3%	170	52.7%	100	31.1%	9	2.9%	323	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 55 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 37b: If [hazmat and EMS for an incident involving chemical/biological agents and 10 injuries is within your department’s responsibility], how far would you have to go to obtain enough people with specialized training for this incident?

Table 23
For Departments Where a Hazmat and EMS Incident Involving Chemical/Biological Agents and 10 Injuries Is Within Their Responsibility How Far Do They Have to Go to Obtain Sufficient Specialized Equipment to Handle Such An Incident? by Community Size (Q. 37c)

	Local		Regional		State		National		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	3	25.0%	6	50.0%	3	25.0%	0	0.0%	11	100.0%
10,000 to 24,999	13	30.8%	19	46.2%	9	23.1%	0	0.0%	41	100.0%
5,000 to 9,999	0	0.0%	24	40.0%	36	60.0%	0	0.0%	59	100.0%
2,500 to 4,999	0	0.0%	43	60.0%	14	20.0%	14	20.0%	71	100.0%
Under 2,500	12	8.3%	59	41.7%	71	50.0%	0	0.0%	141	100.0%
Total	27	8.4%	150	46.2%	133	41.0%	14	4.4%	323	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 54 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 37c: If [hazmat and EMS for an incident involving chemical/biological agents and 10 injuries is within your department’s responsibility], how far would you have to go to obtain enough specialized equipment to handle this incident?

Table 24
For Departments Where a Hazmat and EMS Incident Involving Chemical/Biological Agents and 10 Injuries Is Within Their Responsibility Do They Have a Plan for Working With Others? by Community Size (Q. 37d)

	Yes – Written Agreement		Yes – Informal		Yes – Other		No		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	11	100.0%	0	0.0%	0	0.0%	0	0.0%	11	100.0%
10,000 to 24,999	25	61.5%	13	30.8%	3	7.7%	0	0.0%	41	100.0%
5,000 to 9,999	5	9.1%	49	81.8%	0	0.0%	5	9.1%	59	100.0%
2,500 to 4,999	19	26.7%	33	46.7%	9	13.3%	9	13.3%	71	100.0%
Under 2,500	12	8.3%	106	75.0%	12	8.3%	12	8.3%	141	100.0%
Total	72	22.4%	200	61.9%	24	7.5%	27	8.2%	323	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 55 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 37d: Do you have a plan for working on others on [hazmat and EMS for an incident involving chemical/biological agents and 10 injuries]?

Table 25
Is a Wildland/Urban Interface Fire Affecting 500 Acres Within the Responsibility of Department? by Community Size (Q. 38a)

	Yes		No		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	3	25.0%	8	75.0%	11	100.0%
10,000 to 24,999	41	100.0%	0	0.0%	41	100.0%
5,000 to 9,999	43	53.3%	38	46.7%	81	100.0%
2,500 to 4,999	66	63.6%	38	36.4%	104	100.0%
Under 2,500	156	77.8%	44	22.2%	200	100.0%
Total	309	69.0%	128	31.0%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 71 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 38a: Is [a wildland/urban interface fire affecting 500 acres] within your department's responsibility?

Table 26
For Departments Where a Wildland/Urban Interface Fire Affecting 500 Acres Is Within Their Responsibility How Far Do They Have to Go to Obtain Sufficient People With Specialized Training to Handle Such an Incident? by Community Size (Q. 38b)

	Local		Regional		State		National		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	0	0.0%	0	0.0%	3	100.0%	0	0.0%	3	100.0%
10,000 to 24,999	17	41.7%	14	33.3%	10	25.0%	0	0.0%	41	100.0%
5,000 to 9,999	16	37.5%	22	50.0%	5	12.5%	0	0.0%	43	100.0%
2,500 to 4,999	5	7.1%	38	57.1%	24	35.7%	0	0.0%	66	100.0%
Under 2,500	67	42.9%	44	28.6%	44	28.6%	0	0.0%	156	100.0%
Total	105	33.9%	118	38.1%	86	28.0%	0	0.0%	309	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 49 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 38b: If [wildland/urban interface fire affecting 500 acres is within your department’s responsibility], how far would you have to go to obtain enough people with specialized training for this incident?

Table 27
For Departments Where a Wildland/Urban Interface Fire Affecting 500 Acres Is Within Their Responsibility How Far Do They Have to Go to Obtain Sufficient Specialized Equipment to Handle Such An Incident? by Community Size (Q. 38c)

	Local		Regional		State		National		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	0	0.0%	0	0.0%	3	100.0%	0	0.0%	3	100.0%
10,000 to 24,999	14	33.3%	14	33.3%	14	33.3%	0	0.0%	41	100.0%
5,000 to 9,999	16	37.5%	16	37.5%	11	25.0%	0	0.0%	43	100.0%
2,500 to 4,999	0	0.0%	33	50.0%	33	50.0%	0	0.0%	66	100.0%
Under 2,500	56	35.7%	56	35.7%	44	28.6%	0	0.0%	156	100.0%
Total	85	27.7%	119	38.4%	105	33.9%	0	0.0%	309	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 49 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 38c: If [wildland/urban interface fire affecting 500 acres is within your department’s responsibility], how far would you have to go to obtain enough specialized equipment to handle this incident?

Table 28
For Departments Where a Wildland/Urban Interface Fire Affecting 500 Acres Is Within Their Responsibility Do They Have a Plan for Working With Others? by Community Size (Q. 38d)

	Yes – Written Agreement		Yes – Informal		Yes – Other		No		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	0	0.0%	3	100.0%	0	0.0%	0	0.0%	3	100.0%
10,000 to 24,999	27	66.7%	14	33.3%	0	0.0%	0	0.0%	41	100.0%
5,000 to 9,999	27	62.5%	11	25.0%	0	0.0%	5	12.5%	43	100.0%
2,500 to 4,999	19	28.6%	33	50.0%	9	14.3%	5	7.1%	66	100.0%
Under 2,500	67	42.9%	89	57.1%	0	0.0%	0	0.0%	156	100.0%
Total	140	45.3%	149	48.3%	9	3.1%	10	3.3%	309	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 49 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 38d: Do you have a plan for working on others on [wildland/urban interface fire affecting 500 acres]?

Table 29
Is Mitigation of a Developing Major Flood Within the Responsibility of Department? by Community Size
(Q. 39a)

	Yes		No		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	6	50.0%	6	50.0%	11	100.0%
10,000 to 24,999	32	76.9%	9	23.1%	41	100.0%
5,000 to 9,999	49	60.0%	32	40.0%	81	100.0%
2,500 to 4,999	80	77.3%	24	22.7%	104	100.0%
Under 2,500	133	66.7%	67	33.3%	200	100.0%
Total	299	69.4%	138	30.6%	437	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 72 departments reporting on the indicated question.

Numbers may not add to totals due to rounding.

Q. 39a: Is [mitigation (confining, slowing, etc.) of a developing major flood] within your department's responsibility?

Table 30
For Departments Where Mitigation of a Major Flood Is Within Their Responsibility How Far Do They Have to Go to Obtain Sufficient People With Specialized Training to Handle Such an Incident? by Community Size (Q. 39b)

	Local		Regional		State		National		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	0	0.0%	3	50.0%	3	50.0%	0	0.0%	6	100.0%
10,000 to 24,999	6	20.0%	6	20.0%	19	60.0%	0	0.0%	32	100.0%
5,000 to 9,999	11	22.2%	5	11.1%	22	44.4%	11	22.2%	49	100.0%
2,500 to 4,999	9	11.8%	28	35.3%	38	47.1%	5	5.9%	80	100.0%
Under 2,500	36	27.3%	36	27.3%	48	36.4%	12	9.1%	133	100.0%
Total	63	21.0%	79	26.5%	130	43.3%	28	9.2%	299	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 49 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 39b: If [mitigation (confining, slowing, etc.) of a developing major flood is within your department’s responsibility], how far would you have to go to obtain enough people with specialized training for this incident?

Table 31
For Departments Where Mitigation of a Major Flood Is Within Their Responsibility How Far Do They Have to Go to Obtain Sufficient Specialized Equipment to Handle Such An Incident? by Community Size (Q. 39c)

	Local		Regional		State		National		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 99,999	0	0.0%	3	50.0%	3	50.0%	0	0.0%	6	100.0%
10,000 to 24,999	3	10.0%	13	40.0%	16	50.0%	0	0.0%	32	100.0%
5,000 to 9,999	11	22.2%	5	11.1%	27	55.6%	5	11.1%	49	100.0%
2,500 to 4,999	5	5.9%	24	29.4%	47	58.8%	5	5.9%	80	100.0%
Under 2,500	48	36.4%	24	18.2%	48	36.4%	12	9.1%	133	100.0%
Total	67	22.4%	69	22.9%	141	47.2%	22	7.4%	299	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 49 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 39c: If [mitigation (confining, slowing, etc.) of a developing major flood is within your department’s responsibility], how far would you have to go to obtain enough specialized equipment to handle this incident?

Table 32
For Departments Where Mitigation of a Major Flood Is Within Their Responsibility
Do They Have a Plan for Working With Others?
by Community Size
(Q. 39d)

	Yes – Written Agreement		Yes – Informal		Yes – Other		No		Total	
Population of Community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
25,000 to 49,999	3	50.0%	3	50.0%	0	0.0%	0	0.0%	6	100.0%
10,000 to 24,999	13	40.0%	6	20.0%	3	10.0%	9	30.0%	32	100.0%
5,000 to 9,999	16	33.3%	16	33.3%	5	11.1%	11	22.2%	49	100.0%
2,500 to 4,999	19	23.5%	52	64.7%	9	11.8%	0	0.0%	80	100.0%
Under 2,500	24	18.2%	97	72.7%	0	0.0%	12	9.1%	133	100.0%
Total	75	25.0%	174	58.2%	18	6.0%	32	10.8%	299	100.0%

Source: FEMA/USFA and NFPA Survey of the Needs of the US Fire Service

The above projections are based on 49 departments reporting yes on the “a” counterpart of the indicated question (i.e., Q. 36a, 37a, 38a, or 39a) and also reporting on this question.

Numbers may not add to totals due to rounding.

Q. 39d: Do you have a plan for working on others on [mitigation (confining, slowing, etc.) of a developing major flood]?

APPENDIX: SURVEY FORM

The next four pages contain the Needs Assessment Survey form.

It was printed on legal size paper (8-1/2” x 14”).

O.M.B. NO. 3067-0294
Expires February 28, 2006

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
U.S. FIRE ADMINISTRATION
SECOND SURVEY OF THE NEEDS OF THE U.S. FIRE SERVICE

PART I. IDENTIFYING INFORMATION

Name of person completing form: _____ Date: _____

Title of person completing form: _____

Non-emergency phone number: (____) _____ Fax: (____) _____

E-mail address: _____

Please use enclosed postpaid envelope and return completed survey form to:

FEMA

NFPA®

Fire Analysis and Research Division
1 Batterymarch Park
Quincy, MA 02169-7471 USA
Fax: (617) 984-7478

If you fax the form back, please reduce it first to 8½" × 11" size.

PART II. BASIC INFORMATION

1. **Population** (Number of permanent residents) your department has primary responsibility to protect (exclude mutual aid areas): _____

2. **Area** (in square miles) your department has primary responsibility to protect (exclude mutual aid areas): _____

PART III. BUDGET INFORMATION

3. **Do you have a plan for apparatus replacement on a regular schedule?** ❑ Yes ❑ No

4. **Does your normal budget cover the costs of apparatus replacement?**
❑ Yes, budget covers costs ❑ No, must raise funds or seek special appropriation for purchase

(Questions 5 and 6 are for all or mostly volunteer or call departments ONLY. Indicate % for each, so percents sum to 100 for each question):

5. **What share (%) of your budgeted revenue is from:**
_____ Fire district or other taxes _____ Payments per call _____ Other local payments _____ State government
_____ Fund raising (e.g., donations, raffles, suppers, events) _____ Other (specify) _____

6. **What share (%) of your apparatus was:**
_____ Purchased new _____ Donated new _____ Purchased used _____ Donated used
_____ Converted vehicles not designed as FD apparatus _____ Other (specify) _____

PART IV. PERSONNEL AND THEIR CAPABILITIES

7. **Total number of full-time (career) uniformed fire fighters:** _____

8. **Total number of active part-time (call or volunteer) fire fighters:** _____

9. **Average number of career/paid firefighters on duty available to respond to emergencies** (total number for department): _____

10. **Average number of call/volunteer personnel who respond to a mid-day house fire:** _____

11. **Number of on-duty career/paid personnel assigned to an engine/pumper**
(Circle one) 1–2 3 4 5+ Not applicable

12. **Number of on-duty career/paid personnel assigned to a ladder/aerial**
(Circle one) 1–2 3 4 5+ Not applicable

PART IV. PERSONNEL AND THEIR CAPABILITIES *(continued)*

13. Structural firefighting.

a. Is this a role your department performs? *(Check one)* ❑ Yes ❑ No

b. If yes, how many of your personnel who perform this duty have received formal training (not just on-the-job)? *(Check one)* ❑ All ❑ Most ❑ Some ❑ None

c. Have any of your personnel been certified to any of the following levels? *(Circle letters for all that apply)* A. Firefighter Level I B. Firefighter Level II

14. Emergency medical service (EMS).

a. Is this a role your department performs? *(Check one)* ❑ Yes ❑ No

b. If yes, how many of your personnel who perform this duty have received formal training (not just on-the-job)? *(Check one)* ❑ All ❑ Most ❑ Some ❑ None

c. If yes to a, have any of your personnel been certified to any of the following levels? *(Circle letters for all that apply)* A. First responder B. Basic Life Support (BLS)/EMTIntermediate (EMTI) C. Advanced Life Support (ALS)/EMTIntermediate (EMTI) D. ALS/Paramedic

15. Hazardous materials response (Hazmat).

a. Is this a role your department performs? *(Check one)* ❑ Yes ❑ No

b. If yes, how many of your personnel who perform this duty have received formal training (not just on-the-job)? *(Check one)* ❑ All ❑ Most ❑ Some ❑ None

c. If yes to a, have any of your personnel been certified to any of the following levels? *(Circle letters for all that apply)* A. Awareness B. Operational C. Technician

16. Wildland firefighting.

a. Is this a role your department performs? *(Check one)* ❑ Yes ❑ No

b. If yes, how many of your personnel who perform this duty have received formal training (not just on-the-job)? *(Check one)* ❑ All ❑ Most ❑ Some ❑ None

17. Technical rescue.

a. Is this a role your department performs? *(Check one)* ❑ Yes ❑ No

b. If yes, how many of your personnel who perform this duty have received formal training (not just on-the-job)? *(Check one)* ❑ All ❑ Most ❑ Some ❑ None

18. Basic firefighter fitness and health.

Does your department have a program to maintain basic firefighter fitness and health (e.g., as required in NFPA 1500)? *(Check one)* ❑ Yes ❑ No

19. Infectious disease control.

Does your department have a program for infectious disease control? *(Check one)* ❑ Yes ❑ No

PART V. FIRE PREVENTION AND CODE ENFORCEMENT

20. Which of the following programs or activities does your department conduct? *(Circle letters for all that apply)*

A. Plans review
B. Permit approval
C. Routine testing of active systems (e.g., fire sprinkler, detection/alarm, smoke control)
D. Free distribution of home smoke alarms
E. Juvenile firesetter program
F. School fire safety education program based on a national model curriculum
G. Other prevention program *(specify)* _____

21. Who conducts fire code inspections in your community? *(Circle letters for all that apply)*

A. Full-time fire department inspectors
B. In-service firefighters
C. Building department
D. Separate inspection bureau
E. Other *(specify)* _____
F. No one

22. Who determines that a fire was deliberately set? *(Circle letters for all that apply)*

A. Fire department arson investigator
B. Regional arson task force investigator
C. State arson investigator
D. Incident commander or other first-in fire officer
E. Police department
F. Contract investigator
G. Insurance investigator
H. Other *(specify)* _____

PART VI. FACILITIES, APPARATUS, AND EQUIPMENT

23. Number of fire stations: _____

Number over 40 years old: _____ Number having backup power: _____

Number equipped for exhaust emission control (e.g., diesel exhaust extraction): _____

24. Number of engines/pumpers in service: (Numbers by age should sum to total.)

Total: _____ 0–14 years old: _____ 15–19 years old: _____

20–29 years old: _____ 30 or more years old: _____ Unknown age: _____

25. Number of ladders/aerials in service: _____

Number of buildings in community that are 4 or more stories in height:

(Check one) ❑ None ❑ 1–5 ❑ 6–10 ❑ 11 or more

26. Number of ambulances or other patient transport vehicles: _____

27. Portable radios.

a. How many of your emergency responders on-duty on a single shift can be equipped with portable radios?
(Check one) ❑ All ❑ Most ❑ Some ❑ None

b. How many of your portable radios are water-resistant?
(Check one) ❑ All ❑ Most ❑ Some ❑ None ❑ Don't know

c. How many of your portable radios are intrinsically safe in an explosive atmosphere?
(Check one) ❑ All ❑ Most ❑ Some ❑ None ❑ Don't know

d. Do you have reserve portable radios equal to or greater than 10% of your in-service radios?
(Check one) ❑ Yes ❑ No ❑ Don't know

28. Self-contained breathing apparatus (SCBA).

a. How many emergency responders on-duty on a single shift can be equipped with SCBA?
(Check one) ❑ All ❑ Most ❑ Some ❑ None

b. How many of your SCBA are 10 years old or older?
(Check one) ❑ All ❑ Most ❑ Some ❑ None ❑ Don't know

29. Personal alert safety system (PASS) devices.

How many of your emergency responders on-duty on a single shift are equipped with PASS devices?

(Check one) ❑ All ❑ Most ❑ Some ❑ None

30. Personal protective clothing.

a. How many of your emergency responders are equipped with personal protective clothing?
(Check one) ❑ All ❑ Most ❑ Some ❑ None

b. How much of your personal protective clothing is at least 10 years old?
(Check one) ❑ All ❑ Most ❑ Some ❑ None ❑ Don't know

c. Do you have reserve personal protective clothing sufficient to equip 10% of your emergency responders?
(Check one) ❑ Yes ❑ No ❑ Don't know

PART VII. COMMUNICATIONS AND COMMUNICATIONS EQUIPMENT:

31. Multi-agency communication.

a. Can you communicate by radio on an incident scene with your federal, state, and local emergency response partners (includes frequency compatibility)? *(Check one)* ❑ Yes ❑ No ❑ Don't know

b. If yes, how many of your partners can you communicate with at an incident scene?
(Check one) ❑ All ❑ Most ❑ Some

32. Map coordinate system.

a. Do you have a map coordinate system you would use to help direct your emergency response partners to specific locations? *(Check one)* ❑ Yes ❑ No ❑ Don't know

b. If yes, what system do you use? *(Check one)* ❑ Local system—Map Grid/Street Address/Box Alarm Number
❑ Based on longitude/latitude ❑ Based on Military Grid Reference System (MGRS) or US National Grid (USNG)
❑ State Plane Coordinate System ❑ Other (specify) _____

33. Telephone communication.

Do you have 911 or similar system? *(Check one)* ❑ Yes, 911 basic ❑ Yes, 911 enhanced
❑ Yes, other 3-digit system *(specify)* _____ ❑ No

34. Dispatch.

a. Who has primary responsibility for dispatch operations? *(Check one)* ❑ Fire department ❑ Police department
❑ Private company ❑ Combined public safety agency ❑ Other *(specify)* _____

b. Do you also have a backup dispatch facility? *(Check one)* ❑ Yes ❑ No

35. Internet access.

a. Does your department have Internet access? *(Check one)* ❑ Yes ❑ No

b. If yes, describe the access you have. *(Check one)* ❑ All personnel have individual access
❑ One access point per station, multiple stations ❑ One access point at the only station
❑ Access at headquarters, but there are multiple stations ❑ Other (specify) _____

PART VIII. ABILITY TO HANDLE UNUSUALLY CHALLENGING INCIDENTS

Each question is based on an example incident. We want to know whether you have enough local resources to handle such an incident, and if not, how far you would have to go to obtain sufficient resources. Both the type and the size of the incident are specified to give you something specific to react to and a challenge that will often need more than local resources.

36. Technical rescue and EMS for a building with 50 occupants after structural collapse.

a. Is this type of incident within your department's responsibility? *(Check one)* ❑ Yes ❑ No *(If no, go to Question 37)*

b. If yes, how far would you have to go to obtain enough people with specialized training for this incident? *(Check one)* ❑ Local would be enough ❑ Regional ❑ State ❑ National

c. If yes, how far would you have to go to obtain enough specialized equipment to handle this incident? *(Check one)* ❑ Local would be enough ❑ Regional ❑ State ❑ National

d. If yes, do you have a plan for obtaining assistance from others on this type of incident? *(Check one)* ❑ Yes, written agreement ❑ Yes, informal ❑ Yes, other *(specify)* _____ ❑ No

37. Hazmat and EMS for an incident involving chemical/biological agents and 10 injuries.

a. Is this type of incident within your department's responsibility? *(Check one)* ❑ Yes ❑ No *(If no, go to Question 38)*

b. If yes, how far would you have to go to obtain enough people with specialized training for this incident? *(Check one)* ❑ Local would be enough ❑ Regional ❑ State ❑ National

c. If yes, how far would you have to go to obtain enough specialized equipment to handle this incident? *(Check one)* ❑ Local would be enough ❑ Regional ❑ State ❑ National

d. If yes, do you have a plan for obtaining assistance from others on this type of incident? *(Check one)* ❑ Yes, written agreement ❑ Yes, informal ❑ Yes, other *(specify)* _____ ❑ No

38. Wildland/urban interface fire affecting 500 acres.

a. Is this type of incident within your department's responsibility? *(Check one)* ❑ Yes ❑ No *(If no, go to Question 39)*

b. If yes, how far would you have to go to obtain enough people with specialized training for this incident? *(Check one)* ❑ Local would be enough ❑ Regional ❑ State ❑ National

c. If yes, how far would you have to go to obtain enough specialized equipment to handle this incident? *(Check one)* ❑ Local would be enough ❑ Regional ❑ State ❑ National

d. If yes, do you have a plan for obtaining assistance from others on this type of incident? *(Check one)* ❑ Yes, written agreement ❑ Yes, informal ❑ Yes, other *(specify)* _____ ❑ No

39. Mitigation (confining, slowing, etc.) of a developing major flood.

a. Is this type of incident within your department's responsibility? *(Check one)* ❑ Yes ❑ No *(If no, go to Question 40)*

b. If yes, how far would you have to go to obtain enough people with specialized training for this incident? *(Check one)* ❑ Local would be enough ❑ Regional ❑ State ❑ National

c. If yes, how far would you have to go to obtain enough specialized equipment to handle this incident? *(Check one)* ❑ Local would be enough ❑ Regional ❑ State ❑ National

d. If yes, do you have a plan for obtaining assistance from others on this type of incident? *(Check one)* ❑ Yes, written agreement ❑ Yes, informal ❑ Yes, other *(specify)* _____ ❑ No

PART IX. NEW AND EMERGING TECHNOLOGY

40. Thermal imaging cameras. Do you have any now or plan to acquire any?
(Check one) ❑ Now own ❑ Plan to have in 1 year ❑ Plan to have in 5 years ❑ No plan to acquire

41. Mobile data terminals. Do you have any now or plan to acquire any?
(Check one) ❑ Now own ❑ Plan to have in 1 year ❑ Plan to have in 5 years ❑ No plan to acquire

42. Advanced personnel location equipment. Do you have any now or plan to acquire any?
(Check one) ❑ Now own ❑ Plan to have in 1 year ❑ Plan to have in 5 years ❑ No plan to acquire

43. Equipment to collect chem/bio samples for analysis elsewhere. Do you have any now or plan to acquire any?
(Check one) ❑ Now own ❑ Plan to have in 1 year ❑ Plan to have in 5 years ❑ No plan to acquire

PART X. YOUR TOP 3 NEEDS IN YOUR WORDS.

44. _____

45. _____

46. _____