FIRE SERVICE DELIVERY SYSTEMS IN MICHIGAN

*
***
*

CITIZENS RESEARCH COUNCIL OF MICHIGAN

625 Shelby Street
Detroit, Michigan 48226-4154

909 Michigan National Tower
Lansing, Michigan 48933-1738

REPORT NO. 287

APRIL 1988

TABLES

page

FIRE SERVICE DELIVERY SYSTEMS IN MICHIGAN

Introduction In calendar 1986, there were a total of 69,942 fires reported in Michigan. Those fires caused 242 civilian fatalities, 1,007 civilian injuries, and $256 million in property losses. No Michigan firefighters died in the line of duty in 1986, built 1,015 firefighter injuries occurred, according to a summary of fire department activity statistics prepared by the Fire Marshal Division of the Michigan State Police. Wayne County fire departments reported 43% of all fires and 37% of the total dollar loss attributable to fires in Michigan in 1986. The data for Michigan cities over 100,000 population and for the balance of the state are shown in Table 1.

TABLE 1
FIRES AND THEIR EFFECTS IN MICHIGAN, 1986

Location	Number of Fires	Civilian Fatalities	Civilian Injuries	Firefighter Injuries	Property Loss
Detroit	22,477	69	234	250	$ 60,246,901
Grand Rapids	1,307	11	23	40	4,297,680
Warren	1,022	1	14	27	2,702,755
Flint	1,523	5	24	30	6,017,288
Lansing	824	4	17	39	2,191,450
Sterling Heights	509	1	20	18	1,577,835
Ann Arbor	554	1	13	13	1,504,520
Balance of State	41,726	150	662	598	177,195,752
Totals	69,942	242	1,007	1,015	$255,734,181

In 1987, attention was focused on two very different Michigan communities both of which suffered fire incidents in which three firefighters died.

On March 12, 1987, a rookie was among three career Detroit firefighters who were killed in an arson fire in a downtown warehouse. The arsonist, an admitted alcoholic who claimed he was drunk at the time he set the fire, subsequently pleaded guilty to three counts of second-degree murder and one count of arson.

On October 25, 1987, three volunteer firefighters, one of them a woman, were killed in a fire training exercise in a century-old farmhouse in Milford. This “controlled burn” was also intentionally set, but by local fire officials as a training exercise for volunteer firefighters.

This paper will present the results of a survey of Michigan fire departments serving populations of over 7,000, as well as descriptions of various organizational structures used in Michigan to provide fire protection. Examples of regional fire service organizations and of privatization are presented, and case studies of various Michigan fire departments which represent a cross section of organizational structures are presented in an appendix for those who may be interested in learning more about the operations of specific departments.

It is hoped that this description of the variety of service delivery structures used by various Michigan communities will help public officials and citizens to evaluate critically the organization, costs, risks, and benefits of alternative fire protection systems, and to consider the possibilities for making incremental or major changes in fire suppression organizations, with a better understanding of the range of alternatives available.

A Brief History of Fire Fighting in the U.S. The earliest fire companies in this country were voluntary associations of citizens organized to protect their own property. The nineteenth century witnessed the development of volunteer fire companies that were tightly knit social groups, some with considerable political power. Rivalries between companies led to interference with each other in responding to fires; this competition was worsened by rewards offered by insurance companies to the first fire company to get water on a fire at a building insured by that firm. Rivalry, fights, riots, and destruction by volunteer fire companies led to a loss of respect for volunteer firefighters. As a result of an incident in which volunteers from 13 independent volunteer fire companies fought each other while a wood planing mill burned to the ground, Cincinnati in 1853 became the first American city to establish a full-time, paid fire department.

Concurrent developments had made full-time departments feasible. Prior to the development of water mains, hydrants, and dependable fire hose, fire fighting depended on bucket brigades, and was so labor intensive as to preclude the possibility of full-time, paid fire departments. With the development of systems to deliver water, including steam-powered fire engines, large numbers of volunteers were unnecessary, allowing major cities to disband the competitive volunteer companies and establish salaried fire departments organized on a paramilitary basis. According to the National Fire Protection Association, as of 1986 there were 29,840 fire departments in the U.S. Of these, 1,999 (6.7%) were career departments, 1,044 (3.5%) were mostly career departments, 3,640 (12.2%) were mostly volunteer departments, and 23,157 (77.6%) were all volunteer departments. These fire departments were staffed by 237,750 career firefighters and 808,200 volunteers.

State Involvement in Fire Protection Unlike law enforcement, which is mandated by the state, fire protection in Michigan is an optional local function. Residents may form volunteer fire departments for their mutual benefit, and for the protection of their communities, or they may support fire departments employing career firefighters who spend extensive periods of time on “standby,” waiting for an opportunity to work, as well as other specialists engaged in emergency medical services, fire prevention, arson investigation, apparatus repair, building maintenance, clerical support, and other functions. Between these two extremes lie a number of fire service delivery system options.

To be recognized by the Michigan State Police Fire Marshal Division, a fire department must be established by a government agency or have a contract with a government agency. Various state statutes authorize townships (MSA 5.46(13) and 5.2640(1-10)), villages (MSA 5.1397—5.1408), cities (MSA 5.1918—5.1929) and counties (MSA 5.2586 1-3) to establish and maintain fire departments. Organized fire departments are required to report monthly fire losses, and members of fire departments that are registered with the Fire Marshal Division qualify for a public safety officer death benefit.

Michigan Public Act 125 of 1925 as amended limits both the shift and weekly hours which a firefighter may work. "It shall be unlawful for any municipality, or any officer or employee thereof, in municipalities which maintain or may hereafter maintain an organized paid or part-paid fire department, to require any person in the employ of the fire department who is engaged in fire fighting or subject to the hazards thereof to be on duty in such employment more than 24 hours, or to be off duty less than 24 consecutive hours out of any 48-hour period. All persons in the employ of any organized paid or part-paid fire department who are engaged in fire fighting or subject to the hazards thereof shall…work not more than an average of 36 hours per week."

Those provisions do not apply to chief officers or their assistants, to **on-**call or volunteer employees, to specified emergency situations, or to municipalities which do not require their fire fighting personnel to be on duty more than 40 hours in any consecutive seven-day period.

Michigan Public Act 78 of 1935 as amended provides a civil service system for those cities, villages, and municipalities having full-time, paid employees in fire and/or police departments, which adopt the act by majority vote or incorporation in a charter. PA 78 provides for "examination and investigation as to merit, efficiency, and fitness for appointment, employment, and promotion of all officers...to benefit (the) public by providing better qualified personnel and to protect the officers and employees from arbitrary and unjust removal" (notes to MSA 5.3351). Application, minimum requirements, competitive and non-competitive examination, appointment, probation, reinstatement, promotion, discipline, hearings, discharge, and layoff of full-time firefighters (and police officers) are addressed in the statute.

The Fire Prevention and Protection of Persons and Property Act (PA 207 of 1941 as amended) created the state fire safety board which adopts fire safety requirements for schools and dormitories, state buildings, health care facilities, places of public assembly, penal institutions, and certain dry cleaning establishments, and for the storage, transportation and handling of hazardous materials. The state fire marshal interprets and applies these rules, and may grant variations. Local units are required to report to the state fire marshal all fires resulting in loss of life or property, and insurance companies must report all suspicious losses and provide any information requested by the fire marshal, who may investigate any fire which resulted in loss of life or property and any building or premises which may constitute a fire hazard.

The Fire Fighters Training Council Act (PA 291 of 1966) created the fire fighters training council within the department of state police. The council is responsible for preparing and publishing advisory training standards, including minimum standards for firefighter recruits, basic training and advanced in-service training requirements, and standards for local and regional fire fighter training schools and instructors. This statute also created the fire fighters training fund, from which monies are appropriated by the legislature to participating cities, counties, townships, and villages for salary and expense reimbursement for training fire fighters.

Legislation amending the Fire Fighters Training Council Act, requiring mandatory training (264 hours of basic training within 12 months of being hired for career firefighters, 132 hours within 24 months for on-call firefighters) was signed by the governor on December 2, 1987 (PA 196 of 1987). The Headlee Amendment requirement of state funding for state-mandated local expenditures may not apply to the cost of required fire training, because fire protection is a voluntary local service, but "if a court reaches a final determination that the training meeting the standards promulgated under this section is a new activity or service or an increase in the level of any activity or service under section 29 of article IX of the state constitution of 1963, the training shall no longer be mandatory under this section." Under the new law, any community that chooses to provide fire service would be required to train fire department members as a health and safety measure.

The municipal fire service classification board was created in the fire marshal division by Public Act 340 of 1976, as amended. That board is responsible for evaluating fire service delivery systems and establishing a fire service classification scale, which may be based on available water supply, fire prevention activities, fire department administration, fire fighting equipment and apparatus, organized fire department training, fire losses, fire prevention code and its enforcement, fire incident reporting and fire investigation, fire alarm systems, building construction code and its enforcement, communications, personnel, mutual aid, fire suppression systems, and other fire service delivery technology. Each municipality's fire service delivery system is to be reviewed by the board every eight years or as requested, and a grade assigned. That grading system may be used by insurance companies which use grading systems to establish their property insurance rates. The board also provides technical evaluations for local fire departments with the goal of reducing life and property loss due to fire.

The Variety of Fire Service Organizational Structures There is a perception that the organizational structure and cost of fire departments is closely related to the rural, suburban, or urban characteristics of the area for which fire service is provided. This perception assumes that low density, rural areas would probably be protected by a volunteer department. As density and value increase, the volunteer department would evolve into a part-time, paid department, and as the area acquires more urban characteristics, the "part paid" department would expand into a full-time, paid department.

Contrary to this assumed natural progression of organizational structure linked on a demand basis to the size of the population and to the structural density of the community, the 32-square-mile city of Troy, with a reported population exceeding 85,000 and a 1987 SEV of $2.1 billion, depends on a paid fire staff of ten and on 149 unpaid volunteers. The 70,000 residents in the 34 square miles of Farmington Hills, which had a 1987 SEV of $1.5 billion, depend on 14 full-time, paid and 80 part-time, paid firefighters. In contrast, several mature, but very small, communities rely on full-time paid fire departments to protect them: the Michigan Fire Service Directory for 1987 lists Hamtramck (pop. 20,448, 1987 SEV $100 million), Harper Woods (pop. 16,000, 1987 SEV $209 million), Melvindale (pop. 12,309, 1987 SEV $109 million), Grosse Pointe Farms (pop. 11,700, 1987 SEV $309 million), Hazel Park (pop. 20,914, 1987 SEV $144 million), Ecorse (pop. 14,000, 1987 SEV $156 million), and River Rouge (pop. 13,000, 1987 SEV $212 million) as cities of less than three square miles that maintain full-time, paid fire departments.

The variety of fire service delivery organization structures in use indicates that the choice among them is not determined by community's size or density; rather, there is much room for communities and their officials to select the structure they consider most suitable. The choice of fire service delivery systems – whether to staff with unpaid volunteers, paid volunteers, public safety officers, or career firefighters – reflects a community's loss experience and the willingness of residents to participate in fire fighting activities, and/or to tax themselves to provide protection.

CRC Survey of Fire Service Delivery Systems In order to determine the variety of fire department organizational structures for various sized communities, a questionnaire was sent to all Michigan fire departments which protect communities of over 7,000 population (assuming that smaller communities would generally use volunteer departments). These 308 departments were identified from 1,041 departments listed in the 1987 **Michigan Fire Service Directory,** published by the Fire Marshal Division of the Michigan State Police. The survey generated 181 usable responses, a 58.8% response rate, and provided a basis for the comparison of fire losses and costs among communities that have adopted different fire service delivery structures.

The City of Detroit did not respond to the survey and is not included in the responding department data. This is not harmful to the results, since the scale of Detroit is so dramatically different from that of other communities in the state.

Responding departments were classified into five categories according to the pay status of firefighters. Only four responding departments (2.2%) reported using strictly unpaid volunteers, but smaller communities and non-responding departments depend on unpaid volunteers to a much greater extent. Forty-four responding departments (24.3%) depend completely on compensated part-time volunteer firefighters, with no full-time staff. Seventy-three (40.3%) of the 181 responding departments reported using a combination of career and compensated part-time firefighters, with 45 (24.9% of the 181) of these employing full-time administrative staff only. Twenty-one responding departments (11.6%) are organized as departments of public safety, combining police and fire functions; of these, eight reported using either full-time or part-time firefighters in addition to public safety officers. The remaining 39 responding departments (21.6%) employ only full-time, career firefighters.

For presentation purposes, departments which are comprised only of completely uncompensated volunteers are referred to as "volunteer", while those departments which reimburse their part-time firefighters, whether directly or indirectly, are called "part-time." Of course, all firefighters who serve in other than full-time, paid status are volunteers in the best sense of the term. Departments that utilize both compensated part-time and full-time personnel are called "combination" departments; they appear under the heading "P-T/F-T" in the various tables. Departments that have at least one full company of career, full-time firefighters are designated "full-time" in the tables, although there may be auxiliary groups attached to these departments.

TABLE 2
NUMBER OF FIRE DEPARTMENTS RESPONDING TO CRC SURVEY, BY POPULATION GROUPING

Population of Community Served	Type of Fire Department					
	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time	Total
7,000- 9,999	**1**	14	11	5	**1**	32
10,000-19,999	2	21	27	9	7	66
20,000-29,999	0	5	19	3	4	31
30,000-39,999	**1**	4	8	**1**	8	22
40,000-59,999	0	0	2	3	7	12
60,000-79,999	0	0	4	0	3	7
80,000-99,999	0	0	2	0	3	5
100,000 and over	0	0	0	0	6	6
Total	4	44	73	21	39	181

The demand for fire protection is a function of both population and primary service area. Density, the number of inhabitants protected divided by the primary service area in square miles, is a way to categorize the survey responses that combines these variables.

TABLE 3
NUMBER OF FIRE DEPARTMENTS RESPONDING TO CRC SURVEY, BY DENSITY GROUPING

Population per Square Mile	Type of Fire Department					
	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time	Total
0- 1,000	3	39	39	4	**1**	86
1,001-2,000	0	3	16	6	7	32
2,001-3,000	**1**	0	8	2	3	14
3,001-4,000	0	0	5	4	9	18
4,001-5,000	0	**1**	2	0	9	12
5,001-6,000	0	0	2	3	3	8
6,001-7,000	0	0	0	**1**	4	5
7,001 and over	0	1	**1**	**1**	2	6
Total	4	44	73	21	39	181

Survey data are presented as averages of departmental responses within categories. In those categories which contain only one department, the single response will be printed in bold to indicate that number may be less representative than averages of two or more departments.

The survey questionnaire appears in Appendix I. Detailed survey results are presented in Appendix II to enable local officials to compare the organization, staffing and cost of fire service in their community to fire departments in comparable communities. For presentation purposes, departments are arrayed by size of the population served and/or by population density.

Volunteer and Part-Paid Departments The term "volunteer" is used in this report to denote those who participate in fire fighting on an uncompensated basis. Those who participate in fire fighting and are reimbursed in any material way, whether through a volunteer association or through an appropriation to the fire house for use of the firefighters, or whether paid by the hour, fire, month, or other means, are called "part-time" in this report. In a practical sense, both groups are volunteers. The decision to pay volunteers (and convert them to "part-paid" in this context) may be an expression of the community's appreciation, a reaction to pressure or demands made by volunteers, a strategy to attract and retain volunteers, or some combination of these and other motives.

As expected, the least populous, least dense communities were more likely to be protected by the least expensive volunteer or part-time departments. Departments having no full-time employees protect 47% of represented communities between 7,000 and 9,999 population, 35% of those between 10,000 and 19,999, 16% of those between 20,000 and 29,999, 23% of those between 30,000 and 39,999, and none over 40,000. Forty-two of the 48 volunteer and part-paid departments protect 49% of represented communities having densities of 1,000 or less per square mile. But it is of interest that volunteer and part-paid arrangements do exist in more densely populated communities. Three of 32 departments (9%) in communities of from 1,001 to 2,000 people per square mile are part-paid. There is one unpaid department among the 14 departments protecting communities of from 2,001 to 3,000 people per square mile, one part-paid among the 12 departments protecting communities with densities of from 4,001 to 5,000, and one part-paid among six departments protecting the most dense (7,001 and greater) of the responding cities. The experience of these communities may indicate that the range of possibilities for fire service organization is broader ,than that which normally may be considered in growing areas.

In many rural areas, the volunteer fire department is the only, or was the first, fraternal and benevolent organization. In these communities, the fire department may be considered an extended family; it is often the focus of social and civic events. Volunteers congregate at the fire house (a social activity that incidentally reduces response time), and exercise considerable control over the conduct of department affairs, including the election of new members and officers.

The requirements demanded of, and rewards available to, volunteers and part- timers vary. Residency, age, education, probation, training, attendance requirements, amount and method of reimbursement, availability of insurance and other fringe benefits, station assignment, fire fighting and other responsibilities, requirements for and methods of promotion within the fire service, all vary by department. Volunteers and part-timers may identify directly with the department, or may be members of a volunteer association which has an identity separate from the fire department.

A disproportionate number of departments that failed to respond to the CRC survey are volunteer departments which lack any paid staff. Ninety-two percent of the non-paid firefighters reported to the Fire Marshal Division in 1986 are not represented in the 1987 CRC survey results. Survey responses included over half of the part-paid personnel reported to the Fire Marshal Division in 1986; some of them work in combination departments.

Combination Departments Combination departments employ both full-time and part-paid staff; they were reported by 40.3% of responding departments, making them the most common type among those 181 departments. The use of this form of service delivery system extends over a broad range of populations served.

TABLE 4
RESPONDING COMBINATION DEPARTMENTS, BY POPULATION GROUPING

Population of Community Served	Number of Responding Departments	Number Reporting Use of Full-Time & Part-Time Staff	Percent of Responding Depts. Using Both Full-Time & Part-Time Staff
7,000- 9,999	32	11	34%
10,000-19,999	66	27	41
20,000-29,999	31	19	61
30,000-39,999	22	8	36
40,000-59,999	12	2	17
60,000-79,999	7	4	57
80,000-99,999	5	2	40
100,000-185,000	6	0	0
Total	181	73	40

Combination departments are employed by communities of widely varying densities, protecting about half of all communities with densities under 3,000 per square mile, and about one-fourth of all communities with densities from 3,000 to 6,000 per square mile. One of the six highest density communities reported a combination department.

TABLE 5
RESPONDING COMBINATION DEPARTMENTS, BY DENSITY GROUPING

Population per Square Mile	Number of Responding Departments	Number Reporting Use of Full-Time & Part-Time Staff	Percent of Responding Depts. Using Both Full-Time & Part-Time Staff
0- 1,000	86	39	45%
1,001-2,000	32	16	50
2,001-3,000	14	8	57
3,001-4,000	18	5	28
4,001-5,000	12	2	17
5,001-6,000	8	2	25
6,001-7,000	5	0	0
7,001 and over	6	**1**	17
Total	181	73	

The combined use of part-time and full-time firefighters is a mechanism for insuring that staff will be available during regular work hours when volunteers may not be available, and for insuring that critical, non-fire-suppression assignments are staffed on a regular basis. Obtaining sufficient volunteers may be a problem in communities where shift and blue-collar workers are less available, or where potential volunteers increasingly work at some distance from the community. The combination of full- and part-time staff allows a

wide variety of assignment patterns and at the same time contains costs. Of the 73 responding departments which use both career and volunteer staff, nearly two-thirds employ full-time administrative staff only. In those that employ full-time non-administrative staff, career firefighters may be assigned to fire houses at all times or during normal work hours only, to insure that the fire apparatus is delivered to the fire scene as quickly as possible.

The relationship of volunteers to full-time staff varies from antagonistic to cordial. The career administration in combination departments may actively court volunteers with award and recognition programs, encouraging community involvement, or the administration may consider volunteers an economically necessary compromise in quality.

The competition between career and part-time personnel was addressed by all of the fire and public safety chiefs who were interviewed for this study. Nearly all of the chiefs of volunteer and combination departments enthusiastically praised the devotion, sense of purpose, skill, and dependability of volunteers, and public safety chiefs emphasized the complete ability of their officers to handle both police and fire service functions. Chiefs of non- career and public safety departments expressed their pride in providing their communities with quality service in a very efficient, cost effective manner. All of them stressed the importance of training personnel in fire fighting techniques and equipment to develop and maintain skills and morale. But one of the chiefs articulated the classic internal conflict affecting fire service delivery systems. As a manager, he recognizes that fiscal restraints insure that the future of the department is dependent upon volunteers, and that the quality of the volunteer force reflects the training and direction volunteers receive from the department. As a career firefighter, he expresses concern about fighting fires with volunteers, stressing that at any fire scene the number of responders and timeliness of response cannot be predicted, nor can the property owner or career firefighter depend on the level of training, the dependability, or experience of any single volunteer. He is more comfortable with career firefighters, and feels that the rescue squad brings much better service, in part because they are already "suited up" upon arrival. He also recognizes that some of the volunteers are excellent firefighters, and :that there is some variation in the quality of both volunteer and career members of the department.

Case studies of five departments that use volunteers are included in Appendix III; these departments have different requirements, different structures and different assignment patterns.

The survey did not specifically address the use of "wranglers," public employees who work for departments other than the fire department but who respond to fire alarms, although that is one way to supplement regular firefighters or public safety officers. Employees of public utility, recreation, public works, or other departments may be trained as volunteer firefighters and released from non-critical assignments to provide additional resources at a fire scene. Fire fighting activities could be compensated at a higher rate, and would certainly add excitement and adventure to what might otherwise be a very prosaic assignment.

Public Safety Departments Traditionally, public safety departments have resulted from the merger of existing police and fire departments. This evolutionary role is not mandated. Public safety departments are a legitimate option for communities that have

not yet instituted full-time fire departments. Training and equipping police officers to fight fires, and expanding the cross-trained force only to the extent required by work demand, might be considered a more cost-effective way to expand service than creating a separate career fire department.

When local units which do employ full-time, paid fire departments examine the services and products they purchase, the "stand by" time of fire departments (nationally, firefighters spend only 3% to 5% of their on-duty time fighting fires) seems to offer a clear target for economies. The combination of police and fire forces into public safety departments is one attempt to increase the quantity of services purchased with tax dollars; consolidation can increase the number of on-duty officers available for police or fire service by up to 50%, while making it possible to extend the 40-hour work week to all public safety officers. Michigan communities of various sizes and densities have adopted public safety departments which combine police and fire staffs to provide more, and more visible, police patrol and law enforcement staff, and to make better use of fire service "stand by" time. Some of these communities (10 in our survey) combine use of public safety officers and volunteer firefighters. Communities ranging in size from Manistee's 7,200 residents to, Canton Township's 56, 000 residents are served by public safety officers (PSOs), as are the residents of Kalamazoo, Bloomfield Hills, and four of the five Grosse Pointes. Twenty-one (11.6%) of the responding departments in the survey have adopted departments of public safety.

TABLE 6
RESPONDING PUBLIC SAFETY DEPARTMENTS, BY POPULATION GROUPING

Population of Community Served	Number of Responding Departments	Number Reporting Public Safety Departments	Percent of Responding Departments with Public Safety Officers
7,000- 9,999	32	5	16%
10,000-19,999	66	9	14
20,000-29,999	31	3	10
30,000-39,999	22	**1**	5
40,000-59,999	12	3	25
60,000-79,999	7	0	0
80,000-99,999	5	0	0
100,000-185,000	6	0	0
Total	181	21	

While none of the survey communities above 60,000, had public safety departments, this: option was well represented across the spectrum of densities.

TABLE 7
RESPONDING PUBLIC SAFETY DEPARTMENTS, BY DENSITY GROUPING

Population per Square Mile	Number of Responding Departments	Number Reporting Public Safety Departments	Percent of Responding Departments with Public Safety Officers
0- 1,000	86	4	5%
1,001-2,000	32	6	19
2,001-3,000	14	2	14
3,001-4,000	18	4	22
4,001-5,000	12	0	0
5,001-6,000	8	3	38
6,001-7,000	5	**1**	20
7,001 and over	6	**1**	17
Total	181	73	12

The merger of police and fire departments requires an enlightened electorate, commitment from community leaders and strong leadership within the department. There is a strong distinction in the public perception between police officers and firefighters, and the specter of diminished fire protection normally is raised by firefighters. On the other: hand, police officers typically welcome the opportunity to be public safety officers, and their aggressive, action-oriented approach to fire fighting and to consolidation was praised by those chiefs of public safety departments who were interviewed.

The savings that result from combining existing departments are long term; initial expenses and transitional costs may include "buying out" older employees, attrition, training, and purchase of specialized equipment. Officials of fiscally distressed cities that consider merging police and fire departments as a source of immediate cost reductions may be dismayed by the lack of near-term savings.

Career Departments Thirty-nine of the 181 responding departments (21.6%) depend on career firefighters for general fire service. If full-time firefighters land public safety officers are both considered "paid," the CRC survey included 69% of the paid firefighters reported to the Fire Marshal Division by all departments other than Detroit in 1986. As expected, the percentage of career departments increases with the size of the community served.

TABLE 8
RESPONDING CAREER DEPARTMENTS, BY POPULATION GROUPING

Population of Community Served	Number of Responding Departments	Number Reporting Use of Career Staff Only	Percent of Responding Departments Using Career Staff Only
7,000- 9,999	32	**1**	3%
10,000-19,999	66	7	11
20,000-29,999	31	4	13
30,000-39,999	22	8	36
40,000-59,999	12	7	58
60,000-79,999	7	3	43
80,000-99,999	5	3	60
100,000-185,000	6	3	100
Total	181	39	22

Career departments ,are more common in mature communities, but surprisingly protect only a third of the most densely populated responding cities (those with 7,001 or more inhabitants per square mile).

TABLE 9
RESPONDING CAREER DEPARTMENTS, BY DENSITY GROUPING

Population per Square Mile	Number of Responding Departments	Number Reporting Use of Career Staff Only	Percent of Responding Departments Using Career Staff Only
0- 1,000	86	**1**	1%
1,001-2,000	32	7	22
2,001-3,000	14	3	21
3,001-4,000	18	9	50
4,001-5,000	12	9	75
5,001-6,000	8	3	38
6,001-7,000	5	4	80
7,001 and over	6	2	33
Total	181	39	22

In traditionally organized, full-time, paid fire departments, manpower requirements are dictated by two factors: the number and type of fire fighting apparatus in use, and the average amount of time off (or spent in other assignments) for each firefighter. Professional associations such as the National Fire Protection Association recommend that five firefighters be assigned to pumpers and six firefighters to fire trucks. Many small departments, and some fiscally stressed large departments, assign two or three firefighters to a rig, arid use reinforcements, whether call-ins or a back-up company, when needed.

Number of Fires Fire departments report required statistics to the Michigan State Police Fire Marshal Division, which annually compiles data on fires and fire-related activity using a computerized Fire Incident Reporting System. That system reported a total of 76,599 fire incidents statewide in 1984; 69,523 in 1985; and 69,942 in 1986.

The following tables use data from the 1984, 1985, and 1986 fire incident reports to indicate the average number of fires reported by fire departments which responded to the Citizens Research Council survey, categorized by pay status of firefighters and population or density of community served.

The Michigan Fire Incident Reporting System indicated the number of fires per thousand population statewide in 1984 at 8.2; in 1985 at 7.5; and in 1986 at 7.6. Statewide statistics are skewed by inclusion of data for the City of Detroit, which registered 31% of all reported fires in 1984 and 1985, and 32% of all reported fires in 1986. The fires per thousand population figures were calculated by the Fire Marshal Division using 1980 population of 9,258,344 for the state: 1,203,339 for Detroit and 8,055,005 for non-Detroit.

TABLE 10
NUMBER OF FIRES REPORTED IN MICHIGAN PER 1,000 POPULATION, 1984-1986

	Detroit		Non-Detroit	
	No. of Fires	**Fires per 1000 Pop.**	**No. of Fires**	**Fires per 1000 Pop.**
1984	23,765	19.7	52,834	6.6
1985	21,589	17.9	47,934	6.0
1986	22,477	18.9	47,489	5.9
AVERAGE	22,610	18.8	49,419	6.1

For fire departments responding to the Citizens Research Council survey the average number of fires per thousand residents for the three-year period was 6.2, based on 1984 Bureau of the Census population estimates. These averages varied from one, reported by the combination department in Grand Ledge and Monroe County's Bedford Township volunteer department, to 17.5 in Benton Harbor (population 15,000) and over 30 in Highland Park (population 20,000). Both Benton Harbor and Highland Park have full-time, career fire departments.

TABLE 11
AVERAGE ANNUAL NUMBER OF FIRES PER 1,000 RESIDENTS IN RESPONDING COMMUNITIES, 1984-86, BY POPULATION GROUPING

Population of	**Type of Fire Department**				
Community Served	**Volunteer**	**Part-Time**	**P-T/F-T**	**Public Safety**	**Full-Time**
7,000- 9,999	**5.4-**	6.1	6.9	7.2	**11.3+**
10,000-19,999	6.1	5.5	6.0	4.2-	8.9+
20,000-29,999		6.0-	6.3	13.6+	8.6
30,000-39,999	**1.4-**	2.9	5.9	**5.0**	6.7+
40,000-59,999			4.7	3.4-	6.0+
60,000-79,999			4.6-		5.5+
80,000-99,999			7.1-		8.7+
100,000 and over					6.0

NOTE: " – " indicates smallest and " + " indicates largest average annual loss per fire in each population category.

Generally, the frequency of fires increases from the left to the right side of the table; communities with full-time departments at any given population level tend to have higher fire

frequencies. The lowest average annual number of fires in responding departments occurred in the largest community depending on unpaid volunteers, the second lowest in the largest communities having part-time, paid departments. Excluding public safety departments, the largest average annual number of fires was reported by the smallest community having a career fire department. These data may reflect better reporting or more requests in communities with full-time departments, but they also may indicate simply that communities with more fires adopt more intensive fire protection options.

The same general pattern appears when fire frequency is sorted by density.

TABLE 12
AVERAGE ANNUAL NUMBER OF FIRES PER 1,000 RESIDENTS IN RESPONDING COMMUNITIES, 1984-86, BY DENSITY GROUPING

Population per Square Mile	Type of Fire Department				
	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
0- 1,000	4.55-	5.38	6.45	5.34	11.27+
1,001-2,000		3.53-	5.26	5.29	6.73+
2,001-3,000	**5.44**		5.51	5.17-	6.51+
3,001-4,000			6.74	4.46-	8.02+
4,001-5,000		**7.47**	9.42+		6.89-
5,001-6,000			5.09	13.38+	4.81-
6,001-7,000				**3.29-**	5.78+
7,001 and over		**3.09-**	**4.69**	**4.95**	10.16+

Dollar Loss The Michigan Fire Incident Reporting System includes the total property loss reported annually by each fire department, and the total loss statewide.

TABLE 13
FIRE LOSS IN MICHIGAN

	Total Amount	City of Detroit	Non-Detroit	Responding Depts.
1984	$ 309,917,405	$ 53,898,100	$ 256,019,305	$ 151,158,764
1985	271,979,294	74,158,951	197,820,343	116,377,302
1986	255,734,181	60,246,901	195,487,280	103,854,190

Departments which responded to the Citizens Research Council survey accounted for 59% of the value of fire losses reported by fire departments other than Detroit in 1984 and 1985, and for 53% of the value of fire losses reported by non-Detroit departments in 1986.

Dollar Loss per Fire According to the statewide reports prepared by the Fire Marshal's Office, the average loss per fire in Michigan declined from $4,046 in 1984 to $3,912 in 1985 and to $3,658 in 1986. The average loss per fire reported by non-Detroit departments declined from $4,846 in 1984 to $4,127 in 1985, then remained nearly unchanged at $4,121 in 1986.

The average dollar loss per fire for the last three years for the 181 responding fire departments for which survey statistics are available was $4,499; the range was from $747 in Lyon Township (population 7,078) to $28,363 in Clinton Township (population 80,000).

TABLE 14
AVERAGE ANNUAL DOLLAR LOSS PER FIRE FOR RESPONDING DEPARTMENTS, 1984-1986, BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999	**$ 6,111**	$ 5,027	$ 7,404	$ 3,882	**$ 2,460-**
10,000-19,999	4,379	4,503	3,842-	5,054+	3,862
20,000-29,999		5,197	3,430-	4,822	5,390+
30,000-39,999	**5,790**	4,644	2,973-	**7,593+**	5,178
40,000-59,999			4,475	5,904+	3,437-
60,000-79,999			3,075-		3,156+
80,000-99,999			2,298-		11,743+
100,000 and over					3,122

In the seven comparable categories based on community size, the combination part-time/ full-time departments reported the lowest average annual loss per fire in five categories, while full-time departments reported the lowest rate in two categories. Public safety departments reported the largest average annual loss per fire in three categories; full-time departments reported the largest average annual loss in three categories, and combination departments reported the largest average annual loss per fire in one category. No comparison can be made in communities of over 100,000 because these six cities all employ career departments. Average annual loss per fire for volunteer and part-time departments fell within the range established by other types of departments in each category.

TABLE 15
AVERAGE ANNUAL DOLLAR LOSS PER FIRE FOR RESPONDING DEPARTMENTS, 1984-1986, BY DENSITY GROUPING

Population per	Type of Fire Department				
Square Mile	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
0- 1,000	$4,849+	$ 4,708	$ 3,725	$ 3,389	**$ 2,460-**
1,001-2,000		8,878+	3,774	5,688	2,762-
2,001-3,000	**6,111**		6,878	4,981-	11,428+
3,001-4,000			3,565	5,170+	3,181-
4,001-5,000		**1,337-**	3,320		6,120+
5,001-6,000			5,537+	4,805	3,141-
6,001-7,000				4,340+	3,568-
7,001 and over		**4,132**	**3,760-**	7,593+	5,808

Full-time fire departments reported the lowest average loss per fire in five of eight density levels, but the highest average loss per fire in two density levels. Departments of public safety reported the highest average loss per fire at three of the seven density levels in which they are represented.

Fire Department Budgets The demand for fire service varies with the size and characteristics of the community, including the age and condition of buildings, density, land use, road and traffic conditions, socio-economic status of residents, incidence of crime including arson, industrial development, availability and proximity of emergency assistance, private fire protection measures, incidence of fires, and the expectations of residents.

Resources devoted to fire protection reflect relative rates of personal retention of risk and community assumption of responsibility. The pay status of firefighters exerts the greatest influence on departmental costs, and reflects the willingness of members of the community to participate directly in community service or to tax themselves to provide fire protection for themselves and, their community. To some extent, costs of fire insurance compensate for the costs of fire protection, as minimal investment in infrastructure (water mains and fire hydrants) and fire service results in poorer (higher) Insurance Services Office (ISO) ratings (these ratings classify communities on the basis of their fire defenses and physical conditions, including fire alarm system, fire department, water system and fire flow tests). Actual ISO ratings in Michigan range from a low of 10 up to the grade 2 assigned to Detroit; these ratings are not directly related to the pay status of firefighters.

TABLE 16
ISO RATINGS OF COMMUNITIES SUPPORTING RESPONDING DEPARTMENTS, BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999	8.50-	8.15	6.86	6.70	6.00+
10,000-19,999	8.75	7.58	6.83	6.06	5.75+
20,000-29,999		7.40-	6.95	6.17	5.50+
30,000-39,999	**8.50-**	7.75	6.86	**5.00**	4.75+
40,000-59,999			8.50-	5.80	5.07+
60,000-79,999			5.00-		4.00+
80,000-99,999			4.00-		4.33+
100,000 and over					3.50

Responding communities protected by volunteer fire departments are assessed the poorest fire ratings for insurance purposes. Those communities which employ part-time, paid firefighters have improved ISO ratings, although not as improved as communities which support combination departments. Those communities with departments of public safety generally have ratings which are between those for combination departments and career departments. Ratings for cities with full-time fire departments tend to be the best, and within this group the ratings are better in the larger communities. The extent to which lower insurance rates offset the costs of supporting career firefighters is unknown.

A major problem in assessing whether a community is spending an appropriate amount on fire protection is the inability to specify a “proper” level of service. In the absence of absolute measures, comparisons based on population, service area, numbers of firefighters employed, property value protected, and personal income in the community give some indication of the levels of service considered appropriate in various communities.

Average Costs of Fire Departments The simplest comparison of the costs of fire departments uses the budget figures supplied by the 170 departments that responded to that survey question to determine average departmental budgets by category. It must be emphasized that budgets for departments of public safety, which provide both police and fire protection, are not comparable to budgets for fire departments. Budget data for departments of public safety may be compared only across population and density ranges for public safety departments.

TABLE 17
AVERAGE BUDGETS REPORTED BY RESPONDING DEPARTMENTS IN 1987, BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	**Volunteer**	**Part-Time**	**P-T/F-T**	**Public Safety**	**Full-Time**
7,000- 9,999		$ 85,169-	$ 346,865	$ 774,042	**$ 497,353+**
10,000-19,999	$ 78,565-	121,641	395,920	1,878,319	765,095+
20,000-29,999		243,593-	671,503	612,500	1,396,102+
30,000-39,999	**22,000-**	139,000	968,059	**1,032,127**	2,042,008+
40,000-59,999			2,432,928-	1,874,848	2,600,407+
60,000-79,999			1,889,576-		3,813,932+
80,000-99,999			2,038,209-		5,181,771+
100,000 and over					9,136,808

In each population category (ignoring departments of public safety), responding-part-time departments' average budgets were larger than volunteer departments', combination departments' average budgets were greater than part-time departments', and career departments' required the largest average amount of budgetary resources. Within organizational types, average budgets amounts in departments serving more populous communities tend to be larger. However, when density, rather than population, was used to sort responses, it appeared that the most dense communities commit fewer resource to fire service, on average, than do medium density communities.

TABLE 18
AVERAGE BUDGETS REPORTED BY RESPONDING DEPARTMENTS IN 1987, BY DENSITY GROUPING

Population per	Type of Fire Department				
Square Mile	**Volunteer**	**Part-Time**	**P-T/F-T**	**Public Safety**	**Full-Time**
0- 1,000	$ 59,710-	$ 128,334	$ 362,748	$ 432,554	**$ 497,353+**
1,001-2,000		118,000-	l,032,204	766,209	2,078,497+
2,001-3,000			1,053,996-	1,533,495	2,038,082+
3,001-4,000			1,056,318-	2,493,683	6,244,114+
4,001-5,000		**90,000-**	885,137		3,659,518+
5,001-6,000			**2,374,208-**	2,420,568	3,376,553+
6,001-7,000				**2,583,900**	1,649,148
7,001 and over			**1,181,211-**	**1,032,127**	1,276,043+

Fire Department Budget Per Capita Budget per capita (budget divided by population) gives some indication of the relative cost of supporting the fire service. The major differences among responding departments are not related to the size of the population served, but rather to the pay status of fire department personnel. Responding departments which rely solely on part-time, compensated volunteers are significantly less expensive than those which employ some full-time staff, add those combination departments are substantially more economical than full-time departments for all sized communities.

TABLE 19
RESPONDING FIRE DEPARTMENTS' AVERAGE BUDGET PER CAPITA, 1987-1988, BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999		$ 10.35-	$ 40.32	$ 90.05	**$ 59.21+**
10,000-19,999	$ 6.86-	9.53	26.89	134.97	57.93+
20,000-29,999		11.64-	28.61	30.63	62.01+
30,000-39,999	**0.65-**	4.32	27.46	**28.18**	56.55+
40,000-59,999			47.52-	54.10	53.53+
60,000-79,999			27.86-		50.02+
80,000-99,999			27.73-		64.14+
100,000 and over					63.64

Fire Department Budget per Square Mile Fire department budget per square mile protected is another indicator of the relative expense of the fire service.

TABLE 20
RESPONDING DEPARTMENTS' AVERAGE BUDGET PER SQUARE MILE PROTECTED, BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999		$ 4,983-	$ 65,893+	$ 266,310	**$ 58,512**
10,000-19,999	$ 2,573-	2,909	40,367	561,886	184,442+
20,000-29,999		8,951-	55,908	16,947	365,639+
30,000-39,999	**611-**	3,125	70,054	**198,486**	244,292+
40,000-59,999			74,983-	164,393	127,963+
60,000-79,999			58,282-		262,272+
80,000-99,999			84,218-		204,979+
100,000 and over					259,944

For all sizes of communities, the budget per square mile for part-time departments is measured in thousands, the budget for combination departments is measured in tens of thousands, and the budget for full-time departments is generally measured in hundreds of thousands.

TABLE 21
RESPONDING DEPARTMENTS' AVERAGE BUDGET PER SQUARE MILE PROTECTED, BY DENSITY GROUPING

Population per	Type of Fire Department				
Square Mile	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
0- 1,000	$ 1,191-	$ 3,032	$ 11,481	$ 13,028	**$ 58,512+**
1,001-2,000		15,047-	59,601	65,087	92,383+
2,001-3,000		94,611-	370,381	99,330+	
3,001-4,000			139,532-	488,832	234,120+
4,001-5,000		**20,000-**	178,162		288,571+
5,001-6,000			**505,151+**	990,918	197,148-
6,001-7,000				**1,033,560**	267,180
7,001 and over			**236,242-**	**198,486**	564,068+

It is obvious that as density increases, the cost of protecting each more- heavily-populated square mile also increases, regardless of the pay status of firefighters.

Number of Fire Department Personnel In Michigan, the number of full-time and non-paid firefighters has declined in recent years, while the number of paid, part-time firefighters has increased, according to the Michigan Fire Incident Reporting System.

TABLE 22
NUMBER OF PERSONNEL REPORTED BY MICHIGAN FIRE DEPARTMENTS

Year	Total Paid	Paid Excluding Detroit	Part-Paid	Non-Paid	Total Reported
1984	7,714	5,864	12,614	9,652	29,980
1985	7,671	5,821	12,912	9,443	30,026
1986	7,512	5,662	13,075	9,164	29,751

If Detroit is excluded, paid personnel as a percentage of total personnel reported statewide declined from 20.9% in 1984 to 20.3% in 1986; part-paid personnel it}creased from 44.8% in 1984 to 46.9% in 1986; and non-paid personnel decreased from 34.3% in 1984 to 32.8% in 1986.

Staffing Any comparison of the number of firefighters in different types of fire departments must recognize the differences in availability and assignment patterns among departments. Volunteers, regardless of pay status, may be alerted by siren, pager, or telephone. Generally, volunteers are all on call all of the time they are available, but some may not be able to respond during their regular working hours. Volunteers may not be available for other reasons as well, and may be directed not to respond if they have had an alcoholic drink within a designated period of time. Part-time firefighters may be assigned to a specific fire house, or to special times or conditions for response. They may be directed to report to the fire house, or directly to the fire scene. On the other hand, career firefighters assigned to fire fighting are assumed always to be available when on duty, and report directly from the fire house to the fire scene. The ISO equates full- and part-time firefighters by assuming three part-time volunteers to be the equivalent of one full-time firefighter.

The following table indicates the average number of firefighters by category for the 181 responding departments. For volunteer, part-time, and combination departments, the total number of firefighters represents the maximum possible response to a fire or other emergency.

TABLE 23
AVERAGE NUMBER OF FIREFIGHTERS IN RESPONDING DEPARTMENTS, BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999	**32.0+**	23.6	28.3	29.2	**15.0-**
10,000-19,999	33.0+	31.5	32.8	38.7	18.0-
20,000-29,999		35.8	47.4+	52.7	31.8-
30,000-39,999	**32.0-**	36.3	69.5+	**69.0**	39.3
40,000-59,999			82.5+	64.0	54.7-
60,000-79,999			84.0+		78.3-
80,000-99,999					77.3
100,000 and over					147.8

FTEs If the ISO rating device of converting three part-time or volunteer firefighters to one full-time equivalent (FTE) is used, a different comparison of the staffing of volunteer, part-time, combination, and career departments is possible.

TABLE 24
AVERAGE NUMBER OF FTEs IN RESPONDING DEPARTMENTS, BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999	**11.0-**	7.9	14.2	22.0	**15.0+**
10,000-19,999	11.0	10.4-	15.3	33.1	18.0+
20,000-29,999		12.2-	23.3	45.0	27.8+
30,000-39,999	**11.0-**	12.0	34.4	**69.0**	36.3+
40,000-59,999			48.0-	63.7	54.7+
60,000-79,999			49.3-		78.3+
80,000-99,999			62.0-		77.3+
100,000 and over					147.8

If the four volunteer departments are excluded, the number of full-time equivalents increases both with the size of the community and with the increase in full-time staff. Public safety departments employ the most personnel because they provide both fire and police protection. Combination departments report more average FTEs than volunteer departments at every population and density level, and full-time departments employ more staff than there are average FTEs in combination departments in all population and seven of eight density levels.

The product derived by dividing the population of the primary service area by the number of full time equivalent firefighters may offer some indication of the burden on both firefighters and taxpayers.

TABLE 25
AVERAGE NUMBER OF PERSONS PROTECTED PER FULL TIME EQUIVALENT IN RESPONDING DEPARTMENTS, BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999	**662.4**	1,038.1+	627.9	433.4	**560.0-**
10,000-19,999	1,54.3	1,324.4+	957.1	428.1	776.9-
20,000-29,999		1,932.5+	1,135.6	618.5	798.2-
30,000-39,999	**3,090.9+**	2,839.0	1,183.1	**530.9**	993.3-
40,000-59,999			1,118.8+	919.1	987.7-
60,000-79,999			512.9-		1,081.1+
80,000-99,999			1,445.6+		1,279.8-
100,000 and over					1,249.8

It is interesting to note that, except for public safety departments which also provide police protection, full-time firefighters protect the smallest average number of persons at six of seven comparable population levels and four of eight comparable density levels. Volunteer and part-time FTEs protect the largest average number of residents in one and three categories respectively, in both population and density arrays.

TABLE 26
AVERAGE NUMBER OF PERSONS PROTECTED PER FULL TIME EQUIVALENT IN RESPONDING DEPARTMENTS, BY DENSITY GROUPING

Population per	Type of Fire Department				
Square Mile	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
0- 1,000	1,761.8+	1,314.5	1,059.5	705.5	**560.0-**
1,001-2,000		2,254.3+	959.6	692.9	764.2-
2,001-3,000	**683.1-**		1,017.6	388.7	1,236.7+
3,001-4,000			874.4-	425.6	943.9+
4,001-5,000		**3,000.0+**	1,038.3		864.4-
5,001-6,000			843.7-	283.0	1,769.0+
6,001-7,000				**319.1**	1,182.9
7,001 and over		**2,155.7+**	**1,255.4**	**530.9**	900.4-

SEV and Fire Department Structure Of the 181 departments which responded to the survey, 177 provided sufficiently detailed information about the primary service area to allow determination of the state equalized value (SEV) of property in that area. SEV is the base against which the property tax rate (measured in mills) is applied; identical tax rates would generate more revenue from an area with a larger SEV, loss revenue when applied in an area having a smaller SEV.

TABLE 27
AVERAGE 1986 SEV OF RESPONDING DEPARTMENTS' PRIMARY SERVICE AREAS, IN $1,000, BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999	**$ 47,977-**	$ 81,126	$ 107,169+	$ 102,767	$ 83,391
10,000-19,999	132,208	121,737-	143,550	176,874+	158,067
20,000-29,999		210,380-	305,622+	144,008	258,676
30,000-39,999	**110,696-**	182,000	408,561+	280,904	400,507
40,000-59,999			904,164+	437,088-	534,398
60,000-79,999			840,997+		683,204-
80,000-99,999			1,172,769+		731,194-
100,000 and over					1,519,696

As expected, property tax base as measured by SEV generally increases as population increases. Less expected is the pronounced pattern of high value communities being protected by combination departments; in six of the seven comparable population groupings, the average SEV is highest in those areas protected by combination departments.

SEV Per Capita Property tax base divided by the population of the primary service area is a measure of the wealth of the supporting community.

TABLE 28
ESTIMATED 1986 SEV PER CAPITA IN COMMUNITIES SUPPORTING RESPONDING DEPARTMENTS BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999	**$ 6,585-**	$ 10,370	$ 13,006+	$ 11,957	$ 9,928
10,000-19,999	11,543	9,660-	10,662	13,239+	12,172
20,000-29,999		9,921	13,188+	7,220-	10,958
30,000-39,999	**3,256-**	5,767	11,469+	**7,668**	11,107
40,000-59,999			17,685+	9,555-	11,088
60,000-79,999			12,896+		9,009-
80,000-99,999			14,009+		9,006-
100,000 and over					11,302

In this survey, the most affluent communities as measured by average SEV per capita, reported the use of combination departments in six of seven comparable population categories.

Estimated Property Tax Rate Required to Support Fire Service If the most recent average reported budget for each category of fire department is divide by the most recent average SEV for communities in that category, an estimate of the property tax rate required to support the service is obtained.

TABLE 29
ESTIMATED PROPERTY TAX RATE REQUIRED
TO SUPPORT FIRE SERVICE, IN MILLS,
(Using 1986 SEV and Reported 1987-88 Budgets for Responding Departments)

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999		1.2-	5.2	9.1	**6.0+**
10,000-19,999	0.6-	1.0	3.2	11.2	6.0+
20,000-29,999		1.3-	2.4	4.2	7.6+
30,000-39,999	**0.2-**	0.9	2.7	**3.7**	5.9+
40,000-59,999			2.7-	5.3	4.9+
60,000-79,999			2.1-		6.0+
80,000-99,999			2.8-		6.6+
100,000 and over					6.0

Budget figures for public safety departments are not comparable to those of departments which do not provide police service. As expected, the average estimated property tax required to support career departments is substantially higher than that needed for combination departments, while the millage rate necessary to fund combination departments exceeds that required for volunteer or part-time departments.

Fire Department Costs and Per Capita Income The cost of fire departments reflects the pay status of firefighters, which influences organizational structure, staffing, and siting decisions. The ability of residents to pay for fire protection may be estimated by analyzing per capita income of residents in primary service areas. The most recent **U.S.** Department of Commerce, Bureau of the Census, **Local Population Estimates for the East North Central Region,** which lists 1984 population and 1983 per capita income estimates for counties and incorporated places, was used to obtain estimated per capita income data for the primary service area reported by responding fire departments. In a few cases, the primary service area included areas not found in the bureau of the census data; estimates for these areas were based on the data that were available.

TABLE 30
AVERAGE PER CAPITA INCOME IN RESPONDING DEPARTMENTS' PRIMARY SERVICE AREAS, BY POPULATION GROUPING

Population of	Type of Fire Department				
Community Served	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
7,000- 9,999	**$ 8,593**	$ 9,168+	$ 9,157	$ 8,127	**$ 8,086-**
10,000-19,999	9,820	9,357-	9,599	13,131+	10,205
20,000-29,999		8,946	10,194+	7,412-	7,921
30,000-39,999	**9,741**	10,635+	9,898	**9,939**	9,691-
40,000-59,999			15,357+	10,012-	10,881
60,000-79,999			11,140+		9,894-
80,000-99,999			11,002		9,097-
100,000 and over					9,847

It would appear from this table that residents of areas protected by the most expensive, full-time departments are not those with the highest incomes. In fact, in four of the seven

population categories in which comparisons can be made, residents protected by full-time departments have the lowest estimated per capita income. Combination departments protect the highest per capita income areas in three of the seven comparable population categories, while part-time departments protect the highest income areas in two categories.

TABLE 31
AVERAGE PER CAPITA INCOME IN RESPONDING DEPARTMENTS' PRIMARY SERVICE AREAS, BY DENSITY GROUPING

Population per	Type of Fire Department				
Square Mile	Volunteer	Part-Time	P-T/F-T	Public Safety	Full-Time
0- 1,000	$ 9,794+	$ 9,172	$ 9,536	$ 8,433	$ **8,086-**
1,001-2,000		11,361+	10,666	9,019-	11,191-
2,001-3,000	**8,593**		10,725	12,741+	8,086-
3,001-4,000			9,346	12,279+	8,696-
4,001-5,000		**10,370**	8,569-		10,694+
5,001-6,000			13,948+	10,965	10,887-
6,001-7,000				**15,751+**	9,619-
7,001 and over		**10,354+**	**9,906**	**9,939**	8,199-

On a density basis, residents protected by full-time departments had the lowest estimated per capita income in six of the eight categories in which comparisons can be made. Departments of public safety protect the highest income areas in three of the seven categories in which they are represented.

Siting of Fire Stations According to a December 1987 Advisory Commission on Intergovernmental Relations report, The Organization of Local Public Economies, "The existence of a large number of independent producers of direct services (e.g., a large number of small police departments or fire departments) in a local public economy does not necessarily imply a lack of coordination or an inability to capture limited economies of scale in the production of particular service components. Producers in such areas tend to develop an organizational overlay of coordinated production arrangements."

The effectiveness of fire service delivery systems depends in large measure on the response time, which will be decreased by increasing the number of locations from which response is made. Of course, increasing the number of fire stations increases the cost of fire service to the community. Thus many Michigan communities have developed mutual aid pacts to increase response while holding down the cost of fire protection.

Downriver Wayne County fire departments cooperate in a mutual aid pact, but each of the communities maintains its own fire department and at least one fire station. There are 23 fire stations providing coverage for 113 square miles in 15 communities, an average of one station for every 4.9 square miles, but one fire station has responsibility for the 2.4 square miles in Taylor, an average service area of 7.8 square miles for each station in Taylor. Two stations in Wyandotte and two in Trenton are within one-half mile of each other; seven of the 23 are within three-quarters of a mile of another fire station. The 15 communities contain approximately 344,000 people; each of the 23 stations protects an average of about 15,000 people. However, that average represents a range from the 4,600 residents of

Gibralter who support a fire house to the 80,000 residents of Taylor who share support of three house.

The north Woodward area extending from Eight to Twenty-Six Mile Road, and from Inkster to Dequindre encompasses about 672,000 residents in 23 communities covering approximately 216 square miles. There are 46 fire stations in this area, 14 of which are one-half mile or less from another fire station, and 27 of which are at or within three-quarters of a mile of another fire station. Each fire station in this area protects an average of 4.6 square miles and an average of about 14,600 people. The communities in this area employ a variety of methods for providing fire service. Almost half the land mass and about 28% of the population are in communities protected by on-call departments; four communities have public safety departments; and two communities (Lathrup Village and Pleasant Ridge) contract with other cities to provide fire service. In this area, six of the eight communities that support career fire departments cooperate in the Oakway mutual aid pact. Other than the members of Oakway, Hazel Park and Bloomfield Township are the only communities that support career fire departments, although tiny (6,000 residents in 0.7 square miles Royal Oak Township reported 17 full-time firefighters, enough for one fire company, in addition to 30 non-paid volunteers.

In the 139.6 square mile City of Detroit, a completely unionized, career fire department provides fire response from 47 fire stations, an average of one station for each 2.9 square miles. The city, which had a population of 1.8 million in 1950 but now has slightly over 1 million residents (a density of about 7,375 people per square mill) contains a cluster of fire stations in its central section: 24 fire stations in the city are one-half mile or less from another Detroit fire station, while only seven are more than three-quarters of a mile from another fire house. In Detroit, each fire house protects an average of about 2,2,000 residents.

Mutual Aid Pacts Although recognizing the need to deal effectively with the majority of fire incidents, most communities are unwilling to allocate the amount of resources that would be required to combat very infrequent, but very dangerous and destructive fires. The common solution to the threat posed by major fire emergencies is cooperation with fire departments in nearby communities in mutual aid pacts. These agreements vary in the degree of formalization and the circumstances of assistance but generally obligate a department to send a truck and a specified number of firefighters to a fire in a requesting community, if that can be accomplished without endangering the providing community. This type of agreement insures that additional equipment and manpower will be available in a major emergency, and may provide back-up or fill-in support to protect other locations. Departments which have non-full-time structures, either volunteer or public safety, may find that their ability to participate in mutual aid pacts with “career” departments is limited.

Fire chiefs representing the six cities in Oakway (Pontiac, Birmingham, Royal Oak, Madison Heights, Ferndale, and Southfield), a mutual emergency fire protection organization comprised of career departments, in December 1987, approved a proposal requiring non-members to pay $25,000 for each Oakway fire truck that responds to an emergency in a non-Oakway community.

The Grosse Pointes-Harper Woods Mutual Aid Pact An example of a tightly structured mutual aid pact exists in the five Grosse Pointes and Harper Woods. There, a code and card system insures that location-appropriate, multi-city response and back-up occur automatically for any fire emergency. The system allows personnel and equipment to be dispatched from all participating cities depending on the designated code assigned the fire location. Although generally staff and rigs from other cities would not be dispatched until a second alarm was called, very high risk locations, such as schools and nursing homes, would receive substantial response from more than one city at the first alarm. Because each geographic area is coded to indicate the proper response including back-up movement of equipment and personnel, and each dispatcher possesses an identical box of coded cards, no time is wasted in requesting additional help at a fire scene. The mutual aid pact continues to function even though four of the five Grosse Pointes have adopted departments of public safety. A much more detailed description of this system is provided in the case studies in Appendix III.

Regionalization Where there are clusters of small cities, each supporting a fire department, the potential may exist for reducing the expense of fire protection without reducing the effectiveness of fire service. Economies of scale could be achieved by merging all or portions of the fire service delivery systems into county-wide or regional functions, funded through contracts with local units or through county-wide or regional property tax assessments. Dispatch, arson investigation, site and plan inspection, vehicle acquisition and maintenance, training, and other functions of fire service delivery systems could be provided through a consortium, with fire suppression provided by local organizations in a "two-tier" arrangement. Regional fire suppression service, while separate from the police functions that offer economies in public safety departments, could utilize either career firefighters or volunteer firefighters (perhaps in concert with full-time fire engine drivers). Regional organizations could offer an effective form of emergency medical response. Pending legislation, House Bill 4671, would allow two or more communities to incorporate into a district to provide fire service, funded through a voter-approved property tax.

The political problems associated with regionalization – competitiveness and competition among communities more concerned with autonomy than with efficiency – make it more probable or success as an outgrowth of contractual arrangements for fire service in rapidly growing areas than as a combination and restructuring of numerous existing departments, but fire service regions do offer one more option in structuring fire service delivery systems.

County-wide central dispatch systems, such as those operating in Saginaw and Bay Counties and being developed in Oakland and Genesee Counties, attest to the efficiency of regionalization of that function.

Grand Traverse County exclusive of Traverse City is protected by a county fire department. This combination department is administered by two full-time chiefs who share responsibility/for rural and developed (metro) areas of the county, and is tinder the control of a fire board comprised of township supervisors. The cost of the department is prorated among townships according to state equalized value (SEV). Townships which are protected primarily by the Metro division have adopted fire districts for funding purposes, while 11 of 12 townships in the Rural division pay for fire protection from their general fund. A

more thorough description of the Grand Traverse County Fire Department is presented in the case studies in Appendix III.

Contracting with Another Local Unit Contracting for the provision of public services can provide significant savings over in-house government production. Efficiency gains are due to economies of scale and the benefits of competition, according to the ACIR's The **Organization of Local Public Economies.**

Local units may contract with contiguous municipalities to provide fire protection. The 1.4 square mile city of Lathrup Village (1980 population of 4,639) incorporated before the surrounding portion of Southfield Township became the City of Southfield. The township fire department provided fire service prior to incorporation, and after incorporation, Lathrup Village contracted with the township, and later the city, to provide fire service on the same basis as the department provided to Southfield. The first formal contract was initiated in 1960; the most recent contract, that of June, 1987, requires quarterly payments totaling $330,000 to the City of Southfield for complete fire and EMS protection.

Privatization Private, non-profit fire departments are rare in Michigan; only two were discovered in the course of this research. This form of fire protection requires the greatest degree of public and private entrepreneurship in terms of initiative, investment, and risk, but it offers an option for those communities that have the necessary human resources.

A private, non-profit corporation contracts with Hamburg Township to provide fire suppression and other emergency services. The Hamburg Fire Department is owned by volunteer members, who elect a board of directors to govern the business aspects of the corporation. Member/owners also elect line officers who control emergency operations. Committees are formed to study specific issues, such as equipment purchases (the department owns one of three township fire stations, all fire apparatus and fire equipment). Although the original agreement between the department and the township board required payment of $50 for each fire run, since 1980 the department has negotiated an annual contract with the township, currently worth $90,000, to provide fire and emergency medical service. This annual contract allows the department to budget for equipment and apparatus replacement. The Hamburg Fire Department is also included in the case studies in the appendix.

The non-profit structure has proven effective in controlling the cost of fire service in the limited application of this form in Michigan, but the form is more common in other parts of the country. For example, a considerable proportion of the residents of the state of Arizona contract for fire protection from the Rural Metro Fire Protection Company. Fire service is offered to rural residents on a subscription basis, with the cost based on the value of the covered home, and to residents of cities and fire districts on a contract basis, with the cost negotiated between the firm and the city or district. This private sector approach emphasizes innovation and cost effectiveness in fire fighting, including in-house construction of fire vehicles, employment of relatively few full-time firefighters, and dependence on volunteers.

Other Functions The structure of fire departments may reflect conditions other than the pay status of firefighters; the Detroit Fire Department, while not included in the responding departments, includes a separate division of "Physical Health," a $9 million emergency

mobile; medical (ambulance) service which now operates in conjunction with private ambulance companies. Of the fire departments that did respond to the survey, 124 reported that they provide some level of emergency medical service, whether through an ambulance, first responder service, emergency medical technicians, or other means. Alternately, emergency medical services may be provided by police personnel or by the private sector.

Twenty-five responding departments reported that they provide their own dispatch; 52 reported being part of a community dispatch system; 40 reported being part of a county-wide system; 16 reported that police provide dispatch; 45 did not respond to this question.

Departments which responded to the CRC survey reported a range of functions other than fire fighting and related activities of fire prevention and inspection, civil defense, extrication and emergency medical response, arson investigation, hazardous material response, site plan review, and public relations. These other functions include teaching CPR, providing blood pressure readings, working with alcoholics anonymous, selling smoke detectors, and participating in muscular dystrophy drives. Firefighters sell house numbers; prepare street maps; paint street signs; enforce zoning regulations; stand by at sporting events; repair department vehicles; assist residents who have locked themselves out of their homes or cars; sell garbage bags; maintain buildings, grounds, parks, ball field lighting, and ice skating rinks; wash police cars; and hang Christmas decorations. The variety of other tasks performed by firefighters attests to the amount of time spent not fighting fires.

Conclusion Full-time, paid fire departments developed in large U.S. cities in reaction to competition and abuses in the then-existing volunteer system. That rivalry between volunteer companies seems quaint now, but competition is still evident in the strident criticism of volunteers and public safety officers by unionized firefighters, and, to a lesser extent, of full-time firefighters by volunteers and public safety officers.

Because fires occur so infrequently in most communities, and because fire fighting traditionally attracts volunteers, economical systems which promote community involvement can often be designed. But the desire for economy and the fellowship of the fire hall should never be allowed to conflict with the need for training. The fewer fires a department encounters, the less on-the-job-training is available and the greater the need for practice and training in fire fighting techniques and equipment.

The president of the Michigan State Fire Fighters Union has stated that “Growing communities will eventually be required to hire full-time firefighters,” and most of the largest cities in Michigan now employ career firefighters. But there are structures other than traditional full-time fire departments which are less expensive and evidently provide satisfactory service quality. Public safety departments and regionalized fire service systems have proven their effectiveness. Various combinations of volunteer and career firefighters can be organized to meet local conditions while at the same time controlling costs. Private, non-profit and for-profit companies can provide fire service on a contractual basis, as can neighboring units of government. City workers who normally perform other functions can be trained and used as back-up firefighters; firefighters can be trained and used to perform other necessary labor.

It is hoped that this description of the various organizational structures employed in Michigan to provide fire service will be useful to those local officials and citizens who are concerned with designing, implementing, and funding local fire protection systems.

APPENDICES

APPENDIX I
FIRE DEPARTMENT QUESTIONNAIRE

Name of fire department _____

Address _____

_____

_____

Total 1987-88 budget _____

Name of Chief _____

Telephone Number _____

Primary service area

Name of community or communities whose taxes directly support the department or for whose primary benefit the department exists, exclusive of any contractual arrangements

_____

_____

Resident Population _____ Daytime Population _____

Square Miles _____

Extended service area Names of communities with which you have formal contracts to provide fire service for pay (please include population and square miles for each)

_____

_____

Names of communities with which you have mutual aid pacts (please include population and square miles for each) _____

_____

_____

Names of communities with which you share dispatch or other services (please describe) _____

_____

_____

Number of career and volunteer firefighters

Number of PSOs who may be assigned to fight fires ____

Number of full time, paid firefighters ____

Number of part time, paid firefighters

Number paid by the hour ____

Number paid by the fire ____

Number compensated through a volunteer association ____

Number of totally uncompensated volunteers ____

Total number of paid and volunteer firefighters or PSOs ____

What other functions are performed by the department (dispatch, emergency medical service, medical transport, vehicle repair, other community services)?

_____

_____

_____

_____

Send a copy of the summary Council Comments ___ or of the entire report ___

Appendix II
Fire Delivery Systems Survey Responses

	Resident Pop.	Estimated Daytime Pop.	Density	Vol. Part Time Hourly	P-T Monthly	Part Time /Fire	P-T Vol. Assoc	Full Time	PSO's	Total	FTE's	ISO Rating	Ave Pop. Protected per FTE
VOLUNTEER FIREFIGHTERS													
Carrollton TWP	7,286		2,429	32						32	11	8/9	683
Hamburg	11,318		322	35						35	12	9	970
Monroe TWP Vol	11,654	11,654	448	31						31	10	8/9	1,123
Bedford Vol #2 Mnr	34,000	26,000	944	32						32	11	8/9	3,187
PART-TIME FIREFIGHTERS													
North Branch	7,000		135	18						18	6	8	1,167
Byron Center	7,000	2,500	200			15				15	5	8	1,400
Lyon TWP #	7,078		214	20						20	7	9	1,062
Kimball TWP #	7,100	10,000	197	35						35	12	7/9	609
Allendale	7,118	14,000	222			21				21	7	8/9	1,017
Howard*	7,500	5,500	221			24				24	8	9	938
Rochester	7,500	30,000	1,974				33			33	11	7	682
Millington-Arbela	7,665		106	20						20	7	9	1,150
Sparta Area	8,000		222	28						28	9	7	857
Sheridan Cmmty	8,000		588				20			20	7	8/9	1,200
Shepard Tri-TWP	8,600	5,700	80	30						30	10	7	860
Cooper TWP#	8,600		239	28						28	9	9	921
Lowell Area	9,000	9,500	150			17				17	6	7	1,588
Springfield TWP	9,000		250			22				22	7	9	1,227
Edwardsburg	10,000	10,000	250			25				25	8	6	1,200
Milford TWP	10,000	30,000	278	26						26	9	8/9	1,154
Huron TWP	10,000		278	1			60			61	20	8/9	492
Fort Gratiot	10,200		268			28				28	9		1,093
Barry Prarvle Hope	10,600	8,600	98			23				23	8	9	1,383
Bangor Community	11,000	11,000	76	40						40	13	6	825
Sumpter TWP	11,000	11,000	306			30				30	10	8/9	1,100
Cutlreville	11,000		846			16				16	5	7/9	2,063
Brighton TWP	11,222	20,000	325			28				28	9	8/9	1,202
Oscoda TWP	11,386		86		1	24				25	8	9	1,366
Portland	12,000	10,000	167	30						30	10	6	1,200
Milan Area #	12,000	15,000	240	31						31	10	7	1,161
Mundy TWP	12,000		343	30						30	10	8/9	1,200
Mt. Morris TWP	12,000	16,000	800			26				26	9	8/9	1,385
Williamston	13,200		183	28						28	9	7	1,414
Pinconning*	15,000	20,000	208			21				21	7	7	2,143
Swartz Creek	15,000	17,000	395	50						50	17	7	900
Clawson	15,090	15,200	10,060				21			21	7	5	2,156
Holland TWP	16,500		550	43						43	14	8/9	1,151
Flushing	18,000	16,000	500	1			29			30	10	7	1,800
Holt-Delhi #	19,000	14,000	633	50						50	17	8/9	1,140
Alma District	20,000	30,000	143		23					23	8	6	2,609
Van Buren TWP #	20,000	30,000	556	40						40	13	8/9	1,500
Beecher	20,000	10,000	4,444			20				20	7	8/9	3,000
Chesterfield TWP	21,000	50,000	636	8			34			42	14	7	1,500
Clio Area	24,072		334	54 2						56	19	7	1,290
Davison Area	30,000		417			30				30	10	7	3,000

	Resident Pop.	Estimated Daytime Pop.	Density	Vol	Part Time Hourly	P-T Monthly	Part Time /Fire	P-T Vol Assoc	Full Time	PSO's	Total	FTE's	ISO Rating	Ave Pop Protected per FTE
Georgetown TWP	30,000		833		45						45	15	8/9	2,000
Bedford TWP #1 Mnr	36,000	35,000	1,000					33			33	11	8/9	3,273
Grand Blanc	37,000		1,028				37				37	12	7	3,000
FULL/PART-TIME FIREFIGHTERS														
Comstock Central	7,000	10,000	350		21				2		23	9	8/9	778
Lapeer	7,000	20,000	412				38		1		39	14	6	512
Marysville	7,335	10,000	1,079		20				8		28	15	6	500
Hillsdale	7,400	7,400	1,138		20				5		25	12	6	634
Three Rivers	7,800		2,600	5	15				7		27	14	6	571
Port Huron TWP	8,000	10,000	593		18				3		21	9	8/9	889
Grand Haven TWP	9,000	8,500	265			17			4		21	10	8/9	931
Sturgis	9,468	12,000	2,002				8		14		22	17	6	568
Brandon	9,530	5,000	265		35				7		42	19	9	511
Plymouth	9,700	14,000	3,880		20				7		27	14	6	710
St. Joseph #	9,800	10,300	2,450		10		10		16		36	23	5	432
Pennfield	10,000		278		24				3	1	28	12	8/9	833
Grand Rapids TWP	10,000	10,000	533		15				3		18	8	8/9	1,250
Grosse Ile	10,000	6,500	769	46					1		47	16	6	612
Cadillac	10,000	12,000	1,250		9				10		19	13	6	769
Eastwood	10,000	15,000	2,500		24				1		25	9	5	1,111
Bedford TWP Clhn	10,157	7,000	328		31				1		32	11	8/9	896
Allegan	10,168	12,500	108			25			1		26	9	7	1,089
Grand Haven	11,500	22,000	1,917				11		15		26	19	6	616
South Haven	12,000	15,000	120		20				11		31	18	7	679
Green Oak TWP	12,000	10,000	333				33		1		34	12	8/9	1,000
Lansing TWP	12,000	30,000	1,714		30				17		47	27	6	444
Buena Vista #	12,500	25,000	347		18				6		24	12	8/9	1,042
Oshtemo	13,000		361		30			36	2		32	12	8/9	1,083
Thomas TWP	13,000		394						1		37	13	6	1,000
Niles	13,200		1,833				13		14		27	18	5	720
Bridgeport	14,000		339		32				1		33	12	8/9	1,200
Sault Ste Marie	14,500	20,000	967	8	2				19		29	22	6	649
Northville TWP	15,000	20,000	838		24				1		25	9	8/9	1,667
Auburn Hills	15,000	40,000	882		55				3		58	21	8/9	703
Riverview	15,000	15,000	3,000	47	3				2		52	19	5	804
Coldwater	15,597		217		10				15		25	18	5	851
Hastings	16,000	20,000	119		20				4		24	11	6	1,500
Niles TWP	17,000		378	27					8		35	17	5	1,000
Cascade TWP	17,000	100,000	472		25				2		27	10	8/9	1,645
Walker	18,000	30,000	643				43		1		44	15	8/9	1,174
Owosso	18,000		3,600		10				20		30	23	5	771
Mt. Clemens	18,750	35,000	4,464					30	20		50	30	5	625
Charlotte	20,000		123					24	5		29	13	6	1,538
Frenchtown TWP	20,000	20,000	476					52	4		56	21	8/9	938
Macomb TWP	20,000		556		33				1		34	12	8/9	1,667
Brownstown	20,000	30,000	833		84				2		86	30	6	667
Grand Ledge	21,000	11,000	194		26				4		30	13	6	658
Adrian	21,000	30,000	3,000	9					21		30	24	6	875
Kalamazoo TWP	21,500	22,500	1,734		85				5		90	33	5	645
Independence TWP	22,000	15,000	611				24		14		38	22	8/9	1,000

	Resident Pop.	Estimated Daytime Pop.	Density	Vol	Part Time Hourly	P-T Monthly	Part Time /Fire	P-T Vol Assoc	Full Time	PSO's	Total	FTE's	ISO Rating	Ave Pop Protected per FTE
Summit TWP	22,000	25,000	741		38				12		50	25	8/9	892
Norton Shores #	22,500		918		43				8		51	22	6	1,007
White Lake TWP	23,000	20,000	619				22		6		28	13	8/9	1,725
Mt. Pleasant	24,000	26,000	667		20				9		29	16	7	1,532
Orion TWP	24,000	18,000	667		70				1		71	24	8/9	986
Harrison TWP #	24,000	35,000	2,667		15				18		33	23	6	1,043
Birmingham	24,000		5,106	16					39		55	44	4	541
Plymouth TWP	25,000		1,543		18				15		33	21	6	1,190
Delta TWP	27,000	60,000	771		30				18		48	28	8/9	964
Romulus #	28,000	45,000	778		53				2		55	20	6	1,424
Novi #	28,500	35,000	905		48				6		54	22	8/9	1,295
Burton	30,000	45,000	1,277		66				2		68	24	8/9	1,250
Inkster	30,000	35,000	4,918	8					18		26	21	6	1,452
Meridian TWP	33,800	33,327	1,056		10				31		41	34	8/9	984
Kentwood	35,516		1,578		17				13		30	19	6	1,903
Grand Traverse CTY	36,615	36,615	73	200					2		202	69	9	533
Flint TWP	37,000	65,000	1,510		45				12		57	27	6/9	1,370
East Detroit	38,500		7,700				20		24		44	31	5	1,255
Portage	39,000	70,000	1,130	5			52		31		88	50	5	780
West Bloomfield	48,300		1,491		24				48		72	56	8/9	863
Rochester Hills	55,000	45,000	1,692		80				13		97	40	8/9	1,387
Wyoming	60,000		2,308		60				27		87	47	5	1,277
Waterford	64,437		1,941					50	33		83	50	6	1,297
Dearborn Heights	68,000		5,440			19			53		72	59	3	1,146
Farmington Hills	68,021	120,000	2,018		80				14		94	41	6	1,673
Taylor	80,000	80,000	3,333		75				41		116	66	4	1,212
Troy	85,000	85,000	2,656	147					9		156	58	4	1,466
CAREER FIREFIGHTERS														
Iron Mountain	8,400		988						15		15	15	6	560
Menominee	10,200	12,000	1,275						14		14	14	6	729
Grosse Pte Farms	11,500	11,500	4,423						16		16	16	5	719
Melvindale	12,300		6,150						14		14	14	6	879
Alpena	12,500		1,470						26		26	26	6	481
River Rouge	13,500	14,500	4,856						21		21	21	6	643
Benton Harbor	15,000	15,000	3,261						12		12	12	5	1,250
Traverse City	17,000	20,000	1,417						23		23	23	6	739
Hamtramck	20,000	20,000	10,000						41		41	41	5	488
Hazel Park	20,914		7,469						20		20	20	6	1,046
Marquette	24,000	30,780	2,000						22		22	22	6	1,091
Monroe	25,000	28,000	3,012						44		44	44	5	568
Southgate	32,058	32,058	4,646						24		24	24	5	1,336
Wyandotte	34,000		6,182						37		37	37	4	919
Port Huron	35,000	45,000	4,861						55		55	55	4	636
Allen Park	35,000		4,861						33		33	33	5	1,061
Madison Heights	35,375	57,000	4,913						36		36	36	5	983
Garden City	36,000		6,000						24		24	24	6	1,500
Midland	38,250		1,359						45		45	45	5	850
Jackson	39,739	50,000	3,714						60		60	60	4	662
Muskegon	40,000		2,353						42		42	42	4	952
Lincoln Park	43,201		7,285						37		37	37	5	1,168

	Resident Pop.	Estimated Daytime Pop.	Density	Vol Part Time Hourly	P-T Monthly	Part Time /Fire	P-T Vol Assoc	Full Time	PSO's	Total	FTE's	ISO Rating	Ave Pop Protected per FTE
Bloomfield TWP	45,532	80,000	1,650					72		72	72	4	632
Ypsilanti TWP	46,000	55,000	1,447					34		34	34	9	1,353
East Lansing	51,000	80,000	4,250					54		54	54	5	944
Battle Creek	56,000	60,000	1,217					99		99	99	3/9	566
Redford	58,441	100,000	5,126					45		45	45	6	1,299
Royal Oak	74,828		5,986					65		65	65	4	1,151
St. Clair Shores	76,000	76,000	6,609					53		53	53	5	1,434
Saginaw	77,000	110,000	4,162					117		117	117	3	658
Clinton TWP	80,000		2,694					48		48	48	5	1,667
Pontiac	80,000	150,000	3,200					130		130	130	3	615
Westland	84,100		3,738					54		54	54	5	1,557
Livonia	105,000	275,000	3,281					84		84	84	4	1,250
Sterling Hts	115,000	170,000	3,194					92		92	92	4	1,250
Lansing	130,000	250,000	3,817					208		208	208	3	625
Ann Arbor	140,000	200,000	5,000					49		49	49	4	2,857
Flint	160,000	225,000	4,848					200		200	200	3	800
Grand Rapids	182,000	254,000	3,957					254		254	254	3	717
PUBLIC SAFETY OFFICERS													
Manistee	7,200	85,000	1,440						10	10	10	6	720
Ironwood DPS	7,629	85,000	1,318				16	1	16	33	22	6	342
Greenville DPS	8,500	13,000	1,063	18					20	33	26	7	327
Genesee TWP	9,000	12,000	643						18	18	18	8/9	500
Center Line DPS	9,293	9,000	5,341				20		27	47	34	6	276
East Grand Rapids	11,000		3,141	3					30	33	31	5	355
Farmington DPS	11,022		3,801			21			22	43	29	5	330
Emmett TWP	11,055		325	25					8	33	16	8/9	677
Albion DPS	11,060	11,260	2,765						33	33	33	6	335
Beverly Hills DPS	11,500	11,000	2,706						26	26	26	7	442
Grandville	14,500	15,000	1,726						23	23	23	7	630
Fraser DPS	14,560	18,000	3,640						42	42	42	6	347
Grosse Pte Park	15,000	15,000	6,000						47	47	47	5	319
Grosse Pte Wds DPS	18,000	20,000	5,625				25		43	68	51	5	351
Ionia	20,000	30,000	278	21				6	12	39	25	6	800
Blackman TWP DPS	20,000	40,000	615	8				2	19	29	24	8/9	845
Highland Park	20,000	30,000	5,000						90	90	90	4	222
Oak Park	36,632		7,045						69	69	69	5	531
Saginaw TWP	40,000	40,000	1,481			2			90	92	91	5/9	441
Bay City	41,593	500,000	3,649						67	67	67	4	621
Canton TWP	56,000	75,000	1,556						33	33	33	6	1,697
TOTALS				705	2,237	85	704	483	3146	746	8,106	5,297	

Notes

Firefighters Paid by the hour and for each fire
** Firefighters paid by the fire as well as through a volunteer association
ISO #/9 is used for areas where the rating is the number shown in some areas and 9 in other areas
Bedford Vol #1 and #2 are in Monroe County. The third Bedford WP listed is in Calhoun County.

	Resident Pop.	Square Miles	Density	Ave # Fires 84-86	Ave Loss 84-86	Ave Loss 84-86 & 87 Budget per Capita	Fires 1986	Fires 1985	Fires 1984	Loss Prop & Conts 1986	Loss Prop & Conts 1985	Loss Prop & Conts 1984
VOLUNTEER FIREFIGHTERS												
Carrollton TWP	7,286	3.0	2,428.7	39.7	242,383		47	29	43	105,450	175,300	446,400
Hamburg	11,318	35.1	322.5	63.0	331,723	37	45	67	77	329,200	283,344	382,625
Monroe TWP Vol	11,654	26.0	448.2	77.7	271,193	29	72	76	85	222,074	134,725	456,780
Bdfrd Vol #2 Mnr	34,000	36.0	944.4	48.7	281,777	9	42	47	57	393,400	205,430	246,500
PART-TIME FIREFIGHTERS												
North Branch	7,000	52.0	134.6	11.3	55,587	10	12	15	7	4,760	95,500	66,500
Byron Center	7,000	35.0	200.0	38.3	201,281	32	35	44	36	216,074	243,220	144,550
Lyon TWP #	7,078	33.0	214.5	72.7	81,375	33	82	61	75	29,450	133,300	
Kimball TWP #	7,100	36.0	197.2	73.0	240,220	69	51	70	98	111,000	222,550	387,110
Allendale	7,118	32.0	222.4	25.3	122,751	28	27	21	28	23,023	144,000	330,825
Howard*	7,500	34.0	220.6	52.0	246,350		47	55	54	257,000	65,850	416,200
Rochester	7,500	3.8	1,973.7	38.3	661,667	108	25	53	37	105,525	1,805,300	74,175
Millington-Arbela	7,665	72.0	106.5	26.0	217,050	33	41	11		268,700	165,400	
Sparta Area	8,000	36.0	222.2									
Sheridan Cmmty	8,000	13.6	588.2	33.7	161,092	22	34	20	47	143,910	118,750	220,615
Shepard Tri-TWP	8,600	108.0	79.6	70.3	198,997	35	60	60	91	247,240	187,300	162,450
Cooper TWP#	8,600	36.0	238.9	32.7	131,473	25	39	54	5	171,000	213,420	10,000
Lowell Area	9,000	60.0	150.0	73.7	229,408	28	57	78	86	107,150	358,975	222,100
Springfield TWP	9,000	36.0	250.0	69.3	84,202	21	70	64	74	73,655	60,100	118,850
Edwardsburg	10,000	40.0	250.0	61.3	306,037	35	55	62	67	223,310	325,050	369,750
Milford TWP	10,000	36.0	277.8	83.5	1,418,688	153	79	88		47,300	2,790,075	
Huron TWP	10,000	36.0	277.8	58.7	261,475	38	48	56	72	134,100	390,700	259,624
Fort Gratiot	10,200	38.0	268.4	66.0	70,227	13	61	71	66	72,900	93,950	43,830
Barry Prarvle Hope	10,600	108.0	98.1	36.3	186,662	23	25	37	47	39,885	300,850	219,250
Bangor Community	11,000	144.0	76.4	87.0	162,900	15	87			162,900		
Sumpter TWP	11,000	36.0	305.6				82		10			
Cutlreville	11,000	13.0	846.2	57.3	197,853		57	53	62	77,250	272,185	244,125
Brighton TWP	11,222	34.5	325.3	66.0	198,817	28	84	54	60	71,000	353,500	171,950
Oscoda TWP	11,386	132.0	86.3	71.0	471,704	53	37	63	113	631,313	10,160	643,630
Portland	12,000	72.0	166.7	24.7	78,233	15	31	14	29	85,600	131,500	17,600
Milan Area #	12,000	50.0	240.0	144.0	713,370	70	144			714,370		
Mundy TWP	12,000	35.0	342.9	55.7	418,128	42	36	69	62	208,180	104,330	941,873
Mt. Morris TWP	12,000	15.0	800.0	78.7	211,958	24	90	77	69	207,025	277,285	151,565
Williamston	13,200	72.0	183.3	57.7	142,725	19	37	50	86	117,715	71,050	239,410
Pinconning*	15,000	72.0	208.3	73.3	351,495	28	87	58	75	627,145	187,385	239,955
Swartz Creek	15,000	33.0	394.7	60.3	227,422	26	62	50	69	345,000	122,215	215,050
Clawson	15,090	1.5	10,060.0	46.7	192,929		52	37	51	168,685	91,800	318,000
Holland TWP	16,500	30.0	550.0	80.3	145,415	21	94	70	77	144,420	160,745	131,080
Flushing	18,000	36.0	500.0	70.0	260,702	20	79	52	79	489,150	36,600	255,975
Holt-Delhi #	19,000	30.0	633.3	93.7	740,570	56	84	105	92	449,150	403,475	1,369,085
Alma District	20,000	140.0	142.9	69.0	503,997	36	73	68	66	340,550	928,620	242,820
Van Buren TWP #	20,000	36.0	555.6	153.0	433,095	37	156	151	152	189,090	798,520	311,675
Beecher	20,000	4.5	4,444.4	149.3	199,624	14	144	143	161	134,225	151,216	313,430
Chesterfield TWP	21,000	33.0	636.4	150.7	1,255,197	78	163	141	148	570,890	2,822,550	372,150
Clio Area	24,072	72.0	334.3	97.7	603,675	34	112	83	98	798,779	603,090	409,155

	Resident Pop.	Square Miles	Density	Ave # Fires 84-86	Ave Loss 84-86	Ave Loss 84-86 & 87 Budget per Capita	Fires 1986	Fires 1985	Fires 1984	Loss Prop & Conts 1986	Loss Prop & Conts 1985	Loss Prop & Conts 1984
Davison Area	30,000	72.0	416.7	93.3	325,240	18	115	143	22	364,110	580,410	31,200
Georgetown TWP	30,000	36.0	833.3	90.3	516,592	22	84	84	103	57,710	810,445	681,620
Bdfrd TWP #1 Mnr	36,000	36.0	1,000.0	48.3	270,110	8	41	47	57	246,500	205,430	358,400
Grand Blanc	37,000	36.0	1,027.8	153.3	580,509	21	137	146	177	368,065	990,210	383,251
FULL/PART-TIME FIREFIGHTERS												
Comstock Central	7,000	20.0	350.0	41.0	129,629	41	23	34	61	6,400	140,830	241,658
Lapeer	7,000	17.0	411.8	89.3	1,109,986	178	89	86	93	1,061,250	763,295	1,505,414
Marysville	7,335	6.8	1,078.7	36.0	184,107	80	37	40	31	461,655	58,650	32,015
Hillsdale	7,400	6.5	1,138.5	63.0	560,537	132	44	63	82	116,870	64,787	1,499,954
Three Rivers	7,800	3.0	2,600.0	59.7	147,949	49	51	66	62	166,855	118,452	158,540
Port Huron TWP	8,000	13.5	592.6	51.3	226,224	47	60	46	48	375,848	140,758	162,065
Grand Haven TWP	9,000	34.0	264.7	40.0	105,922	32	34	36	50	55,120	113,420	129,225
Sturgis	9,468	4.7	2,014.5	62.7	1,441,688	212	67	62	59	1,052,675	3,187,375	85,015
Brandon	9,530	36.0	264.7	81.0	373,727	80	84	76	83	656,476	346,786	117,920
Plymouth	9,700	2.5	3,880.0	57.7	163,603	61	83	53	37	127,934	162,445	200,431
St. Joseph #	9,800	4.0	2,450.0	46.3	549,247	134	46	48	45	216,195	98,686	1,332,861
Pennfield	10,000	36.0	277.8	39.0	62,950	26		10	68		44,650	81,250
Grand Rapids TWP	10,000	17.0	588.2	44.0	80,541		44	32	56	82,295	81,127	78,200
Grosse Ile	10,000	13.0	769.2	29.0	237,900	51	18	40	29	297,075	282,450	134,175
Cadillac	10,000	8.0	1,250.0	56.7	270,745	73	57	42	71	85,750	437,440	289,045
Eastwood	10,000	4.0	2,500.0	49.3	210,717	40	44	62	42	230,775	281,450	119,925
Bedford TWP Clhn	10,157	31.0	327.6	67.7	249,962	32	57	66	80	194,780	176,755	378,350
Allegan	10,168	94.0	108.2	71.0	215,855	33	58	69	86	121,050	267,154	250,360
Grand Haven	11,500	6.0	1,916.7	78.3	361,745	84	78	74	83	692,775	343,736	48,725
South Haven	12,000	100.0	120.0	107.7	381,105	76	114	104	105	475,100	367,066	301,150
Green Oak TWP	12,000	36.0	333.3	53.0	284,198	33	71	35		258,700	309,695	
Lansing TWP	12,000	7.0	1,714.3	64.3	236,342	79	63	72	58	71,100	594,570	43,355
Buena Vista #	12,500	36.0	347.2	122.7	678,829	84	136	108	124	1,128,295	453,614	454,578
Oshtemo	13,000	36.0	361.1	94.0	215,710	43	87	86	109	208,215	162,545	246,370
Thomas TWP	13,000	33.0	393.9	39.7	113,243	15	37	41	41	112,350	103,160	124,220
Niles	13,200	7.2	1,833.3	85.3	171,706	63	56	103	97	218,050	169,285	127,782
Bridgeport	14,000	36.0	388.9	78.3	319,131	80	82	68	85	195,715	205,254	556,425
Sault Ste Marie	14,500	15.0	966.7	58.3	216,167	67	73	59	43	386,400	124,300	137,800
Northville TWP	15,000	17.9	838.0	80.7	886,704	69	66	86	90	1,766,855	538,092	355,165
Auburn Hills	15,000	17.0	882.4	177.7	247,134	58	116	122	115	263,045	195,358	283,000
Riverview	15,000	5.0	3,000.0	94.3	242,622	48	79	100	104	136,055	280,260	311,160
Coldwater	15,597	72.0	216.6	134.0	370,492	62	107	140	155	469,455	406,130	235,892
Hastings	16,000	135.0	118.5	121.0	525,581	47	118	127	118	445,480	645,513	485,750
Niles TWP	17,000	45.0	377.8	102.0	395,142		100	100	106		601,000	473,025
Cascade TWP	17,000	36.0	472.2	26.5	24,013	11		25	28	111,400	32,225	15,800
Walker	18,000	28.0	642.9	126.3	292,597	26	118	119	142	321,605	457,750	98,435
Owosso	18,000	5.0	3,600.0	95.0	453,721	82	101	81	103	247,160	1,036,000	78,002
Mt. Clemens	18,750	4.2	4,464.3	175.7	700,623	85	190	190	147	264,805	961,690	875,375
Charlotte	20,000	162.0	123.5	133.7	392,808	31	91	133	177	238,280	364,725	575,420
Frenchtown TWP	20,000	42.0	476.2	128.7	412,056	34	149	95	142	466,431	194,802	574,935
Macomb TWP	20,000	36.0	555.6	89.3	204,438	24	82	89	94	100,432	234,202	278,681
Brownstown	20,000	24.0	833.3	141.7	241,305	26	122	168	135	84,050	252,785	387,080

	Resident Pop.	Square Miles	Density	Ave # Fires 84-86	Ave Loss 84-86	Ave Loss 84-86 & 87 Budget per Capita	Fires 1986	Fires 1985	Fires 1984	Loss Prop & Conts 1986	Loss Prop & Conts 1985	Loss Prop & Conts 1984
Grand Ledge	21,000	108.0	194.4	31.1	161,994	17	13	6	75	174,307	149,681	
Adrian	21,000	7.0	3,000.0	142.0	786,765	78	138	140	148	391,465	960,420	1,008,410
Kalamazoo TWP	21,500	12.4	1,733.9	33.0	74,280	31	43	28	28	53,350	52,290	117,200
Independence TWP	22,000	36.0	611.1	187.3	638,100	71	180	167	215	275,005	1,108,588	530,708
Summit TWP	22,000	29.7	740.7	136.0	375,930	40	133	132	143	406,367	290,756	430,667
Norton Shores #	22,500	24.5	918.4	136.3	282,912	39	143	124	142	546,150	195	106,695
White Lake TWP	23,000	37.5	613.3	134.0	705,923	48	140	112	150	1,400,980	339,875	376,913
Mt. Pleasant	24,000	36.0	666.7	124.3	594,089	45	136	134	103	389,757	743,465	649,045
Orion TWP	24,000	36.0	666.7	210.7	475,018	37	189	190	253	684,855	364,880	375,320
Harrison TWP #	24,000	9.0	2,666.7	161.0	909,888	92	155	158	170	1,725,645	280,010	724,010
Birmingham	24,000	4.7	5,106.4	141.0	983,222	140	156	142	125	2,171,615	316,945	461,105
Plymouth TWP	25,000	16.2	1,543.2	154.7	326,464	41	150	128	159	422,565	275,001	281,815
Delta TWP	27,000	35.0	771.4	132.7	300,283	59	137	132	129	251,170	231,575	418,105
Romulus #	28,000	36.0	777.8	377.3	1,445,417	68	327	354	451	1,350,442	1,304,051	1,681,757
Novi #	28,500	31.5	904.8	207.3	471,408	37	201	218	203	634,380	380,929	398,915
Burton	30,000	23.5	1,276.6	197.3	721,953	43	241	206	145	692,435	1,008,365	465,060
Inkster	30,000	6.1	4,918.0	284.3	753,951	54	262	288	303	672,077	869,760	720,015
Meridian TWP	33,800	32.0	1,056.3	166.0	434,948	57	156	147	195	79,984	212,845	1,012,015
Kentwood	35,516	22.5	1,578.5	131.3	364,587	28	129	125	140	258,680	513,560	321,520
Grand Trav CTY	36,615	500.0	73.2	377.7	830,489	38	327	342	344	549,528	636,041	1,305,899
Flint TWP	37,000	24.5	1,510.2	145.0	412,343	34	223	52	160	446,874	386,970	403,185
East Detroit	38,500	5.0	7,700.0	180.7	679,223	48	180	190	172	457,050	830,025	750,595
Portage	39,000	34.5	1,130.4	189.7	572,517	55	137	228	204	190,070	367,217	1,160,263
West Bloomfield	48,300	32.4	1,490.7	193.0	1,320,809	81	182	162	235	744,218	2,003,788	1,214,420
Rochester Hills	55,000	32.5	1,692.3	299.7	631,432	53	253	303	343	764,015	446,307	683,975
Wyoming	60,000	26.0	2,307.7	282.3	598,344	40	254	269	324	573,970	423,620	797,442
Waterford	64,437	33.2	1,940.9	363.7	1,067,358	48	303	331	457	973,588	1,136,574	1,091,913
Dearborn Heights	68,000	12.5	5,440.0	293.0	1,201,454		290	227	312	1,262,830	1,697,585	643,948
Farmington Hills	68,021	33.7	2,018.4	266.3	837,516	35	310	281	208	1,012,508	713,999	786,040
Taylor	80,000	24.0	3,333.3	754.7	1,585,121	51	707	711	846	1,511,608	1,134,356	2,109,400
Troy	85,000	32.0	2,656.3	410.3	1,024,122	36	428	402	401	1,178,510	622,330	1,271,526
CAREER FIREFIGHTERS												
Iron Mountain	8,400	8.5	988.2	94.7	232,838	87	81	92	111	26,884	228,189	443,441
Menominee	10,200	8.0	1,275.0	95.0	257,133	59	83	89	113	260,546	93,297	417,556
Grosse Pte Farms	11,500	2.6	4,423.1	24.7	313,921	97	38	13	23	95,600	701,180	144,983
Melvindale	12,300	2.0	6,150.0	117.7	346,865	76	119	119	115	357,806	457,470	225,320
Alpena	12,500	8.5	1,470.6	80.3	210,508	108	95	67	79	269,457	290,541	71,525
River Rouge	13,500	2.8	4,821.4	121.7	254,614	77	119	117	129	260,441	310,380	193,022
Benton Harbor	15,000	4.6	3,260.9	262.7	593,508	83	265	258	265	521,975	692,990	565,560
Traverse City	17,000	12.0	1,416.7	140.7	236,036	76	135	153	134	235,772	226,705	245,630
Hamtramck	20,000	2.0	10,000.0	305.7	3,746,766	263	309	307	301	928,039	658,650	9,653,608
Hazel Park	20,914	2.8	7,469.3	182.0	489,317	73	210	216	120	553,127	475,455	439,370
Marquette	24,000	12.0	2,000.0	104.3	414,690	52	86	104	123	537,603	412,760	293,707
Monroe	25,000	8.3	3,012.0	148.0	390,794	104	132	158	154	404,665	462,118	305,600
Southgate	32,058	6.9	4,646.1	254.7	3,336,542	151	246	262	256	2,431,020	7,185,065	393,540
Wyandotte	34,000	5.5	6,181.8	230.0	1,008,745	77	224	196	270	772,180	1,918,715	385,339

	Resident Pop.	Square Miles	Density	Ave # Fires 84-86	Ave Loss 84-86	Ave Loss 84-86 & 87 Budget per Capita	Fires 1986	Fires 1985	Fires 1984	Loss Prop & Conts 1986	Loss Prop & Conts 1985	Loss Prop & Conts 1984
Port Huron	35,000	7.2	4,861.1	350.3			371	321	359			
Allen Park	35,000	7.2	4,861.1	164.7	323,210	49	157	171	166	283,174	253,690	432,765
Madison Heights	35,375	7.2	4,913.2	281.7	1,879,962	113	312	262	271	1,386,772	2,647,255	1,605,860
Garden City	36,000	6.0	6,000.0	123.3	440,207	47	117	137	116	311,910	474,535	534,175
Midland	38,250	28.2	1,356.4	163.7	324,860	77	146	151	191	223,155	345,849	405,577
Jackson	39,739	10.7	3,713.9	344.0	1,566,874	125	350	324	358	1,085,493	910,205	2,704,925
Muskegon	40,000	17.0	2,352.9	347.0	675,635	67	333	365	343	472,097	999,907	554,900
Lincoln Park	43,201	5.9	7,322.2	281.0	696,554		233	288	322	438,646	833,325	817,690
Bloomfield TWP	45,532	27.6	1,649.7	184.7	1,028,325	119	185	167	202	744,006	1,734,305	606,663
Ypsilanti TWP	46,000	31.8	1,446.5	280.0	709,647	63	236	275	329	536,550	701,821	890,569
East Lansing	51,000	12.0	4,250.0	133.7	747,814	52	140	128	133	491,513	557,707	1,194,223
Battle Creek	56,000	46.0	1,217.4	488.0	1,088,320	69	455	493	516	996,234	1,226,340	1,042,385
Redford	58,441	11.4	5,126.4	336.0	1,245,955	61	286	348	374	1,352,091	923,959	1,461,815
Royal Oak	74,828	12.5	5,986.2	351.0	977,359	46	367	297	389	969,910	938,618	1,023,550
St. Clair Shores	76,000	11.5	6,608.7	257.0	866,168	53	233	253	285	1,036,834	829,365	732,305
Saginaw	77,000	18.5	4,162.2	653.0	2,163,525	103	622	623	709	1,674,472	2,589,335	2,226,769
Clinton TWP	80,000	29.7	2,693.6	521.7	14,796,007	226	425	508	632	1,919,805	1,160,511	41,307,704
Pontiac	80,000	25.0	3,200.0	852.3	2,057,297	140	803	835	919	1,986,881	1,732,990	2,452,020
Westland	84,100	22.5	3,737.8	559.0	2,488,917	66	592	535	550	4,482,541	1,453,970	1,530,239
Livonia	105,000	32.0	3,281.3	512.3	1,785,094	65	496	509	532	2,245,917	1,685,688	1,423,667
Sterling Hts	115,000	36.0	3,194.4	543.3	1,562,665	65	509	533	588	1,577,835	1,126,560	1,983,600
Lansing	130,000	34.1	3,812.3	818.0	2,289,711	90	827	767	860	2,191,900	2,820,505	1,856,728
Ann Arbor	140,000	28.0	5,000.0	556.7	1,630,930	50	554	568	548	1,504,520	2,025,445	1,362,825
Flint	160,000	33.0	4,848.5	1,465.3	5,120,249	133	1523	1488	1385	6,017,288	4,466,833	4,876,627
Grand Rapids	182,000	46.0	3,956.5	1,258.0	3,962,239	93	1307	1228	1239	4,297,680	3,688,853	3,900,185
PUBLIC SAFETY OFFICERS												
Manistee	7,200	5.0	1,440.0	52.0	331,402	90	37	62	57	93,345	482,836	418,025
Ironwood DPS	7,629	5.8	1,315.3	61.7	200,850	90	40	71	74	74,800	227,300	300,450
Greenville DPS	8,500	8.0	1,062.5	74.0	440,978	193	84	71	67	777,027	270,541	275,365
Genesee TWP	9,000	14.0	642.9	35.0	78,833	17	24	45	36	12,500	197,400	26,600
Center Line DPS	9,293	1.7	5,466.5	74.0	116,125	205	68	74	80	174,595	112,010	61,770
East Grand Rapids	11,000	3.5	3,142.9	37.7	54,325		48	34	31	69,000	67,475	26,500
Farmington DPS	11,022	2.9	3,800.7	32.0	95,871	118	39	26		140,435	51,306	
Emmett TWP	11,055	34.0	325.1	75.7	207,185		44	85	98	148,545	212,960	260,050
Albion DPS	11,060	4.0	2,765.0	83.3	527,801	165	85	76	89	381,550	777,140	424,712
Beverly Hills DPS	11,500	4.3	2,674.4	32.3	117,312	164	27	40	30	179,460	55,375	114,100
Grandville	14,500	8.4	1,726.2	56.7	196,337	24	63	54	53	110,645	188,550	289,815
Fraser DPS	14,560	4.0	3,640.0	75.0	1,020,009	282	66	77	82	314,934	2,299,793	445,300
Grosse Pte Park	15,000	2.5	6,000.0	49.3	214,100	187	38	46	64	192,700	84,525	365,075
Grss Pte Wds DPS	18,000	3.2	5,625.0	36.3	252,260	184	30	44	35	218,010	483,475	55,295
Ionia	20,000	72.0	277.8	71.0	169,833	20	68	51	94	73,600	119,600	316,300
Blckmn TWP DPS	20,000	32.5	615.4	141.3	872,269	94	141	121	162	2,300,195	192,541	124,070
Highland Park	20,000	4.0	5,000.0	603.3	3,561,702		526	582	702	2,620,571	2,810,755	5,253,779
Oak Park	36,632	5.2	7,044.6	181.3	1,376,884	66	177	186	131	1,359,247	1,012,202	1,759,204
Saginaw TWP	40,000	27.0	1,481.5	133.7	914,048	40	112	152	137	1,578,825	872,360	290,960
Bay City	41,593	11.4	3,648.5	265.0	669,909	94		307	223		906,992	492,825
Canton TWP	56,000	36.0	1,555.6	27.7	227,785	36	12	35	36	89,800	227,505	366,050

	Resident Pop.	1987-88 Budget	Density	Income per Capita	State Equalized Valuations	Budget per Capita	SEV per capita	Budget per Capita	Budget per Sq. Mile
VOLUNTEER FIREFIGHTERS									
Carrollton TWP	7,286		2,428.7	8,593	47,977,328		6,585		
Hamburg	11,318	90,000	322.5	10,541	155,835,526	0.0006	13,769	8	2,564
Monroe TWP Vol	11,654	67,130	448.2	9,099	108,579,983	0.0006	9,317	6	2,582
Bedford Vol #2 Mnr	34,000	22,000	944.4	9,741	110,695,821	0.0002	3,256	1	611
PART-TIME FIREFIGHTERS									
North Branch	7,000	16,000	134.6	6,700	27,447,579	0.0006	3,921	2	308
Byron Center	7,000	20,000	200.0	8,704	120,891,000	0.0002	17,270	3	571
Lyon TWP #	7,078	152,500	214.5	9,401	104,751,400	0.0015	14,800	22	4,621
Kimball TWP #	7,100	250,000	197.2	6,945	46,693,158	0.0054	6,577	35	6,944
Allendale	7,118	80,000	222.4	7,071	45,454,200	0.0018	6,386	11	2,500
Howard*	7,500		220.6	7,932	51,147,843		6,820		
Rochester	7,500	150,000	1,973.7	11,924	124,978,860	0.0012	16,664	20	39,474
Millington-Arbela	7,665	37,700	106.5	7,932	61,926,009	0.0006	8,079	5	524
Sparta Area	8,000	75,000	222.2	8,380	103,710,250	0.0007	12,964	9	2,083
Sheridan Cmmty	8,000	16,000	538.2	7,294	71,205,997	0.0002	8,901	2	1,176
Shepard Tri-TWP	8,600	98,000	79.6	7,041	86,983,051	0.0011	10,114	11	907
Cooper TWP#	8,600	87,000	238.9	9,121	77,484,293	0.0011	9,010	10	2,417
Lowell Area	9,000	20,000	150.0	8,427	107,466,302	0.0002	11,941	2	333
Springfield TWP	9,000	105,000	250.0	21,483	105,629,575	0.0010	11,737	12	2,917
Edwardsburg	10,000	46,097	250.0	8,568				5	1,152
Milford TWP	10,000	110,000	277.8	10,556	162,090,150	0.0007	16,209	11	3,056
Huron TWP	10,000	116,648	288.8	9,619	93,126,862	0.0013	9,313	12	3,240
Fort Gratiot	10,200	64,400	268.4	10,018	82,799,320	0.0008	8,118	6	1,695
Barry Prarvle Hope	10,600	59,000	98.1	8,650	90,604,794	0.0007	8,548	6	546
Bangor Community	11,000	287,223	76.4	6,305	95,145,699	0.0030	8,650	26	1,995
Sumpter TWP	11,000	50,000	305.6	8,297	71,946,840	0.0007	6,541	5	1,389
Cutlreville	11,000		846.2	8,864					
Brighton TWP	11,222	112,000	325.3	11,425	189,558,600	0.0006	16,892	10	3,246
Oscoda TWP	11,386	130,818	86.3	6,094	92,170,720	0.0014	3,095	11	991
Portland	12,000	100,000	166.7	8,420	75,708,120	0.0013	6,309	8	1,389
Milan Area #	12,000	127,700	240.0	9,422	133,614,775	0.0010	11,135	11	2,554
Mundy TWP	12,000	90,000	342.9	10,844	128,384,650	0.0007	10,699	8	2,571
Mt. Morris TWP	12,000	75,000	800.0	8,478	198,299,153	0.0004	16,525	6	5,000
Williamston	13,200	103,000	183.3	12,529	101,510,516	0.0010	7,690	8	1,431
Pinconning*	15,000	65,000	208.3	7,535	77,624,000	0.0008	5,175	4	903
Swartz Creek	15,000	161,900	394.7	10,243	135,997,790	0.0012	9,067	11	4,261
Clawson	15,090		10,060.0	10,354	150,462,028		9,971		
Holland TWP	16,500	197,400	550.0	8,796	189,346,900	0.0010	11,476	12	6,580
Flushing	18,000	100,000	500.0	10,515	89,599,411	0.0011	4,978	6	2,778
Holt-Delhi #	19,000	315,000	633.3	9,941	155,013,150	0.0020	8,159	17	10,500
Alma District	20,000	222,570	142.9	7,649	158,031,198	0.0014	7,902	11	1,590
Van Buren TWP #	20,000	310,311	555.6	10,110	218,045,162	0.0014	10,902	16	8,620
Beecher	20,000	90,000	444.4	10,370				5	20,000
Chesterfield TWP	21,000	382,680	636.4	9,286	254,161,535	0.0015	12,103	18	11,596
Clio Area	24,072	212,405	334.3	8,740	211,280,829	0.0010	8,777	9	2,950
Davison Area	30,000	212,000	416.7	11,662	239,482,655	0.0009	7,983	7	2,944

	Resident Pop.	1987-88 Budget	Density	Income per Capita	State Equalized Valuations	Budget per Capita	SEV per capita	Budget per Capita	Budget per Sq. Mile
Georgetown TWP	30,000	140,000	833.3	8,717	285,310,900	0.0005	9,510	5	2,889
Bedford TWP #1 Mnr	36,000	24,000	1,000.0	9,741	110,695,821	0.0002	3,075	1	677
Grand Blanc	37,000	180,000	1,027.8	12,419	92,509,596	0.0019	2,500	5	5,000
FULL/PART-TIME FIREFIGHTERS									
Comstock Central	7,000	156,694	350.0	9,183	115,049,443	0.0014	16,436	22	7,835
Lapeer	7,000	135,050	411.8	8,022	73,737,000	0.0018	10,534	19	7,944
Marysville	7,335	402,155	1,078.7	10,347	135,979,492	0.0030	18,538	55	59,140
Hillsdale	7,400	417,443	1,138.5	7,212	65,562,548	0.0064	8,860	56	64,222
Three Rivers	7,800	231,810	2,600.0	7,691	200,279,852	0.0012	25,677	30	77,270
Port Huron TWP	8,000	150,000	52.6	8,310	66,591,543	0.0023	8,324	19	11,111
Grand Haven TWP	9,000	179,400	264.7	9,217	98,092,850	0.0018	10,899	20	5,276
Sturgis	9,468	563,000	2,001.7	8,555	20,579,260	0.0274	2,174	59	119,027
Brandon	9,530	387,600	264.7	9,155	119,955,000	0.0032	12,587	41	10,767
Plymouth	9,700	427,615	3,880.0	11,312	145,116,400	0.0029	14,960	44	171,046
St. Joseph #	9,800	764,750	2,450.0	11,722	137,911,500	0.0055	14,073	78	191,188
Pennfield	10,000	193,165	277.8	9,656	71,818,556	0.0027	7,182	19	5,366
Grand Rapids TWP	10,000		588.2	12,344	151,943,950		15,194		
Grosse Ile	10,000	270,000	769.2	15,477	160,429,680	0.0017	16,043	27	20,769
Cadillac	10,000	455,000	1,250.0	7,397	83,298,700	0.0055	8,330	46	56,875
Eastwood	10,000	185,107	2,500.0	9,663				19	46,277
Bedford TWP Clhn	10,157	77,370	327.6	9,223	65,103,859	0.0012	6,410	8	2,496
Allegan	10,168	121,000	108.2	8,177	99,799,780	0.0012	9,815	12	1,287
Grand Haven	11,500	603,513	1,916.7	9,032	146,559,800	0.0041	12,744	52	100,586
South Haven	12,000	527,770	120.0	8,021	160,520,294	0.0033	13,378	44	5,278
Green Oak TWP	12,000	108,000	333.3	9,102	131,520,938	0.0008	10,960	9	3,000
Lansing TWP	12,000	712,102	1,714.3	11,139	192,146,700	0.0037	16,012	59	101,729
Buena Vista #	12,500	372,782	347.2	7,634	169,354,597	0.0022	13,548	30	10,355
Oshtemo	13,000	339,822	361.1	10,533	152,978,840	0.0022	11,768	26	9,440
Thomas TWP	13,000	85,000	393.9	9,427	137,178,675	0.0006	10,552	7	2,576
Niles	13,200	654,700	1,833.3	8,166	99,381,503	0.0066	7,529	50	90,931
Bridgeport	14,000	97,525	388.9	8,600	117,545,974	0.0008	8,396	7	2,709
Sault Ste Marie	14,500	755,858	966.7	6,840	85,878,801	0.0088	5,923	52	50,391
Northville TWP	15,000	150,000	838.0	13,733	208,689,930	0.0007	13,913	10	8,380
Auburn Hills	15,000	626,000	882.4	9,497	181,931,233	0.0034	12,129	42	36,824
Riverview	15,000	478,227	3,000.0	10,428	149,819,170	0.0032	9,988	32	95,645
Coldwater	15,597	596,000	216.6	7,988	80,617,900	0.0074	5,169	38	8,278
Hastings	16,000	229,567	118.5	8,458	142,022,334	0.0016	8,876	14	1,700
Niles TWP	17,000		377.8	8,029	106,697,572		6,276		
Cascade TWP	17,000	161,000	472.2	13,964	299,036,000	0.0005	17,590	9	4,472
Walker	18,000	177,290	642.9	9,243	239,890,700	0.0007	13,327	10	6,332
Owosso	18,000	1,029,700	3,600.0	8,326	111,849,227	0.0092	6,214	57	205,940
Mt. Clemens	18,750	891,508	4,464.3	9,067	186,269,335	0.0048	9,934	48	212,264
Charlotte	20,000	231,102	123.5	9,228	174,906,009	0.0013	8,745	12	1,427
Frenchtown TWP	20,000	276,119	476.2	8,806	825,431,056	0.0003	41,272	14	6,574
Macomb TWP	20,000	284,000	555.6	9,975	184,822,480	0.0015	9,241	14	7,889
Brownstown	20,000	275,000	833.3	9,168	180,755,128	0.0015	9,033	14	11,458
Grand Ledge	21,000	193,410	194.4	5,220	175,636,091	0.0011	8,364	9	1,791
Adrian	21,000	846,049	3,000.0	8,293	166,432,300	0.0051	7,925	40	120,864
Kalamazoo TWP	21,500	598,028	1,733.9	10,533				28	48,228
Independence TWP	22,000	925,050	611.1	11,441	269,311,200	0.0034	12,242	42	25,696
Summit TWP	22,000	495,000	741.5	10,822	183,142,172	0.0027	8,325	23	16,684

	Resident Pop.	1987-88 Budget	Density	Income per Capita	State Equalized Valuations	Budget per Capita	SEV per capita	Budget per Capita	Budget per Sq. Mile
Norton Shores #	22,500	600,388	918.4	9,964	223,689,905	0.0027	9,942	27	24,506
White Lake TWP	23,000	404,000	618.8	9,980	221,471,250	0.0018	9,629	18	10,869
Mt. Pleasant	24,000	495,666	666.7	6,464	144,885,990	0.0034	6,037	21	13,769
Orion TWP	24,000	420,000	666.7	10,306	291,142,400	0.0014	12,131	18	11,667
Harrison TWP #	24,000	1,300,000	2,666.7	11,031	266,562,609	0.0049	11,107	54	144,444
Birmingham	24,000	2,374,208	5,106.4	17,089	527,484,900	0.0045	21,979	99	505,151
Plymouth TWP	25,000	688,772	1,543.2	12,797	393,987,400	0.0017	15,759	28	42,517
Delta TWP	27,000	1,300,000	771.4	12,264	429,006,700	0.0030	15,889	48	37,143
Romulus #	28,000	455,256	777.8	7,700	321,752,480	0.0014	11,491	16	12,646
Novi #	28,500	596,500	904.8	12,605	520,756,650	0.0011	18,272	21	18,937
Burton	30,000	570,000	1,276.6	9,099	284,076,600	0.0020	9,469	19	24,255
Inkster	30,000	878,765	4,918.0	8,071	163,895,868	0.0052	5,630	29	144,060
Meridian TWP	33,800	1,490,856	1,056.3	12,364	406,666,300	0.0037	12,032	44	46,589
Kentwood	35,516	639,719	1,578.5	9,873	461,334,000	0.0014	12,989	18	28,432
Grand Traverse CTY	36,615	573,279	73.2	8,137	584,662,552	0.0010	15,968	16	1,147
Flint TWP	37,000	831,115	1,510.2	10,820	438,399,300	0.0019	11,349	22	33,923
East Detroit	38,500	1,181,211	7,700.0	9,906	331,096,090	0.0036	8,600	31	236,242
Portage	39,000	1,579,527	1,130.4	10,910	593,356,200	0.0027	15,214	41	45,783
West Bloomfield	48,300	2,602,600	1,490.7	17,598	987,477,650	0.0026	20,445	54	80,327
Rochester Hills	55,000	2,263,256	1,692.3	13,116	820,850,600	0.0028	14,925	41	69,639
Wyoming	60,000	1,772,670	2,307.7	8,869	774,588,300	0.0230	12,910	31	68,180
Waterford	64,437	2,006,481	1,940.9	10,251	739,452,849	0.0027	11,476	31	60,436
Dearborn Heights	68,000		5,440.0	10,806	602,762,650		8,864		
Farmington Hills	68,021	1,557,988	2,018.4	14,634	1,247,183,125	0.0012	18,335	23	46,231
Taylor	80,000	2,500,000	3,333.3	8,372	576,161,101	0.0043	7,202	31	104,167
Troy	85,000	2,056,640	2,656.3	13,631	1,769,376,080	0.0012	20,816	24	64,270
CAREER FIREFIGHTERS									
Iron Mountain	8,400	497,353	988.2	8,086	83,391,350	0.0060	9,928	59	58,512
Menominee	10,200	345,000	1,275.0	8,707	79,181,100	0.0044	7,763	34	43,125
Grosse Pte Farms	11,500	800,000	4,423.1	25,870	286,287,700	0.0028	24,895	70	307,692
Melvindale	12,300	589,980	6,150.0	9,177	107,225,558	0.0055	8,718	48	294,990
Alpena	12,500	1,135,331	1,470.6	7,305	138,441,500	0.0082	11,075	91	133,568
River Rouge	13,500	786,845	4,856.1	7,299	211,400,322	0.0037	15,659	58	283,038
Benton Harbor	15,000	650,000	3,260.9	4,854	49,856,382	0.0130	3,324	43	141,304
Traverse City	17,000	1,048,507	1,416.7	8,222	234,076,155	0.0045	13,769	62	87,376
Hamtramck	20,000	1,516,733	10,000.0	7,657	96,962,460	0.0156	4,843	76	758,367
Hazel Park	20,914	1,035,353	7,469.3	7,825	137,946,000	0.0075	6,596	50	369,769
Marquette	24,000	832,322	2,000.0	7,056	237,738,402	0.0035	9,906	35	69,360
Monroe	25,000	2,200,000	3,012.0	9,147	562,057,600	0.0039	22,482	88	265,060
Southgate	32,058	1,505,779	4,646.1	9,854	275,729,726	0.0055	8,601	47	218,229
Wyandotte	34,000	1,600,000	6,181.8	8,888	274,367,547	0.0058	8,070	47	290,909
Port Huron	35,000	2,444,000	4,861.1	8,269	284,877,200	0.0086	8,139	70	339,444
Allen Park	35,000	1,396,365	4,861.1	11,478	338,790,230	0.0036	11,108	40	193,940
Madison Heights	35,375	2,102,676	4,913.2	9,594	447,548,950	0.0044	13,500	59	292,038
Garden City	36,000	1,250,000	6,000.0	9,503	260,379,289	0.0048	7,233	35	208,333
Midland	38,250	2,637,243	1,358.8	12,040	953,310,035	0.0280	25,054	69	93,685
Jackson	39,739	3,400,000	3,713.9	7,903	284,052,278	0.0120	7,148	86	317,757
Muskegon	40,000	2,019,040	2,352.9	6,843	343,189,300	0.0058	8,705	50	118,767

	Resident Pop.	1987-88 Budget	Density	Income per Capita	State Equalized Valuations	Budget per Capita	SEV per capita	Budget per Capita	Budget per Sq. Mile
Lincoln Park	43,201		7,285.2	9,116	320,138,676		7,410		
Bloomfield TWP	45,532	4,394,400	1,649.7	22,715	1,171,298,014	0.0038	25,725	97	159,217
Ypsilanti TWP	46,000	2,189,000	1,446.5	10,051	448,943,250	0.0049	9,760	48	68,836
East Lansing	51,000	1,900,000	4,250.0	7,849	309,463,090	0.0061	6,068	37	158,333
Battle Creek	56,000	2,800,000	1,217.4	9,299	530,084,726	0.0053	9,466	50	60,870
Redford	58,441	2,300,000	5,126.4	10,297	612,666,190	0.0038	10,483	39	201,754
Royal Oak	74,828	2,485,182	5,986.2	11,468	739,105,350	0.0034	9,877	33	198,815
St. Clair Shores	76,000	3,156,613	6,608.7	10,906	754,214,660	0.0042	9,924	42	274,488
Saginaw	77,000	5,800,000	4,162.2	7,309	556,292,850	0.0104	7,225	75	313,514
Clinton TWP	80,000	3,262,385	2,693.6	10,360	775,543,454	0.0042	9,694	41	109,861
Pontiac	80,000	9,182,428	3,200.0	7,249	759,721,750	0.0121	9,497	115	367,297
Westland	84,100	3,100,000	3,737.9	9,653	658,318,090	0.0047	7,828	37	137,778
Livonia	105,000	5,000,000	3,281.3	11,526	1,661,622,510	0.0030	15,825	48	156,250
Sterling Hts	115,000	5,900,000	3,194.4	10,485	1,496,986,700	0.0039	13,017	51	163,889
Lansing	130,000	9,355,900	3,816.8	9,145	1,212,137,900	0.0077	9,324	72	274,689
Ann Arbor	140,000	5,344,477	5,000.0	10,895	1,433,828,000	0.0037	10,242	38	190,874
Flint	160,000	16,200,000	4,848.5	8,725	1,584,036,310	0.0102	9,900	101	490,909
Grand Rapids	182,000	13,020,472	3,956.5	8,304	1,729,566,350	0.0075	9,503	72	283,054
PUBLIC SAFETY OFFICERS									
Manistee	7,200	320,000	1,440.0	7,617	61,217,242	0.0052	8,502	44	64,000
Ironwood DPS	7,629	189,000	1,317.6	6,543	40,420,500	0.0121	5,298	64	84,456
Greenville DPS	8,500	1,200,000	1,062.5	3,445	92,965,300	0.0129	10,937	141	150,000
Genesee TWP	9,000	72,662	642.9	8,799	199,198,836	0.0004	22,133	8	5,190
Center Line DPS	9,293	1,788,550	5,340.8	9,231	120,031,988	0.0149	12,916	192	1,027,902
East Grand Rapids	11,000		3,142.9	17,822	170,374,300		15,489		
Farmington DPS	11,022	1,200,000	3,800.7	13,701	173,937,090	0.0069	15,781	109	413,793
Emmett TWP	11,055		325.1	9,454	86,954,175		7,866		
Albion DPS	11,060	1,300,000	2,765.0	6,285	54,588,873	0.0238	4,936	118	325,000
Beverly Hills DPS	11,500	1,766,990	2,705.9	19,196	207,346,100	0.0085	18,030	154	415,762
Grandville	14,500	152,995	1,726.2	9,694	175,960,400	0.0009	12,135	11	18,214
Fraser DPS	14,560	3,091,761	3,640.0	9,366	194,607,876	0.0159	13,366	212	772,940
Grosse Pte Park	15,000	2,583,900	6,000.0	15,751	198,674,299	0.0130	13,245	172	1,033,560
Grosse Pte Wds DPS	18,000	3,052,587	5,625.0	16,906	329,426,018	0.0093	18,301	170	953,933
Ionia	20,000	225,000	277.8	8,524	85,564,900	0.0026	4,278	11	3,125
Blackman TWP DPS	20,000	1,000,000	615.4	6,955	173,417,336	0.0058	8,671	50	30,769
Highland Park	20,000		5,000.0	6,758	173,041,881		8,652		
Oak Park	36,632	1,032,127	7,044.6	9,939	280,904,390	0.0037	7,668	28	198,486
Saginaw TWP	40,000	670,406	1,481.5	11,261	487,291,513	0.0014	12,182	17	24,830
Bay City	41,593	3,189,288	3,648.5	8,225	286,209,155	0.0111	6,881	77	279,762
Canton TWP	56,000	1,764,850	1,555.6	10,551	537,763,957	0.0033	9,603	32	30,769

APPENDIX III

Case Studies Information about the following fire departments was obtained from fire or public safety department directors and the materials they provided, including fire department annual reports, departmental procedures and policy directives, and capital program plans. All directors interviewed were extremely cooperative, informative, and generous of their time, and each had the opportunity to review and correct the description of his department to insure accuracy. The fire service structures described are representative, but by no means exhaustive. Other systems may be better adapted to a particular community.

The City of Troy

1960 Population	19,402
1970 Population	39,419
1980 Population	67,102
1980 Median Family Income	$34,192
1980 Area in Square Miles	32.0
1965 SEV	$ 84,458,794
1975 SEV	604,115,875
1985 SEV	1,556,694,820
1985 Total Fires	402
1985 Total Estimated Loss	$622,330
1985 Incendiary Fires	47
1985 Suspicious Fires	62

Those who associate volunteer fire departments with undeveloped, rural communities may be surprised by the well-trained, well-equipped volunteers in fast-growing Troy, which reported its 1987 population as 75,000. The city has no downtown, but does have ever increasing numbers of high-rise office buildings, as well as substantial light industrial and commercial development, including two major shopping malls. In 1986 over $210 million of non- residential construction activity occurred in Troy, which has a fire service rating of 4.

Troy has never had anything but a volunteer fire department; the city and the department, which now has nine full-time employees engaged in administration and fire prevention and 142 part-time fire fighting members, have grown together. Volunteers are recruited primarily by current members, but mailings, school programs, an occasional news article, and an open house during fire prevention week also generate interest. Applicants must be 18 years or older, pass a background investigation for criminal and traffic offenses, a physical exam, an agility test, and a written examination. Applicants are assigned to the fire station nearest their home, when an opening occurs and if the applicant receives the approval of the volunteers in that station. During the probationary period of at least one year, the probationary firefighter must successfully complete a 132 hour training program provided by the Troy department to qualify for Firefighter I, must be able to drive and operate all apparatus assigned to the station, and must be reviewed by station officers at least once every three months. At the end of the probationary period, final approval is contingent upon the outcome of a vote by the members of the fire station.

Regular members are Troy residents and are expected to attend at least 50% of all home station alarms that occur outside of their regular work hours and excused leave periods. Auxiliary members may be nonresidents but must work in the city of Troy, and are expected to attend at least 50% of alarms that occur during their hours of employment.

Obtaining sufficient volunteers has not been a problem in Troy, although there are fewer shift and blue collar workers available for daytime response than in the past. Volunteers are encouraged to spend time at the fire stations, where the coffee pot is always on and the social structure binding people who may have to depend on each other in threatening situations can be reinforced. Volunteers are permitted to wash their personal automobiles at the fire stations, as one means bf attracting them to the fire house.

Each station is assigned between 20 and 30 volunteers, and contains from two to four pieces of apparatus. Station officers (one assistant chief, one captain and a lieutenant for each major piece of fire fighting equipment) are elected by the volunteers assigned to that station.

Volunteer firefighters are dispatched from the communications center by a pager system which is used to identify the location of the emergency, whether fire, system alarm, gas leak, auto accident, or hazardous condition. The first volunteer who arrives at the fire station reports that his assigned apparatus is responding, confirms and writes the location on a blackboard, identifies the best response route, and reports from the road when the apparatus leaves the station. Other volunteers report directly to the scene.

The average response time, an important measure of fire department effectiveness, is 4.9 minutes. In 1986, there were a total of 1348 fire runs reported, with an overall average of 10.5 men responding to each.

AVERAGE RESPONSE BY STATION

Station 1	310 Runs	2827 Men	9.1 Average
Station 2	169 Runs	1771 Men	10.5 Average
Station 3	319 Runs	2711 Men	8.5 Average
Station 4	317 Runs	4056 Men	12.8 Average
Station 5	119 Runs	1645 Men	13.8 Average
Station 6	114 Runs	1102 Men	9.7 Average

An alarm received during the 7:00 AM to 5:00 PM period would initiate calls to the volunteers of two fire stations to insure adequate response. During evening and night hours, initial response would be from one station, with a minimum of two pumpers.

Because direction and coordination at the scene of a fire could be a problem in a volunteer department, there are precise policies that designate which of those attending a fire controls the action. Generally, the highest ranking officer at the scene of a fire is in charge. Within ranks, the most senior officer controls: if two stations are called to a run and two officers of the, same rank arrive, the officer of the area in which the fire occurs controls. If no officer arrives, the most senior member is in charge.

All volunteers are required to have at least 60 hours of training each year; at least 90% have completed firefighter II training. The deputy chief coordinates the training program and a training officer, appointed by the deputy chief and capable of instructing all phases of the basic training course, is assigned to each of the six fire stations.

The department emphasizes the importance of training, both in house and by the State of Michigan Firefighters Training Council. During 1986, the Troy department conducted two classes for Level A training, attended by personnel from nine other communities in addition to those from Troy. (Levels A and B lead to certification to Firefighter I; levels C and D to Firefighter II, which requires a total of 274 class hours.) Some 12,335 personnel hours were spent in 296 classes at fire stations as part of continuing Firefighter I and II training, and 24 persons attended the National Fire Academy Fire Fighter Safety and Survival class. The department is implementing plans to relocate a fire station and convert the existing structure into a training facility.

Volunteers receive first aid training as part of the basic course provided in the first year, but the department does not provide normal emergency medical services. Instead, Troy participates in an arrangement with Suburban Ambulance whereby the city rents property to the ambulance company and the company agrees to maintain sufficient advanced life support units in Troy to service the community. The communications center notifies the police department and Suburban Ambulance of calls for medical assistance.

The fire prevention division consists of the full-time fire marshal and five inspectors, two hired in December of 1986, and one in July, 1987. In addition to conducting training and investigating fires, staff review all building plans and conduct inspections during construction and prior to issuance of the certificate of occupancy. In 1986, a total of 1700 building inspections, including existing buildings but excluding one and two family dwelling units, resulted in issuance of 1403 violations. Troy has adopted the standard BOCA basic fire prevention code. These model fire prevention regulations, developed by the Building Officials and Code Administrators International, Inc. and published in book form, are designed to be adopted by a community's governing body.

A Police/Fire Arson Unit is comprised of an employee from each department. The unit investigated 49 fires in 1986; 29 were determined to be arson. Although significant problems exist in quantifying the value of fire loss, the Troy department estimates reflect the fact that more than one third of 1986 arsons were to vehicles.

TROY FIRE DEPARTMENT - ARSON HISTORY

Year	Total Fire Dept. Responses	Fires Investigated	Arson	Total Arson Loss	Average Loss Per Arson
1981	786	51	35	$126,210	#3,606
1982	821	63	32	193,775	6,055
1983	838	45	22	391,071	8,690
1984	960	41	12	30,000	2,525
1985	1,032	41	21	98,750	4,702
1986	1,141	49	29	107,963	3,723

There is no problem with malicious false alarms in Troy, but there are private fire alarm equipment malfunctions that cause art estimated 28% to 30% of all runs. The crime prevention bureau of the police department can impose, and also may waive, fines for these false alarms.

Troy participates in the Oakland County Mutual Aid Pact.

The total budget for the City of Troy for 1987-88 is $47,952,620. The Troy Fire Department budget for 1987-88 totals $2,056,640, of which $723,530 is for capital, including portions of a computer assisted dispatch system. The fire chief prepares a budget request based on need, but within constraints defined by the city manager. Although volunteers are not paid, fire stations will this year each receive $28,250 (having grown from $350 in 1940) to be used in any way the assigned volunteers choose, including paying for social events, purchasing distinctive clothing, or any other purpose. An evaluation by the department four years ago concluded that these payments to fire stations were approximately equal to the amount that would have been paid to part-time paid firefighters.

In Troy, fire department organization has not been a political issue. The structure of the department is constantly reviewed in-house, and is at present considered to be cost effective and adequate for the needs of the community.

The City of Farmington Hills

1960 Population	26,692
1970 Population	48,933
1980 Population	58,056
1980 Median Family Income	$35,197
1980 Area in Square Miles	33.5
1965 SEV	$ 90,475,793
1975 SEV	406,506,723
1985 SEV	1,113,934,718
1985 Total Fires	281
1985 Total Estimated Loss	$713,999
1985 Incendiary Fires	29
1985 Suspicious Fires	27

The suburb of Farmington Hills is primarily residential, but does contain some industrial parks and strip commercial development. Structures are limited to five stories by city ordinance. The reported 1987 population was 68,021.

In 1986, the city's fire department reported 3,255 incidents, including medical emergencies and 560 actual fires. Total fire loss in 1986 was $7,408,515, including one fire responsible for $5,800,000 in losses, and another causing $456,800 in damage.

The Farmington Hills Fire Department utilizes both full-time paid and part- time paid firefighters in a system that has been a political issue in the community. Full-time employees include the fire chief, deputy chief, fire marshal, training lieutenant, and the firefighters. Two full-time, paid firefighters are assigned to each of the four fire stations

between 7:30 AM and 6:00 PM (during 1986, most alarms occurred between 4 PM and 8 PM) while two other full-time firefighters are currently on special assignment, one involved in public education and the other working as an administrative assistant primarily concerned with fire preplanning and right-to-know legislation. Seventy-two volunteers are assigned to the fire stations nearest their homes, with a goal of 20 volunteers to each station. Qualified part- time firefighters fill in for vacationing full-time firefighters, generally on a first-come-first-served basis, although there are some permanent arrangements made for part-timers who may be available during certain times, such as teachers during the summer months.

Farmington Hills, which has an ISO rating of 6, has been utilizing full-time firefighters for daytime response for ten years. This solution to the volunteer department problem of inadequate daytime response to requests for fire service offers one structural alternative midway between the volunteer organization and the more expensive, full-time paid structure.

Paid volunteers are recruited through newspaper advertisements, the city newsletter, and word of mouth. A new full-time employee will be assigned to recruiting and maintaining the level of volunteers. Although attracting and maintaining volunteers continues to be a challenge, the average duration of involvement of part-timers four years ago was about 2.5 years; it has now increased to about five years.

Volunteers are trained to the firefighter I level in-house, before being allowed on fire trucks. After they begin to participate in fire runs, they are given the first responder (advanced first aid) course, then sent to firefighter training, and finally encouraged to take an emergency medical technician course. In order to be taken off probation, a volunteer must attain firefighter I, pass the first responder course, and have a valid cardiopulmonary resuscitation (CPR) card. Service as a volunteer is required to qualify for full-time employment with the department.

Probationary part-timers receive $7.80 per hour or part thereof; regular part- timers receive $11-20 per hour or part thereof for emergency situations, and $7.80 for training and non-emergency activities, with no guaranteed minimum. Volunteers may qualify for: longevity pay and there is an award system. An annual banquet, permission to wash and perform minor maintenance on personal cars at fire stations, VCRs, cable television and exercise machines at fire stations, and workers' compensation and supplemental disability insurance are offered to increase to the attractiveness of being a part-time firefighter, and to encourage volunteers to spend their free time at the fire houses, which allows speedier fire response.

Each fire station offers 36 hours of training annually, and centralized training concerning special hazards, special equipment or mutual concerns is provided for officers and firefighters. Each volunteer must attend, 11 of 12 station drills, and spends an average of 1.5 hours each week in training. This includes 30 hours every 3 years for EMT continuing education and three hours per year to maintain a valid CPR card. A total of 9000 man hours of training occurred in 1986.

Volunteers are promoted only if they have completed specific course requirements and on the basis of competitive examination. To qualify for sergeant, a volunteer must have three

years on the force, have attained firefighter II, (60 members of the department have attained firefighter II certification) and be a certified EMT have a good history of community service and satisfactory evaluations and service record, and have a response, record of over 45%. One year as a sergeant with a good evaluation an officers' course, cause and origin class, and approved building construction class, and being a certified instructor with an active role in training is required to qualify for lieutenant. A captain must have been a lieutenant for two years with a good evaluation, demonstrated a continuing involvement in training, completed hazardous materials and incident command courses, and have good written and verbal communications skills. Written tests are administered in-house and test fire fighting skills and knowledge of the department oral examinations are staffed by officers from other stations. Full examinations are 40% written, 30% oral, 5% seniority, and 25% station evaluation by the district chief or officers cadre.

Career firefighters, called fire technician/specialists, are promoted on the basis of written tests prepared by the Michigan Municipal League and oral examinations staffed by invited fire chiefs. Fire technician/specialists exercise authority just below that of volunteer district chiefs at fire scenes.

The department has begun training a special emergency response team for extraordinary situations such as special rescue or hazardous material incidents.

Department administrators prepare quarterly objectives, outlining goals such as maintaining response time under six minutes, and special projects for the agency. The objectives and related performance are reviewed in a formal evaluation process.

Fire response time averaged 5.47 minutes in 1986 in Farmington Hills Police dispatch directs only two men assigned to a fire house to respond to dumpster fires, accidents, medical emergencies, and non-emergency runs. All the men assigned to a station are notified of vehicle fires and smoke and odor calls. All the men assigned to two stations and the four staff officers are summoned to structure fires. The call to a structure fire requires that at one station the two full-time men, or first volunteers, take a mid-sized pumper for immediate response while the first two men from the other station arrive on an engine and begin connecting hose. Part-time firefighters, notified on a station basis by pager of fire emergencies, report to their assigned fire station, and respond in the vehicles assigned to that station. An average of three volunteers per station respond to day time calls; about ten volunteers respond to night calls. The primary fire danger is residential buildings, although there have been no fire fatalities since a suicide eight years ago.

The fire service recognizes emergency response as its first priority, followed by equipment preparedness, and fire prevention. Summer help is used for hydrant maintenance, and the city's DPW maintains the fire trucks.

Each fire station houses a mini-initial attack pumper and a full-sized pumper. Ambulances are assigned to two stations, other stations contain reserve pumpers, and an aerial truck is stationed at an industrial park.

Farmington Hills has adopted the BOCA code with some exceptions. No burning is allowed, and there are some variations on permits. During 1986, fire staff assigned to the four fire stations completed 2,753 inspections, including annual, business license, liquor

license, complaint, final building, and construction inspections, suppression system tests, and Department of Social Services inspections. Maintenance inspections of about 2000 existing non-residential and multi-residential buildings occur on an 18 month schedule. Currently 11 of 14 full time employees are state certified fire inspectors, although the goal is for all career employees to be so certified. Full-time firefighters drive fire trucks to the inspection site assigned by the fire marshal, and spend an estimated 50% of their on-duty time in work related to inspections, including research and report writing. A sampling of citizens who receive fire services and property owners or managers whose property has been inspected are sent questionnaires to determine whether they were satisfied with the service provided.

All homeowners in Farmington Hills are eligible to receive free home smoke detectors, which are purchased by the fire department with grant or donated money and installed by fire department personnel. Staff offer CPR courses, inspect homes on request, make public service announcements on cable television, and respond to any request for assistance that can be performed safely. In addition, in 1986 the department conducted 203 public education programs.

The fire department provides the first response to medical emergencies, although the police dispatcher also notifies Community EMS, a private ambulance company that works from Botsford Hospital. The fire department owns two ambulances, but fire staff transport injured victims only four or five times a month, when the private ambulance fails to arrive timely or in life or death situations. Eighty two percent of the fire department staff, including all career staff, are emergency medical technicians.

The city of Farmington Hills participates in mutual aid pacts with the city of Farmington, western Wayne County and western Oakland County, but would respond to any request for assistance that would not place Farmington Hills residents at risk.

The city's 1987-88 general fund budget totals $21,416,263, of which $1,557,988 is allocated to the fire department. A separate capital budget of $3,007,000 contains $185,000 for a payment on an aerial truck and for fire station improvements. Operating budgets are prepared on an incremental basis, while a six year capital plan requires a longer range assessment of needs. The city council sets general goals, rather than limits or specific requirements for the department, and does not consider level of risk as an issue. Based on expenditures in Livonia and Southfield, the fire chief estimates that his budget would have to be tripled to maintain the existing quality of fire service with full-time employees.

The fire chief of Farmington Hills believes the strengths of the department derive from the number of people who can be brought to a fire scene, reliable equipment, and training; response time is the primary weakness.

Waterford Township

1960 Population	47,107
1970 Population	59,123
1980 Population	64,437
1980 Median Family Income	$26,472
1980 Area in Square Miles	33.2
1965 SEV	$ 117,412,323
1975 SEV	342,670,471
1985 SEV	714,562,800
1985 Total Fires	331
1985 Total Estimated Loss	$1,136,574
1985 Incendiary Fires	52
1985 Suspicious Fires	46

This 33.2 square mile township is primarily residential, with some industry and strip commercial, and increasing numbers of multiple unit residential structures. Residents are middle class, medium income, and fiscally conservative. Waterford voters approved a one mill property tax increase for fire service in 1977, but denied proposals for another mill for fire service three times before finally granting approval for a second mill that will become available to the fire department in 1988.

The one mill assessment for fire service that was levied in 1977 resulted in, reduction if the township contribution of from 10.64% to 5.78% of the general fund. By 1986 the fire department was receiving 12.04% of the general fund budget, in addition to the proceeds of the special millage. In addition to balanced water and sewerage funds, the 1987-88 township budget includes the following appropriations:

WATERFORD TOWNSHIP - 1987-88 BUDGET

General Fund	$10,416,361
Fire Fund	2,006,481
Police Fund	4,799,731
Bikeway Fund	340,427
Total	$17,560,000

Requests for improvements in the fire department budget are routinely denied by the township supervisors, and funds budgeted as set asides for rig purchases last year were not carried forward.

In 1986, the fire department responded to 3,331 alarms, of which 2,302 were rescue and emergency medical calls. Of the 519 fire calls, 112 were structure fires.

The fire department is comprised of the chief, two line captains, four line lieutenants, 26 career firefighters, and a maximum of 50 volunteers, of whom ten are volunteer lieutenants. Volunteers receive no pay, but do have an association which this year will receive $50,000 from the township. This payment to the volunteer association is used to maintain

the club's facility, purchase pagers and other fire equipment, and make contributions to township programs such as the nature center.

Career firefighters are assigned to the five fire stations on the two platoon system, which requires one 24 hour day worked, the next day off, the following day worked, and the next three days off. Four fire houses are staffed by a single full time employee, whose duty it is to drive the apparatus to an emergency and, once at a fire, stretch the first fire hose. The headquarters building, where five career men are assigned, houses a rescue squad staffed by three career employees including an officer. This squad responds to all medical emergencies and to structure fires, bringing manpower to rescue victims and to utilize the first fire hose. The second line of response is the volunteers, who stretch a second fire: line if necessary, relieve the career firefighters, mop up and clean up, roll the hose, wash and dry the hose at the station, and clean the equipment. Ten volunteers are assigned to each station, five for day time response and five for night response.

A volunteer lieutenant is assigned to each shift at each station. He is responsible for fire fighting efforts, and he transmits instructions from the career officers to the volunteers at the fire scene. Promotion to volunteer lieutenant requires a minimum of five years experience as a volunteer, the top score on a promotional examination, recommendation by the executive board of the volunteer association, and approval by the fire chief.

Station calls, which affect only the firefighters assigned to one fire house, are initiated by medical emergencies or vehicle, grass or dumpster fires. Volunteers, who keep their fire gear in their private vehicles, are notified by pager, and respond directly to the scene. All structure fires, to which additional pumpers and men are called, are attended by the chief or assistant chief. Average response time for the fire engines is 4.5 minutes. The average number of volunteers in attendance at fires or other incidents not known.

Volunteers, who have their own club house, are not encouraged to and do not spend time at fire houses, and until recently were not allowed to ride on the advanced life support unit. Considerably more emphasis is now placed on training and discipline. The department administration is attempting to instill self respect and pride in the volunteers through praise and discipline, and has defined a chain of command and established a grievance and appeal procedure. Firefighters are prohibited from approaching the fire chief on business matters; instead, career and volunteer lieutenants meet and discuss specific problems, and if they are unable to resolve the issue, refer it up the ranks. Volunteers may appeal disciplinary action through the fire department chain of command, may appeal a discharge to the township board, and have final recourse through the courts. Departmental business may not be discussed with anyone other than Waterford Township Fire Department personnel, and no one in the department may contact anyone in another department without the express approval of the chief (except the firefighters' union president, who may contact the township representative.)

Volunteer lieutenants are now included with career lieutenants and captains in staff meetings. Two hours of training per month is being provided at meetings in the volunteers' club house, and attendance is required at special training sessions conducted by the fire department. In spite of opposition from career staff, volunteer and full time firefighters now train together.

There is some difficulty recruiting volunteers in Waterford Township; recruiting techniques include newspaper advertising and word of mouth. Recruits must pass agility, drug, driving, and oral examinations and must complete or be enrolled in firefighter I and advanced first aid courses by the end of their six months probation. The average length of service of volunteers is not known, although it is believed that turnover is high.

Career firefighters are under the local civil service system. Applicants must be high school graduates and pass Michigan Municipal League written and agility tests and an oral examination. Criminal and driving records are checked, as are ail credentials. Applicants are screened for drug use. These employees must pass firefighter II and an EMT course within their six month probationary period, and receive a base salary of $18,000 to start and $24,000 after four years. Career firefighters assigned to fire stations are responsible for the fire apparatus and equipment.

The Waterford Fire Department is a member of the North Oakland mutual aid pact, but receives no requests as a result. The department will send men and equipment to any bordering community if that can be done without endangering Waterford.

The fire department has an insignificant problem with false alarms; approximately two are received in an average month. As a result of numerous malfunctions, automatic dialers are prohibited from ringing the fire department.

The department responds to medical emergencies by dispatching the nearest engine (75% of career firefighters are EMTs) and the volunteers assigned to that shift at that station, and notifying Paramed Ambulance Company. Paramed maintains two stations in Waterford from which the company also serves surrounding communities. Although the fire department does not usually transport, it will in those situations encountered about twice a month, in which fire transport is in the best interests of the patient.

Waterford bas adopted the standard BOCA fire code. Each day they work, career firefighters are required to complete a minimum of two inspections, including preplanning and completing inspection forms, which are reviewed by the fire marshal. A total of 309 inspections were completed in 1986. All service stations, schools, new businesses and license transfers were inspected, and 77 construction blueprints and/or site plans and 12 sprinkler plans were reviewed. Fire prevention programs were presented to 35 groups.

Three career officers including the chief have attended the police academy and are sworn police officers for the purpose of arson investigation. These officers investigate suspicious fires, provide the testimony required to have a warrant issued, pursue the case, and testify in court. In Waterford, the police department is not involved in arson investigation. In 1986, the fire department arson investigation team investigated 44 fires of which 4 were determined to be accidental and the rest either arson or suspicious.

Waterford Township has an ISO rating of 6, granted in 1979. No significant changes in fire service or water capacity (the water supply is considered to be excellent) have occurred since then.

The fire chief, a former firefighter union president, feels strongly that fire protection should continue to utilize volunteers, but that staff should, be expanded to include three career firefighters assigned to each fire station and that new equipment, especially including an aerial ladder, should be purchased. He believes that at least one new fire station is needed, and major repair and enlargement or replacement of three others is considered necessary.

The City of Royal Oak

1960 Population	70,893
1970 Population	86,238
1980 Population	80,612
1980 Median Family Income	$26,421
1980 Area in Square Miles	11.3
1965 SEV	$ 209,762,396
1975 SEV	434,142,000
1985 SEV	733,011,850
1985 Total Fires	297
1985 Total Estimated Loss	$938,618
1985 Incendiary Fires	25
1985 Suspicious Fires	32

Royal Oak is a fully-built residential community with pockets of industrial development and a recently revitalized downtown. Dramatic growth occurred in the years after World War II, but population declined by 5,626 to 80,612, or 6.5% from 1970 to 1980, according to the Bureau of the Census; the local unit reported the 1987 population as 75,000. The city maintains a traditional, full-time fire department comprised of a chief, fire marshal, fire inspector, part-time secretary, three captains, six lieutenants, nine sergeants, and 47 firefighters, providing 24-hour-a-day staffing at three fire houses. This is substantially less fire coverage than was provided 13 years ago, when there were 90 fire employees including an assistant fire chief and a training officer, staffing four fire houses. During this period, when staffing declined by 23%, the volume of fire runs increased from 1800 to 3200, or 78%. The most recent layoffs occurred in the 1980 to early 1983 recession period, and were made for financial reasons.

In 1986, the Royal Oak Fire Department responded to 91 structure fires, 285 other fires, 2,065 inhalator runs, 363 false alarms and 564 other alarms. There has not been a fire fatality in the city since 1982.

The city of Royal Oak appropriated $2,485,182 to the fire department out of a total city budget of $23,295,144 for the fiscal year beginning June 1, 1987. About 45% of salaries are budgeted elsewhere for pensions and other fringe benefits for fire personnel, bringing the total cost of the fire service operation to about $3,435,534. This would imply a per capita cost of $45.81, assuming the reported current population of 75,000. Budget requests are based on the prior year's expenditures, augmented by special requests and explanations of capital items including fire rigs. Budget decisions are based on available funds rather than on technical analysis of risk factors and loss levels.

Firefighter positions are advertised in local newspapers. New hires are required to have completed 60 credit hours, equivalent to two years, of college, and must attend and pass a prescribed fire course at the Macomb Fire Training Institute of Macomb Community College and must attend and pass an Emergency Medical Technician (EMT) course and obtain a state EMT license.

Royal Oak is an Act 78 city, but requires five rather than two years in the next lower rank to qualify to take the examination for sergeant. The city personnel department administers promotional examinations which are prepared and scored by the Michigan Municipal League. Firefighters receive one hour of in service training every week day that they work. Although the training officer was a fatality of budget cuts, a sergeant at the main station voluntarily prepares and circulates training materials. Training is conducted by the shift officer, and may concern equipment, streets, apparatus, hose practice, hazardous materials, or topic which the officer wishes to use for training.

The 1985-86 base firefighter wage, which is currently being paid, is $29,474. The expired contract has not been replaced, but will probably contain some wage increase. Pension and fringe costs increase the cost of a firefighter to the city to $42,737. The city maintains its own pension system for firefighters, who may retire at age 50 with 25 years of service, and at age 55 with no service minimum. The pension benefit is calculated as 2.5% multiplied by years of service, multiplied by the average base wage plus longevity earned in the best paid three of the last- ten years of service.

There is no residency requirement, and possibly fewer than 50% of fire department employees live in Royal Oak. The fire chief would prefer to limit residency to an area within 10 miles of the city center for mandatory call back purposes.

The fire chief may assign or transfer staff to any of the three currently open fire houses. Firefighters work an official 54 hour week, although the average work week is 56 hours. Three shifts are assigned to work 10, 9, or 9, days in every 28 day period; those assigned to the 10 day schedule received an extra 24 hours off, referred to as a “Milliken day.” The department has adopted an 84 day schedule during which every firefighter receives one Milliken day in that 84 day period. Generally, firefighters work one 24 hour day, and have the next two days off, but individuals may trade work days. After one, year of service, firefighters receive five 24 hour days off, equal to 17: normal vacation days, added to their four Milliken days. The maximum number of 24 hour vacation days is 13, equal to 5.7 weeks of normal vacation time.

Three captains, three sergeants, and 23 firefighters are assigned to station #1, while three lieutenants, three sergeants, and 12 firefighters each are assigned to station #3 and to station **#4**. The minimum number of fire fighting personnel on duty in all three houses is fifteen. Should fewer than that be available, off duty personnel would be called in on an overtime basis.

In Royal Oak, firefighters rotate fire duty assignments every two weeks. The eight slots in each company at station #1 include cook, booster driver, engine driver, ladder driver, ladder tiller, engine rider, and booster rider twice. Firefighters perform all mechanical functions-involved in maintaining fire houses and maintaining and repairing fire rigs, up to and including replacing a fire apparatus engine.

In 1985, when the average age of Royal Oak's fire rigs was 22 years, a millage increase adopted by the voters was justified partially on the basis of the need for new fire vehicles. Prior to receipt of four new vehicles in April and May of 1987, the department relied for reserve purposes on pumpers made in 1950 and 1953; among the eight first response vehicles were a 1953 pumper, a 1953 ladder, and a 1956 pumper. Current apparatus includes the following:

5 Pumpers (1966, 1973, three 1987)
1 Ladder (1972)
1 Combination Ladder (1987)

Fire personnel respond to any emergency call for help, although city policy prevents them from responding to requests to help animals, such as the proverbial cat in the tree. The standard response to any emergency involving smoke or fire in a building is eight men, two pumpers and a ladder truck. En route to the scene, each rig would have no fewer than two men.

Requests for medical assistance are met by firefighters with a pumper. Since 31 of the 69 men in the department are licensed emergency medical technicians, and because response time is about three minutes, this provides an adequate emergency response. The fire department does not transport medical cases, but has a noncontractual arrangement with Suburban Ambulance service whereby the ambulance company is notified simultaneously with the city fire department by whomever receives the initial call for help. Suburban Ambulance has agreed to maintain sufficient cars and to respond within the city at no cost to the city of Royal Oak, although victims may refuse transport. The target maximum response time for an ambulance with an advanced life support crew is eight minutes; the average response time in recent months has been 7.5 minutes. This simultaneous response system has been in operation for eight years, and is considered satisfactory.

Royal Oak has adopted the standard BOCA fire code. The staff certified fire marshal and fire inspector inspect all business locations prior to licensing, and inspect all city offices and all target hazards, including schools, hospitals, gas stations, etc. annually. Other non residential structures are inspected on a rotating basis, approximately 30% each year.

Because Royal Oak is a stable, middle class community, fire is not a major problem. The greatest single fire hazard from a life safety standpoint is the large Beaumont Hospital complex. The probable cause of all fires is investigated, and if it is determined that arson may have been involved, the, Oakland County Sheriff's Department arson squad and/or the State Fire Marshal's office may be called upon for assistance in the investigation.

Citizens can have their blood pressure measured by an emergency medical technician at any fire house. Citizens may also purchase plastic garbage bags at fire houses.

The City of Oak Park

1960 Population	31,537
1970 Population	36,762
1980 Population	36,632
1980 Median Family Income	$24,447
1980 Area in Square Miles	5.2
1965 SEV	$ 108,562,121
1975 SEV	194,787,910
1985 SEV	280,552,608
1985 Total Fires	181
1985 Total Estimated Loss	$1,759,204
1985 Incendiary Fires	24
1985 Suspicious Fires	0

Oak Park, which borders Detroit along Eight Mile Road, adopted its first city charter in 1951, and amended that charter in 1953 to allow the police and fire departments to be merged to increase productivity. The city is now a fully built, middle class, residential community. The city contains strip commercial and light industrial development, and some mid-rise construction. Major fire hazards are considered to be a testing laboratory containing a large variety of hazardous materials, and an eleven-story senior citizens apartment. Oak Park does not have a major crime problem; in the past ten years, the total of all crimes has increased by a mere eight percent. The city has had a completely combined, fully cross-trained public safety department since 1954.

To counteract some of the employee resistance to consolidation, Oak Park police officers and firefighters were offered raises of $900 to compensate for the increased responsibility. In spite of that, five of the firefighters who were cross trained were not used as public safety officers, but rather became permanent fire engine drivers and assisted in providing fire fighting training to police officers. All personnel hired after 1954 were hired, trained, and utilized as public safety officers. Initially, fire training equivalent to firefighter I was provided in house, while police training was provided by the Detroit Police Academy.

All present employees of the public safety department were hired after the consolidation. The department advertises positions in several newspapers and the police newsletter, on cable television, and through college placement offices and the Michigan Employment Security Commission. Public safety officer recruits are required to be at least 18 years old, have completed two years of college, and pass the Michigan Law Enforcement Training Council test of verbal and physical skills, an oral examination, background check, medical examination, and psychological test. There is no residency requirement. Public safety officers earn between $24,000 and $36,000 in base pay.

The public safety department operates from a central location to service the 5.2 square mile city. In 1957, three years after the consolidation of the police and fire departments, the city's ISO rating was upgraded from 7 to 5. That rating was retained after a 1975 evaluation.

The 69 uniformed members of the department (there are also seven civilian employees) are assigned to four platoons, which allow for assignment on a 40 hour week, utilizing a 28 day cycle. Each platoon works seven days of afternoon shift and has two days off, then works seven days of day shift and has one day off, then works seven days of midnight shift and has four days off. Each officer has one additional day off during each cycle. This pattern of rotation provides three platoons for duty each day.

(This assignment pattern contrasts with that used by the public safety department in Grosse Pointe Park, where PSOs in four platoons work 12 hour shifts, two days on, two days off, two on, and three off. Officers work seven of every 14 days, and get every other week end, Friday through Sunday, off. Day and night assignments are switched every 10 weeks. Within each shift, officers are assigned to patrol or to stand by which includes training, meals, building and equipment maintenance, and fire and ambulance response, in three or four hour blocks. Of the officers on duty, five will be on patrol and three on stand by at anyone time.)

In Oak Park, each, platoon includes one lieutenant, one sergeant, one communications officer, and about 12 public safety officers. Minimum shift strength is nine, including command officers. The lieutenant is the station commander, the communications officer is assigned to desk and dispatch duties three officers are assigned to the station for emergency equipment response, and remaining officers are assigned to patrol cars, one of which is a two man car.

In 1986, a total of 312 fires, causing losses totaling $1,366, 377, occurred in Oak Park. Of the 160 building fires, 42 were out before the arrival of the officers and 35 were put out by the patrol unit. A total of 53 hours was spent fighting building fires; another 21 hours and 54 minutes were spent fighting all other fires. The total fire fighting time of 74 hours and 54 minutes for the year averages six and a quarter hours of fire fighting a month, or 0.86% of the time in the year.

A call for fire service is answered by the dispatch of patrol officers, who have their fire fighting gear in their patrol cars, and the men assigned to station duty, who drive the two fire rigs to the scene. Fire calls have priority over routine public safety duties, allowing patrol officers to arrive first at the fire scene. Nearly half of all structure fires, and over one sixth of all other fires are either already out or are extinguished by the first arriving patrol unit prior to the arrival of the fire trucks. In the remainder of cases, the public safety officers size up the fire, locate the nearest hydrant, and gear up while awaiting the pumpers. Initial response time is two minutes; within four or five minutes two fire rigs and eight, public safety officers are on the scene.

The shift commander responds to structure fires. Off duty officers living closest to the station are called back if needed at a fire or to cover the station; this occurred 22 times in 1986.

Officers are required to keep an extra uniform in their lockers at the public safety building. After fighting a fire, officers clean up, change if necessary, and return to patrol duty. Officers assigned to the station care for the equipment.

The suggested use of volunteers or auxiliary PSOs, or of public works employees, to assist in performing necessary fire equipment clean up tasks would improve the system by allowing PSOs to return to patrol duties faster. Indeed, several Michigan communities, including Emmett Township, Albion, Grand Haven, and Ionia, use public safety officers supported by volunteers.

Public safety officers in Oak Park may serve for years without seeing a significant fire. Because police duties are omnipresent and fires occur so infrequently, there is a tendency in public safety departments to treat fire fighting as a stepchild. This tendency is combated with in-house training that is skills oriented, and is believed by the department director to be of better quality than much of what is considered training in traditional fire departments.

Oak Park has had a 911 emergency telephone system for about 12 years, and will be included in the county-wide 911 system to be implemented in 1988. Currently all incoming calls are recorded, and telephones from which calls have been received can be called back automatically. There are no fire alarm boxes on the streets, and no alarm systems are tied to the municipal station.

Although public safety officers have received minor injuries such as sprains while fighting fires, none has ever been seriously injured.

Oak Park owns a 1968 aerial platform, a 1975 Telesquirt, and three pumpers of which one is a reserve unit. The replacement schedule calls for one new piece of apparatus every five years. Routine maintenance is performed by the three stand by officers; more involved repairs are performed by the city mechanic or on contract.

In 1986, 1075 requests for emergency medical service were received. Calls for medical assistance initiate the simultaneous dispatch of the municipal ambulance and the private Suburban Ambulance advanced life support unit, which responds to the scene in approximately five minutes. Twenty public safety officers are trained emergency medical technicians; a minimum of two EMTs are on duty at all times. Medical emergency victims were transported in the Oak Park ambulance only seven times in 1986; victims were transported in patrol cars 31 times last year. These were typically minor injuries involving employees of the department or the city; some were prisoners.

Oak Park has adopted the BOCA code with some additions. Once every two years, every business in the city receives a fire inspection, performed by public safety officers assigned to patrol duty. In 1986, 1223 routine inspections were completed by officers as part of their patrol duties. Some routine inspections (11 in 1986) and any follow up inspections (20 in 1986) are done by the fire marshal. Because sale of liquor by the glass is illegal in Oak Park, there are fewer inspections than would otherwise be the case.

The department responds to all requests for assistance, although the proverbial cat in a tree would receive a low priority rating.

Oak Park participates in the Oakland County police mutual aid pact, and has fire assistance agreements with Huntington Woods, Berkley, and Hazel Park.

Oak Park has adopted a 1987-88 city budget of $21,848,397, of which $12,641,703 is for general fund operations. Of the public safety department budget of $4,779,797, the cost center for fire service is allocated $1,032,127, which includes fringe benefits and capital, and which covers 42.5% of the cost of the chief, 100% of the fire division commander and fire inspector, and 12 full-time public safety officers.

The combination program and performance budget links activity types to cost centers, and facilitates budget requests based on levels of service. Although budget decisions are constrained by the fiscal condition of the city, incremental allotments are made in recognition of their implications for the level of service, because the staffing and budget history supports a known level of response.

In Oak Park, the public safety department is a source of community pride. Strong support by elected officials, city administrators, and the public has prevented the public safety structure from becoming a political issue.

The Grand Traverse County Fire Department Grand Traverse County, exclusive of Traverse City, has a single fire department, with two chiefs who share responsibility for rural and developed areas. Prior to 1947, Grand Traverse County had no organized fire protection. The county sheriff, recognizing the need for some fire service, acquired a fire truck which was kept at the county jail, so far from most fires that it was used primarily to extinguish the rubble remaining after those fires had burned themselves out. The sheriff's department dispatched and staffed the truck.

In 1947 a fire department was established, with the sheriff as chief for negotiating purposes; in 1973 an assistant chief was hired for operations. Another assistant chief was added in 1978. The department has always used volunteer firefighters. The rapid growth in the Traverse City area, especially Acme, East Bay, and Garfield Townships, including not only increasing population but also commercial and limited high rise development, led to the creation of two divisions. Because rural township officials felt their areas were not receiving their share of service and officials in more developed townships believed they were not receiving enough service, two operating divisions were established in the reorganized fire department in 1980. The Grand Traverse County Fire Department - Metro Division is primarily responsible for Acme, East Bay, and Garfield Townships, while the Grand Traverse County Fire Department. Rural Division is generally responsible for, the remainder of the county, excluding Traverse City, which maintains a full-time, paid department. Both divisions are dependent on the county dispatch system, which sends the volunteers assigned to the two closest stations, whether rural or metro, to any structure or alarm fire. Volunteers perform only fire suppression and rescue functions.

The department is under the control of a fire board comprised of township supervisors. The fire board must review and approve the /budget request prepared by the fire chief; the cost of the department is prorated among townships according to state equalized value {SEV). The 1987 budget for the metro division totals $339,936, of which $133,866 is for capital; the current year budget for the rural division totals $230,000, of which $120,000 is for capital purchases. The cost of expensive fire trucks is spread over several years. Budgets include the cost of contracting out the repair and maintenance of equipment.

Metro townships have adopted fire districts Ear funding purposes: Acme levies one mill; East Bay levies 3/8 mill and includes the cost of ambulance service; the charter township of Garfield levies one mill. Of the 2 townships served by the financially struggling rural division, only one has adopted a fire district; others use their general fund to pay for fire protection services. The chiefs, stressing the need to establish a funding formula early in the development of a regional system, emphasize that obtaining voter approval for a limited-term millage to build a fire station is significantly easier than obtaining approval for on-going assessments for operating purposes.

Volunteers assigned to individual fire stations conduct their own fund-raising activities; some have incorporated as non-profit organizations. Money raised by volunteer firefighters or their support groups from bingo, pancake breakfasts, or other ventures may be used to purchase equipment which is donated to the department, or small items such as uniforms and badges, or may be used to pay for awards banquets or picnics.

Each township in the metro division has constructed and maintains a fire station within the township. There are six fire stations located in the twelve townships comprising the rural division. Most fire stations were constructed using funds from the now-discontinued federal revenue sharing program. Long-range planning is a critical issue for the fire service in this fast-growing region; chiefs work with planners to attempt to define future zoning, traffic flow, types of development, and demand for service. Although obtaining funds for maintaining the current level of service is not too difficult, obtaining funding commitments necessary for projected levels of required service is a challenge.

The department, currently staffed by two chiefs, two clerks, 80 metro volunteers and 130 rural volunteers, recorded 2700 runs in 1986, and 534 rescue and 579 fire-related runs in the first six months of 1987.

The influx of more up scale, non-working class residents and the demands of newer residents for a career department have made obtaining sufficient numbers of volunteers to protect the rapidly growing area more difficult. The chiefs recruit volunteers as young as possible, using explorer scouts as a prime; source, although there is high turnover at the entry level. There is no residency requirement. Volunteers must be at least 18 years old, but need not be high school graduates. Criminal and driving, records of recruits are checked by the chiefs prior, to acceptance. Probationary volunteers must complete the first 66 hours of state-approved training for firefighter IA before they may stand for election for membership, and should complete the 132 hours of level I training within the first year of service. There are 12 state-certified trainers in the department; every month, each station provides two to four in-service training sessions during the evenings and on Saturdays. Training is stressed to keep volunteers busy, informed, and interested, and to develop interests in prevention and investigation.

Problems associated with urbanization are appearing in: the metro division, where volunteers are now provided with lights and sirens. Metro volunteers are paid based on a point system which insures that those who train and work most receive the most compensation.

The department adopts minimum operating policies and procedures, but stations may adopt more stringent requirements. Volunteers assigned to stations elect a station chief, an assistant chief, up to three captains, up to four lieutenants, and a water supply officer.

The station-level chain of command for the metro division also includes a purchasing officer, equipment officer, fire prevention officer, and chief engineer; that for the rural division reflects a purchasing officer, communications officer, training officer, and chief engineer/mechanic. All elected officers must be approved by the appropriate division chief.

Average response time is estimated at two to three minutes, a fast rate attributed to the fact that volunteers tend to congregate at the fire stations, and so are available immediately when calls are received. Volunteers are alerted by pager.

The fire ground command system assigns the first officer on the fire scene to size up the fire and establish radio communications. That officer controls the fire suppression activity until he decides that the fire is too large, at which time he relinquishes control to a higher officer. This system allows an officer from one station to command staff from other stations. Sector control permits an officer inside a building to report to the controlling officer. Training volunteers from various stations together enables the system to work; completing efforts to standardize equipment will make it work better.

The department uses water supply vehicles and standardized tankers to create a tanker shuttle system. The supply vehicles can fill up from an available water supply and dump that water to a tanker in less than two minutes. More tankers may be added to increase the fire flow. This system allows the department to deliver 2700 gallons per minute over 1 1/3 miles from the water source. The chiefs hope to use this system to justify an improvement in the county's ISO rating, which is now 8 or 9, depending on the area.

The Traverse Regional Arson Plan (TRAP) includes 25 volunteers who have completed an 80 hour program in fire cause investigation. These specialists are divided into three teams, and are on call to determine fire origin and cause at those sites which the chief determines warrant further scene investigations. The TRAP team documents and photographs the fire scene, and compiles for each investigated fire a file which is maintained by the chiefs. If a fire is determined to be of suspicious origin, the case is referred to the police.

The county has adopted the standard BOCA fire code, but there are no county fire inspectors and no formal inspection program. One township, Garfield, is funding an inspector who will be an employee of the metro division but will work only in that township.

The chiefs in Grand Traverse County report that regional system works in part because it is the original fire service delivery system. The tendency to territoriality is evident, and must be consciously suppressed in order for the department to function. In Grand Traverse County, both the rural and the metro chief work at cooperating, attend each others fires, and actively counteract any station initiatives that might lead to separation or isolation. Division staffs train together, and work together at fires.

Grand Traverse County is changing rapidly, and will continue to grow. The fire department will also evolve, and will probably gain paid support staff to handle required paper work and perform fire inspections. The chiefs are hopeful that the volunteer nature of the fire fighting force will not change.

The Hamburg Fire Department, Inc. The Hamburg Fire Department in Livingston County is a private, non-profit corporation which contracts with Hamburg Township to provide fire suppression and other emergency services. The 35.1 square miles of Hamburg Township contained 3,189 residents in 1960, 5,481 residents in 1970, and 11,318 residents in 1980. The non-profit fire service corporation owns one of the three township fire stations, all six pieces of apparatus (four pumpers and two pickups) and all fire fighting equipment and negotiates contracts with the township on an annual basis, with payments made monthly, regardless of the number of fire runs. Members of the department are volunteers who receive no compensation.

The Hamburg Fire Department, Inc. was chartered on August 25, 1946 as a result of citizen concern generated by a fire which destroyed a township hall and killed the local mail carrier. The department was incorporated independently of the township to save money, and was originally limited to thirty members. A minimum of equipment was purchased with donations from the community, but in 1947 an agreement was reached with the township board to pay the fire department $50 per fire run. In 1948 the township donated a parcel of land and volunteers built the first fire station in Hamburg. Seven firemen and a local merchant signed a personal note to guarantee repayment of the loan used to purchase a used fire truck. In 1979, firemen renovated a former gas station that was donated to the corporation for use as a fire station and hall, and in 1983 a combined police and fire station was completed using a voted one mill property tax. Since 1980, the department has negotiated an annual contract, currently worth $90,000, to provide fire and emergency medical service to the township.

The Hamburg Fire Department is organized very much like Benjamin Franklin thought a volunteer department ought to be. It belongs to the 35 active members who run it as a private corporation and vote on operating decisions at monthly meetings. The members of the board of directors, who govern the business aspects of the corporation, and line officers (chief, assistant chief, two captains and two lieutenants), who control emergency operations, are elected by the members. Committees are formed to study specific issues, such as equipment purchases. Probationary apprentices become approved apprentices by completing at least the first 66 hours of state approved firefighter training and receiving the approval of the full members. Approved apprentices, who may respond to fires but hot participate in fire fighting unless specifically directed to do so by the officer in charge, may wait for years for an opening in the roster that will allow them to become full members. Apprentices and members must live in the township. The dedication required to be an uncompensated volunteer in an organization that is time-consuming and occasionally dangerous, insures that discipline is not a problem. The department provides workers compensation and disability, life and hospitalization insurance.

Although the township now has other social organizations, for many years the fire department was the only organized fraternal and benevolent organization in the area. Membership was, and still is, a family affair. The fire department is considered an extended family and is the focus of social as well as civic functions, including various fund raising activities. While not tax deductible, single or occasional donations to the corporation's capital fund or for other special purposes are viewed by Hamburg residents as preferable to tax increases, which are considered permanent.

A women's unit was established in 1973, in response to the fact that increasing numbers of firemen were working outside of town and were not available to respond during the day. The 24 firemen's wives who comprised the original group received training in first aid and basic fire fighting, and defined their role as supplemental to the men volunteers. The women's unit responds to calls primarily between 7:00 AM and 4:30 PM.

A fire or other emergency situation in Hamburg may be reported to the county sheriff, the Hamburg Police Department, or the fire chief. Members of the fire department are alerted by means of a plectron system which utilizes touch tone telephones. Members' wives telephone apprentices. The first firefighter to arrive at a fire station drives the appropriate apparatus to the fire scene; usually a rig is on the road before notification is complete. All other available personnel respond directly to the fire or emergency scene. If additional help is required, members of the Livingston County Mutual Aid Association are notified by the county sheriff's office, which dispatches the firefighters and equipment requested. (The Hamburg Fire Department is also affiliated with the Washtenaw Area Mutual Aid Association.) Response time is in the four to five minute range. Because there are only two fire hydrants in Hamburg, the fire department uses lakes, rivers, pools, or any other water source available. The township has an ISO rating of 9.

The fire department, which includes 12 emergency medical technicians, generally responds more quickly to medical emergencies than the county ambulance. Of the approximately 300 annual responses made by the Hamburg Fire Department, Inc., an estimated 65% to 70% are medical emergencies.

The Grosse Pointes-Harper Woods Mutual Aid Pact One of the oldest, most tightly structured mutual aid pacts in Michigan provides protection in the case of multiple alarm fires in the five Grosse Pointes and Harper Woods. Four of the five Grosse Pointes have merged police and fire functions into departments of public safety, while Grosse Pointe Farms and Harper Woods have traditional police and fire departments. The fire mutual aid pact originated in 1954 and so predates the mergers, but still operates in the original manner. Each city is divided into regions based on types of structures and, activities; residential areas are designated, and commercial strips, schools and churches are identified. Each region or location is identified by a three-digit code number, the first digit of which denotes the city, on a map which hangs by each dispatcher's console. Each code number is repeated on a calling card which reflects prearranged responses for first, second, and third alarms at that location or area, for each of the six fire or public safety departments. Cards numbered to correspond to coded areas are filed in numerical order in a card box; each dispatcher in each of the six cities has an identical card box, to which he or she refers when a fire is reported or announced over the dispatch system.

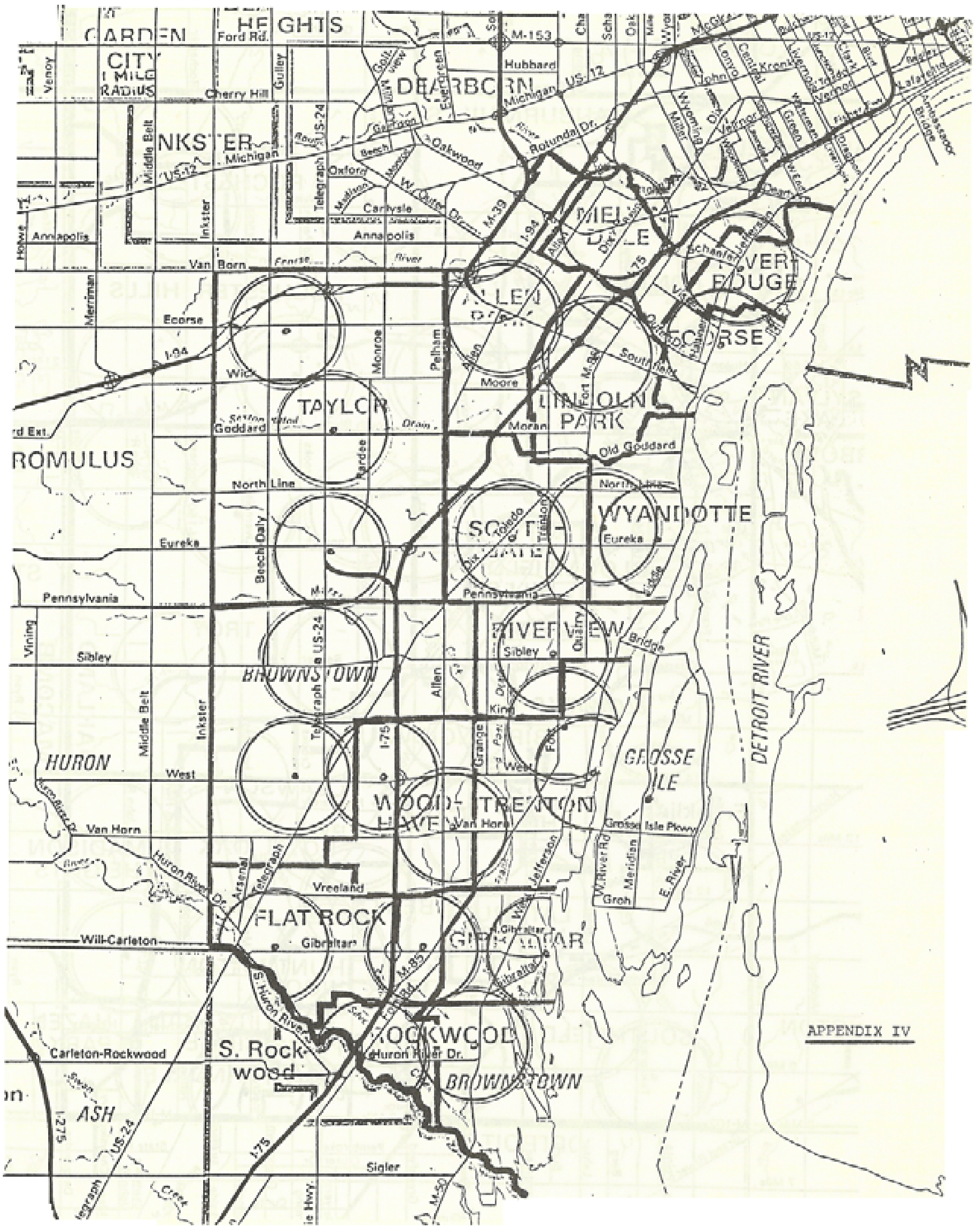
Because Grosse Pointe Park is protected by a public safety department as well as a very formal mutual aid pact, the response to a fire in that community combines both systems. For example, a fire in the residential area of Avondale-Essex-Barrington-Bedford in Grosse Pointe Park, designated on calling card "103," would receive the Park's total compliment of one engine, one ladder, and one ambulance on the first alarm. The three PSOs assigned to the station would drive the apparatus to the fire, leaving only the dispatcher in the station to announce additional alarms and guard any prisoner who may be in the lock-up. Those officers on patrol report directly to the fire scene in scout cars. Officers may be called in to provide additional manpower, with those living closest being called first, or a command

officer may, if necessary, be called in to maintain patrol. The second alarm would automatically cause Grosse Pointe City to dispatch two engines, while a third alarm would bring an engine and a ladder from Grosse Pointe Farms. Also on the third alarm, Grosse Pointe Shores would send an engine to provide back-up at the Grosse Pointe City station. A minimum of three officers is provided with each rig; the commanding officer from the city in which the fire occurs controls the fire fighting activity.

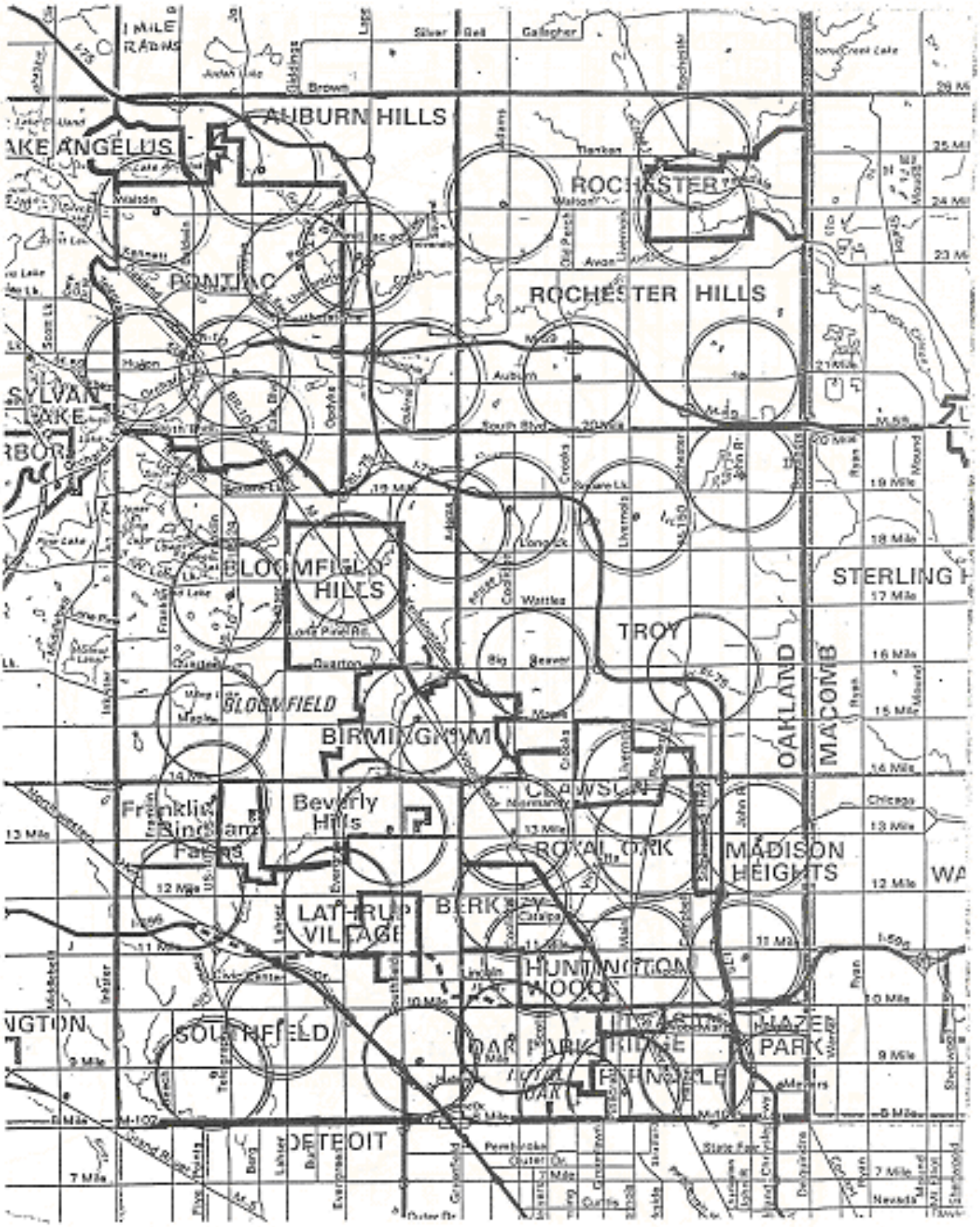
The escalating response to a fire at 820 Beaconsfield is described on card No 104M. Because this location is Trombley School the first alarm would bring an engine, ladder, and ambulance from Grosse Pointe Park, two engines from Grosse Pointe City, and a ladder from Grosse Pointe Farms. A second alarm would cause an engine from Grosse Pointe Farms, and a snorkel from Grosse Pointe Woods to be sent, and a third alarm would bring an engine from Grosse Pointe Woods. Also at the second alarm, Grosse Pointe Shores would send an engine to Grosse Pointe City for back up.

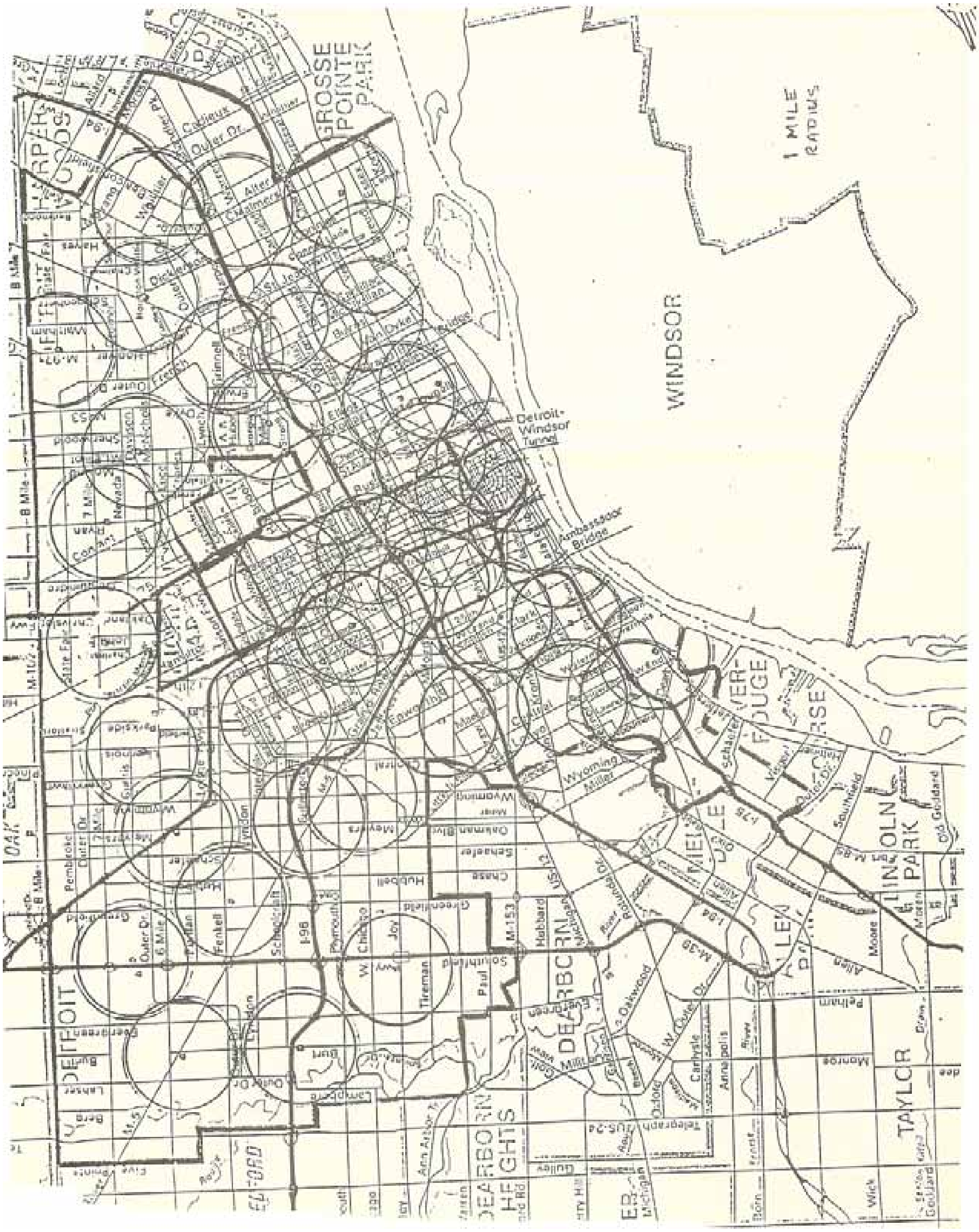
Response time averages 3.5 to four minutes. Cards are reviewed annually to insure that response levels continue to be appropriate to locations. Once a response is determined and recorded on the card, there is no need for questions or decisions, about the correct course of action; the required apparatus is dispatched automatically whenever the designated alarm is announced.

This fire service delivery system, which uses both firefighters and PSOs, quickly provides large amounts of fire equipment and manpower within the six-city mutual aid area. Indeed, the highly structured system performs very much like a single department, except that it is much more expensive. An integrated department with a central dispatch unit, coordinated equipment purchases and training, could provide an equal or improved level of service at a lower cost.


DEARBORN
INKSTER
ROMULUS
TAYLOR
LINCOLN PARK
ECORSE
RIVER ROUGE
WYANDOTTE
RIVERVIEW
BROWNSTOWN
HURON
WOODHAVEN
TRENTON
FLAT ROCK
GIBRALTAR
ROCKWOOD
S. Rockwood
GROSSE ILE
DETROIT RIVER
ASH
Van Born
Ecorse
Goddard
North Line
Eureka
Pennsylvania
Sibley
West
Van Horn
Vreeland
Gibraltar
Will-Carleton
Carleton-Rockwood
Huron River Dr.
Sigler
Telegraph
Inkster
Middle Belt
Merriman
Allen
Pelham
Monroe
Beech Daly
Annapolis
Michigan
Fort
Jefferson
Grosse Isle Pkwy
Meridian
Groh

APPENDIX IV


AUBURN HILLS
ROCHESTER
ROCHESTER HILLS
PONTIAC
BLOOMFIELD HILLS
TROY
BLOOMFIELD
BIRMINGHAM
Beverly Hills
ROYAL OAK
MADISON HEIGHTS
OAKLAND
MACOMB
SOUTHFIELD
OAK PARK
HAZEL PARK
DETROIT
STERLING
1 MILE RADIUS


GROSSE POINTE PARK
WINDSOR
1 MILE RADIUS
Detroit-Windsor Tunnel
Ambassador Bridge
DETROIT
DEARBORN
DEARBORN HEIGHTS
TAYLOR
LINCOLN PARK