

I. INTRODUCTION

The City of Portland and Portland Fire & Rescue (PF&R) have requested the assistance of an outside firm to provide a comprehensive analysis of fire and emergency medical service delivery. The purpose of this analysis is to seek improved service delivery while maintaining acceptable levels of service to the community. To perform the evaluation, the city selected TriData, a division of System Planning Corporation, by competitive bid.

TriData is a nationally recognized consulting firm that has undertaken over 130 studies of this type, including studies for Houston, Fort Worth, Chicago, Seattle, Washington, DC, Jacksonville, Colorado Springs, and many other comparably sized cities. In addition, TriData works closely with the United States Fire Administration to compile annual fire loss statistical data and complete topical studies on current issues affecting fire and emergency medical response in the United States.

SCOPE OF WORK

PF&R requested that TriData review the following:

- Staffing levels for all divisions;
- Current and proposed Station locations for Portland and adjacent jurisdictions;
- Response time goals and reliability;
- Services delivered (e.g. Company fire inspection program, Public Education, Advanced Life Support, Basic Life Support, Specialty Response, Community Emergency Services, Trauma Intervention Program, all hazards all risk response, etc.);
- Training delivery (in-service and academy);
- Span of control division-wide;
- Mutual aid and automatic aid;
- Types of apparatus and replacement schedules;
- Effectiveness of fire prevention programs;
- Infrastructure (water supply, response routes – bridges, topography, etc.);
- Disaster preparedness and response;
- Facilities and apparatus maintenance;
- Available prior studies of PF&R's organizational structure;
- Operational safety (i.e. staffing levels, run volumes, operational procedures, span of control);
- General Obligation Bond commitments and promises
- Historical bureau budget cuts;
- Geographical area served by PF&R;
- Census Bureau information on changing demographics of jurisdiction

- Existing and potential partnerships with other fire, rescue and emergency service agencies in the region as they relate to shared common resources and improving service delivery;
- PF&R organizational structure;
- Directive from Council regarding direction of the Study (adopted budget note and taped council discussion);
- Information related to Fiscal Year 2005-2006 budget proposal/alternatives; and
- Changes PF&R has implemented to enable it to continue to provide the best possible service to its citizens while receiving less funding;
- Future industrial, commercial and residential development impacts.

In addition, TriData also evaluated:

- Options for mergers and/or expanded cooperation with neighboring jurisdictions beyond mutual aid agreements.
- Alternative delivery systems.
- Partnerships with other fire, rescue and emergency service agencies in the region as they relate to shared common resources and improving service delivery.

Specific questions that were answered include:

1. Does the Bureau's management structure provide for the optimum delivery of services?
2. Does the Bureau have an adequate number and appropriate mix of personnel (uniform and non-uniform) in all divisions, given current and projected demands for service?
3. What should the Bureau's minimum crew size and overall staffing level be?
4. Are there opportunities for more effective and/or more efficient use of Bureau resources?
5. Are all Bureau staff and management personnel adequately trained?
6. Is the existing approach for providing code enforcement and inspection services appropriate?
7. Are Bureau stations located optimally throughout the City considering the various services offered by the Bureau?
8. Are there changes in EMS services that would result in more efficient and effective provision of services?
9. Review of adjacent systems as they relate to Portland's.
10. Assess the level of risk and tell us how it compares to other fire jurisdictions nationwide.
11. How do the services provided by the Bureau correspond to those provided by similar jurisdictions?
12. What are the costs and benefits of strengthening building codes? How would these changes impact staff in the Emergency Operations and Prevention Divisions?

13. What are recent innovations and best practices in other jurisdictions? How have they fared?
14. Are there opportunities for capital investment that would enhance Bureau services and/or result in long term cost savings?

STUDY STEPS

1. Kickoff conference call
2. Collection and review of background material
3. Stakeholder consultation – Initial meetings and triage of issues with the city, fire department officials, etc.
4. Interjurisdictional comparison
5. Risk and demand analysis
6. Analysis and evaluation of fire and special operations
7. Review of station location, response times, and apparatus placement
8. Analysis of emergency medical services
9. Review of fire prevention
10. Review of organization and management
11. Analysis of support services
12. Develop draft final report
13. Delivery final report and presentation

OVERVIEW OF PORTLAND FIRE & RESCUE

PF&R is a municipal fire department that provides a full range of modern fire department services, including fire suppression, emergency medical services, EMS transport, hazmat, marine response, prevention, disaster management, and technical rescue. It protects a population of nearly 540,000 spanning 149.5 square miles.

Located in Willamette Valley, the city is a mix of residential, commercial, industrial, and manufacturing areas. The Portland International Airport is the 30th busiest in the United States and is home to an Oregon Air National Guard base. Five major highways run through the city (I-5, I-405, I-205, U.S. 26, and U.S. 30).

PF&R provides emergency services with 650 sworn and 52 non-sworn positions on staff. The majority of these positions are allocated for fire suppression and EMS. The Department responds from 29 fire stations, operating with 29 engine companies, nine ladder companies, and other front-line fire and rescue apparatus.

BACKGROUND OF CITY

Population – Population size, growth, and density all impact the risk of fire, fire death, and, subsequently, the demand for fire and EMS services. Population growth is particularly important; it directly impacts future demand.

In the 2000 Census, the city’s population was 529,121, having grown rapidly over the past two decades, as shown in Table 1. From 1980 to 2000, the city’s population grew at a rapid rate, increasing from 366,383 to 529,121, an annual growth rate of just over two percent (1.8). Since 2000, the annual growth rate has declined to around one percent each year.

Portland offers several popular tourist attractions including the Oregon Zoo, the World Forestry Center, and Portland Art Museum. Over five million people visit the Portland area each year. The specific impact of these visitors on PF&R call volume is not clear, but they likely impact EMS, especially during the summer tourist season. In addition, several educational institutions are located in the city. The student population of these institutions also affects call volume; however, it is not clear to what extent.

Table 1: Population Growth & Percent Change

Year	Population	Percent Change
1980	366,383	-
1990	437,319	19.4
2000	529,121	20.9
2003	545,140	3.0
2004	550,560	1.0

Demographics – National studies have shown an inverse correlation between income and fire risk. Residents with lower incomes are often at higher risk for becoming victims of fire than persons with higher incomes. A slightly higher percentage of individuals in Portland live below the poverty level than nationally (Table 2).

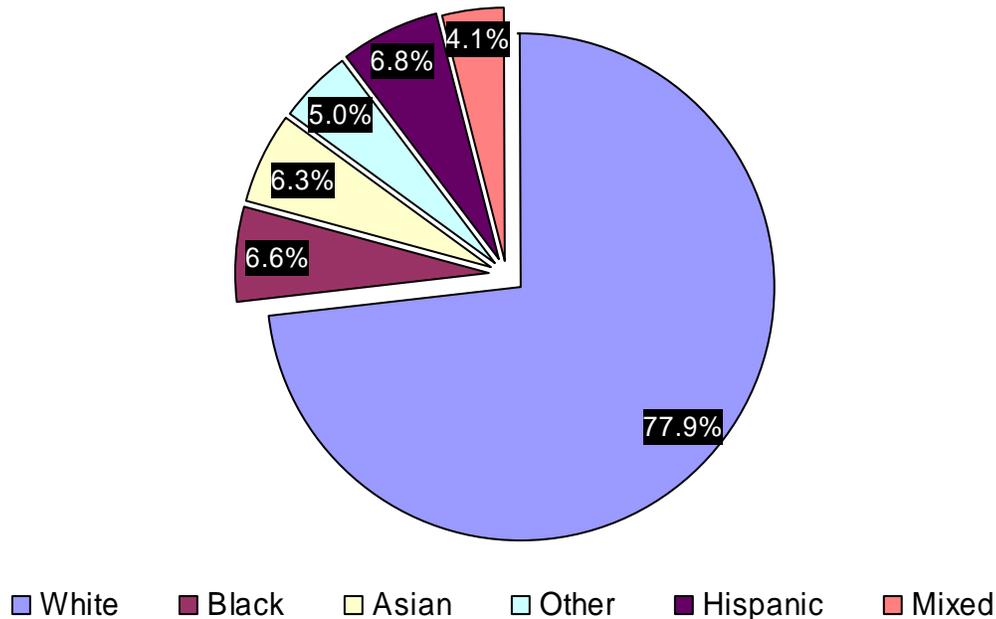
Table 2: Percent of Population Below Poverty Level

Subject	Percent Below Poverty Level – Portland	Percent Below Poverty Level – United States
Families	8.5	9.2
Families with female householder, no husband present	23.0	26.5
Individuals	13.1	12.4

Source: United States Bureau of the Census 2000, Table DP-3. Profile of Selected Economic Characteristics

Nationally, statistics show that African Americans and Hispanics tend to be at higher risk for fire injury and death than other groups. Asians, however, tend to experience lower risk than the general population. Figure 1 depicts the percent of the population by race for Portland as of 2000.

Figure 1: Population by Race



Source: United States Bureau of the Census, 2000 Population
Note: Total is greater than 100 because it is possible for respondents to report Hispanic and another race.

Age – Portland is a relatively young city with a median age of 35.2. Only 11.6 percent of the population is over the age of 65, and 17.7 percent is younger than 15.¹ Based on national statistics, these two age groups are at significantly higher risk during fires than the population at large. The elderly (individuals over age 65) also tend to use the EMS system at a higher rate than the general population. Risk involving age will be discussed more in Chapter III, Risk and Demand Analysis.

Education – There are 154 public and private schools in Portland: 73 elementary, 28 intermediate, and 18 secondary schools. There are also 35 private schools. Opportunities for higher education include: Portland State University, University of Portland, and Pacific University.

In Portland, 42.2 percent of the population has completed an Associate’s Degree or higher, which is slightly higher than the national average of 29 percent.² Another 13.8 percent of

¹ Source: Table DP-1, Profile of General Demographic Characteristics, Census 2000.

² Source: Educational Attainment in Population 25 Years and Over, 1990-2000, Census 2000.

the population has received their high school diploma or equivalency. Education has been related to fire risk; people with lower levels of education tend to be at higher risk for fire injury or death. Those with lower educational levels also tend to have lower incomes, another contribution risk factor.

Economy – Portland’s economy is very diverse. Major industries include: petrochemical, computer & electronics manufacturing, healthcare, and the trade sector.

In December 2005, the unemployment rate was 4.5 percent, slightly below the national average of 4.9 percent.³ The median household income in Portland, according to the 2000 Census, was \$40,146 with a per capita income of \$22,643. Table 3, shows the industry sectors where people in Portland work.

Table 3: Portland Industry, 2000

Occupation	Percent of Employed Population*
Educational, health and social services	19.7
Manufacturing	12.5
Professional, scientific, management, administrative, and waste management services	12.0
Retail Trade	11.5
Arts, entertainment, recreation, accommodation and food services	9.4

Source: Table DP3, Profile of Selected Economic Characteristics, Census 2000

* Totals to more than 100 percent due to rounding.

Transportation – The city has a strong traffic management program, which includes traffic-calming devices (e.g., speed humps, which slow emergency response, too) as well as neighborhood programs to encourage safe driving. In addition to personal vehicles, there are also transportation options available through a public bus and rail system.

Tax Base – The city collects revenue through a variety of sources, including property taxes, hotel tax, franchise taxes, licenses, permits, fines, and fees for service. For fiscal year 2003–2004, total revenue was projected to be in excess of \$460,000,000.

Housing⁴ – Home ownership, type of residence, and structure age are all factors that contribute to fire risk and the need for emergency services. Older homes tend to be at higher risk for fire, particularly if they are not properly maintained. Some newer homes are constructed with built-in fire protection, such as sprinklers.

³ Source: Bureau of Labor Statistics

⁴ All statistics are from Census 2000.

More people in Portland own their homes than rent them (47.3 percent owner-occupied versus 41.7 percent renter-occupied). Nationally, the percentage of homeowners is significantly higher (66 percent), as compared with 47.3 percent in Portland.

The largest percentage of the city's housing units are single-family, detached homes (60.3 percent) followed by multi-family dwellings with 20 or more units (15.2 percent). A significant portion of the city's housing stock was built prior to 1980 (84.1 percent). Again, without proper maintenance, these older homes are at a higher risk for fire than newer ones. Only 6.8 percent of housing units were constructed between 1995 and 2000.

The majority of owner-occupied housing units are valued between \$100,000 and \$199,999 (63.4) and 16.6 percent are valued between \$200,000 and \$299,999. Only 0.3 percent housing units are valued over \$1 million. Houses valued less than \$100,000 make up only 10.1 percent of the housing units.

METHODOLOGY

The methodology used for this study was based on TriData's 24 years of experience in undertaking similar projects. The study used a mixture of data analysis and personal interviews, thus allowing the project team to develop a comprehensive picture of the Bureau and its needs.

The study began with a kick-off conference call in November 2005 between TriData staff and representatives from the PF&R. The purpose of this meeting was to discuss the study's scope, and the tentative schedule for the first on-site meeting. The kick-off conference ensures that the study plan was appropriate and that staff assignments are in line with the goals of the project.

Members of the TriData team made their first visit to Portland to perform an initial "triage" of goals, priorities, and issues. They conducted a series of meetings with PF&R command staff, rank-and-file firefighters, representatives from International Association of Fire Fighters (IAFF) Local 43, and city officials. At the conclusion of the visit, a wrap-up meeting was conducted with key members of PF&R project team to discuss the major issues identified during the visit, review the scope of the study, and determine if any priorities or goals needed to be modified.

During the next phase of the project, specialists from the study team undertook a series of on-site, in-depth reviews of various PF&R functions. These included management and organization, prevention, fire suppression operations, EMS, special operations, communications, and information technology. A series of data analyses were undertaken to project demand and consider various station location configurations, using GIS software.

The team then developed the initial report draft sections, each of which describes a functional area of the Bureau, assesses its current efficiency and effectiveness relative to

standards and practices across the nation, and makes a series of recommendations for improvements. The drafts were sent to PF&R for review to ensure factual accuracy and the suitability of recommendations. Modifications were made, as necessary, and a final draft was compiled.

ORGANIZATION FOR THE REPORT

The report includes in addition to the Introduction, 10 major chapters. While each chapter is considered a self-contained analysis, reading the entire report aids in better understanding of the whole study. The major chapters include:

Chapter II, Management and Organization – This chapter looks at the logic of the organization chart, as well as the organizational issues of internal communications, spans of control, training of people in supervisory positions, management information, and other aspects of the organization and management of the PF&R. We also considered the use of information management, adequacy of facilities, and clerical support staff.

Chapter III, Risk and Demand Analysis – In this chapter we discuss the pressures on the fire and EMS system, including an analysis of future population changes and a projection of demand, which is important in evaluating future viability of the system as well as the need for more or less resources to meet future demand.

Chapter IV, Determining Resource Needs – This chapter discusses system performance goals and standards typically used in the fire and EMS industry. The project team compares PF&R to these standards and makes recommendations on goals the city should consider adopting.

Chapter V, Station and Apparatus Deployment – Presents a geographic information system (GIS)-based analysis of station locations and resource deployment. It presents population and demand projections through 2025. The models are used to propose a new station configuration for the city that meets the demand for emergency service while reducing redundancy of stations and apparatus coverage.

Chapter VI, Fire and Rescue Operations – A large chapter that discusses the current shift schedule and structure, staffing, approach to operations, apparatus and resource deployment, incident command, response complements, dispatch protocols, and technical and special operations. Alternatives for the future, including costs implications, are also discussed. Lastly, it includes interjurisdictional comparisons with other cities, both inside and outside the State of Oregon.

Chapter VII, Emergency Medical Services – This is a description of the components of the EMS system and how it currently functions. The chapter also provides recommendations for improvements to the current system.

Chapter VIII, Fire Prevention – This chapter discusses fire prevention and investigation functions. Included are bureau organization, code enforcement, plans review and construction inspections, public education, fire investigations, and workload and performance measures.

Chapter IX, Support Services – Discusses the many support services needed to operate the Bureau. These include training, officer development, safety and health, risk management, communications, fleet management and maintenance, and information technology.