CLARK COUNTY
FIRE DISTRICT 6
FIRE•RESCUE•EMS

Fire Department Analysis and Master Plan

April 2008

Emergency Services Consulting inc.

Clark County Fire District 6

Fire Department Analysis And Master Plan

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Executive Summary

Purpose of the Report

This report details the study of fire protection and emergency medical services in Clark County Fire District 6, Washington, (CCFD6 or District) by Emergency Services Consulting inc. (ESCi). The work, contracted by the District in early 2008, requested a performance and resources evaluation, and based on that finding, the development of a plan for the continuation and potential improvement of those services through 2027.

The Board of Fire Commissioners and staff of CCFD6 provided a great deal of written and verbal information to ESCi and its associates during the course of this work. The Fire Chief and his administrative staff have been generous in their effort to provide us with accurate and complete information. We are grateful for their able assistance and cooperation throughout this master planning process.

Methodology

We recognize that the information provided by the District, by its very nature, is often dynamic. Organizations (such as CCFD6) tend to undergo a process of continuous change. Every effort has been made to compile data that is comprehensive and as accurate as possible. Our information gathering process included a broad checklist of contemporary organizational attributes that measure results against acceptable industry standards and good practices. Checklists and documentation are validated by one-on-one interviews with key staff members from the agency and every program area.

The report document is divided into three major sections including an evaluation of the existing fire protection and emergency medical system, the forecasting of service and system demand through 2027, and the development of a short, mid, and, long-term delivery system models for CCFD6. A brief explanation of each section and a summary of the short, mid, and long-term recommendations follows below.

Section I – Fire Department Analysis

Section I provides a detailed evaluation of the fire department arranged into ten objective chapters beginning with organizational overview and works through components such as management, planning, personnel management, training programs, fire prevention and public education, capital assets, staffing, and current service delivery performance.

The analysis conducted in the *Fire Department Analysis* section establishes a baseline from which to build the District's long-term plans. However, as a second benefit it yields a series of short and mid-term recommendations for improvement that, if implemented, may result in improved administration, efficiency, or service.

The recommendations and suggestions generated by the analysis are compiled in table format in the Appendix under *Summary Table of Recommendations*. The table is cross-referenced to the appropriate page in the report to ease its use by CCFD6 leaders. The recommendations are not prioritized in keeping with their advisory nature.

Two important issues were identified in this section. First, analysis of current incident staffing showed that the District is slightly understaffed for moderate risk incidents. Second, the District's training function is not optimal and could be improved.

ESCi has concluded from the Section I evaluation that CCFD6 is well managed and equipped. A team of qualified, capable, and engaged professional managers heads the agency and leads a cadre of dedicated uniformed emergency workers who provide a high level of fire and emergency medical service to the District's community.

Section II – Future System Demand Projections

This report section establishes the population and service demand projections necessary for the creation of future deployment models. A review of population forecasts for the District through 2030 indicate that the District will continue toward build out, resulting in a residential population of approximately 88,953.

The increase in population and its associated commercial development will push the number of requests for emergency assistance from 5,112 in 2007 to more than 10,000 in year 2030 – an increase of nearly 100 percent.

A community risk analysis, based on occupancy types and density, is provided in this report section, along with a geographic representation of the analysis district wide. As with population forecasts, the community risk analysis provides a basis for a future deployment model.

The analysis shows that the community contains mostly low and moderate risk properties. The predominance of highest risk property is clustered around major transportation routes such as I-5. These properties include light and heavy commercial, mid-rise, mixed-use, institutional, and multi-family occupancies.

ESCi's analysis shows that the existing geographical deployment of CCFD6 fire stations serve the District well. In addition, the analysis shows that the existing station locations will provide adequate coverage to meet future response time goals. However, additional resources will need to be added to Station 63 in 2020 in order to maintain response time goals.

Section III – Future Delivery System Models

This section of the report provides the central elements of the master plan. ESCi evaluated the analysis conducted in the previous sections and identified a set of critical issues facing the District. Those critical issues were:

- The District is not providing sufficient personnel to guarantee 13 personnel on a moderate risk response.
- The training function is not operating at an optimal level.
- Population growth and an increase in workload requiring additional response resources and improved facilities (Station 63).
- Annexation of District territory by the city of Vancouver and a corresponding loss of tax revenue.
- Continued erosion of the District's taxing authority due to state-wide tax limitation measure (I-747).

The District's critical issues were used to identify a set of options for future service delivery. The options that were evaluated for inclusion in the District's master planning strategies were:

Option 1: Status Quo

Option 2: Increase minimum career staffing level to 13 per shift

Option 3: Optimize training functions

Option 4: Increase response capacity and facilities to meet future service demand

Option 5: Open lines of communication with the city of Vancouver and prepare for potential annexations.

The options were evaluated for their strengths, weaknesses, and financial feasibility. Short, mid, and long-term master plan strategies that address the District's critical issues were developed. They were:

1. Address recommendations for improvement as listed in Section I of the report (Short-term)
2. Increase minimum career staffing level to 13 per shift (Short-term)
3. Optimize training functions (Short-term)
4. Increase response capacity and facilities to meet future service demand (Mid-term)
5. Open lines of communication with the city of Vancouver and prepare for potential annexations. (Long-term)

Section I: Fire Department Analysis

Introduction

Emergency Services Consulting inc. (ESCi) was engaged by Clark County Fire District 6 (CCFD6 or District) to conduct an evaluation and analysis of its organization and emergency service delivery system as Phase I of the development of a 15 year Comprehensive Master Plan.

The agency evaluation includes an in-depth study of administrative, operational, and support services. The evaluation and analysis is an assessment of the following ten subject areas:

- Organizational Overview
- Management Components
- Planning for Fire Protection and EMS
- Risk Management
- Personnel Management
- Training Program
- Fire Prevention/Public Education Programs
- Capital Assets and Capital Improvement Programs
- Staffing
- Service Delivery Systems

Using organizational, operational, staffing, and geographic information system (GIS) models, this phase of the study provides recommendations for improvement in current services delivered to the community. The evaluation and analysis of data and other information is based on Washington State laws and regulations, National Fire Protection Association (NFPA) standards, Commission on Fire Accreditation International (CFAI)[1] self-assessment criteria, health and safety requirements, federal and state mandates relative to emergency services, and generally accepted best practices within the emergency services community.

Each section in the following report provides the reader with general information about that element, as well as observations and analysis of any significant issues or conditions that are pertinent. Observations are supported by data provided by the District and collected as part of

[1] The CFAI organization is now a subsection of the Center for Public Safety Excellence (CPSE), but maintains its prime function of accrediting fire agencies.

the review and interview process. Finally, specific recommendations are included to address identified issues or to take advantage of opportunities that may exist.

Objective One: Organizational Overview

The organizational overview provides information about the District - its size, service delivery, governance, and foundational structure.

General Description

Clark County

Named for Captain William Clark of Lewis and Clark Expedition fame, Clark County is one of the fastest growing regions in Washington State and in the Portland, Oregon, metropolitan region. Today, more than 383,000 people live in Clark County, a figure that is almost double the population recorded in 1980.

Clark County Fire District 6

The District, formed in 1954, has been providing services to the Hazel Dell, Lakeshore, Felida, Salmon Creek, Mount Vista, and the Clark County Fairgrounds for over 50 years. The District was accredited by the Washington Surveying and Rating Bureau on January 1, 1956. The first fire station was built on properties donated by the Hazel Dell Community Club and Mr. Gale Marshall, a local businessman. Station 2 was added in 1958 when the Felida/Sara and lower Hazel Dell Avenue areas requested fire services from CCFD6. Station 3 was added in 1962 in the Salmon Creek area.

The first call for volunteers in 1954 saw 65 men come forth to commit time and effort to the community. The first part-time fire chief's position was created in 1959, and the first full-time firefighter was hired in 1967. Additional career firefighters were hired in 1968; organized under Local 1805 of the International Association of Firefighters which remains the representative body for professional firefighters today.

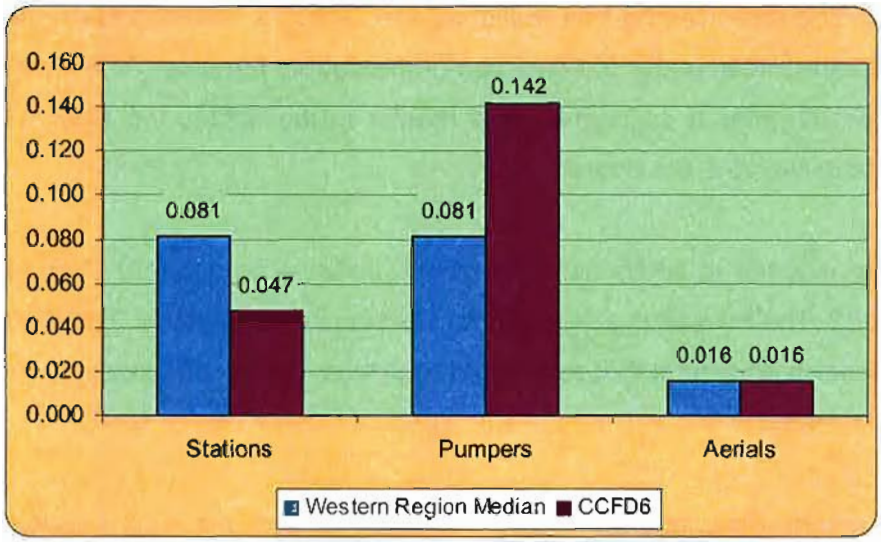
Updates, remodeling, and replacement of fire stations have been ongoing over the past 50 years. Station 1 was constructed in 1991, 12 blocks to the north of the original station.

The District serves an area of approximately 37 square miles comprised of rural, residential, commercial, and light industrial properties. A major north/south interstate freeway, I-5, bisects the District and intersects with I-205, a north/south auxiliary interstate that serves the Clark, Multnomah, and Clackamas County urban areas. A Union Pacific Railroad main line follows the District's western boundary.

In 2007, the District responded to 5,112 incidents from four fire stations. Three fire stations are owned by the District. The fourth station is located near the Clark County Fairgrounds, on the District's northern boundary. It is owned by Clark County and staffed by districts 6, 11, and 12.

The District serves a population of approximately 65,334.[2] Figure 1 provides a comparison of the District's resources per 1,000 population to similar size communities (50,000 to 99,999) in the western U.S.[3]

Figure 1: Resource Allocation Comparison, per 1,000 Population



In comparison with fire departments serving similar size communities, CCFD6 has fewer stations, but a greater or equal number of apparatus. ESCi will explore the distribution and concentration of resources later in the report.

[2] Projected from 2000 and 2007 U.S. Census data.

[3] *U.S. Fire Department Profile Through 2006*, by Michael J. Karter, Jr. and Gary P. Stein, November 2007.

Responsibilities and Lines of Authority

Fire districts located within the state of Washington are governed by Title 52 of the Revised Code of Washington (RCW). They are considered single-purpose agencies with specific focus on fire protection and emergency medical service.

The purpose of a fire board is to set district policy and high level organizational goals that ensure that services are delivered, and public funds are spent appropriately. Policy level direction is given to a fire chief who is responsible for directing the execution of policy and general administration of the organization.

Observation: The District is governed by a three-member board of commissioners (Board). The commissioners are elected at-large within the District's territory. Commissioner and chief officer roles are defined by policy documents, employment agreements, and job descriptions.

In February, 2008, the Board reorganized the District's top management by creating a deputy chief position. The restructuring has realigned the District's administrative staff and places all day-to-day administration under the direction of the deputy fire chief. The fire chief will continue to oversee special projects and serve as a mentor to the deputy fire chief. The fire chief and deputy chief both report to the Board.

The Board has chosen to codify its conduct and behavior in a Board Policy Manual that was adopted in 2002. The manual is scheduled for revision in March 2008. The Board Policy Manual is a comprehensive document that sets forth the powers, functions, conduct, and responsibilities of the Board.

The Manual clearly describes the Board's function in sections *1.02 Leadership*, *1.03 Policy Making*, and *1.04 Management Techniques*. These sections appropriately define the Board's role as a policy making body. Those sections are outlined below:

> ***1.02 Leadership***
> *Effective leadership from the Board of Commissioners is essential if quality service is to be provided to their patrons. Board members should do the following:*
> - *Recognize that the individual member has no legal status to act for the Board outside of an official meeting.*
> - *Refuse to make commitments on any matter that should properly come before the Board as a whole.*

- *Respect the opinion of other members and graciously accept the principal of "majority rule" in Board decisions.*
- *Insist that all of the District's transactions be on an ethical and above board basis.*
- *Refuse to allow personal problems to be brought into Board consideration.*
- *Insist that personnel complaints go through the proper chain of command first and only to the Board if not resolved at these levels.*

1.03 Policy Making

Policymaking is one of the most important responsibilities of a Board member. It is essential that the member thoroughly understand the goals, objectives and general operating policy of the District. Developing goals and policy is a two-step process.

- *Planning - This begins with the Board, but is defined by the process of creating measurable goals and objectives for the District that adapt to changing conditions.*
- *Policy - After goals and objectives are identified, the Board must develop specific strategies or policies to achieve these goals.*

1.04 Management Techniques

A Board member's time is limited. The following techniques assist in utilizing time efficiently and lead to more effective decision-making.

- *Set Priorities - List projects in order of importance and act on accordingly.*
- *Develop Study Plans - List steps that must be followed and completion dates for each project.*
- *Delegate Responsibility - Do not get involved in every activity of the District.*
- *Preparation - Stay current of the District's activities.*
- *Project Completion - Use your own leadership and authority to make sure good ideas are actually implemented.*[4]

The fire chief and deputy chief are both responsible for executing the Board's policies. Both chiefs are hired by the Board under a personal services agreement that is automatically renewed on an annual basis. The positions' authority and duties are outlined in the agreements between the Board and the chiefs. The following excerpt describes the chiefs' duties and the Board's role:

1. Duties. *The Fire Chief (Deputy Fire Chief*[5]*) shall perform the following duties:*

> ***1.1.*** *Perform such services for the District as directed from time to time by the Board of Commissioners (or the Fire Chief) in the manner and to the extent permitted by the laws of the State of Washington and in accordance with the policies of the District as established by the Board of Commissioners.*
>
> ***1.2.*** *Perform all duties established by the job description of the position of (Deputy) Fire Chief which is incorporated into this Agreement by this reference. The District retains the right to modify the job description during the term of this Agreement.*
>
> ***1.3.*** *The Board of Commissioners vests in the (Deputy) Fire Chief the day-to-day operational control of Fire District operations, and reserves to the Board of*

[4] Fire District 6 Board Policy Manual, 2002, pg.5-6, Clark County Fire District 6.

[5] Deputy Chief Employment Agreement, Feb 2008, pg. 1 – (annotated items have been placed in parenthesis).

> *Commissioners the policy-making authority and control over all matters of fiscal policy, budget and financial matters not expressly delegated to the (Deputy Fire Chief by the Board of Fire Commissioner of the) Fire Chief.*
>
> ***1.4.*** *The Board of Commissioners agree(s) to a principle of noninterference in the day-today operations necessary to the orderly and efficient implementation of District policy as established by the Board of Commissioners. The Board of Commissioners shall ensure that the individual commissioners will direct all concerns and communications to District employees through the (Deputy) Fire Chief. The (Deputy) Fire Chief shall respond promptly to all inquiries from members of the Board of Commissioners, whether made individually or collectively.*[6]

As stated earlier, the role of the Board is clearly defined. The roles of the chief and deputy chief are also clearly defined, but are in conflict because both positions report directly to the Board. In addition, both chiefs are required to "*respond promptly to all inquiries from members of the Board of Commissioners, whether made individually or collectively.*" This particular statement is troublesome as it leaves the door open for requests for information that serve the interest of one board member and not the whole board. It can also create an environment where staff time is inefficiently directed toward individual requests and not the District's overall goals.

ESCi recognizes that there is a fine line between policy making and operational implementation. When the line becomes blurred, disconnects and distractions occur that are detrimental to the effective management of the organization. ESCi has determined, through internal and external stakeholder interviews, that there are conflicts between the Board and senior management. The conflicts, as described below can be resolved through facilitation and reaffirmation of District policy.

The conflicts between senior management and the Board revolve around several issues. Specifically, the Board is perceived as having taken a direct role in issues that are the preview of administration. Furthermore, it was reported that individual directives regarding department operations have, at times, come from individual Board members and not the Board as a body. A direct management role is contrary to the role defined in the Board Policy Manual and chief and deputy chief employment agreements.

Individual Board members are also perceived as making excessive requests for information, causing an increase in workload and inefficient use of senior management work time. In one

[6] Fire Chief Employment Agreement, Feb 2006, pg. 1.

instance, an external stakeholder reported witnessing a Board member giving direction during an emergency incident. Activity of this nature creates indefensible risk for the District if the actions that were directed lead to a tragedy.

The exercise of management functions by individual Board members, or the Board as a whole, creates confusion among employees regarding management's authority and encourages mistrust between the Board and organization. It is essential that a clear distinction be maintained between setting policy - a responsibility of the Board of Commissioners, and implementation of that policy - the responsibility of the fire chief and staff. When the Board steps into administrative and operational venues, the effectiveness of the chief is seriously undermined and the organization suffers.

As a policy body, the Board should set measurable goals for the District overall and the fire chief individually, and monitor progress. The management and administration of the Board's policy and goals should be left to the fire chief and administration.

It is essential that the Board and chief re-define their roles and establish a clear and universally accepted delineation of their respective responsibilities. The District has engaged the services of a leadership coach to assist and advise senior staff. If properly equipped, the leadership coach, or another facilitator could facilitate a series of meetings that would lead to the reaffirmation of Board and management roles. In addition, Section 1.4 of the chief and deputy chief employment agreements should be modified to state that requests for information are to be forwarded to the chief after collective agreement by a majority of the Board.

Recommendations:

- Modify Section 1.4 of the chief and deputy chief employment agreements to state that requests for information must come from a majority of the Board.
- Engage the services of a management consultant to clarify and re-define the roles of the Board and senior management.
- Board members discontinue the practice of giving direction during an emergency incident.

Foundational Policy

Efficient and effective governmental organizations are guided by clear policies and rules that lay the foundation for effective organizational culture. Policies and rules should set boundaries for expected and acceptable behavior, while not discouraging creativity and self-motivation.

In fire districts, comprehensive organizational operating policy, procedures, and guidelines are made up of two primary categories.

1. Board Policy – Board policies are the basic policy-level direction given by the governing body. Policies are established or enabled by resolution or ordinance that enact and revise the documents. Policies should be reviewed periodically by the Board to assure that they are current and meet state law. Policies should be identified as such and be organized as a set of policy documents. Board policy should contain, at a minimum, the following:
    - Board conduct and responsibilities
    - Establishment of meeting agendas and conduct
    - Procedures for public testimony during meetings
    - Public records access and retention
    - Contracting and purchasing authority
    - The establishment of risk management and safety programs
    - Disciplinary and grievance procedures
    - Hiring and termination authority
    - Harassment and discrimination policy

2. Standard Operating Procedures or Guidelines[7] (SOPs / SOGs) – Standard operating procedures or guidelines contain operational standards of practice for department personnel. SOGs are different from board policies in that variances are allowed in unique or unusual circumstances where strict application of the SOG would be less effective. A program of regular, systematic updating assures SOGs remains current, practical, and relevant. SOGs should be developed, approved, and enforced under the direction of the fire chief. SOGs will be discussed in depth later in the report.

[7] ESCi has found that the terms procedure and guideline are treated in the same context throughout the fire service, and thus, will use the more contemporary term, *guideline*.

Observation: The Board has established a Board Policy Manual as well as set of policies that guide District behavior. The Board Policy Manual is a comprehensive and appropriate document that guides Board behaviors and establishes departmental policies. The process for creating policy is complete except for a provision for periodic review.

The manual also describes the Board's responsibility for hiring, promoting, demoting, or discharging employees.[8] In this instance, the Board has retained full authority for all of these functions. The personnel functions listed above are normally the responsibility of the fire chief with board oversight. The fire chief position is the only position that the Board should be directly responsible for. ESCi recommends a change to 5.02 of the Board Policy Manual to remove all reference to personnel functions except for oversight of personnel actions and the hiring of the fire chief.

ESCi could not find a policy or reference to public testimony during Board meetings and recommends that one be added to the set of District policies.

The District maintains a complete set of SOGs that guide incident management and other administrative activities. SOGs should have a founding document that describes the authority under which they were established, how they are created, and when they are reviewed or revised. ESCi could not find a founding document and recommends that one is adopted.

Recommendations:

- Revise Section 5.02 of the Board Policy manual, removing all reference to District personnel actions and human resource functions except for the hiring and oversight of the fire chief.
- Adopt a policy regarding public testimony during Board meetings.
- Establish an SOG founding document that describes the basis and authority for SOGs, how they are created, and when they are reviewed or revised.

[8] Fire District 6 Board Policy Manual, Section 5.02 Assignments, pg. 14, Clark County Fire District 6.

Chain of Command & Organizational Structure

A well-designed organizational structure reflects the lines of responsibility and authority within the agency, provides for the equitable distribution of the workload, and clearly defines the official path of internal communication. The lines of an organizational chart visually clarify the chain of command as well as the organization's accountability, coordination, and supervision.

Detailed job descriptions should provide the particulars of each job within the organization including the positions reporting relationships. The job description also helps to ensure that each individual's specific role is clear and focused on the overall mission of the organization.

This method of organization encourages structured and consistent lines of communication and prevents positions, tasks, and assignments from being overlooked. The overall goals and objectives of the organization can be effectively passed down through the organization in a consistent fashion.

Span of control, also known as span of management, is a human resources management term that refers to the number of subordinates a supervisor can effectively manage. Developed in the United Kingdom in 1922 by Sir Ian Hamilton, the concept of span of control evolved from the assumption that managers have finite amounts of time, energy, and attention to devote to their jobs. In his research of British military leaders, Hamilton found that leaders could not effectively control more than three to six people directly.

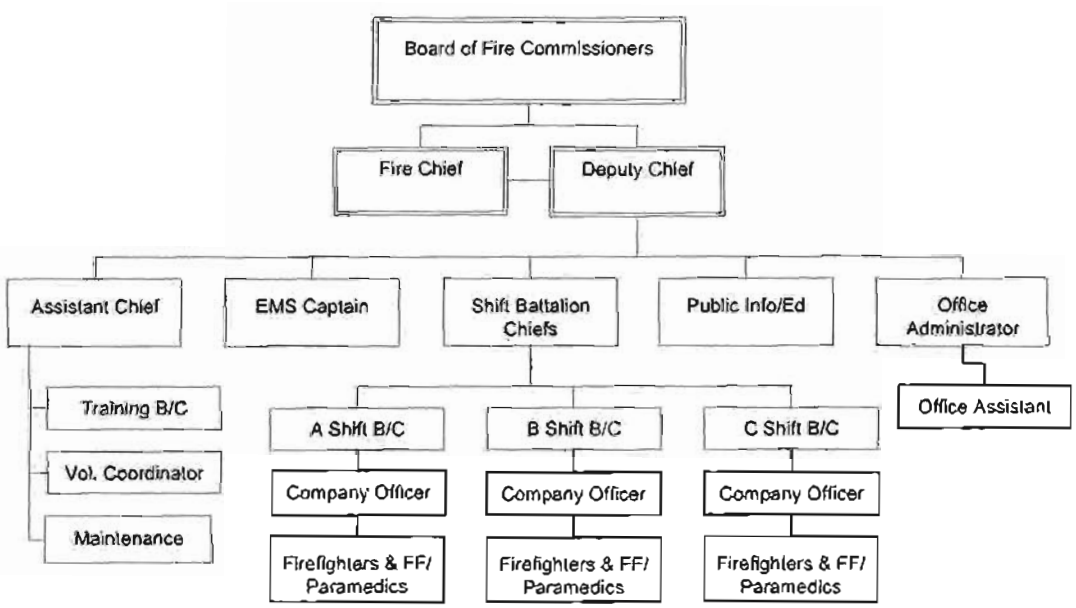
Observation: Based on stakeholder interviews, the District's chain of command is clearly understood throughout the organization's administrative and operational units. All members know who they report to in all circumstances. The chain of command is referenced in various documents of the SOGs and other District manuals.

The current span of control is appropriate for an organization of this size and complexity.

The fire chief job description implies, but does not clearly state, that the position reports directly to the Board. The same is true of the chief's employment agreement. Conversely, the deputy chief job description states in the second paragraph, "...will report to the Fire Chief." It goes on to say "In certain circumstances, however, the Deputy Fire Chief will also report directly to the

Board."[9] It is, therefore, implied that the deputy fire chief will report to two supervisors. The following organization chart, provided by the District, confirms this arrangement.

Figure 2: CCFD6 Organization Chart



The role of the fire chief and deputy chief in the administration of the District is clearly defined, albeit in conflict. The role of the deputy chief is parallel to the chief, and at times subordinate. Consequently, the deputy chief's stated relationship with the board is in conflict with the chief. Only one chief should be a direct report to the Board.

The chief's responsibilities are outlined in the positions job description, excerpts of which follow. In the section titled *Nature and Purpose of Work*:

> *The authority of the Fire Chief shall include but not be limited to overall management, administration, leadership and direction of District operations; the management and disciplining of District employees and volunteers; the execution, enforcement and administration of District policies, rules, regulations, general orders and general directives; policy advice to elected officials and open communication with the community so as to foster responsive and courteous public service.*[10]

In the section titled *Controls Over Work*, it goes on to say

[9] Clark County Fire District 6, Deputy Fire Chief Job Description, pg. 1, Feb 2008.
[10] Clark County Fire District 6, Fire Chief Job Description, Jan 2006, pg. 1.

> *The primary purpose of this position is to provide a chief administrative and leadership officer for the District. The Chief shall always be the superior officer over all other employees of the District. The Chief shall report to, and carry out the directives of the Board of Fire Commissioners. The position shall be subject to periodic evaluation by the Board of Fire Commissioners.*[11]

The deputy chief's responsibilities are defined in the position's job description, excerpts of which follow. In the section titled *Nature and Purpose of Work*:

> *The Deputy Fire Chief will be responsible for overall operation of the department and will report to the Fire Chief. In certain circumstances, however, the Deputy Fire Chief will also report directly to the Board. The Deputy Fire Chief will work closely with the Fire Chief who will provide advice and counsel as needed or requested, in an effort to train the Deputy Fire Chief in all phases of the position of Fire Chief at Fire District 6.*
>
> *The authority of the Deputy Fire Chief shall include but not be limited to overall management, administration and direction of District operations; the disciplining of District employees and volunteers; the execution and administration of District policies, rules, regulations, general orders and general directives; policy advice to elected officials and open communication with the community so as to foster responsive and courteous public service.*

In the section titled *Board*:

> *The Deputy Fire Chief is the primary administrative contact for Board members. All email, telephone and other contacts by Board members go directly to the Deputy Fire Chief.*[12]

In the section titled *Personnel Supervision / Authority of Position*, the job description goes on to say:

> *The Deputy Fire Chief is responsible for the supervision of all personnel below the level of Fire Chief. The line of authority for all personnel, excepting the Board of Fire Commissioners and Fire Chief, is through the Deputy Fire Chief.*
>
> *The Deputy Fire Chief is granted the authority, through delegation, to manage all areas of the department's operations. He or she has the authority and responsibility for overall management, administration, leadership and direction of District operations, the management and disciplining of District employees and volunteers and the execution, enforcement and administration of District policies, rules, regulations and general orders.*
>
> *The Fire Chief is available at any time to provide advice and counsel to the Deputy Fire Chief, but the final decisions on department operations will remain with the Deputy Fire Chief.*[13]

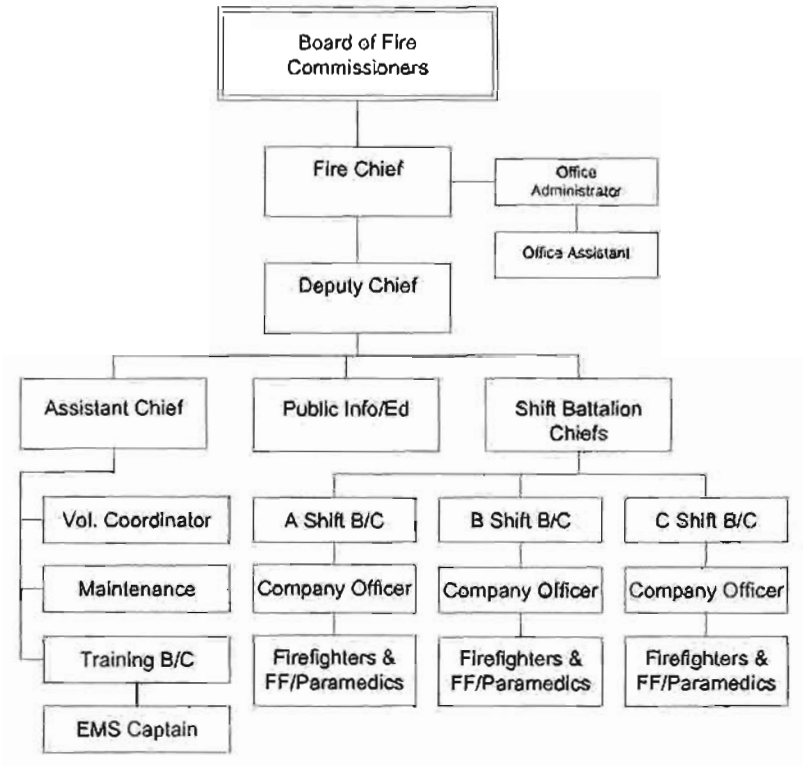
The language in the chief and deputy chief job descriptions creates a leadership dilemma for the individuals filling those positions. The Board must give direction to two subordinates, both of

[11] Clark County Fire District 6, Fire Chief Job Description, Jan 2006, pg. 2.
[12] Clark County Fire District 6, Deputy Fire Chief Job Description, Feb 2008, pg. 1.
[13] Clark County Fire District 6, Deputy Fire Chief Job Description, Feb 2008, pg. 2.

whom have the same power and responsibilities. Co-leadership, without a clear delineation of authority and responsibility, is a professionally awkward situation at the very least, and the situation is exacerbated by the current Board/management relationship that was extensively explored earlier in this chapter. The current split leadership situation presents opportunities for manipulation by superiors and subordinates. In addition, a single individual is not ultimately responsible for organizational performance and outcomes. Finally, this situation is likely to lead to confusion and mistrust between the Board, senior management, and personnel at all levels of the organization.

ESCi understands that this arrangement was developed as a succession plan for the fire chief position. However, the same objective can be achieved by realigning the organizational structure and making minor changes in the deputy chief's job description. ESCi recommends a restructuring that makes the fire chief the only direct report to the Board. The deputy chief would be subordinate to the chief. In addition, the Board should resolve to abate the issues that exist between the Board and senior management. The following organization chart illustrates ESCi's recommendation. (Note: the realignment of the EMS captain position has been included in this illustration and is discussed later in the report.)

Figure 3: ESCI Recommended Organization Chart



This realignment does not prohibit communication between the Board and the deputy chief. Instead, it encourages communication in the mentoring process. It also clarifies who is ultimately responsible for organizational performance.

ESCi also recommends that the deputy chief employment agreement and job description be revised to reflect the recommended reporting structure.

Recommendations:

- Restructure the District so the fire chief is the only direct report to the Board.
- Revise the deputy chief employment agreement and job description to reflect the recommended reporting structure.

Operating Budget, Resources, and Cost Recovery

Fire districts within the state of Washington are special purpose forms of government and are supported primarily through property taxes. They operate under Chapter 52 of the RCW and other Washington State laws applicable to fire districts.

Observation:

Overview

The Board of Commissioners establishes budget policies and guidelines that are administered by the fire chief. The fire chief has responsibility for coordinating the preparation of the budget and forwarding it to the Board for discussion and approval. The District's operational authority is derived from the Revised Code of Washington (RCW) Title 52 and the Board's Policy Manual substantiates this in Section 2.01.

The District's budget year begins in January. An annual operating budget and is prepared each year, the CCFD6 Board adopts a preliminary budget that is submitted to the County no later than November 30th.

The District has developed a capital improvement plan and has established a capital reserve fund for future expenditures. The transfer of funds to capital reserves is expected to occur in

2008. The lack of a capital fund causes operating expenses to vary significantly from year to year as the actual cost of equipment replacement or new assets is charged to the general operating budget.

Financial control within the District is the responsibility of the fire chief and the office administrator. Financial reporting is submitted monthly to the Board for review and approval. The District does not publish a Comprehensive Annual Financial Report (CAFR). However, the District's accountant prepares a compiled financial statement. In 2004 the District instituted the financial porting requirements the Governmental Accounting Standards Board (GASB).[14]

Every two years, the District's finances are audited by the Washington State Auditor's office[15] for compliance to the U.S. Office of Management and Budget (OMB) Circular A-133. Once the audit is completed, the audit reports are distributed. The most recent audit results, January 2005 – December 2006, noted no significant deficiencies or material weaknesses applicable to the District's control over financial reporting.

The District uses a modified accrual basis for its accounting. Under the modified accrual basis of accounting, revenues and other financial resources are recognized as accrued when they become both measurable and available to finance expenditures of the current period. Expenditures are recognized when the fund liability is incurred with certain exceptions. The Clark County finance department is responsible for managing all financial activities and oversees the District's revenues, expenditures, investments, accounting, and debt.

The District's primary revenue source is property taxes. For the 2008 budget, 96.9 percent of revenue is from property taxes. Seventy-five percent of total revenue is generated from fire services property taxes, and 25 percent is derived from an emergency medical services (EMS) levy, also property taxes. The following table describes the District's 2008 revenue.

[14] GASB, Statement 34, Basic Financial Statements and Management's Discussion and Analysis for State and Local Governments.
[15] Report on Financial Statements and Accountability.

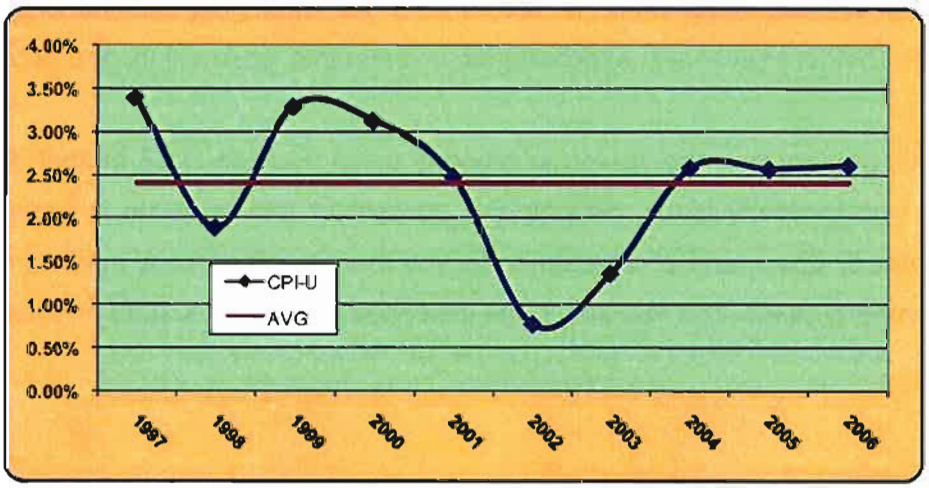
Figure 4: Revenue Sources

Revenue Sources	Fire	EMS	Total
Property Taxes	$6,956,269	$2,285,779	$9,242,048
Fire Protection Services	$65,000	0	$65,000
Investment Interest	$90,000	$60,000	$150,000
Other Taxes	$26,892	$4,521	$31,413
Other Income	$46,500	$7,000	$53,500
Total	**$7,184,661**	**$2,357,300**	**$9,541,961**
Percentage			
Property Taxes	96.82%	96.97%	96.86%
Fire Protection Services	0.90%	0.00%	0.68%
Investment Interest	1.25%	2.55%	1.57%
Other Taxes	0.37%	0.19%	0.33%
Other Income	0.65%	0.30%	0.56%
Total	**75.30%**	**24.70%**	**100.00%**

Financial Planning

Inflation is a significant economic factor that not only affects individuals, but also may cause problems for public entities. Historically, inflation in the Portland-Salem region has seen brief upswings in the CPI-U (Consumer Price Index – All Urban Consumers) during a ten-year period (see figure below), but shown overall relative stability. The increase in the CPI-U is trending at a little over 2.4 percent per year.

Figure 5: CPI-U History: Portland – Salem, OR - WA Region 1996 - 2006



Fire District Budget

The following table provides a detailed analysis of the 2008 budget that is compared to the previous three years of actual data:

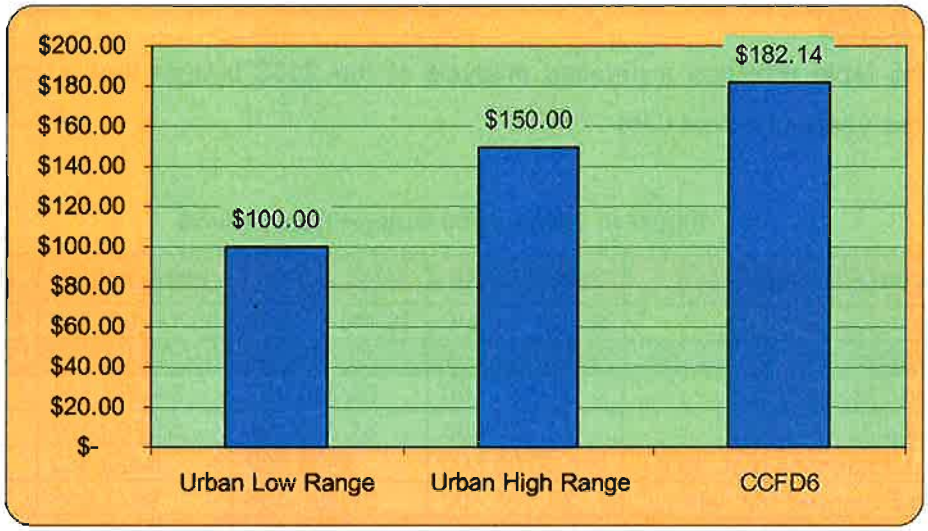
Figure 6: 2005 – 2008 Budget Comparison

Expense Categories	2008 Budget	2007 Actual	2006 Actual	2005 Actual
Assessed Value	$6,994,160,910	$6,250,711,008	$5,171,244,869	$4,358,340,958
Expenditures				
Salary and Wages	$5,504,166	$4,710,962	$4,857,141	$4,532,031
Fringe Benefits	$1,766,000	$1,340,353	$1,202,080	$1,069,596
Supplies & Expenses (cat. 300)	$703,800	$534,582	$422,342	$305,646
Operating Expenses (cat. 400)	$1,808,400	$1,336,456	$977,856	$975,315
Debt Payment & Loan Payment	$405,000	$359,812	$507,961	$455,197
Subtotal	**$10,187,366**	**$8,282,165**	**$7,967,379**	**$7,337,785**
Capital Outlay	$1,712,500	$762,365	$1,213,995	$661,852
Total District Cost	**$11,899,866**	**$9,044,531**	**$9,181,374**	**$7,999,636**
Millage Rate w/o Capital Outlay	$1.46	$1.32	$1.54	$1.68
Millage Rate with Capital Outlay	$1.70	$1.45	$1.78	$1.84

The District's total budget costs approximately $1.70 per $1,000 of assessed value and $1.46 per $1,000 without capital outlay. The illustration shows that the cost of fire protection, with capital outlay, is subject to wide variance from year to year and not as consistent as the cost without capital. Wide variances can be avoided by establishing and funding reserve funds. The District Board has already resolved to establish reserve funds, but has not transferred money to those funds. ESCi recommends that the District transfer a portion of current financial resources to a reserve fund and develop a ten year capital improvement plan. The capital improvement plan should be updated annually, and funded ratably each year.

Human activity creates workload for a fire department and population is an important component of the fire protection equation. Census data provides a snapshot of the static population and census numbers do not account for a highly mobile culture. Factors such as transportation, commerce, workforce, and recreation tend to make the census populations fluctuate widely depending on the time, day, and season. ESCi is unable to determine the effect of transient populations. Consequently, the following charts illustrate the per capita cost for CCFD6 based on census based population levels.

Figure 7: 2008 Cost per Capita Comparisons



2008		
Population	**Budget**	**Cost per Capita**
65,334[16]	$11,899,866	$181.14

Experience has shown it is very common for the cost of fire protection to exceed $100.00 per capita in an urban setting, trending up to about $150.00 in most cases. The higher cost of fire service in an urbanized zone is usually a function of the level of sophistication required by that system (i.e.: fully career, paramedic services, and fully staffed fire prevention programs). The national average cost per capita is considered to be approximately $93.00, and will vary by region. The table above shows that the District's cost to provide service is slightly higher than that of national norms, on a per capita basis.

If a capital improvement plan were adopted and funded annually, the cost of emergency services for the District would decline. To illustrate this, the cost of capital above was averaged for 2005 – 2008 in the table below.

Figure 8: 2008 Cost per Capita without Capital Expenditures

2008		
Population	**Budget**	**Cost per Capita**
65,334	11,275,044	$172.58

[16] Projected from U.S. Census data.

The cost per capita falls by $8.56 when capital expenditures are not included in the budget. ESCi recommends the District conduct long-range financial planning.

Recommendations:

- Transfer a portion of the current budget resources into the newly established reserve funds.
- Develop a ten year capital improvement plan.
- Develop a comprehensive long-range financial forecast and plan.

Cost of Service

Establishing the cost of fire protection in a community is an important part of evaluating the feasibility of other delivery strategies. By knowing the cost of the services as they exist, and predicting the cost of that service after organizational changes are made, alternative fire models may be judged more fairly.

ESCi has developed a software model for estimating the public cost of fire and emergency medical services. The baseline estimate is expressed in dollars and in terms of equivalent millage rate that, when applied to the District's assessed value, will produce revenue sharing necessary to support the service. The estimate provides a scale by which to measure the status quo against any proposed system change.

Adapting the District's budget to estimate the public cost of fire protection requires certain conventions and assumptions. Specifically, the agency's budget may need to be reformatted, often combining line item expenditures of different governmental funds to reflect total public service cost.

Non-tax revenues specific to the District, such as fees for services, are identified. Revenue is corrected to allow for cash accumulations or expenditures, and for the average expenditure of contingencies. Adjusted revenues are subtracted from expenditures to yield an estimate of general operating tax requirements. The resultant sum represents the amount of public tax support required to sustain the given level of fire and emergency medical services, regardless of the source of the tax revenue.

It should be noted that this analysis provides a snapshot and estimate of the public tax cost for the current budget year. Many forces may act to change the level of tax support in the future including changes in law, revenue, politics, or contracts. This process uses current revenue and appropriation to generate an estimate of the amount of tax support relative to existing levels of service. The analysis allows comparison with the predicted cost of service; it does not predict the actual tax rate, current or future.

EMS Budget, Resources, and Cost Recovery

There are a number of factors that influence governmental revenues, but it is accepted that an overall slowing of economic growth is occurring due to rising energy costs. A comprehensive long-range financial plan is a useful forecasting tool for preparing or avoiding this problem. The Government Finance Officers Association (GFOA) has a consulting branch that can facilitate the development of a long-range forecast and plan.

Some revenue can be gleaned from response to hazardous materials (hazmat) incidents, where *spiller pays* laws require that departments are reimbursed for their mitigation efforts. However, this is typically limited to actual documented expenditures and, with the exception of very busy hazmat teams, provides little in the way of a predictable revenue stream.

Some fire departments have initiated billing for fire suppression responses, primarily to insured structures. However, most insurance carriers provide limited coverage for such fees, thus the revenue is rarely worth the political and public relations challenges, or the administrative efforts to collect it.

Observation: Fire districts derive their operating revenue from a limited number of sources with tax revenue being the primary source of revenue. As noted earlier, property taxes account for nearly 97 percent of the District's revenue. Revenue from an EMS levy accounts for 24.7 percent of the total budget and the EMS budget is 26.8 percent of the District's total expenses.

CCFD6 receives funding from several sources, of which, property taxes is the primary source. A district can achieve a higher level of financial stability if it develops a broad revenue base that includes non-tax money. The District also receives non-tax revenue from several sources, but

the total equals only 2.81 percent of the total budget. There are a number of potential revenue sources that the District should explore. These sources include the following:

- Cell tower fees
- Fire protection fees
- Space rent for billboards
- EMS first response fees

Washington State law allows a fire district to see authorization of a non-property tax revenue source called a benefit charge. The benefit charge is calculated as a charge for measurable services, or benefit provided to real or personal property by a fire district.[17] The District was authorized to levy a benefit charge, which was unpopular with residents. In 1995, District voters authorized a third $0.50 levy, for a total of $1.50 per $1000 of taxable assessed value and the benefit charge was rescinded.

Recommendation:

- Explore the potential for increasing non-tax revenue.

Current Description of the Fire Suppression Infrastructure

Observation: CCFD6 provides service from three stations that house nine engines, one ladder truck, one squad, an air-supply unit, and a rehab unit. Three engines and one squad are staffed full-time and the remaining equipment is staffed by volunteers. The District also fields one command unit and several staff cars. The District shares a fourth station along its northern border.

The District has a total of 105.5 personnel that provide internal support and direct service to the community. There are 9.5 administrative and support personnel and 96 operational response personnel, including 45 combat volunteers.

[17] RCW 52.18.

Objective Two: Management Components

As with most emergency service agencies, CCFD6 faces a number of challenges to organizational growth and management. In addition to community growth and resultant workload, the management, leadership, and supervision of career and volunteer personnel presents unique issues.

This section examines the District's efforts to manage the organization and prepare for the future.

Mission, Vision, Strategic Planning, Goals, and Objectives

Successful organizations are guided by a mission, vision, goals, and performance objectives. Each of these items has a role in the organizations success.

Fire agencies are *mission driven* organizations that require a clear and concise mission statement to guide the organization and its members. It is important in today's constantly evolving business and economic environment, for an organization to keep its mission statement focused and up-to-date. The mission of an organization should be adopted by the highest authority and be displayed at fire stations and in all offices. It should also be used in conjunction with the budget, goals, and objectives processes.

The vision statement describes where the organization wants to be in the future, and how it wishes to be known by others. It should also say how the organization will enhance the quality of life for those who use its services

An organization's goals are statements about how the organization will meet its mission and vision. Goals should chart a clear direction for the organization or its programs and represent a desired result or desired condition. Goals should also be measurable.

The performance of an emergency service delivery system should be periodically measured and compared to its past performance and industry benchmarks. Performance measures provide an organization with a gauge of its health and capability, and provide decision makers with quantitative decision-making information regarding future system requirements.

Observation: The District adopted mission, vision, and value statements during the 2005 strategic planning process. These are displayed in all three stations and noted on the District's website. They have not been reviewed since 2005, but will be reassessed as part of the upcoming strategic planning process, which will be facilitated by ESCi, in a later phase of this project.

District goals and objectives were established during the strategic planning process, but have not been integrated in the District's budget process. Individual goals and objectives are part of each member's performance evaluations. Objectives for District programs are currently developed by the program manager, if applicable.

Service delivery and response time performance objectives have been developed and adopted by Board resolution. No other performance objectives have been established in the District.

Recommendation:

- Consider integrating the District's goals into the budget building process.

Adequacy of SOGs, Rules, Regulations, and Policies

An accessible and up-to-date collection of standard operating guidelines is essential for the safe and effective organization of a fire district. A significant financial and legal risk exists when day-to-day practice does not follow guidelines, procedures, or policy. A number of factors can cause a practice to shift gradually away from policy. An out-of-date guideline becomes a problem when common practice does not match the guideline. When this occurs, the policy-making authority must either enforce the guideline or change it to match the practice. When guidelines are driven by regulation, such as federal OSHA rules, the practice must match the policy.

Observation: The District's rules and regulations and SOGs are available to the membership via the intranet website, and hard notebook copies in each station. All SOGs are up-to-date and have been recently reviewed and revised as needed.

A mechanism is in place for update and review of the SOGs, but there is no process for development of new SOGs. There is also no founding document to authenticate the District's SOG process. SOGs that are used in training evolutions are included in the training plan.

Recommendations:

- Provide an SOG founding document that specifies the process for development and review.

Financial Controls

The control of a public entity's expenditures is extremely important to the health and well-being of the organization. Financial credibility is easily damaged by seemingly small issues and municipalities must be able to account for the proper expenditure of every taxpayer dollar. Issues such as payroll errors, misuse of cell phones, or lax purchasing control tend to make media headlines. Consequently, expenditure controls must be clearly stated in municipal code or administrative rules, and must conform to state law.

All fire district expenditures should be accounted for regardless of size. Accounting should include justification and receipts for all expenditures, purchase orders where appropriate, and a process for pre-approval of purchases at set purchasing thresholds. In addition, all payroll entries should have supervisor approval and oversight at more than one level.

Fire district financial controls should, at a minimum, include the following.

Minimum financial controls:

- Mail pick-up and the receipt of district financial resources, invoices, and bank statements should be restricted to a limited number of persons and should not include the organization's bookkeeper.
    - A check-in process should be utilized prior to forwarding the bookkeeper.
    - If a post office box is utilized, keys should be strictly controlled.
- The fire chief and board of commissioners should review the district's bank statement, check register, and income and expense reports on a monthly basis.
- Two signatures should be required on all checks.
    - Several high ranking members of the district should have signature authority and the person(s) preparing checks should not have signature authority.
- Receipts should be required for all expenditures regardless of size, and justification should be required for each purchase.
- Purchase orders and pre-approval should be required for all purchases over a certain amount.
- Blanket purchase orders should have a limited and specific signature authority.
- Pre-defined spending limits should be placed on all purchasing cards.
- Personnel that are issued purchasing cards should be required to sign an agreement that defines the limits and use of the card.
- Petty cash accounting should be conducted under two signatures.
- Endorsement stamps should be kept in a secured location.
- All payroll, benefit, and leave bank entries should receive approval at more than one supervisory level.

Observation: The District practices appropriate financial control procedures, however, the details of all but a few procedures are not codified in District policy, Board resolution, or SOG. The procedures that have been codified are:

- The chief is authorized to spend up to $10,000 (section 6.03, Board Policy Manual)
- Compensation (Section 7, Board Policy Manual)
- Credit Card Authorization (Board resolution 2007-03)
- Travel and Subsistence Policy (Board resolution 2005-11)
- Food & Beverage Purchase (SOG, 2007)

The District should codify the financial practices that have not been formally adopted. ESCi suggests that all financial controls be placed in a single financial or purchasing manual.

Recommendations:

- Specific financial practices should be formally adopted as a financial or purchasing manual and placed in the District's SOGs.
- Board policy should reflect the establishment of a process for the control of financial activity.

Critical Issues and Future Challenges

An organization's leadership cannot prioritize the issues it faces, and prepare to find solutions or mitigate problems, if the issues have not been identified. It is important that there be a clear understanding of critical issues facing an agency. In addition, the enunciation of critical issues to District members increases their awareness of the organization's priorities and helps them to focus on solutions.

As with critical issues, it is important for any agency to have an appropriate level of future thinking. This permits an agency to identify what external challenges may present themselves to the organization in the coming years. This awareness of future challenges ensures that the District does not miss opportunities or blindly stumble into a crisis unprepared.

Observation: The following critical issues and future challenges were identified by the District's chief officers.

Critical Issues

- Staffing
- Facilities
- Organizational culture
- Morale
- Officer development and training
- Staff relationship with the Board and its affect on personnel

Future Challenges

- The next generation of firefighters and their integration with current staff
- Technological advancements
- Remaining a viable District on its own accord, rather than a part of annexation

- Future financial viability
- Loss of future EMS levy or other financial levies

The organization as a whole has not been engaged in the development of critical issues and future challenges. ESCi will facilitate the organizational development of issues and challenges during the strategic planning process.

Recommendation:

- Future efforts toward identifying critical issues and future challenges should include input from all levels of the organization.

Internal and External Communications

Quality communication is an extremely important, achievable goal for any organization, but one that always seems to be most elusive. Established communication processes within an organization provide opportunities for District personnel to be heard and be involved.

At a minimum, minutes or summaries of staff meetings should be made available or distributed for review by all organization members. Such an effort encourages internal communications and permits members to share ideas on issues involving District issues, enhancing a feeling of empowerment among personnel. However, there are many strategies and tools that can be used to enhance communication. The following list provides strategies for creating an internal communication plan.

Strategies for internal communication plans:

- A formal internal communication plan is established and communicated throughout the organization.
- All personnel (top to bottom) are held responsible for communication and the distribution of information.
- Personnel are coached or provided with listening skills training.
- Employee satisfaction surveys are utilized to determine if the communication plan is effective.
- Affected personnel are required to acknowledge critical written information.
- Open-door policies are communicated at all levels and codified (chain of command is not subverted).
- Procedures provide direction regarding the use and organization of bulletin boards.
- Face-to-face meetings and forums that include members at all levels are offered on a

periodic basis.
- Staff meetings occur on a regularly scheduled basis, have a time limit, and an agenda that describes what is to be accomplished and who is invited.
- Meeting minutes are provided to all personnel.
- Technology is used to supplement instead of supplant communication between members.
- Email is limited (if possible) to the distribution of orders, meeting minutes, critical information, and short memorandums.
- Shift personnel are provided time to exchange information and to communicate during shift change periods.
- Telephone, web, or video conferencing are utilized in remote locations.
- Organizational sub-units meet on a regular basis (division or station level).
- Sub-unit representatives are sent to broader organizational meetings.
- Upper level management visit sub-unit meetings on a periodic basis.
- A newsletter (paper or web-based) is published for the distribution of non-critical information.

Like internal communication plans, external communication and community relations programs can take any number of forms. In some organizations, all members are responsible for communicating with the public. In others, public information or public affairs are handled by a specific person or group. Each organization must determine its own approach. There are a number of strategies and tools that can be employed to enhance communication. The following list provides strategies for creating an external communication plan.

Strategies for external communication and community relations programs:
- A formal external communication plan is established, set in procedure, and communicated throughout the organization.
- A complaint process procedure is established.
- Personnel are coached or provided with training on public relations.
- Response personnel are empowered to provide value-added service beyond normal response services.
- Public information officer(s) are identified and their deployment identified in procedures.
- Citizen satisfaction surveys are utilized.
- Relationships with the media are established.
- Media and press release procedures are identified.
- Citizen focus groups are utilized to acquire feed-back on specific issues.
- An advisory committee is seated to discuss ongoing issues.
- A *key communicators* group of influential people is utilized to provide feedback and to inform the community.
- Community group and service club meetings are attended on a regular basis.
- An annual fire station open house is held.
- Website is available and kept up-to-date.
- An email distribution list is utilized to distribute news and information.
- A newsletter (paper or web-based) is published and distributed throughout the community.

- Newsletters from other public entities and industry are utilized to distribute information.

Observation:

Internal Communications

CCFD6 staff meetings are scheduled twice a month to correlate with the Board's twice-monthly meetings. Those attending the meeting include the senior chief officers, three battalion chiefs, training battalion chief, office administrator, and public information officer. Staff meetings last about an hour, have no formal agenda, and minutes are published for the fire chief and deputy chief only.

Memos are posted on the District's intranet site, linked to the fire chief's internal blog, and hard paper copies are distributed to each station. There is no member newsletter; however the fire chief writes a *Chief's News* blog, the deputy chief has an operation's blog, and the administration assistant chief has an information page that is not interactive. Member forums are not utilized. Bulletin boards are used throughout the District for various work units and a separate space is dedicated for union business. Voice mail and e-mail are available to all department members. Mailboxes are used only for headquarters' staff.

The District informally supports an open door policy, though there is no written policy or SOG defining the process or responsibilities.

Internal stakeholders reported that communication at all levels of the organization is an issue and could be improved. The District does not have an internal communication plan and communication paths, both vertical and horizontal, are not formally defined in an SOG or other policy.

External Communications

The District reaches out to the community through the use of a twice yearly community newsletter. A satisfaction survey is mailed to individuals that has responded to or have received direct service from the District. The survey is sent to every tenth incident after a review of the incident to determine whether or not a survey is appropriate.

While the District does not use a formal citizen advisory committee, ESCi has facilitated three public forums with past strategic planning processes. A citizens' meeting will be held later this

year in conjunction with updating the District's strategic plan and ESCi is conducting a formal survey as part of this project. Details and results of the survey will be reported in a separate document.

Recommendations:

- An open door procedure (SOG) should be developed that describes employee access to supervisors at all levels of the organization.
- An internal communications plan (SOG) that formalizes and describes how members communicate vertically and horizontally. The plan should include periodic member forums or opportunities for face-to-face communication between senior staff and members at all levels of the organization.

Decision Making Processes

An organization benefits from a higher level of commitment and ownership in the agency's success when members have the opportunity to engage in the decision-making process.

Decision-making should be pushed down into the organization as far as possible, empowering personnel to have an impact on department outcomes. When pushing decision-making down, the person expected to make the decision must be provided with the expectations by which they are to make the decision.

In addition, decisions should be made in an informed and data-rich environment, be consensus driven, and collaborative. Furthermore, input should be solicited from all individuals that are directly impacted by a decision, in addition to other data sources.

Observation: CCFD6's decision-making process is evolving and will continue to change with the recent reorganization of senior staff. Stakeholders reported that decisions are being pushed down to appropriate levels. The chief officers are expected to assist and mentor subordinates in the decision-making process. However, it was noted that many decisions are *reactionary*, rather than being *planned*. A formal decision-making process has not been adopted in District policies or the SOGs.

Recommendation:

- Describe and formalize in an SOG the District's preferred administrative decision-making process.

Document Control and Facility Security

Records management is a critical function of any organization. A variety of uses are made of written records and, therefore, their integrity must be protected. Furthermore, proper documentation of actions taken by an organization reduces legal risks.

State law requires public access to certain fire and emergency medical services (EMS) documents and data. Consequently, formal written procedures need to be adopted that provide for public records access through district or department staff.

The Health Insurance Portability and Accountability Act (HIPAA) included regulations that require all individually-identifiable health care information be protected to ensure privacy and confidentiality when stored, maintained, or transmitted. Compliance requires a HIPAA compliance officer be in place, and strict policies defined to guide compliance. Efforts to access response records containing protected medical information must be strictly controlled and appropriate identification required for such access.

Most fire agencies have a significant investment in facilities, apparatus, and equipment. Protecting these assets is very important. Fire stations should be kept locked and access to valuable assets should be strictly controlled. A policy for public access to fire facilities must be established and should be overseen by a high ranking member of the organization.

Observation:

Document Control

The District has two policies regarding access to records. The *Records Policy and Procedures* (revised 2004) policy describes the process for public and internal access to records. The Privacy Policy (2004) describes the District's responsibilities and procedures under HIPAA requirements. Both policies are comprehensive and appropriate.

Hard copy records are protected in locking non-fire proof file cabinets that are kept in a locked office. The office area has early warning and sprinkler systems to protect contents. The District's computer system requires that all employees change their password every three months. Computer records and data are backed up on a daily basis and an employee takes a copy of the tape home every night.

The practice of taking records home at night is required by the Washington State Auditor. However, the requirement places the District at risk of theft of sensitive data regarding employees and emergency medical response. It was reported to ESCi that the District is investigating alternatives to the current practice. Alternatives could include encryption to prevent access to the data or to utilize a secure off-site internet backup system.

Facility Security

District facility security is being handled appropriately. Doors to the headquarters' station are open during business hours, but locked during evening hours. Station access is restricted and apparatus doors are closed when equipment leaves the station.

Apparatus are not locked or secured while on scene of an incident. A District policy or SOG does not exist for security for apparatus and other vehicles. However, controlled substances are adequately secured.

A capital inventory is maintained and an asset security system is in place.

Recommendation:

- Continue to investigate alternatives to sending the District's tape data backup home with an employee.

Reporting and Records

Fire districts are required to maintain a wide variety of records. Many of these records must be kept in hard copy storage and many can be maintained in computer records management systems (RMS). RMS must be capable of efficiently producing records and reports regarding

the agency's activities. There are a number of efficient records management systems (RMS) available to fire agencies for this purpose.

Observation: The District operates a client server computer system that utilizes the Windows 2003 operating system. Records are maintained on the District's servers and are accessed for internal and external reporting, including bi-monthly Board meetings. Financial reports are prepared for the first Board meeting of each month and safety reports are provided at each meeting. Operational reports are provided on an annual basis. The District has not produced an annual report for the past two years.

The District maintains all the required records of an emergency service agency including incident reports, patient care reports, exposure records, self-contained breathing apparatus (SCBA) testing, and hose, ladder, and pump test results. Breathing air samples and vehicle testing are also maintained.

Objective Three: Planning for Fire Protection and EMS

Emergency services' agencies exist in a rapidly changing environment. Tools and methods used to provide service are constantly changing, with which comes increased regulation of tasks and activities. There are new construction methods and risks to protect, and challenges that can quickly catch the unwary off guard. An organization must continuously monitor the internal and external fire protection environment in order to stay ahead of these challenges. When change occurs, the organization must also make course corrections in order to provide an appropriate level of service.

Clark County Fire District 6 has recognized the need for a stronger planning effort by pursuing this agency evaluation and the subsequent development of a 15-year master plan and three to five-year strategic plan.

The process of preparing for the future requires both discipline and organization. In order to be truly effective, an emergency services agency should consider planning on four distinct levels - operational, tactical, strategic, and master or long-range planning.

Operational planning is the preparation for ongoing agency activities and its integration into other regional response networks. Tactical planning is the practical preparation of incident strategies for potential emergency incidents. Strategic planning supports the department's mission and sets short-term departmental goals. Master or long-range planning is preparation for the agency's future service delivery effectiveness based on projections of the future service delivery environment.

Strategic and master planning processes give decision-makers targets by which the organization's service delivery can be measured. These plans include well-defined objectives that provide clear performance quantification. In addition, plans must provide for the safest and most efficient emergency response while ensuring that future goals and objectives are met.

Current Planning Processes

In conjunction with this agency analysis, the District is in the process of developing a short-term strategic plan and a long-term master plan. The completion of these plans will provide the District's decision makers with good strategies and recommendations to move the District into

the future. In addition, the District conducts short-term financial planning through their budgeting process. However, the District has not established other formal planning processes.

Operational Planning

Operational planning includes the establishment of minimum staffing policies, standardized response plans or protocols, NIMS[18] compliant regional incident command planning, mutual aid planning (locally and regionally), resource identification and planning, and disaster planning.

Maintaining a comprehensive and current emergency plan and resource list is the best opportunity for the department to ensure adequate resources are readily available to control major events. Resource lists should be available to incident commanders and general staff in the field, and in an emergency operations center.

Observation: The District is well prepared from an operational planning perspective. A minimum staffing policy has been adopted that ensures a minimum of 11 firefighters and one command officer per shift. A system of incident protocols that are based on incident type and resource requirements has been programmed into the computer aided dispatch system.

All Clark County fire chiefs have agreed to utilize NIMS as the framework for their regional incident management system. However, the group has not settled on a uniform tactical terminology and a formal agreement is yet to be developed.

The District utilizes a county-wide mutual aid agreement, as well as an automatic aid agreement with the city of Vancouver. The automatic and mutual aid agreements reviewed by ESCi provide for mutual and first response assistance, but do not contain an incident management system.

Recommendations:

- Work with regional fire agencies to develop a formal NIMS and incident management system agreement that also specifies a uniform set of tactical terminology.
- Revise mutual aid agreements to include the specifics of an incident management system.

[18] National Incident Management System.

Tactical Planning

It is critically important that firefighters and command staff have comprehensive, accurate information readily at hand to identify hazards, direct tactical operations, use built-in fire suppression systems, and fire resistive features. This can only be accomplished by building familiarization tours, developing pre-incident plans, and conducting tactical exercises; on-site or tabletop simulation.

The target hazard's list should be regularly updated and aggressive efforts taken to ensure response crews have copies of these plans available. Target hazards are defined by:

- Buildings with large potential occupant loads
- Buildings with populations who are partially or completely non-ambulatory
- Buildings of large size (greater than 12,000 square feet)
- Buildings that contain process hazards such as hazardous materials or equipment
- Buildings with significant governmental or community infrastructure responsibility
- Non-structural hazards that present a significant risk to the community

Pre-incident plans are easy to use, quick reference tools for company officers and command staff. At a minimum, a pre-incident plan includes information such as:

- Building construction
- Occupant characteristics
- Incorporated fire protection systems
- Capabilities of public or industrial responding personnel
- Water supply
- Exposure factors
- Facility layouts

The *National Fire Protection Association 1620*[19] provides excellent information on the development and use of pre-incident plans and should be considered as a reference.

[19] *NFPA 1620: Recommended Practice for Pre-Incident Planning*, 2003.

Once pre-incident plans are established and/or updated, training should be provided to all personnel who may respond to an incident at those locations. In addition, copies of pre-incident plans and drawings should be available on each response vehicle.

Observation: Pre fire planning is an ongoing process for CCFD6. In addition to general preplans, District personnel have identified high risk hazards such as the Washington State University campus and Legacy Hospital.

Master Planning

Master and long-range planning provide a broader perspective of where the organization will be in the future, and is typically developed for a 10 to 20-year period. Long-range planning can support the organization's health by predicting important future changes, and the organization's potential response to that change. Master planning analyzes an organization's current community demographics, service delivery, and finances, and projects these elements into the future by considering how the community will look after certain periods of time.

Master planning takes a big picture look at a fire district's long-range challenges and needs. Fire and EMS master planning focuses on three simple questions:

- Where are we now?
- Where will we need to be in the future?
- How do we get there?

With a clearly defined master plan, policy makers and fire district managers are better armed to identify the desired level and composition of emergency services and determine when they have been achieved or are deteriorating.

Observation: The District has developed a number of issue specific plans that were presented to the Board of Commissioners. Phase 2 of this project is the development of a 15-year master plan. The District does not have a process for updating the resulting master plan. ESCi recommends a biennial master plan update that reviews organizational and community changes and adjusts the master plan as needed.

Recommendation:

- Adopt a procedure for reviewing and updating the District's master plan.

Recommendations for Future Planning Needs

Strategic planning is often confused with long-range or master planning. Strategic plans address the organization's most immediate critical issues as well as short-term strategies for meeting long-range or master planning initiatives. The document, like a business plan, charts a clear direction for the future, clarifying an organization's mission, articulating its vision for the future, and specifying the values within which it will conduct itself.

Planning efforts should be based on organizational performance measures, both operational and administrative. The accumulation and analysis of data provides decision-makers with comparisons to past performance and potential trends in service delivery and administrative functions. Identified trends and changes in the local environment should be carefully analyzed and included n long-range and strategic planning or plan updates.

Observation: As previously noted, the District is developing a master plan and strategic plan over the course of this project. Data is being analyzed and internal and external surveys are being conducted. The data that is being developed provides the District with a baseline for future comparisons. Future comparisons will tell decision-makers if improvement has been made and where adjustments should be made in existing plans.

Capital and long-range financial planning are mentioned in the financial section of *Objective 1 – Organizational Overview*. Both of these planning functions are important. However, the current economic uncertainty has made them of utmost importance. The District would be well served to engage in the financial planning process in order to avoid future surprises.

Recommendations:

- Develop new organizational performance measures that provide the District with a comparison of current to future conditions.
- Engage in long-range financial and capital planning.

Emergency Management Planning

Emergency management, once a low priority in the mind of the public, has risen to the conscious level of everyday life. Nonexistent before 2001, the DHS (Department of Homeland Security), terrorist threat warnings, the Transportation Safety Administration (TSA) screenings on public transportation, and security checks at sporting events and concerts are now common parts of urban life.

Major disasters (man-made or natural) occur infrequently, but such events can result in a complete paralysis or destruction of municipal infrastructure, leaving local government incapable of providing basic services to the public. Classified as low-frequency events, disasters include high-risk consequences.

Well-prepared community governments prepare themselves, other institutions, businesses, and the public to survive disaster by mitigating hazards to eliminate or reduce risk. By developing and maintaining emergency action plans, and by exercising and updating the plans regularly, municipal governments help limit (or manage) the consequences of a disaster. The common term for governmental disaster preparedness is emergency management.

The Superfund Amendment and Reauthorization Act, found in Title III of the Federal Code (SARA Title III), defined requirements for the tracking of hazardous materials used in fixed facilities and established requirements for emergency response planning. Businesses must develop a plan for response to a release and that plan must be coordinated with the fire department.

Observation: The District has not developed plans for responding to disasters and has chosen to rely on the county-wide emergency management functions of the Clark Regional Emergency Services Agency (CRESA). The District has had limited input to these plans and exercises have

been infrequent. It is paramount that CCFD6 staff be well informed of their content and the District's role in their execution.

The District receives SARA Title III information that includes the type, quantity, and location of hazardous materials. While the District collects the information, it is not included in operational or pre-incident planning activities. The District should identify the existence of facilities identified by SARA Title III, ensure that businesses have developed plans, and that those plans have been coordinated with the District.

Recommendations:

- Provide training on the District's role in the execution of county-wide disaster plans.
- Conduct an annual table-top or full scale disaster exercise within the District.
- Identify SARA Title III facilities and ensure the presence of a facility plan that is coordinated with District operations.

Objective Four: Risk Management

The responsibility of a manager to safeguard organizational assets is just as applicable to a fire district as to any business. Although the purpose of emergency service providers is to manage community risk, it must also be concerned with risk to the organization and its members. The District is open to a variety of risks similar to those faced by every private organization.

There are interesting parallels between a fire district and private enterprise. A risk manager in the private sector tries to protect the assets of the enterprise and ensure that it can stay in business. Similarly, a fire district risk manager tries to protect public assets (including personnel, facilities, equipment) and ensure the agency can perform its emergency mission.

The fire district risk manager is also the custodian of public funds and assets. He or she must restrict any undesirable outcome that costs money, consumes public dollars, and reduces the capability to spend funds where they would do the most good. Fire district risk management includes:

- Periodic safety and risk inspections of district facilities, including ergonomic assessment of all workspaces
- Periodic comprehensive risk analysis consisting of claim experience, judicial issues, benchmarks, and insurance review
- Safety committee oversight
- Claim frequency review, workplace and work process evaluation, and loss reduction strategy development
- Employment risks, including records management and hiring and termination practices
- Liaison between the district and regulatory (safety) agencies
- Review of administrative rules and procedures for potential risk exposure
- Review of contracts and agreements for potential risk exposure
- Training of fire officers on emerging risk, such as national liability claim trends and injury prevention
- Periodic review of facility, liability, equipment, and vehicle insurance coverage

Risk Management Strategies

Managers should conduct a periodic analysis of the organization's risk management practices and claims. A risk analysis starts with the accumulation of loss and claim data that is used to evaluate past claims and identify trends. The analysis should include a cost-benefit analysis of the mitigation of a recurring claim to determine if mitigation efforts will cost more than accepting the risk and paying the claim. Claim trends and their associated practices can be used to predict future exposure and losses.

The outcome of the risk analysis is a short and long-term strategy intended to limit future claims. Finally, if an organization is performing its own risk analysis, it is important to seek a third party review to ensure that the analysis meets the requirements of underwriters, the regulatory environment, and current industry-wide trends.

Observation: CCFD6's risk manager is the assistant chief – administration. The District is a member of the Clark County Fire Rescue Risk Management Group (Risk Management Group). The Risk Management Group is a Washington nonprofit corporation that was organized to jointly provide insurance and risk management services to fire protection districts within Clark County. The Risk Management Group is made up of a commissioner from each jurisdiction and the Group's current risk manager is a Clark County Fire District 3 commissioner. The CCFD6 fire chief is the Group's registered agent.

The Risk Management Group studies claim experience, evaluating past losses and claims and providing advice to the member fire districts. The Risk Management Group is insured by VFIS, who provides a third party review and risk management strategies.

Compliance Programs for Regulations and Standards

The District is subject to the laws of the Washington Industrial Safety and Health Act,[20] Washington Administrative Code (WAC) adopted by the Washington State Department of Labor and Industries, and certain federal Occupational Safety and Health Administration regulations. Under these laws and regulations, fire districts are required to have an occupation-specific safety committee.

[20] Chapter 49.17 RCW (http://www.lni.wa.gov/WISHA/Rules/RCW49-17/default.htm).

Observation: The District maintains a safety committee that is based on Washington State Administrative Code and consists of representation from the union, volunteer association, and administration. Three members are currently on the committee, but more can be added as long as administration members do not outnumber the other two groups. Meetings are held once a month. The committee reviews all accidents, personnel injuries, and draws conclusions and makes recommendations. Station safety inspections are also reviewed. Comments and testimony from other District personnel is reviewed as needed. Minutes are maintained and posted on the website. Copies are provided to the Board.

Based on ESCi's review of the District's policies and SOGs, the District appears to be compliant with current laws, regulations, and standards. The District has been subject to a voluntary station air quality evaluation that found no hazards. In addition, the Department of Labor and Industries conducted a safety audit in 2002 and the District complied with the recommendations of the audit. In addition, the District has not conducted an internal NFPA 1500[21] or respiratory protection[22] compliance audit.

Recommendation:

- Conduct an internal *NFPA 1500* and respiratory protection compliance audit to ensure that appropriate safety activities are taking place.

Risk Associated with Employment, Termination, and Training Practices

In national surveys, firefighters are routinely considered the most trusted and respected members of our society. Firefighters are charged with the responsibility of entering and taking control of another person's possessions in order to extinguish a fire. Fire departments must ensure that the people they hire are of the highest moral character. Properly conducted background, criminal, reference, credit, and driving record checks are a way to determine if a person can meet society's standards, and reduce department risk.

[21] *NFPA 1500: Fire Department Occupational Safety and Health Program*, 2007.
[22] 29 CFR 1910.134 Respiratory Protection.

In addition to moral character, a fire district must also ensure that new employees or volunteers do not have a pre-existing physical condition that would prevent them from performing their duties appropriately, or a condition that would put them at risk while performing emergency duties. Fire districts should conduct a full medical exam on all new members that is compliant with *NFPA 1582.*[23]

Disciplinary processes should be considered as tools for correcting poor behaviors or performance. Discipline should be progressive and focused on a behavior(s) that need to be corrected. In addition to corrective action, a disciplinary process must be consistent and the corrective actions taken must be equal in severity to the behavior that is to be corrected.

All employees should be afforded due process for serious discipline issues. Specifically, the employee should be informed of the infraction and the potential consequences, an investigation should be conducted, and the employee should have an opportunity to respond to the charges. After all of these steps have taken place, the corrective action is taken.

It is important for a district to ensure that after becoming members of the organization, all personnel are evaluated periodically to ensure their continued ability to perform job duties safely and efficiently. Technical and manipulative skills should be evaluated on a regular basis. This provides documentation about a person's ability to perform their duties and provides valuable input into the training and education development process. Regular evaluation and feedback for personnel is critical to behavior modification and improvement.

Observation:

Employment Practices

The District contracts its firefighter recruitment through Public Safety Testing (PST) based in Bellevue, WA. PST requires a formal structured application, proctors the testing process, and administers the candidate physical ability test (CPAT). Pre-appointment medical exam and psychological evaluations are conducted by another contractor. It is unknown if the medical exam is *NFPA 1582* compliant. All new hires attend a recruit academy where all policy and procedures are reviewed.

[23] *NFPA 1582: Comprehensive Occupational Medical Program for Fire Departments*, 2003

Employee records are kept in locked file cabinets in the office administrator's office. All performance and disciplinary actions are maintained there as well. Coaching journals are maintained by company officers and are used for annual evaluations. They are not a part of personnel file. Exposure and medical files are secured in the same locked file cabinet, but are in a separate drawer and not intermixed with personnel files.

Recommendation:

- Review new hire medical exam criteria to ensure compliance with *NFPA 1582*.

Termination Practices

The District has a comprehensive formal discipline policy[24] that describes the process for progressive discipline and the documentation that is required. The discipline policy covers all discipline from corrective action through termination. Terminations are reviewed by legal counsel.

The process for an employee resigning or retiring from employment includes the recovery of keys, pager, and other equipment. The District has not developed a formal process or checklist to ensure that all equipment has been recovered and access to facilities and computer systems has been removed. Exit interviews are held irregularly.

Recommendations:

- Develop an SOG regarding the resignation or retirement of an employee that clarifies the process of recovering equipment and restricting access to facilities and computer systems.
- Develop an exit interview SOG that provides feedback to the District regarding job satisfaction.

Training Practices

A comprehensive evaluation of the training program follows in *Objective 6: Training Program*. Internal stakeholders reported that some training is perceived as just "check the box" and not

[24] Clark County Fire District 6, Discipline Policy, 2007.

taken seriously or actually conducted. External stakeholders reported a perception of poor performance on the fire ground.

The District should ensure that firefighters and companies maintain a high level of competency by conducting periodic testing. Competency testing documents individual and company skills, determines where additional training is required, and lowers the District's risk.

Individual and company skills tests should be conducted at least annually. Classroom testing should be conducted after most lectures. In addition to skills testing, an assessment of command and safety knowledge should be administered to all personnel. Command and safety assessments should be tailored to each position that is tested.

Recommendation:

- Develop and adopt a company and individual skills and knowledge testing system to be administered on an annual basis.

Safety Policies, Practices, and Programs

Emergency response involves stressful tasks that require a high degree of physical and mental fitness. The U.S. Fire Administration's *America Burning* publications, the U.S. National Fire Academy, volunteer organizations, labor unions, and others report that one-half of firefighter fatalities are the result of cardiovascular problems. Of those, many of the individuals had existing heart problems. It is clearly in the interest of the agency, individual firefighters, and the citizens they protect, to ensure that programs are in place to periodically review and support high levels of medical and physical fitness, in order to reduce the risk of injury or illness.

An ongoing fitness program is an important aspect of an overall firefighter training and performance system. *NFPA 1583: Standard on Health-Related Fitness Programs for Fire Fighters* (2000) provides excellent guidance to the development of a comprehensive fitness screening, improvement, and maintenance program. Another good source of guidance for ongoing fitness programs is the Wellness/Fitness Initiative jointly produced by the International Association of Fire Chiefs (IAFC), The Volunteer Council, and the International Association of Fire Fighters (IAFF).

Firefighter health and wellness includes mental health as well as physical health. Emotional stress from participation in horrific and traumatic events can be just as disabling as physical injuries. Critical incident stress debriefing and management are programs that provide the responder with an emotional support mechanism following a traumatic event. Chaplain programs can also provide emotional support as well as spiritual assistance when requested by the responder. Fire and medical services should have several programs available to the employee for dealing with traumatic events. These programs include:

- Employee Assistance Program (EAP)
- Critical Incident Stress Debriefing and Management
- Chaplain program

Employee health and safety practices include personal protective equipment (PPE) and a safety program. OSHA requires the employer to provide the appropriate protective ensemble and safety training in its use. In addition, *NFPA 1500* requires that a fire district have a formally designated Health and Safety Officer,[25] and an active safety committee that meets on a regular basis. The safety committee should be involved in the following:

- Reviewing safety complaints
- Conducting safety inspections and making corrective recommendations
- Review accidents and make recommendations to prevent future occurrences
- Develop safety procedures
- Research new equipment to improve safety
- Document and distribute minutes and maintain records of activities and findings

Personal Protective Equipment

The personal protective equipment (PPE) for today's firefighter includes a helmet, hood, jacket, pants, boots, and gloves. When operating machinery such as saws or rescue tools, the responder must also wear hearing and eye protection. The face shield supplied by most helmet manufacturers is not considered sufficient eye protection when operating power saws; a standard set of safety glasses or goggles must be worn when not wearing an SCBA face piece.

[25] The department safety officer should not be confused with an incident safety officer, a designation used to identify the individual assigned at any particular incident to assist the incident commander with monitoring the safety conditions of that incident.

Medical responders must wear, at a minimum, latex or nitrile gloves and eye protection for disease and blood borne pathogen protection. When communicable diseases are suspected, a HEPA filtration mask and gown must be added. It is the responsibility of the agency to provide and have readily available all of these protective items.

In addition to the standard firefighting and blood borne pathogen PPE, firefighters must be certified for the use of self-contained breathing apparatus (SCBA) in accordance with WISHA codes[26] and the code of federal regulations.[27] OSHA and has taken an aggressive stance in the enforcement of the respiratory protection regulations. Inspectors have consistently written more citations for violations of respiratory protection regulations than any other workplace violation.

Consequently, ESCi advises that the following WISHA and federal OSHA respiratory regulations are meticulously followed:

- The employer must adopt a written respiratory protection program with required worksite-specific procedures and elements for required respirator use as outlined in 29 CFR 1910.134.
- The employer must designate a program administrator.
- The employer must provide the appropriate respirator for the environment that requires protection.
- Records must be kept of all respirator usage, repair, fit testing, training, and medical qualification.
- Employees must be medically evaluated and approved for the type of respirator used.
- Employees must be correctly fitted and tested for the exact type and size of face piece used.
- Hair, including facial hair, cannot come in contact with the sealing surface of a tight fitting respirator.
- SCBA shall be worn for interior structural firefighting.
- Environments that were assumed to be immediately dangerous to life and health (IDLH) must be quantitatively measured and monitored prior to the removal of SCBA.
- Two-in, two-out: For interior structural fires, a minimum of two employees are needed to enter an IDLH atmosphere and a minimum of two employees shall be located outside the IDLH atmosphere.
- Respirators must be cleaned and inspected after every use and respiratory equipment shall be inspected monthly (minimum).
- Maintenance shall only be performed by certified technicians.
- Breathing air must be tested and certified of high purity.
- Compressed air cylinders must be certified on a periodic basis.
- Respiratory protection training must be comprehensive, understandable, and occur annually.

[26] WAC 296-305-04001 *Respiratory Equipment Protection.*
[27] 29 CFR 1910.134 *Respiratory Protection.*

Additional information regarding respiratory protection requirements is available through the Washington State Department of Labor and Industries website[28] and through the U.S. Department of Labor, Occupational Safety and Health Administration.[29]

Observation: All CCFD6 members are provided with full personal protective equipment that includes structural fire ensembles, communicable disease protection, and protective eye and hearing protection. The District has a comprehensive set of safety policies.

Safety training is provided District-wide and at shift safety meetings. Minutes of the safety meetings are posted on the internal website. The following is a breakdown of the District's safety components.

Figure 9: District Safety Components

Safety Component	Reference
Operational Safety	Policy 7 – Operations Policy 8 – Rope Rescue Operations Policy 9 – Hazardous Materials Operations Policy 10 – Aircraft Rescue and Firefighting Policy 14 – Ground Ladders Policy 16 – Electrical Policy 17 – Wildland Fire Operations
PPE	Policy 2 – Body Protection Policy 3 – Emergency Medical Protection
Non-emergency Safety	Policy 11 – Fire Training Policy 12 – Fire Service Equipment Policy 15 – General Facility Requirements
Infection Control	Policy 3 – Emergency Medical Protection
Apparatus Operation	Policy 5 – Automotive Fire Apparatus Equipment Policy 6 – Aerial Ladders
Respiratory Protection	Policy 4 – Respiratory Protection
Hazardous Materials	Policy 9 – Hazardous Materials Operations
Safety Committee	Policy 1 – Safety
Equipment Testing	Policy 13 – Testing Fire Service Equipment Policy 14 – Ground Ladders

The District provides a fitness and wellness program for all career personnel and on a limited basis for volunteers. The program is strongly supported by the union membership. Fitness equipment is available at all three stations.

[28] www.lni.wa.gov/wisha/.
[29] http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=12716&p_table=STANDARDS.

An employee assistance program (EAP) is available to all members, including volunteers.

The District has participated in the national Near Miss Program. Reports are submitted to the safety officer.

Job Related Injury Programs

The cost of an injured member is multi-faceted. There is an emotional cost to the employee and organization, a cost to the organization in lost experience and productivity, and in the case of career employees, a cost when a position must be backfilled to meet staffing requirements. On the surface, workers' compensation insurance appears to assist the employee, but most employees suffer emotionally from inactivity or by not being a contributor to the organization, not to mention the physical pain. Furthermore, workers' compensation insurance may not fully compensate volunteer members that cannot work at their regular employment, because of an injury sustained while serving in their volunteer capacity.

A rapid and effective reaction to the injury of a member can facilitate an early return to work and a cost savings to both the individual and the agency. The reaction starts when the member is injured. Organizations should have a procedure for on-the-job injuries, and that procedure should identify the steps that must be taken to make a workers' compensation claim. At a minimum, a packet of information and forms should be available to the member. If the injury is serious, supervisors should have instant access to the same packet and be able to facilitate its transmittal to the hospital.

After the member has recovered, a return-to-work program facilitates and speeds their recovery and return as a productive member of the organization. Non-combat assignments are often utilized while a firefighter is recovering. Non-combat assignments also provide the organization with a valuable resource for research and program development.

Observation: The District's *Serious Injury or Death* SOG specifies the procedure for a serious on-duty injury. The SOG covers basic procedures and notifications. Hospitals require a number of personal and work related items when a firefighter must be admitted to an emergency room and hospital. Consequently, it is advisable to prepare in advance a packet of workers' compensation insurance forms and other District paperwork for transport with the patient to the

hospital. Generic injury packets could be carried in the shift battalion chief's car and other command vehicles.

The District does not have a formal return to work policy or SOG. However, there is a light duty clause in the labor agreement between the District and the International Association of Firefighters (IAFF) Local 1805.[30] The language within the agreement implies that a medical release is required for restricted or light duty, but there is no such specification for return to unrestricted or regular duty. A work related physical capability test is not required for return to unrestricted duty when an employee has been off work for an extended period.

The District maintains an EOP that is accessible by all personnel and a CISD team is available when requested through dispatch.

Recommendation:

- Develop and adopt a comprehensive return to work policy.

Liability and Property Insurance Programs

Nothing is accomplished without some element of risk. Since avoiding risk altogether is impossible, effective management of risk is necessary. This involves a variety of strategies including transferring risk to a third party via insurance.

Observation: In reviewing the District's risk to natural hazards, it was determined the region is at greatest risk from earthquakes, flood, and severe weather. During the winter of 2008, the District experienced tornado activity, thought there was little or no damage to District properties.

While District facilities are at risk from earthquake and severe weather, it was reported that no District property is at risk from flooding.

An engineering seismic risk analysis has not been conducted, but due to its age, the Salmon Creek fire station is most likely not seismically sound.

[30] 2005-2007 Contract between Clark County Fire District 6 and Local 1805 International Association of Fire Fighters, Article 44 Pg. 27, 2004.

The District is a member of the Clark County Fire Rescue Risk Management Group who obtains group insurance through VFIS. The District has sufficient insurance coverage for liability and property risks. There are no open claims at this time.

Recommendation:

- Have a seismic risk analysis and mitigation options prepared by a qualified engineering firm.

Objective Five: Personnel Management

Human resource management (HRM) is based on the assumption that workers and members of organizations are individuals with varying goals, desires, needs, and wants. As such, the workforce should never be thought of as an inanimate business resource. Because people represent the very foundation of any successful organization, HRM should take a positive view of workers, assuming that all wish to contribute productively; and that the main obstacles to any endeavor result from a lack of knowledge, insufficient training, or process failure.

An organization's people are its most valuable resource. Careful attention must be paid to managing that resource to achieve maximum productivity for the organization and maximum satisfaction for the individual. A safe working environment, fair treatment, a system for member input, and recognition for a job well done are key components of job satisfaction. This section provides an overview of the District's personnel management practices.

Personnel Policies, Rules, Regulations, Manuals, and Handbooks

It is important that the organization's members know to whom they should go when they have a problem, question, or issue related to their relationship with the District. In large companies, this function is typically handled by a human resource department. Human resource staff handles questions, issues, and tasks related to appointment, benefits, performance, discipline, promotion, or termination. In addition, it is important that all members receive consistent information and advice regarding personnel rules, policies, benefits, and other human resource issues.

Observation: In CCFD6, the assistant chief - administration is designated as the human resource function manager. A new personnel policy manual is under development. It will consolidate existing SOGs, rules and regulations, and policies.

The District has a set of rules and regulations and a number of Board policies that address HRM issues. Board policies include, service awards, discipline, discrimination, employment of relatives, family medical leave, personnel file, substance abuse, violence in the workplace, hiring preference for volunteers, and a whistleblower policy. It was noted that there is a grievance procedure in the labor contract for represented employees, but a grievance procedure is not available for non-represented employees.

The District has a written summary of salary and benefits for career and volunteer personnel. ESCi could not determine if the summary was part of a policy or procedure, or if it is a stand alone document. Salary and benefits for represented employees is described in their labor agreement. The salary and benefits for non-represented employees are described in their personal employment agreement. Volunteer compensation and benefits to which they are entitled are listed in the written summary.

The Board Policy Manual states that the Board reserves all hiring, promotion, demotion, and discharge rights. The process by which these actions take place should be enunciated in a separate policy that also cedes the authority and responsibility to the fire chief with Board oversight.

New employees receive training on District policies and SOG during their recruit training period. While the employee is not required to sign off as having received policies and SOGs, they are required to acknowledge that they have received the training.

Recommendations:

- Complete the assembly of a personnel policy manual.
- Provide a grievance procedure for non-represented employees.
- Develop a salary and benefit policy for non-represented employees.
- Develop a recruitment, hiring, and promotion policy that places the responsibility for these functions on the fire chief.

Personnel Records

The maintenance of appropriately segregated, adequate, and up-to-date personnel records is critical in every organization that depends on the effective performance of its people. Hard copy and electronic records must have redundant systems to ensure that records are not accidentally lost due to natural or manmade causes. Computer records must be well secured, and systems must be in place to prevent unauthorized copying (hacking). Similarly, hard copy (paper) records should be copied and stored in two separate locations, and should be stored in locked, fireproof, insect resistant, and waterproof file systems.

Personnel records must be separated by type of record. Application and entry level records, as well as performance, discipline, and training records may be stored in the same file, but should all be separated. It is advisable to keep training records separate from the other more confidential personnel records. Medical records must be kept in a completely separate file cabinet.

Observation: All employee records are retained in locked, file cabinets in the office administrator's office or in the secured, locked storage area. The District is currently in the process of digitizing all documents. Employment applications are maintained by Public Safety Testing as part of their recruitment process for the District.

Performance evaluations are maintained through the employee's career and then filed in long-term storage. Injury and accident reports and health and exposure records are maintained separately from other employee/personnel records.

Compensation and Benefits

The purpose of this study was not to be a compensation analysis. Thus, this evaluation did not perform in-depth comparisons with other agencies of similar type and makeup. However, it is important that, within the context of this emergency services evaluation, to determine whether compensation appears to be a strength or weakness of the organization, as it affects employee morale, loyalty, and turnover.

Observation: Career staff receives the typical forms of compensation, including salary, health insurance, retirement pension, medical and dental insurance, deferred compensation plan, uniforms, and employee assistance program.

In 2007, a first class firefighter received a base salary of $66,456. The 2007 median family income for Clark County was $64,780.[31] Based on this comparison, compensation is neither a strength nor weakness for the District.

[31] Source: U.S. Census, 2000 & 2006 Fact Sheets for Clark County, Washington.

Disciplinary Process

Disciplinary processes should be considered as tools for correcting poor behaviors or performance. Discipline should be progressive and focused on a behavior that needs to be corrected. In addition to corrective action, a disciplinary process must be consistent and the corrective actions taken must be equal in severity to the behavior that is to be corrected.

All employees should be afforded due process for serious discipline issues. Specifically, the employee should be informed of the infraction and the potential consequences, an investigation should be conducted, and the employee should have an opportunity to respond to the charges. After all of these steps have taken place, the corrective action is taken.

Observation: A formal disciplinary process is identified in Board policy and is available in hard copy and on the District's intranet. A recent policy adopted by the Board outlined the discipline process. Training was conducted for all volunteers and all career shifts. The language is not part of the union contract, but has been signed off on by the union.

The disciplinary process is progressive and provides for various levels of discipline focused on correcting unacceptable behaviors.

Counseling Services

Emergency services bring otherwise ordinary people into life and death situations that sometimes end very tragically. Even though emergency personnel are trained responders, they do not have an impregnable shield that prevents them from being affected by traumatic events. Critical incident stress is a very real condition that affects all emergency service workers to some degree or another. Every emergency worker compensates for stress in a different way, and at times, is unable to adjust or compensate. The trigger for significant psychological trauma may be a single event, or a series of events compounding on each other.

Fire and EMS departments have recognized the need to provide a support system for their personnel who are exposed to traumatic incidents. Critical incident stress management (CISM) is an intervention program that provides short-term assistance to an individual that is or may be affected by traumatic stress. Personnel trained to conduct critical incident stress debriefings (CISD) help emergency personnel cope with an event immediately following the event. Longer-

term support is also needed and should be provided by mental health professionals. Often an EAP will provide this service. Failure to provide counseling and support can ultimately lead to the loss of a very valuable member.

Some organizations rely on department chaplains to assist with CISD or to provide immediate counseling assistance to the public. Chaplains are an excellent resource and ESCi encourages the establishment of a chaplaincy program that also encourages advanced training for the participating members from the faith community.

Observation: The District provides an employee assistance program, critical incident debriefing, and drug and alcohol intervention program. The programs are available under contract with Solutions Employee Assistance through the Southwest Washington Medical Center.

Application and Recruitment Process

Personnel recruitment is a critically important function for emergency service agencies. The American's with Disabilities Act (ADA) prohibits discrimination against individuals with physical disabilities, but permits organizations to establish the physical standards that are required to perform the primary functions of any job safely and effectively. History has shown that the most effective method of avoiding a litigation suit involving ADA is through reasonable and consistent application of job-relevant, pre-employment physical ability testing.

Applicants for volunteer and career positions in emergency services should be subjected to a formal physical ability test to measure the applicant's ability to perform critical physical tasks and functions. Furthermore, volunteer and career applicants must demonstrate their aptitude to learn and perform the necessary mental skills to perform the work through a specific written aptitude test.

Finally, all applicants should also be required to pass a pre-employment medical examination. The examination should be required after a contingent offer of employment as a volunteer or future career firefighter.

Experience within the fire service industry has shown that relaxing entry requirements for appointment to firefighting positions is not an appropriate method for recruiting new members. Instead, departments have more success by conducting activities which encourage qualified applicants to apply. In smaller communities, the activities will include demonstrations of the fire department's capabilities, youth programs such as an Explorer Post, and the inclusion of non-combat programs. Departments have also utilized targeted advertising and promotional campaigns.

Observation: As noted in the previous *Risk Management* section, the application, testing, and physical agility testing processes for District employment is contracted to Public Safety Testing of Bellevue, WA (PST). Recruitment is continuous and hiring lists of firefighter candidates are made available to the District twice a year. It is unknown if the company performs targeted recruitments for minorities or women.

The minimum qualifications for entry level firefighter or firefighter/paramedic are as follows:

- Minimum age: 21
- Must be a US citizen
- High school graduate or GED
- State issued drivers license
- No felony convictions as an adult, some juvenile convictions are disqualifiers
- Read and speak English
- Must successfully pass the medical-physical exam
- Associate degree in Fire Science, Fire Protection Technology, or one year of documented firefighting experience within twenty-four months
- Must possess EMT-Basic certification (or paramedic)
- Preference given to volunteers in good standing, up to ten percent of total score

The District also lists a set of automatic disqualifiers:

- One or more traffic crime convictions within 5 years (DWI, Suspended, Reckless, etc.)
- Suspension of driver's license within past 5 years
- Illegal drug substance usage or exposure within past 5 years
- Illegal use of illegal drugs in the last 5 years
- Illegal opiate use
- Illegal sale of ANY drug, including marijuana
- Pattern of illegal use of prescription medication
- Any adult felony conviction
- Adult misdemeanor convictions will be carefully reviewed
- Juvenile misdemeanor conviction will be carefully reviewed
- Unlawful sexual misconduct
- Lied during any stage of the hiring process

- Falsified application

PST also conducts the entry physical ability testing.

Applicants to the volunteer program have to be at least 18 years old, have a Washington State driver's license, take a general aptitude test, and are subject to a Washington State Patrol driving record and criminal background check. Volunteers who have been accepted received a short physical exam that is not NFPA compliant. Volunteer recruitment is not spelled out in a District SOG or District policy. The District gets volunteers from its cadet program and through District open house events and the use of sandwich boards. It was reported that the District is not so much concerned about a lack of volunteers, as they are with the large degree of turnover in the volunteer ranks.

Recommendations:

- Ensure that PST is conducting targeted recruitment activities for women and minorities.
- Develop a volunteer recruitment and testing SOG.
- Include a physical ability test in the volunteer selection process.
- Provide an NFPA compliant physical exam for successful career and volunteer applicants.

Testing, Measuring, and Promotion Processes

It is important that a department evaluate all of its personnel on a periodic basis to ensure their continued ability to perform job duties safely and efficiently. Technical and manipulative skills should be evaluated on a regular basis to provide documentation about a person's ability to perform their duties. An added benefit is the opportunity to determine training and education requirements.

A performance evaluation system should be adopted for all organization members, and evaluations should be conducted, at a minimum, on an annual basis. A volunteer evaluation program can be simplified and performance can be documented with a checklist. However, periodic feedback for personnel is critical to behavior modification and improvement.

Physical competency testing should also be conducted annually. The evaluation can mirror the entry physical capacity tests, but should, within limits, give some consideration for an individual's age. Competency testing involving typical emergency scene tasks is also a common method of evaluation.[32]

Physical capacity testing cannot detect all potential limiting conditions of an individual's health and fitness levels. A periodic medical evaluation is necessary. National safety standards for firefighters recommend an annual medical evaluation and bi-annual physical examinations. The examination should include all the criteria included in the entry-level exam, as well as periodic stress EKGs for persons over 40 and regular blood toxicology screening. Communicable disease vaccinations can also be updated as needed during this process. *NFPA 1582* or equivalent should be used as a resource for establishing the criteria of both entry-level and ongoing medical evaluations.

Organizational members want to be led by people who have a combination of good leadership qualities and technical skills. Consequently, promotional processes must measure both elements with a high degree of reliability. Individuals that are promoted without participating in a credible process often must overcome the perception of not deserving the promotion or of being promoted because of a relationship with the promoting authority.

At a minimum, promotional processes should include the following major elements and any of the minor elements:

- Leadership skill or attributes evaluation:
  - Personnel problem role play
  - Leaderless group interaction
  - Peer evaluations
  - Testing such as Meyers-Briggs, FIRO-B™, and MBTI
  - Input on identified leadership attributes
- Technical skill evaluation:
  - Written exam
  - Incident management problem
  - In-basket problem
  - Written research project
  - Training presentation
- Oral interview:
  - Oral presentation
  - Job parameter discussion and reasons for seeking position
  - Discussion of expectations

[32] A nationally recognized peer standard has not been developed for physical competency testing.

Observation: District staff is provided annual medical exams as part of the wellness program. If a firefighter fails the medical, which is handled through Portland Adventist Hospital, they are given the opportunity to work on light duty for a limited time. The individual's physician can provide a written report which will allow the employee to return to work.

Performance reviews are completed on an annual basis at the end of each calendar year for all District members. The process is reviewed annually with all supervisors.

Internal promotions are handled through an application and interview process. Testing is situational based on the position. The Board makes the final decision on promotions. Other recruitments are done on a situational basis at the Board's consent.

The District does not perform physical competence testing.

Recommendations:

- Develop an SOG that describes the process and criteria for use in the promotional testing process.
- Develop an annual physical competency test policy.

Health and Wellness Programs

Firefighting is a stressful job that requires physically and mentally fit personnel. Heart attacks account for approximately 50 percent of firefighter fatalities. Of those, 50 percent had existing heart problems. It is clearly in the interest of a fire department and the individual career/volunteer firefighters to ensure programs are in place to periodically review and support high levels of medical and physical fitness.

Entry-level knowledge testing and physical ability testing is also important to the success of an organization and the individuals that it hires. Testing provides a fire district with information as to whether an individual has knowledge, skills, and abilities (KSA) and is physically capable of performing the rigorous tasks involved in emergency services.

Physical ability testing cannot detect all potential limiting conditions of an individual's health and fitness level. A periodic medical examination is necessary and recommended by national standards.[33]

An ongoing fitness and wellness program is one of the most important aspects of an overall firefighter training and performance system; *NFPA 1583* provides excellent guidance to the development of a comprehensive fitness screening, improvement, and maintenance program.[34]

Observation: The District follows the Washington Association of Cities recommendations for medical standards for firefighters. Medical exams are provided annually for all bargaining unit personnel and are optional for management staff.

In addition to medical exams, the District offers a wellness program to all employees and volunteers. Exercise equipment is available in all fire stations.

[33] National Fire Protection Association. *NFPA 1582: Standard of Comprehensive Occupational Medical Program for Fire Departments*, 2003.
[34] National Fire Protection Association. *NFPA 1583: Standard on Health-Related Fitness Programs for Fire Fighters*, 2000.

Objective Six: Training Program

Providing for a safe and effective fire and emergency medical services delivery system requires a well-trained response force. The International Fire Service Training Association (IFSTA) states:

> *"Regardless of the particular system used, an effective training program will include: (1) the continuous training of all levels of personnel in the department; (2) a master outline or plan; (3) a system for evaluating the scope, depth, and effectiveness of the program: and (4) revising the program, as required, to include advances in equipment, products, and techniques."*

Without a high quality, comprehensive training program, emergency outcomes are compromised, District personnel are at risk, and the District may be held liable for the actions of its employees. Training and education of District personnel are critical functions for CCFD6.

Anthony Granito, author of *Fire Service Instructor's Guide*, states the following:

> *"A good training program is undoubtedly the single most important factor for producing and maintaining a high proficiency in any fire department. It not only produces high efficiency initially, but also affects future efficiency when we consider that the rawest recruit now being trained may be chief of the department or at least a senior officer in 20 or 30 years."*

The function of a training program is not merely imparting personal knowledge and technical skills to an individual, it is developing the self-confidence to perform correctly under stressful, if not hostile, conditions. A training program must be systematic, and must provide positive feedback to the trainee, firefighter, or officer. The goals of training should always focus on performance, never merely on acquiring a certain number of training hours.

Key elements of an effective training program should include:

- Training administration
- Training schedules
- Training goals and objectives
- Methodology for success
- Varied types of reinforcement
- Organizational priority to training
- Training division staffing
- Training facilities
- Motivation for training
- Company operations and performance
- Member targeted training
- Peer group commitment to training

General Training Competencies

In order to ensure that quality training is provided, it should be based on established standards and industry best practices. There are a variety of sources for training standards. In the state of Washington, training is required by state statute which states:

> *"All members who engage in emergency operations shall be trained commensurate with their duties and responsibilities. Training shall be as frequent as necessary to ensure that members can perform their assigned duties in a safe and competent manner but shall not be less than the frequencies specified in this standard."*[35]

Adequate training is critical if a fire district is going to be able to assure that it can effectively complete its mission of fighting fires and delivering emergency medical care. In addition, to effectiveness of service delivery, training directly effects an organization's ability to make sure that its personnel are able to operate safely without putting its citizens or its firefighter's at risk.

Observation: CCFD6 has an active training program with a goal of meeting the requirements of WAC 296-305-05501. Training is conducted on a regular basis and is incorporated into the District's daily operations.

A training plan is in place, dated 2007. The plan is extensive and the subject matter is comprehensive. The District has not developed specific goals and objectives for the training program. Instead, the District bases their training activities on a generalization of WAC requirements and individual certifications.

The District uses National Fire Protection Association and Delmar Fire Fighter standards and curriculum. Emergency medical technician (EMT) and basic life support (BLS) training is based on competencies established by the State of Washington's *Ongoing Training and Education Program* (OTEP). Paramedic and advanced life support (ALS) training and recertification are conducted under a Clark County Paramedic Training Program. The minimum EMS certification level for career personnel is EMT- Basic. The District currently has 21 paramedics.

The District provides training to its members at several levels that include entry probationary (recruit) training, ongoing skills development and maintenance, and specialized services. The District uses a number of standards and written sources in its training program, depending

[35] Washington Administrative Code 296-305-05501.

primarily on Delmar Manuals and NFPA standards. All are considered industry standards and of good quality.

Training is provided on mandatory subjects including:

- Fire Suppression
- Emergency Medical Services
- Hazardous Materials Awareness
- Respiratory Protection
- Two In / Two Out Rule and Application
- Hazard Communication
- First Aid/CPR
- Blood borne Pathogens
- Blood and Airborne Pathogens
- Confined Space Awareness

Ongoing Skills Development and Maintenance

The District's training program targets on-the-job and in-service training. Structural fire suppression training, rescue, and EMS training is delivered on a regular basis. Hazardous materials response training is delivered to District personnel at the awareness level. The District has no hazardous materials technicians. Limited wildland fire suppression training is conducted. The content and composition of the programs is well balanced and capable of addressing essential fire and EMS competencies and skills.

Apparatus operators (AO) are provided with drivers training, using the Emergency Vehicle Accident Prevention program (EVAP), a Washington State driver's training curriculum. Driver training is conducted on local streets and parking lots. Emergency vehicle operation training, under realistic conditions, is not conducted due to the lack of facilities for behind the wheel training. An adequate protocol is in place that specifies requirements that must be met before an employee can drive emergency vehicles.

Pre-incident planning is essential, not only because it helps firefighters to be knowledgeable of a building's floor plan and characteristics, but also as a means to enhance firefighter safety. While CCFD6 conducts pre-incident planning, ESCi found that pre-incident planning is not routinely incorporated into ongoing training activities. It is recommended that pre-incident planning be included as a component of the training program.

It is important that a training program establish well defined minimum annual training hours, or alternatively, a competency based approach. Doing so enables the training officer to properly develop training plans and provides measures by which training delivery can be gauged. The

District has not established minimum annual training hours or skills competencies. Instead, the District determines hours and training content on an as-needed basis, in order to meet training and recertification requirements. ESCi recommends that annual training requirements be established and measured.

Emergency medical responses constitute the majority of the District's call volume, making EMS training of critical importance. The District, under the direction of the medical program director (MPD) participates in an active and well structured program of continuing medical education (CME).

Training in fire suppression, hazardous materials, rescue, and related subjects is delivered by the District's training officer. EMS training, however, does not fall under the training officer's responsibilities. EMS training is assigned to an EMS captain who is responsible for all EMS training and education. The EMS captain does not report to the District training officer.

The fire and EMS training programs are entirely separate. Schedules are not coordinated and classes and subject matter are not synchronized. One day of the week is committed to EMS training, but beyond that, the two programs are not coordinated. Training should be managed and coordinated as a single, multi-faceted program. It is recommended that the fire and EMS training programs be merged into a single function that provides both types of training.

Entry Level Firefighter Training

The manner in which new firefighters are trained in their first months and years of employment lays the foundation for the development of their knowledge base and skills for their entire career. A good entry level training plan is the essential to assuring that new recruits, whether career or volunteer, get a good start.

Newly hired CCFD6 career firefighters are required to attend a recruit academy that is internally developed by the District. Following the initial academy, a series of training requirements must be met over the course of the first three years of employment, enabling the recruit to progress to the levels of Firefighter-Third Class in the first year, Second Class in the second year and First Class in the third year. The steps are well defined and based on appropriate criteria. At the end of the sequence, personnel are certified at the Firefighter I and II levels along with completing a number of District-specific training requirements.

New volunteers are not held to the same training requirements as career members. They also complete a recruit academy, but it is limited to Module One of the Firefighter I curriculum. In subsequent training, they are processed through the balance of the Firefighter I curriculum, along with District-specific training requirements that are similar to, though not as comprehensive, as the career training standards. Volunteers are offered the opportunity to advance to Firefighter II, which is not required.

Career and volunteer personnel do not train together and there is no training requirement to do so. Given that firefighters from both units will frequently find themselves working side by side on the emergency scene, and potentially putting themselves at risk together, the lack of mutual training is not appropriate. ESCi recommends that the volunteer and career training practices be combined and closely integrated into a single training and education methodology.

Competence Testing and Skills Assessment

Regular competence testing is an essential part of a comprehensive training program. Competence assessments assure that personnel are receiving adequate training and knowledge and skills can be put into practice. Skills' testing also serves as a tool for assessing the effectiveness of the training program and identifies areas that need to be emphasized when planning the training calendar.

The District conducts company level performance standard exercises every Tuesday. At this time, crews are evaluated based on their ability to complete certain emergency scene tasks and evolutions. If they be unable to perform the tasks correctly, additional training will be provided. Company performance testing, however, does not replace the practice of annual proficiency testing specific to each individual firefighter. Annual competency testing should be conducted to assure that personnel are receiving adequate training and that they are able to put their knowledge and skills into practice. ESCi recommends that the District establish a system of annual skills proficiency testing.

A formal evaluation of actual training needs can enable the training officer to identify areas of weakness as well as safety and operational risks. The evaluation will also guide how future training plans are established. CCFD6 has not undertaken the process of conducting a structured training needs assessment. Instead, training is based solely on state requirements

and NFPA standards. It is recommended that the District conduct a formal training needs assessment.

Recommendations:

- Incorporate pre-incident planning as a routine part of ongoing training.
- Establish annual training requirements and performance measures.
- Eliminate the separation of fire and EMS training by combining both into a single, comprehensive training program.
- Combine volunteer and career training activities into a collective training approach.
- Establish a process for annual skills proficiency assessment.
- Conduct a formal training needs assessment process.

Training Administration and Schedule

Administration

Effective training programs must be managed in a professional manner in order for training to be viewed as a high priority by the members of the organization. The training officer and others responsible for the training program should be experienced in the fire and EMS disciplines and specifically trained in the planning, management and administration of fire service training programs.

Observation: The CCFD6 training program is conducted under the direction of a training battalion chief. The current training officer (TO) has been in the position for just over two years and has 16 years of service time with the District. He is the only employee assigned to the training division and is not involved in training delivery. Training, classes, and drills are delivered by other officers.

The District has not developed a formal set of qualifications for the position of battalion chief – training. Currently, the TO position is a mandatory step in the process of becoming a shift battalion chief and personnel are assigned to the position until a shift battalion chief position is available. Consequently, the position of battalion chief – training is not considered to be a desirable position by most candidates. Consequently, the person filling the TO position changes often, resulting in a lack of consistency and direction in the program.

The current TO holds an Associate Degree in Fire Science and a variety of fire service certifications. His training and education had not prepared him for managing a training program. The current TO is highly capable and puts a great deal of effort into running an effective training program. However, ESCi recommends that the District establish a formal set of criteria for the TO position, and when appropriate, fill the position with a qualified fire training specialist.

In addition to training duties, the TO is tasked with the non-training projects and responsibilities including a duty officer rotation. Additional duties, with the exception of the duty officer rotation, lower the importance of the role of training and divert the attention of the TO from his primary tasks. ESCi recommends that the TO not be tasked with non-training projects that require a significant amount of effort.

Training workload is shared by the TO and the EMS training captain, taking a considerable burden off the TO. In addition, a volunteer captain conducts the volunteer recruit academy. No other staff support is provided. Training delivery is dependent primarily on shift battalion chiefs and line officers. Given the size of the organization and the critical importance of training and safety, it is important to assure that the training division is adequately staffed. ESCi recommends that the District conduct a workload analysis on the position of battalion chief – training to determine whether additional support is warranted.

As discussed earlier, the captain that is assigned to EMS training does not report to and is not connected with the training division. The EMS and training officers provide training with very little coordination. Assigning the EMS captain to the training division would provide support to the TO, and coordinate training activities. It is recommended that the EMS captain be assigned to the District's training division.

Training Schedule

CCFD6 schedules training on a regular and ongoing basis. An internal web site details scheduled training sessions and assignments. Training subjects are prescribed by the training officer and posted on the training web site. A calendar also details each day's scheduled training.

Recommendations:

- Establish a formal set of criteria for the TO position, and when appropriate, fill the position with a qualified fire training specialist.
- Conduct a workload analysis on the training officer's position to determine if additional staffing is needed.
- Discontinue the practice of tasking the TO with non-training projects that require a significant amount of effort.
- Assign the EMS captain to the training division.

Training Facilities

Two primary elements are required for the delivery of effective educational instruction. Quality training best occurs when realistic scenarios can be simulated and equipment can be deployed on an adequately designed training ground. The other essential component needed for effective training delivery is appropriate classroom instructional space.

Observation: CCFD6 has an excellent classroom facility at its main station in Hazel Dell. The room is well equipped with projection equipment and necessary resource materials. Station 62, Felida, has a large meeting room which is used more for public meetings than training. Station 63, Salmon Creek has a public meeting room, but it is currently used as and exercise equipment area.

The District does not have a dedicated drill and apparatus maneuvering facility. Instead, firefighters must train in parking lots and on public streets. There is a large paved area behind the main station that is often used and personnel have been able to locate other areas in the District in which to train. The closest training site is at Vancouver Fire Department. The facility is available to CCFD6 and is used as much as possible, though arranging for response area coverage when at the training ground is problematic.

Due to the considerable cost and space requirements associated with a fire training facility, ESCi does not recommend that the District build one. Instead, the District should explore the option of engaging in a training partnership with the Vancouver Fire Department. Developing a strong cooperative relationship between the two agencies training divisions, sharing resources,

instructors, and program management can yield substantial benefits to both organizations, while also enhancing emergency scene operations.

Recommendation:

- Explore the possibility of a training partnership with Vancouver Fire Department to share training resources, equipment, and program management.

Training Program Goals and Objectives

A training program cannot be fully effective and efficiently operated without a clearly defined sense of direction. A planning process, during which training needs and priorities are identified and goals and objectives are defined will set the course for a successful program.

Observation: As stated above, the District has not undertaken the process of defining clear goals and objectives for the training program. Instead, program guidance is based on a loosely defined practice of meeting the requirements of the WAC and the requirements of certification maintenance. The development of a formal training plan is strongly recommended.

Recommendation:

- Undertake a training planning process and establish clearly defined program goals and objectives.

Training Procedures and Manuals

Training programs are best organized around a training plan and a training operations manual that serves to establish a foundational basis from which the departmental training is delivered. Training manuals, lesson plans, and performance standards assure that all personnel are receiving the same information and developing similar skills.

Observation: The District's training program is summarized in the District's current training plan. The plan, while not specific in terms of detailed scheduling or program goals and objectives, provides a detailed overview of the program's content. The plan is supplemented by

training manuals, specifically the Delmar manuals that are used as the basis for lesson plans and course content.

Recordkeeping and Clerical Support

Training records are a vital resource with which the District can develop long-range training and education plans, as well as a means by which they can gather information that is useful in developing division reports, applying for grants, and documenting data on safety and other practices that may be invaluable in the event of a legal challenge.

Observation: CCFD6 maintains individual training records on all employees. Records are kept both electronically and on paper.

The records management system (RMS) utilized is *Firehouse Software®*, a software program that is capable of managing incident response information, training records, and a variety of other fire service data. Training staff reported that *Firehouse* is not working well, as it is currently being used, and it is not being used to its full capacity.

The process of entering training records into *Firehouse* lacks structure and a system of checks and balances. Line officers input reports on training activities, but an SOG has not been developed to ensure accuracy. Consequently, the current data is inconsistent making reporting, data retrieval, and analysis problematic. Furthermore, that lack of a procedure to check accuracy creates a potential for the malicious manipulation of training data. ESCi recommends that the *Firehouse* training module be properly configured and an SOG be developed regarding the input of training data.

Clerical support for the training division is available on a limited basis from existing administrative office staff. There is no clerical support position that is specifically assigned to work with the training program. Given the importance of training record keeping and associated administrative tasks, additional clerical support is recommended.

Recommendations:

- Fully configure Firehouse Software® to meet training data management needs.
- Establish an SOG regarding training entry data in the *Firehouse.*
- Provide additional clerical support for the training division.

Objective Seven: Fire Prevention/Public Education Program

When evaluating fire prevention programs, ESCi reviews the legal obligations, national standards, and best practices to which fire districts are accountable. Those responsibilities are specified in state laws, local codes, National Fire Protection Association (NFPA) Standards and Codes, International Building Codes (IBC), International Fire Codes (IFC), and Uniform Electrical and Plumbing Codes. These laws, ordinances, and codes establish the authority and responsibility under which the fire district delivers fire prevention and life safety services. The references usually provide for the promulgation of regulations governing hazardous conditions, fire safety, life safety, and explosion.

Fire prevention activities should include the following:

Fire Code Enforcement

- Proposed construction and plans review
- New construction inspections
- Existing structure/occupancy inspections
- Special risk inspections
- Internal protection systems design review
- Storage and handling of hazardous materials

Fire Safety Education

- Public education
- Specialized education
- Juvenile fire setter intervention
- Prevention information dissemination

Fire Investigation

- Fire cause and origin determination
- Fire death investigation
- Arson investigation and prosecution

Aggressive community risk reduction programs, delivered as a part of an active fire prevention program, is a fire department's best opportunity to minimize the losses and human trauma associated with fire. The International Association of Fire Chiefs (IAFC) has defined proactive fire service as:

> *"...Embracing new, proven technology and built-in protection, like automatic fire sprinklers and early detection systems, combined with aggressive code enforcement and strong public education programs."*

A fire department should actively encourage the use of fire resistive construction, built-in early warning, and fire suppression systems, as well as the development of an educated public, trained to minimize their risk to fire.

The most effective way to combat fires is to prevent them. A strong fire prevention program reduces loss of property, life, and the personal disruption that accompanies a catastrophic fire. The impacts of fire are significant; it is reported that nearly 50 percent of all small businesses that are forced to close due to fire, never re-open. The economic consequence of a fire is estimated to be 2.5 times the actual damage that the fire causes to a structure and its contents.

In our review of CCFD6, ESCi found that the agency has active fire prevention programs in place, having clearly recognized the importance of keeping fires from occurring. Below, ESCi examines the composition of the District's prevention programs and recommends steps toward enhancement of existing efforts.

Code Enforcement Activities

In the State of Washington, fire jurisdictions may choose whether they adopt a fire code for the occupancies that fall within their fire district. Cities within a fire district can adopt the code independently, even though they fall within the fire district's boundaries. Code adoption enables the fire district to perform fire prevention activities.

Unlike most states, each county in Washington has its own fire marshal. Fire districts and cities decide independently whether they will provide fire prevention services for their jurisdictions but fire districts have no code enforcement authority. If they choose to not provide prevention services, jurisdictional authority falls back to the county fire marshal. The county assumes responsibility for code enforcement, fire and life safety plans reviews, inspection services, and other prevention tasks.

Observation: Clark County Fire District 6 has not adopted a fire code. The District works closely with the Clark County Fire Marshal taking an active role in an advisory capacity in plans reviews, new construction projects, and related prevention activities. The county has adopted the International Fire Code and enforces it collaboratively with the District. This enables the District to be involved in code enforcement activities, but substantially limits its actual authority.

The District relies on county code adoptions and the Clark County Fire Marshal's office in fire code matters.

ESCi took a close look at the effectiveness of the current fire prevention service delivery system, focusing on the practice of using the county fire marshal for code enforcement. The following analysis will consider each of the essential components of a good fire prevention and public education program and how they are being delivered.

ESCi has learned that the Clark County Fire Marshal's office (CCFMO) has a reputation as one of the most active and effective prevention organizations in the State. The CCFMO covers a very large area, provides a wide array of services, and is unable to deliver a fully comprehensive level of activity to all county fire districts. For example, the fire marshal's office conducts inspections on higher risk commercial and assembly occupancies, but not those that are classified as lower risk.

It should be noted that ESCi is a proponent of residential fire sprinkler systems. The following summary provides some basic information regarding these systems.

Residential Fire Sprinkler Systems

Sprinkler systems provide a level of protection that is often misunderstood and overlooked. While sprinklers are required by code in most commercial buildings, eighty percent of the fire deaths experienced each year in the United States occur in single-family homes, where sprinklers are infrequently required. The installation of residential fire sprinklers in homes is by far the most effective way to prevent the loss of lives and property and is becoming a trend in many communities across the country.

ESCi believes strongly in the fire and life safety protection that is afforded by the installation of residential fire sprinkler systems. The adoption of an ordinance requiring the installation of sprinkler systems in new construction is recommended.

New Construction Inspection and Involvement

An essential component to a fire prevention program is new construction plans reviews. When proposed construction projects are scrutinized for compliance with fire code requirements, the reviewing agency has the opportunity identify critical issues early in the process and assure that they are corrected during construction.

When a new building is proposed within a fire district's boundaries, the structure is going to become the protection responsibility of the fire district for the building's life. If it is not constructed according to code, it may become a problem for the fire district in the future. Consequently, the fire district has a fundamental interest in ensuring that a structure is properly built.

Observation: CCFD6 is involved, to a limited extent, in the new construction plans review process. The District is informed of proposed projects and provides input, but lacks regulatory authority. When new buildings and subdivisions are proposed within the District, plans are sent to the District at the same time that they are provided to the CCFMO. This brings the District into the plans review process and ensures that they are aware of the project. CCFD6, however, only reviews and signs off on the site plan, after reviewing access, hydrant locations, egress, and other response related concerns. They do not review the structural design, fire protection system plans, or any other building related matters.

As currently practiced, the District is informed and consulted on new projects, and granted the opportunity to provide input and comment to the fire marshal prior to final approval. It should also be noted that the District's role is secondary to the fire marshal, and does not provide any actual authority over issues and concerns that may arise with a construction project.

General Inspection Program

Property inspections, designed to identify and eliminate potential fire hazards before an emergency occurs, are an important part of the overall fire protection system.

The recommended frequency for commercial fire safety inspections varies by the type of business. Generally, they are classified by degree of hazard. The table below describes the various hazard classes and the recommended frequency for fire safety inspections by class.

Figure 10: Recommended Frequency of Fire and Life Safety Inspections

Hazard Classification	Example Occupancies	Recommended Frequency
Low	Apartment common areas, small stores, and offices, medical offices, storage of other than flammable or hazardous materials.	**Annually**
Moderate	Gas stations, large (>12,000 square feet) stores and offices, restaurants, schools, hospitals, manufacturing (moderate hazardous materials use), industrial (moderate hazardous materials use), auto repair shops, storage of large quantities of combustible or flammable material.	**Semi-annually**
High	Nursing homes, large quantity users of hazardous materials, industrial facilities with high process hazards, bulk flammable liquid storage facilities, and facility classified as an "extremely hazardous substance" facility by federal regulations	**Quarterly**

The importance of effective code enforcement cannot be overemphasized. Without an effective program for regular formal fire inspections and code enforcement, hazardous conditions go unnoticed and uncorrected.

Observation: CCFD6 personnel complete pre-incident plans on a periodic basis, which, as a minimum, gives them the opportunity to observe serious and apparent hazards. They do not, however, conduct routine fire and life safety inspections. This is the responsibility of the Clark County Fire Marshal's Office. Further, the District does not have the authority to correct violations and remedy hazards.

As stated earlier, CCFMO, while providing excellent service, is unable to inspect lower risk occupancies. The CCFMO inspects and addresses code violations in the occupancies that fall into the high risk category, and the majority of the moderate risk occupancies. These occupancies include assembly, institutional, and other occupancies. Also inspected are buildings that are subject to the issuance of a fire code permit, which is required if a business has some form of hazard on the premises. They do not inspect small business or B occupancies.[36]

The CCFMO is not fully aware of the existence of all occupancies that should require a fire code permit. A system is not in place to reliably identify the presence of these risks. As a result, there are an unknown number of businesses that are not inspected on a regular basis.

[36] As defined in the Uniform Fire Code.

ESCi has found that there are gaps in the inspection program. It is acknowledged that the vast majority of buildings, especially those that pose the highest risks, are inspected by the fire marshal's office, and kept in compliance with fire and life safety codes. There are others however, that do not get inspected at all.

ESCi will often recommend that fire districts take on their own program of new construction plans reviews, compliance enforcement, and fire and life safety inspections. However, CCFMO delivers a high quality service and has highly effective relationships with the District. The system is working well and, based on our observations, is an approach that should be continued, rather than pursuing an in-house program. However, concerns previously listed are not addressed under this relationship.

It is appropriate that the District continue its relationships with the CCFMO, but it is recommended that they supplement those services to address the identified gaps. To do so, the District will need to establish a dedicated fire prevention staff position.

Further, a program should be developed, including the use of properly trained engine company crews, to conduct lower risk inspections under the supervision of the new fire prevention position, who would also be given responsibility for conducting inspections on higher risk occupancies. A self inspection program is also recommended to address fire prevention in small, low risk occupancies, where appropriate.

It will be important, when developing the inspection program, to include a system for record keeping. Incorporated in the system will need to be a scheduling methodology to assure that various occupancies receive timely inspections. Also of importance is a means of recording inspection results, tracking re-inspections, and reporting program results. Since the District is already using the *Firehouse Software*® RMS (*Firehouse*), we recommend that the same program be used for inspection program management.

Recommendations:

- Work with the CCFMO to establish closer relationship and greater authority in the plans review process.
- Identify specific occupancies that are not being inspected by the CCFMO and develop a plan for implementation of an inspection program.

Fire and Injury Public Education Programs

Providing fire and life safety education to the public to minimize the occurrence of fire and injury should be a priority for all fire agencies. Given the potential loss to a community, prevention education provides the best chance for minimizing the affect of hostile fires, medical emergencies, and natural and man-made disasters. All segments of the community's population should receive education that is age and culturally appropriate.

Observation: CCFD6 has developed a very active and effective public education program. It was readily apparent that one of the key reasons for the program's success is the presence of a dedicated public information officer. The public education program is very well organized and fully comprehensive, covering all of the subject areas of a contemporary public education program. Presentations are delivered to local schools including how to call 9-1-1, home exit drills, and heating and electrical appliance use and injury prevention. An internally developed curriculum is used in school programs, including a puppet show that CCFD6 personnel have developed and deliver.

Special needs have also been identified and are addressed, including juvenile fire setting identification and intervention, which is conducted by the pubic information officer and four other trained staff. The District is also active in the area Safe Kids Network and the Southwest Washington Fire Prevention Council.

Fire Investigation Programs

Accurately determining the cause of a fire is an essential element of a complete fire prevention program. When fires are set intentionally, identification and/or prosecution of the responsible offender is critical to prevent additional fires. Identifying the cause of accidental fires is also of

great importance. Knowing and understanding how accidental fires start is the most effective way to identify fire prevention and public education requirements.

Observation: CCFD6 line personnel perform preliminary fire cause determination at incident scenes. Company officers exercise their judgment to decide whether further investigation is warranted. If so, a District command officer is contacted and the CCFMO carries out the investigation. District personnel are trained in the fundamentals of scene preservation and basic cause and origin awareness. A solid working relationship exists between the District and fire investigation authorities, as well as local law enforcement.

The District describes their fire company fire cause training to be at an awareness level. While company officers can make a fire cause determination in many instances, it is likely that the level of training creates the risk of missing a clue that indicates an incendiary cause. The CCFMO investigators are well trained and capable. However, they must cover a large area and may not always be close at hand when needed. Consequently, ESCi recommends the delivery of additional fire cause and origin training to line personnel.

Regional fire investigation teams (FIT) that incorporate the resources of local, county, and state fire and law enforcement and fire investigators are a highly effective approach to enhancing fire cause and origin and arson prosecution practices. A regional FIT has not been established in Clark County. Development of a team in Clark County to supplement the investigative capabilities of fire marshal office staff is recommended.

Recommendations:

- Provide additional training for fire companies in initial fire scene evaluation and evidence preservation.
- Continue to build the relationship with CCFMO and local law enforcement to enhance cause and origin determination and arson investigation processes.
- Increase the level of fire investigation training for command staff and company officers.
- Develop a local (FIT) Fire Investigation Team.

Pre-Incident Planning

Firefighters are often making their first visit to a particular occupancy when they respond to an emergency call. A lack of familiarity with the building can easily cause a firefighter to become disoriented or injured. In order to operate safely and effectively, firefighters must be knowledgeable of a building's floor plan, unique hazards, access issues, and built-in fire resistive features. This can be accomplished via building familiarization tours, development of pre-incident plans, and conducting tactical exercises on-site or by tabletop simulation.

Observation: CCFD6 has an active and adequate pre-incident planning program.

Statistical Collection and Analysis

The primary purpose for maintaining a record of emergency responses is to evaluate the effectiveness of fire/rescue prevention and suppression programs and performance. This effort includes deployment strategies, training requirements, and the effectiveness of fire prevention, code enforcement, fire investigation, and life safety education programs. If a coordinated data collection and analysis process is in place, incident records can be analyzed to determine a number of important incident factors, such as:

- The types of incidents that are occurring most frequently
- The types of properties most often involved
- Fire causes
- Types of injuries and the age of the person affected

Observation: CCFD6 uses the *Firehouse* records management system to record emergency response data, training information and similar information. The District does not use *Firehouse* to track prevention activities.

The District collects fire cause information if the investigation was conducted by a District officer. However, fire cause and origin reports are also maintained by CCFMO, but are not readily available to the District. The District should acquire fire cause information from CCFMO. Doing so is valuable in that it would enable the District to monitor why fires are starting in their service area. This information would allow the District to target fire prevention and public education activities to specific areas of concern.

The District is not using the *Firehouse* program to the full extent of its capability with regard to tracking and analyzing fire incident occurrence and fire prevention needs. It is recommended that the District enhance its data collection and management practices by more effective use of the records management program.

Recommendation:

- Acquire and place in *Firehouse*, fire cause information that was investigated by CCFMO.
- Review current use of *Firehouse* and expand its use for incident and prevention data collection and management.

Objective Eight: Capital Assets and Capital Improvement Programs

Fire departments need a balance of three basic resources to successfully carry out their emergency mission - people, equipment, and facilities. Because firefighting is an extremely physical pursuit, the adequacy of personnel resources is a primary concern. However, no matter how competent or numerous the firefighters, the department will fail to execute its mission if it lacks sufficient fire apparatus distributed in an efficient manner.

Clark County Fire District 6 owns over $6.5 million in capital assets.[37] These assets are necessary to provide service and must be maintained and replaced as needed. Maintenance and replacement plans help to provide a stable and predictable financial environment. Organizations with capital asset plans for facilities, apparatus, and other high value equipment do not experience the negative financial swings and impacts of unplanned capital replacement. Capital plans identify when an asset should be replaced, and should identify the funding mechanism for replacement.

ESCi recommends the development of long-range capital plans for asset management, as well as specific plans to address current problems. Emergency service facilities and equipment are costly items. Capital planning reduces the potential for redundancy and misuse of hard-to-come-by public funds.

Long-range capital management plans should include a variety of items, such as:

- Location, timing, and cost of any new facilities or equipment
- Identified long-term maintenance and upgrade requirements for existing facilities and equipment
- Ongoing funding plans

Facilities

In the course of our fieldwork, ESCi toured the District's fire stations to evaluate their suitability, location, and condition. The following tables contain ESCi's observations.

[37] Fire district apparatus, equipment, and facilities at the District's estimated value.

Hazel Dell Station
8800 NE Hazel Dell Avenue

Built in 1991, the Hazel Dell station houses the District's administrative offices, as well as 24-hour response staff. Originally constructed in 1991, a wing was added in 2000 to bring the total station size to 23,000 square feet.

The building features five, double depth, drive through apparatus bays that house three engines, ladder truck, rehabilitation bus, rescue/brush vehicle, and several staff vehicles.

A four-bay maintenance shop is also located on the property which houses an air support and other units. Working space is compromised by storage in the shop.

• **Design & Location**	o The Hazel Dell Station is well located, providing good access to the core response area and to the Interstate 5 freeway. o The building is well designed, accomodating both 24-hour crew quarters and an adequate administrative office area. Storage and office space is sufficient, but at capacity.
• **Construction**	o The structure is a combination of wood frame construction with portions that are un-reinforced masonry. Building has not been seismically retrofitted.
• **Safety**	o A large and adequate apron area accommodates safe vehicle maneuvering in the front and the rear of the station. o A biohazard decontamination area is available. o Fire extinguishers provided meet code, and are adequate for occupancy. o Overhead doors have an electric eye and pressure sensors for door reversal in the event of an obstruction. o A breathing air compressor is properly installed and maintained. o Fire sprinkler system and alarm system are present.
• **Environment**	o Auxiliary power provides limited energy to an emergency circuit. Additional power is needed to support the entire station. o Condition of the building is good to excellent and appears well maintained. o Apparatus are not equipped with exhaust removal systems. o Adequate area exists for air and oxygen storage, tanks are properly secured.
• **Code Compliance**	o The building is ADA compliant.
• **Turnout Storage & Cleaning**	o Turnouts are stored in apparatus room, subject to daylight and fluorescent lighting as well as vehicle exhaust. o A turnout gear cleaning extractor is utilized.
• **Staff Facilities**	o Kitchen and staff quarters are good sized and adequate. o Separate men's and women's lockers and showers are not available. Door placards are utilized.
• **Efficiency & Security**	o Storage is adequate and free of trip hazards. o The floor plan is adequate with room for expansion or additional office space.

Felida Station
11600 NW Lakeshore Avenue

Built in 1987 and later updated and remodeled in 1999, this 14,800 square foot station features four, double depth, drive through apparatus bays that house three fire engines.

Space is provided for quarters for on duty personnel as well as a meeting room and public area. The building is clean and modern in appearance.

• **Design & Location**	○ The Felida Station is positioned for good access to Lakeshore Avenue, a major thoroughfare providing good coverage to the north and south. ○ The building adequately houses 24-hour crews and has a good sized public meeting area. Storage and apparatus bay space is full and limited.
• **Construction**	○ The building is largely of masonry construction, combined with portions of wood frame structure. Building has not been seismically retrofitted.
• **Safety**	○ Apron areas in the front and the rear of the station are large, providing good space for safe vehicle maneuvering. ○ There is no biohazard decontamination area. ○ Fire extinguishers are adequate. ○ Overhead doors have safety devices for reversal in the event of obstruction. ○ The station has both a fire sprinkler system and a fire alarms system.
• **Environment**	○ Auxiliary power is installed but under-sized. ○ Condition of the building is good. Some roof leaking issues were noted. ○ Facility shows indication of generally good maintenance. ○ Apparatus are not equipped with exhaust removal systems.
• **Code Compliance**	○ The building is ADA compliant.
• **Turnout Storage & Cleaning**	○ Turnouts are stored in apparatus room, subject to daylight and fluorescent lighting as well as vehicle exhaust. ○ A turnout gear cleaning extractor is utilized at the Hazel Dell Station.
• **Staff Facilities**	○ Kitchen and staff quarters are sufficient as used today, but have limited capacity for expansion. ○ Separate men's and women's lockers and showers are not available. Door placards are utilized. ○ Exercise equipment is in a vacant apparatus bay due to lack of available inside space.
• **Efficiency & Security**	○ Storage is at capacity and free of trip hazards. ○ The floor plan is adequate but with limited room for future expansion.

Salmon Creek Station
1200 NE 134th Street

Built in the 1970s and remodeled in 1988, this 7,000 square foot station houses one engine, career staff, and two volunteer/reserve engines.

The building has two, double depth, drive through apparatus bays, as well as living quarters for on duty personnel. A public meeting area is occupied with fitness equipment.

• **Design & Location**	○ The Salmon Creek Station is well locaed as far as access to its service area and the Interstate 5 freeway. Access to the main thoroughfare, 134th Street, is problematic due to traffic circulation problems. ○ The building is designed to adequately house 24-hour crews, but has limited room for expansion.
• **Construction**	○ The building is primarily of masonry, concrete block, construction. The living area is wood frame. Building has not been seismically retrofitted.
• **Safety**	○ Apron areas in the front and the rear of the station are small, providing difficulty in vehicle maneuvering. ○ There is no biohazard decontamination area. ○ Fire extinguishers are adequate. ○ Overhead doors have safety devices for door reversal in the event of an obstruction. ○ A fire sprinkler system is not present. ○ A fire alarm system is in place.
• **Environment**	○ Auxiliary power is installed and provides sufficient back up power. ○ Condition of the building is good with minor indication of deferred maintenance. ○ Apparatus are not equipped with exhaust removal systems.
• **Code Compliance**	○ The building is not ADA compliant.
• **Turnout Storage & Cleaning**	○ Turnouts are stored in apparatus room, subject to daylight and fluorescent lighting as well as vehicle exhaust. ○ A turnout gear cleaning extractor is utilized at the Hazel Dell Station.
• **Staff Facilities**	○ Kitchen and staff quarters are adequate, but with little room for expansion. ○ Separate men's and women's lockers and showers are not available. Door placards are utilized. ○ Exercise equipment is in the meeting area.
• **Efficiency & Security**	○ Storage is adequate and free of trip hazards. ○ The floor plan is adequate for current use but with limited room for future expansion.

Fairgrounds Station
505 NW 179th Street

The Fairgrounds Station is a fairly new building, completed in 2001. The station is 20,000 square feet and serves as a volunteer-only fire station, The West Precinct of the Clark County Sheriff's Office and offices of the Clark County Fire Marshal are included in the building.

The building has three, double depth, drive through apparatus bays, as well as living quarters for on duty personnel. One engine owned by another fire agency is housed in the station, and a number of sheriff and fire marshal vehicles are stored in the apparatus bays.

This station is not owned by CCFD6, and is operated under a cooperative agreement with two neighboring fire districts.

• **Design & Location**	o The Fairgrounds Station is located in close proximity to the Interstate 5 freeway and is located with good access to 179th Street, a major travel route. o The building is designed to adequately house 24-hour crews, currently occupied by resident volunteers.
• **Construction**	o The building is primarily of masonry, concrete block, construction.
• **Safety**	o Apron areas in both the front and the rear of the station are adequate, providing room for safe vehicle maneuvering. o There is no biohazard decontamination area. o Fire extinguishers are adequate. o Overhead doors have safety devices for door reversal in the event of an obstruction. o A fire sprinkler system and fire alarm system are present.
• **Environment**	o Condition of the building is excellent. o Apparatus are not equipped with exhaust removal systems.
• **Code Compliance**	o The building is ADA compliant.
• **Turnout Storage & Cleaning**	o Turnouts are stored in apparatus room, subject to daylight and fluorescent lighting as well as vehicle exhaust o A turnout gear cleaning extractor is utilized at the Hazel Dell Station.
• **Staff Facilities**	o Kitchen and staff quarters are adequate.
• **Efficiency & Security**	o Storage is adequate and free of trip hazards. o The floor plan is well configured.

CCFD6's fire stations have the appearance of being well built, adequate in their configuration, and well cared for. Some deferred maintenance issues were noted, including leaking at the roof eves on both Stations 62 and 63. Otherwise, maintenance is adequate.

None of the stations are equipped with a vehicle exhaust removal system. All three do, however, have automatic fans that engage when the apparatus bay doors are opened, evacuating vehicle exhaust. While these fan systems are effective, to some degree, they are not considered sufficient to assure the air quality considered necessary in this setting.

Station 63 is well located with regard to response coverage. Access issues exist, however, due to changes that have been made in the traffic flow configuration on 134th Street. Peak hour traffic, along with the placement of a traffic control island between the traffic lanes in front of the station make ingress and egress extremely difficult. The station is marginally adequate in light of current public facilities requirements and the capacity for remodeling or expansion is limited. In addition, the structure was built in an era when attention was not paid to seismic resistance. This station should be the first facility that is replaced when adequate funds are available.

A detailed analysis of station locations, response times, and travel distances are provided in *Objective 10: Delivery Systems* of this report.

Facilities Replacement Planning

Given the substantial cost associated with the upgrading and replacement of fire stations, long range financial planning is critical. Failure to accurately forecast future facility needs, predict the costs and dedicate funding to the anticipated demands will can place a fire district in a difficult financial predicament.

Observation: To its credit, CCFD6 has composed two detailed capital facilities plans, the most recent of which is dated February, 2007. ESCi has reviewed the plan; however, we have not completed a full analysis of the plan's content or a financial assessment. It appears to be comprehensive in scope and content, and accurately identifies facility needs and shortcomings, as well as offering a variety of alternatives to be considered for future financial planning.

The 2007 capital facilities plan was extensively reviewed by a District committee assigned to the project. The plan, however, has not been adopted. No long-range plan is in place for future

station replacement and long-range facility funding is not identified. After completion of this project, ESCi recommends that the 2007 capital facilities plan be reviewed, updated, modified as needed, and formally adopted.

Recommendations:

- Complete and adopt a long range plan for the updating and replacement of fire stations.
- Schedule station 63 for replacement.

Apparatus

ESCi conducted an assessment of the District's major front line fire apparatus. An overview is provided in the following table.

Figure 11: Apparatus Condition Table

Unit ID	Year	Miles/Hours	Type	Condition
E 61	2006	11,516 / 930	Pierce Pumper	Excellent
E 611	2001	125,863 / 4279	Pierce Pumper	Good
E 612	1992	83,751 / 6959	Pierce Pumper	Good
E 62	2006	12,168 / 678	Pierce Pumper	Excellent
E 621	1996	73,551 / 6,203	Pierce Pumper	Good
E 622	1987	6,174 / 7,359	Mack Pumper	Good
E 63	2006	17,004 / 1,472	Pierce Pumper	Excellent
E 631	2001	48,306 / 4,548	Pierce Pumper	Good
E 632	1984	68,320 / 252	Mack Pumper	Fair
S 61	2000	52,749 / 6,300	Ford 550 Squad/Rescue	Good
RH 61	1982	651,050 / NA	GMC Bus - Rehab	Fair
T 61	1981	13,313 / 2,782	Mack Aerial Platform	Fair

We found the front line vehicles to be in good condition. No critical issues were identified and all apparatus were properly equipped and well maintained. The District has recently added a full-time mechanic's position, charged with the ongoing repair and maintenance of vehicles.

There are nine engines in inventory, all of which the District considers to be front line apparatus. It is our opinion that the District should reduce the overall number of engines in continuous service by moving the two oldest engines from front line to reserve status. The units in reserve would be available for greater alarm incidents, but would have a low priority for maintenance, thus, reducing maintenance costs. ESCi also recommends that the District undertake a

thorough review of its engines, their frequency of use and actual need, to determine whether all of the apparatus in inventory is actually needed.

Apparatus Replacement

Fire apparatus and equipment has an identifiable service life span and future cost can be accurately forecast, making its replacement predictable, enabling the District to anticipate and plan for future needs. The importance of apparatus replacement planning cannot be over-emphasized.

Observation: The District has developed a long-range vehicle replacement plan, as detailed in a June 2007 report to the Board of Commissioners. The report details projected apparatus replacement needs, calendar, and expected costs, using the following criteria:

- Engine service life – 18 years
- Engine replacement frequency – one every two years, assuming nine engines in inventory
- Aerial platform service life – not clearly defined, but recommended for replacement in five years at 30 years of age
- Engine replacement cost in 2008 dollars – $429,076
- Aerial platform replacement cost in 2011 – $950,000

The report includes a detailed replacement schedule through 2016 (Appendix A of the CCFD6 report). ESCi analyzed the District's schedule, utilizing front line fire apparatus and excluding staff and support vehicles. The following chart illustrates the report's suggested replacement schedule and projected costs.

Figure 12: Apparatus Replacement Schedule from Staff Report

Unit	Year	Svc Life	Repl. Year	2008	2010	2011	2012	2014	2016
E 61	2006	18	2024						
E 611	2001	18	2019						
E 612	1992	18	2010				517,575		
E 62	2006	18	2024						
E 621	1996	18	2014					626,265	
E 622	1987	18	2005		456,246				
E 63	2006	18	2024						
E 631	2001	18	2019						757,780
E 632	1984	18	2002	429,076					
Sq 61	2000	15	2015						
Air 61	1996	15	2011				200,000		
T 61	1981	30	2011			950,000			
Total Annual Expense				**429,076**	**456,246**	**950,000**	**717,575**	**626,265**	**757,780**
Cumulative Liability				429,076	885,322	1,835,322	2,552,897	3,179,162	3,936,942

ESCi observed that engines 622 and 632 are past the replacement schedule proposed in the report and engine 632 was scheduled for replacement in 2008. Two years later, engine 622 is scheduled for replacement.

The District report uses an 18-year replacement schedule for engines and 30-years for aerial apparatus. Normally, ESCi uses a 20-year life span for fire engines and 25 years for aerial apparatus. Brush and squad type vehicles are figured with a 20-year service life. If an engine is experiencing excessive wear due to response activity, it should be placed on a 15 year front line cycle with five years as a second-out unit.

For comparison purposes, ESCi developed a replacement schedule based on 15 years of front line use for engines, with five years in reserve. Aerial apparatus replaced every 25 years and other apparatus on a 15 year cycle. ESCi used the following assumptions in 2008 dollars:

- Engine – $375,000
- Equipment for engine – $62,500
- Aerial apparatus – $800,000
- Equipment for aerial apparatus – $75,000
- Squad – $100,000
- Air unit – $150,000

- Annual inflation rate of 2.4 percent

The following table describes ESCi's recommended apparatus replacement schedule. The term *Reserve* signifies the year that unit is place in reserve status. *Surplus* signifies the disposal of a unit. ESCi gave arbitrary apparatus numbers for existing engines for illustration purposes.

Figure 13: ESCi Apparatus Replacement Schedule

Unit	Year	Svc Life	Repl Year	Repl Cost 2008	2008	2009	2010	2011	2012	2013	2015	2017	2022
App 1 (E61)	2006	20	2026	$437,500									Reserve
App 2 (E611)	2001	20	2021	$437,500								Reserve	
App 3 (E612)	1992	20	2012	$437,500	Reserve					Surplus			
App 4 (E62)	2006	20	2026	$437,500									Reserve
App 5 (E621)	1996	20	2016	$437,500					Reserve				
App 6 (E622)	1987	20	2007	$437,500	Reserve		Surplus						
App 7 (E63)	2006	20	2026	$437,500									
App 8 (E631)	2001	20	2021	$437,500								Reserve	
App 9 (E632)	1984	20	2004	$437,500		Surplus							
App 10 (E)	2009	20	2029	$437,500		449,318							
App 11 (E)	2010	20	2030	$437,500			458,752						
App 12 (E)	2013	20	2033	$437,500						492,581			
App 13 (E)	2017	20	2037	$437,500								541,599	
App 14 (E)	2022	20	2042	$437,500									609,786
App 15 (E)	2022	20	2042	$437,500									609,786
Squad 61	2007	15	2022	$100,000									139,380
Brush 62	2000	15	2015	$100,000							118,059		
Air 61	1996	15	2011	$150,000				161,061					
Truck 61	1981	25	2006	$875,000				939,524					
Total Annual Expense					0	449,318	458,752	1,100,585	0	492,581	118,059	541,599	1,358,952
			Inflation factor	2.40%	1.00	1.0240	1.0486	1.0737	1.0995	1.1259	1.1806	1.2379	1.3938
				Forecast Liability	0	449,318	458,752	1,100,585	0	492,581	118,059	541,599	1,358,952
				Cumulative Liability	0	449,318	908,070	2,008,655	2,008,655	2,501,237	2,619,296	3,160,895	4,519,846

The replacement costs for the vehicles in the chart above include equipment.

When comparing the two schedules, ESCi finds that the District's replacement schedule is more aggressive than ESCi's calculations. By 2017, the cumulative liability is approximately $776,047 greater for the District's plan than ESCi's. Based on the ESCi replacement schedule, the District's estimated apparatus replacement liability would be $4,519,846 through 2022. The District Board has resolved to establish reserve funds for capital replacement purposes. The following chart estimates the amount that needs to be reserved in order to purchase apparatus and equipment through 2022.

Figure 14: Apparatus Reserve Fund Calculation

	2008	2009	2010	2011	2012	2013	2014	2022
Beginning Fund balance	550,000	905,396	828,070	737,699	1,275	242,076	1,540	1,100,264
Transfer in	315,000	315,000	315,000	315,000	230,000	230,000	193,400	193,400
Interest (County Invest. Pool @ 4.67%)	40,396	56,992	53,381	49,161	10,801	22,046	9,104	60,741
Ending Fund Baland	905,396	828,070	737,699	1,275	242,076	1,540	204,044	2,454

If the District transfers $865,000 into a capital reserve fund in 2008 and continues to make transfers through 2022 (amount varies), the District should have sufficient funds to replace its apparatus through 2022 and beyond.

Both plans are reasonable in regard to replacement of apparatus and the commensurate cost. Regardless of which plan is acceptable, ESCi recommends that the District adopt an apparatus replacement plan and reserve funds for future capital investment.

Recommendations:

- Review and update the proposed vehicle replacement plan as needed and check the calculation methodology.
- Finalize and adopt a long range vehicle replacement plan.

Support and Small Equipment

Small equipment that has been designed for emergency service can take a significant bite out of an annual budget, and has the additional challenge of having its life limited by technological improvements.

Fire agencies should consider establishing a small equipment replacement plan. The plan, like those for facilities and apparatus, should include a schedule of equipment covered, estimated life expectancy, replacement cost, and annual contributions required to replace equipment as needed. It is recommended that all equipment with a value of more than $5,000, as well as groups of equipment with an aggregate value of more than $5,000, be included in the plan. Equipment that should be included in the plan include cardiac monitor/defibrillators, portable and mobile radios, computer equipment and systems, shop diagnostic and maintenance equipment, breathing apparatus and filling systems, and computer software (major systems).

Observation: At this time, CCFD6 does not have a small equipment replacement plan. Small equipment replacement funding is included in the annual budget for equipment that is known to be in need of replacement, but purchases are not subject to a scheduled replacement plan.

Some small equipment is scheduled for replacement when the District replaces apparatus. An apparatus replacement plan has not been adopted. However, small equipment will typically wear out or be damaged before fire apparatus is replaced and technological advancements necessitate replacement. Small equipment, at this time, is replaced on an as-needed basis.

Recommendation:

- Establish and fund a small equipment replacement plan.

Pump and Hose Testing

Two necessary procedures that must be performed and documented annually are pump and hose testing.

Fire pumps are one of the most important and expensive parts of a fire apparatus. The care and routine check of a fire pump is a necessity and should be conducted on a weekly basis.

Preventive maintenance programs require that all fire pumps be serviced regularly. This test includes drain and refill of the fluids in the transfer case, grease to the bearings, and lubrication of ball valves, linkage, drain valves, and pressure relief valves. In addition to the above checks, the booster tank water level gauge is also inspected along with all other gauges and pump panel lights.

The life expectancy of fire hose is determined by the care it receives. Hose is susceptible to mechanical injury, heat and fire damage, mold and mildew, and damage due to chemical contact, and excessive pressures. An inventory of all fire hose should be recorded along with a history of each section of hose.

Observation: After reviewing hose and pump test records, it appears the District is current and has been thorough with regard to hose and pump testing and recording keeping.

Turnout Gear Maintenance Program

Statistical data indicates that firefighter health and safety is at risk due to exposure to buildup of contaminants found in turnouts and other fire equipment. In the latest revisions to *NFPA 1500*[38] and *1971*,[39] the fire service has addressed the health and safety risks associated with contaminated turnout gear by requiring that protective clothing be cleaned at least once every six months.

Fire departments across the country are trying to find inexpensive ways by which to effectively comply with new standards. The life expectancy of gear depends on the type of department, number and type of fires fought, and the aggressiveness of the firefighters. Proper care will enable fire departments to lengthen their replacement cycle for new gear, thereby reducing capital expenditures. Many fire departments have realized significant savings by having gear professionally cleaned, evaluated, and, if necessary, repaired by certified companies.

Observation: Commercial extraction cleaning is the only approved method for cleaning turnouts. CCFD6 is utilizing an appropriate extraction type washing machine for its turnout gear.

[38] *NFPA 1500: Fire Department Occupational Safety and Health Program*, 2002.
[39] *NFPA 1971: Protective Ensemble for Structural Fire Fighting*, 2000.

Objective Nine: Staffing

The District utilizes a combination of career and volunteer staff to accomplish its mission and deliver services to its citizens. This section of the study provides an analysis of the organization's current staffing levels.

Administration and Support Staff Level

One of the primary responsibilities of a fire district's administration and support staff is to ensure that the operational members of the organization have the ability and means to mitigate emergency incidents. Efficient and effective administration and support are critical to a district's success. In the absence of sufficient oversight, logistics, planning, and finance, the agency will not meet its operational goals. Likewise, the administration of an emergency services organization requires sufficient resources to function properly.

At CCFD6, administrative and support functions are provided on multiple levels. Chief officers provide administrative support, emergency response, program management, supervision, and organizational direction. Battalion chiefs and captains are assigned to either administrative support roles or, more commonly, line-level management duties that are performed while working on a shift schedule.

The District's administrative and support staffing is summarized in the following chart. All personnel listed work 40 hours per week:

Figure 15: Administrative and Support Staffing

Administration/Support Staff	CCFD6
Fire chief	1
Deputy chief – Operations	1
Assistant chief – Administration/Support	1
Office administrator	1
Office assistant	1
Public education & information officer	1
Equipment & facility maintenance specialist	1
Battalion chief – training	1
EMS – captain	1
Volunteer program coordinator	.5
Total administrative and support personnel	**9.5**

Analyzing the ratio of administrative and support positions to the total operational positions within the District provides an understanding of the relative number of resources committed to this important function. An appropriate balance of administrative personnel to operational staff is crucial to the success of a district's mission and responsibilities. Based on experience with similar organizations, ESCi has determined that emergency services organizations, optimally, require a ratio of administration and support to staff to operational personnel in a range of 10 to 15 percent.[40] The following chart illustrates the current ratio of administrative and support personnel to operational staff.

Figure 16: Ratio of Admin & Support to Operational Staff

Position	Total Personnel	FTE[41]
Battalion chief	3	3
Captain	3	3
Lieutenant	6	5
Firefighter, paramedic	20	20
Firefighter	19	19
Volunteers[42]		
Captain	3	1.00[43]
Lieutenant	5	1.67[44]
Firefighter	37	12.33[45]
Total operational staff	**96**	**65.00**
Percent of operational officers to firefighters	26.32%	
Ratio of administration and support to operational staff		14.62%
Fire District total	**105.5**	**51**

Observation: As illustrated in the chart above, the District falls within the desired range of a 10 to 15 percent ratio of administration and support staff to total personnel. While the District is at the upper end of the range, departments with EMS and fire prevention functions often tend toward the higher end of that paradigm. The District sustains fire prevention and EMS functions; consequently, ESCi views the District's ratios of administrative and support staffing as

[40] ESCi recognizes that organizational goals, regulatory environment, and workload are the actual drivers that determine the number of administrative personnel required to deliver support services. The 10 to 15 percent ratio is used for comparison purposes.
[41] Full-Time Equivalent
[42] The authorized strength of the volunteer unit is 45 personnel.
[43] A 3:1 ratio is used to calculate the number of FTE.
[44] Ibid.
[45] Ibid.

appropriate for this organization. In the Training section of the report, ESCi recommends that the District provide additional clerical support for the training function. The training function could be supported with the current clerical staff if they have the capacity for additional assignments. Otherwise, an additional part-time clerical position may be warranted.

Operational Staffing Level

It takes an adequate and well trained staff of emergency responders to put the appropriate emergency apparatus and equipment to its best use mitigating incidents. Insufficient staffing at an operational scene decreases the effectiveness of the response and increases the risk of injury to citizens and responders alike.

Operational staffing is accomplished utilizing a combination of career, student residents, and volunteer personnel. Career staff work 24 hour shifts seven days a week throughout the District's stations. Volunteer personnel respond to their assigned station from their homes or business. Student residents provide response coverage between 7:00 p.m. and 7:00 a.m. at Station 151 (fairgrounds).

The District assigns 16 career firefighters, including captains and lieutenants, to each of three 24 hour shifts. One battalion chief is also assigned to each shift. A minimum staffing SOG has been adopted that requires a minimum of three career firefighters per engine, staffing four engines. When the number of on-duty personnel drops to 11 due to leave usage one engine is taken out of service and replaced by a two person squad. The following chart describes the District's minimum staffing requirement by station:

Figure 17: Minimum Staffing by Station

Station	Personnel
61	5
62	3
63	3
Total	**11**

The District has an authorized volunteer strength of 45 personnel. The current strength[46] is 36 plus nine recruits in training. The ratio used by the Washington Surveying and Rating Bureau

[46] At time of fieldwork.

and the Insurance Services Office (ISO) to determine the effective number of volunteer responders is 3:1. Based on this ratio, CCFD6 should have 15 volunteer responders available at any time. However, it is ESCi's experience that this ratio is optimistic and it is likely that the actual number of volunteers available to respond is significantly lower, especially during the work day. Data was not available to conduct a statistical analysis of the ratio of volunteer's to actual responders.

Functional or Divisional Staff Allocation

The allocation of administrative staff is adequate for an organization the size of CCFD6. The District has placed a high degree of importance on EMS response and training and has allocated personnel specifically for those functions.

A maintenance specialist has also been allocated for apparatus, equipment, and facilities maintenance. Based on the number of stations, apparatus, and equipment, a single maintenance person may not be adequate. The District should closely monitor its maintenance routines to ensure that all preventative maintenance is being performed on a timely basis.

A half-time volunteer program coordinator has been allocated whose function is to support the volunteer program. The volunteer program should receive support from several other positions including the training officer, EMS captain, shift battalion chief, and assistant chief if those positions have adequate functional capacity. The volunteer program coordinator position should be reviewed for its functionality and appropriateness and the position should be modified if found to lack the appropriate functionality.

Recommendations:

- Monitor and evaluate the District's maintenance functions and determine if additional assistance is required to complete all preventive maintenance.
- Review the functions of the volunteer program coordinator and modify the position to suit the District's needs.

Staff Scheduling Methodology

District administrative and support staff work 40 hours per week on a five day-a-week schedule. Administrative personnel are available during normal business hours and a receptionist greets the public at the front door of the office.

Career operational personnel work a three platoon rotating 24 hour on-duty, 48 hour off-duty shift.

The chief, deputy chief, assistant chief, and training battalion chief work a 40 hour work week. They are also required to serve as the District's duty chief once every four weeks in rotation. The duty chief is the second-out chief for response to concurrent incidents, or provides incident management or safety officer support for the shift battalion chief. The duty chief function has been adopted informally and is not codified in the District's SOGs. Consequently, there are no specific directions regarding the duty chief's qualifications, function, responsibilities, accessibility, or type of incident they are to respond to.

Recommendation:

- The qualifications, function, responsibilities, accessibility, and type of response required of the duty chief should be formalized in an SOG.

Standard of Coverage and Incident Staffing Performance

Tasking at fire incidents can be broken down into two key components - life safety and fire flow. The life safety tasks are based on the number of building occupants, their location, status, and ability to take self-preservation action. Life related tasks involve the search, rescue, and evacuation of victims. The fire flow component is the delivery of sufficient water to extinguish the fire and create an environment within the building that allows entry by firefighters or escape by occupants.

The number and types of tasks needing simultaneous action will dictate the minimum number of firefighters required to combat different types of fires. In the absence of adequate personnel to perform concurrent action, the command officer must prioritize the tasks and complete some in chronological order, rather than concurrently. These tasks include:

- Command
- Scene safety
- Search and rescue
- Fire attack
- Water supply
- Pump operation
- Ventilation
- Back-up/rapid intervention

The Commission on Fire Accreditation International (CFAI, now a subsection of the Center for Public Safety Excellence) has developed a model critical tasking analysis for the number of personnel required on scene for various levels of risk which is provided in the following figure.

Figure 18: Critical Staffing Requirements by Risk

Minimum Firefighting Personnel Required Based On Level of Risk				
Critical Task	Maximum Risk	High Risk	Moderate Risk	Low Risk
Attack line	4	4	2	2
Search and rescue	4	2	2	
Ventilation	4	2	2	
Backup line/rapid intervention	4	3	2	2**
Pump operator	1	1	1	1
Water supply	1	1	1	
Utilities support	1	1	1	
Command/safety	2	2	2	1***
Forcible entry	*			
Salvage	*			
Overhaul	1*			
Communication	1			
Chief's aide	1	1		
Operations section chief	1			
Logistics	1			
Planning	1*			
Staging	1*			
Rehabilitation	1			
Division/group supervisors	2*			
High-rise evacuation	10*			
Stairwell support	10*			
Total	**49**	**17**	**13**	**4-6**

* At maximum and high-risk fires, additional personnel may be needed for these tasks
** Backup line may not be required for certain incidents
***Can often be handled by the first due officer.

The District has conducted a critical task analysis and has determined that between 11 and 17 personnel are required for structure fires.[47] As noted earlier, the District's minimum staffing level is 11 personnel, with a maximum of 15 personnel on duty when no personnel are on leave.

[47] Clark County Fire District 6, Standard of Response Coverage, Part 8 – Department Operations, 2005.

The following chart describes the District's actual minimum staffing for selected incident types and contrasts that staffing with the CFAI recommendation.

Figure 19: CCFD6 Incident Staffing Minimums

Incident Type	Risk	CFAI	Engine	Truck	Other	B/C	CCFD6 Staffing*
Low Rise Residential Fire	Mod	13	12	4	1	1	18
High Rise Residential Fire	High	17	12	4	1	1	18
Commercial Fire	High	17	12	4	1	1	18
High Risk Commercial Fire	Max	49(21**)	12	4	1	1	18
Vehicle Fire	Low	4-6	3				3
Brush Fire (large)	Mod	13	6		2	1	9
Vehicle Accident	Low	4-6	3		2		5

*First alarm assignment – Includes mutual aid response
**A minimum of 21 personnel are required for the first alarm response.

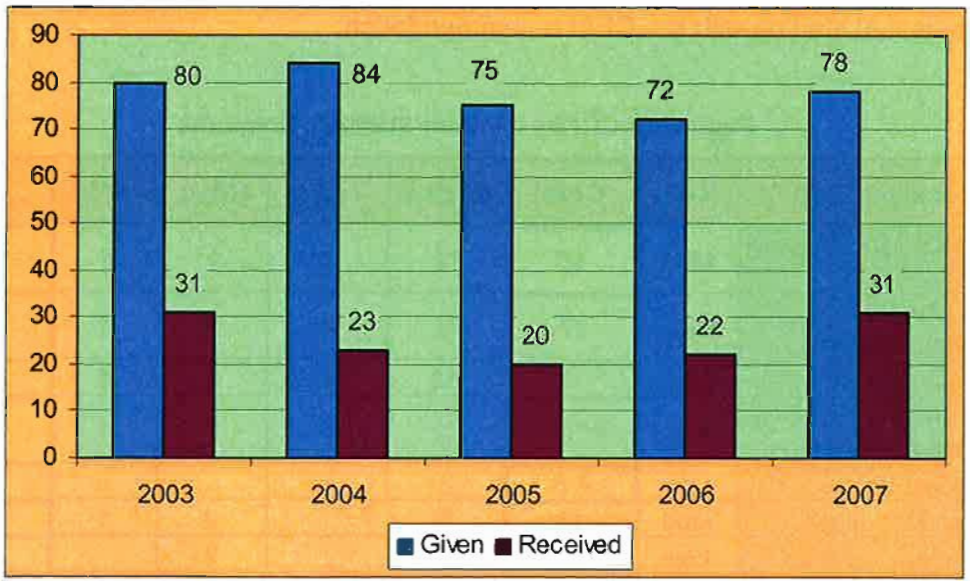
Based on the District's minimum staffing of 11 personnel, 12 including the shift battalion chief, the District does not have enough personnel to meet the task requirements for moderate, high, and maximum risk occupancies without utilizing volunteers or mutual aid.

The District has sufficient on-duty personnel for responses to low risk incidents, but has chosen to respond with fewer than the recommended number of personnel to vehicle or brush fires.

Observation: The District utilizes a combination of career, volunteer, and mutual aid personnel to provide sufficient response staff for moderate, high, and maximum risk incidents. The District depends primarily on career responders for low and moderate risk incidents.

The response to moderate, high, and maximum risk occupancies has been supplemented by volunteer responders and mutual aid from the city of Vancouver or Clark County Fire Districts 11 and 12. Mutual aid should be balanced between agencies so that both organizations are receiving similar levels of or a fair exchange of service. The following graph illustrates the number of mutual aid responses given and received by the District.

Figure 20: Mutual Aid Given & Received by CCFD6



The District is providing mutual aid to its bordering agencies at the rate of 3:1 incidents. Mutual aid is mildly out of balance and the District should evaluate options for utilizing neighboring response resources in a more balanced manner and for supplementing the District's response.

A group of 45 volunteers supplements the career response. However, due to the lack of appropriate data, it is unknown if the volunteer force is responding in a reliable and effective manner. The District should begin acquiring the following data to determine the effectiveness of the volunteer response:

- Number of volunteers that respond to each incident
- Turnout time for individual volunteers
- Turnout time for volunteer apparatus
- Response reliability by time of day

Based on comparisons with the CFAI minimum staffing requirements, the District is not providing an adequate response to some low risk incidents. The District should revisit the critical tasking requirements of these responses to determine if the initial response is adequate.

Fire departments respond to substantially more moderate risk structural fire incidents than high or maximum risk. The District should consider adding one additional responder per shift in order to guarantee a minimum of 13 personnel for moderate risk incidents.

Recommendations:

- Evaluate options for balancing mutual aid to supplement the District's incident staffing.
- Evaluate the reliability and effectiveness of the District's volunteer response by acquiring volunteer response data.
- Determine if the current response force for low risk incidents is adequate and adjust response protocols if necessary.
- Consider raising the District's career minimum staffing to 12 personnel per shift.

Firefighter/EMS Staff Distribution

The minimum staffing on CCFD6 engines is three personnel and two on the squad. When daily staffing rises above 11 personnel and a lieutenant or qualified acting officer is available, a second engine is staffed at Station 61.

The District provides a career first responder emergency medical response at the advanced life support (ALS) level. When all career units are committed to incidents, the response drops to basic life support (BLS) until the arrival of an ambulance. The District's career staffing plan requires the placement of at least one paramedic on each apparatus. In certain instances, the paramedic may also be a company officer.

Personnel Responsibilities & Activity Levels

In addition to normal job position functions, additional routine duties and assignments are often handled by fire companies. The company officer may have a special, assigned task, and in some cases, tasks will be assigned to specific firefighters. Assigned tasks are based on the interest and skills of the individual officer or firefighter or station assignment.

Observation: Routine duties are assigned by position and areas of personal interest. Special duties within the District are assigned to one of the battalion chiefs, who may delegate responsibility to a fire company or company officer.

District committees are shown in the following table. Not all committees are codified in the District's standard operating guidelines. Committee membership is determined by interest and supervisor assignment.

Figure 21: CCFD6 Committee List

Committee	Members
Safety	Meets monthly. Management/union representatives
Apparatus and Equipment	Assigned by interest
Volunteer Training	Handled by volunteer program coordinator
Technical Rescue Team	Team members
Operations Group	Chief officers, station captains
Officers Group	Company officers, battalion chiefs

Utilization of Career and Volunteer Companies

The CCFD6 Board has adopted the following response objectives:

Figure 22: CCFD6 Response Objectives

Objective	Measurement	Percentile Target
Turnout time	60 seconds	90% of the time
Fire response/travel time – 1st engine arrival	5 minutes	90% of the time
Fire response full 1st alarm arrival	8 minutes	90% of the time
EMS response – 1st unit arrival	5 minutes	90% of the time
EMS response – ALS unit arrival	8 minutes	90% of the time
TR response – 1st trained personnel arrival	8 minutes	90% of the time
TR response – sufficient personnel arrival	30 minutes	90% of the time

*TR – Technical rescue

The adopted response objectives clearly define the District's goals, especially for career companies. The turnout time objective is not realistic for volunteer companies, and volunteers will have difficulty meeting the full first alarm arrival objective unless they are sitting in the station. Specific volunteer response objectives should be added to the District's response objectives and measurements taken to determine the effectiveness and reliability of their response.

Recommendation:

- Add volunteer-specific response objectives to the District's response objective policy.

Objective Ten: Delivery Systems: Suppression, Rescue, EMS, HazMat

Alarm Systems, Communications Infrastructure, PSAP, & Dispatch Center

Fast and efficient communications and dispatch operations are essential as they directly affect fire/EMS service levels, response times, and overall service delivery. In the vast majority of incidents, the 9-1-1 call taker is the first point of contact for an emergency. The call taking and dispatch functions are the first step in the time sensitive process of resolving or mitigating an emergency.

The dispatch function is critical to all communities. In communities where career responders are supported by volunteers it becomes even more important. Volunteers have longer turnout times than career staff which make the call processing function critical when considered in relation to the total time it takes to respond to an incident.

Call taking and dispatching are the core business functions of a professional dispatch center. Specific protocols set standards for these functions and define the level of service provided to responders and the citizens they serve. Like any other component of the emergency service delivery system, dispatch functions should be measured to ensure that performance is appropriate. Industry standards suggest that 9-1-1 call answering and dispatching should take 90 seconds or less, 95 percent of the time. In addition, quality assurance programs ensure that the appropriate policies and procedures are being adhered to.

Observation: CCFD6 receives communication and dispatch services from the Clark Regional Emergency Services Agency (CRESA). CRESA is an independent multi-functional agency whose authority is derived from an interlocal agreement.[48] The dispatch center is the primary public safety answering point (PSAP) for Clark and portions of Cowlitz and Skamania counties. CRESA provides dispatch services for all of the police, fire, and EMS agencies within the county. The agency also provides emergency management and technical communications services to its member agencies. They employ 85 personnel, 62 of which deliver direct dispatch and communication services.

[48] Revised Code of Washington 39.34.

CRESA dispatches fire, police, and medical units throughout the county. The number of dispatchers on duty varies and the center utilizes a peak staffing model that allows for fewer personnel during low activity periods. In addition to call takers and police dispatchers, the communications center has a minimum of two dispatchers dedicated to fire dispatch 24 hours a day and a third is available during peak hours. The third position is scheduled to increase to 24 hours in 2008.

The communications center is housed in a modern facility in downtown Vancouver. The facility is at maximum capacity and will require additional space in the near future. The operations floor is well designed and uses ergonomically designed console areas. The center has comprehensive redundant systems and the Washington State Patrol dispatch center serves as CRESA's backup facility, if the main facility is abandoned in an emergency. Standby power consists of a high capacity battery system with diesel generator backup.

The agency's personnel operate under a comprehensive set of written directives for EMS, police, and fire dispatching. All directives are available to personnel via the center's intranet. The center uses the Power DMS® distribution system to track employee acknowledgement when a directive is adopted or revised. Directives are reviewed and revised as needed annually.

The communications center is accredited by the Commission on Accreditation of Law Enforcement Agencies (CALEA) and by Medical Priority Dispatch System (MPDS). CRESA is one of only a few dispatch centers in the world that have received the MPDS accreditation. All dispatchers are Emergency Medical Dispatch (MPDS) certified.

The dispatchers utilize Hitech® computer aided dispatch (CAD) software for law enforcement and fire dispatching and recordkeeping. Apparatus availability is tracked automatically by the CAD. Once a 9-1-1 call is answered, incident data is entered in the CAD and the dispatcher reviews the units the CAD has identified for dispatch. An encoder is utilized to alert CCFD6 personnel via tone encoded voice pagers and a communication's interface provides alpha-numeric pager alerting. Mutual aid requests are dispatched both automatically and upon request of incident commanders. The CAD tracks dispatch, arrival, and incident termination times in hours, minutes, and seconds.

Primary radio communication between field units and with dispatchers is over a Motorola trunked 800 MHz radio system. Radios on the system are capable of interoperable communications with other regional radio systems. The system is fully redundant. Responding units are migrated to a tactical talk group during multi-unit responses and dispatchers monitor the primary tactical talk group during fire operations.

The communications center does not have enough 9-1-1 traffic to experience call queuing[49] unless a large or spectacular event floods 9-1-1 phone lines.

The communications center has adopted a number of operational performance measures. The primary fire and EMS performance measures are:

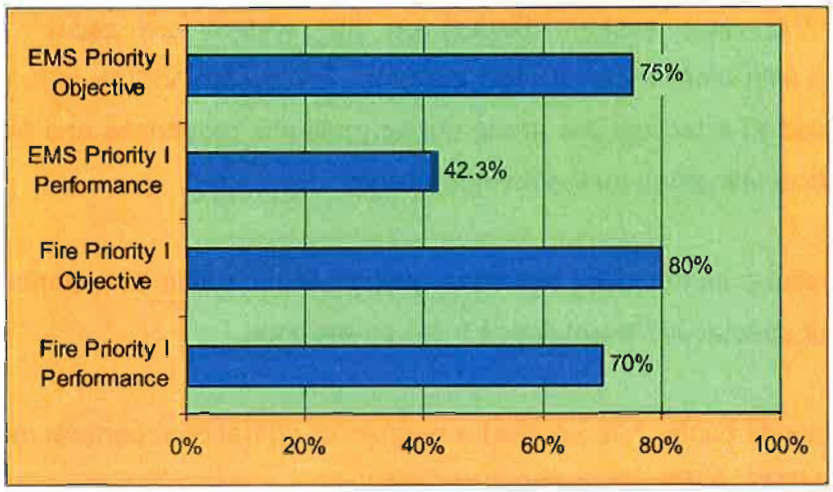
- The average speed of answer for 9-1-1 calls will be three rings (10 seconds) or less.
- 75 percent of priority I and II EMS calls shall be dispatched within 90 seconds of receipt.
- 80 percent of priority I and II fire calls shall be dispatched within 60 seconds of receipt.

The center has chosen to establish their own performance objectives (measures) by which to monitor their performance. While NFPA suggests higher standards, the performance objectives selected by CRESA are appropriate for the District's financial and physical environment.

CRESA provided ESCi with their 2006 performance statistics, which are described in the following chart:[50]

[49] 9-1-1 calls on hold or waiting to be answered.
[50] Clark Regional Emergency Services Agency, 2006 Annual Report, Pg. 25-26, 2007.

Figure 23: CRESA 9-1-1 Call Processing Performance 2006



The EMS priority I objective states that 75 percent of calls will be dispatched within 90 seconds. The communications center is performing at 42.3 percent, which is an improvement over 2005. The fire priority I objective is 80 percent of calls will be dispatched within 60 seconds and the center is performing at 70 percent. While the agency is not meeting its stated performance objectives, they have indicated that several system changes are scheduled that should have a positive impact.

Overall, CRESA is an accredited, well run, and high quality organization.

Response Time Performance Levels and Capabilities

When measuring organizational performance it is important to use descriptive statistical measures that are utilized throughout the public safety industry. Some of these may not be familiar to all readers. In an effort to reduce confusion or the drawing of inaccurate conclusions, this section provides a brief explanation of these measures. The measures most often used which require clarification are *average* and *percentile* measures.

Average

The average measure is a commonly used descriptive statistic, also called the mean of a data set. It is a measure to describe the central tendency, or the center of a data set. The average is the sum of all the points of data in a set divided by the total number of data points. In this measurement, each data point is counted and the value of each data point has an impact on the

overall performance. Averages should be viewed with a certain amount of caution because the average measure can be skewed if an unusual data point, known as an outlier, is present within the data set. Depending on the sample size of the data set, the skewness can be either very large or very small.

For example, assume that a particular fire station with a response time objective of six minutes or less had five calls on a particular day. If four of the calls had a response time of eight minutes, while the other call was across the street and only a few seconds away, the average would indicate the station was achieving its performance goal. However, four of the five calls, or 80 percent, were beyond the stated response time performance objective.

The opposite can also be true where one call with an unusually long response time can make otherwise satisfactory performance appear unacceptable. These calls with unusually short or long response time have a direct impact on the total performance measurements and the farther they are from the desired performance, the greater the impact.

The reason for computing the average is because of its common use and the ease of understanding that is associated with it. The most important reason for not using averages for performance standards is that it does not accurately reflect the performance for the entire data set. As illustrated above, one extremely good or bad call skewed the entire average. While it does reflect all values, it does not really speak to the level of accomplishment in a strong manner.

Percentile

With the average measure, it is recognized that some data points are below the average and some are above the average. The same is true for a median measure which simply arranges the data set in order and finds the value in which 50 percent of the data points are below the median and the other half are above the median value. This is also called the 50th percentile.

When you deal with percentages, the actual value of the individual data does not have the same impact as it did in the average. The reason for this is that the fractile is nothing more than the ranking of the data set. The 90th percentile means that 10 percent of the data is greater than the value stated and all other data is at or below this level.

Higher fractile measurements are normally used for performance objectives and performance measurement because they show that the large majority of the data set has achieved a particular level of performance. This can be compared to the desired performance objective to determine the degree of success in achieving the goal.

CCFD6 Response Time Objectives

Turnout time is a measurement of the elapsed time from dispatch to an incident and apparatus responding to the incident: turnout time objective of sixty seconds, which the District should meet 90 percent of the time.

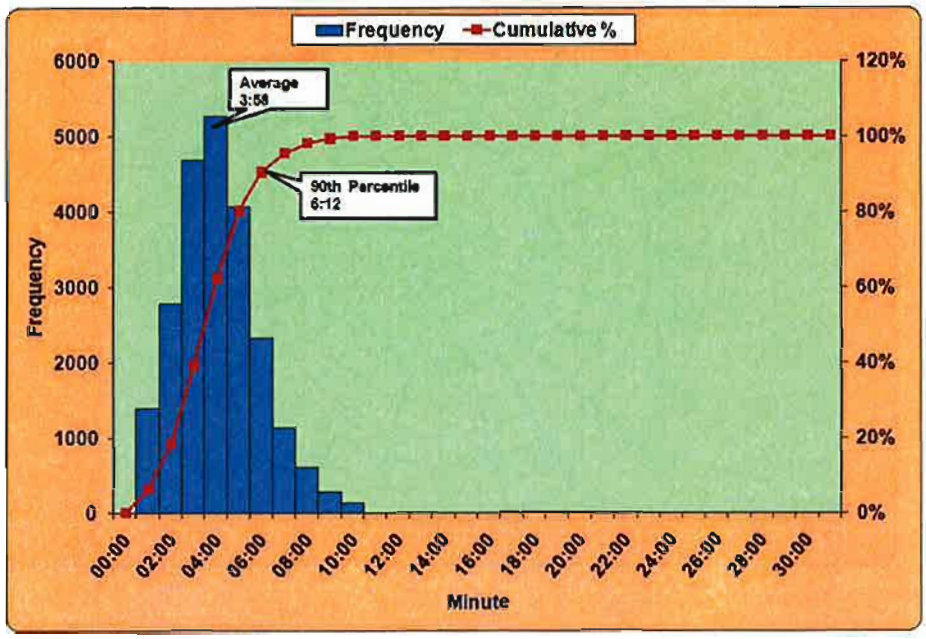
Response time is a measurement of the elapsed time beginning with responding to the incident and ending with the arrival on the scene of the incident.

- First engine response/travel time objective to fire suppression incidents = five minutes for the arrival of the first engine company 90 percent of the time.
- EMS unit response/travel time to an emergency medical incident = five minutes for the arrival of the first emergency medical unit with appropriately trained personnel on board 90 percent of the time.
- ALS response/travel time objective = eight minutes for the arrival of an advanced life support unit with appropriately trained personnel (paramedics) on board 90 percent of the time.
- Technical rescue unit response/travel time objective = eight minutes for the arrival of the first unit with personnel trained at the technical rescue operations level to a technical rescue incident 90 percent of the time.
- Technical rescue technician response/travel time objective = thirty minutes for the arrival of a sufficient number of appropriately trained and equipped technical rescue technicians to perform operations at a technical rescue incident 90 percent of the time.

The following chart illustrates the response time frequency for CCFD6 over the last full year of data provided.[51]

[51] Mutual aid calls and non-emergent calls were removed from response time analyses as they were found.

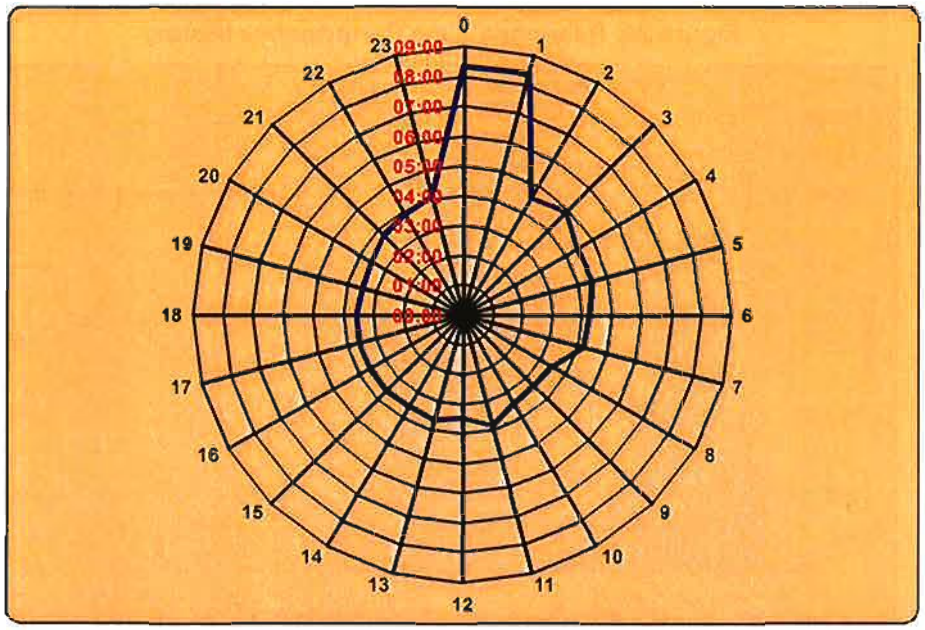
Figure 24: Response Time Performance History



The most frequently recorded response times were at the four minute range. Specifically, the average of all calls was three minutes and fifty-eight seconds with 90 percent of all fire calls answered in less than six minutes and twelve seconds. This is just slightly more than the District's stated goal.

Response times can vary by time of day in reflection of service demand workload, traffic congestion, weather, and distance to the call from the station, to name but a few. The average total response time for fire calls ranged from a high average of eight minutes and twenty-two seconds for all calls between noon and 1:00 p.m., to a low average of three minutes and twenty-two seconds for incidents between 9:00 and 10:00 a.m.

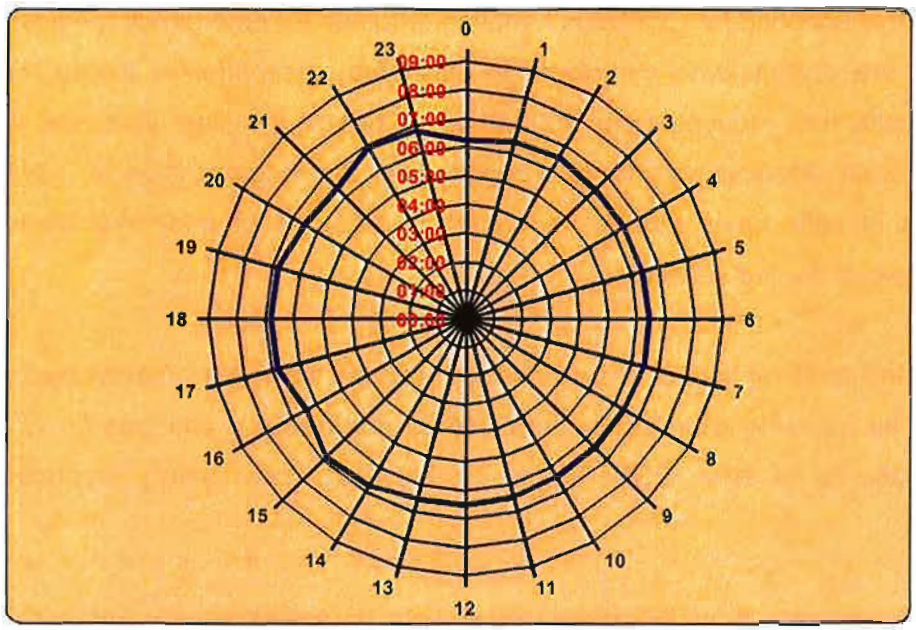
Figure 25: Average Response Time by Hour of Day



Average response time is one useful measure to determine how well geographic-based coverage is achieved. More significant is how well the majority of emergency response demand is being serviced. One useful way to determine how well demand-based coverage is achieved is by determining maximum response time to a larger percentage of the incidents, in most cases 90 percent.

The *90th percentile* response time for fire calls occurring within CCFD6 ranged from a high of six minutes and fifty-four seconds between 10:00 to 11:00 p.m., to a low of six minutes and fifteen seconds from midnight to 1:00 a.m.

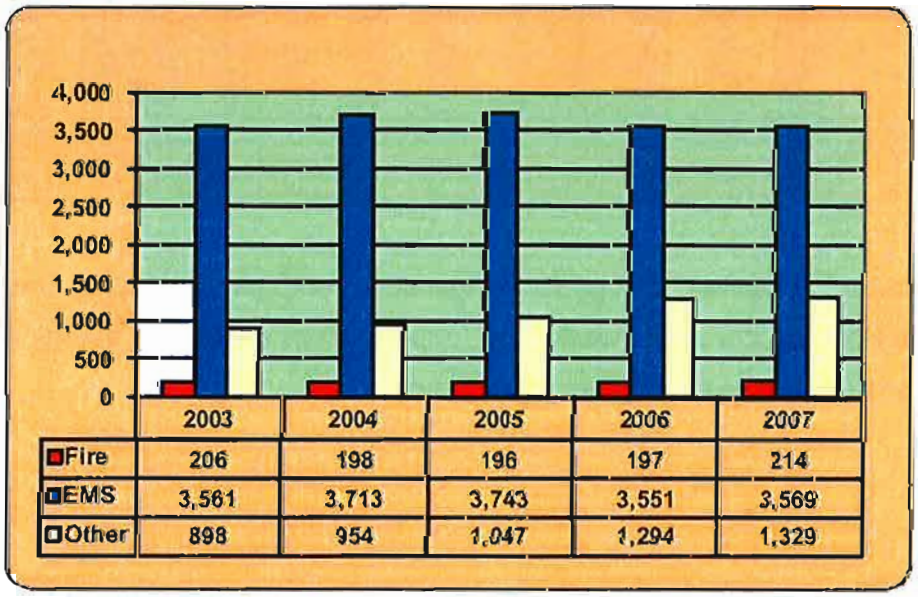
Figure 26: 90th Percentile Response Time by Hour of Day



Current Workload Analysis

The District provided incident data for the fire calls from 2003 through 2007 from its National Fire Reporting Information System (NFIRS) database. District workload has varied over the last five years as depicted in the chart below. The chart categorizes the calls by actual fires, medical assists, and by all other types of calls such as fire alarms.

Figure 27: Workload Historical Data

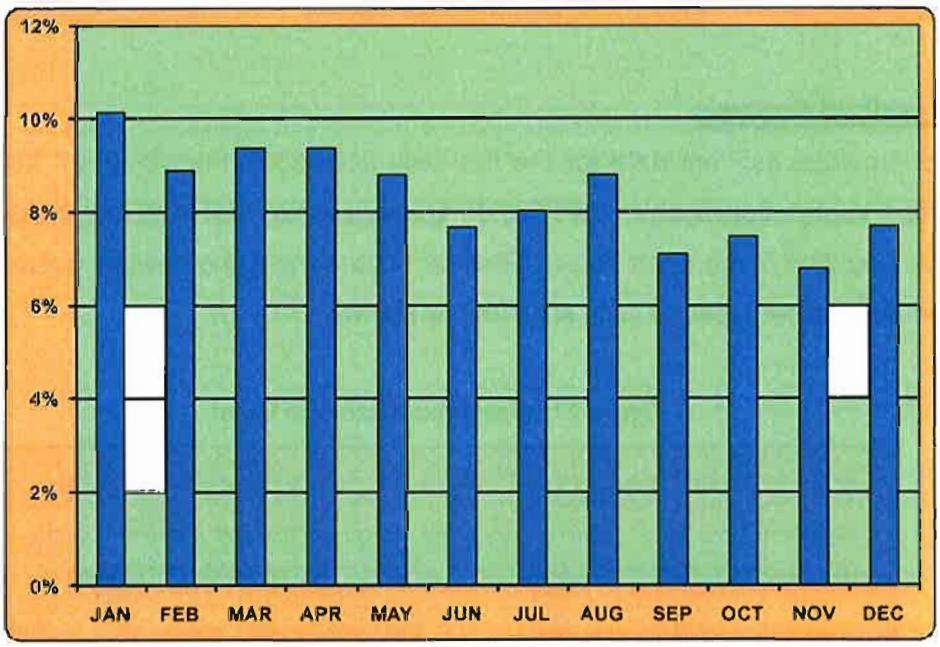


	2003	2004	2005	2006	2007
Fire	206	198	196	197	214
EMS	3,561	3,713	3,743	3,551	3,569
Other	898	954	1,047	1,294	1,329

The bulk of the workload for CCFD6 is handling requests for emergency medical aid. This is not unusual for fire districts who participate in either first responder or transporting capabilities. While fire calls had reduced from 2003-2006, a recent increase in actual fire events was recorded in 2007. Medical calls have dropped since the recorded high of 3,743 calls in 2005. Other types of calls have steadily increased in reflection of additional alarm systems and expanding role of the fire service.

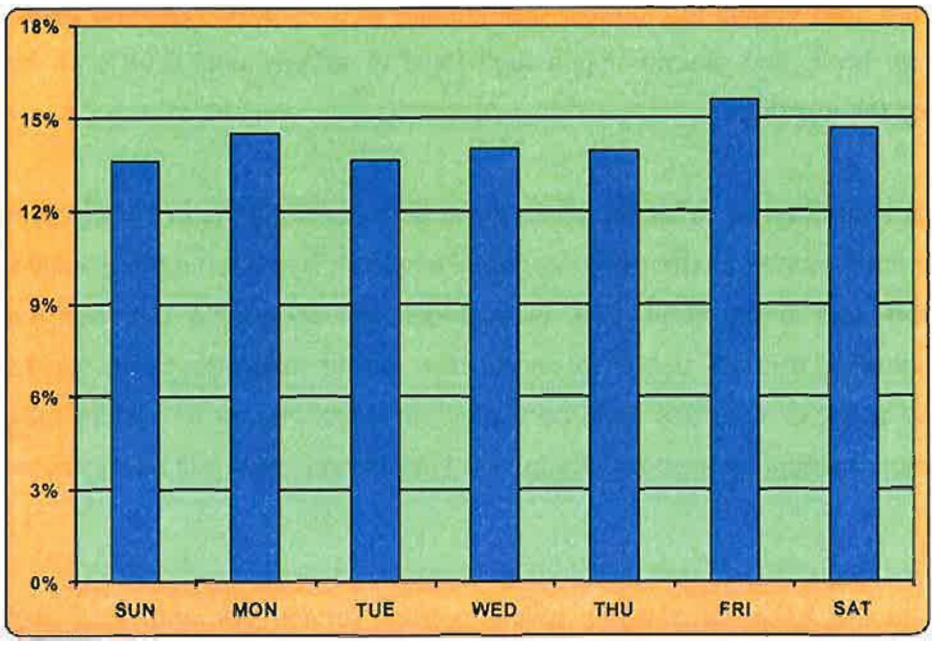
A review of incidents by time of occurrence also reveals when the greatest response demand is occurring. The following charts show how activity and demand changes for CCFD6 based on various measures of time. ESCi began by breaking down yearly workload into monthly increments.

Figure 28: Monthly Workload



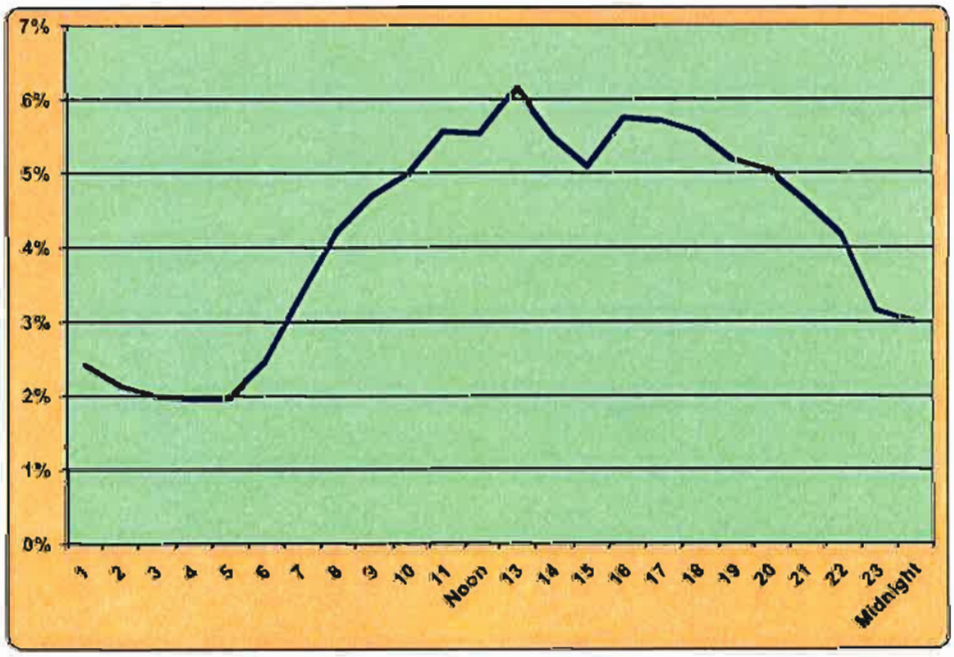
Monthly workload for calls is higher during the winter and spring months. The following chart analyzes workload by day of the week. The following chart shows that activity is slightly higher on Fridays and Saturdays than the rest of the week.

Figure 29: Workload by Day of Week - Fire Calls



The final analysis of historical workload concludes with examination of call types by hour of day. Peak activity hours can strain an under-equipped or under-staffed fire district. Understanding when peak activity occurs begins the process of developing deployment strategies and needs assessment.

Figure 30: Workload by Hour of Day - Fire Calls



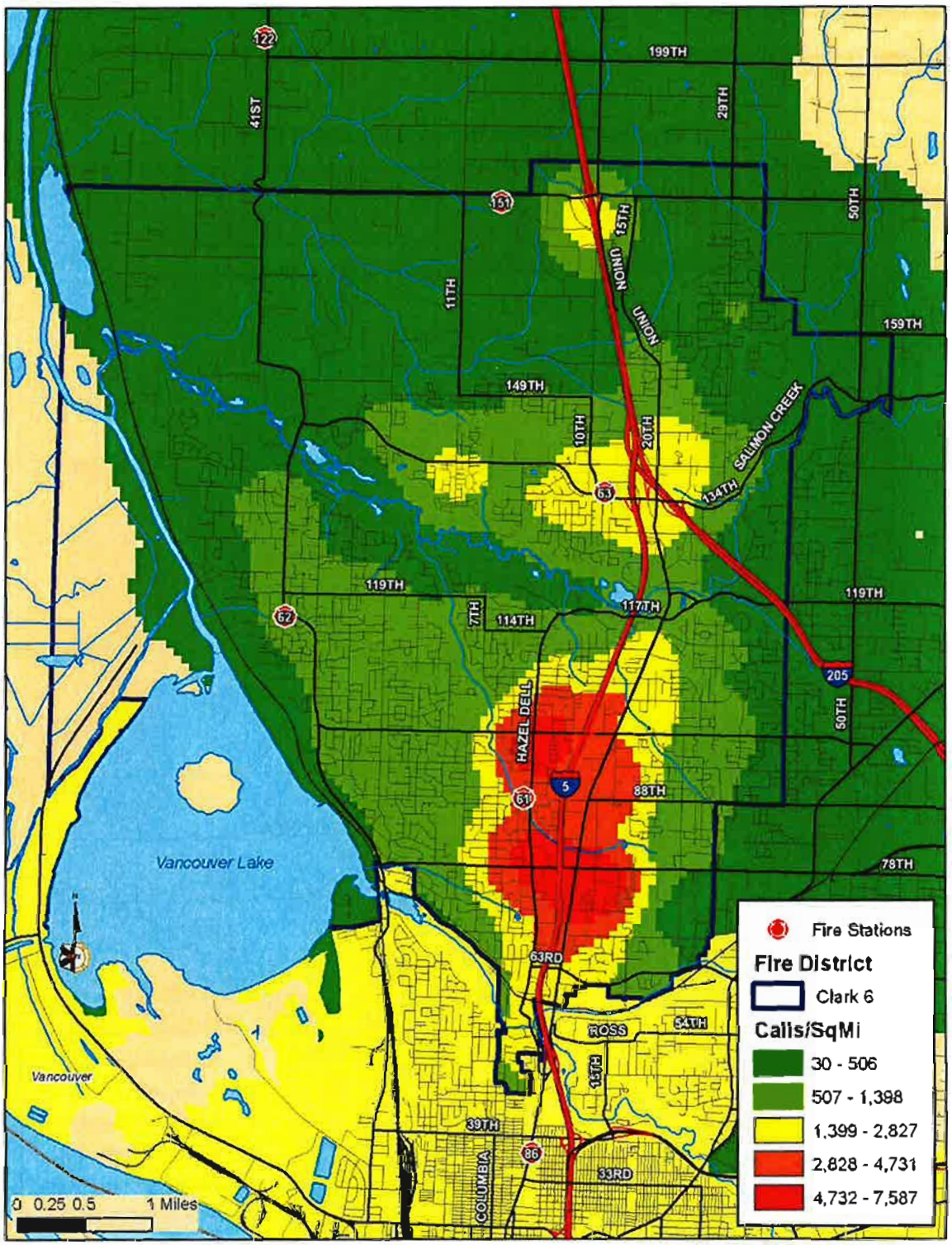
Activity for fire calls begins to increase dramatically at 6:00 a.m., reaching peak volume during the 1:00 p.m. hour, and maintaining a high level of activity until 5:00 p.m. before gradually declining into the evening.

Peak activity times can be reflected in response time performance in certain cases. The impact of response time on the outcome of emergency incidents has been exhaustively studied, both in the laboratory and in historical data, with predictable correlation between the two. Though seemingly intuitive, it is still useful to review how longer response times can have a negative effect on the ability to suppress fires, particularly in structures, or to successfully intervene in a life-threatening medical emergency. Response time performance will be examined in a separate section.

In addition to the temporal analysis of the current service demand, it is useful to examine geographic distribution of service demand. Later in the study, this will allow for assessing the location of stations in comparison to the actual service demand within the area.

The following maps indicate the distribution of emergency incidents responded to by the District during 2007.

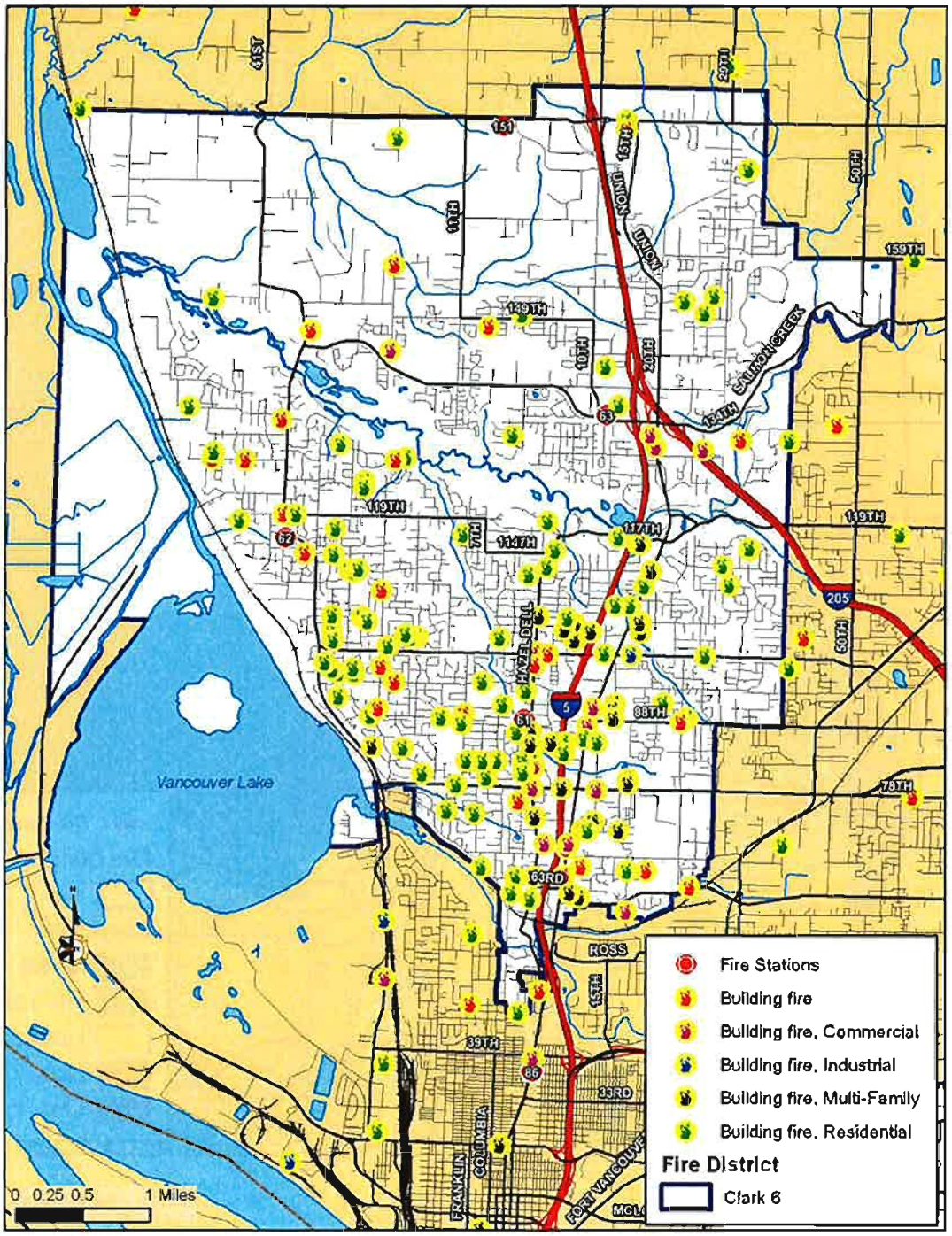
Figure 31: Service Demand Density



The map shows most areas of high service demand are located in areas of high residential density and near major roadway arterials. While the above map reflects all calls for service for

the District, it can be overshadowed by the prevalence of medical aid requests. In the following map, structure fires handled by CCFD6 over the same time period are shown. It illustrates that the majority of fire incidents occur near populated areas and within proximity of the fire station.

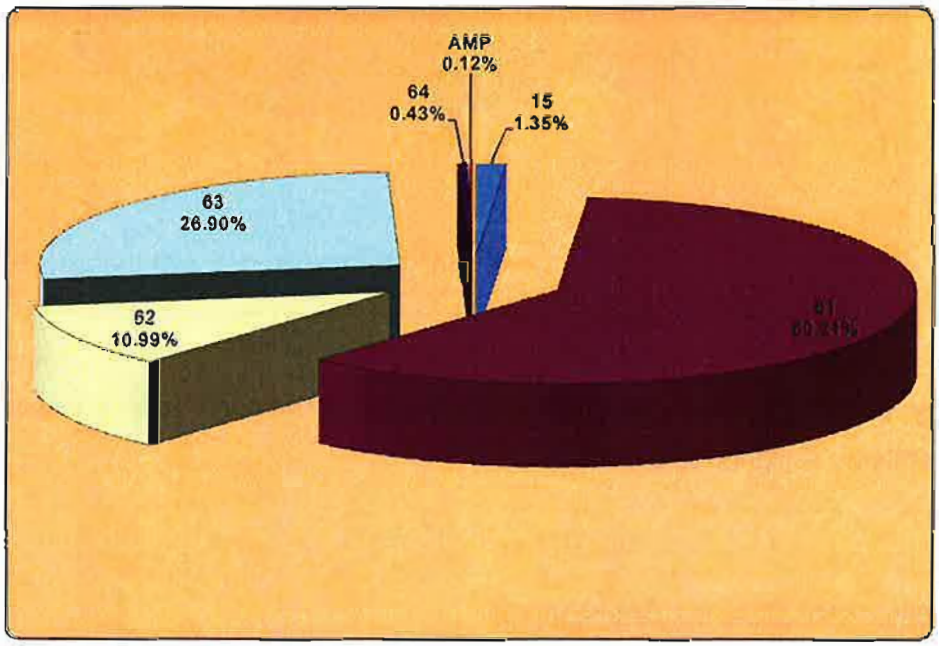
Figure 32: Service Demand-Structure Fires



Similar to all calls, the highest fire service demand is in the area of higher population density and commercial development.

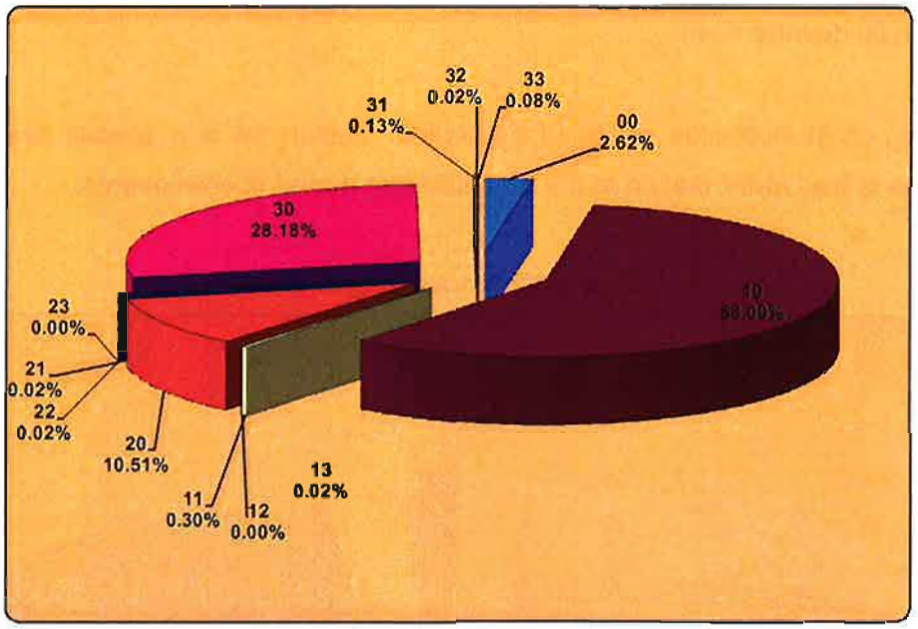
The following chart illustrates workload by station. Station 64 is a special event unit for the county fair as is the "AMP" station at the amphitheatre during special events.

Figure 33: Workload by Station



Station 61 is the busiest station within the District followed by Station 63. This matches the pattern revealed in the service demand density map. Since there are times when a station may respond into another district which may be on an assignment already, the following chart details the workload based on the sub-districts area designations within the dataset.

Figure 34: Workload by Sub District

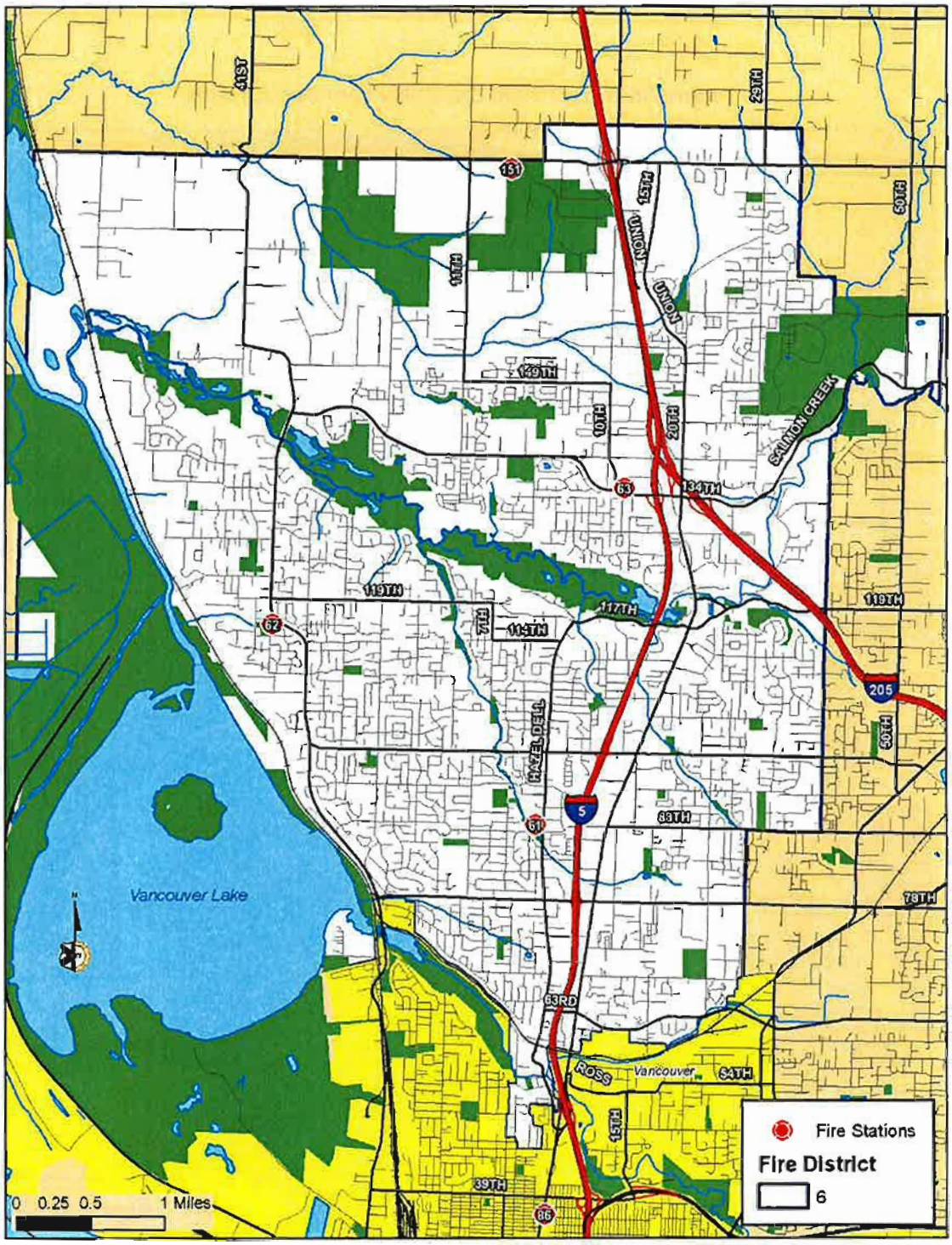


The primary sub-districts with the higher workloads correspond with the workload for the respective stations assigned to them.

Facility Deployment Strategy Assessment

CCFD6 operates out of a four facilities within the District. Station 151 is operated jointly with the fire districts to the north. The District itself lies just north of the city of Vancouver, Washington. The following figure illustrates fire station locations in relation to the primary fire service area.

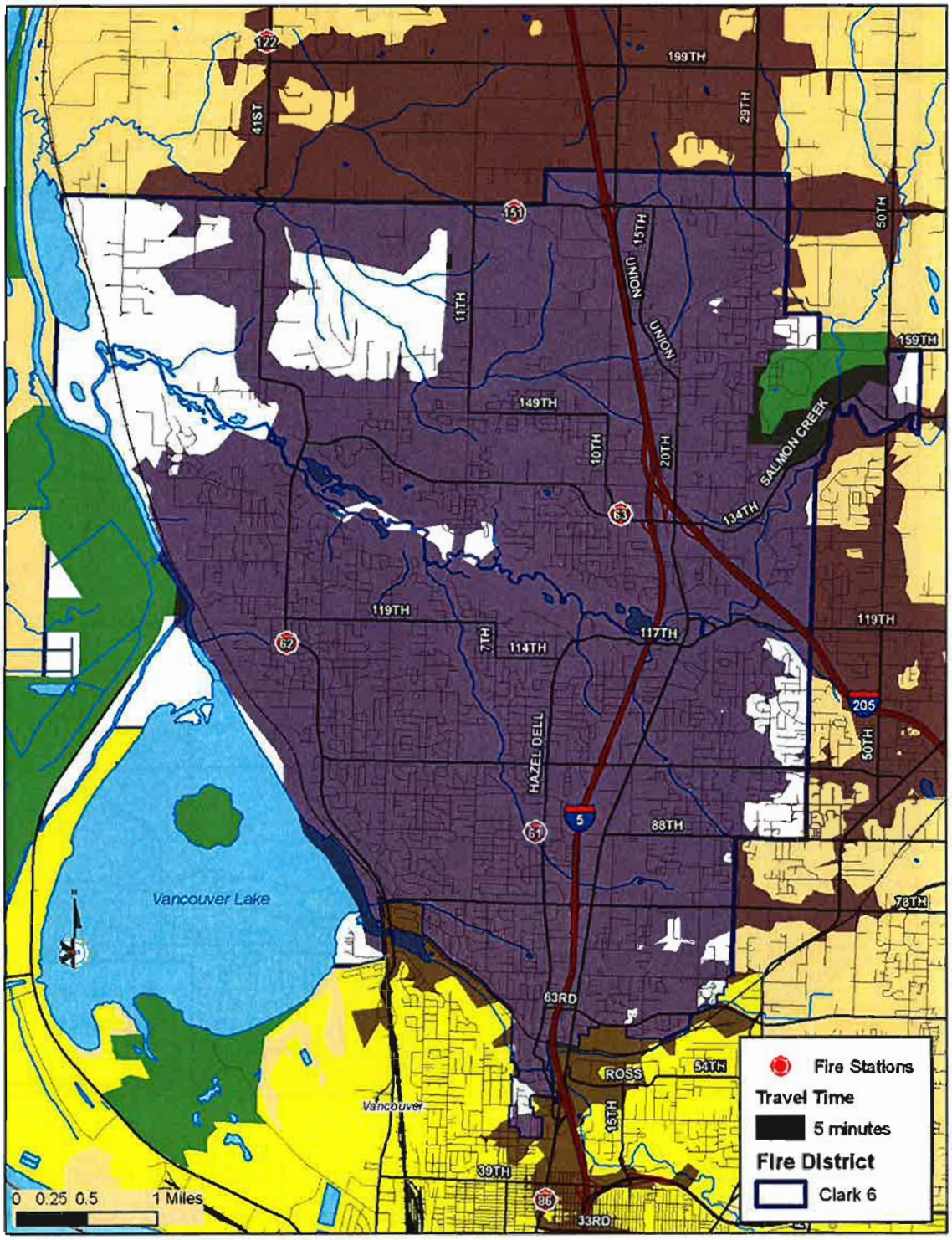
Figure 35: Facility Deployment & Fire Service Area



The following map demonstrates the travel time capability of emergency apparatus when it leaves the firehouse. The five minute travel time footprint is shaded in black. Adjustments have

been made to the street and speed capacity to account for negotiating turns and intersections with fire apparatus.

Figure 36: Travel Time Capability-Fire Service Area

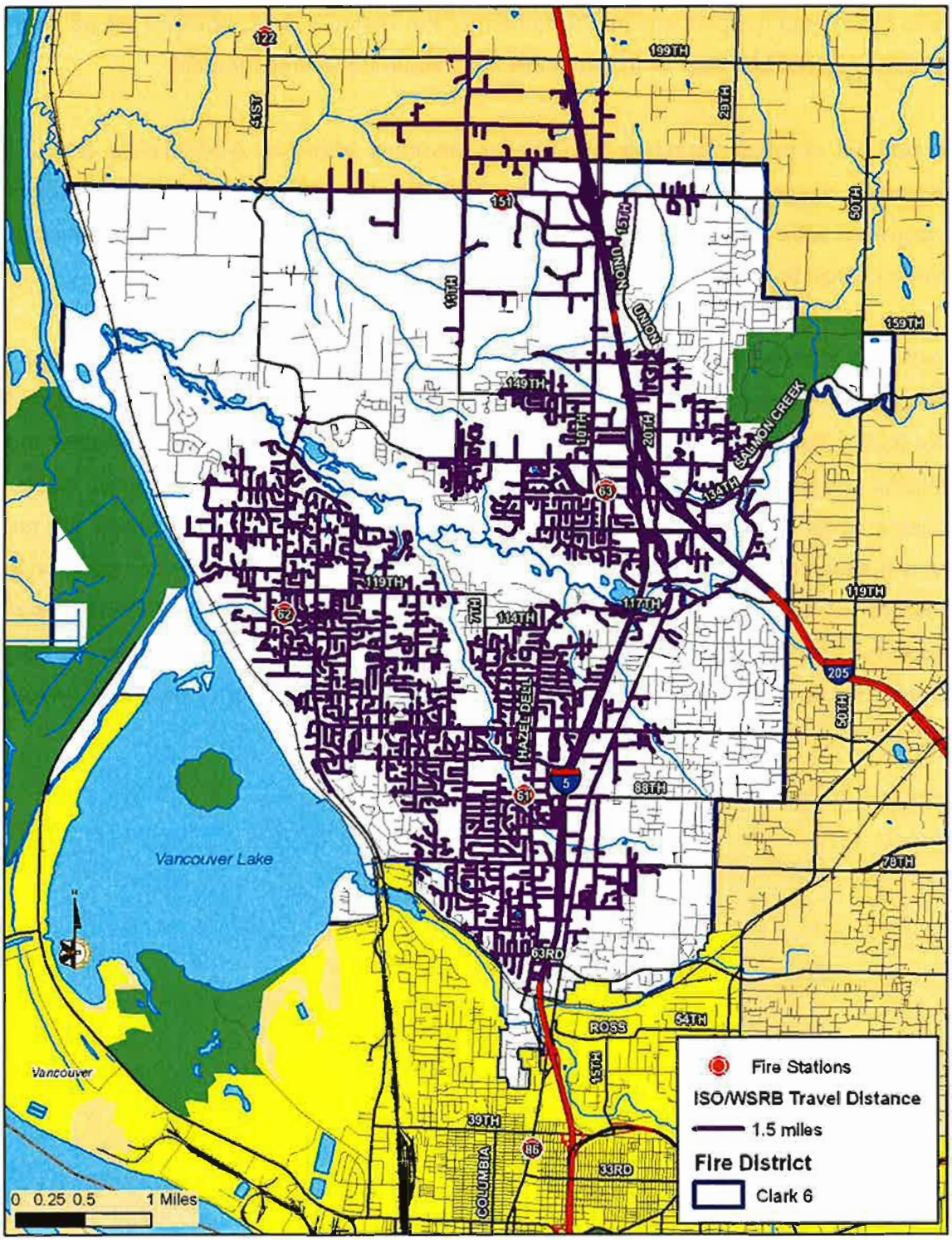


Much of CCFD6 is well covered within five minutes of travel time. In fact, geographically, the five minute travel time footprint covers 76 percent of the District's area; however 98 percent of the calls that occurred last year were within this five minute travel time footprint.

The next set of maps examines the District's coverage based on credentialing criteria for the Washington Surveying and Rating Bureau (WSRB). The WSRB evaluates fire protection in communities within the State of Washington and is influential in the rate determination that insurers charge business and residential customers.

In order to achieve optimum credit for the number of engine and truck companies, WSRB reviews the response area of each existing engine and identifies building heights and needed water flow to fight a structure within those response areas. WSRB analyzes whether there are additional geographic areas of the District outside of the existing station response areas where additional water flow need could be served by a new engine. For WSRB purposes, the response area is measured at 1.5 miles of travel distance from each first due engine company on existing roadways for areas with a need of less than 5000 gallons per minute (GPM) of water are necessary. According to WSRB, this may be increased to two miles for residential districts of one and two family homes, and to four miles where the separation of dwellings average 100 feet.

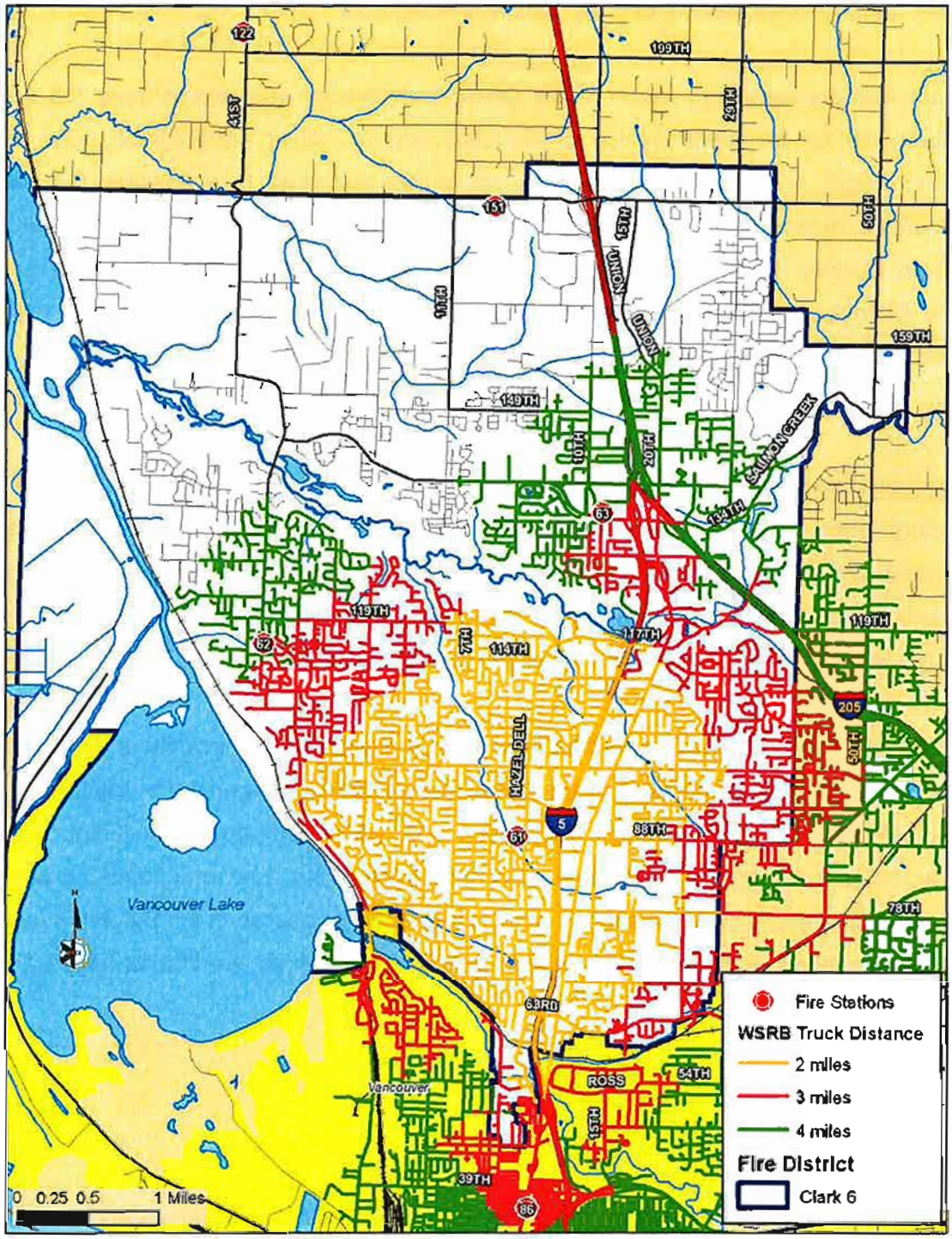
Figure 37: WSRB Engine Company Distance



For truck companies, WSRB considers their necessity when at least five buildings with heights of three or more stories exist within the district. For areas with less than 5,000 GPM of needed

water flow, the first due ladder company should be within two miles. This may be increased to three miles for residential areas of one and two family homes, and to four miles where the separation of dwellings average 100 feet.

Figure 38: WSRB Truck Distance



A truck company is not required to have an elevating ladder or aerial device unless there are a sufficient number of buildings that would meet the three-story height and square footage limits. Other areas can receive credit for a truck company without the requirement of an elevated device, and can even receive partial credit for a truck company if other apparatus, such as an engine, carries a complement of truck company equipment.

It is unclear precisely how much of the District's protection area would meet the necessary requirements for an aerial device or elevated ladders, since geographical data regarding building height and square footage was not made available. It is possible that additional apparatus in reserve status may provide some increase in credit for reserve companies, but it is not likely to affect the overall community insurance rating. This may not be the case in all areas of the District, and therefore, truck company coverage will be further evaluated later in the report.

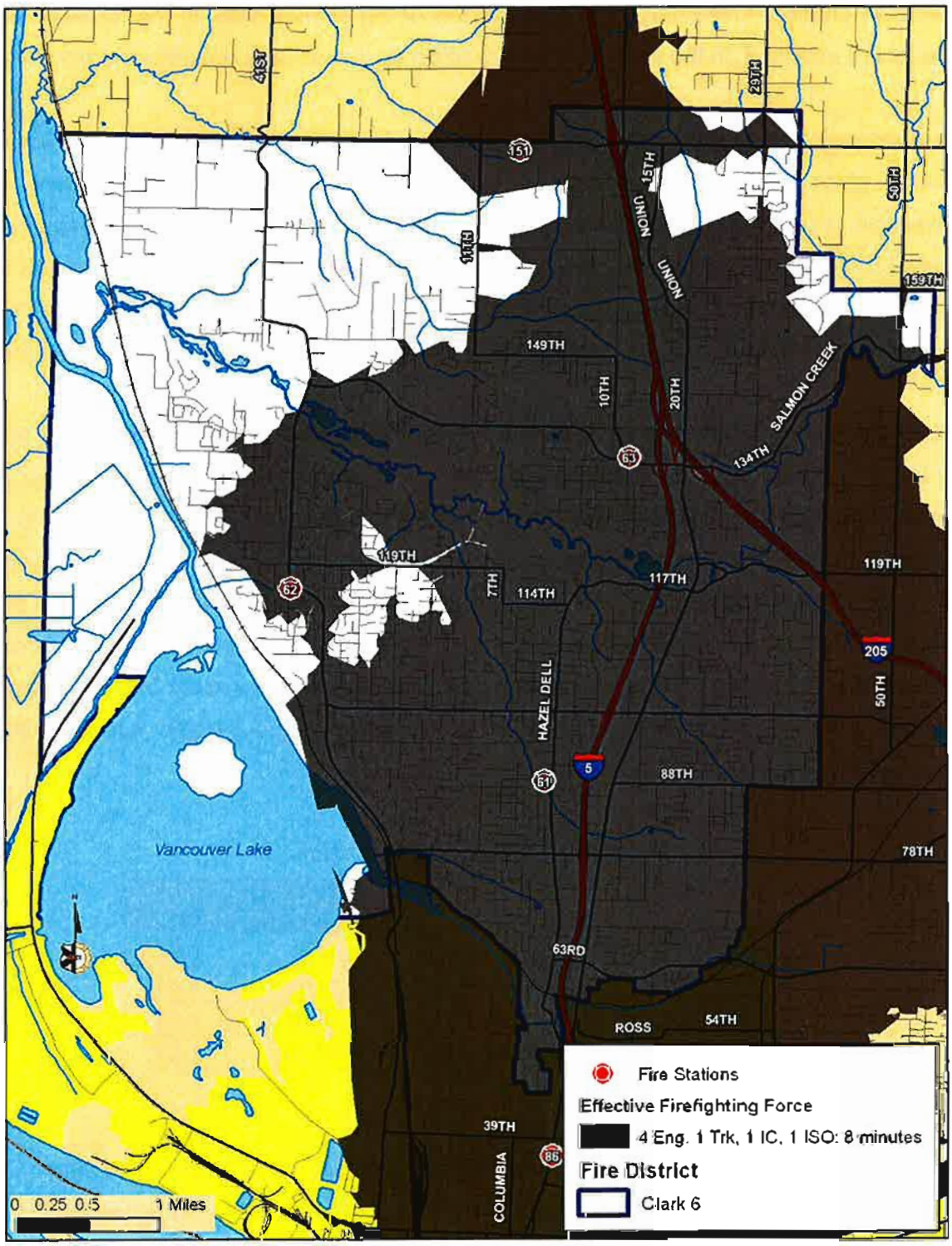
Resource Deployment Strategy Assessment

Standard firefighting procedures call for the arrival of the entire initial assignment (sufficient apparatus and personnel to effectively combat a fire based on its level of risk) within a certain amount of time. This is to ensure that enough people and equipment arrive soon enough to be effective in controlling a fire before substantial damage occurs.[52]

For CCFD6, a full response to the first alarm of a fire suppression incident is eight minutes for the arrival of the full complement of apparatus and personnel, 90 percent of the time. Based on the full alarm protocol, four engine companies, one ladder company, an incident commander, and an incident safety officer would respond to a structure fire. The area shaded in black in the following figure would be the extent of an effective firefighting force in the District. It is assumed that the command staff may be in random locations throughout the District as a part of their duties.

[52] See the appendix for a supplemental discussion about time/temperature curve and the effects of flashover.

Figure 39: Effective Firefighting Force



The preceding illustration shows that the District has adequate apparatus and stations to provide an effective firefighting force to a majority of the service area. In the following section, the effect of workload on the apparatus and its effect on station area reliability are examined.

The workload of emergency response units can be a factor in response time performance. The busier a given unit, the less available it is for the next emergency. If a response unit is unavailable, a unit from a more distant station must respond, increasing overall response time. A cushion of surplus response capacity above average values must be maintained due to less frequent, but very critical times, when atypical demand patterns appear in the system. Multiple medical calls, simultaneous fires, multi-casualty events, or multiple alarm fires are all examples.

Unit hour utilization is an important workload indicator because it describes the amount of time a unit is not available for response since it's already committed to an incident. The larger the number, the greater its utilization and the less available it is for assignment to an incident. The highest unit hour utilization (UHU) figures for fire suppression units are typically around 0.20 with some studies indicating that unit failure rates[53] at this workload will begin to hit 10 percent. Studies of fire-based medical units indicate that significant employee burnout can occur with 0.30 unit hour utilization. Since the incident data provided did not include individual apparatus response data, a sum of all the time spent on service demand by type was tabulated and converted to the UHU ratio.

Figure 40: Call Type Utilization

Call Type	Calls	Time	Avg. Time on Call	UHU
Fire	251	169:41:16	0:40:34	0.02
Medical	3610	1388:19:20	0:23:06	0.16
Other	1278	349:32:53	0:16:29	0.04
Total	**5139**	**1907:33:29**	**0:22:19**	**0.22**

As the previous chart indicates, medical calls account for the bulk of calls within CCFD6. However, fire calls consume more time on scene than any other type. While this is not

[53] The unit failure rate is the percentage of calls for which a unit is unavailable due to handling an existing call where it otherwise would have been dispatched as the primary unit.

unexpected, the total UHU was divided among the stations based on their workload share percentage. The following table details the workload level for each station within the District.

Figure 41: Station Hour Utilization

	Station			
Call Type	**61**	**62**	**63**	**15**
Fire	0.01	0.00	0.01	0.00
Medical	0.10	0.02	0.04	0.00
Other	0.02	0.00	0.01	0.00
Total	**0.13**	**0.02**	**0.06**	**0.00**

While Station 61 has two staffed apparatus, individual apparatus UHU can be estimated to be .20, at the upper limit of workload thresholds suggested within the fire industry. Station 63 is also close to this upper threshold limit for 2007.

Call Concurrency and Resource Drawdown

Another way to look at resource workload is to examine the amount of time multiple calls happen within the same time frame on the same day. ESCi examined calls during 2007 to find the frequency that CCFD6 apparatus is handling multiple calls within any time frame. This is important because the more calls occurring at one time can stretch available resources and extend response times from distant, responding available apparatus.

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Figure 42: Call Concurrency Table

LEVEL OF CALL CONCURRENCY	All Calls		Fire Calls		Medical Calls		Other Call Types		Station 61 Area		Station 62 Area		Station 63 Area	
Single	20275	75.47%	1184	97.29%	15625	85.10%	5101	96.46%	12940	86.94%	2570	98.17%	6673	94.71%
2	3869	14.40%	30	2.47%	2410	13.13%	170	3.21%	1410	9.47%	45	1.72%	352	5.00%
3	570	2.12%	1	0.08%	292	1.59%	7	0.13%	110	0.74%	1	0.04%	20	0.28%
4	101	0.38%	2	0.16%	23	0.13%	5	0.09%	13	0.09%	2	0.08%	0	0.00%
5	20	0.07%			1	0.01%	2	0.04%	3	0.02%			1	0.01%
6	4	0.01%			2	0.01%	1	0.02%	2	0.01%				
7	9	0.03%			2	0.01%	2	0.04%	0	0.00%				
8	4	0.01%			0	0.00%			2	0.01%				
9	2	0.01%			1	0.01%								
10	1	0.00%			2	0.01%								
11	2	0.01%			1	0.01%								
12	0	0.00%			0	0.00%								
13	2	0.01%			1	0.01%								
14	4	0.01%												
15	1	0.00%												
16	0	0.00%												
17	1	0.00%												

As in most communities, the majority of calls occur singularly. However, as communities grow the propensity for concurrent calls increase. When the concurrency reaches a level to which it stretches resources to near capacity, response times begin to extend. Although multiple medical calls will cause drawdown, especially as concurrency increases, they usually occupy one unit at a time. Concurrent fire calls however, are of more concern as they may require multiple unit responses for each call depending on the dispatch criteria. Typically, *Other* calls, that are not actual fire or medical calls, do have higher rates of concurrency than fires and depending on the dispatch criteria, may create period of extensive resource drawdown.

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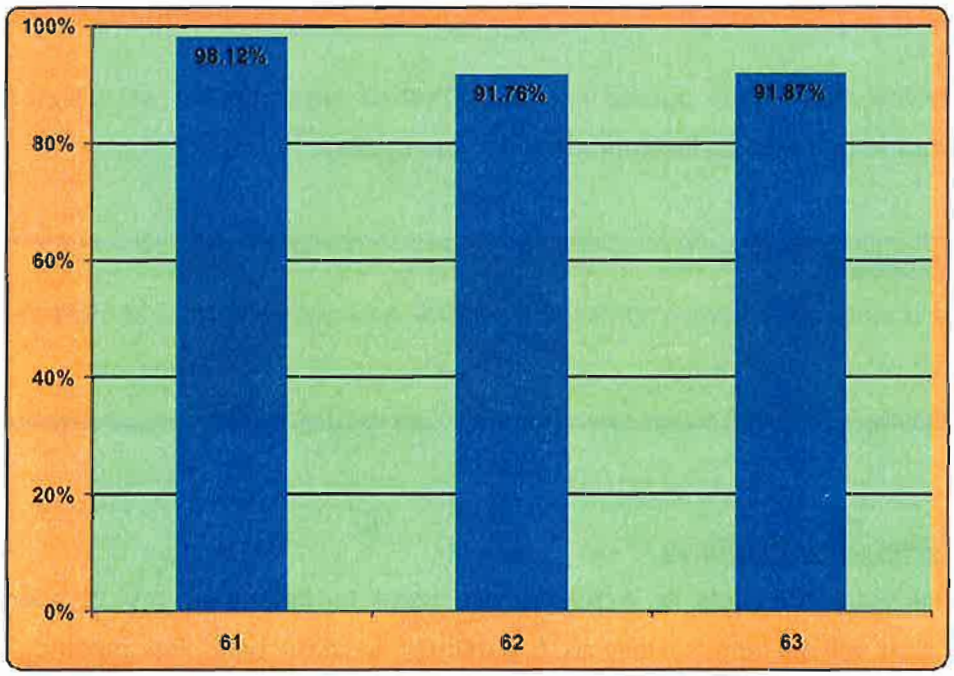
It is important to note that the area with the highest workload, especially medical calls, typically has the highest rate of concurrent calls. This requires response units from other stations, to respond into this area. This reduces the reliability that an area is covered by its primary unit. The impact on station area reliability can be affected by several factors such as:

- Out of service for mechanical reasons
- Out of service for training exercises
- Out of area on move-up deployment
- Lack of staffing
- Concurrent calls

When these factors impact the reliability of a station to respond within its prescribed territory, response time performance measures for the back-up station/apparatus can be negatively affected. The following chart detailed the reliability by which the station responsible for a sub-district had handled the calls that occurred last year. A reliability rate less than 90 percent is a cause for concern since it leads to worsening response times as back-up apparatus must respond from outside of the primary station district.

Figure 43: Station Reliability



Specialized Programs

CCFD6 trains for and provides specialized rescue services at the technician level. Specifically, the District will respond to high angel rope rescue, swift water, industrial, agricultural, and confined space rescue events.

There are two major interstate highways and a rail mainline in the District's jurisdiction that present a hazardous materials threat. Hazardous materials response is provide by a regional team that is an element of the Vancouver Fire Department (VFD). The mitigation of serious hazardous materials events requires a significant number of resources and personnel. The training, equipage, and maintenance of a hazardous materials team are expensive and difficult to achieve in an organization the size of CCFD6. The use of the VFD team is appropriate.

The District's level of special response is appropriate for the area's risks.

Incident Control and Management

CCFD6 uses the Incident Command System (ICS) for tactical incident management and has adopted the National Incident Management System (NIMS) as its standard management protocol. Both management systems are referenced in the District's *Fire Operations* SOG.

The county fire chiefs have agreed informally that all organizations will utilize the NIMS, but have not agreed to a tactical incident management system.

Recommendation:

- Seek a county-wide formal agreement regarding a common tactical incident management system.

Standard Response Practices

Incident response protocols or practices are used to determine the number and type of resources that will be sent initially to a particular incident type. For instance, a car fire or automatic fire alarm may require the dispatch of a single resource where a fire in a single-family

residence may require the dispatch of multiple resources. Response protocols are based on the critical tasks, staffing, and equipment that are required to mitigate an incident.

Observation: Units are dispatched by CRESA according to a complex set of run strings that are associated with a geographic area, incident type codes, and the number and type of unit(s) required for mitigation. The following list describes in simplistic terms the units assigned to certain types of incidents.

Figure 44: Incident Response Protocol

Call Type	Minimum Response
Medical	Eng or Squad
Motor vehicle accident	Eng
Hazardous materials	2 Eng, IC
Vehicle fire (passenger)	Eng
Vehicle fire (commercial)	2 Eng, IC
Grass/Brush fire	2 Eng, Squad, IC, ISO
Low rise residential fire	4 Eng, Trk, IC, ISO
High rise residential fire	4 Eng, Trk, IC, ISO
Moderate risk commercial fire	4 Eng, Trk, IC, ISO
High risk commercial fire	4 Eng, Trk, IC, ISO

Key: Eng: Engine; IC: Battalion Chief; ISO: Incident Safety Officer; Trk: Truck Company

The District's non-shift chief officers share an informal duty officer system. Chief officers serve as duty officer for seven days every four weeks. The chief officers are described as second-out or back-up to the shift battalion chief. There are no formal duty officer requirements and the person that is on duty is not required to be within the District boundaries when serving as duty chief. The current duty officer system used by the District should be revised to ensure that the duty chief is within District boundaries and ready to respond at any time.

Recommendation:

- Develop an SOG regarding the requirements and responsibilities of the rotating duty chief.

Mutual Aid / Automatic Aid

CCFD6 is a co-signer of a Clark County mutual aid agreement that also specifies automatic response. In practice, mutual aid is handled as a boundary drop agreement with units automatically responding regardless of jurisdiction.

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Section II: Future System Demand Projections

In this section, ESCi projects and analyzes the District's future system demand. Future system demand is dependant on population and its potential growth, and the type of community development that is planned. The District's potential workload is derived from this analysis.

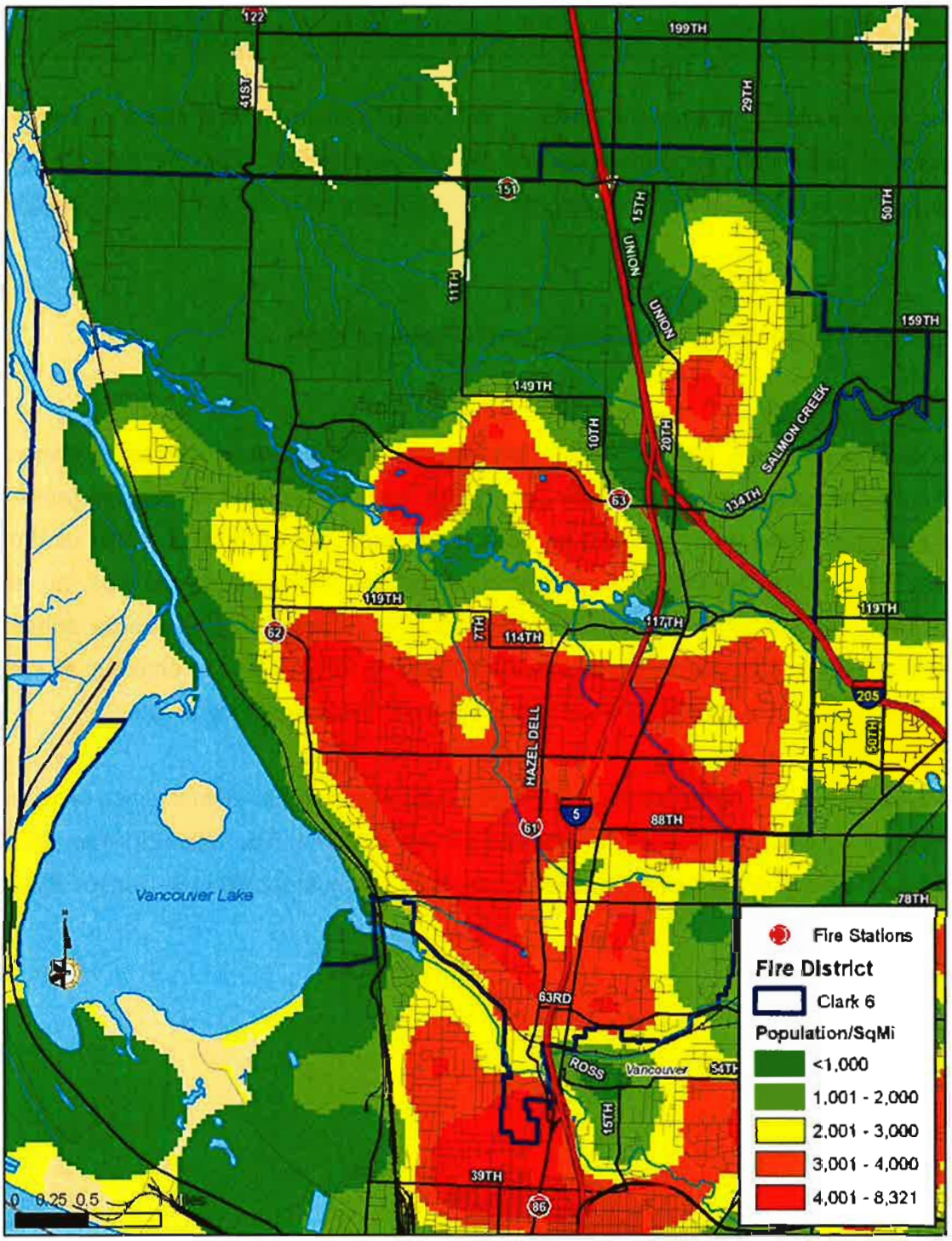
Objective One: Population Growth Projections

Population History

This section examines the population, demographic composition, and housing characteristics within the District's service area. Clark County Fire District 6 provides primary fire protection and first responder emergency medical services to an area just north of the City of Vancouver, Washington. Since the District does not correlate with municipal boundaries, an estimated population was utilized from census block population which may not exactly adhere to the District area. The estimated population for the District in 2000 is 52,114 persons; an estimate of population for 2007 is 63,524 persons based upon a 2.85 percent growth rate.

It is useful to assess the distribution of the population within a fire district, since there is a direct correlation between population density and service demand. The following map displays the population density of the District, based on information from the 2000 U.S. Census Blocks.

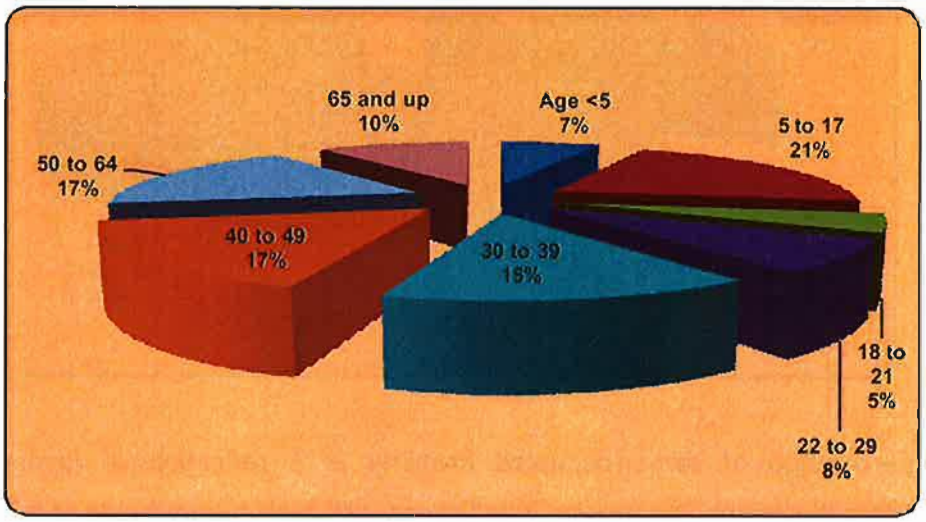
Figure 45: Population Density



The highest concentration of population is south of 119th Street and west of I-5. While population concentration is important, it is also important to evaluate its composition with regard

to age and socioeconomic characteristics. The following chart examines the District's population segmented by age groups.

Figure 46: Population by Age

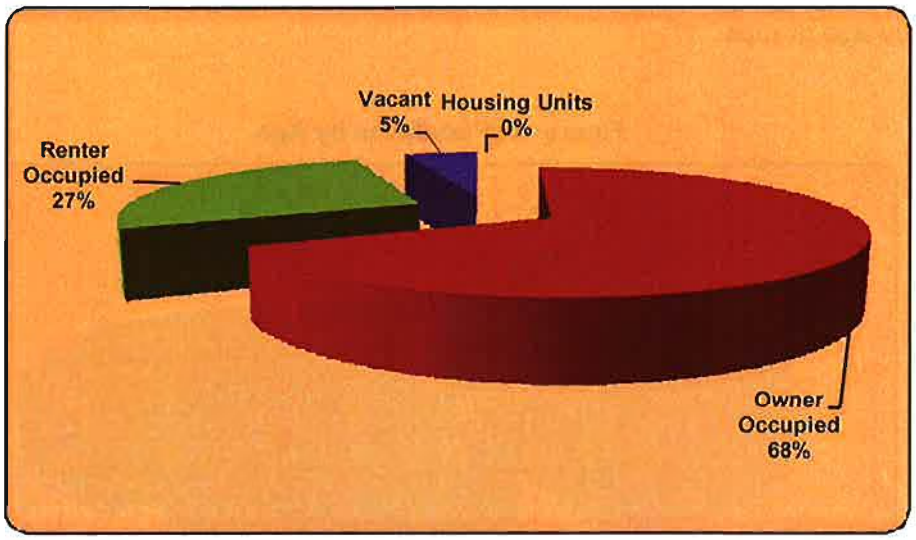


The figure above shows that ten percent of the population is 65 years of age or older and seven percent of the population is under five years of age. A total of 17 percent of the area's population is in age groups that are at the highest risk in residential fire incidents. The median age is 37.5 compared to the median age in the U.S. at 35.3 years of age. This is expected to rise as the baby-boomer cohort ages into the future.

Current Housing Analysis

This section examines the housing characteristics and geographic composition. The following figure illustrates the housing occupancy types found in the District.

Figure 47: Housing by Occupancy



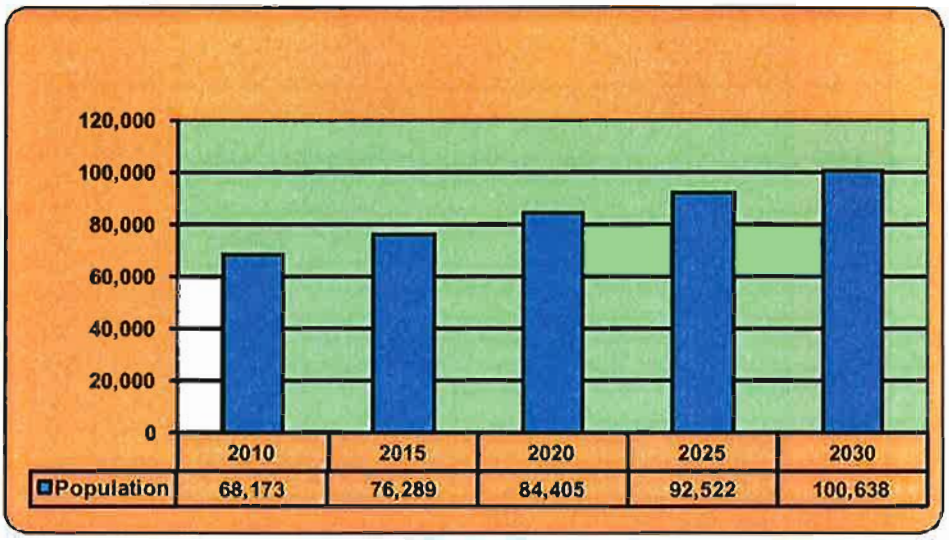
The high percentage of owner-occupied property is a reflection of favorable economic conditions within the region. Nationally, jurisdictions with high percentages of rental and vacant properties correlate with a higher workload for public safety agencies. The District experiences a moderate workload level, in part, because of this demographic. This measure must be viewed cautiously as areas with colleges or resorts tend to have an abundant supply of rental housing.

The District also protects commuting workers, shoppers, and those traversing through major arterial routes, and precisely tabulating this volume can be challenging. These are additional potential points of service demand that were not reflected in the residential population analysis.

Census-based Population Growth Projections

Service demand projections are developed from population growth that is based upon census and community development. The population growth in the District has increased modestly over the last several years. ESCi anticipates that this growth will continue into the future, but at a slower rate than in the past due to land availability. ESCi developed the District's population forecast utilizing estimated growth figures and assumed a similar rate of growth to forecast population through 2030. The resulting population forecast appears in the following chart.

Figure 48: Census-based Population Forecast for CCFD6

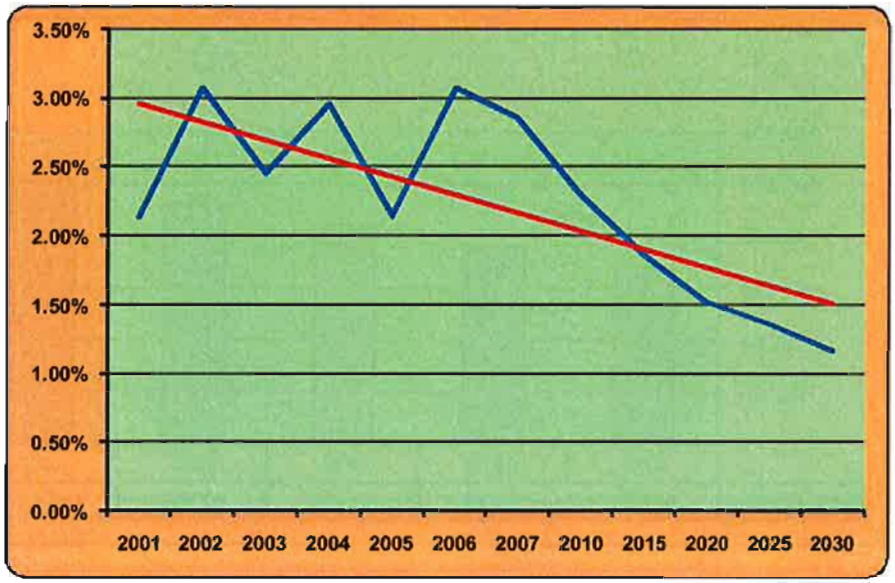


Community Planning-based Population Growth Projections

Census-based population projections provide a mathematically based estimate of future population based on historical data. However, they often fail to account for expected trends in the growth rate of an area. These changes often result from redevelopment, annexation, changes in employment capacity, or other socio-economic factors not reviewed in a census-based projection. For this reason, ESCi calculates projections based on review of available local development and business information.

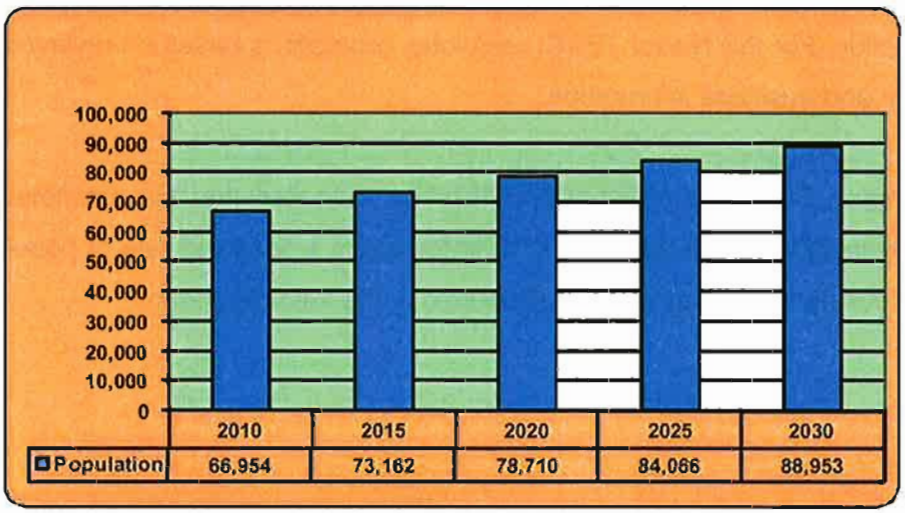
The Washington State Fire Marshal (WSFM) has indicated that the estimated population for Clark County in 2007 is 415,000. The WSFM forecasts a declining rate of population growth for the County looking forward to 2030 as illustrated in the following chart.

Figure 49: WSFM projected Population Growth Rate for Clark County



ESCi also analyzed the Clark County growth estimates from 2010 through 2030, which have been applied to the District's 2007 population estimate and forecasted into the future. The chart below illustrates this estimate.

Figure 50: CCFD6 Population Projections



It is not the intent of this study to be a definitive authority for the projection of future population in the service area, but rather to base our recommendations for future fire protection needs on a reasonable association with projected service demand. It is known that service demand is based almost entirely on human activity. Consequently, it is important to have a population-

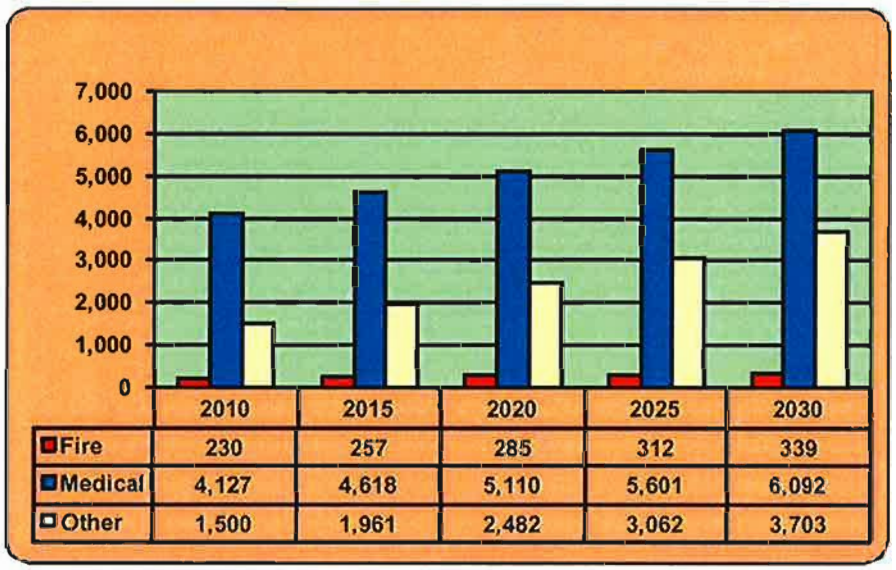
based projection of the community. While we can see variation in the population projections discussed here, one thing that can be certain is that the CCFD6 will continue to be an emergency service provider to a growing population likely reaching over 80,000 by 2030. The fire department should begin to plan for this additional population growth.

Objective Two: Service Demand Projections

When evaluating the deployment of facilities, resources, and staffing, it is imperative that consideration be given to potential changes in workload and service area that directly affects deployment. Changes in service demand can require changes and adjustments in the deployment of staff and resources in order to maintain acceptable levels of performance.

ESCi multiplied the census-based population projections by an incident rate that was derived from current and past incident per capita rates to identify workload potential through the year 2030. The results of the analysis are shown, by year and type of incident, in the following chart and table.

Figure 51: Workload Projection



	2010	2015	2020	2025	2030
Fire	230	257	285	312	339
Medical	4,127	4,618	5,110	5,601	6,092
Other	1,500	1,961	2,482	3,062	3,703

It is projected that the incidence of fire events will remain relatively stable, thanks to automatic suppression systems, code enforcement, and public education. Other fire related alarms are expected to increase along with requests for medical aid. Medical calls are projected to increase more significantly due to a larger number of the population entering their senior years of life.

Objective Three: Community Risk Analysis

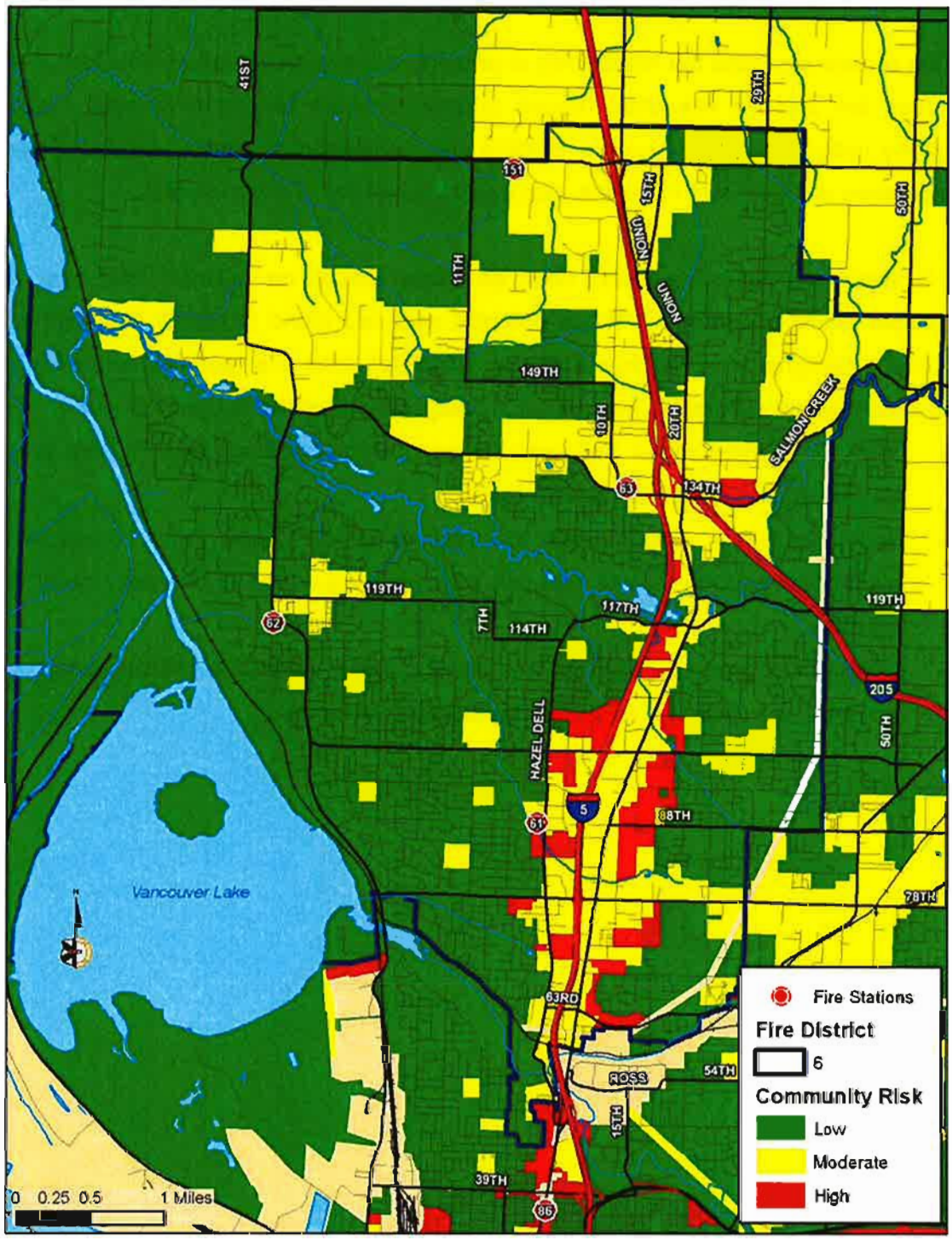
The fire service assesses the relative risk of properties based on a number of factors. Properties with high fire and life risk often require greater numbers of personnel and apparatus to effectively mitigate a fire emergency. Staffing and deployment decisions should be made with consideration of the level of risk within geographic sub-areas of a community.

The District's risk assessment has been developed based on potential land use within its anticipated future boundaries.[54] These potential uses are found in county development plans and zoning designations. The following map translates land use (potential scale and type of development within geographic sub-areas) to categories of relative fire and life risk.

- Low risk – Areas zoned and used for agricultural purposes, open space, low-density residential, and other low intensity uses.
- Moderate risk – Areas zoned for medium-density single family properties, small commercial and office uses, low-intensity retail sales, and equivalently sized business activities.
- High risk – Higher-intensity business districts, mixed use areas, high-density residential, industrial, warehousing, and large mercantile centers.

[54] It should be noted that the District's boundaries are subject to change due to annexation by the city of Vancouver. Annexation is discussed later in the report.

Figure 52: Community Risk



The community contains mostly low and moderate risk properties on the north side of the District, as well as in certain non-residential developments along the major arterials such as I-5 and Highway 99.

Section III: Future Delivery System Models

A fire protection master plan is intended to provide strategies that are long-term in nature. It is the job of a master plan to identify the most critical issues the agency will face over the long term, as long as twenty years in the future. ESCi started that process in the previous section of this report where community growth, identified risks, and service demands were evaluated. The previous analysis is now compiled to provide a recommended long-term service delivery strategy.

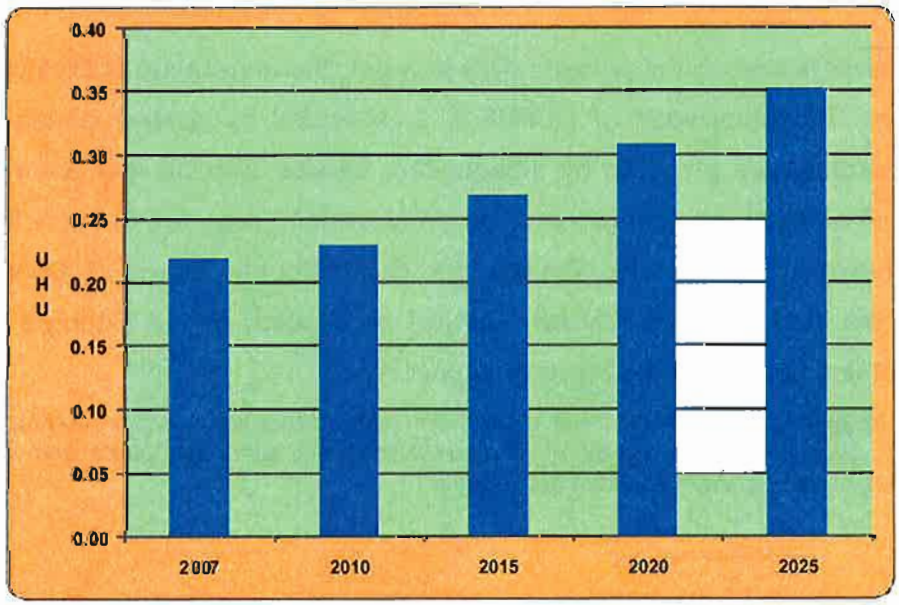
Objective One: Feasible Options

Service Delivery Performance Projection

Based on the travel time capability from the District's existing stations, it is expected that future service demand can be met within the current response time performance objectives.

Based on projected service demand, the workload threshold level for the District does not indicate the need for an additional staffed apparatus until at least 2020. The workload threshold or unit hour utilization (UHU) is based on the average time a unit spends on assignment.

Figure 53: CCFD6 Projected UHU



Based on the increase in activity and the projected unit hour utilization, an additional response unit is expected to be necessary in Station 63 in approximately 12 years (2020).

Facility & Resource Deployment

Based on the current distribution of resources, ESCi had determined that additional stations are not required. Station 63, however, cannot accommodate additional personnel and is inadequate for a contemporary emergency service delivery system. It should be remodeled or replaced in a closely adjacent location.

Annexation

The city of Vancouver has published a plan that describes the city's intent to annex portions of unincorporated Clark County, including a significant portion of CCFD6.[55] ESCi interviewed Vancouver's annexation coordinator and found that the city intends to aggressively pursue annexation and the plan is currently on schedule.

Clark County Fire District 5 is facing annexation under a different set of circumstances. Vancouver is the primary utility provider to the area served by Clark County Fire District 5, which is also within the planned annexation territory. Recognizing the inevitability of annexation, District 5 entered into an emergency service delivery agreement with Vancouver. At this time, public education/information is the only direct service provided by District 5.

Since Vancouver is already the primary utility provider, the annexation of District 5 is a relatively simple matter. The annexation of CCFD6 is complicated by several issues. The utilities in District 6's territory are provided by independent service districts that are not interested in annexation. In addition, a vocal group of property owners, reported to be in the minority, has resisted annexation by the city. Finally, the Clark County Board of Commissioners has established the Three Creeks Advisory Council as a policy of the County's Comprehensive Plan.[56] The stated purpose of the advisory council is:

> *"...is to give residents living there a large and more direct voice in planning for their own future. ...to assist with sub-area transportation plans, land use plans and such other matters as the Board may deem appropriate."*

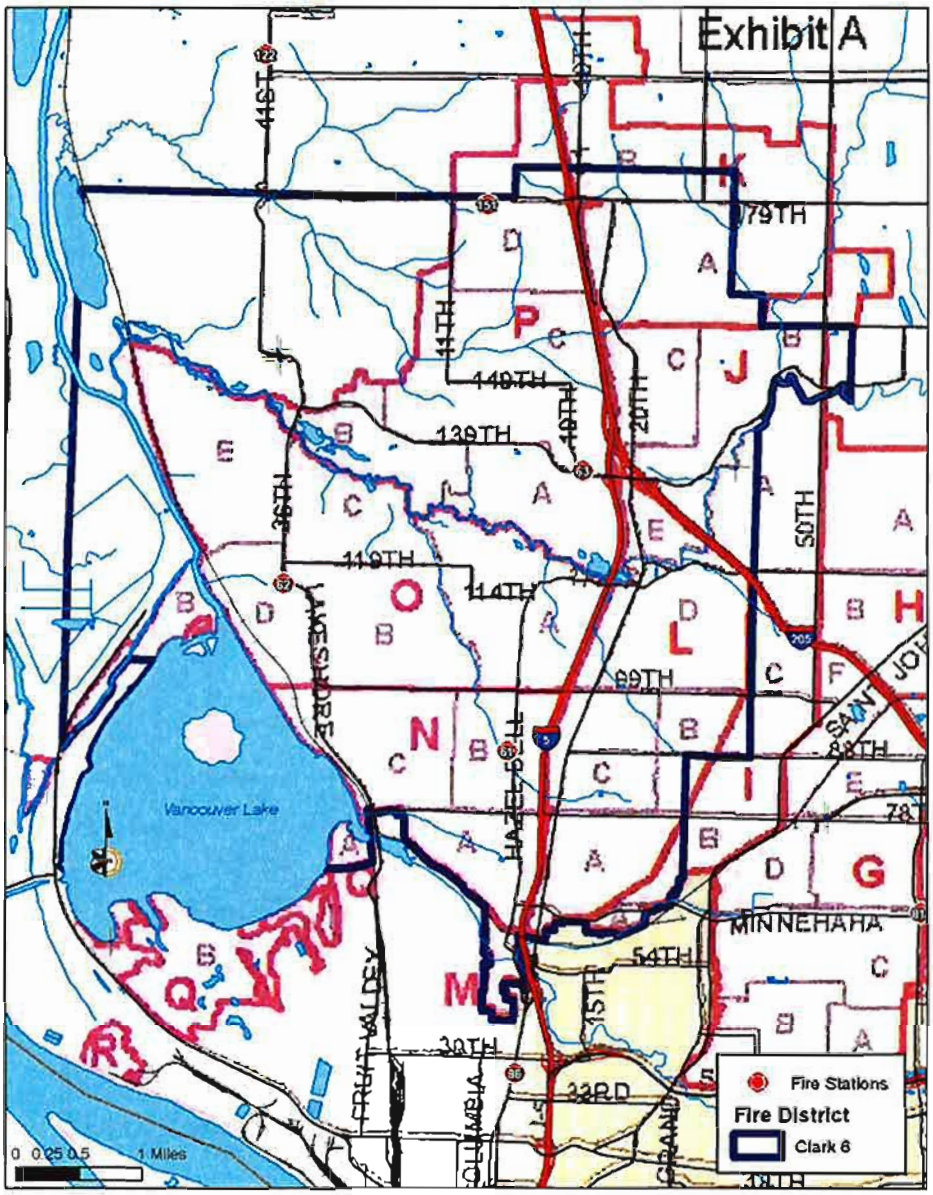
[55] *City of Vancouver-Clark County Vancouver Urban Growth Area Annexation Blueprint: 20-Year Plan*, city of Vancouver, 2007 Update.

[56] Letter: Nomination to the Three Creeks Advisory Council, December 11, 2007, Board of Clark County Commissioners.

However, it was reported to ESCi that the incorporation of a new city within the District's territory would be examined as well. The incorporation of a new city inside the CCFD6 was attempted in 1997. The initiative failed with a 70.69 percent no vote.

The following map overlays CCFD6 on the urban growth areas scheduled for annexation by the city of Vancouver. The Vancouver Fire Department is expected to assume fire protection services and should provide service with personnel, apparatus, and facilities acquired from the District. Annexations with a significant impact on CCFD 6 do not begin until 2017. Please refer to the following map and schedule of annexations.

Figure 54: CCFPD 6 & Vancouver UGA Areas

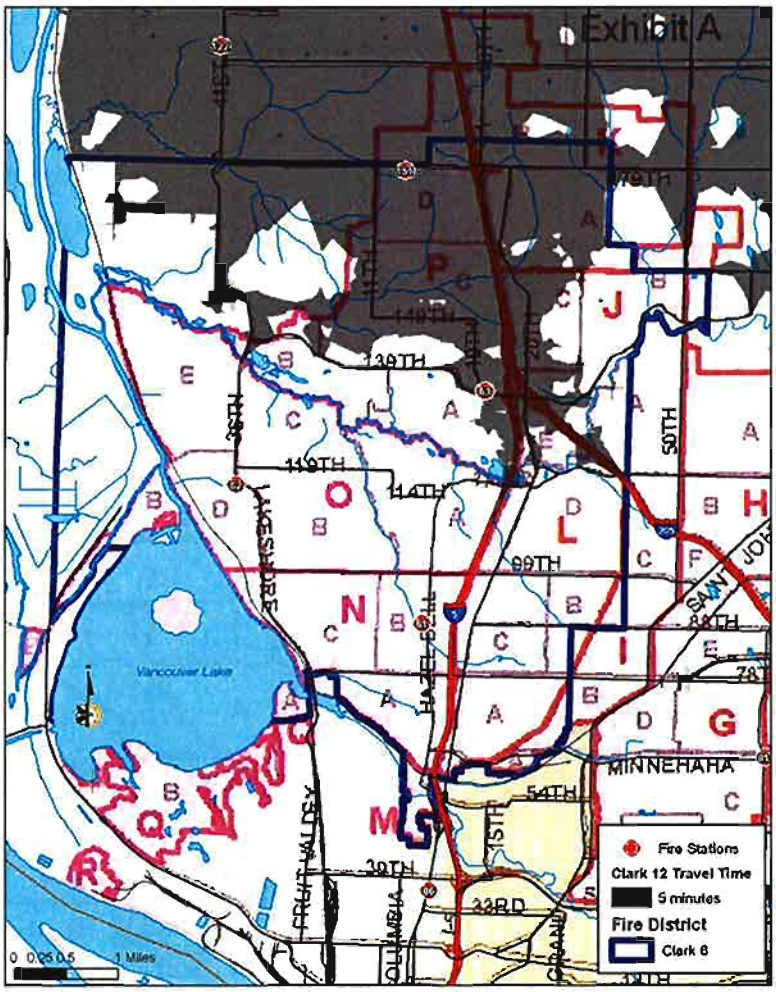


If the Vancouver annexation plan stays on schedule, the District can expect to loose territory in the following years:

- 2017 – 2022: Areas north of I-205 and east of I-5 in the northeast corner of the District, including Kozy Kamp (K) and Pleasant Valley (J)
- 2022 – 2027: Felida (O), Highway 99 area (L), Lakeshore (N), and the Salmon Creek area (P).

The remaining CCFD6 territory will be limited to a small area in the northwest corner of the District that can be serviced readily by Clark Fire District 11 Station 122 or by Vancouver. The following figure illustrates the remaining District territory and the response footprint from Station 122.

Figure 55: CCFD 11 Station 122 Travel Time Into CCFD6



The future necessity of Station 151 will be questionable as the full annexation plan is implemented.

Discussion

The District will experience a gradual increase in workload due to population growth and development. Consequently, an additional response unit will need to be added at Station 63 in approximately 12 years (2020). Station 63 cannot accommodate additional personnel and a modern facility should be built near its current location.

The city of Vancouver plans to annex a portion of the District sometime within the next five years. This initial annexation has minimal impact upon the geography of the District (Areas Q & M). The Burnt Bridge Creek area (M) has a higher level of service demand which will then be under the response auspices of the Vancouver Fire Department. This area accounts for three percent of current service demand. No additional facilities, apparatus, or additional staffing is required during this period.

Beginning in 2017, annexations will begin to significantly impact the District's territory and revenue. When complete, some time after 2027, the District's territory will consist of a small area in the northwest portion of the former District. District revenue will be severely impacted.

Critical Issues

Clark County Fire District 6 is facing several critical issues that have the capacity to negatively impact the organization. Those issues are:

- The District is not providing sufficient personnel to guarantee 13 personnel on a moderate risk response.
- The training function is not operating at an optimal level.
- Population growth and an increase in workload requiring additional response resources and improved facilities (Station 63).
- Annexation of District territory by the city of Vancouver and a corresponding loss of tax revenue.
- Continued erosion of the District's taxing authority due to state-wide tax limitation measure (I-747).

Feasible Options

Based on the critical issues facing the District, ESCi developed options for future service delivery based on the information and data presented in the previous report sections and stakeholder input. The options were presented to District senior staff for discussion regarding their feasibility. The following options are the District's feasible strategies for future service delivery.

Option 1: Status Quo

Option 2: Increase minimum career staffing level to 13 per shift

Option 3: Optimize training functions

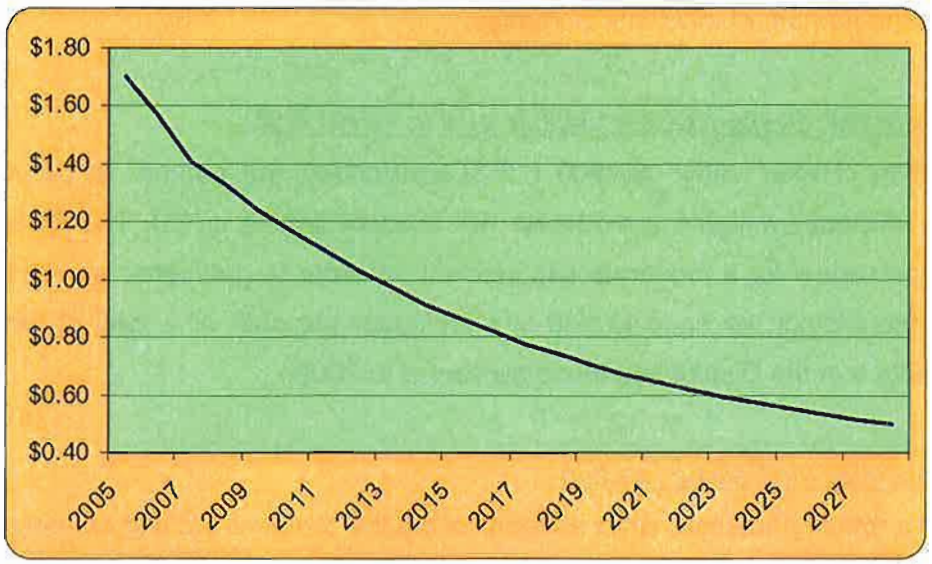
Option 4: Increase response capacity and facilities to meet future service demand

Option 5: Open lines of communication with the city of Vancouver and prepare for potential annexations.

Option 1: Status Quo – No change to the current system

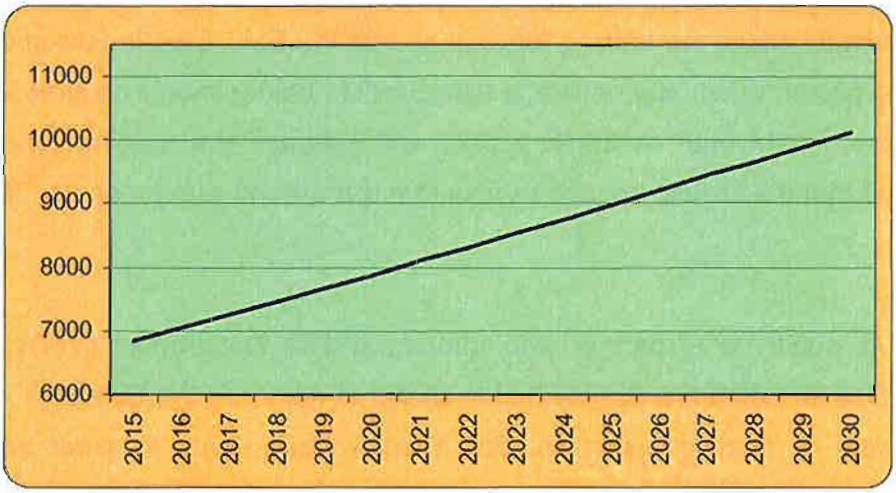
This option, while the easiest to implement, places the District at risk of being unable to sustain the current service level. The District's General Fund fire suppression tax rate has dropped from $1.35 per $1000 of taxable assessed value (TAV) in 2005, to $1.00056 in 2008. When the District's EMS levy ($0.32877) is included, the total tax rate has dropped an average of 8.54 percent per year over the past four years. Utilizing the average drop in tax rate, ESCi projected the District's tax rate to 2028. The tax rate drops to $0.4966 when projected over the next 20 years.

Figure 56: Estimated Tax Rate Erosion 2008 - 2018



In addition to the loss of tax revenue, the District will experience an increase in workload. Based on workload projections in the previous section, in twelve years, the District will be responding to 7,877 incidents, and 10,134 by 2030.

Figure 57: Workload Growth



Year	2015	2020	2025	2030
Incidents	6,836	7,877	8,975	10,134

Under the status quo option, the District's financial resources will suffer a continuous decline and the ability to sustain the current level of service will suffer. Additional financial analysis is

included later in the report. In addition to a decline in financial resources, response times will lengthen as the number of incidents increases.

Option 2: Increase minimum career staffing level to 13 per shift

In the Staffing chapter under Section I, ESCi described the number of personnel that are required to efficiently mitigate a moderate risk incident (which is 13). The District is currently fielding 12 personnel for a moderate risk incident. In order to guarantee an incident staff of 13 personnel, the District will need to add one firefighter per shift or a total of three firefighters. ESCi suggests that the District add these personnel in 2009.

Option 3: Optimize the training function

The District's training function, while accomplishing the required training elements, suffers from insufficient resources and facilities, and split EMS and fire training functions. The person assigned to the training officer position is not selected for his/her knowledge, skills, or ability, and educational criteria have not been established for this position. The person filling this role is assigned when promoted to battalion chief. The fire and EMS training functions are not integrated into a seamless training system. In addition, the District does not have adequate exterior drill facilities.

The District should adjust the training function so that the EMS captain falls under the direction of the training officer. When appropriate, a fully qualified trainer should be hired to fill the training officer position. While both of these actions will enhance the training function, ESCi has recommended that the District acquire access to a drill ground with props and facilities for skills training.

An alternative would be to partner with Vancouver Fire Department (VFD) for the training function. VFD is an urban fire agency that is similar in nature to the District. It is well equipped for the delivery of training programs. The District would have to enter into an interlocal agreement, and depending on the extent of the training delivered, would compensate Vancouver for this function. ESCi also considered Clark County Fire & Rescue (CCFR). However, CCFR is primarily a volunteer agency that responds to a non-urban environment. They would be required to change their training delivery system in order to deliver training to a large career and volunteer workforce.

Option 4: Increase response capacity and facilities to meet future service demand

The District will experience a continual, but moderate increase in workload over the next 20 years. Consequently, the District should monitor its response objectives and unit hour utilization to determine more precisely when resources should be added. ESCi has predicted that an additional response unit will need to be added at Station 63 in approximately 12 years (2020). Depending on the amount of activity, the District could choose to add a two person squad or a three person engine.

ESCi determined that Station 63 should be replaced with an updated facility that has adequate space and is seismically resistant. This facility will need to be replaced prior to the addition of a second career response unit and two or three personnel per shift.

Option 5: Open lines of communication with the city of Vancouver and prepare for potential annexations.

The city of Vancouver has expressed its intent to aggressively annex most of the District's territory. At the same time, annexation is not as easy in the District's territory as it is in the District 5 area, and there is a county appointed advisory council that may consider the possibility of a new city in that area. However, the citizens have overwhelmingly rejected a new city proposal in a past election. ESCi has come to the conclusion that it is highly probable that the city will eventually annex the territory that it has said it will.

Annexation of the District's territory will have a significant impact on the District's revenue, and its ability to continue to deliver the same level of service that it is delivering today. Consequently, the District should engage in formal talks with the city that lead to some form of an interlocal agreement regarding annexation and service delivery.

Future Organizational Structure

The organizational structure recommended by ESCi is adequate regardless of the option recommended and should be sufficient for the next 15 to 20 years.

Cost Models

All of the options described above have the potential for financial impact on the District's revenues and expenses. Each option was analyzed for potential impact to:

- Taxable assessed value (TAV)

- The maximum allowed property tax revenue
- Other revenue
- Operating expenses including recommended changes to manpower and capital assets

It should be noted that the General Obligation Bond issued March 1, 2006 for $955,000 will be retired on December 15, 2009.

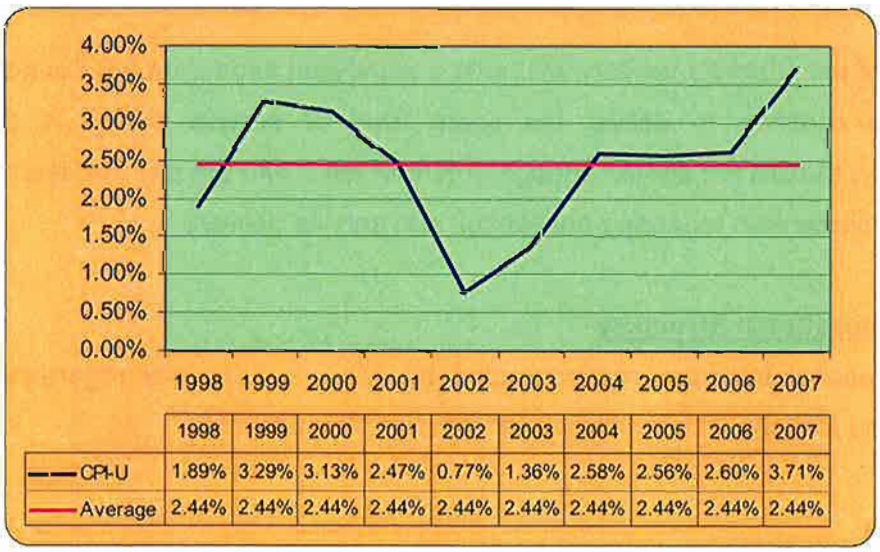
It is assumed that CCFD6 will adopt the recommendation to fund a capital fund to provide for major equipment purchases. The funding should come from excess cash on hand and is included in the analysis. Reconciliation of fund activity is also presented.

Annual Inflation Rate

Historical information was used to develop an inflation index for the years 2008 - 2027.[57] The information is illustrated in the following figure. The historical 10 year CPI-U is 2.436 percent per year.

This rate will be used in the following analysis. However, the actual CPI-U for a given year is likely to be higher or lower than the rate projected for this study.

Figure 58: Historical CPI-U



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
CPI-U	1.89%	3.29%	3.13%	2.47%	0.77%	1.36%	2.58%	2.56%	2.60%	3.71%
Average	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%

[57] Bureau of Labor Statistics: http://www.bls.gov/cpi/.

The CPI-U average increase was applied to each category of the 2008 approved budget to develop forecasted impact on CCFD6's future financial stability. The following table shows the potential annual impact.

Taxable Assessed Value

The District's TAV has continued to grow due to development. ESCi used the following calculations to determine the historical TAV growth:

- The value of property on the current tax rolls will be increased at one percent per year because of tax limitation measures.
- The CCFD6 TAV has increased by an average of 17.14 percent from 2005 through 2008.[58] However, in order to assure a conservative analysis of future TAV, ESCi used a five percent growth rate for new construction added to the tax rolls.

Property Tax Revenue

The maximum potential revenue that could be derived from the District's taxable assessed value is shown in the following illustration. ESCi used a five percent increase per year for new construction and a maximum tax rate, approved by voters in 1995, of $1.50 per $1000 of TAV. The following chart illustrates the maximum potential revenue.

[58] Data provided by CCFD6.

Figure 59: Projected TAV Growth & Maximum Tax Revenue

Budget Year	TAV	New Construction	Total TAV	Maximum Tax Rate	Property Tax Revenue
2008	6,994,160,910	0	6,994,160,910	1.50	10,491,241
2009	7,064,102,519	353,205,126	7,417,307,645	1.50	11,125,961
2010	7,487,948,670	374,397,434	7,862,346,104	1.50	11,793,519
2011	7,933,693,539	396,684,677	8,330,378,216	1.50	12,495,567
2012	8,402,439,126	420,121,956	8,822,561,082	1.50	13,233,842
2013	8,895,342,601	444,767,130	9,340,109,731	1.50	14,010,165
2014	9,413,619,065	470,680,953	9,884,300,019	1.50	14,826,450
2015	9,958,544,446	497,927,222	10,456,471,668	1.50	15,684,708
2016	10,531,458,540	526,572,927	11,058,031,467	1.50	16,587,047
2017	11,133,768,207	556,688,410	11,690,456,618	1.50	17,535,685
2018	11,766,950,726	588,347,536	12,355,298,262	1.50	18,532,947
2019	12,432,557,311	621,627,866	13,054,185,176	1.50	19,581,278
2020	13,132,216,816	656,610,841	13,788,827,656	1.50	20,683,241
2021	13,867,639,612	693,381,981	14,561,021,593	1.50	21,841,532
2022	14,640,621,668	732,031,083	15,372,652,752	1.50	23,058,979
2023	15,453,048,828	772,652,441	16,225,701,269	1.50	24,338,552
2024	16,306,901,306	815,345,065	17,122,246,371	1.50	25,683,370
2025	17,204,258,408	860,212,920	18,064,471,329	1.50	27,096,707
2026	18,147,303,486	907,365,174	19,054,668,661	1.50	28,582,003
2027	19,138,329,140	956,916,457	20,095,245,597	1.50	30,142,868

The previous chart illustrates the maximum possible fire suppression tax levy. However, I-747 and subsequent legislative action has the effect of lowering the District's tax rate, and consequently, the District's revenue.

ESCi also projected the District's potential tax revenue based on current tax rates for fire suppression and EMS. The following figure illustrates the projected tax revenue without asking voters for a fire suppression levy lid lift.

Figure 60: Projected TAV Growth & Tax Revenue Based on Current Conditions

Budget Year	TAV	New Construction	Total TAV	Projected Tax Rate	Property Tax Revenue
2008	6,994,160,910	0	6,994,160,910	1.3293	9,297,548
2009	7,064,102,519	353,205,126	7,417,307,645	1.2439	9,226,254
2010	7,487,948,670	374,397,434	7,862,346,104	1.1657	9,165,380
2011	7,933,693,539	396,684,677	8,330,378,216	1.0943	9,115,551
2012	8,402,439,126	420,121,956	8,822,561,082	1.0289	9,077,370
2013	8,895,342,601	444,767,130	9,340,109,731	0.9691	9,051,423
2014	9,413,619,065	470,680,953	9,884,300,019	0.9144	9,038,283
2015	9,958,544,446	497,927,222	10,456,471,668	0.8644	9,038,514
2016	10,531,458,540	526,572,927	11,058,031,467	0.8187	9,052,677
2017	11,133,768,207	556,688,410	11,690,456,618	0.7768	9,081,330
2018	11,766,950,726	588,347,536	12,355,298,262	0.7386	9,125,035
2019	12,432,557,311	621,627,866	13,054,185,176	0.7036	9,184,361
2020	13,132,216,816	656,610,841	13,788,827,656	0.6715	9,259,886
2021	13,867,639,612	693,381,981	14,561,021,593	0.6423	9,352,200
2022	14,640,621,668	732,031,083	15,372,652,752	0.6155	9,461,911
2023	15,453,048,828	772,652,441	16,225,701,269	0.5910	9,589,644
2024	16,306,901,306	815,345,065	17,122,246,371	0.5686	9,736,048
2025	17,204,258,408	860,212,920	18,064,471,329	0.5481	9,901,797
2026	18,147,303,486	907,365,174	19,054,668,661	0.5294	10,087,590
2027	19,138,329,140	956,916,457	20,095,245,597	0.5123	10,294,161

Total Revenue Projections

ESCi projected the District's total revenue through 2027 based on current revenue streams and the tax revenue described in the previous charts. The revenue categories were derived from the 2008 budget and an annual CPI increase of 2.436 percent was applied to non-tax revenue where appropriate. Property tax revenue was calculated to balance projected General Fund operating costs. The following illustration does not include a fire suppression levy lid lift or beginning fund balances.

Figure 61: Revenue Projection Based on Current Conditions

Budget Year	Property Taxes	Fire Protection	Investment Income	Other Taxes	Other Income	Total Revenue
2008	9,297,548	65,000	150,000	31,413	53,500	9,597,461
2009	9,226,254	66,583	150,000	32,178	54,803	9,529,819
2010	9,165,380	68,205	150,000	32,962	56,138	9,472,685
2011	9,115,551	69,867	150,000	33,765	57,506	9,426,688
2012	9,077,370	71,569	150,000	34,588	58,907	9,392,433
2013	9,051,423	73,312	150,000	35,430	60,342	9,370,507
2014	9,038,283	75,098	150,000	36,293	61,812	9,361,486
2015	9,038,514	76,928	150,000	37,177	63,317	9,365,936
2016	9,052,677	78,801	150,000	38,083	64,860	9,384,421
2017	9,081,330	80,721	150,000	39,011	66,440	9,417,501
2018	9,125,035	82,687	150,000	39,961	68,058	9,465,741
2019	9,184,361	84,702	150,000	40,934	69,716	9,529,713
2020	9,259,886	86,765	150,000	41,932	71,414	9,609,996
2021	9,352,200	88,879	150,000	42,953	73,154	9,707,185
2022	9,461,911	91,044	150,000	43,999	74,936	9,821,890
2023	9,589,644	93,262	150,000	45,071	76,761	9,954,738
2024	9,736,048	95,533	150,000	46,169	78,631	10,106,382
2025	9,901,797	97,861	150,000	47,294	80,547	10,277,498
2026	10,087,590	100,244	150,000	48,446	82,509	10,468,789
2027	10,294,161	102,686	150,000	49,626	84,519	10,680,992

Expense Projections

ESCi projected future District costs over the same period as the previous projections. The following illustration does not include transfers to a capital reserve or major apparatus purchases. The CPI-U, described earlier, was used to calculate future expense.

A detailed personnel cost chart was developed for each year using existing personnel as the base. During the analysis, ESCi determined that the 2008 Budget overstated wage and benefit information by $500,000 to $750,000. Since the 2008 budget was used as the basis for future calculations, the overstatement is included in the analysis. ESCi cautions that the overstatement of personnel costs has the potential to indicate the need for a new levy or lid lift in advance of the actual requirement.

It should be noted that the capital category provided in the following chart is for small tools and is an estimate based on past expenditures. The capital expense could be significantly higher or lower depending on the District's needs.

Figure 62: Projected Operating Costs Based on Current Conditions

Budget Year	Salaries	Benefits	Supplies	Materials	Capital	Debt	Total
2008	5,504,166	1,766,000	703,800	1,808,400	0	405,000	10,187,366
2009	5,647,077	1,855,990	720,945	1,852,453	200,000	414,866	10,691,330
2010	5,765,815	1,941,177	738,507	1,897,578	204,872	0	10,547,948
2011	5,887,409	2,030,398	756,497	1,943,803	209,863	0	10,827,970
2012	6,011,929	2,123,848	774,925	1,991,154	214,975	0	11,116,831
2013	6,139,445	2,221,731	793,802	2,039,659	220,212	0	11,414,849
2014	6,270,030	2,324,259	813,139	2,089,345	225,576	0	11,722,350
2015	6,403,758	2,431,657	832,947	2,140,241	231,071	0	12,039,676
2016	6,540,704	2,544,161	853,238	2,192,378	236,700	0	12,367,181
2017	6,680,947	2,662,016	874,023	2,245,784	242,466	0	12,705,236
2018	6,824,564	2,785,481	895,314	2,300,491	248,372	0	13,054,224
2019	6,971,639	2,914,827	917,124	2,356,531	254,423	0	13,414,545
2020	8,146,748	3,489,111	939,465	2,413,936	260,621	0	15,249,881
2021	8,325,945	3,652,723	962,350	2,472,740	266,969	0	15,680,728
2022	8,509,464	3,824,177	985,793	2,532,976	273,473	0	16,125,883
2023	8,697,408	4,003,854	1,009,807	2,594,679	280,134	0	16,585,883
2024	8,889,885	4,192,153	1,034,406	2,657,886	286,959	0	17,061,288
2025	9,087,004	4,389,492	1,059,604	2,722,632	293,949	0	17,552,681
2026	9,288,876	4,596,311	1,085,416	2,788,955	301,109	0	18,060,668
2027	9,495,618	4,813,069	1,111,857	2,856,894	308,444	0	18,585,882

Capital Reserve Fund

The District Board has resolved to establish capital reserve funds, but transfers of money have not yet occurred. ESCi used the apparatus replacement assumptions presented in Section I for development of a capital fund scenario. The following figure analyzes the projected capital fund activity for apparatus if the capital fund is adequately funded.

Figure 63: Projected Capital Fund Activity

Year	Beginning Balance	Provision	Interest: 4.67%	Charges	Ending Balance	Comments
2008	550,000	315,000	80,791		945,791	
2009	945,791	315,000	75,792	449,318	887,265	Replace APP 10 (E)
2010	887,265	315,000	69,444	458,752	812,957	Replace APP 11 (E)
2011	812,957	315,000	2,556	1,100,585	29,928	Replace Truck & Air 61
2012	29,928	230,000	24,277		284,205	
2013	284,205	230,000	2,020	492,581	23,643	Replace APP 12 (E)
2014	23,643	193,400	20,272		237,315	
2015	237,315	193,400	29,202	118,059	341,858	Replace Squad 61
2016	341,858	193,400	49,993		585,251	
2017	585,251	193,400	22,141	541,599	259,193	Replace APP 13 (E)
2018	259,193	193,400	42,272		494,866	
2019	494,866	193,400	64,284		752,550	
2020	752,550	193,400	88,352		1,034,301	
2021	1,034,301	193,400	114,667		1,342,369	
2022	1,342,369	193,400	16,515	1,358,952	193,332	Replace APP 14 & 15 (E) & Sq 61
2023	193,332	193,400	36,121		422,852	

Financial Analysis of Options

Financial Analysis – Option 1: Status quo

Under the status quo scenario, the District continues to operate as it currently is. The District will maintain current staffing and programs. The expense budget is expected to grow at a modest rate from normal cost of living escalation. Fire apparatus is replaced on an unscheduled basis and the capital reserve fund has not been funded.

ESCi projected the District's annual revenue requirements through 2027 based on current revenue streams and projected operating costs. The revenue categories were derived from the 2008 budget and an annual CPI increase of 2.436 percent was applied where appropriate.

Property tax revenue was calculated as an amount that is required to balance the budget. The formula for property tax calculation was: Property tax = projected annual budget minus other revenue sources.

The following figure shows the District's projected revenue requirements under the status quo option.

Figure 64: Revenue Sources – Status Quo

Budget Year	Property Taxes Required	Fire Protection	Investment Income	Other Taxes	Other Income	Total Revenue
2008	9,242,048	65,000	150,000	31,413	53,500	9,541,961
2009	10,673,265	66,583	150,000	32,178	54,803	10,976,830
2010	10,526,143	68,205	150,000	32,962	56,138	10,833,448
2011	10,802,332	69,867	150,000	33,765	57,506	11,113,470
2012	11,087,268	71,569	150,000	34,588	58,907	11,402,331
2013	11,325,765	73,312	150,000	35,430	60,342	11,644,849
2014	11,580,647	75,098	150,000	36,293	61,812	11,903,850
2015	11,893,753	76,928	150,000	37,177	63,317	12,221,176
2016	12,216,937	78,801	150,000	38,083	64,860	12,548,681
2017	12,550,564	80,721	150,000	39,011	66,440	12,886,736
2018	12,895,017	82,687	150,000	39,961	68,058	13,235,724
2019	13,250,693	84,702	150,000	40,934	69,716	13,596,045
2020	15,081,270	86,765	150,000	41,932	71,414	15,431,381
2021	15,507,242	88,879	150,000	42,953	73,154	15,862,228
2022	15,947,404	91,044	150,000	43,999	74,936	16,307,383
2023	16,402,289	93,262	150,000	45,071	76,761	16,767,383
2024	16,872,454	95,533	150,000	46,169	78,631	17,242,788
2025	17,358,480	97,861	150,000	47,294	80,547	17,734,181
2026	17,860,969	100,244	150,000	48,446	82,509	18,242,168
2027	18,380,551	102,686	150,000	49,626	84,519	18,767,382

In addition to the projection of potential revenue, ESCi calculated the amount of revenue that will be required to balance future budgets under the status quo scenario. The following figure shows that the current revenue stream is not adequate to maintain the current and projected level of spending. However, there is more than adequate revenue available to meet projected spending if the District were to request a fire suppression levy lid lift.

Figure 65: Comparison of Revenue Required to Balance Vs. Current & Maximum Revenue

Budget Year	Projected Budget	Status Quo Revenue	Maximum Available Revenue
2008	9,541,961	9,597,461	10,791,154
2009	10,976,830	9,529,819	11,429,526
2010	10,833,448	9,472,685	12,100,825
2011	11,113,470	9,426,688	12,806,705
2012	11,402,331	9,392,433	13,548,905
2013	11,644,849	9,370,507	14,329,249
2014	11,903,850	9,361,486	15,149,653
2015	12,221,176	9,365,936	16,012,130
2016	12,548,681	9,384,421	16,918,791
2017	12,886,736	9,417,501	17,871,856
2018	13,235,724	9,465,741	18,873,653
2019	13,596,045	9,529,713	19,926,630
2020	15,431,381	9,609,996	21,033,352
2021	15,862,228	9,707,185	22,196,518
2022	16,307,383	9,821,890	23,418,958
2023	16,767,383	9,954,738	24,703,646
2024	17,242,788	10,106,382	26,053,704
2025	17,734,181	10,277,498	27,472,408
2026	18,242,168	10,468,789	28,963,202
2027	18,767,382	10,680,992	30,529,699

It should be noted that in 2008 the District has a beginning fund balance (carry over) of approximately $5,150,000. The District has projected the ending fund balance for 2008 to be approximately $2,792,095. The 2009 beginning fund balance is adequate to fully fund the District's budget. The District will retire a general obligation bond in 2009 with a final payment of $414,866. Consequently, the District's financial requirements will slightly lower in 2010 than 2009. However, the District's 2010 revenue stream is approximately $1,360,763 less than the projected requirement.

The status quo option is not financially feasible without reducing expenditures or service levels.

Financial Analysis – Option 2: Increase minimum career staffing level to 13 per shift

In this option, the District adds three career firefighters in 2009 to guarantee a minimum of 13 personnel for moderate risk responses. In Option 1, ESCi determined that the District cannot sustain its current level of spending without requesting a fire suppression levy lid lift. This option requires additional spending and the same finding is true for this option.

ESCi used the 2008 previously developed projections (provided earlier in this section of the report) as the base for this analysis. Nine firefighters (three per shift) were added to the personnel cost in 2020 and a new engine was added to the capital replacement schedule. The capital reserve fund has been funded in calculation as well.

The following figure shows the 2009 through 2027 projected budgets that include the cost of three additional firefighters compared to the projected and maximum available revenue.

Figure 66: Option 2 Revenue Requirements

Budget Year	Projected Budget	Revenue W/Carry Over	Maximum Available Revenue
2009	10,944,655	14,691,961	
2010	10,809,009	13,768,925	
2011	11,097,030	9,426,688	12,806,705
2012	11,394,168	9,392,433	13,548,905
2013	11,700,748	9,370,507	14,329,249
2014	12,017,109	9,361,486	15,149,653
2015	12,343,604	9,365,936	16,012,130
2016	12,680,601	9,384,421	16,918,791
2017	13,028,480	9,417,501	17,871,856
2018	13,387,641	9,465,741	18,873,653
2019	13,758,495	9,529,713	19,926,630
2020	14,454,729	9,609,996	21,033,352
2021	14,860,256	9,707,185	22,196,518
2022	15,279,181	9,821,890	23,418,958
2023	15,712,005	9,954,738	24,703,646
2024	16,159,248	10,106,382	26,053,704
2025	16,621,454	10,277,498	27,472,408
2026	17,099,187	10,468,789	28,963,202
2027	17,593,038	10,680,992	30,529,699

In order to implement this option, the District should seek a fire suppression levy lid lift. The lid lift should also be used to fund the capital reserve fund for apparatus replacement and facilities improvements.

This option is feasible, if the District seeks a fire suppression levy lid lift prior to the 2010 budget year.

Financial Analysis – Option 3: Optimize training functions

ESCi has determined that the District's training function is not operating at an optimal level. Current training costs include salaries and benefits for a training battalion chief and EMS captain, and associated training and education operating costs. The approximate 2008 costs for training are described in the following figure:

Figure 67: 2008 Training Costs

Obj	Description	Fire	EMS	Total
	Salaries & Benefits			
110	Training Battalion Chief	97,272		97,272
110	EMS Captain		84,612	84,612
200	Benefits (32.1% of salary)	31,224	27,160	58,385
200	Training Overtime	36,000	30,000	66,000
200	TRT Overtime	36,000	4,800	40,800
	Sub Total	**200,496**	**146,572**	**347,069**
	Operating Supplies and Services			
312	Copying		500	500
313	Educational Supplies	8,000	5,000	13,000
314	Maps, Books, Periodicals	850	2,000	2,850
318	Equipment Under $5,000	4,000	5,000	9,000
320	Operating Supplies	2,500		2,500
410	Professional Services	12,000	7,500	19,500
434	Long Distance Travel	30,000	10,000	40,000
482	Equipment Maintenance	1,500		1,500
496	Tuition/Registration	28,000	19,500	47,500
640	Machinery/Equipment	10,000	7,500	17,500
	Sub Total	**96,850**	**57,000**	**153,850**
	Total	**297,346**	**203,572**	**500,919**

The District is spending approximately $501,000 on training in 2008. If the District were to partner with VFD for training functions, the District may be required to pay VFD for some or all of the training cost. Determining the cost of partnering with VFD would be speculative at this point and ESCi does not believe that a financial savings would be gained. However, a cost-neutral agreement that shares resources or coordinates training could be created between the agencies.

This option is feasible if the District seeks a cost-neutral partnership with VFD.

Financial Analysis – Option 4: Increase response capacity and facilities to meet future service demand

ESCi has projected an increase in workload in 2020 that necessitates the addition of a response resource if the District wishes to meet its adopted response objectives. The new resource should be located at Station 63 and consist of a two person squad or three person engine. In addition, Station 63 is in need of remodeling or replacement and does not have the facilities to appropriately house three additional personnel per shift.

ESCi utilized the personnel, revenue, and operating expense projections developed earlier as the base for this analysis. It was assumed that nine firefighters (three per shift) were added to personnel costs in 2020, a new engine was added to the capital replacement schedule, and Station 63 was replaced by 2018. Transfers to the capital reserve fund have been included in the expense calculation.

The following figure shows the anticipated capital cost and the associated reserve fund transfer required for the replacement of Station 63 and the addition of an engine in that station. The following chart describes the cost of replacing the station in 2018 and adding an engine in 2020.

Figure 68: Reserve Fund Requirements with New Engine and Station 63 Replacement

Year	Beginning Balance	Tranfer In	Interest (4.67%)	Charges	Ending Balance	Comments
2008	550,000	392,500	44,015	0	986,515	
2009	986,515	392,500	43,417	449,318	973,114	Replace E632
2010	973,114	392,500	42,350	458,752	949,212	Replace E622
2011	949,212	392,500	11,261	1,100,585	252,388	Replace Air 61 & T61
2012	252,388	392,500	30,116		675,004	
2013	675,004	392,500	26,849	492,581	601,772	Replace E612
2014	601,772	392,500	46,432		1,040,704	
2015	1,040,704	392,500	61,417	118,059	1,376,563	Replace Squad 61
2016	1,376,563	392,500	82,615		1,851,678	
2017	1,851,678	392,500	79,510	541,599	1,782,089	Replace E611
2018	1,782,089	392,500	12,407	1,908,917	278,080	Build New Station 63
2019	278,080	392,500	31,316		701,896	
2020	701,896	392,500	23,950	581,537	536,809	Add Engine at Sta. 63
2021	536,809	392,500	43,399		972,708	
2022	972,708	392,500	292	1,358,952	6,548	Replace E61, 62 & Sq 61

The following figure shows the cost of adding three firefighters in 2009 (Option 2), six firefighters and three officers in 2020, and transfers to the capital reserve fund sufficient for the replacement of Station 63 in 2018 and the addition of one engine for that station in 2020.

Figure 69: Option 4 Operating Costs

Budget Year	Salaries	Benefits	Supplies	Materials	Small Equip	Debt	Capital Transfer	Total
2008	5,504,166	1,766,000	703,800	1,808,400	0	405,000	942,500	11,129,866
2009	5,837,739	1,918,653	720,945	1,852,453	200,000	414,866	392,500	11,337,155
2010	5,961,121	2,006,931	738,507	1,897,578	204,872	0	392,500	11,201,509
2011	6,087,473	2,099,395	756,497	1,943,803	209,863	0	392,500	11,489,530
2012	6,216,866	2,196,247	774,925	1,991,154	214,975	0	392,500	11,786,668
2013	6,349,375	2,297,700	793,802	2,039,659	220,212	0	392,500	12,093,248
2014	6,485,074	2,403,974	813,139	2,089,345	225,576	0	392,500	12,409,609
2015	6,624,040	2,515,304	832,947	2,140,241	231,071	0	392,500	12,736,104
2016	6,766,353	2,631,932	853,238	2,192,378	236,700	0	392,500	13,073,101
2017	6,912,092	2,754,116	874,023	2,245,784	242,466	0	392,500	13,420,980
2018	7,061,340	2,882,123	895,314	2,300,491	248,372	0	392,500	13,780,141
2019	7,214,183	3,016,234	917,124	2,356,531	254,423	0	392,500	14,150,995
2020	8,146,748	3,489,111	939,465	2,413,936	260,621	0	392,500	15,642,381
2021	8,325,945	3,652,723	962,350	2,472,740	266,969	0	392,500	16,073,228
2022	8,509,464	3,824,177	985,793	2,532,976	273,473	0	392,500	16,518,383
2023	8,697,408	4,003,854	1,009,807	2,594,679	280,134	0	392,500	16,978,383
2024	8,889,885	4,192,153	1,034,406	2,657,886	286,959	0	392,500	17,453,788
2025	9,087,004	4,389,492	1,059,604	2,722,632	293,949	0	392,500	17,945,181
2026	9,288,876	4,596,311	1,085,416	2,788,955	301,109	0	392,500	18,453,168
2027	9,495,618	4,813,069	1,111,857	2,856,894	308,444	0	392,500	18,978,382

The District will retire its current general obligation bonds in 2009. The District can utilize the funds previously allocated for debt payments to fund future transfers to the capital reserve fund. The District's starting General Fund balance (carry over) is $5,150,000 in 2008 and projected to be $2,792,095 in 2009. Consequently, the District has sufficient revenue to begin implementing Option 4. However, there is insufficient revenue to sustain Option 4 beyond 2009, possibly 2010, without seeking approval of a fire suppression levy lid lift.

The following chart compares the Option 4 projected operating costs to the current and maximum potential revenue streams.

Figure 70: Option 4 Operating Costs vs. Potential Revenue

Budget Year	Starting Balance	Current Revenue	Operating Cost	Maximum Revenue
2008	5,150,000	14,747,461	11,129,866	
2009	2,792,095	12,321,914	11,337,155	
2010		9,472,685	11,201,509	12,100,825
2011		9,426,688	11,489,530	12,806,705
2012		9,392,433	11,786,668	13,548,905
2013		9,370,507	12,093,248	14,329,249
2014		9,361,486	12,409,609	15,149,653
2015		9,365,936	12,736,104	16,012,130
2016		9,384,421	13,073,101	16,918,791
2017		9,417,501	13,420,980	17,871,856
2018		9,465,741	13,780,141	18,873,653
2019		9,529,713	14,150,995	19,926,630
2020		9,609,996	15,642,381	21,033,352
2021		9,707,185	16,073,228	22,196,518
2022		9,821,890	16,518,383	23,418,958
2023		9,954,738	16,978,383	24,703,646
2024		10,106,382	17,453,788	26,053,704
2025		10,277,498	17,945,181	27,472,408
2026		10,468,789	18,453,168	28,963,202
2027		10,680,992	18,978,382	30,529,699

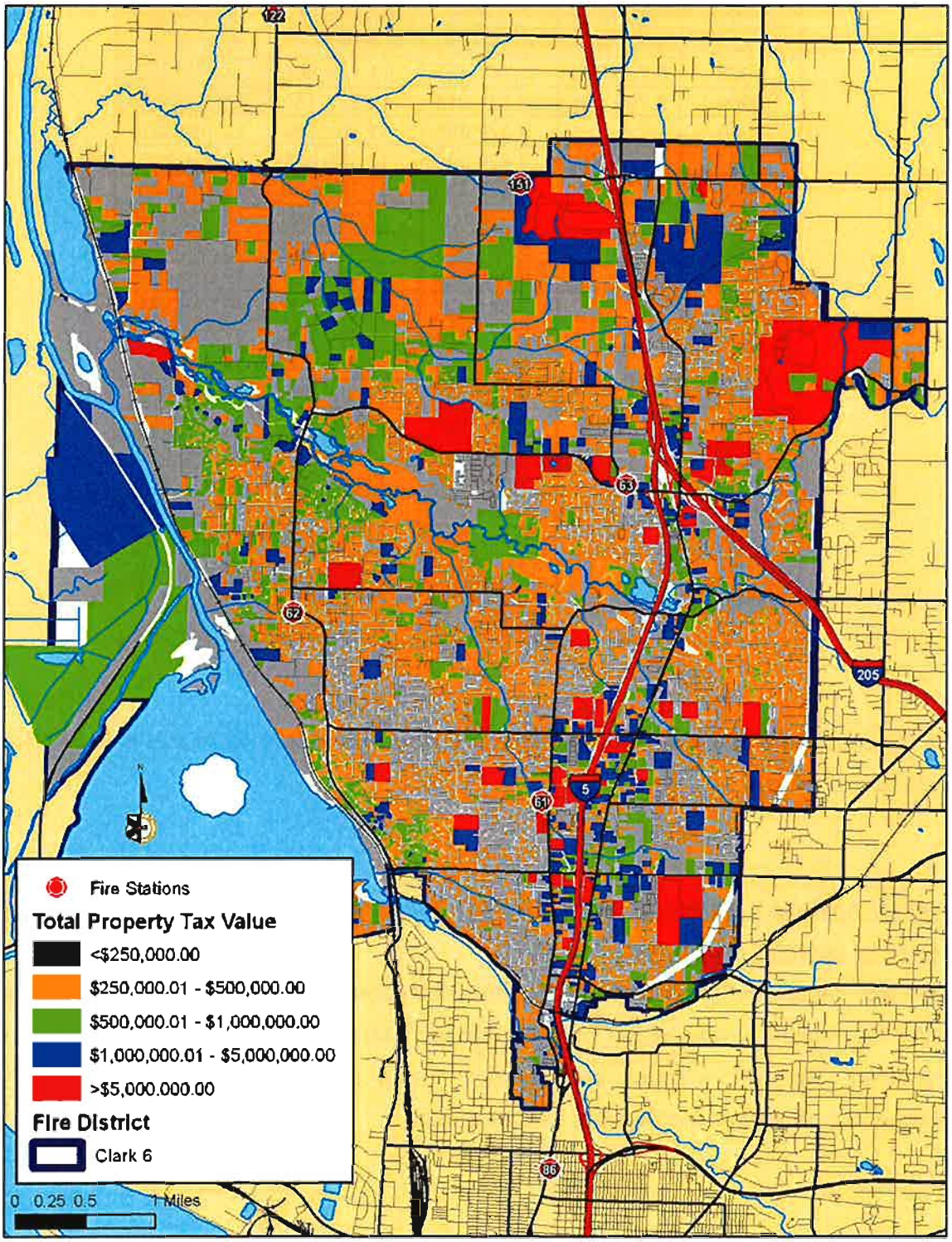
This option is feasible if the District seeks a fire suppression levy lid lift that is in effect prior to the 2010 budget year.

Financial Analysis – Option 5: Open lines of communication with the city of Vancouver and prepare for potential annexations.

The city of Vancouver has published a 20 year urban growth annexation plan.[59] In this plan, they outline the territory (areas of tax parcels) the city intends to annex and a time frame for the annexation. The plan includes property both inside and outside of CCFD6 territory. The following map illustrates the District's TAV by parcel.

[59] *City of Vancouver-Clark County Vancouver Urban Growth Area Annexation Blueprint: 20-Year Plan*, city of Vancouver, 2007 Update.

Figure 71: TAV by Parcel Map



The table in the following figure provides an overview of the major areas within the District the city intends to annex.

Figure 72: Areas Scheduled for Annexation

Area	TAV	Annexation Timeframe
Burnt Bridge Creek West	50,820,200	2014
LakeView	937,660	2014
Kozy Camp	398,938,430	2020
Pleasant Valley	578,790,100	2020
St. Johns	88,561,730	2020
Felida	1,984,067,400	2024
Highway 99	1,426,225,829	2024
Lakeshore	1,176,576,390	2025
Salmon Creek	1,278,679,560	2025
Total TAV	**6,983,597,299**	

If the plan is adopted as published, approximately 98.5 percent of the 2008 assessed property value will be annexed by the city of Vancouver. In addition, all the District's fire stations will be annexed into the city. If the city moves forward with the plan, the District will be required to conduct a significant realignment of operations including the potential closing of all existing stations.

The following table projects station closures due to planned annexations. The closure of a station also requires a commensurate reduction of operational expense and a corresponding reduction in manpower.

Figure 73: Schedule of Station Closures

Territory to be Annexed	Schedule	ESCi Forecast	Station Impact
Burnt Ridge	2012 - 2017	2014	None
Lake View	2012 - 2017	2014	None
Pleasant Valley	2017 - 2022	2020	Close 63
St. Johns	2017 - 2022	2020	None
Felida	2022 - 2027	2024	Close 62
Highway 99	2022 - 2027	2024	Close 62
Lakeshore	2022 - 2027	2025	Close 61
Salmon Creek	2022 - 2027	2025	Close 61

When the city annexes District territory, the District's TAV will be reduced by an amount equal to the value of the area annexed. The following figure reflects the potential change in the District's TAV when the city annexes District territory. The chart also shows the District's maximum potential property tax revenue.

Figure 74: TAV & Property Tax Adjustments Due to Annexation

Budget Year	TAV	New Construction	Total TAV	Maximum Tax Rate	Maximum Property Tax
2008	6,994,160,910	0	6,994,160,910	1.50	10,491,241
2009	7,064,102,519	353,205,126	7,417,307,645	1.50	11,125,961
2010	7,487,948,670	374,397,434	7,862,346,104	1.50	11,793,519
2011	7,933,693,539	396,684,677	8,330,378,216	1.50	12,495,567
2012	8,402,439,126	420,121,956	8,822,561,082	1.50	13,233,842
2013	8,895,342,601	444,767,130	9,340,109,731	1.50	14,010,165
2014	9,338,960,259	466,948,013	9,805,908,272	1.50	14,708,862
2015	9,879,603,280	493,980,164	10,373,583,444	1.50	15,560,375
2016	10,448,015,401	522,400,770	10,970,416,171	1.50	16,455,624
2017	11,045,592,448	552,279,622	11,597,872,070	1.50	17,396,808
2018	11,673,800,110	583,690,006	12,257,490,116	1.50	18,386,235
2019	12,334,177,436	616,708,872	12,950,886,308	1.50	19,426,329
2020	10,916,848,401	545,842,420	11,462,690,821	1.50	17,194,036
2021	11,528,904,331	576,445,217	12,105,349,548	1.50	18,158,024
2022	12,172,225,192	608,611,260	12,780,836,452	1.50	19,171,255
2023	12,848,380,853	642,419,043	13,490,799,896	1.50	20,236,200
2024	5,597,512,492	279,875,625	5,877,388,116	1.50	8,816,082
2025	22,829,891	1,141,495	23,971,386	1.50	35,957
2026	24,096,491	1,204,825	25,301,316	1.50	37,952
2027	25,427,672	1,271,384	26,699,056	1.50	40,049

ESCi has recommended the funding of a capital reserve fund. This recommendation should be enacted in 2008 regardless of the city's annexation plan. If the plan is activated, modifications can be made to the capital fund to compensate for lost of revenue and service area.

ESCi has offered two scenarios for funding the capital fund under this option. In the first scenario, the District assumes that the city will successfully annex District territory and maintains the minimum balance required for apparatus replacement through 2017. The District should evaluate its equipment requirements and relocate the better equipment to the stations that will continue to provide service

While the city has expressed its intent to annex District territory, there is some question as to whether or not the city can or will carry out the plan. Consequently, ESCi has developed a second scenario. In this scenario, the District transfers funds to the capital fund at the same rate suggested in Option 4. However, the District should re-evaluate the city's intent or progress toward annexation in 2013, and adjust transfers to the capital fund as necessary.

Figure 75: Option 5 Capital Fund – Scenario One

Year	Beginning Balance	Transfer In	Interest (4.67%)	Charges	Ending Balance	Comments
2008	550,000	301,000	39,742	0	890,742	
2009	890,742	301,000	34,671	449,318	777,095	Replace APP 10 (E)
2010	777,095	301,000	28,923	458,752	648,266	Replace APP 11 (E)
2011	648,266	301,000	36,809	161,061	825,014	Replace Air 61
2012	825,014	301,000	8,709	939,524	195,199	Replace Truck 61
2013	195,199	301,000	169	492,581	3,787	Replace APP 12 (E)
2014	3,787	156,000	7,462		167,250	
2015	167,250	156,000	9,582	118,059	214,773	Replace Squad 61
2016	214,773	156,000	17,315		388,088	
2017	388,088	156,000	116	541,599	2,605	Replace APP 13 (E)
2018	2,605		122		2,727	
2019	2,727		127		2,854	
2020	2,854		133		2,988	
2021	2,988		140		3,127	
2022	3,127		146		3,273	
2023	3,273		153		3,426	
2024	3,426		160		3,586	
2025	3,586		167		3,753	

Figure 76: Option 5 Capital Fund – Scenario Two

Year	Beginning Balance	Transfer In	Interest (4.67%)	Charges	Ending Balance	Comments
2008	550,000	392,500	44,015	0	986,515	
2009	986,515	392,500	43,417	449,318	973,114	Replace APP 10 (E)
2010	973,114	392,500	42,350	458,752	949,212	Replace APP 11 (E)
2011	949,212	392,500	55,136	161,061	1,235,787	Replace Air 61
2012	1,235,787	392,500	32,165	939,524	720,929	Replace Truck 61
2013	720,929	392,500	28,994	492,581	649,841	Replace APP 12 (E)
2014	649,841		30,348		680,189	
2015	680,189		31,765		711,954	
2016	711,954		33,248		745,202	
2017	745,202		34,801		780,003	
2018	780,003		36,426		816,429	
2019	816,429		38,127		854,556	
2020	854,556		39,908		894,464	
2021	894,464		41,771		936,235	
2022	936,235		43,722		979,958	
2023	979,958		45,764		1,025,722	
2024	1,025,722		47,901		1,073,623	
2025	1,073,623		50,138		1,123,761	

ESCi projected the District's total revenue through 2027 based on the maximum tax revenue and other revenue streams described in the previous cost model section of the report. The revenue categories were derived from the 2008 budget, and an annual CPI increase of 2.436 percent was applied to non-tax revenue where appropriate. ESCi estimated non tax revenues for budget years 2020 and 2024 through 2027

Figure 77: Post Annexation Revenue

Budget Year	Current Property Tax	Maximum Property Tax	Fire Protection	Investment Income	Other Taxes	Other Income	Beginning Balance	Total Revenue
2008	9,297,548		65,000	150,000	31,413	53,500	5,150,000	14,747,461
2009	9,226,254		66,583	150,000	32,178	54,803	2,792,095	12,321,914
2010		11,793,519	68,205	150,000	32,962	56,138		12,100,825
2011		12,495,567	69,867	150,000	33,765	57,506		12,806,705
2012		13,233,842	71,569	150,000	34,588	58,907		13,548,905
2013		14,010,165	73,312	150,000	35,430	60,342		14,329,249
2014		14,708,862	75,098	150,000	36,293	61,812		15,032,065
2015		15,560,375	76,928	150,000	37,177	63,317		15,887,797
2016		16,455,624	78,801	150,000	38,083	64,860		16,787,368
2017		17,396,808	80,721	150,000	39,011	66,440		17,732,979
2018		18,386,235	82,687	150,000	39,961	68,058		18,726,942
2019		19,426,329	84,702	150,000	40,934	69,716		19,771,682
2020		17,194,036	74,969	132,763	36,231	61,705		17,499,704
2021		18,158,024	76,795	125,000	37,206	63,208		18,460,233
2022		19,171,255	78,666	125,000	38,112	64,748		19,477,781
2023		20,236,200	80,582	100,000	39,041	66,325		20,522,148
2024		8,816,082	35,106	43,566	17,008	28,895		8,940,658
2025		35,957	15,000	20,000	8,000	14,000		92,957
2026		37,952	7,500	1,500	4,000	5,000		55,952
2027		40,049	7,914	1,583	4,221	5,276		59,043

The 2008 budget was used as the base for calculating projected costs for future years. All cost categories used the 10-year historical average CPI-U index to capture inflation from year to year.

ESCi completed a detailed personnel, salary, and benefit spreadsheet for each year using the 2008 budget as the base. The projected changes to personnel include the closure of all of the districts stations in the following order:

- Station 63 – 2020
- Station 62 – 2024
- Station 61 – 2025

The table in the following figure shows the District's projected costs through 2027 as the city annexes District territory. The Option 5 Capital Fund – Scenario One was utilized to calculate capital transfers.

Figure 78: Post Annexation Operating Costs

Budget Year	Salaries	Benefits	Supplies	Materials	Small Equip	Debt	Capital Transfer	Total
2008	5,504,166	1,766,000	703,800	1,808,400		405,000	851,000	11,038,366
2009	5,647,077	1,855,990	720,945	1,852,453	200,000	414,866	301,000	10,992,330
2010	5,765,815	1,941,177	738,507	1,897,578	204,872		301,000	10,848,948
2011	5,887,409	2,030,398	756,497	1,943,803	209,863		301,000	11,128,970
2012	6,011,929	2,123,848	774,925	1,991,154	214,975		301,000	11,417,831
2013	6,139,445	2,221,731	793,802	2,039,659	220,212		301,000	11,715,849
2014	6,270,030	2,324,259	813,139	2,089,345	225,576		156,000	11,878,350
2015	6,403,758	2,431,657	832,947	2,140,241	231,071		156,000	12,195,676
2016	6,540,704	2,544,161	853,238	2,192,378	236,700		156,000	12,523,181
2017	6,680,947	2,662,016	874,023	2,245,784	242,466		156,000	12,861,236
2018	6,824,564	2,785,481	895,314	2,300,491	248,372			13,054,224
2019	6,971,639	2,914,827	917,124	2,356,531	225,000			13,385,122
2020	6,179,282	2,646,480	629,442	1,617,337	154,422			11,226,963
2021	6,206,756	2,723,001	644,775	1,656,736	158,184			11,389,452
2022	6,034,154	2,711,766	660,481	1,697,094	162,037			11,265,532
2023	6,170,326	2,840,511	676,571	1,738,435	165,985			11,591,827
2024	4,253,812	2,005,946	228,707	587,659	56,109			7,132,234
2025	3,719,839	1,796,874	50,000	250,000	30,000			5,846,713
2026	86,617	42,860	25,000	150,000	5,000			309,477
2027	88,727	44,973	25,000	100,000	5,000			263,700

In the following figure, the projected revenue stream, which includes maximum tax revenue, is compared to the projected operating cost.

Figure 79: Option 5 – Adequacy of Revenue Stream

Budget Year	Maximum Revenue	Projected Cost
2008	14,747,461	11,038,366
2009	12,321,914	10,992,330
2010	12,100,825	10,848,948
2011	12,806,705	11,128,970
2012	13,548,905	11,417,831
2013	14,329,249	11,715,849
2014	15,032,065	11,878,350
2015	15,887,797	12,195,676
2016	16,787,368	12,523,181
2017	17,732,979	12,861,236
2018	18,726,942	13,054,224
2019	19,771,682	13,385,122
2020	17,499,704	11,226,963
2021	18,460,233	11,389,452
2022	19,477,781	11,265,532
2023	20,522,148	11,591,827
2024	8,940,658	7,132,234
2025	92,957	5,846,713
2026	55,952	309,477
2027	59,043	263,700

Based on the expense and revenue analysis, the District will have sufficient revenue to continue operating through 2024 if it seeks a fire suppression levy lid lift. However, annexations will significantly reduce the District's potential property tax and other revenue streams. In 2025, the District will be forced to eliminate all expenses except for insurance and may not be able to provide fire protection.

The ability to fund basic expenses and fire protection could be extended, if the District were to reserve funds in 2023 and earlier years for future service delivery. However, tax payers in areas annexed by the city would be subsidizing service delivery in the area that is not to be annexed.

If the city is successful in annexing the territory that is proposed in the Annexation Blueprint, the District will need to consider how it will provide fire and EMS service to the remaining territory, or consider dissolving the District with the intent of annexation by another service provider.

Based on the financial analysis, the option to open lines of communication with the city of Vancouver and prepare for potential annexations is feasible. More so, ESCi believes that it is

imperative that the District open lines of communication with the city of Vancouver to prepare for potential annexations.

Strengths & Weaknesses of Options

Option 1: Status Quo	
Strengths	**Weaknesses**
• Ease of implementation	• Is not financially feasible without service reductions • Does not address critical issues • Service levels will degrade from lack of improvements • Financial resources potentially impacted by annexation
Recommendation: Reject option	

Option 2: Increase minimum career staffing level to 13 per shift	
Strengths	**Weaknesses**
• Meets moderate risk staffing recommendation • Increases citizen and firefighter safety • Quick to implement	• Requires voter approval of a financial measure to sustain the option • Immediate financial impact
Recommendation: Accept option	

Option 3: Optimize training functions	
Strengths	**Weaknesses**
• Increases consistency between EMS and fire training • Focused training functions and a higher level of education and training delivery • Removes unqualified personnel from training officer position • Improved firefighter safety • The EMS captain can begin reporting to the training officer immediately • Financial impact is minimal if the training officer position is implemented when the current battalion chief is permanently reassigned to a shift • Potential for training partnership with VFD	• Training function will not improve without implementation • Eliminates battalion chief experience as training officer • Potential for conflict between EMS and fire training functions • Must wait for a shift battalion chief retirement for full implementation
Recommendation: Accept option	

Option 4: Increase response capacity and facilities to meet future service demand	
Strengths	**Weaknesses**
• Provides a continued high level of service • Upgrades Station 63 facilities • Assists in meeting District response objectives • Improves overall response capacity	• Service delivery will degrade without implementation • Long-term operating cost impact • Station construction is not budgeted • Requires voter approval of a financial measure
Recommendation: Accept option	

Option 5: Open lines of communication with the city of Vancouver and prepare for potential annexations	
Strengths	**Weaknesses**
• Ease of implementation • Creates the potential for a smooth transition of services, service area, and financial impacts • May lead to a long-term contractual relationship	• Potential conflict between the agencies agendas • District's financial condition and service delivery may be severely impacted if annexations move forward and this option is not implemented
Recommendation: Accept option	

Recommended Strategies

Based on the strengths and weaknesses of the options presented in the previous objective, ESCi recommends that the District move forward with all of the options except for Option 1: Status Quo. The options now become short, mid, and long-term strategies which can be initiated when the master plan is adopted. In addition to the strategies listed below, the District should consider the recommendations for improvement made in Section I of the report (see appendix) as short term strategies. The strategies should be accomplished within the following time periods:

- Short term strategies – Five years or less
- Mid term strategies – Between 10 to 15 years
- Long-term strategies – Within 20 years

The following strategies have been developed for CCFD6:

Figure 80: Recommended Short, Mid, and Long-Term Strategies

Term	Strategy
Short	1. Address recommendations for improvement as listed in Section I of the report
Short	2. Increase minimum career staffing level to 13 per shift
Short	3. Optimize training functions
Mid	4. Increase response capacity and facilities to meet future service demand
Long	5. Open lines of communication with the city of Vancouver and prepare for potential annexations.

Objective Two: Recommended Long-Term Strategy

Strategy 5: Open lines of communication with the city of Vancouver and prepare for potential annexations.

Impact on Governance and Organizational Structure

In order to effect an orderly transition of services, the District should open lines of communication leading to an agreement regarding service delivery, the assimilation of human resources, and the disposition of assets.

It is imperative that the organizations control how personnel and assets are transferred from the District to the city. When the planned annexations are complete, CCFD6 will still have territory that requires protection and the District will still be required to have a Board of Fire Commissioners.

The annexation of District territory will have a significant impact on the District's organizational structure. As District territory is annexed, the delivery of fire protection becomes the responsibility of the city of Vancouver.

Incremental annexation will require that the District reduce the number of response personnel and administrative positions. The following series of organizational charts describe possible reductions in personnel that will compel changes to the District's organizational structure from 2022 through 2026.

Figure 81: CCFD6 Organizational Chart 2022

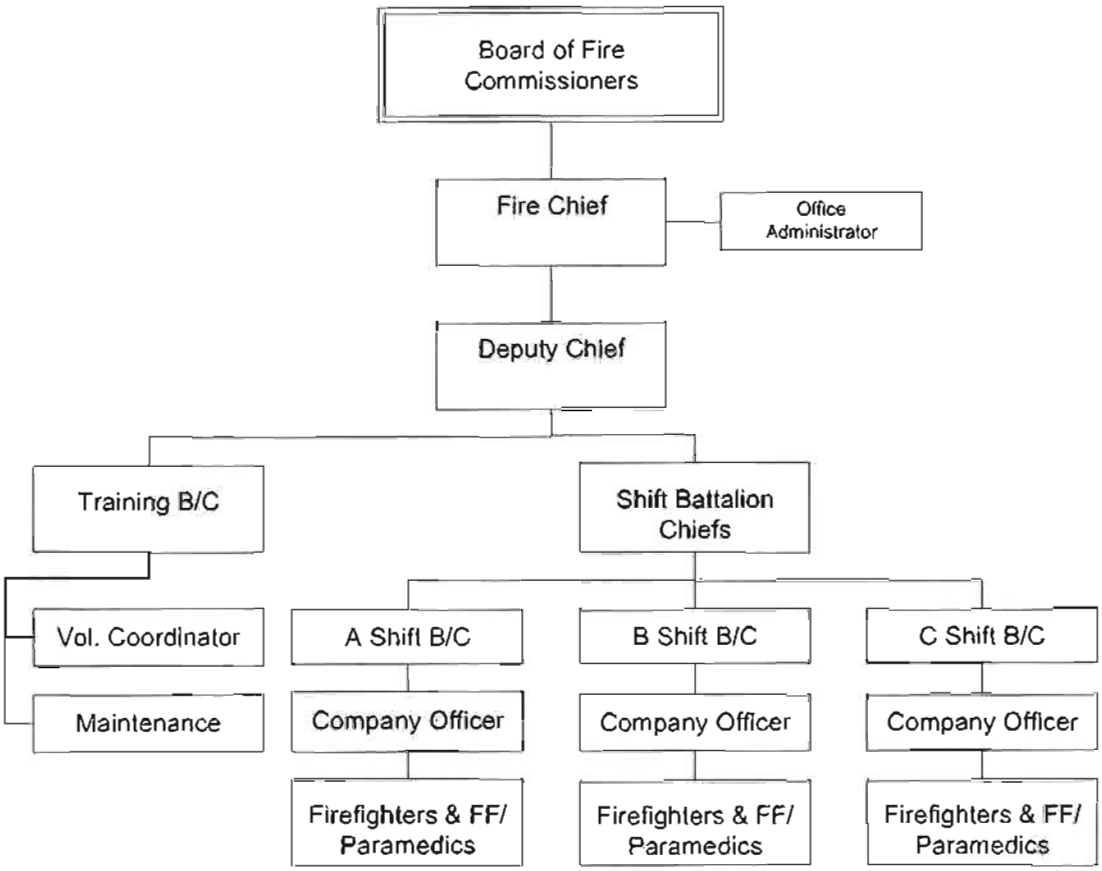


Figure 82: CCFD6 Organizational Chart 2024

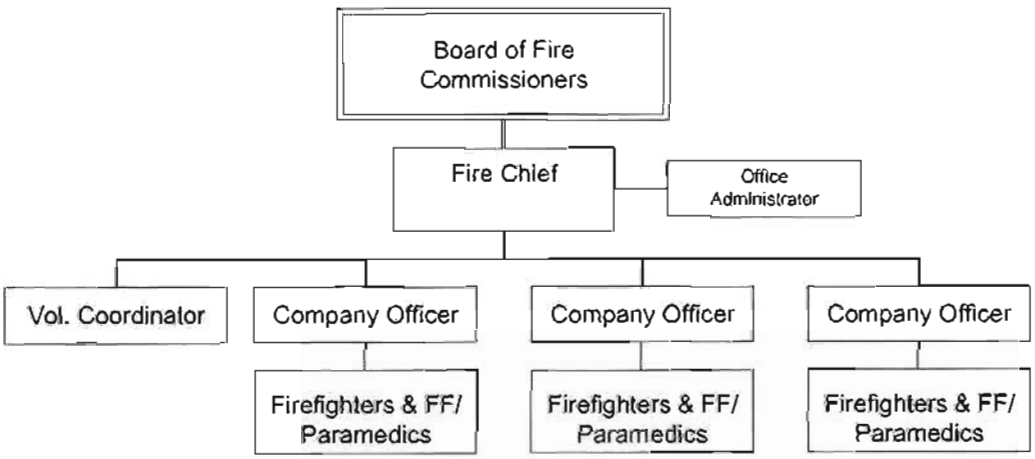


Figure 83: CCFD6 Organizational Chart 2025

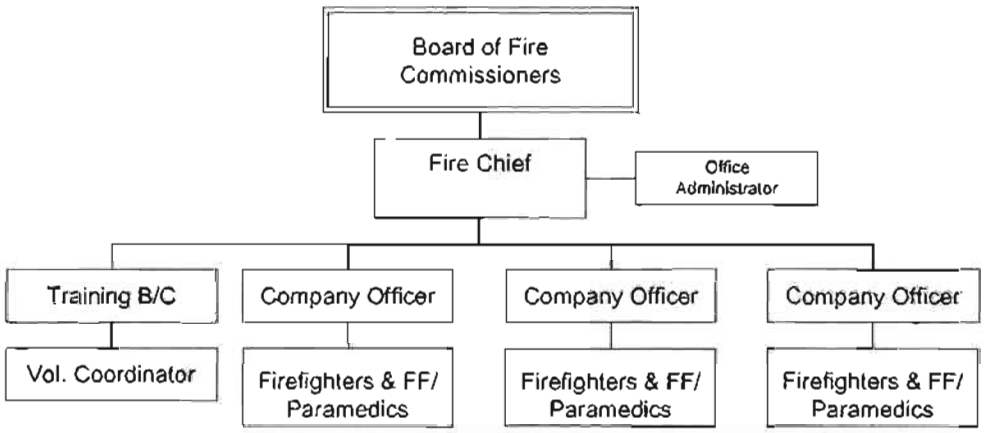
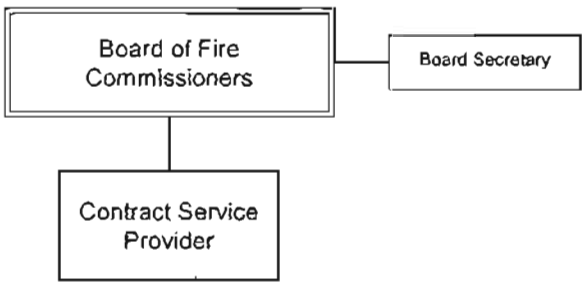


Figure 84: CCFD6 Organizational Chart 2026



Impact on Assets and Resources

ESCi recommends that the District fund its capital replacement fund in order to assure the continued replacement of apparatus and facilities. The amount transferred should be evaluated annually while monitoring the progress of annexation. If annexation is moving forward on the schedule stated by the city, the District should adjust transfers accordingly. If annexation is not moving forward, the District should continue to transfer funds to the capital replacement fund and replace apparatus until conditions change.

Communication between the District and the city is necessary for the transition of physical assets such as apparatus, equipment, and facilities. The District's physical assets are the property of the District. However, those assets were paid for by the District's taxpayers. Consequently, the District's physical assets should continue to deliver service if annexed into

the city. The process of dividing assets should be spelled out in an interlocal agreement that specifies the type of asset and the trigger point for transfer from one agency to another.

Impact on Staffing

Open communication with the city of Vancouver would provide the District and the city with an opportunity to determine how the District's assets and resources would be divided in the event of an annexation.

The protection of human resources is paramount to the continued health of the District. Employees should be reassured regarding their job security so moral and service delivery does not suffer. If employees sense the threat of a reduction in personnel (layoff) is possible, they will begin seeking employment elsewhere. This scenario also impacts the ability of the District to replace personnel that leave for other employment.

Based on the analysis in the previous sections, ESCi has determined that the District would reduce the number of staff according to the following schedule:

Figure 85: Personnel Schedule – Annexation

Position	2008	2020	2021	2022	2023	2024	2025	2026	2027
Chief	1	1	1	1	1	1	1		
Deputy Chief	1	1	1	1	1				
Assistant Chief	1	1	1						
PIO	1	1	1						
Training Battalion Chief	1	1	1	1	1	1			
EMS Captain	1	1							
Office Administrator	1	1	1	1	1	1	1		
Office Assistant	1	1	1						
Maintenance Specialist	1	1	1	1	1				
Volunteer Coordinator	.5	.5	.5	.5	.5	.5			
Battalion Chief	3	3	3	3	3				
Captain	3	2	2	2	2	1	1		
Lieutenant	6	4	4	4	4	2	2		
Firefighter, paramedic	20	16	16	16	16	12	3		
Firefighter	19	15	15	15	15	11	3		
Volunteers									
Captain	3	3	3	3	3	3			
Lieutenant	3	3	3	3	3	3			
Firefighter, paramedic	0	0	0	0	0	0			
Firefighter	37	37	37	37	37	37			

Roadblocks and Challenges to Implementation

ESCi has identified two significant roadblocks or challenges that are potential barriers to successful implementation of this strategy. These barriers need to be avoided or resolved to ensure successful communication between the District and city. The roadblocks and challenges fall into the categories of public perception, and communication and attitudes between organizations. The issues are not ranked in order of significance or importance.

Public Perception

Based on stakeholder testimony, there is concern regarding the District Board and its handling of administrative matters. In addition, a recent levy request failed at the polls, indicating voter dissatisfaction with the District's request.

In order to sustain service at the current levels, the District will need to ask the voters for a fire suppression levy lid lift. If the decision is made to request an increase in taxes to fund fire services, public perception will need to be carefully measured. The District, and later, a campaign committee, will need to conduct a comprehensive public information campaign. ESCi is conducting a public opinion poll which should provide additional insight regarding public perception.

Communication and Attitudes Between Organizations

Successful communication between the District and city is dependent on effective working relationships between the top administrative leadership of the organizations. ESCi found communication to be excellent between the administrative leadership of the organizations. The fire chiefs have an excellent working relationship and the organizations respond with each other.

However, ESCi found that the District Board members harbor some distrust of the communication between the Board and city representatives has never been opened or is nonexistent. ESCi believes that this strategy is at risk if communication is not opened between the organizations.

ESCi suggests that the District Board request the formation of a taskforce consisting of a board member, city council member, fire chiefs, and possibly the Vancouver City Manager. The

purpose of the taskforce would be to examine the potential for annexation and how fire and EMS services would be delivered in CCFD6 while annexation is proceeding.

The utilization of a taskforce has the potential for improving communication between the parties. ESCi recommends that the taskforce develop clear goals and objectives regarding its purpose and how recommendations are brought back to the organizations. In addition, the taskforce should utilize a third party facilitator whose function is to keep the taskforce on task and to organize the input and outcome of meetings.

Policy Actions

The District Board and city should begin the communication process by entering into a memorandum of understanding (MOU). The MOU is an instrument that provides groundwork for future meetings and describes the purpose of the taskforce. Other policy action includes adoption of strategic plans and interlocal agreements that describe how the District is annexed.

Major Implementation Timelines

The following objectives and timeline is suggested for this strategy.

Strategy 5: Open lines of communication with the city of Vancouver and prepare for potential annexations		
Objective 1 – Open lines of communication		
Task	**Description**	**Timeline**
1	Board approval of master plan strategy	Apr 2008
2	Objectives and timeline revised as necessary	May 2008
3	Develop outline of an annexation taskforce	Jun 2008
4	CCFD6 and VFD Fire Chiefs meet to discuss the formation of task force and timelines	Jun 2008
5	Board discusses outcome of Chiefs' meeting	Jul 2008
6	Board makes formal request for formation of taskforce	Aug 2008
7	Taskforce MOU developed	Sep 2008
8	MOU presented to each entity for approval	Nov 2008
9	Taskforce members appointed, first meeting scheduled	Dec 2008
10	Taskforce meetings begin	Jan 2009
11	Taskforce develops remaining schedule	Jan 2009

Strategy 5: Open lines of communication with the city of Vancouver and prepare for potential annexations		
Objective 2 – Ensure a sustainable service delivery system		
Task	**Description**	**Timeline**
1	Board approval of master plan strategy	Apr 2008
2	Objectives and timeline revised as necessary	May 2008
3	Form levy committee consisting of a cross-section of District personnel	May 2008
4	Committee develops levy timeline and calendar	Jun 2008
5	Committee develops public information plan based on feedback from citizen poll conducted by ESCi	Jun 2008
6	Form campaign committee	After ballot title is adopted
7	Conduct public information campaign	July – Election

Objective Three: Short and Mid-Term Strategies

ESCi recommends the District adopt the following short and mid-term strategies:

- Strategy 1: Address recommendations for improvement as listed in Section I of the report. (Short-term)
- Strategy 2: Increase minimum career staffing level to 13 per shift. (Short-term)
- Strategy 3: Optimize training functions. (Mid-term)
- Strategy 4: Increase response capacity and facilities to meet future service demand. (Mid-term)

Strategy 1: Address recommendations for improvement as listed in Section I of the report.

ESCi made over 80 recommendations for organizational improvement in *Section I – Fire Department Analysis* of the report. A summary of the recommendations is provided in the appendix.

- ➢ ESCi recommends that the Fire Department Analysis recommendations be addressed in the upcoming strategic planning workshops.

Staffing, Facility, and Resource Deployment

The following strategies address the District's staffing, facility, and resource deployment needs.

Strategy 2: Increase minimum career staffing level to 13 per shift.

In the Staffing chapter under Section I of the report, ESCi described the number of personnel that are required to efficiently mitigate a moderate risk incident (which is 13). The District is currently fielding 12 personnel for a moderate risk incident. In order to guarantee an incident staff of 13 personnel, the District will need to add one firefighter per shift or a total of three firefighters. ESCi suggests that the District add these personnel in 2009.

ESCi determined that the District cannot sustain its current level of spending without requesting a fire suppression levy lid lift. This option requires additional spending and the same finding is true for this option.

The addition of three career firefighters in 2009 should be dependant on the passage of a fire suppression levy lid lift. The discussion supporting this strategy is provided in *Objective Two: Recommended Long-Term Strategy.*

- ESCi recommends that this strategy be addressed in the upcoming strategic planning workshops.

Strategy 4: Increase response capacity and facilities to meet future service demand.

The District will experience a continual, but moderate increase in workload over the next 20 years. Consequently, the District should monitor its response objectives and unit hour utilization to determine more precisely when resources should be added.

- ESCi recommends that response performance monitoring be addressed in the upcoming strategic planning workshops.

If the District wishes to meet its adopted response objectives, ESCi has predicted that an additional response unit will required at Station 63 in approximately 12 years (2020). Depending on the amount of activity, the District could choose to add a two person squad or a three person engine.

In addition to the increased response capacity, ESCi determined that Station 63 should be replaced with an updated facility that has adequate space and is seismically resistant. This facility will need to be replaced prior to the addition of a second career response unit and two or three personnel per shift.

The replacement of Station 63 and the addition of response resources is dependant on the District maintaining a revenue stream that will support the transfer of funds to the capital reserve fund. ESCi addressed the issue of increasing the District's fire suppression levy in the report under *Objective Two: Recommended Long-Term Strategy*. However, the District will need to continually monitor its property tax revenue stream and request a fire suppression levy lid lift at appropriate intervals to ensure that sufficient revenue is available to implement this strategy.

- ESCi recommends that a long-range monitoring of the District's property tax situation be addressed in the upcoming strategic planning workshops.

Cooperative Service Agreements

Strategy 3: Optimize training functions.

The District's training function, while accomplishing the required training elements, suffers from insufficient resources and facilities, and split EMS and fire training functions. The person assigned to the training officer position is not selected for his/her knowledge, skills, and ability and educational criteria has not been established for this position. The person filling this role is assigned when promoted to battalion chief. The fire and EMS training functions are not integrated into a seamless training system. In addition, the District does not have adequate exterior drill facilities.

ESCi made recommendations in report *Section 1 – Fire Department Analysis, Training*, regarding the qualification of the training officer, restructuring of EMS and training functions, and acquiring access to a drill ground.

ESCi also recommended the District partner with Vancouver Fire Department (VFD) for training functions. A training partnership would require an interlocal agreement between the District and the city and depending on the extent of the training delivered.

- ESCi recommends that training recommendations be addressed in the upcoming strategic planning workshops.

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Appendix

Summary Table of Recommendations

Summary Table of Recommendations		
Objective Reference	**Page Number**	**Recommendation**
Objective One: Organizational Overview		
Responsibilities and Lines of Authority	11	• Modify Section 1.4 of the chief and deputy chief employment agreements to state that requests for information must come from a majority of the Board. • Engage the services of a management consultant to clarify and re-define the roles of the Board and senior management. • Board members discontinue the practice of giving direction during an emergency incident.
Foundational Policy	13	• Revise Section 5.02 of the Board Policy manual, removing all reference to District personnel actions and human resource functions except for the hiring and oversight of the fire chief. • Adopt a policy regarding public testimony during Board meetings. • Establish an SOG founding document that describes the basis and authority for SOGs, how they are created, and when they are reviewed or revised.
Chain of Command & Organizational Structure	18	• Restructure the District so the fire chief is the only direct report to the Board. • Revise the deputy chief employment agreement and job description to reflect the recommended reporting structure.
Operating Budget, Resources, and Cost Recovery	23	• Transfer a portion of the current budget resources into the newly established reserve funds. • Develop a ten year capital improvement plan. • Develop a comprehensive long-range financial forecast and plan.
	25	Explore the potential for increasing non-tax revenue.
Objective Two: Management Components		
Mission, Vision, Strategic Planning, Goals, and Objectives	27	Consider integrating the District's goals into the budget building process.
Adequacy of SOGs, Rules, Regulations, and Policies	28	Provide an SOG founding document that specifies the process for development and review.
Financial Controls	30	• Specific financial practices should be formally adopted as a financial or purchasing manual and placed in the District's SOGs. • Board policy should reflect the establishment of a process for the control of financial activity.
Critical Issues and Future Challenges	31	Future efforts toward identifying critical issues and future challenges should include input from all levels of the organization.

Summary Table of Recommendations		
Objective Reference	**Page Number**	**Recommendation**
Internal and External Communications	34	• An open door procedure (SOG) should be developed that describes employee access to supervisors at all levels of the organization. • An internal communications plan (SOG) that formalizes and describes how members communicate vertically and horizontally. The plan should include periodic member forums or opportunities for face-to-face communication between senior staff and members at all levels of the organization.
Decision Making Processes	35	Describe and formalize in an SOG the District's preferred administrative decision-making process.
Document Control and Facility Security	36	Continue to investigate alternatives to sending the District's tape data backup home with an employee.
Objective Three: Planning for Fire Protection and EMS		
Operational Planning	39	• Work with regional fire agencies to develop a formal NIMS and incident management system agreement that also specifies a uniform set of tactical terminology. • Revise mutual aid agreements to include the specifics of an incident management system.
Master Planning	42	Adopt a procedure for reviewing and updating the District's master plan.
Recommendations for Future Planning Needs	43	• Develop new organizational performance measures that provide the District with a comparison of current to future conditions. • Engage in long-range financial and capital planning.
Emergency Management Planning	44	• Provide training on the District's role in the execution of county-wide disaster plans. • Conduct an annual table-top or full scale disaster exercise within the District. • Identify SARA Title III facilities and ensure the presence of a facility plan that is coordinated with District operations.
Objective Four: Risk Management		
Compliance Programs for Regulations and Standards	47	Conduct an internal NFPA 1500 and respiratory protection compliance audit to ensure that appropriate safety activities are taking place.
Risk Associated with Employment, Termination, and Training Practices	49, 50	• Review new hire medical exam criteria to ensure compliance with NFPA 1582. • Develop an SOG regarding the resignation or retirement of an employee that clarifies the process of recovering equipment and restricting access to facilities and computer systems. • Develop an exit interview SOG that provides feedback to the District regarding job satisfaction. • Develop and adopt a company and individual skills and knowledge testing system to be administered on an annual basis.
Job Related Injury Programs	55	Develop and adopt a comprehensive return to work policy.

Summary Table of Recommendations		
Objective Reference	**Page Number**	**Recommendation**
Liability and Property Insurance Programs	56	Have a seismic risk analysis and mitigation options prepared by a qualified engineering firm.
Objective Five: Personnel Management		
Personnel Policies, Rules, Regulations, Manuals, and Handbooks	58	• Complete the assembly of a personnel policy manual. • Provide a grievance procedure for non-represented employees. • Develop a salary and benefit policy for non-represented employees. • Develop a recruitment, hiring, and promotion policy that places the responsibility for these functions on the fire chief.
Application and Recruitment Process	63	• Ensure that PST is conducting targeted recruitment activities for women and minorities. • Develop a volunteer recruitment and testing SOG. • Include a physical ability test in the volunteer selection process. • Provide an NFPA compliant physical exam for successful career and volunteer applicants.
Testing, Measuring, and Promotion Processes	65	• Develop an SOG that describes the process and criteria for use in the promotional testing process. • Develop an annual physical competency test policy.
Objective Six: Training Program		
General Training Competencies	72	• Incorporate pre-incident planning as a routine part of ongoing training. • Establish annual training requirements and performance measures. • Eliminate the separation of fire and EMS training by combining both into a single, comprehensive training program. • Combine volunteer and career training activities into a collective training approach. • Establish a process for annual skills proficiency assessment. • Conduct a formal training needs assessment process.
Training Administration and Schedule	73	• Establish a formal set of criteria for the TO position, and when appropriate, fill the position with a qualified fire training specialist. • Conduct a workload analysis on the training officer's position to determine if additional staffing is needed. • Discontinue the practice of tasking the TO with non-training projects that require a significant amount of effort. • Assign the EMS captain to the training division.
Training Facilities	75	Explore the possibility of a training partnership with Vancouver Fire Department to share training resources, equipment, and program management.
Training Program Goals and Objectives	75	Undertake a training planning process and establish clearly defined program goals and objectives.

Summary Table of Recommendations		
Objective Reference	**Page Number**	**Recommendation**
Recordkeeping and Clerical Support	77	• Fully configure Firehouse Software® to meet training data management needs. • Establish an SOG regarding training entry data in the Firehouse. • Provide additional clerical support for the training division.
Objective Seven: Fire Prevention/Public Education Program		
General Inspection Program	84	• Work with the CCFMO to establish closer relationship and greater authority in the plans review process. • Identify specific occupancies that are not being inspected by the CCFMO and develop a plan for implementation of an inspection program.
Fire Investigation Programs	85	• Provide additional training for fire companies in initial fire scene evaluation and evidence preservation. • Continue to build the relationship with CCFMO and local law enforcement to enhance cause and origin determination and arson investigation processes. • Increase the level of fire investigation training for command staff and company officers. • Develop a local (FIT) Fire Investigation Team.
Statistical Collection and Analysis	87	• Acquire and place in Firehouse, fire cause information that was investigated by CCFMO. • Review current use of Firehouse and expand its use for incident and prevention data collection and management
Objective Eight: Capital Assets and Capital Improvement Programs		
Facilities	94	• Complete and adopt a long range plan for the updating and replacement of fire stations. • Schedule station 63 for replacement.
Apparatus	98	• Review and update the proposed vehicle replacement plan as needed and check the calculation methodology. • Finalize and adopt a long range vehicle replacement plan.
Support and Small Equipment	99	Establish and fund a small equipment replacement plan.
Objective Nine: Staffing		
Functional or Divisional Staff Allocation	104	• Monitor and evaluate the District's maintenance functions and determine if additional assistance is required to complete all preventive maintenance. • Review the functions of the volunteer program coordinator and modify the position to suit the District's needs.
Staff Scheduling Methodology	105	The qualifications, function, responsibilities, accessibility, and type of response required of the duty chief should be formalized in an SOG.
Standard of Coverage and Incident Staffing Performance	109	• Evaluate options for balancing mutual aid to supplement the District's incident staffing • Evaluate the reliability and effectiveness of the District's volunteer response by acquiring volunteer response data • Determine if the current response force for low risk incidents is adequate and adjust response protocols if necessary • Consider raising the District's career minimum staffing to 12 personnel per shift

Summary Table of Recommendations		
Objective Reference	**Page Number**	**Recommendation**
Utilization of Career and Volunteer Companies	110	Add volunteer-specific response objectives to the District's response objective policy.
Objective Ten: Delivery Systems: Suppression, Rescue, EMS, HazMat		
Incident Control and Management	140	Seek a county-wide formal agreement regarding a common tactical incident management system.
Standard Response Practices	141	Develop an SOG regarding the requirements and responsibilities of the rotating duty chief.

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Dynamics of Fire and Medical Emergencies

Dynamics of Fire In Buildings

Most fires within buildings develop in a predictable fashion, unless influenced by highly flammable material. Ignition, or the beginning of a fire, starts the sequence of events. It may take some minutes or even hours from the time of ignition until flame is visible. This smoldering stage is very dangerous, especially during times when people are sleeping, since large amounts of highly toxic smoke may be generated during early phases.

Once flames do appear, the sequence continues rapidly. Combustible material adjacent to the flame heats and ignites which in turn heats and ignites other adjacent materials if sufficient oxygen is present. As the objects burn, heated gases accumulate at the ceiling of the room. Some of the gases are flammable and highly toxic.

The spread of the fire continues quickly. Soon the flammable gases at the ceiling reach ignition temperature. At that point, an event termed *flashover* takes place; the gases ignite, which in turn ignites everything in the room. Once flashover occurs, damage caused by the fire is significant and the environment within the room can no longer support human life.

Flashover usually happens about five to eight minutes from the appearance of flame in typically furnished and ventilated buildings. Since flashover has such a dramatic influence on the outcome of a fire event, the goal of any fire agency is to apply water to a fire before flashover takes place.

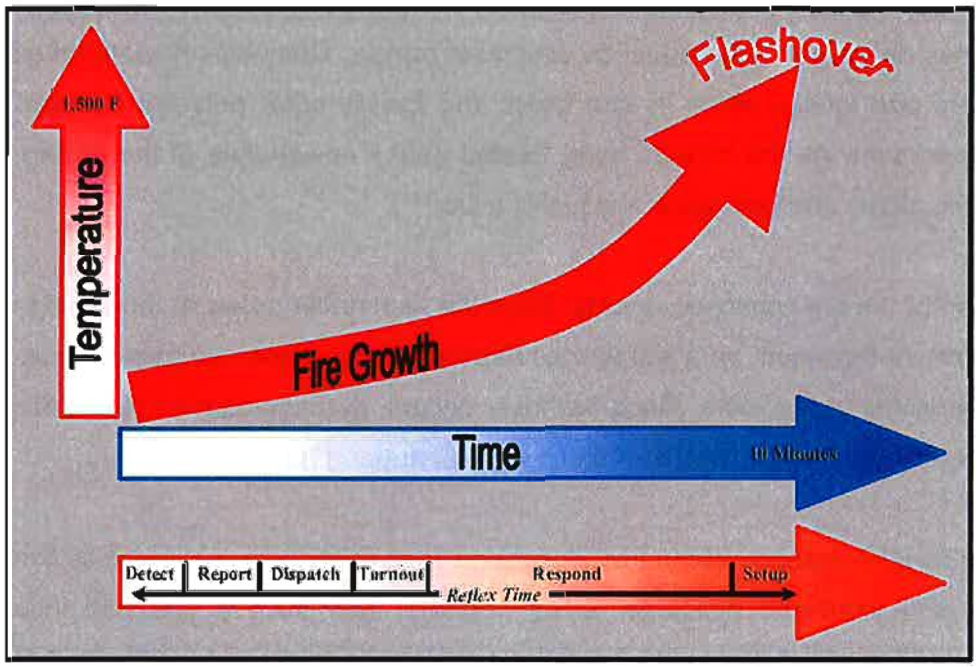
Perhaps as important as preventing flashover is the need to control a fire before it does damage to the structural framing of a building. Materials used to construct buildings today are often less fire resistive than the heavy structural skeletons of older frame buildings. Roof trusses and floor joists are commonly made with lighter materials more easily weakened by the effects of fire. *Light-weight* roof trusses fail after five to seven minutes of direct flame impingement. Plywood I-beam joists can fail after as little as three minutes of flame contact. This creates a very dangerous environment for firefighters.

In addition, the contents of buildings today have a much greater potential for heat production than in the past. The widespread use of plastics in furnishings and other building contents

rapidly accelerate fire spread and increase the amount of water needed to effectively control a fire. All of these factors make the need for early application of water essential to a successful fire outcome.

A number of things must happen quickly to make it possible to achieve fire suppression prior to flashover. The figure below illustrates the sequence of events.

Figure 86: Fire Growth versus Reflex Time



The reflex time continuum consists of six steps, beginning with ignition and concluding with the application of (usually) water. The time required for each of the six components varies. The policies and practices of the TFR directly influence four of the steps, but two are only indirectly manageable. The six parts of the continuum are:

- Detection: The detection of a fire may occur immediately if someone happens to be present or if an automatic system is functioning. Otherwise, detection may be delayed, sometimes for a considerable period.
- Report: Today most fires are reported by telephone to the 9-1-1 center. Call takers must quickly elicit accurate information about the nature and location of the fire from persons who are apt to be excited. A citizen well trained in how to report emergencies can reduce the time required for this phase.
- Dispatch: The dispatcher must identify the correct fire units, subsequently dispatch them to the emergency, and continue to update information about the emergency while the

units respond. This step offers a number of technological opportunities to speed the process including computer aided dispatch and global positioning systems.

- Turnout: Firefighters must don firefighting equipment, assemble on the response vehicle, and begin travel to the fire. Good training and proper fire station design can minimize the time required for this step.
- Response: This is potentially the longest phase of the continuum. The distance between the fire station and the location of the emergency influences reflex time the most. The quality and connectivity of streets, traffic, driver training, geography, and environmental conditions are also a factor.
- Set up: Last, once firefighters arrive on the scene of a fire emergency, fire apparatus are positioned, hose lines stretched out, additional equipment assembled, and certain preliminary tasks performed (such as rescue) before entry is made to the structure and water is applied to the fire.

As is apparent by this sequence of events' description, application of water in time to prevent flashover is a serious challenge for any fire department. It is critical, though, as studies of historical fire loss data can demonstrate.

The National Fire Protection Association (NFPA) studied data from residential structures occurring between 1994 and 1998 in order to analytically quantify the relationship between the growth of a fire beyond the room of origin and losses in life and property. As the next figure clearly indicates, fires contained to the room of origin (typically extinguished prior to or immediately following flashover) had significantly lower rates of death, injury, and property loss when compared to fires that had an opportunity to spread beyond the room of origin (typically extinguished post flashover). Incidents in which a fire spreads beyond the room where it originates are likely to experience six times the amount of property loss and have almost nine times greater chance of resulting in a fatality.

Figure 87: National Data – Fire Growth to Life and Property Loss[60]

Fire Extension in Residential Structure Fires, 1994 – 1998			
Extension	Rates per 1,000 Fires		
	Civilian Deaths	Civilian Injuries	Dollar Loss Per Fire
Confined to room of origin	2.32	35.19	$3,385
Beyond room of origin; But confined to floor of origin	19.68	96.86	$22,720
Beyond floor of origin	26.54	63.48	$31,912

Emergency Medical Event Sequence

Cardiac arrest is the most significant life threatening medical event. A victim of cardiac arrest has mere minutes in which to receive definitive lifesaving care, if there is to be any hope for resuscitation.

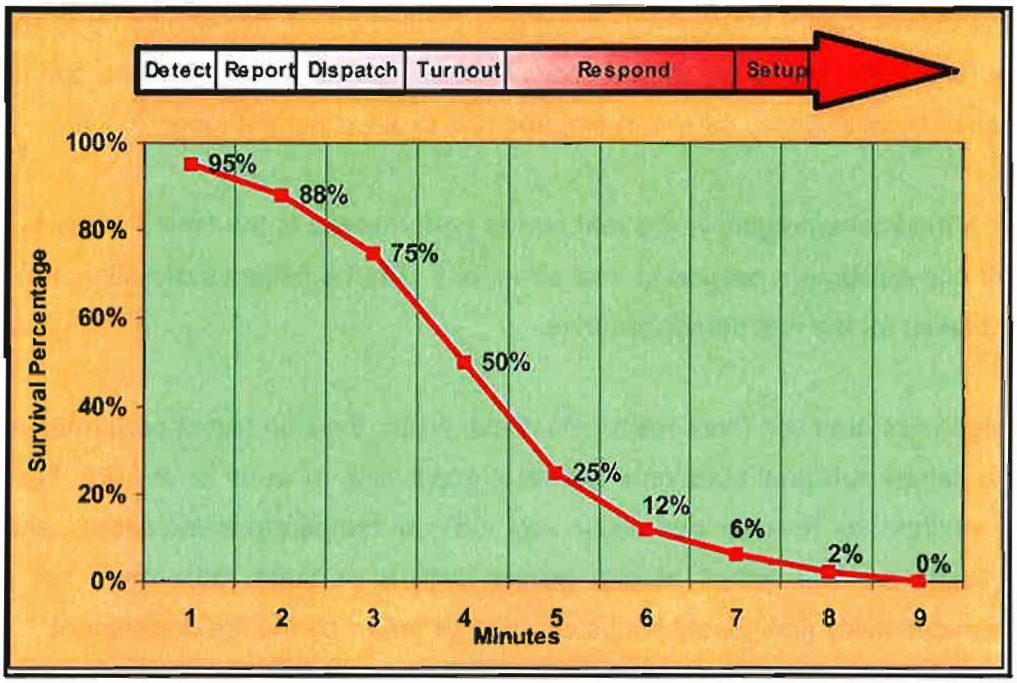
Recently, the American Heart Association (AHA) issued a new set of cardiopulmonary resuscitation guidelines designed to streamline emergency procedures for heart attack victims, and to increase the likelihood of survival. The AHA guidelines include new goals for the application of cardiac defibrillation to cardiac arrest victims.

Heart attack survival chances fall by seven to ten percent for every minute between collapse and defibrillation. Consequently, the AHA now recommends cardiac defibrillation within five minutes of cardiac arrest.

As with fires, the sequence of events that lead to emergency cardiac care can be visually shown, as in the following figure.

[60] Data from NFPA *Annual Fire Experience Survey* and United State Fire Administration *National Incident Reporting System*.

Figure 88: Cardiac Arrest Event Sequence



The percentage of opportunity for recovery from cardiac arrest drops quickly as time progresses. The stages of medical response are very similar to the components described for a fire response. Recent research stresses the importance of rapid cardiac defibrillation and administration of certain drugs as a means of improving the opportunity for successful resuscitation and survival. An Oregon fire department recently studied the effect of time on cardiac arrest resuscitation and found that nearly all of their *saves* were within one and one-half miles of a fire station, underscoring the importance of quick response.

People, Tools, and Time

Time matters a great deal in the achievement of an effective outcome to an emergency event. Time, however, isn't the only factor. Delivering sufficient numbers of properly trained, appropriately equipped, personnel within the critical time period completes the equation.

For medical emergencies this can vary based on the nature of the emergency. Many medical emergencies are not time critical. However, for serious trauma, cardiac arrest, or conditions that may lead to cardiac arrest, response time is very critical.

Equally critical is delivering enough personnel to the scene to perform each concurrent task required to deliver quality emergency care. For a cardiac arrest, this can be up to six personnel; two to perform CPR, two to set up and operate advanced medical equipment, one to record the actions taken by emergency care workers, and one to direct patient care.

Thus, for a medical emergency, the real test of performance is the time it takes to provide the personnel and equipment needed to deal effectively with the patient's condition, not necessarily the time it takes for the first person to arrive.

Fire emergencies are even more resource critical. Again, the true test of performance is the time it takes to deliver sufficient personnel to initiate application of water on the fire. This is the only practical method to reverse the continuing internal temperature increases, and ultimately prevent flashover. The arrival of one person with a portable radio does not provide fire intervention capability and should not be counted as arrival by the fire department.

In order to legally enter a building to conduct interior firefighting operations at least four personnel must be on scene. The initial arrival of effective resources should be measured at the point in time when at least four personnel, properly trained and equipped, have assembled at the fire.

Emergency service agencies should have clearly defined response performance objectives established to allow for evaluation of capability and service delivery. An organization's performance objectives should clearly state both the current and desired emergency service capabilities in very measurable terms. For emergency response, performance objectives should define response performance using both time and resource criteria. For example:

- Provide for the arrival of adequate resources to initiate basic emergency medical services at the scene of any medical emergency within "X" minutes following dispatch, 90 percent of the time.
- Provide for the arrival of adequate resources to initiate interior fire suppression operations at the scene of any fire within "X" minutes following dispatch, 90 percent of the time.

With specific performance criteria, a fire department can develop deployment methodologies to achieve desired levels of performance and can quickly identify when conditions in the environment degrade performance.

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