Emergency Services Consulting International

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Letter of Transmittal

August 27, 2012

Mr. Kurt Triplett
City Manager
City of Kirkland
123 5th Ave.
Kirkland, Washington 98033

Dear Mr. Triplett:

Enclosed please find the final report in response to your request for an organizational evaluation, future plan, feasibility of cooperative service delivery, and organizational strategic plan for the Kirkland Fire & Building Department. The associates of ESCI have appreciated the opportunity to work with the community, city staff, and employees of the Kirkland Fire & Building Department in the completion of this project.

We have presented this report in three major sections: organizational and community overview, fire and building department findings and recommendations, and strategic plan recommendations and priorities. A number of appendices are attached that will provide helpful information for the city and fire department.

It is our intent to meet and exceed your expectations and to be available to you after the project is complete. Should you have questions do not hesitate to contact me at our headquarters office in Wilsonville, Oregon, at (503) 570-7778. It has been our pleasure to work with the professional and highly dedicated staff of the Kirkland Fire & Building Department.

Sincerely,

Jack W. Snook
President, COO

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Acknowledgements

Emergency Services Consulting International (ESCI) would like to acknowledge that without the assistance and support of the administrative staff and personnel of the City of Kirkland and the Kirkland Fire & Building Department, this project could not have been completed.

City Council

Joan McBride, Mayor
Doreen Marchione, Deputy Mayor
Amy Walen, Council Member
Dave Asher, Council Member
Bob Sternoff, Council Member
Penny Sweet, Council Member
Toby Nixon, Council Member

City Administration

Kurt Triplett, City Manager
Marilynne Beard, Assistant City Manager and Project Lead

Fire and Building Department

Kevin Nalder, Fire Chief
Tom Phillips, Building Services Manager
Helen Ahrens-Byington, Deputy Fire Chief
Jack Henderson, Deputy Chief of Operations

Executive Summary

Emergency Services Consulting International (ESCI) was retained by the City of Kirkland, Washington, to conduct an organizational evaluation, future planning and feasibility of cooperative service delivery study, and an organizational strategic plan for the Kirkland Fire & Building Department (KF&BD).

Initiated in January 2012, the project involved a review of a substantial amount of background information and data supplied by the City of Kirkland and KF&BD staff. ESCI's associates spent four days on-site conducting stakeholder interviews with personnel from all levels of the City and the fire and building department. ESCI's methodologies included a detailed analysis of collected data. This information was combined with interviews of key staff members and the affected stakeholders, as well as direct observation of facilities and apparatus, and became the foundation for the in-depth study of all aspects of the administrative, operational, and support services of the KF&BD's current service delivery.

Scope, Purpose, and Report Conventions

The purpose of the study was to provide a third party independent organizational evaluation, a plan for the future, an assessment of the feasibility of cooperative efforts, and facilitation of the development of an organizational strategic plan for the KF&BD (Kirkland Fire & Building Department). Officials desired to understand how well the fire and EMS (emergency medical services) system is working and whether the fire department can provide services more efficiently. Specifically, the scope of services requested by the City of Kirkland included:

- A comprehensive review of the current conditions of the KF&BD, including a baseline assessment and current service delivery performance analysis
- A focused, objective analysis of overall fire department emergency response operations
- Development of an inventory of opportunities under which the KF&BD (Kirkland Fire & Building Department) and its neighboring emergency response agencies can work more closely together to increase efficiency and effectiveness.

- Identification and analysis of the feasibility of strategies
- Based on the identified cooperative service delivery options:
    - Findings and the feasibility of each option
    - Identification of the preferred option or options
    - Description of governing body actions and necessary policy action
    - Implementation timelines and recommendations
    - Process issues including legal considerations, management and governance, and funding
- Facilitate the development of a KF&BD strategic plan document involving:
    - A local planning team (12 to 20 persons) including representatives of city management and various levels of the agency itself
    - A two-day strategic planning retreat
    - An analysis of the strengths, weaknesses, opportunities for, and threats to the organization
    - Identification of critical issues
    - Development of a vision, mission, and values statements
    - Establishment of goals and objectives
    - Establishment of performance measures

Report Layout

The organizational evaluation, assessment of current conditions, findings, feasibility of cooperative efforts, and strategic planning is catalogued into the following subject areas:

- Organizational and Community Overview
    - Kirkland Community Description and Demographics
    - City of Kirkland Organization Description
    - Fire and Building Department
- Fire and Building Department Findings and Recommendations
    - Summary of Stakeholder Input
    - Department Mission and Values
    - Management Components
    - Emergency Management (Disaster Preparedness)
    - Fire Prevention Bureau
    - Fire and Emergency Medical Services (Emergency Response)
    - Accountability and Reporting
- Strategic Plan Recommendations and Priorities

  - Major Findings and Recommended Priority Goals
  - Strategic Goals
- Appendices

Each section in the report provides the reader with general information about that element, as well as observations and analysis of any significant issues or conditions. ESCI's observations are supported by data collected as part of the document review and interview process. Specific recommendations are included to address identified issues and opportunities for service improvement, efficiencies, and future cost avoidance.

The purpose of this review and evaluation is twofold: First, it provides the KF&BD and City with a valuable assessment of the organization, its assets, and service delivery methods. Secondly, the review equips ESCI staff with a detailed and comprehensive understanding of the KF&BD, which is essential to the strategic planning process and determining potential cooperative service delivery efforts with other emergency service providers.

General Assessment

It is the professional opinion of ESCI that the Kirkland Fire and Building Department is a high-quality organization with the potential to become a great organization. The staffs are dedicated and skilled professionals committed to providing the City of Kirkland's citizens and visitors with the highest possible level of service. Elected officials for the City of Kirkland all recognize the high degree of importance of these services in ensuring the public safety of their community. Citizens and visitors can be assured that the members of the KF&BD are professional in the delivery of fire and emergency medical services. The level at which service is delivered is commensurate with other fire departments in the region.

An operational tension has developed between the KF&BD and other City departments. While there is no single reason for the division, the divisive relationship is hampering the Finance and Administration Department, Human Resources and Performance Management Department, City Manager's Office, and the Fire & Building Department from operating as efficiently as possible. To a lesser degree the rapport is challenged with other departments. During the time of this study the City administration has initiated corrective actions to improve relations. The process of improving working relationships will take time and effort but is necessary for the City departments to operate effectively.

ESCI found other areas of concern that impede the efficient operation of the KF&BD, primarily in the administration and support level. Work efforts of the two deputy fire chiefs should be directed at the highest level of administration and oversight of the fire department. Presently a large percentage of time is dedicated to work unrelated to administration. Updating job descriptions and affirming the expectations of administration and support staff is required.

It is our opinion that the number of KF&BD support staff is inadequate to meet the needs of the fire department and the expectations of the City. While it is possible to assign a staff person responsibility to work directly with the fire department from finance, IT, or HR, so far this approach has not been effective. Even if this assignment arrangement were successful, the KF&BD requires additional administrative and support positions. Support staffing has remained static or decreased even as the number of emergency operations personnel and the services of the fire department have increased.

An issue compounding the administration and support staffing problem has been KF&BD's inability to harness technology. Without integration of technology tools, the fire department will continue to struggle to provide information for analysis and benchmarking performance based outcomes. Successful implementation of the New World CAD by NORCOM is seen as one of the primary solutions to the problem.

An Efficiency and Effectiveness Study commissioned by the City of Kirkland and King County Fire District #41 was conducted on the KF&BD in 2008. Many of the study's major findings and major recommendations have not been addressed and are still outstanding.[1] They include:

- The high level of EMS responses has the unintended consequence of lowering the level of fire protection.
- KF&BD is totally dependent upon mutual and automatic aid response for marine rescue/firefighting.
- The measurement of response time standard is flawed and overly ambitious.
- EMS response crew size should be reduced from three to two.
- KF&BD failed to meet response time standard 50 percent of the time from 2004-2007.

To discourage this organizational evaluation, feasibility, and strategic plan from lying fallow, ESCI recommends the Kirkland City Council prioritize and adopt the goals found in this report. To have a fruitful outcome of the recommended top priority goals requires the KF&BD to have

[1] See Appendix B: Management Advisory Group, Recommendations and Findings.

the authority, resources, responsibility, and accountability for implementation. To that end each strategic plan goal includes:

- Goal Statement
- Recommended Actions
- Implementation Metrics
- Resources Required

All of the pieces are in place for the KF&BD to become the organization, "known for consistently meeting our citizens' needs and epitomizing a winning "major league" team; our efforts build community ownership and pride in our brand.[2]"

Fire and Building Department Findings and Recommendations

A total of 90 recommendations are provided throughout this report. The following sections summarize the major findings and key recommendations related to each.

Organizational and Community Overview

Organizational and community overview is a summary of basic information about the City of Kirkland, Washington, and the Kirkland Fire and Building Department. It includes an overview of City governance; organizational structure; service area size; the community environment; resources dedicated to the fire and emergency medical services (EMS), the building division, and emergency management; and a financial survey. Significant findings include:

- ❖ Kirkland's 2011 population is estimated to be 80,505, a 62.24 percent increase from 2010. The increase is connected to the annexation of Fire District #41, a portion of Fire District #36 (Woodinville), and a small area of Fire District #34 (Redmond). Annexation increased the service area slightly as KF&BD already provided contracted service to King County FD #41 prior to the annexation.
- ❖ KF&BD's organizational structure, while atypical in that the director has oversight of building services, emergency management, and the fire department, is functioning well.
- ❖ KF&BD's most recent survey by the WSRB (Washington Surveying and Rating Bureau) was in June 1995. Improvements in staffing, apparatus, and fire stations suggest that KF&BD would benefit from a re-evaluation by WSRB.
- ❖ Kirkland has developed financial long-term plans for operating KF&BD that include a CIP (capital improvement plan) for the acquisition of major assets for the fire department.
- ❖ In March of 2011, KF&BD began charging for BLS (basic life support) EMS transports from medical incidents.

[2] Source: KF&BD Strategic Goal No. 1, Goal Statement.

Fire and Building Department

The single largest change to occur for the City of Kirkland in years was the annexation in June 2011. KF&BD was already providing contract fire and emergency services to Fire District #41 and added coverage to a portion of Fire District #36 (Woodinville) and a small area of Fire District #34 (Redmond) as a result of the annexation. While KF&BD added emergency response personnel to serve the annexed area, there was no corresponding increase in administration and support. Recommended actions include:

- ❖ Amend job descriptions to accurately reflect roles and expectations for administration and support staff.
- ❖ Increase emergency operations by adding a BLS aid unit staffed between 8:00 AM and 8:00 PM to maintain adequate personnel for a moderate risk fire event.
- ❖ Annually conduct a detailed analysis of revenue versus expenditure to validate that EMS transportation activity is meeting stated goals established by the City.
- ❖ Bill for EMS transport when responding and transporting patients outside of the City of Kirkland.
- ❖ Add one FTE administrative assistant for EMS and one FTE financial analyst to administrative support functions.

Summary of Stakeholder Input

To validate the mission, vision, and values of the KF&BD, ESCI solicited input from internal and external stakeholders (City Council, City Management, KF&BD Members, neighboring service providers) through two separate venues: one-on-one interviews conducted by the ESCI team during the initial data gathering process and a citizens group formed to participate in the strategic planning process. As part of the interview process, the internal and external stakeholders were asked to identify their perspectives on the department's strengths and weaknesses, as well as the challenges facing the department and critical issues it needs to address. The most frequently reported input for each was:

- Organizational Strengths
  - o Community satisfied with service
  - o Best trained and highest morale in the area
  - o Training division is good; personnel are well trained
  - o Department has good people and a good leader
- Organizational Weaknesses
  - o Geography; jurisdictional boundaries
  - o Money
  - o Need for a fireboat

  - Stability and predictability in costs; any incident will generate overtime
  - Containing growth of call volume; growing number of non-emergency calls
  - External political forces
- Challenges
  - Response time
  - Slow growth of expenses
  - Funding, leadership, too few administrative staff
  - Overpricing of service
  - Housing prices down
  - Underprepared for a disaster
- Critical Issues
  - Coverage in annexation area
  - Funding that is sustainable for all city departments
  - Funding, levy approval for Medic One program
  - Ongoing workload/cultural shift
  - Need to be more community connected; need to be more agile in addressing change

Department Mission and Values

A validated mission statement is clearly stated and intentionally simplistic; the Kirkland Fire Department *Mission* accurately describes the organization's general purpose. The Mission Statement for the Kirkland Fire Department validated during this study is:

> *Providing timely, emergency response and safeguarding the lives, property, and environment of our community.*

Management Components

Fundamental tools necessary for organizational management are inadequate. ARs (administrative rules) and SOGs (standard operating guidelines) specific to the fire department were generally outdated. Additionally, variations exist between City and KF&BD AR documents including safety, purchasing, and public access to records and document retention. There should be a sense of urgency given to developing a complete set of documents.

Internal tension between the KF&BD and Finance and Administration (F&A) is concerning, though recent moves on the part of the two directors has made what is described as "improvement" to the working relationship.

KF&BD's management of external communication efforts has been reduced to reacting to media worthy events.

Highlights and ESCI recommendations for management components include:

- Outsource development and maintenance of Administrative Rules and Standard Operating Guidelines to a third party. Development and maintenance of Administrative Rules and Standard Operating Guidelines should include involvement of the City human resource department.
- Prioritize media messaging. Use "Currently Kirkland" and other media outlets as a tool to leverage the reach and impact of fire department public information and education messages.
- Develop a procedure and policy for reporting and retaining all employee exposure records.
- Establish a medical baseline for new firefighters at the time of hire/appointment.
- Provide a fire service-related occupational and health program.

Emergency Management (Disaster Preparedness)

Given the number of tasks and functions required of managing an emergency management program, KF&BD is performing well considering the lack of FTEs allocated to the program. However, this comes at an opportunity cost to the fire department by squeezing out other program needs (financial, HR, and IT services to name a few) that would otherwise be provided by the deputy chief of administration. Acquiring additional staff to provide the daily work necessary to maintain a state of readiness would free the deputy chief to perform other essential tasks directly related to the administration of the fire department, relegating the emergency management workload to providing management guidance and gravitas to the program.

Highlights and ESCI recommendations for emergency management include:

- Develop and implement a plan outlining how volunteers will be used and managed during emergency events.
- Identify a location and develop a dedicated EOC; apply for a matching grant from the Washington EMD Emergency Operations Center Grant Program (requires a 25 percent local match).
- Complete and publish the Continuity of Operations (COOP) and Continuity of Government (COG) plans.
- Develop a Hazard Identification and Vulnerability Assessment and a Hazard Mitigation Plan. Submit to King County for inclusion as an annex to the County plan.
- Hire a full-time City emergency manager, shifting daily responsibilities from the Deputy Chief of Administration to the emergency manager.

Fire Prevention Bureau

The City of Kirkland's process for construction permitting delivers a higher level of service than is commonly seen by involvement of the fire and building departments from pre-application conference for commercial developments and continuing throughout the construction process.

KF&BD current completion rate for scheduled annual inspections of an estimated 20 percent may expose emergency services personnel and public to unacceptable risk during a fire event.

Fire and life-safety public education efforts of the KF&BD were limited to outside special requests that have since been discontinued.

Highlights and ESCI recommendations for the fire prevention bureau include:

- Integrate KF&BD fire prevention records management with the EnerGov RMS software used by the Building Division.
- Conduct a fire and life-safety inspection of all inspectable occupancies in the next 12 months. If necessary use emergency services personnel to complete inspections.
- Develop and adopt a plan for the maintenance, repair, and flow testing of all fire hydrants in the City of Kirkland.
- Acquire and deploy electronic tablet devices for field data entry and rapid downloading to the records management system.
- Adopt a local residential sprinkler ordinance for new residential construction.

Fire and Emergency Medical Services (Emergency Response)

The hierarchal structure of the KF&BD operates as intended with the building services manager. In contrast, ESCI found that in practice the fire chief is the direct report for any number of other fire department personnel and activities. Deputy fire chiefs routinely perform administrative, technician, and clerical tasks. Time devoted to activities outside of essential functions and principal accountabilities have reduced the deputy chiefs' availability to perform job critical administrative and supervisory duties.

Given the number of FTEs dedicated to emergency operations (a minimum staffing of 19 per day, 30 personnel assigned to each shift), KF&BD's use of overtime is appropriate. Leave time use categorized as sick leave and injury is considered to be high.

EMS is expected to continue as the predominate factor affecting service demand. ESCI recommends that the KF&BD move forward and analyze the feasibility of contracting ALS response services with Medic One.

Capital facilities, apparatus, and capital equipment for the KF&BD constitute a large investment. Planning for remodels and the replacement of fire stations is a major capital expense and requires long-range planning. With two fire stations nearing their life expectancy, ESCI recommends that a capital plan for the rebuild or replacement of fire stations be developed. It is further recommended that KF&BD develop an internal long-term plan for funding the maintenance and replacement apparatus and capital equipment that aligns with the City CIP. The KF&BD pay rates into internal service fund reserves for facility and vehicle replacements and a sinking fund for replacement of equipment is being developed in cooperation with the Finance Department.

KF&BD relies on automatic aid to have adequate personnel for most fire incidents. Over the past two years, each of the neighboring fire and EMS agencies has gone through some reduction of fire stations, staffed apparatus, or personnel. To mitigate the reduction and improve coverage to the northwest (Finn Hill) area of the City, ESCI recommends that the KF&BD construct and staff a joint fire station with the Northshore Fire Department.

There are two alternative methods for KF&BD to meet the current adopted response time objectives. First, change the response time objectives to the match the response that the fire department is able to meet. Second, add facilities, emergency response units, and personnel to the department to the level that will meet the response objectives. For Kirkland to increase resources requires a large capital investment and ongoing expenditures. Capital requirements involve the addition of two fire stations, one in the Finn Hill neighborhood and a second in the southern section of the City. Each fire station would need an engine and aid unit and a minimum of six personnel per day to cross-staff the units.

Of the potential partnerships with neighboring fire and EMS service providers, ESCI considers Northshore and Bellevue fire departments to be feasible partners. Consolidation of fire and EMS into a single operational unit, either through Interlocal Agreement (ILA) or the formation of an RFA would provide increased fire and emergency service efficiency in the areas served by the three fire departments.

ESCI developed 34 cooperative efforts strategies that the KF&BD could pursue. They are judged as being feasible and most likely to result in significant improvement to systems and/or programs. These strategies should be acted on regardless of action on a regional partnership.

Highlights and ESCI recommendations for fire and emergency medical services include:

- Store personnel protective equipment (PPE) in a separate, well ventilated room.
- Establish a minimum requirement for annual company and individual training evaluations. Include shift battalion chief involvement in annual evaluations.
- Jointly construct and staff a new fire station with Northshore FD. The fire station should be located in an area to serve the Finn Hill neighborhood and Northshore FD.
- Provide Advanced Life Support (ALS) services within the City of Kirkland via the King County Medic One program.
- Modify the EMS response protocol of sending three responders to medical incidents. Redeploy with dedicated staffing of two-person aid units, or single person quick response unit for low priority EMS incidents.
- Expand the current partnership with the King County Sheriff's Marine Unit and the Seattle Fire Department to provide a joint, coordinated response to marine firefighting and rescue incidents.

Accountability and Reporting

While the KF&BD is mostly meeting accountability and reporting requirements, there is a need for improvement. The accreditation process is one way for a fire department to make certain it is covering all of the accountability and reporting bases. The process of becoming an accredited agency is a time consuming, labor intensive, costly process. Therefore ESCI has recommended that the KF&BD make accreditation a long-term item and focus on other issues first.

In the last *Response Time Objectives Report* submitted (2010), KF&BD did not define the geographic areas where requirements are not being met, or explain predictable consequences, or the steps necessary to achieve compliance. KF&BD is meeting its stated response performance goals (including turn out time) approximately 50 percent of the time. KF&BD has not developed options to improve response performance. Without action to improve response time performance, subsequent reports will include similar results.

Tools for the reporting and archiving of data and information of KF&BD activities are labor intensive. This is exemplified by the number of staff hours required to capture background information for this study. Most of the improvements to reporting hinge on deployment of the New World CAD. Efforts should be directed at the implementation of the CAD system.

ESCI recommends that KF&BD disseminate reports (information) in a dashboard display customized for the end user.

Highlights and ESCI recommendations for accountability and reporting include:

- Adopt a two tiered response time objectives for fire, EMS, hazardous materials, technical rescue, and specialized rescue incidents.
- Develop and adopt response time intervals, benchmark, and review at a minimum annually.
- NORCOM – Establish communication center performance measurement benchmarks that meet national standards.
- Adopt turnout time standards based on incident type and time of day.
- Integrate the New World RMS (records management system) with emergency management plans, records, and reports.

Major Findings and Recommended Priority Goals

ESCI's recommended priority goals for the KF&BD result from stakeholder interviews with community members, policymakers, administration, KF&BD, neighboring fire department leadership, the organizational evaluation, and ESCI's analysis and experience. Recommended priority goals were developed in recognition of what is important to the public. Initiatives and key priorities were assigned recommended actions and implementation metrics to track progress over time. The goals are ambitious but realistic targets that are achievable.

Goal No. 1: Administrative Infrastructure

Goal Statement: Build an administrative infrastructure that efficiently provides administration and support functions for KF&BD. (Administrative and support staff realignment, administrative rules, and guidelines)

Goal No. 2: Staffing and Deployment

Goal Statement: Increase the ready availability of fire apparatus and personnel. (Swing staffing of aid units and engine/ladder companies and staffing levels)

Goal No. 3: Outreach and Education

Goal Statement: Provide contemporary, practical fire prevention, EMS, and emergency management education and informational services to the community. (PIO, PEO, and community preparedness)

Goal No. 4: Performance

Goal Statement: Develop, measure, and meet response and measurable performance benchmarks. (Response time)

Goal No. 5: Partnerships

Goal Statement: Develop partnerships with neighboring fire and EMS agencies to improve services and the level of service in a cost efficient manner. (Training, maritime response, joint staffing of fire stations, RFA)

Strategic Goals

The following are ESCI's recommended strategic goals internal to the KF&BD. Community members, policymakers, administration, and KF&BD personnel participated in a two day process to assist in developing priorities for the Kirkland Fire Department strategic plan. Five of the seven are incorporated as top priority goals. The remaining two are internal strategic organizational goals that meld with the validated mission, vision, and values of the KF&BD.

Strategic Organizational Goal No. 1: KF&BD Branding

Goal Statement: Create an attractive brand for KF&BD to inform and market our services

Strategic Organizational Goal No. 2: KF&BD Internal (City) Relationships

Goal Statement: Enhance a positive culture with internal customers; Kirkland Fire Department and other City Departments

Organizational and Community Overview

Kirkland Community Description and Demographics

The Organizational and Community Overview section provides information and establishes a starting point of facts about the City of Kirkland, Washington, and the Kirkland Fire & Building Department (KF&BD). It includes an overview of City governance; organizational structure; service area size; the community environment; resources dedicated to the fire and emergency medical services (EMS), the building division, and emergency management; and a financial survey. A detailed analysis of the service delivery system is provided in a subsequent section. *(Historical statistical information and data on population, demographics, annexation, and land-use in the overview are used in the service demand forecast for KF&BD.)*

Service Area Population and Demography

Located on the eastern shore of Lake Washington east of Seattle, Kirkland has a unique downtown waterfront (the only Eastside downtown frontage along Lake Washington's shoreline),[3] lined with restaurants, galleries, a performing arts center, public parks,[4] and beaches. Kirkland is considered a suburban city, surrounded by other suburban cities and pockets of unincorporated King County. Major transportation routes serving the area include Interstate 405, Washington State Route 520, and Interstate 5. These routes connect the City economically and socially to the greater Seattle area.[5]

Kirkland was founded in 1890 by Peter Kirk (1860–1916), an established steel mill owner from Workington, England.[6] Since only U.S. citizens were allowed to own property, Kirk with the help of Leigh A. J. Hunt, publisher of the *Seattle Post-Intelligencer* in June of 1888, purchased 5,000 acres. Streets were platted and homes were built for the workers that would be needed to run the mill. Modeled after Kirk's mill in England, it would employ thousands of workers who would

[3] Peyton Whitely (1998-02-25). "Kirkland's downtown dilemma rules to save local flavor could price it out of existence". *The Seattle Times*, Retrieved March 21, 2012.
[4] Photograph of Marina Park, permission granted for use, GNU Free Documentation License.
[5] Source: City of Kirkland, Washington Comprehensive Annual Financial Report, For the Fiscal Year Ended December 31, 2010, Tracey Dunlap, Director of Finance and Administration, page 4.
[6] A Look To The Past: Kirkland: From wilderness to high-tech - Kirkland history in 50 vignettes, Matthew, W. McCauley, CreateSpace (November 23, 2010).

live in the city that would grow around it. Proclaimed as the "The Pittsburgh of the West", the mill never produced any steel or iron but a city had been born.

From the 5,000 original acres in 1890, Kirkland grew to 10.70 square miles over the next 120 years (1890 to 2010). In 2011 through an annexation of the Juanita, Finn Hill, and Kingsgate neighborhoods, Kirkland is now approximately 17.90 square miles.[7] A chronological history of annexations and geographic growth of the City of Kirkland shows that it has grown in size on 12 different occasions (Figure 1).

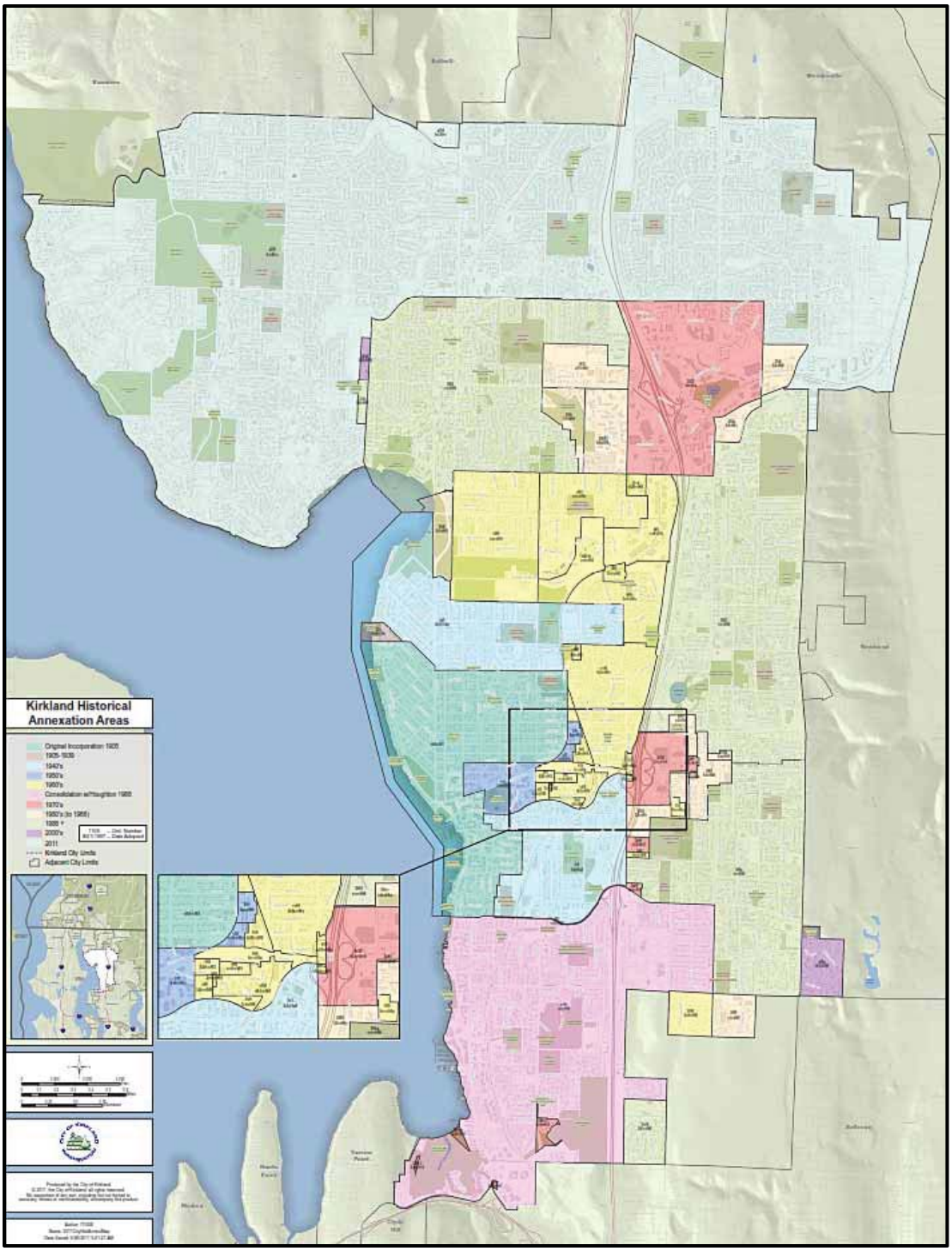
Figure 1: City of Kirkland Annexation History

Years	Square Miles Annexed	Cumulative Square Miles
1905 – 1910	0.88	0.88
1910 – 1920	0.00	0.88
1920 – 1930	0.01	0.89
1930 – 1940	0.00	0.89
1940 – 1950	1.00	1.89
1950 – 1960	0.11	2.00
1960 – 1970	3.39	5.39
1970 – 1980	0.84	6.23
1980 – 1990	4.19	10.42
1990 – 2000	0.00	10.42
2000 – 2010	0.00	10.42
2010 – 2011	7.80	17.90

Figure 2 is a visual depiction of annexations to the City of Kirkland.[8]

[7] City of Kirkland background data lists 17.9 square miles in the City.
[8] Source: City of Kirkland GIS Administrator, Karl Johansen.

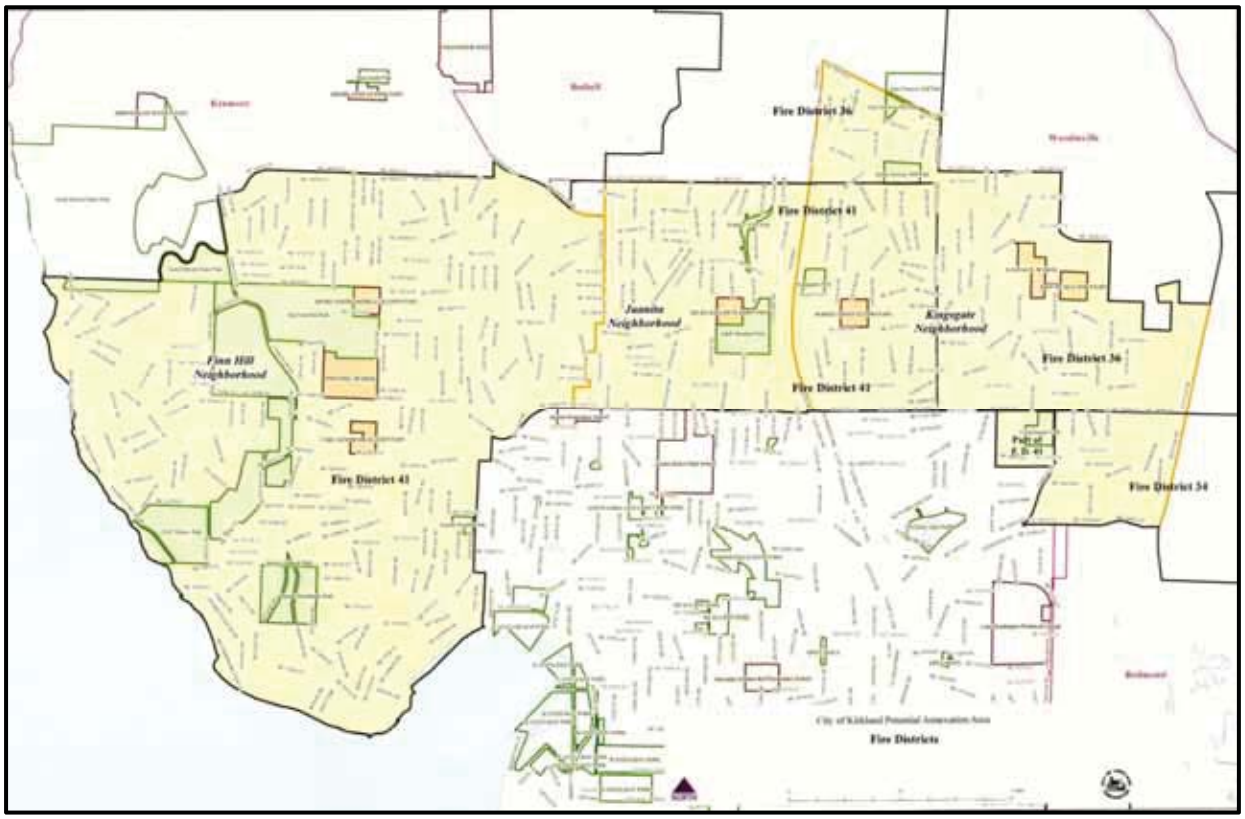
Figure 2: City of Kirkland Annexation History Map



While the City's footprint grew significantly in 2011, the area served by KF&BD increased only marginally. Under terms of a contractual relationship KF&BD already provided fire, EMS, and emergency response services to King County Fire Protection District #41 (KCFD #41). The new service area for KF&BD involved two smaller areas previously served by Woodinville and

Redmond. Figure 3 is a view of the June 2011 annexation area[9] and its relationship to the City of Kirkland.

Figure 3: Annexation Area, June 2011



The 2011 population of Kirkland is estimated to be 80,505, a 62.24 percent increase from 2010. The increase is connected to the annexation of Fire District #41, a portion of Fire District #36 (Woodinville), and a small area of Fire District #34 (Redmond).

As of the 2010 U.S. Census, there were 22,445 households and 12,014 families residing in Kirkland.[10] The population density was 4,762 people per square mile (1,628.8/km²). There were 24,345 housing units at an average density of 2,336 per square mile (789.2/km²).

[9] Community and Annexation Area map, City of Kirkland, Planning and Community Development.
[10] U.S. Census, 2010 Demographic Profile Data, City of Kirkland, WA.

City of Kirkland Organization Description

Type of Government

Kirkland is a charter city with a council-manager form of government. City Council is Kirkland's governing body and is comprised of seven non-partisan members elected by registered voters serving "at large" (not representing a district or ward). Council members are elected every two years, serving staggered four-year terms. The mayor and deputy mayor are elected among the members to serve two-year terms. Day-to-day oversight of the city is the responsibility of a City Manager hired by the city council.

Organizational Structure

A well-designed organizational structure should reflect the lines of responsibility and authority within the agency, provide for the equitable distribution of the workload, and clearly define the official path of internal communication. The lines of an organizational chart visually clarify accountability, coordination, and supervision. Detailed job descriptions should provide the particulars of each job within the organization, helping to ensure that each individual's specific role is clear and focused on the overall organization mission.

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 seven people directly.

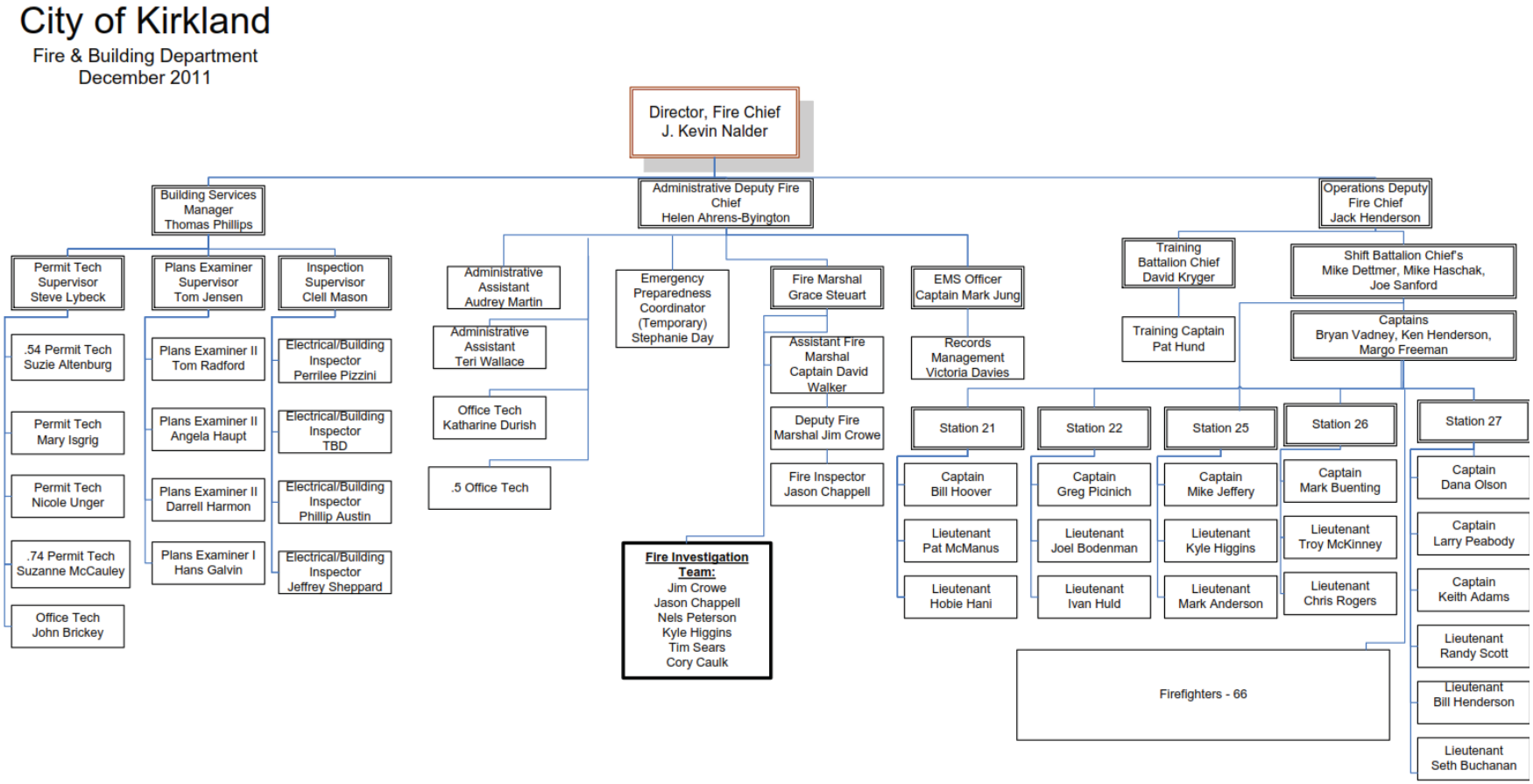
This generally accepted rule of thumb for span of control is still considered relevant today and applies not only to the military, but correspondingly to the fire service. It is important to note that all managers experience a decrease in effectiveness as their span of control exceeds the optimal level. In other words, the limitations implied by span of control are not shortcomings of individual managers but rather of managers in general. In addition, it is important to understand that span of control refers only to direct reports rather than to an entire corporate hierarchy (i.e., all personnel in the fire department).

> *Extending span of control beyond the recommended limits engenders poor morale, hinders effective decision-making, and may cause loss of the agility and flexibility that give many entrepreneurial firms their edge.*[11]

KF&BD's organizational structure is atypical in that the director has oversight of building services, emergency management, and the fire department. The fire department stem of the organization is a typical top-down hierarchy found in most public emergency service providers. The following figure (Figure 4) shows the current Kirkland Fire & Building Department organizational structure.

[11] Hendricks, Mark, *Span Control*, Entrepreneur, January 2001.

Figure 4: Kirkland Fire & Building Department Organizational Chart



Operating Budget

The current housing crisis and the reduction in appraised taxable value has caused a general slowing of or reduction in property tax revenue in some government agencies and municipalities. However, in the City of Kirkland, property tax revenue has not decreased but has grown at 1 percent per year due to the optional levy increase plus new construction ranging from 0.25 percent to 4 percent in the past five years, with projections assuming 1 percent for future new construction. This growth is forecast to continue as the City, with a 2012 levy rate of 1.36766 and a bond levy rate of 0.08976, is considerably below the maximum allowed for Washington cities ($3.10 for Kirkland, since the City is annexed into the King County Library District).

Other factors impacting many cities are lack of economic growth and a flattening or decrease of revenue from fees for service and sales tax that are often a significant basis of revenue for cities. The City of Kirkland is facing some of these same issues. As one cost element in the City's budget, the fire and building department is competing with other departments for a contracting revenue stream. In the City's 2011 – 2012 $231.5 million general fund biennial budget, fire and building represents 16.6 percent or $38.3 million of the total general fund budget. Note that the total budget figure includes $14.1 million in general government reserve balances; excluding those reserves, the fire and building department represents 17.6 percent of the general fund budget. The operation of the fire and building department is somewhat unique in that fire operations are primarily funded by the City general fund; the building division is partially funded with fees that are collected for its services, with the balance of the revenue from general fund resources. If budgeted fees for service are inadequate to support the building division's budget, then the division's costs may be reduced to meet revenue expectations and workload requirements.

The initial information in the analysis will display the historical review of costs of the Kirkland Fire Department. The second segment is a projection of costs through 2017.

Historical Financial Information Kirkland Fire and Building Department (KF&BD)

KF&BD is operating as a cost center or department of the City of Kirkland. Funding for the department is through fees charged for services, primarily EMS-related and charges to King County Fire District #41 (prior to June 2011), and regional EMS levy and grants, with the balance of revenue being resourced from the City's general purpose revenues. KF&BD must

compete for these resourced funds with all other city departments and revenue is not increasing at the pace previously experienced.

KF&BD Revenue

The following figure provides a historical view of KF&BD actual revenue from 2008 through 2011 and budgeted revenue for 2012.

Figure 5: KF&BD Revenue, 2008 – 2012

Description	2008 Actual	2009 Actual	2010 Actual	2011 Actual	2012 Budget
Property Tax District #34, #36, #41	0	0	0	2,313,161	0
WFLSD Asset Transfer	0	0	0	0	1,426,568
Firework Permits	120	100	150	179	100
Recreational Fire Permits	0	0	474	316	79
Grants – FEMA	0	0	0	408	0
Grants – EMPG	0	58,287	88,714	103,130	50,000
Intergovernmental – ire Control Service	0	12,690	648	65,174	0
Intergovernmental – District #41	3,439,879	3,904,235	3,580,280	2,083,640	0
Intergovernmental – EMS	793,023	838,397	831,434	840,146	866,729
Emergency Transport Fee	0	0	0	556,877	845,210
MBP Service Fee	0	0	0	44,430	33,000
City General Fund Resource	10,357,564	10,923,225	11,200,596	11,283,300	14,635,959
Total Revenue	**14,590,586**	**15,736,934**	**15,702,297**	**17,290,760**	**17,857,645**
Percent City General Fund Resource Increase		5.46%	2.54%	0.74%	29.71%

The City's general fund resourcing of the fire department has increased every year since 2008. Average annual general fund contributions increased 9.61 percent over the four years. Annual fluctuations during the period 2010 to 2012 can largely be attributed to the annexation which became effective June 1, 2011. Revenue that was received as intergovernmental charges for service from Fire District #41 through the District's separate levy ended in 2011. Funding is now provided by the City's regular property tax levy, causing a shift to the contribution of General Fund resources. Likewise, one-time revenue received from Fire District #41 and Woodinville Fire and Rescue were received during this period, further skewing actual revenue figures.

In March of 2011, KF&BD began charging for BLS (basic life support) EMS transports of patients from medical incidents. Since KF&BD has only been providing BLS transport services for a year, there is not enough history to develop a financial trend. ESCI recommends that a

detailed analysis of BLS transport revenue versus expenditure be conducted to validate that EMS transportation activity is meeting established City goals.

The figure below provides a snapshot of EMS transportation revenue from March 2011 through January 2012:

Figure 6: KF&BD EMS Transportation Revenue, March 2011 – January 2012

Month 2011	Transport Tickets	Gross Charges	Payments	Collection Percent	Levy Funding	Disallowed	Uncollected	Pending
March	180	116,099	(63,866)	55%	(5,591)	(35,463)	(6,473)	4,705
April	168	107,535	(58,186)	54%	(8,691)	(31,421)	(3,248)	5,990
May	169	108,667	(64,169)	59%	(6,395)	(30,611)	(628)	6,864
June	204	130,875	(68,436)	52%	(8,720)	(38,448)	(159)	15,112
July	195	125,119	(69,006)	55%	(8,001)	(32,701)	(1,335)	14,075
August	189	120,586	(64,729)	54%	(5,831)	(32,350)	(1,299)	16,376
September	195	125,591	(62,912)	50%	(6,855)	(39,803)	(2,362)	13,660
October	203	129,909	(63,500)	49%	(9,696)	(35,028)	0	21,684
November	184	118,551	(56,551)	48%	(3,736)	(33,663)	(0)	24,600
December	179	115,181	(39,747)	35%	(793)	(23,818)	0	50,823
Month 2012	**Transport Tickets**	**Gross Charges**	**Payments**	**Collection Percent**	**Levy Funding**	**Disallowed**	**Uncollected**	**Pending**
January	217	139,140	(7,325)	5%	0	(1,713)	0	130,102
Total	**2,083**	**1,337,253**	**(618,428)**	**54%**	**(64,310)**	**(335,020)**	**(15,505)**	**303,991**

The collection rate was forecast at 52 percent and the actual percentage for the first six months of the program was 54.88 percent. ESCI finds that collections exceeding forecast are positive indication of the benefit of the program. The amount of uncollected billings is considered to be in the low range. The lower collection percent in the most recent months is attributed to the lag time between billing and payment. Disallowed is the difference between the gross charges and what is allowable under insurance, primarily Medicare.

Kudos 1: *The City of Kirkland's decision to begin billing for BLS services is allowing KF&BD to capture available monies that were previously uncollected.*

The original plan decision included a proviso of not billing when KF&BD transported patients in neighboring jurisdictions if that department was not charging for the service. Recent changes in the billing practices of Bellevue Fire Department make it an appropriate time to revisit the subject. ESCI recommends that KF&BD bill for EMS when responding and transporting patients outside of the City of Kirkland.

KF&BD Expenditures

The figure below provides a historical view of KF&BD expenditures from 2008 through the 2012 budget year.

Figure 7: KF&BD Expenditures by Department, 2008 – 2012

Description	2008 Actual	2009 Actual	2010 Actual	2011 Actual	2012 Budget
Administration	881,929	1,065,297	1,056,591	1,233,046	1,314,428
Suppression	12,530,756	13,237,963	13,300,369	14,571,901	15,145,445
Training	470,273	577,057	498,593	631,666	547,632
Prevention	549,924	634,653	599,988	673,012	698,112
Emergency Preparedness	157,704	221,965	246,756	181,136	152,028
Total Expenditures	**14,590,586**	**15,736,934**	**15,702,297**	**17,290,760**	**17,857,645**

KF&BD total expenditures have increased by 22.39 percent since 2008. The annexation in 2011 resulted in the addition of an engine and cross staffed aid car to serve the area previously served by Woodinville. The cost of serving Fire District #41 was already included in the fire budget. After factoring out the annexation-related increase, the net increase was approximately 13.6 percent.

In Figure 8 KF&BD's expenditures are segregated by cost category from 2008 through 2012:

Figure 8: KF&BD Expenditures by Cost Category, 2008 – 2012

Description	2008 Actual	2009 Actual	2010 Actual	2011 Actual	2012 Budget
Salaries and Wages	9,138,030	9,688,144	9,853,930	10,055,150	10,592,947
Benefits and Taxes	2,690,799	3,156,578	2,937,976	3,629,545	3,801,592
Supplies	200,468	205,644	150,686	639,643	269,915
Other Services and Charges	394,503	383,538	412,477	387,207	366,390
Inter-fund Operating Leases	1,811,715	1,860,919	1,882,894	2,116,624	2,224,137
Intergovernmental Fund	355,071	442,111	464,333	462,592	595,664
Capital	0	0	0	0	7,000
Total Expenditures	**14,590,586**	**15,736,934**	**15,702,297**	**17,290,760**	**17,857,645**

The next figure provides a percentage breakdown of KF&BD expenditures by cost categories from 2008 through 2012:

Figure 9: KF&BD Expenditure Percentage by Cost Category, 2008 – 2012

Description	2008 Actual	2009 Actual	2010 Actual	2011 Actual	2012 Budget
Salaries and Wages	62.630%	61.563%	62.755%	58.153%	59.319%
Benefits and Taxes	18.442%	20.058%	18.710%	20.991%	21.288%
Supplies	1.374%	1.307%	0.960%	3.699%	1.511%
Other Services and Charges	2.704%	2.437%	2.627%	2.239%	2.052%
Inter-fund Operating Leases	12.417%	11.825%	11.991%	12.241%	12.455%
Intergovernmental Fund	2.434%	2.809%	2.957%	2.675%	3.336%
Capital	0.000%	0.000%	0.000%	0.000%	0.039%
Total Expenditures	**100.000%**	**100.000%**	**100.000%**	**100.000%**	**100.000%**
Benefits & Taxes as % of Wages	**29.446%**	**32.582%**	**29.815%**	**36.096%**	**35.888%**

Approximately 81 percent of total costs are related to employee salaries, wages, benefits, and taxes. Inter-fund or governmental transfers account for 15.79 percent of total costs. Intergovernmental charges and allocations are actual expenditures of the City, although they are not directly controlled by the department. In tough financial times, inter-departmental charges should be examined independently from the fire department budget prior to discussing potential cost cutting strategies.

The next figure provides a percentage breakdown of the benefit and taxes line item from Figure 9 above.

Figure 10: KF&BD Percentage of Benefits and Taxes, 2008 – 2012

Description	2008 Actual	2009 Actual	2010 Actual	2011 Actual	2012 Budget
Medical, Dental, and Vision	15.039%	15.938%	15.306%	19.708%	20.532%
Pension	5.931%	5.906%	5.663%	5.701%	5.480%
Industrial Insurance	1.405%	1.498%	1.663%	2.553%	2.321%
MEBT	5.429%	5.478%	5.494%	5.517%	5.268%
Taxes and Other	1.642%	3.762%	1.690%	2.618%	2.134%
Benefits & Taxes as % of Wages	**29.446%**	**32.582%**	**29.815%**	**36.096%**	**35.888%**

The fastest growing benefit cost, as a percentage of wages, is medical, dental, and vision increasing from 15.04 percent in 2008 to 20.53 percent in 2012's budget.

KF&BD Summary of Operational Finances

Figure 11 provides a historical summary of KF&BD operational revenue and expenditures from 2008 through 2012.

Figure 11: KF&BD Summary of Operational Finances, 2008 – 2012

Description	2008 Actual	2009 Actual	2010 Actual	2011 Actual	2012 Budget
Revenue					
Revenue w/o General Fund Resources	4,233,022	4,813,709	4,501,701	6,007,461	3,221,686
City General Fund Resource	10,357,564	10,923,225	11,200,596	11,283,300	14,635,959
Total Revenue	**14,590,586**	**15,736,934**	**15,702,297**	**17,290,760**	**17,857,645**
Expenditures					
Salaries & Wages	9,138,030	9,688,144	9,853,930	10,055,150	10,592,947
Benefits & Taxes	2,690,799	3,156,578	2,937,976	3,629,545	3,801,592
Supplies	200,468	205,644	150,686	639,643	269,915
Other Services & Charges	394,503	383,538	412,477	387,207	366,390
Inter-fund Operating Leases	1,811,715	1,860,919	1,882,894	2,116,624	2,224,137
Intergovernmental Fund	355,071	442,111	464,333	462,592	595,664
Capital	0	0	0	0	7,000
Total Expenditures	**14,590,586**	**15,736,934**	**15,702,297**	**17,290,760**	**17,857,645**

KF&BD Debt

KF&BD debt is paid through the City of Kirkland General Government Debt Service Fund. As of December 31, 2011, three debt obligations impact the fire department.[12] Figure 12 summarizes these transactions:

Figure 12: KF&BD Debt Summary

Description	Funding Source	Origination Date	Maturity Date	Origination Principal Amount	Principal Loan Balance of 12/31/11
North Rose Hill Fire Station	1992 UGOB	Refunded 7/6/2001	12/2/2012	1,730,000	185,000
Forbes Creek Fire Station	1995 UGOB	8/1/1995	12/1/2014	1,020,000	240,000
KCFPD #41 Bond	LGOB	5/26/2011	12/1/2021	4,000,000	4,000,000
Total Debt				**6,750,000**	**4,425,000**

The next table (Figure 13) displays the amortization schedule for these debt issues:

[12] KCFPD #41 debt obligation remains with District property owners.

Figure 13: KF&BD Debt Amortization Schedule

Loan Description	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Forbes Creek Fire Station Principal and Interest										
Principal	75,000	80,000	85,000	0	0	0	0	0	0	0
Interest	88,643	89,405	89,845	0	0	0	0	0	0	0
Total Cost	**163,643**	**169,405**	**174,845**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
KCFPD #41 Principal and Interest										
Principal	345,313	356,451	367,949	379,817	392,069	404,715	417,770	431,245	445,156	459,515
Interest	125,259	64,021	102,623	90,755	78,503	65,857	52,802	39,327	25,416	11,058
Total Cost	**470,572**	**420,472**	**470,572**	**470,572**	**470,572**	**470,572**	**470,572**	**470,572**	**470,572**	**470,572**
North Rose Hill Fire Station										
Principal	185,000	0	0	0	0	0	0	0	0	0
Interest	193,603	0	0	0	0	0	0	0	0	0
Total Cost	**378,603**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Combined Principal and Interest Cost										
Principal	605,313	436,451	452,949	379,817	392,069	404,715	417,770	431,245	445,156	459,515
Interest	407,505	153,426	192,468	90,755	78,503	65,857	52,802	39,327	25,416	11,058
Total Cost	**1,012,818**	**589,877**	**645,417**	**470,572**	**470,572**	**470,572**	**470,572**	**470,572**	**470,572**	**470,572**

Debt on the North Rose Hill Fire Station will be retired in the current budget year and on the Forbes Creek Fire Station in fiscal year 2014.

Unfunded Liabilities

Three primary unfunded liabilities are normally applicable to the fire service: 1) open litigations or workers' compensation claims 2) accrued time as allowed by contract for vacation, sick leave, Kelly days, etc., and 3) unfunded actuarial accrued liabilities for pension and medical benefits.

1) Open litigation or workers' compensation claims: Information provided by Kirkland indicated that a summary of any open tort claims against KF&BD's liability policy, worker compensation policy, or other pending legal action is zero (0).

2) Accrued time as allowed by contract for vacation, sick leave, Kelly days, etc.: The City of Kirkland pays for the fire department employees' accrued vacation pay (and a portion of sick leave under certain conditions) upon separation from current employment. The liability is recorded in the City's annual financial statements.

3) Unfunded actuarial accrued liabilities for pension and medical benefits: On page 104 of the City of Kirkland 2010 Comprehensive Annual Financial Reporting (CAFR) document, the position for firefighter's pension and LEOFF1 retiree and medical/long-term care are reported. Figure 14 lists the actuarial liability of the firefighter pension from January 1, 2001, to January 1, 2010 (date of the most recent report).

Figure 14: KF&BD Firefighter Pension

Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liabilities	Unfunded Actuarial Liabilities	Funding Ratio
January 1, 2001	901,000	385,000	(516,000)	234%
January 1, 2004	1,015,000	547,000	(468,000)	186%
January 1, 2006	1,090,000	533,000	(557,000)	205%
January 1, 2008	1,305,000	469,000	(836,000)	278%
January 1, 2010	1,527,000	420,000	(1,107,000)	364%

The KF&BD firefighter pension fund funding ratio was 364 percent (overfunded) of actuarial liabilities as of January 1, 2010.

Figure 15 shows the actuarial liability of the unfunded LEOFF I medical/long-term care from January 1, 2006, to January 1, 2010 (date of the most recent report).

Figure 15: KF&BD Unfunded LEOFF I Medical/Long-Term Care

Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liabilities	Unfunded Actuarial Liabilities	Funding Ratio
January 1, 2006	0	11,360,000	11,360,000	0%
January 1, 2008	0	12,505,000	12,505,000	0%
December 31, 2009	0	10,724,000	10,724,000	0%
December 31, 2010	0	10,070,000	10,070,000	0%

The City has made a decision to make the LEOFF1 medical payments an operational expense with estimated cost of premiums and direct medical payments budgeted as an ongoing expense in a non-department budget. The City's actuaries have pointed out that any unused pension reserve (which is overfunded) can be made available for use toward the OPEB (Other Post Employment Benefits) liability. In addition, the City has set aside $619,000 in a reserve toward this purpose (which does not show in the liability table because it is not a trust account). The LEOFF I liability has and will continue to decrease over the ensuing years.

Capital and Vehicle Replacement Plans

Kirkland uses a six-year CIP (capital improvement plan) to forecast the acquisition of major assets for the fire department. The plan is formally adopted by the City Council with the annual budget. Capital apparatus and equipment for KF&BD from the 2011 to 2016 CIP is shown in Figure 16 and Figure 17.

Figure 16: KF&BD CIP Vehicle Replacement, 2012 – 2016

Vehicle ID	Year	Description	Useful Life	2012	2013	2014	2015	2016
F609	1995	Seagraves Pumper	18	0	598,193	0	0	0
F213	2006	Chevy Suburban	8	0	0	74,192	0	0
F314	2006	Ford Aid Vehicle	8	0	0	210,682	0	0
F315	2006	Ford Aid Vehicle	8	0	0	210,682	0	0
F316	2007	Ford Aid Vehicle	8	0	0	0	218,000	0
F506	1997	Simon LTI Aerial	18	0	0	0	1,163,314	0
F216	2008	Chevy Suburban	8	0	0	0	0	84,439
F317	2008	Ford Aid Vehicle	8	0	0	0	0	225,630
Total				**0**	**598,193**	**495,556**	**1,381,314**	**310,069**

Figure 17: KF&BD CIP Equipment Replacement, 2012 – 2016

Project Number	Project Title	2012	2013	2014	2015	2016
PS 0066	Thermal Imaging Camera Replacement	133,000	0	0	0	0
PS 0067	Dive Rescue Equipment Replacement	0	58,900	0	0	0
PS 0071	SCBA Equipment Replacement	0	0	305,500	316,100	0
Total		**133,000**	**58,900**	**305,500**	**316,100**	**0**

Economic Indicators

Economic indicators specific to Washington, King County, and the local area will provide the historical basis for projecting future costs that affect the operation of the fire department. Information in this section is provided to substantiate the forecast and projected increases in TAV, revenue, and expenditures. To perform these projections, ESCI reviewed historical home retail sales information, unemployment statistics, and the ten-year CPI-W history.

Historic Residential Property Sales

State of Washington assessors use recent residential home sales to establish increases or decreases in new appraised values. Figure 18 is the number of home sales and the median value by quarter from 2006 through 2011 for the City of Kirkland.[13]

[13] http://www.city-data.com/city/Kirkland-Washington.html.

Figure 18: Kirkland, Washington, Median Value and Home Sales, 2006 – 2011

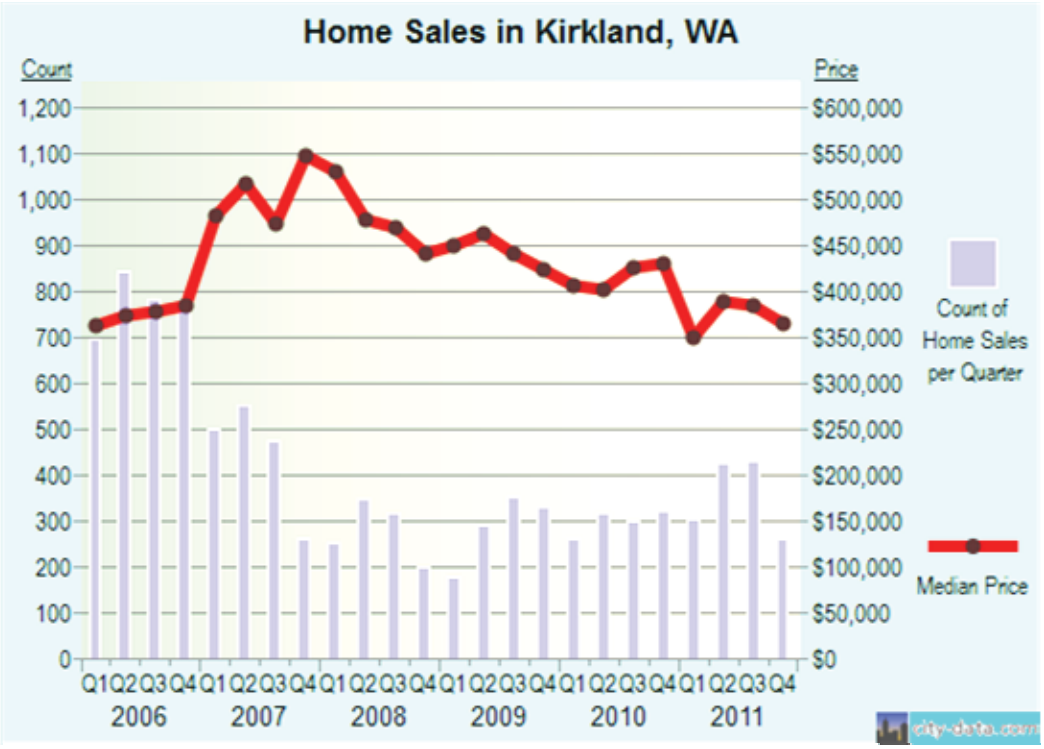


Figure 18 shows that the number of retail home sales declined significantly in 2007 and has not yet returned to the levels of 2006. The median sales price of existing homes has dropped from the 2007 high level of approximately $550,000 to approximately $355,000 in the fourth quarter of 2011. Note that a portion of this drop reflects the inclusion of the annexation area in the 2011 figure.

Historic Unemployment Rate

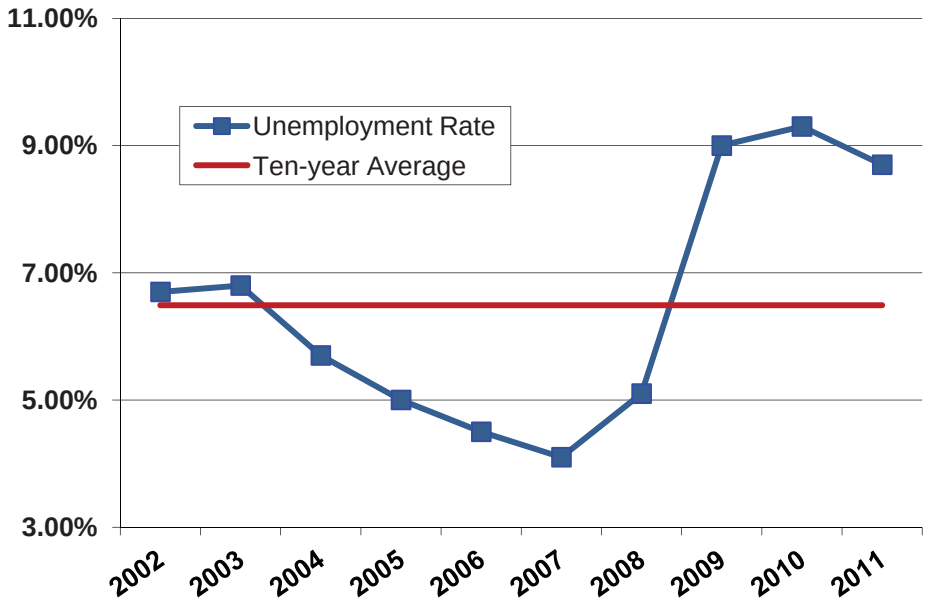
The level of employment in the region can potentially impact the number of homes being sold and the ultimate sales price. In Figure 19, the ten-year and average historic unemployment rates are shown for the Seattle-Tacoma-Bellevue area:

Figure 19: Unemployment Percentage, 2002 – 2011[14]

Year	Unemployment Rate	Ten-year Average
2002	6.70%	6.49%
2003	6.80%	6.49%
2004	5.70%	6.49%
2005	5.00%	6.49%
2006	4.50%	6.49%
2007	4.10%	6.49%
2008	5.10%	6.49%
2009	9.00%	6.49%
2010	9.30%	6.49%
2011	8.70%	6.49%

Historical unemployment percentages are graphically displayed in the following figure.[15]

Figure 20: Unemployment, 2002 – 2011



Annual Inflation Rate

Inflation is also an important consideration when forecasting cost. For the purpose of this analysis, ESCI will use the Consumer Price Index for all urban consumers (CPI-W), reported from June 2002 through June 2011 period for the Seattle-Tacoma-Bremerton Statistical Area as

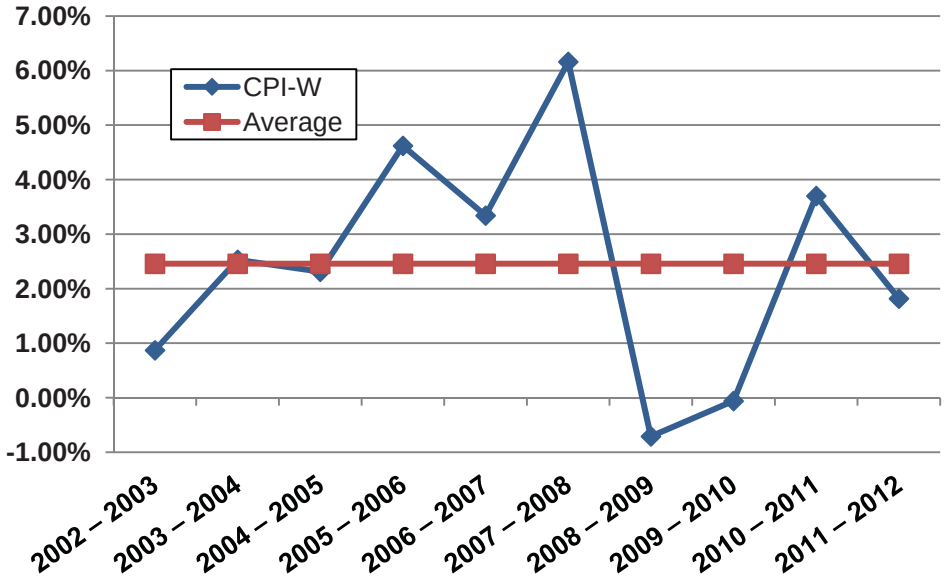
[14] CPI-W historical information was provided by client.
[15] An increasing unemployment rate from 2007 through 2011 provides a strong indicator that the housing market will not improve significantly over the next few years.

compiled by the U.S. Department of Labor, with the June 2011 to April 2012 average used for an approximation for 2012.[16] This measure is identified in the City's labor contracts. The information is displayed in both table and graphical format (below).

Figure 21: Historical and June to June CPI-W Table, 2002 – 2012[17]

Year	CPI-W	AVG
2002 – 2003	0.87%	2.458%
2003 – 2004	2.53%	2.458%
2004 – 2005	2.31%	2.458%
2005 – 2006	4.62%	2.458%
2006 – 2007	3.34%	2.458%
2007 – 2008	6.16%	2.458%
2008 – 2009	-0.71%	2.458%
2009 – 2010	-0.06%	2.458%
2010 – 2011	3.70%	2.458%
2011 – 2012	1.82%	2.458%

Figure 22: Historical and Average CPI-W Graphically, 2002 – 2012

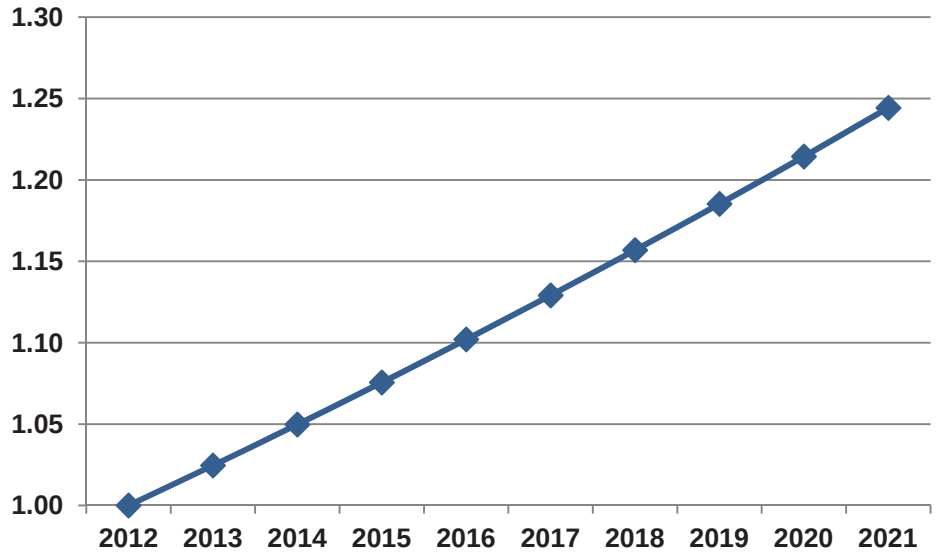


A historical review of the ten-year Consumer Price Index – Urban (CPI-W) shows that the prices were increasing an average 2.458 percent per year. This rate is used for analytical purposes in this financial review. The use of this value is an estimate to project potential cost trends in future years; however, the actual CPI-W for a given year could be higher or lower.

[16] U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index—All Urban Consumers, Series Id: CWURA423SA0 Not Seasonally Adjusted, Seattle-Tacoma-Bremerton.
[17] The full year CPI-W has been released for 2011 – 2012 since the completion of this study.

Historical data was used to develop an inflation index for the years 2012 through 2021 as shown below. The CPI-W average increase will be applied to other revenue and expense categories of the 2012 budget to develop the forecast impact on the organization's future financial stability.

Figure 23: CPI-W Forecast Budget Impact, 2012 – 2021



Expenditures in 2021 are projected to be approximately $1.244 for each of today's dollars.

Forecast Taxable Assessed Value

*Taxable Assessed Value (*Re-assessment of existing property): The county assessor's office reviews and assigns revised property tax values annually with a legally mandated requirement for a site visit every six years. A projection for 2013 by the King County Assessor forecasts that 2013 residential values in the County will decline by approximately 1.25 percent. The King County Assessor projects that TAV will be flat in 2014 and then experience a slight growth of around 1 percent per year. The inflation assumptions used for TAV are shown in Figure 24 and the forecast TAV is provided in Figure 25:

Figure 24: TAV Growth Rates, 2013 – 2017

Year	TAV Change Percent
2013	-1.25%
2014	0.00%
2015	1.00%
2016	1.00%
2017	1.00%

Figure 25: Forecast TAV, 2012 – 2017

Description	2012 Budget	2013	2014
City of Kirkland	14,672,056,829	14,488,656,119	14,488,656,119
Description	**2015**	**2016**	**2017**
City of Kirkland	14,633,542,680	14,779,878,107	14,927,676,888

Revenue Forecast

In the 2012 budget, KF&BD generated approximately 18 percent of its revenue from non-city general fund resources. When projecting revenues categories ESCI used the ten-year average CPI-W of 2.458 percent for all non-city general fund resource line items.

Figure 26: KF&BD Revenue Forecast, 2012 – 2017

Description	2012 Budget	2013	2014	2015	2016	2017
Property Tax District #34, #36, #41	0	0	0	0	0	0
WFLSD Asset Transfer	1,426,568	0	0	0	0	0
Firework Permits	100	102	105	108	110	113
Recreational Fire Permits	79	81	83	85	87	89
Grants – FEMA	0	1,000	1,025	1,050	1,076	1,102
Grants – EMPG	50,000	51,229	52,488	53,778	55,100	56,455
Intergovernmental – Fire Control Serv.	0	0	0	0	0	0
Intergovernmental – District #41	0	0	0	0	0	0
Intergovernmental – EMS	866,729	888,033	909,861	932,225	955,140	978,617
Emergency Transport Fee	845,210	865,985	887,271	909,080	931,425	954,320
MBP Service Fee	33,000	33,811	34,642	35,494	36,366	37,260
City General Fund Resource	14,635,959	16,655,767	17,274,398	17,918,587	18,589,536	19,288,508
Total Revenue	**17,857,645**	**18,496,009**	**19,159,873**	**19,850,407**	**20,568,840**	**21,316,464**
Percent City General Fund Resource Increase	29.71%	13.80%	3.71%	3.73%	3.74%	3.76%

The financial impact of annexation is seen in the 29.71 percent increase in City general fund resources as funding shifted from District #41 contract payments to property taxes. The 13 percent increase in 2013 reflects the one-time asset transfer from Woodinville in 2012 that does not recur in the following years.

Expenditures Forecast

Forecast expenditures for KF&BD (2013 to 2017) rely upon the following assumptions and calculations:

- All wage and benefit expense categories were inflated at 2.458 percent, medical costs were increased by 7.00 percent per year.
- Inter-fund vehicle replacement expenses have remained at the 2012 budget level of $491,943 increased by the ten-year average CPI-W of 2.458 percent.
- All other expense categories were increased at the ten-year average CPI-W of 2.458 percent.

Figure 27: KF&BD Expenditure Forecast, 2012 – 2017

Description	2012 Budget	2013	2014	2015	2016	2017
Salaries and Wages	10,592,947	10,959,251	11,338,222	11,730,298	12,135,931	12,555,592
Benefits and Taxes	3,801,592	3,995,455	4,200,385	4,417,076	4,646,261	4,888,721
Supplies	269,915	276,010	282,242	288,615	295,132	301,796
Other Services and Charges	366,390	374,663	383,123	391,774	400,620	409,666
Inter-fund Operating Leases	2,224,137	2,274,358	2,325,713	2,378,228	2,431,928	2,486,841
Intergovernmental Fund	595,664	609,114	622,868	636,932	651,314	666,021
Capital	7,000	7,158	7,320	7,485	7,654	7,827
Total Expenditures	**17,857,645**	**18,496,009**	**19,159,873**	**19,850,407**	**20,568,840**	**21,316,464**

Summary Expense Fund Balance

The following figure depicts the projected summary for each fund to provide a snapshot of the fund balance in the years 2012 through 2017.

Figure 28: KF&BD Forecast Summary, 2012 – 2017

Description	2012 Budget	2013	2014	2015	2016	2017
Revenue						
Revenue w/o General Fund Resources	3,221,686	1,840,242	1,885,475	1,931,820	1,979,304	2,027,956
City General Fund Resource	14,635,959	16,655,767	17,274,398	17,918,587	18,589,536	19,288,508
Total Revenue	**17,857,645**	**18,496,009**	**19,159,873**	**19,850,407**	**20,568,840**	**21,316,464**
Expenditures						
Salaries and Wages	10,592,947	10,959,251	11,338,222	11,730,298	12,135,931	12,555,592
Benefits and Taxes	3,801,592	3,995,455	4,200,385	4,417,076	4,646,261	4,888,721
Supplies	269,915	276,010	282,242	288,615	295,132	301,796
Other Services and Charges	366,390	374,663	383,123	391,774	400,620	409,666
Inter-fund Operating Leases	2,224,137	2,274,358	2,325,713	2,378,228	2,431,928	2,486,841
Intergovernmental Fund	595,664	609,114	622,868	636,932	651,314	666,021
Capital	7,000	7,158	7,320	7,485	7,654	7,827
Total Expenditures	**17,857,645**	**18,496,009**	**19,159,873**	**19,850,407**	**20,568,840**	**21,316,464**

Changes in the assumptions used for TAV, CPI-W, and wages and benefits could alter the overall projection of these values. While the assumptions and results above do not include any costs for the replacement of department vehicles, capital replacement is fully funded. Capital expenditures are funded by the fire department as transfers to reserves.

Cost Avoidance Planning

KF&BD maintains adequate internal controls over expenditures with all costs being applied for providing fire service to the residents of the service area. In looking at the detailed line item expenditures, the majority of the costs are from salaries and benefits. The major cost increases in these categories result from annual wage and medical benefit cost increases.

Future expenses should, to the extent possible, be indexed to projected revenues, other than service level enhancements. Expense growth in excess of revenue growth exacerbates the fiscal decline and is not sustainable. Another avenue to control and potentially reduce costs would be through a process of collaboration with neighboring agencies.

Fire and Building Department

Overview of Fire and Building Department Services Provided

Under the direction of the Director of the Fire and Building, Kirkland Fire & Building Department (KF&BD) provides a variety of non-emergency and emergency response services. Non-emergency services include:

- Plan review and permit issuance for construction
- Pre-submittal conferences
- Permitting – permit application routing and processing
- Construction inspections
- Issuance of operational permits for regulated activities
- Annual fire safety and life safety inspections in existing buildings
- Fire origin and cause determination
- Emergency management – community preparedness activities
- Code violation investigations
- Code and policy development and interpretation

Emergency response services include:

- Fire suppression
- Emergency Medical Services (EMS) response and Basic Life Support (BLS) transport
- Hazardous materials emergency response
- Entrapment and other technical rescue
- Emergency management
- Other specialized rescue services

The delivery of fire suppression and rescue services is no more effective than the sum of its parts. It requires efficient notification of an emergency, rapid response from well-located facilities, appropriate apparatus, with sufficient staffing, following a well-practiced plan of action. The most visible and valued of the services provided by the KF&BD is the response to and control of emergency events.

To operate in the emergency response environment effectively, fire departments must capitalize on managing various aspects of a large business enterprise. A lion's share of this effort goes

into supporting the primary mission, including those components shown in the list above. However, there are additional requirements that have to be met and a substantial infrastructure that must exist in order for the organization to function at its best.

Staffing by Function

Kirkland Fire & Building Department is a service provider to a diverse urban community within a larger urban metropolitan area. This poses a challenge in that community growth and demand for services often outpaces organizational growth and available resources. The burden placed on management can be daunting. In addition to either matching or managing community expectations, the management of the business of a fire department always presents unique issues involving the administration of financial and personnel resources, the setting of goals and objectives, internal and external communications, information management, and security. This section of the report examines KF&BD's current management efforts and preparation for the future of the organization.

Department Staffing

One of the primary responsibilities of the KF&BD's administrative and support staff is to ensure that the operational elements of the organization have the ability and means to accomplish the emergency mission. Effective administration and support are vital to the success of the department. Without enough oversight, planning, documentation, training, and maintenance, the department will struggle to meet its operational commitments. On the other hand, if too many of the organization's resources are committed to administration and support, the operational element will likely suffer.

Administrative and Support

Comparing the ratio of administrative and support jobs to the total number of positions in the department helps to establish an understanding of the proper balance between internal and external services. Maintaining an appropriate proportion between the two is important to the success of the department's mission and responsibilities. Kirkland Fire & Building Department is comprised of six organizational functions:[18] one provides direct emergency service to the community (emergency services), and the other five augment or otherwise support that effort--administrative services, fire prevention, emergency management, training, and building services. There are three direct reports to the fire and building department director/fire chief

[18] Department Overview, City of Kirkland Fire & Building Department, City of Kirkland 2011 – 2012 Budget Document (final), page 222.

(Figure 4 on page 21): the building services manager, the administrative deputy fire chief, and the operations deputy fire chief.

Statistical information provided in the next section relating to FTEs by division and program is used when comparing KF&BD to other regional fire agencies (Appendix F: Comparable Providers).

The following table summarizes the personnel resources and full-time equivalents (FTEs) assigned to administration, management, and support functions of the KF&BD.

Figure 29: Administrative and Support Staffing Summary

Career – Position Title	Number (FTE)
Director of Fire and Building, Fire Chief	1.00
Deputy Fire Chief, Administration[19]	1.00
Deputy Fire Chief, Operations	1.00
Battalion Chief, Training	1.00
Captain, Training	1.00
Fire Marshal	1.00
Assistant Fire Marshal	1.00
Fire Inspector	2.00
Captain, EMS Billing	1.00
Administrative Assistant	2.00
Office Technician	1.50
Sub-Total	**13.50**
Sub-Total, Percentage of Administrative and Support Staff to Total Personnel	**13.04%**
Emergency Management – Position Title	**Number (FTE)**
Emergency Preparedness Coordinator (Temporary)	1.00
AmeriCorps, VISTA (Volunteer)	1.00
Records Management Specialist – Transport Fee (Temporary Position Ends 12/30/2012)	0.50
Total Administrative and Support FTEs	**16.00**
Percentage of Administrative and Support Staff to Total Personnel	**15.46%**

Three of the positions (2.5 FTEs) are of limited duration: emergency preparedness coordinator, AmeriCorps VISTA (Volunteers in Service to America), and a records management specialist (transport fee). Administration and support staff of KF&BD is comprised of 13.5 FTEs; operational jobs include 90 authorized FTEs. Consequently, the administrative and support function presently includes about 13.0 percent of available human resources. Based on our experience with similar organizations (i.e., medium-sized municipal fire departments using full-

[19] Deputy Chief of Administration is effectively spending 0.50 FTE with responsibilities associated with managing the City of Kirkland Emergency Management program.

time employees to provide all normal services plus fire prevention, fire training, and emergency medical transport), the expected ratio of administrative and support staff to operational staff usually falls somewhere between 15 and 20 percent.[20] While there is no definitive standard for the ratio between administration and operational roles, this suggests that KF&BD has fewer administrative and support personnel than comparable fire departments.

KF&BD is providing BLS (basic life support), EMS transport, fire and life safety plan review and inspections, hazardous materials response, fire training, emergency management, and a limited public education program with a relatively few number of administrative and support positions. In our experience, we find that fire departments often will provide one or two additional or advanced services. KF&BD is among a select few that offer virtually all aspects of emergency services with a minimum of non-emergency staff.

Kudos 2: *Kirkland Fire and Building Department provides or provides for virtually all emergency services that are available and offered by municipal fire departments.*

Staffing by Division and Program

KF&BD uses an internal budgetary framework to define the division of tasks, resource deployment, and coordination of activities. Divisions have authority, responsibility, and accountability for programs. Figure 30 summarizes the distribution of the 13.5 career FTEs in administration and support by division and program.

Figure 30: Administration and Support FTEs by Division and Program

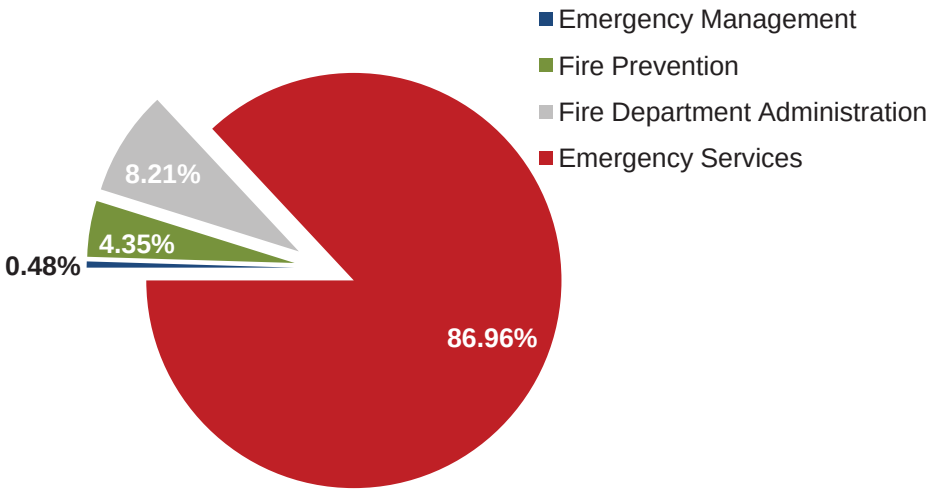
Division or Program	FTEs
Fire Department	7.0
Fire Prevention	4.5
Training	2.0
EMS	0.0

In the City budget, under the umbrella of the fire and building department, each of the divisions and programs provides a detail of functions (responsibilities), accomplishments, objectives, and budget highlights. A division/program summary lists a review, projection, and changes in

[20] Based on ESCI's experience with 800 plus clients.

staffing and budget.[21] The percentage of the FTEs devoted to each budgetary division and program (taken from the City's adopted budget) is summarized by the following pie chart.

Figure 31: KF&BD Staffing by Division and Program



As is expected, the majority of the department's FTEs (approximately 87 percent) are dedicated to the delivery of fire suppression and emergency medical services. Noticeably absent from the staffing figure is a lack of personnel dedicated to management of emergency medical services. As a general rule, fire departments serving a community of similar size and character that provide EMS and transport services have a full-time staff person dedicated to managing the medical services program.

City budget documents for the fire department do not include administrative functions as a division. Administrative services include those functions necessary to support the operation of the other divisions in a department and assure quality control. The budget document for the City of Kirkland separates administrative services for some departments such as planning and community development and the police department. To better quantify the administrative services function for the Kirkland Fire & Building Department, we recommend that an administrative division budget for the department have two categories: 1) fire and 2) building.

[21] Source: *Fiscal year 2011 – 2012 Final Budget*, City of Kirkland, page 222.

The next table lists the staffing for the fire and building department according to the City of Kirkland fiscal year 2011 – 2012 budget by division/program and the change from fiscal year 2007 – 2008.[22]

Figure 32: Position Summary FTEs, Fiscal Year 2007 – 2008 and 2011 – 2012

Divisions and Programs	2008 FTEs	2012 FTEs	Change
Administration	6.00[23]	6.00	0.00
Emergency Services	79.00	93.00	14.00
Fire Prevention	4.00	3.50	(0.50)
Building Services	20.53	18.28	(2.25)
Emergency Management	0.00	0.00	0.00
Total	**109.53**	**120.78**	**11.25**

KF&BD saw a net increase of 11.25 FTEs between fiscal year 2007 – 2008 and fiscal year 2011 – 2012 according to the City budget. With 14.00 additional FTEs budgeted, emergency services had the largest increase; administration static, while two other programs lost FTEs (fire prevention and building services). Nine of the emergency services FTEs are a result of the City's 2011 annexation of a portion of the Woodinville service area. Fire department administration has seen an actual decrease in personnel with the loss of one FTE administrative support position that was funded by King County Fire District #41. This administrative support position was eliminated at the time of annexation.

KF&BD has no internal capacity for the analysis of data and implementing of outcomes. The problem is seen as two-fold. First, is the limited availability and integration of electronic data. Second is the lack of an analyst or administrative staffer with the knowledge and skill set to perform analysis. ESCI recommends that one FTE administrative assistant for EMS and one FTE analyst be added to the administrative support function of the KF&BD.

Emergency Operations

It takes an adequate and well-trained staff of emergency service responders to put the apparatus and equipment to its best use in mitigating an emergency incident. Too few workers at an emergency scene lessen the effectiveness of the response and increase the risk of injury to those at the scene.

[22] Ibid.
[23] 0.8 FTE was provided by King County Fire District #41. This administrative support position was eliminated at the time of annexation.

Direct customer services in emergency operations are provided by 90 career personnel. The following figure lists the number of emergency operations personnel by position and rank.

Figure 33: Emergency Operations Staffing

Position	FTEs
Battalion Chief	3
Captain	10
Lieutenant	11
Firefighter & Firefighter/EMT	66
Total Authorized	**90**

The 2011 – 2012 budget of the City called for "elimination of the remaining 0.45 FTE Community Education and Information Specialist position; institute "rolling brown outs" when staffing falls below minimum levels. Note that if the EMS Transport Fees are approved, the funds could be used to restore this reduction." Subsequent to budget adoption, approval was received to implement the EMS transport fee in order to maintain a minimum emergency daily staffing level of 19 personnel (18 plus 1 for annexation).

Staffing by Risk

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 performance metric. 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 adequately equipped to the scene to perform all of the concurrent tasks required to deliver quality emergency care. For a cardiac arrest this can be up to six medical personnel; two to perform CPR, one or 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. Effective operations at the scene of fire emergencies also depend on the arrival of enough trained personnel to perform all of the duties and tasks required to control a fire event. Tasks that must be performed can be broken down into two key components; life safety, and fire flow.

Life safety tasks are based on the number of building occupants, their location, status, and ability to take self-preservation action. Life safety tasks involve the search, rescue, and evacuation of victims. The fire flow component involves delivering sufficient quantities of water to extinguish the fire, and creating an environment within the building that allows entry by firefighters.

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, completing some in chronological order rather than at the same time, reducing overall emergency scene effectiveness. These tasks include: command, scene safety, search and rescue, fire attack, water supply, pump operation, ventilation, back-up line, and staffing a rapid intervention team (RIT). The following table is an illustration of fire ground staffing based on level of risk. The following definitions apply to the table (below):

- Low Risk – Fires involving small sheds and other outbuildings, larger vehicles and similar—characterized by sustained attack fire flows typically less than 250 gallons per minute.
- Moderate Risk – Fires involving single-family dwellings and equivalently sized commercial office properties—sustained attack fire flows range between 250 gallons per minute to 1,000 gallons per minute.
- High Risk – Fires involving larger commercial properties with sustained attack fire flows between 1,000 gallons per minute and 2,500 gallons per minute
- Maximum Risk – Fires in buildings with unusual hazards such as high-rise buildings, hazardous materials facilities, very large buildings, and high life risk properties (nursing homes, hospitals, etc.). Though they may not require large sustained attack fire flows they do require more personnel to perform tasks required for effective control.

Figure 34: Number of Firefighting Personnel Based Upon Level of Risk

Task	Maximum Risk	High Risk	Moderate Risk	Low Risk
Attack Line	4	4	2	2
Search and Rescue	4	2	2	N/A
Ventilation	4	2	2	N/A
Back-Up Line/Rapid Intervention Team	8	6	4	2
Pump Operator	1	1	1	1
Water Supply	1	1	1	N/A
Utilities Support	1	1	1	N/A
Command/Safety*	2	2	2	1
Forcible Entry**	N/A	N/A	N/A	N/A
Salvage**	N/A	N/A	N/A	N/A
Overhaul**	N/A	N/A	N/A	N/A
Communication**	1	N/A	N/A	N/A
Operations Section Chief	1	N/A	N/A	N/A
Logistics	1	N/A	N/A	N/A
Planning**	1	N/A	N/A	N/A
Staging**	1	N/A	N/A	N/A
Rehabilitation	1	N/A	N/A	N/A
Division/Group Supervisors**	2	N/A	N/A	N/A
High Rise Evacuation**	10	N/A	N/A	N/A
Stairwell Support**	10	N/A	N/A	N/A
Totals	**53**	**19**	**15**	**6**

** Can often be handled by the first due officer.*
*** At maximum and high-risk fires, additional personnel may be needed.*

Delivering sufficient numbers of personnel to the scene to accomplish all the various tasks required to effectively control an emergency is essential. As is shown by the preceding figure (Figure 34), national criteria suggests at least 15 personnel be on scene of a fire in a single family home for safe and effective operations. More personnel are needed as the size of the structure, the complexity of the incident, or the life safety risk increases or when special hazards exist. At minimum daily staffing levels, KF&BD has 19 emergency personnel available for immediate response to emergencies.

In communities around the country, the number of fire calls has declined over the past decade. Yet as the frequency of fires has diminished, in part due to stricter fire codes and an emphasis on safety education, the workload of fire departments has risen sharply—medical calls, hazardous materials calls, and every sort of household emergency is now addressed by fire departments. Therefore, although the frequency of fires has diminished, the need for a ready group of firefighters has increased.

Although modern codes tend to make fires in newer structures less frequent, today's energy-efficient construction (designed to hold heat during the winter) also tends to confine the heat of a hostile fire. In addition, research has shown that modern furnishings generally burn hotter (due to synthetics), and roofs collapse sooner because prefabricated roof trusses separate easily after a very short exposure to flame. In the 1970s, scientists at the NIST (National Institute of Standards and Technology) found that after a fire breaks out, building occupants had about 17 minutes to escape before being overcome by heat and smoke. Today, that estimate is three minutes.[24] The necessity of firefighters arriving on the scene of a fire in the shortest span of time is more critical now than ever.

Along with a quick response, a robust, well-trained, and appropriately equipped complement of emergency workers is needed to successfully mitigate structural fires. Too few firefighters at an emergency scene decreases effectiveness and increase the risk to both the citizens and the firefighters.

The time required to place workers on the scene of an emergency is crucial to the quality of service. Longer response times occur in the more remote areas of the City, during the morning and evening commute (heavy traffic), and when incidents occur simultaneously. A higher percentage of calls occur between the hours of 8:00 AM and 8:00 PM. KF&BD uses a static or constant staffing model with the same number of personnel available all hours of the day. Based on 15 personnel to accomplish the tasks of a moderate risk fire event, KF&BD emergency operations staffing is at a minimum. ESCI recommends that the City add career personnel during periods of higher call volume to maintain adequate personnel to staff for a moderate risk fire event.

[24] National Institute of Standards and Technology, *Performance of Home Smoke Alarms, Analysis of the Response of Several Available Technologies in Residential Fire Settings,* Bukowski, Richard, et al.

Current Service Delivery Infrastructure

The delivery of fire suppression and rescue services is no more effective than the sum of its parts. It requires efficient notification of an emergency, rapid response from well-located facilities, appropriate apparatus, with sufficient staffing, following a well-practiced plan of action. The most visible and valued of the services provided by the KF&BD is the response to and control of emergency events.

To operate in the emergency response environment effectively, fire departments must capitalize on managing various aspects of a large business enterprise. A lion's share of this effort goes into supporting the primary mission. However, there are additional requirements that have to be met and a substantial infrastructure that must exist in order for the organization to function at its best. A key component of an agency's service delivery infrastructure is its equipment and fire stations. The following table summarizes KF&BD's capital facilities and apparatus resources:

Figure 35: Service Delivery Infrastructure

Resource	Number
Fire Stations	6
Engines, Front Line	5
Engines, Reserve	2
Ladder (Aerial) Trucks	1
Ladder (Aerial) Trucks, Reserve	0
Aid Units, Front Line	6
Aid Units, Reserve	2
Command	1
Command, Reserve	1
Boats	0
Air Units	1
Water Tenders	0

A comparison of resources between KF&BD and five other fire agencies in Washington that provide service to similar sized communities is found in Appendix F: Comparable Providers.

WSRB (Washington Surveying and Rating Bureau)

The WSRB (Washington Surveying and Rating Bureau) evaluates all Washington communities for their fire protection/suppression capability using a schedule approved by the Washington State Office of the Insurance Commissioner. WSRB assigns each community a Protection Class of 1 through 10, where 1 indicates exemplary fire protection capabilities and 10 indicates the capabilities, if any, are insufficient for insurance credit. The insurance classification developed under the schedule is one of several elements used in the development of fire insurance rates. Although the schedule provisions may be of assistance to municipal officials

when used in conjunction with their analysis of local needs, capabilities, and priorities, the schedule is not intended to serve as a primary planning guide for local fire protection. WSRB recommendations offered in connection with insurance classifications are helpful to municipal officials when reviewed in combination with more specific studies of local needs by consultants, staff, or local task forces in arriving at fire protection decisions based upon an analysis of local priorities and financial capabilities.[25]

The grading process is conducted on both a request and non-request basis. To determine a community's Protection Class WSRB objectively evaluates four major areas:[26]

- Fire Department – WSRB reviews engine companies, ladder companies, distribution of fire stations and fire companies, automatic aid received, response to alarms, equipment carried on apparatus, apparatus maintenance, pumping capacity, reserve apparatus, department personnel and training.
- Water Supply – Water supplies used are reviewed to determine their adequacy for fire-suppression purposes. The review involves calculating required fire flows (gpm) for buildings and conducting flow tests to measure water pressures (psi) and volume (gpm). We also consider hydrant size, type, and installation, as well as the inspection frequency and condition of fire hydrants.
- Emergency Communications Systems – The 9-1-1 system is evaluated including facilities, handling and dispatching fire alarms, dispatch personnel and training.
- Fire Safety Control – Fire prevention activities such as fire code enforcement, public education and building code enforcement are reviewed.

After completing the field survey, WSRB analyzes the data and calculates the Protection Class based on a total maximum of 5,000 points of deficiency (see Figure 36 below). The community receives a notification letter identifying the new Protection Class along with a summary report of findings.

[25] WSRB Grading Schedule and Commentary for Municipal Fire Protection, WSRB (Washington Surveying and Rating Bureau), 2006.
[26] Protection Class Evaluation Overview, WSRB (Washington Surveying and Rating Bureau), Retrieved March 28, 2012.

Figure 36: Points of Deficiency and Community Class

Community Class	Points of Deficiency
1st Class	0 to 500 Points
2nd Class	501 to 1,000 Points
3rd Class	1,001 to 1,500 Points
4th Class	1,501 to 2,000 Points
5th Class	2,001 to 2,500 Points
6th Class	2,501 to 3,000 Points
7th Class	3,001 to 3,500 Points
8th Class	3,501 to 4,000 Points
9th Class	4,001 to 4,500 Points
10th Class	More than 5,000 Points

KF&BD's most recent survey by WSRB was in June 1995. Figure 37 is a summary of the survey listed by area, points of deficiency, relative values, and classification.

Figure 37: KF&BD Grading Schedule, June 1995

Area	Point of Deficiency	Relative Values
Water Supply	435	1,950
Fire Department	692	1,950
Fire Service Communications	49	450
Fire Safety Control	445	650
Climatic Conditions	52	
Divergence between Water Supply and Fire Department	0	
Total Points	**1,673**	**5,000**
Classification	**4**	

KF&BD is currently rated as a Class 4 by the WSRB for properties within five miles of a fire station. The largest point of deficiency was related to the fire department (35.49 percent). Since the survey in 1995, improvements in staffing, apparatus, and fire stations (Fire Station No. 26 [North Rose Hill] and Fire Station No. 21 [Forbes Creek]) suggest that the KF&BD would benefit from a re-evaluation by WSRB. Also relevant is the annexation of June 2011 that increased the size of the City.

ESCI recommends that a request be made to WSRB to conduct an evaluation of the fire and suppression capabilities of KF&BD. The request must be signed by the mayor and should include a brief explanation of improvements made that would warrant a new evaluation.

Conclusion – Fire and Building Department

The single largest change to occur for the City of Kirkland in years was the annexation in June 2011 of a large area and expansion by 7.8 square miles. City population increased from 2010

by an estimated 62.24 percent to 80,505. KF&BD was already providing contract fire and emergency services to Fire District #41 and added coverage to a portion of Fire District #36 (Woodinville) and a small area of Fire District #34 (Redmond) as a result of the annexation. While KF&BD added emergency response personnel to serve the annexed area, there was no corresponding increase in administration and support. With three KF&BD administration and support positions being of limited duration the personnel resources dedicated to supporting service delivery will decrease. There was a loss of the 0.8 FTE provided by King County Fire District #41. This administrative support position was eliminated at the time of annexation.

KF&BD's greatest percent of calls for service are related to emergency medical incidents and in 2011 the department began the practice of billing for EMS transport services. Emergency agencies of like size and character commonly have staff dedicated to supporting EMS, KF&BD does not. ESCI believes that given the increases in operational personnel and EMS responsibilities there is a need to increase administrative support personnel in a ratio equal to added services and emergency service personnel.

Recommendation Summary – Fire and Building Department

- Recommendation 1: Amend job descriptions to accurately reflect roles and expectations for administration and support staff. (Implementation Order 1)
- Recommendation 2: Create a budget category for administrative services for the fire and for building departments. (Implementation Order 7)
- Recommendation 3: Increase emergency operations by adding a BLS aid unit staffed between 8:00 AM and 8:00 PM to maintain adequate personnel for a moderate risk fire event. (Implementation Order 5)
- Recommendation 4: Request WSRB to conduct an evaluation of the fire and suppression capabilities of KF&BD. (Implementation Order 8)
- Recommendation 5: Annually conduct a detailed analysis of revenue versus expenditure to validate that EMS transportation activity is meeting stated goals established by the City. (Implementation Order 6)
- Recommendation 6: Add a Medical Service Administrator (MSA) at the rank of division chief to manage the medical division. (Implementation Order 2)
- Recommendation 7: Bill for EMS transport when responding and transporting patients outside of the City of Kirkland. (Implementation Order 4)
- Recommendation 8: Add one FTE administrative assistant for EMS and one FTE financial analyst to administrative support functions. (Implementation Order 3)

Fire and Building Department Findings and Recommendations

Summary of Stakeholder Input

ESCI solicited input from internal and external stakeholders through two separate venues: one-on-one interviews conducted by the ESCI team during the initial data gathering process and a citizens group formed to participate in the strategic planning process. As part of the interview process, the internal and external stakeholders were asked to identify their perspectives on the department's strengths and weaknesses, as well as the challenges facing the department and critical issues it needs to address.

Internal and External Stakeholders

Organizational Strengths

It is important for any organization to identify its strengths in order to assure it is capable of providing the services requested by customers and to ensure that strengths are consistent with the issues facing the organization. Often, identification of organizational strengths leads to the channeling of efforts toward primary community needs that match those strengths. Programs that do not match organizational strengths or the primary function of the business should be seriously reviewed to evaluate the rate of return on precious staff time. In the course of ESCI's stakeholder interviews, the strengths of the Kirkland Fire and Building Department were identified by both internal stakeholders (representatives of the City Council, city management, and department directors, and the fire department) and a select group of external stakeholders (neighboring emergency service providers). They are listed below as stated by those interviewed.

Organizational Strengths as Identified by:			
City Council	**City Management & Department Directors**	**KF&BD Members**	**Neighboring Providers**
Community satisfied with service	Best trained and highest morale in the area	Training division is good, personnel are well trained	Department has good people and a good leader

Organizational Strengths as Identified by:			
City Council	**City Management & Department Directors**	**KF&BD Members**	**Neighboring Providers**
Good department…they work well with each other and know how to cooperate	The fact that it is a city service—it is personal and available to the public	Comprehensive system that has identified hazards and appropriate resources	Good relations with KF&BD staff
Personnel are devoted and well trained	Service is excellent and well-coordinated	Building division is not under direction of Planning Department	Partnership in mutual aid and NORCOM
Provides good service and delivers what the public expects	Good quality service and effective	Good people who are interested and dedicated	
Good relationship between labor and management		Good neighbors that we train with	
Department is trusted and respected by the public		Good follow through on calls	
		Cohesive staff—no grandstanding	
		We do a lot with less	
		People are treated well by their peers	
		Good people	
		Citizens really appreciate the service	
		Training has improved significantly	
		Chief is motivated and provides leadership	
		Apparatus/equipment/ PPE are in good shape	
		Our people work hard	
		Training is really good, troops are very professional	

Organizational Weaknesses

Performance or lack of performance within an organization depends greatly on the identification of weaknesses and how they are confronted. While it is not unusual for these issues to be at the heart of the organization's overall problems, it is unusual for organizations to be able to identify and deal with these issues effectively on their own.

For any organization to either begin or to continue to move progressively forward it must not only be able to identify its strengths but also those areas where it does not function well. These

areas of needed enhancements are not the same as challenges, but rather those day-to-day issues and concerns that may slow or inhibit progress.

Organizational Weaknesses as Identified by:			
City Council	**City Management & Department Directors**	**KF&BD Members**	**Neighboring Providers**
System has never met response time goals	City departments don't see that finances are now really difficult; there is a new normal	Hard to say no to new projects	Rumor that KF&BD wants own paramedics—this will hurt regional strength
The issue of overtime	Loss of public information/education and outreach capabilities	Economy forces FDs to decrease resources and become over reliant on mutual aid	Redundancies among neighbors
Huge department with very few fires—most calls are for EMS; many people are sitting around waiting for something to happen	Public education loss is serious	No comprehensive wellness and fitness program	Government can be a barrier
Concerns about sustainability of the system		Struggle with relationships with other City Departments	Procedural differences; they seem to be out of position quite a bit (Engine 25)
Location of fire stations—difficult to serve Kingsgate and Finn Hill		Low company staffing	
Having building and fire under the same department is wrong		Struggle to maintain facilities	
		We struggle with appropriate discipline	
		Lack of buy-in on the importance of prevention by some operations personnel	
		Very limited ability to change	
		Uncertainties	
		Declining money	
		Officer training is non-existent	
		Lack of standards	
		Lack of administrative control	
		No support to take corrective action	

Challenges

To draw the strong suit and gain full benefit of any opportunity, the challenges to the organization must also be identified. By recognizing potential challenges, an organization can greatly reduce the potential for future setbacks. In this particular exercise, stakeholders were asked to identify up to three challenges facing KF&BD.

Organizational Challenges as Identified by:			
City Council	**City Management & Department Directors**	**KF&BD Members**	**Neighboring Providers**
• Geography; jurisdictional boundaries • Money	• Need for a fireboat • Stability and predictability in costs • Any incident will generate overtime	• Containing growth of call volume • Number of non-emergency calls	External political forces
Political issues	• Getting people to engage in safe practices/emergency preparedness • Firefighters at risk from injuries and age	• Fees are not enough to finance Building Division • Adding new permit tracking software	
• Coverage • Competition for financial resources • Possibility of RFA		• Budget support • Connecting to the community	
Staffing levels		Need more staff (in prevention)	
		• Building good relationships with neighbors • Act/behave like the size city we are	
		• Reserve program is gone • Finn Hill Station	
		Annexation impacts	

Critical Issues

After organizational strengths and weaknesses and challenges posed by the current environs, ESCI asked stakeholders to identify the critical issues they perceive the agency is facing. The following reflect the critical issues that the respondents felt pose the greatest risk today to the success KF&BD's service delivery. As with the organizational challenges, each stakeholder was asked to identify up to three critical issues.

Critical Issues as Identified by:			
City Council	**City Management & Department Directors**	**KF&BD Members**	**Neighboring Providers**
Response time	Slow growth of expenses	Funding, leadership, too few administrative staff	• Cost of service • Housing prices down • Dramatically underprepared for a disaster
Coverage in annexation area	Funding that is sustainable for all city departments	Funding, levy approval for Medic One program	• Money • Ongoing workload/cultural shift—need to be more community connected • Need to be more agile in addressing change
Financial stability	Annexations, revenue, change in building stock	Budget challenge	King County EMS Levy Declining economy
Funding		Administrative support resources (for data extraction and analysis) IT support	• Revenues • Controlling expenses
Building codes are overwhelming		• Organizational communications • No recognizable vision—old strategic plan not implemented	
		• Strategic planning • Organizational communication—most information comes via the rumor mill	
		Lack of communication between fire and building	
		Team building	
		• Chief's decisions will set tone for organizational culture • Administration is understaffed Operations chief is overwhelmed	
		• Structure and accountability for offenders • Staffing issue at the line (Fire Station No. 27) • Battalion aid needs to be staffed 24/7	

Community Members

A citizens' group consisting of local business owners and representatives of several neighborhood associations were invited to participate in the strategic planning session facilitated by ESCI; a total of 11 community members attended the session. Rather than focusing on the organization's strengths, weaknesses, challenges, and critical issues, the community members were asked to identify their priorities, expectations, and concerns with regard to the department and its services.

Customer Priorities

In order to dedicate time, energy, and resources on services most desired by its customers, the Kirkland Fire and Building Department needs to understand the community's priorities. To assist with the overall strategic planning process, members of the citizens' group were asked to review a short list of planning considerations and rank them through a direct comparison process. The results of that ranking appear below (in priority order):

- Technical competence of firefighters and emergency medical personnel
- Ensuring that facilities and equipment are reliable and functional
- Improving the response time of the first engine or ambulance to arrive at a scene
- Maintaining the existing response times of the first engine or ambulance
- Compassion, empathy, and customer service of emergency responders
- Expanding the types of services offered by the Kirkland Fire and Building Department
- Keeping Kirkland Fire and Building Department costs and tax rates as low as possible

Customer Expectations

Understanding what the community expects of its fire and emergency services organization is critically important to developing a long-range perspective. With this knowledge, internal emphasis may need to be changed or bolstered to fulfill the customer needs. The following are the expectations identified by several members of the citizens' group.

- Well trained, competent, professional personnel
- Fast response times
- Reliable, appropriate equipment and facilities
- Community education and training for disaster preparedness
- Adaptable to changing conditions; willingness to consider alternative delivery methods

Areas of Customer Concern

The Customer Centered Strategic Planning process would fall short and be incomplete without an expression from the customers of their concerns about the organization. Some areas of concern may, in fact, be a weakness within the delivery system. However, they may also be perceptions of the customers based on limited knowledge.

- Does it have a sustainable structure? Can it adapt to changes in resources?
- How can services be provided equally across the city? Shift in City resources/personnel away from certain neighborhoods
- Accountable and efficient. Do they have what they need to do the job? Training, equipment, etc.
- Lack of public outreach; communication skills could be improved.

Positive Customer Feedback

For a strategic plan to be valid, the customer views on the strengths and image of the emergency services organization must be established. Needless efforts are often put into over-developing areas that are already successful. However, utilization and promotion of the customer-identified strengths may often help the organization overcome or offset some of the identified weaknesses.

- Personnel are professional, well trained, experienced, and knowledgeable
- Equipment and facilities are appropriate, adequate for the job, and well maintained
- The department enjoys good leadership
- KF&BD firefighters/EMTs are visibly committed to their community

Other Thoughts and Comments

The citizens' group participants were asked to share any other comments they had about the Kirkland Fire and Building Department or its services. The response that appeared most often was an appreciation for the opportunity to participate in the process and a desire to improve and enhance the partnership that exists between KF&BD and the community it serves.

Department Mission and Values

Mission (Vision) Statement

Mission and vision statements, goals, and objectives provide key organizational management foundations. Development of such organizational underpinnings is important, but communication of them is paramount. Leaders and workers alike need to understand why the organization exists, where it is headed, and how to identify success. While the mission of a fire department may seem obvious, if the organization's purpose is left to an individual's imagination, many individual missions will result--which in the end may cause agency members to work at cross-purposes.

The City of Kirkland City Council has established a vision and goals for the City. The stated purpose of the City Council Goals is:

> *…to articulate key policy and service priorities for Kirkland. Council goals guide the allocation of resources through the budget and capital improvement program to assure that organizational work plans and projects are developed that incrementally move the community towards the stated goals.*

The goal for public safety is to ensure that all those who live, work and play in Kirkland are safe and the ascribed Council Goal is:

> *Provide for public safety through a community-based approach that focuses on prevention of problems and a timely response.*

The Kirkland Fire and Building Department has an adopted vision statement that provides the compass for the organization. The current KF&BD vision statement states:

> *The Kirkland Fire Department is committed to the protection of life and the preservation of property and the environment from the adverse effects of fire, medical, and all hazardous conditions through sustained training, progressive education, proactive prevention and a dedicated diligence to provide the highest level of customer service to our Community.*

The Kirkland Fire and Building Department mission, vision, and value statement was reviewed as one element of the strategic planning process.

Mission, Vision, and Values Validation

The strategic planning process accomplished more than just the gathering of input and a document. It challenged elected officials, city staff, the membership of the KF&BD, and the community to look critically at paradigms, values, philosophies, beliefs, and desires. It challenged individuals to work in the best interest of the "team." In addition, it provided the membership with an opportunity to participate in the development of their organization's long-term direction and focus. The members of the KF&BD strategic planning team and the citizen's advisory group did an outstanding job in committing to this important project and seeing it to final form.

Mission

Clearly stated and intentionally simplistic, the Kirkland Fire Department *Mission* accurately describes the organization's general purpose. The validated Mission Statement for the Kirkland Fire Department is:

> *Providing timely, emergency response and safeguarding the lives, property, and environment of our community.*

Vision

Building on this mission, the stakeholders identified a *Vision* for the department, thus establishing targets of excellence for the future. The proposed *Vision* for the Kirkland Fire Department is illustrated in the following:

> *The Kirkland Fire Department is a respected partner in our community and an innovative leader in the nation.*
>
> - *We inspire a culture of esprit de corps.*
> - *We offer opportunity for personal and professional growth.*
> - *We demonstrate professionalism, competency, compassion and a readiness to respond.*
> - *We listen to, understand and keep the public informed.*
> - *We provide fiscally prudent preventive and emergency services.*
> - *Above all, we earn the confidence, trust and respect of the community we serve.*

Values

Recognizing that its collective personality and the values of its members enhance the organization, the stakeholders declared the following *Values* for the KF&BD:

- ***Service*** *– Demonstrated innovation and understanding of our internal and external customers' needs.*

- ***Professionalism*** *– Upholding industry standards and honoring the expectation of a professional firefighter both on and off the job.*
- ***Integrity*** *– Maintaining consistency between actions and words at all times.*
- ***Respect*** *– Being accountable and demonstrating mutual trust and respect.*
- ***Innovation*** *– Providing a supportive work environment that encourages and empowers innovation and risk taking within the norms of the department and the City.*
- ***Trust*** *– Trusting other and being trustworthy.*
- ***Teamwork –*** *Finding strength in diversity and working together for a common goal.*

Conclusion – Department Mission and Values

KF&BD's appraisal, review, and update of its organizational mission, vision and values is consistent with best practices. ESCI recommends that upon completion of this study 2012 Strategic Plan it be validated by KF&FD and adopted by the City of Kirkland City Council.

Recommendation Summary – Department Mission and Values

- ❖ Recommendation 9: KF&BD review and validate the mission, vision, and values following completion of the 2012 strategic plan. (Implementation Order 1)
- ❖ Recommendation 10: Display the adopted mission, vision, and organizational values in City Hall and fire department facilities. (Implementation Order 2)

Management Components

ESCI reviewed management of the Kirkland Fire & Building Department, including an examination of philosophical ideals as expressed by its mission, vision, and values statements. We look to assure that such visionary principles conform to the core values of managers and members and address several other important questions: Are goals and objectives consistent with the City's direction? Are staffing levels adequate to meet City and organizational goals? Do human resource and administration systems meet legal requirements and department needs? Are appropriate financial controls in place?

Communication internal to the City and KF&BD was checked, as was external communication to the community. A review of security issues concerning hard records, electronic data, offices, and buildings was conducted as well as to ensure that all necessary reports and records were produced, completed, and maintained. Last, ESCI describes the merit, benefits and costs associated with fire department accreditation.

Staffing and Reporting Relationships

The position of director of fire and building/fire chief is appointed by, works for, and is under direct supervision of the City Manager. The city charter states that the fire chief shall be head of the fire department and shall have charge and supervision over all matters relating to the prevention and extinguishment of fires and of all measures necessary to guard and protect all persons and property impaired thereby.[27]

Deployment

KF&BD operates six fire stations (five with career staffing) with 12 frontline units and has established a minimum daily staffing level of 19 personnel.[28] KF&BD *Department Manual Directive Number 3.001* dated February 1, 2000, states that the minimum staffing shall be 15

[27] Kirkland Municipal Code, City Charter, Title 3, Chapter 3.16 City Manager-Administrative Departments.
[28] Source: Minimum staffing design as compared to total staff assigned per shift, 02/15/2012.

with 1 being an officer and 14 firefighters. This directive needs to be updated to accurately represent current minimum staffing.

Figure 38 lists minimum staffing by unit and position in January 2012.

Figure 38: Minimum Staffing by Unit and Position, January 2012

Unit	Battalion Chief	Officer (Captain or Lieutenant)	Driver Operator	Firefighter
Engine 21		1	1	1
Engine 22		1	1	1
Engine 25		1	1	1
Engine 26		1	1	1
Engine 27		1	1	1
Aid 21		Cross-staffed with Engine 21		
Aid 22		Cross-staffed with Engine 22		
Aid 25		Cross-staffed with Engine 25		
Aid 26		Cross-staffed with Engine 26		
Aid 27		Cross-staffed with Engine 27		
Aid 29		Cross-staffed with Ladder 27		
Air Unit 21		Cross-staffed with Engine 22		
Ladder 27		1	1	1
Battalion Chief	1			
Shift Captain (Swing Position)[29]		1		
Total	**1**	**6**	**6**	**6**

A total of 30 personnel are assigned to each shift with minimum daily staffing set at 19. In the minimum staffing matrix, the swing staff position is not identified.

Human Resources Management

The Kirkland Human Resources and Performance Management Department (HR) develop, manage, administer, and is the information source for employee programs. Many of the human resource activities involve KF&BD:

- Recruitment and selection of new employees – KF&BD with HR involvement
- Civil service program management for public safety employees (police and fire) – HR
- Organizational training and career development – KF&BD
- Employee relations and contract interpretation – HR
- New hire orientation – HR

[29] Not included in minimum staffing total.

- Benefits administration – HR
- Compensation and classification – HR
- Performance evaluation tracking – KF&BD, HR records management
- LEOFF I Disability Board – HR
- Employee safety and risk management services – HR
- Tuition reimbursement – KF&BD
- Policies and procedures – KF&BD internal, HR City polices
- Diversity program – HR and KF&BD
- Wellness program – HR for day staff other departments
- Employee recognition and service awards – HR and KF&BD

The City's human resource department programs, documents, and processes appear to be all-inclusive and in-line with best practices. Human resource documents were not reviewed for legal compliance but appear to contain the depth and breadth of information to comply with federal and state requirements.

Fire department rules and regulations and standard operational guideline documents were reviewed for content, relevancy, and applicability to KF&BD's emergency operations. ESCI found that ARs (administrative rules) and SOGs (standard operating guidelines)[30] specific to the fire department were generally outdated. Additionally, variations were found between City and KF&BD AR documents including safety, purchasing, and public records access, and document retention. KF&BD reported that a limited number of ARs and SOGs have been updated and the department has plans to complete a total revision in 2012. The last time that comprehensive updates of the policies were completed was in 2000 with many dated from the 1990s.

The time and expertise to maintain, update, and verify legal compliance of ARs and SOGs is extensive. ESCI has recommended that a complete set of ARs and SOGs be developed and maintained by periodic review and updating on a set timetable. Review of ARs and SOGs should include involvement and oversight of the City Human Resources and Performance Management Department. However, the time and expertise to maintain, update, and verify legal compliance of ARs and SOGs for the fire department is extensive. Given the importance of creating a complete set of ARs and SOGs, ESCI recommends development and maintenance be outsourced to a third party.

[30] KF&BD uses the terms P & P (policies and procedures) and R & R (rules and regulations).

Succession Planning (Development)

A succession plan should be ongoing and provide a pool of trained, experienced, and promotable personnel to succeed current officers. Succession development is a process whereby a fire department can ensure that employees are recruited and developed to fill each key role within the organization. Actively pursuing succession planning ensures that personnel are constantly being prepared to fill each needed role. As KF&BD key employees retire or accept promotional opportunities, succession development guarantees that there will be officers and firefighters ready and available to fill new roles. Effective, proactive succession development leaves KF&BD well prepared for the loss of a key employee, filling a newly created position, employee promotions, and organizational redesign.

Through succession development, KF&BD can better retain superior personnel because they appreciate the time, attention, and development invested in them. Employees are motivated and engaged when they can see a potential for continued growth and development. KF&BD can use such practices as providing opportunities for assignment to special projects, smaller leadership roles, progressively increasing management roles, and both internal and external training opportunities.

KF&BD should identify and understand the developmental desires of personnel. It is not necessary nor does everyone need or want to be the fire chief. Ensure that firefighters understand the promotional paths and the roles that are available for them to aspire. Focus resources on retaining key personnel and having individuals ready to step up.

Keep succession planning and development simple. At times fire departments have created excessively complex criteria for the succession development process. Keep it simple: It is more important that individuals have a competent coach.

There are several factors typically found in successful succession development initiatives. Examples include:

- Personal involvement of the fire chief and senior officers.
- Senior officers hold themselves accountable for developing future leaders.
- Personnel are committed to their own self-development.
- Success is based on long-term department needs.
- Succession is linked to master planning, strategic planning, and an investment in the future.

- Leadership skill sets and competencies are identified and used when developing future department leaders.
- A pool of talent is identified and developed early for long-term needs.

Many of the costs for succession development are soft costs associated with a commitment of time by the current KF&BD leadership. Other expenditures involve a commitment of funds for internal and external training courses.

ESCI recommends that the KF&BD develop a succession plan to ensure employees are recruited and developed to fill each key role within the organization.

Financial Management

Budgeting

Beginning in 2004, the City of Kirkland changed from an annual to a biennial budget process. State law requires that the first year of a biennial budget be an odd numbered year. Accordingly, the preparation of the biennial budgeting process occurs during an even numbered year, beginning in June and continuing through the end of the year.

The City Council holds a mid-year budget review meeting in June and receives a status report on the current biennial budget and an updated six-year financial forecast, with an emphasis on the coming biennium. Additionally, the City Manager requests input from the City Council about budget priorities and overall direction. The following are key steps that the City takes to prepare its budget.

1) In July, the director of Finance & Administration (F&A) makes the official "budget call" to all department directors requesting expenditure and revenue estimates for the current year and the coming two years.
2) F&A prepares all general purpose revenue estimates, consisting mostly of taxes, state shared revenues and entitlements, and intergovernmental service revenues, during the first half of August. Additionally, the F&A department receives and reviews departmental revenue estimates during the same time period. Departmental expenditure estimates for the current year and "basic budget" requests for the coming biennium, which represent the estimated cost of maintaining the current service level, are received and reviewed by the F&A department during the second half of August.
3) In late August, the director of F&A meets with each department to review their basic budget requests.
4) In early September, departments submit additional funding requests (called "service packages") for new positions, equipment, and projects which are over and above their basic budgets. F&A reviews all service package requests by mid-September.

5) In mid-September, the City Manager meets with each department to review their basic budget and service package requests. The City holds a public hearing in mid-September to gather citizen input on proposed revenue sources for the coming biennium.

6) The City Manager finalizes the preliminary budget proposal, which includes recommended service packages, by the end of September. In early October, the City Manager and director of F&A brief the council finance committee on the preliminary budget proposal.

7) In October, the F&A department prepares and prints the preliminary budget document for the coming biennium. By November 1st, the preliminary budget document is filed with the city clerk, distributed to the City Council and the departments, and made available to the public.

8) The City Council holds a series of budget study sessions in November to review the City Manager's proposed budget and to determine if there are any changes they wish to make.

9) The City holds a public hearing in mid-November to gather citizen input on the preliminary budget as well as on any changes made by the City Council during their budget deliberations.

10) In December, the City Council adopts the final property tax levy for the coming year and the final budget for the coming biennium each by ordinance via a simple majority of the members present. The appropriation approved by the City Council is at the individual fund level.

11) The F&A department publishes the final budget document during the first quarter of the following year, distributes the document to the City Council and the departments, and makes copies available to the public.

Interviewees described to ESCI a "tension" between the KF&BD and F&A. Concerns were expressed that the fire department:

- Has a "mind-set" of spending it all each year; if they have money they will spend it to the limit.
- Other City departments have gotten better results by involving F&A on process, budgeting, and making a budget case for fire department programs.

Stakeholder portrayals of the relationship between KF&BD and F&A included some recent positive elements. Affirmation included how the KF&BD successfully handled the EMS transport billing issue and training on internal financial controls of fire officers by F&A.

A new level of cooperation between KF&BD and other City departments is viewed as a positive outcome that is a result of direction from the City Manager's office.

Purchasing Management

KF&BD spends approximately $500,000 per year purchasing supplies and services. City purchasing policies reflect best practices calling for separation of duties assigning buying functions to different people, obtaining appropriate authorizations and approvals, securing assets, and verifying charges. With proper segregation, no single person has complete control over all buying activities. KF&BD follows the adopted City purchasing policy for the acquisition of goods and services.

The City issues P-Cards (purchasing cards) to the training division, and fire department administration that have source and product limitations. Regardless of vendor or amount of purchase, all procurements require a P.O. (purchase order) to be generated in the City purchasing system. KF&BD participates in cooperative purchasing in particular for capital apparatus. As defined in City purchasing policy, high value items involve a bid process and assistance from F&A with the process; the fire department develops the specifications.

Adequate controls are in place to ensure fiduciary responsibilities for purchasing items and services for KF&BD are met.

Equipment Replacement Funding

KF&BD has reserve funds dedicated for the replacement of some capital equipment. The City currently funds replacement reserves for facility systems replacement, vehicles, and personal computers using a "sinking fund" approach, which sets aside funds each year through the operating budget toward the anticipated replacement of that equipment.

ESCI recommends that items with an individual value below capital threshold minimums that are generally purchased in volume and have a total value over $5,000 be aggregated and included in capital replacement funding. Items generally below capital threshold minimums but acquired in bulk include:

- PPE (Personal Protective Equipment)
- Firefighting hose
- SCBA (self-contained breathing apparatus)
- Radio (portable and mobile)
- Firefighting appliances (nozzles and adaptors)
- Uniforms
- Disaster preparedness equipment (Ham radios, and emergency provisions)

- Generators, fans, and saws

Establishing these items as a capital asset and contributing to an annual replacement fund is appropriate. While a single set of firefighter PPE is approximately $2,000, acquiring 20 complete sets would exceed $40,000. It is understood that funding would need to follow the normal budget process, but anticipating the purchase requirement is prudent.

Records Keeping

Records management is a critical function for any organization. A variety of uses are made of written records. Misplaced, stolen, or lost documents can have serious consequences, so it is important that their integrity be protected. RCW 42.56.070 requires public access to certain documents and data.[31] The Kirkland City Council, through approval of Resolution 4669, adopted Public Records Act Rules. A simple, straight-forward link on the City website launches a public records request form for citizens to complete with a stated goal to provide a response within five business days.

Fire department hard copy records are protected in either secured file drawers, secured offices, or both. Computer files are routinely backed up. Electronic files are password and level of authority protected, preventing access by unauthorized personnel.

Security

The citizens of the City of Kirkland have made a significant financial investment in facilities, apparatus, and capital equipment for the KF&BD. Protecting these assets is a fiduciary responsibility of the City and KF&BD and an expectation of the community which funded them. Fire stations were observed by ESCI and reported to be consistently locked and secure from unauthorized entry. Public access to the buildings is limited to community rooms and/or, when accompanied by an employee, business areas. Access to fire stations is via a coded keyless entry system.

KF&BD maintains a current inventory of capital assets. An asset tag and inventory control system is based on the value of an item and for items identified as “attractive assets.” No business-related cash is routinely kept on the premises, reducing the risks associated with burglary and theft. City Purchase Cards (P-Cards), such as VISA™ or MASTERCARD™ credit cards, with limited distribution, strict account controls, and low credit limits are issued for fire

[31] RCW Sections 42.56.040, 42.56.070 and 42.56.100, Documents and indexes to be made public.

department use. A formal City purchasing policy and procedures for the acquisition of services and items are in place and strictly enforced.

Management Reporting

KF&BD uses an RMS (records management software) to enter and store emergency incident information. The software is compliant with NFIRS (National Fire Incident Reporting System) standards and incidents are entered appropriately. Exposure records for blood and airborne pathogens are recorded in HealthForce – Workplace Health Solutions. However, there is no formal process for managing other types of exposure records. Appropriate records are maintained for documenting the testing of self-contained breathing apparatus (SCBA), hose, ladder, pump, breathing air, vehicles, gas monitor, and radiological detection equipment.

ESCI recommends that the KF&BD and the Human Resources and Performance Management Department develop a procedure and policy for reporting and retaining all employee exposure records.

Periodic reports on the financial activities of KF&BD are provided to the City's elected officials by the Finance and Administration Department. Fire department operational reports are delivered to the City Council on a request basis. An annual report is produced and includes emergency response data analysis. The annual report is distributed to the City Council, City Manager, and others on an as-requested basis. At the time of this study the 2011 annual reported had not been completed.

Fire department personnel records are retained by the City Human Resources and Performance Management Department. They are maintained in a manner that protects private medical information in compliance with HIPPA (Health Insurance Portability and Accountability Act) requirements. Records retention includes documents related to an employee's relationship with the City (employment history), discipline, commendation, performance evaluation, work assignment, injury, exposure, and leave use.

Internal and External Communications

Media Relations/PIO

KF&BD's external communication effort is not robust. Due to budget decisions the KF&BD Community Information and Education Specialist position that served as the department public information officer (PIO) was eliminated at the end of 2010. KF&BD relies on the City's Communications Program Manager (CPM) to manage external messaging to the media. The

(CPM) reported to ESCI that it is too early to tell if dependence on this position will be effective long term. A barrier identified to the success is the availability of KF&BD administrative staff to respond promptly to CPM requests for information or when a time sensitive story must be approved prior to release. Messaging must be timely, especially when using the media as the vehicle for dissemination of material. A lack of available management personnel to draft, review and approve press releases which reduces the effectiveness of the message and may relegate the message to a footnote. KF&BD does not dedicate personnel to staff a media sector at emergency incidents.

The City CIO is the public affairs producer of "Currently Kirkland," a local government channel that provides local news, information on community activities, and special features about the City of Kirkland. This medium could be leveraged by KF&BD as an outlet for telling its story and distributing public safety messages to the community. While viewership may not rival network television, these types of government access programs have a high percentage of actively engaged citizens who will multiply the message by their activism.

A recent example of the problem inherent in a passive approach to external communication and community outreach was Finn Hill Fire Station controversy. This community conflict could have been managed more effectively by anticipating where the controversy might lead, understanding what the key points of conflict are, and "getting ahead" of the story. Anticipating the spread of a controversy affords the fire department and City an opportunity to develop message points and get them out to the community to prevent a conflict or at a minimum avoid being placed in a defensive posture.

Proactive messaging can include public interest stories that are not time sensitive and can be run "on a slow news day" or in concert with a global news event that provides a local angle. These messages can be developed as staff has time to develop them and be kept on file until the fire department can leverage the story to the greatest advantage.

A dynamic, contemporary, up-to-date, and useful website provides an additional avenue of distributing information and communicating with the public. KF&BD's web presence appears to be kept up to date in some areas and significantly out of date in others. Citizen interest is maintained in a website that is continuously changing to meet the needs of the community. The website could be enhanced by producing and adding citizen training videos to the site. Expanding the use of interactive components such as surveys and downloadable documents

(fire escape plans, preparedness, and self-help checklists) will help to keep the community engaged. Potential benefits include a reduction in community risk through education, and a multiplied impact of staff-hours dedicated to educational endeavors. To keep content fresh and relevant, a regular schedule of updating and maintenance of the fire department website is recommended.

ESCI recommends that the KF&BD make media messaging a priority and use "Currently Kirkland" and other media outlets as a tool to leverage the reach and impact of fire department public information and education messages. This should include a proactive message file where the subject is not time-sensitive, but timely release may position the message to its greatest advantage.

Internal Communications

Quality communication requires continuous attention and effort for any organization. At the KF&BD, the administration and operations chiefs conduct monthly meetings with staff. The building official and both deputy chiefs (executive staff) meet on a weekly basis and all chief officers attend company officer meetings once a month. The fire chief meets with the labor group (labor management) once a month and visits fire stations two to three times a month. Minutes for internal meetings are taken by a meeting attendee.

Fire departments should have a systematic method for distribution of written communications established and maintained in order to make certain that no members are excluded from the information loop. Critical information should not be distributed in a one-way communication model with the assumption that personnel have reviewed and understand the content. For these circumstances, the chain-of-command should be used to disseminate critical or time-sensitive information during crew meetings. KF&BD issues internal written, formal memoranda when major events occur, such as the hiring of new personnel, promotional announcements, or informal commendations. Otherwise, e-mail is used for routine fire department communication. Overall, ESCI found that a significant effort in communication is being invested internally by KF&BD staff to provide an opportunity for department personnel to be informed, heard, and involved.

With the high cost and logistical difficulty of bringing all members together for a briefing or meeting, selected fire departments are using other approaches to communication. One example is a department that employs monthly broadcasts made by fire chiefs that are delivered

over a secure network. The broadcast is recorded for later viewing by department membership unable or unavailable to view the content live. Questions arising from the broadcast or from e-mails submitted to the fire chief are answered in an internally distributed newsletter. The internal newsletter contains information specifically for employees. ESCI recommends that the KF&BD expand internal communication with a monthly informational broadcast meeting with department staff.

Live broadcasts are viewed as a viable method to deliver a consistent message on a regular basis to all KF&BD personnel. They are not intended to replace routine meetings between the fire chief, fire department leadership, and department personnel. It was ESCI observation that there are long periods of time between opportunities for personnel to meet and confer with the fire chief. With a live monthly informational broadcast meeting between the fire chief and department personnel it could be rebroadcast or replayed at a time that is convenient for department personnel.

Decision-Making Processes

It is widely recognized that when employees are provided with the opportunity to engage in the decision-making process, the organization benefits from a higher level of commitment and ownership in the success of the organization.

For fire departments, the opportunities to delegate decision-making down through the organization are quite numerous. Chief officers (deputy chiefs and battalion chiefs) are often given the task of making staffing decisions. Company officers can be given responsibility and/or authority for scheduling, program management, training, and fire station operations. Firefighters can make determinations as to patient care, station and apparatus maintenance.

The decision-making process for KF&BD is defined and participatory where appropriate. In the past, the relatively small size of the organization lent itself to a more personal and informal decision-making process. ESCI found that when making decisions KF&BD personnel tended to still view the department as intimate and insular. KF&BD and the City can still be intimate but the reality is that it is now a large, complex enterprise with multiple facets.

Where participation is solicited by management in the decision-making process, those involved should be knowledgeable of the key findings by which the decision was made. This process may go a long way in acceptance of the decision and providing a sense of worth and value in the employees, even though the decision may not reflect their input. ESCI observed that the fire

chief encourages and applies participatory communication to decisions with staff and operational personnel interacting through all levels of the department.

Kudos 3: *Fire Chief Kevin Nalder encourages and applies participation in the decision-making process by involving staff and operational personnel from all levels of the department.*

Interdepartmental Communications and Relationships

Throughout this process ESCI heard comments and observed interaction regarding KF&BD's relationships with other City departments. The description of fire department relations with other City departments were represented as okay then couched with "but," "The fire department does not understand how other departments can help them and that they are not the only City department." In more than a few instances relations with KF&BD and other City departments were described as being tense or that there is tension. It was suggested in discussions with stakeholders that one way for improving interdepartmental relations was to have KF&BD personnel receive exposure to other City departments. Such an example occurred recently between KF&BD and the finance and administration department.

In an effort to improve acquisition and internal control systems, Kirkland Finance and Administration Department delivered training to KF&BD fire officers. ESCI views this action as positive for fire department personnel to grasp an understanding of City procedures and building healthy inter-department relationships. The deeper understanding must go both ways however. Providing the other city departments with training and exposure to the challenges and issues facing the fire department also assists in improving interdepartmental relations. This is addressed in greater detail in the strategic planning elements of this report.

Other City departments were just as likely to commend the fire department for positive relationships and actions. KF&BD was recognized by two other City departments acknowledging the department's efforts at doing a good job with the Fire Corps program.

In the course of this evaluation the City instituted an *Internal Process Review*. The four stated goals of the process review are to:

- Optimize department administrative processes
- Ensure supportive work is completed
- Establish/reinforce effective working relationships between operating and support departments

- Better understand (individual) department's needs for future planning purposes

Health and Wellness Program

Keeping members safe and healthy is an important component of a fire department's method of operation. It has been clearly documented that it is by far cheaper to prevent injury than to pay for rehabilitation and work replacement.[32] Modern, progressive departments are incorporating numerous methodologies into the daily routine of firefighters to help in this regard.

There is a need for fire departments to have access to a group of professionals with expertise in the occupational medicine field. Occupational medicine is dedicated to promoting and protecting the health of workers through preventive services, clinical care, research, and educational programs. One aspect of such a program is keeping up-to-date with health and safety regulations, standards, and current practices. Occupational medicine specialists review current practices to see if they meet industry regulations, make modifications if needed, and assist the department in adopting any changes. Another aspect of a holistic occupational medicine system is fitness programs. Fitness programs are used to monitor and develop required physical training to keep personnel ready for the tasks to be performed and reduce the possibility of injury while on the job.

The importance of employee health and welfare and the potential liability associated with the lack of such programs necessitates that fire departments establish close professional relationships with occupational medicine specialists to assure that emergency workers are protected by the most up-to-date occupational health and safety programs possible.

Occupational safety and health programs (sometimes referred to as Industrial Medicine) vary in depth, form, and delivery. A fire department may employ a physician full time, contract with a provider organization, or conduct a program partially in-house while contracting for the remaining services. There are several hospitals and medical centers in the area which have programs that may meet the needs of KF&BD.

One such occupational medicine program that ESCI is familiar with uses the fire department wellness coordinator to conduct audiometric, spirometric, and vision screenings before personnel complete their annual physical evaluation. The occupational medicine provider then

[32] *American Journal of Industrial Medicine*, Volume 43, Issue 4; "The Economic Consequences of Firefighter Injuries and Their Prevention", National Institute of Standards and Technology, pgs 454 – 458, March 2005.

conducts blood draws at individual fire stations. Consequently, at the time of the medical physical, the physician has at his/her disposal the firefighter's historical and current medical screening records.

The medical physical, stress test, and all other components of the evaluation are done as part of the fire department's regular training rotation at a regional training center. Through a professional relationship developed with a medical service provider over several years, the fire department in this example was able to receive this level of service at a very competitive price.

The legal requirements for a fire department occupational safety and health program have been established. How a fire department administers and supports the program determines the success and the resultant benefit. In the example, the department mentioned previously had to hire back extra staff or pay employees overtime to take annual medical physicals. The occupational medical program resulted in a cost avoidance of more than $15,000 through reduced overtime cost; some funding is still required for medical follow-ups and for employees not able to meet the schedule.

An additional advantage of using a local occupational safety and health provider is the ability to quickly evaluate and treat non-threatening injuries suffered by employees.

KF&BD has established medical physical standards and provides medical physical examinations; depending on the individual's age, risk factors, etc., additional evaluations and tests are provided. Examinations should follow *NFPA 1582*.[33] Baseline values for all firefighters should be established at time of hire/appointment that includes: titer level, vision, spirometry, audiometric, hepatitis, B, and C, and tetanus.

A stress test is used to determine the amount of stress that a heart can manage before developing either an abnormal rhythm or evidence of ischemia (inadequate blood flow to the heart muscle). The test provides information about how the heart responds to exertion. It usually involves walking on a treadmill or pedaling a stationary bike at increasing levels of difficulty, while heart rate, and blood pressure are monitored, with a physician present. The test helps to determine if there is adequate blood flow to the heart during increasing levels of activity and the likelihood of having a coronary event or the need for further evaluation. KF&BD fitness standards used during the hiring process are job-related. The fitness evaluation for incumbent

[33] *NFPA 1582: Standard on Comprehensive Occupational Medical Program for Fire Departments*, 2007 Edition.

employees is not job related. Incumbent firefighter fitness is assessed by measuring the number of pull-ups, sit-ups, push-ups, and timing a run.

Medical physical assessment should involve periodic stress tests of incumbent employees/ members every two to five years, based on age and risk factors. We recommend that a stress test be performed at the time of hire to determine if a candidate has an underlying heart defect or disease that would put them at risk while performing the duties of a firefighter. The leading cause of death for firefighters is heart attack (44 percent). Death from trauma, including internal and head injuries, is the second leading cause of death (27 percent). Asphyxia and burns account for 20 percent of firefighter fatalities.[34]

Conclusion – Management Components

Fundamental tools necessary for organizational management are inadequate. ARs (administrative rule) and SOGs (standard operating guideline) specific to the fire department were generally outdated. Additionally, variations exist between City and KF&BD AR documents including safety, purchasing, and public access to records and document retention. There should be a sense of urgency given to developing a complete set of documents.

Internal tension between the KF&BD and F&A is concerning, though recent moves on the part of the two directors has made what is described as "improvement" to the working relationship.

KF&BD's management of external communication effort has been reduced to reacting to media worthy events. Limited administrative staff for information requests on time sensitive stories further reduces the fire department's ability to seize opportunities to tell its story. An effective option for linking with the community is through a website presence. KF&BD's web presence appears to be kept up to date in areas and significantly out of date in others.

Without the assistance and a greater degree of cooperation between and from other City departments, KF&BD lacks the administrative and support staff to give public education and information programs little more than lip service.

Recommendation Summary – Management Components

- Recommendation 11: Outsource development and maintenance of Administrative Rules and Standard Operating Guidelines to a third party. Development and maintenance of

[34] The United States Fire Administration (USFA), *The USFA Firefighter Fatality Retrospective Study: 1990-2000,* October 2002.

Administrative Rules and Standard Operating Guidelines should include involvement of the City human resource department. (Implementation Order 1)

- Recommendation 12: Develop a succession plan to ensure employees are recruited and developed to fill each key role within the organization. (Implementation Order 11)
- Recommendation 13: Prioritize media messaging. Use "Currently Kirkland" and other media outlets as a tool to leverage the reach and impact of fire department public information and education messages. (Implementation Order 2)
- Recommendation 14: Anticipate controversies or events which may generate media or community interest and develop a media or messaging plan in advance. (Implementation Order 7)
- Recommendation 15: Develop a proactive message file where the subject is not time-sensitive, but timely release may position the message to its greatest advantage. (Implementation Order 12)
- Recommendation 16: Develop interactive content for the fire department website: citizen training videos and downloadable documents (fire escape plans, preparedness, and self-help checklists). (Implementation Order 9)
- Recommendation 17: Update existing content on the fire department website and schedule regular maintenance. (Implementation Order 8)
- Recommendation 18: Administer a stress test at the time of hire and periodically on incumbent employees/members based on age and risk factors. (Implementation Order 5)
- Recommendation 19: Develop a procedure and policy for reporting and retaining all employee exposure records. (Implementation Order 4)
- Recommendation 20: Aggregate like item equipment purchases with a total value of $5,000 or more and include in the City's annual budget. (Implementation Order 12)
- Recommendation 21: Develop, validate, and employ a physical evaluation process that is job related. (Implementation Order 6)
- Recommendation 22: Establish a medical baseline for new firefighters at the time of hire/appointment. (Implementation Order 2)
- Recommendation 23: Produce a live monthly informational broadcast meeting between the fire chief and department personnel. (Implementation Order 10)
- Recommendation 24: Provide a fire service-related occupational and health program. (Implementation Order 3)

Emergency Management (Disaster Preparedness)

Comprehensive planning that includes risk assessment, communications systems and networks, personnel training and exercising, and hazard mitigation, forms the basis of effective emergency management and disaster preparedness. Because the impact of these incidents is often widespread, a regional perspective for the plan's design is essential.

The Office of Emergency Management (OEM) is a City wide function under the Fire and Building Department. J. Kevin Nalder as the Director of the Fire and Building Department and City Emergency Management, directs the OEM while the deputy chief of administration serves as the emergency manager.

Overview of Emergency Management Services Provided

Elements of expected government functions entail: 1) preparedness, 2) response, 3) recovery, and 4) mitigation. The Preparedness Cycle calls for local agencies to perform the following tasks to ensure their ability to fulfill those expectations:

- Plan
- Organize, train, and equip
- Exercise
- Evaluate and improve

This section assesses the current status of the City of Kirkland's Comprehensive Emergency Management Plan (CEMP) and emergency management and disaster preparedness program design.

An emergency management program relies foremost on capable staff in sufficient numbers, to carry out the elements of the CEMP. We begin our survey of this program design with an overview of assigned staffing.

Staffing and Reporting Relationships

The director of fire and building/fire chief holds the title, responsibility, and accountability of emergency director[35] for the City of Kirkland but is not included in the staffing budgeted for the OEM.

Emergency Management Staffing

There are 1.5 FTEs assigned to staff the City emergency management program:

- Deputy Fire Chief (0.5 FTE)[36]
- Coordinator (1.0 temporary FTE)

A cadre of external and internal volunteers has been recruited to assist with community preparedness:

- Volunteers (includes 2 emergency volunteers; 12 Fire Corps volunteers; 1 AmeriCorps VISTA volunteer through August 2012)
- Amateur Radio Emergency Services[37] (ARES) and Radio Amateur Civil Emergency Services[38] (RACES) (40 volunteer personnel)
- The EMAT (Emergency Management Action Team) is a group of City department representatives that coordinate updates to the CEMP and emergency preparedness activities and information

Emergency Management Action Team (EMAT)

The Emergency Management Action Team (EMAT) is an internal City team that assists emergency management with non-emergency communication. This team is comprised of a mix of staff members from each of the City's departments. The stated purpose is to assist with emergency preparedness, internal information dissemination and solicitation, monitor training requirements, and capturing feedback on emergency operations center (EOC) staff assignments. EMAT is led by the emergency management coordinator.

Amateur Radio Emergency Services (ARES)

Amateur Radio Emergency Services (ARES) is a group of community volunteers (approximately 40 members) dedicated to the delivery of communications during a disaster of large scale emergency incident. Established in 1995, this group of registered disaster volunteers can

[35] Kirkland Municipal Code 3.20; WAC 118.
[36] Amount of time dedicated to emergency management is an estimate provided to ESCI by the administration deputy fire chief.
[37] ARES (non-government) is typically activated before, during, and after an emergency; handles all types of communications.
[38] RACES (government) is active only during an emergency; provides communications support for government emergency management offices.

operate radio transmitters located in each fire station, city hall, the EOC, or the maintenance center. The City recently invested $57,000 of CIP funds to upgrade the radio equipment used by ARES.

Community Emergency Response Training (CERT)

A group of 15 to 20 volunteers participate and assist with Community Emergency Response Training (CERT), Map your Neighborhood, and the Preparedness outreach programs. The deputy chief of administration (emergency manager) is the program coordinator.

There is a new cadre of volunteers that has been recruited to assist with community emergency preparedness. As of the date of this study program details have yet to be established. The AmeriCorps VISTA volunteer has been the point person for most of the volunteers in the OEM. This grant position ends in August 2012.

KF&BD lacks sufficient career personnel resources to fulfill essential roles for the mission and design of the emergency management program. In its place, the City assigns key responsibilities to senior managers of the KF&BD as part of their job description duties. The temporary nature of the emergency management coordinator position has created an uncertainty among staff and has left the program predisposed to turnover. The deputy chief of administration represents the single point of continuity for the emergency management program of the city from year to year, thus represents the single point of failure. This ties the program's success to an individual and reduces the availability of the deputy chief of administration in other fire department responsibilities.

The OEM relies on City staff to participate in emergency management functions. Staff from each of the City departments has employees that are actively involved in operation of the EOC, assigned to disaster response teams, and contributed to Kirkland's CEMP.

Current staffing practices mean that KF&BD must rely heavily on City staff from all departments during an emergency event. In order to capitalize effectively on these volunteer resources, KF&BD must develop and implement a plan that outlines how volunteers will be used and how they will be managed.

EOC (Emergency Operations Center)

When an emergency or disaster incident occurs, local agencies must carry out multiple functions swiftly and effectively in an effort to protect life, property, the environment, and the

economy in a concerted effort to restore normalcy. The number, nature, and urgency of problems during an emergency differ greatly from those during normal governmental operations. The complexity, criticality, and interdisciplinary nature of these events dictate the need for a centralized and unique planning and coordination center.

An Emergency Operations Center (EOC) at a central location should be used for information gathering, disaster analysis, and response coordination. Elected and appointed officials use this information for decisions concerning emergency actions and to identify and prioritize the use of needed resources. Emergency warnings, critical information, and instructions to government personnel and the public are vital for success.

Gathering information, making decisions, and taking necessary action requires close coordination between key officials who may not normally work together. Decisions and response actions must be coordinated, integrated, and applied thoughtfully from a central location. A proven way to maximize coordination and application of resources in an emergency is by centralizing response actions in an EOC.

The City of Kirkland does not have space designed and dedicated primarily to the functions of an EOC. Existing space is converted and workarounds must be instituted. These steps take time and lead to further delays and complexities when the space assigned as an EOC is otherwise in use.

Interdepartmental Communications

The emergency management coordinator with support from the community program manager facilitates internal communications through the Kirkland intranet network. Emergency Management Assistance Team (EMAT) members meet on a regular schedule and are supplemented with numerous face-to-face and e-mail communications. Newsletters and memoranda are not routinely used as part of internal communications.

External Communications

The City of Kirkland's website is the primary resource for public (external) communications with the community. Management of information distribution is directed by the OEM and supported by the City's communications program manager. Kirkland also participates in a regional public information network which community members can voluntarily receive posted information. Electronic reader boards are located at each of the fire stations to provide routine information

and can be deployed during an emergency event. The OEM directs external communication when the OEC is activated in a disaster or during emergency events.

Inter-jurisdictional

North East King County Regional Public Safety Communication Agency (NORCOM) serves as the community's public safety answering point (PSAP) for 9-1-1 calls and dispatching emergency resources. NORCOM maintains a reverse 9-1-1 system whereby it can deliver a recorded emergency notification to a geographically selected set of telephone service subscribers. The City of Kirkland has access to the emergency notification system for the dissemination of information.

Kirkland emergency management personnel are active with the Local Emergency Planning Committee (LEPC) and participate on regional planning committees with the school districts.

The City of Kirkland has a need to plan, prepare, and be in a position to manage natural and man-made emergency events. Given that many of the events are high risk – low frequency events, the focus of funding and personnel are often directed to other efforts. A strategy employed by various emergency service providers is to collaborate on staffing for services that are of mutual interest. Two neighboring fire districts and others jurisdictions have invested in emergency management. ESCI recommends that the City of Kirkland seek a cooperative effort with other agencies, contracting emergency management services from KF&BD.

Emergency Management Planning

All emergency management and preparedness planning documents, records, and reports are retained in electronic format.

Documentation

Kirkland's Comprehensive Emergency Management Plan (CEMP) includes a formally adopted mission and objectives linked to its programs.[39] The program mission provides guidance in disaster prevention, preparedness, response, and recovery. The plan emulates the National Response Framework, the Washington State and King County CEMPs, and the Zone 1 (Northeast area of King County) Regional Disaster Plan.

Kirkland's CEMP is posted on the City's website and is available for review and download. The current CEMP was developed in 2010 and is subject to review and revision on a four-year cycle.

[39] City of Kirkland Resolution R-4865; February 15, 2011.

While incomplete this plan is thorough, integrated with regional, state and national plans, and well organized. The Continuity of Operations (COOP) and Continuity of Government (COG) plans have not been completed due to a lack of funding.

The City of Kirkland has a current Hazard Identification and Vulnerability Assessment (HIVA). A HIVA provides a summary of risk to the City from a variety of different hazards. A Hazard Mitigation Plan (HMP) provides guidance to local public safety officials on projects that could help mitigate the effects of potential hazards such as severe storms, earthquakes, wildfire, and flooding. Federal Emergency Management Agency (FEMA) funding for pre-disaster mitigation is dependent on the adoption of an approved Local Hazard Mitigation Plan.

Training/Drills

The OEM staff plans, develops, and coordinates EOC training exercise. City employees with EOC or disaster team assignments participate in training and exercises. Like many urban cities today, there is little time among the work priorities of department employees to attend to emergency management roles and responsibilities. However, without leadership input into disaster preparedness planning and training, directors and department personnel can be surprised by plan components as an incident unfolds. City leaders must continue to prioritize time and focus attention to emergency management roles and responsibilities at key junctures in the planning processes.

Community Involvement

Citizen awareness and involvement in emergency preparedness is vital for success. Citizens need convenient access to emergency management staff to support community involvement. Individuals and groups can direct questions, suggestions, and complaints to the City by means of the website. Community and neighborhood meetings are not a normal component of external communications for emergency preparedness. Meetings to communicate the City's emergency preparedness to neighborhood and community groups should be conducted regularly.

The following paragraphs provide an overview of three key volunteer initiatives under the direction of the KF&BD deputy fire chief of administration

Community Emergency Response Team (CERT)

Emergency preparedness training is available to the community through the CERT (Community Emergency Response Team). Training classes are determined by the number of community members enrolling through the City's website. Emergency preparedness training is provided to

KF&BD personnel but fire department and other city personnel are not included in emergency exercises.

The development of the CERT program was a principal focus and activity of the City's emergency management program. CERT modules instruct neighbors in disaster preparedness for hazards that may impact their community and introduces basic disaster response skills such as fire safety, light search and rescue, team organization, and disaster medical operations.

Using the skills learned in the classroom and during exercises, CERT members can assist others in their neighborhood or workplace following an event when professional responders are not immediately available to help. Members of CERT are encouraged to support their emergency response agencies by taking a more active role in emergency preparedness projects in their wider community.

Program funding for CERT was decreased in the 2010 budget process. Volunteers and community members have raised funds to sponsor two CERT classes with the OEM in 2012. The CERT program is coordinated by volunteers, taught by a KF&BD firefighter and supervised by the deputy chief of administration.

Fire Corps

Fire Corps is the name of a Federal Emergency Management Agency (FEMA) grassroots strategy that brings together government and community leaders to involve people in all-hazards emergency preparedness and resilience. Fire Corps is one of five Citizen Corps programs and its mission is to connect community volunteers with their local fire department to assist with non-emergency tasks. Once trained these community volunteers perform non-operational roles that develop, implement, and sustain programs and services to help their fire department meet certain community needs.

Kirkland Fire Corps program has just been established in Kirkland. A KF&BD fire captain manages the program with oversight by the deputy chief of administration (emergency manager). Fire Corps has 12 members who are involved in activities that support the fire department and the OEM.

Map Your Neighborhood

A third external community preparedness activity is the Map Your Neighborhood (MYN) program.[40] Sample elements of the mapping survey includes ascertaining neighbors with relevant skills to assist, locating vulnerable neighbors, and determining the location of residential natural gas shut offs on a neighborhood map. Due to the autonomous nature of this program, there is no practical means to measure the currency and readiness of the Map Your Neighborhood program. The AmeriCorps VISTA resource person position that is responsible for oversight of OEM volunteers is available until August 31, 2012.

This program offers a unique way for neighbors to connect before, during, and after a disaster or emergency event. There are nine basic steps to the program whereby neighbors can take appropriate action to help each other. However, the program can be strengthened by developing a "block captain" concept and hosting a meeting with these block captains to facilitate brainstorming, share, and create an opportunity for the Kirkland professional staff to provide advice and counsel to the MYN program.

With this many community members involved in emergency management programs and a finite number of personnel resources for oversight, ESCI recommend that KF&BD develop and implement a plan that outlines how volunteers will be used and managed during emergency events.

Conclusion – Emergency Management

Given the number of tasks and functions required of managing an emergency management program, KF&BD is performing well considering the lack of FTEs allocated to the program. However, this comes at an opportunity cost to the fire department by squeezing out other program needs (financial, HR, IT, services to name a few) that would otherwise be provided by the deputy chief of administration. Acquiring additional staff to provide the daily work necessary to maintain a state of readiness would free the deputy chief to perform other essential tasks directly related to the administration of the fire department, relegating the emergency management workload to providing management guidance and gravitas to the program. Further, key plans and documents are missing from the program; specifically the COOP, COG, and HIVA/HMP. Emergency management program documents must be developed and volunteer groups (CERT, ARES/RACES, Fire Corps, AmeriCorps VISTA) need to be honed into

[40] Map Your Neighborhood is an award-winning program from the Washington State Emergency Management Division that seeks to build and strengthen preparedness within local neighborhoods.

a cohesive, focused team, each contributing as appropriate toward the emergency management mission.

Recommendation Summary – Emergency Management

- Recommendation 25: Develop and implement a plan outlining how volunteers will be used and managed during emergency events. (Implementation Order 5)
- Recommendation 26: Identify a location and develop a dedicated EOC; apply for a matching grant from the Washington EMD Emergency Operations Center Grant Program (requires a 25 percent local match). (Implementation Order 4)
- Recommendation 27: Seek potential partner agencies to provide contracted emergency management services from KF&BD. (Implementation Order 7)
- Recommendation 28: Complete and publish the COOP and COG plans. (Implementation Order 2)
- Recommendation 29: Develop a Hazard Identification and Vulnerability Assessment and a Hazard Mitigation Plan. Submit to King County for inclusion as an annex to the County plan. (Implementation Order 3)
- Recommendation 30: Involve KF&BD and other City of Kirkland employees in community-based emergency exercises at least annually. (Implementation Order 6)
- Recommendation 31: Hire a full-time City emergency manager, shifting daily responsibilities from the Deputy Chief of Administration to the emergency manager. (Implementation Order 1)

Fire Prevention Bureau

Overview of Fire Prevention Services Provided

This section assesses the current status of the KF&BD's fire prevention and public education program. A comprehensive and effective fire prevention program is grounded on adoption of the current Washington state building code.[41] Services expected in such a program are: 1) regulation of new construction in the community; 2) regular inspection of regulated occupancies and enforcement of applicable codes; 3) delivery of fire prevention and life safety information and skills training to the general public; 4) investigation of all fire incidents and assisting in the prosecuting the crime of arson; and 5) a reliable, secure records management system.

Effective service delivery requires capable staff in sufficient numbers to carry out the mission of the program. We begin our survey of this program with a summary look at staffing.

Staffing and Reporting Relationships

Four full-time equivalent (FTE) personnel staff the Fire Marshal Office (FMO or Bureau of Fire Prevention) of the KF&BD. The position titles include:

- Fire Marshal
- Assistant Fire Marshal/Inspector
- Deputy Fire Marshal
- Inspector

New Construction Review

The City of Kirkland's process for permitting new construction actively involves the KF&BD fire marshal, beginning with a pre-application conference for commercial developments and continuing throughout the construction process. The fire marshal's signature is required on any permit for construction and on the subsequent certificate of occupancy.

[41] Revised Code of Washington (RCW) 19.27.031

The new construction approval process incorporates a two-part fire and life safety plan review. First the building division applies the building code. Second, the fire marshal focuses on fire department access (less than or equal to 150 feet from the building), fire flow, sprinklers, hydrants, fire alarms, and extinguishers.

Kirkland's comprehensive fee schedule supports permit activity. Projected fire marshal service costs are built into the City's permit fees. Fire marshal charges are an actual hourly rate for plan review of a project. The Kirkland Building Division tracks permitting and inspection activity with EnerGov Solutions software.

KF&BD's emergency services have a need for pre-fire (quick access) plans of public, commercial, industrial, and assembly structures. Quick access plans are used in training activities and during emergency incidents to give firefighters familiarity with access and egress points, utilities, hazards, and a general layout of the structure. A considerable amount of building structure information is captured during the permitting, construction, and inspection process. Integration of the fire prevention records with EnerGov RMS used by the building division would meet the requirements of KF&BD for quick access plans.

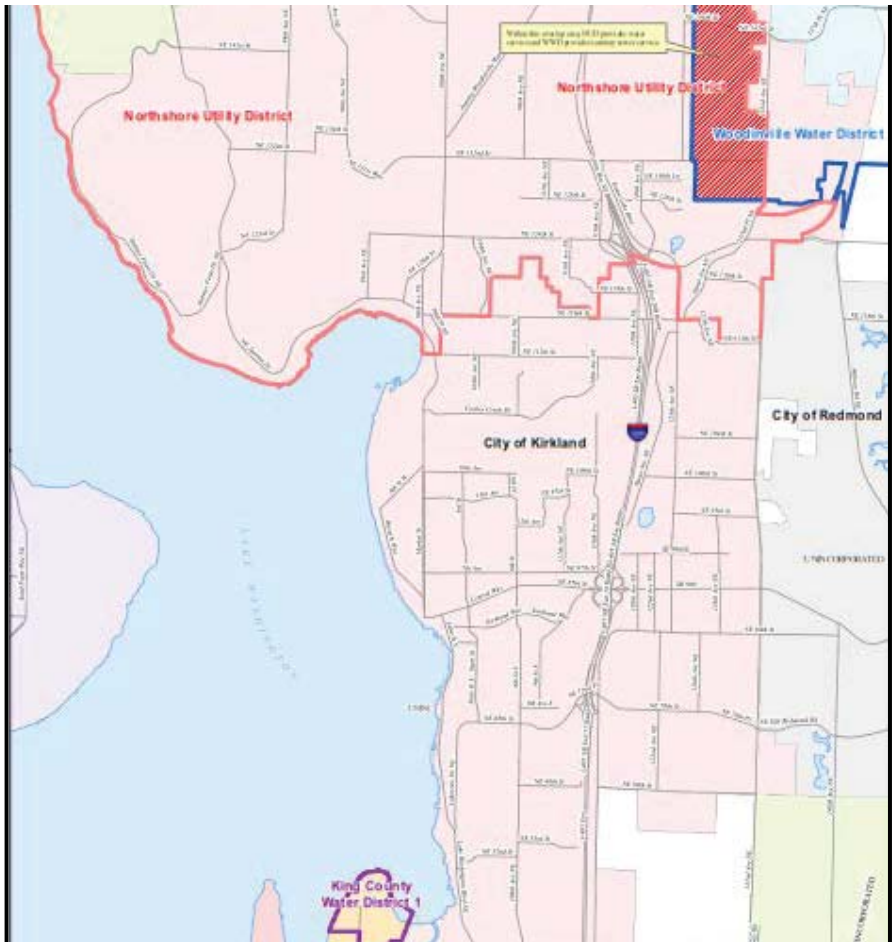
The City of Kirkland Water Division, the City of Bellevue and Northshore Utility, Woodinville, and King County Water Districts maintain the water supply and distribution system, including fire suppression and hydrant fixtures. The water purveyors use a water-modeling software application program for design and assessment purposes; City and District water staff also maintain the water system. Due to environmental restrictions, the water suppliers rarely flow test fire hydrants (system).

Water systems are constantly undergoing improvement, change in usage, and deterioration. As a result it is important to periodically flow test fire hydrants to determine what their capabilities would be in an emergency. Flow testing can uncover improperly operating valves, leaks and pump damaging debris in hydrants. Discovery of problems and repairs are vital before a hydrant is needed in an emergency.

Additionally, flow test data provides information necessary for water service planners and fire prevention staff can accurately estimate the capabilities of water mains. Water main and hydrant flow capabilities impact decisions on fire protection and fire resistance features that are required for new developments and priorities for upgrading older, smaller water mains.

Figure 39 is a water district and service area reference map. It displays three district boundaries (Northshore Utility, Woodinville Water, and King County Water District 1) and surrounding jurisdictions which provide water services. Service areas do not necessarily match the administrative or political boundaries of municipalities. For example, the City of Kirkland provides water service to the south part of Kirkland, City of Bellevue provides water services to Medina, Hunts Point, Clyde Hill, and part of Yarrow Point. The map label indicates generally the location of the service areas.

Figure 39: Water District Service Areas[42]



The City of Kirkland Water Division performs bi-annual inspections of all fire hydrants in the Kirkland water service area. Bi-annual hydrant inspections consist of operation of the main valve, foot valve, caps, leaks, draining and pressure. Flow testing is performed as needed to calibrate the fire flow model. Inspections of fire hydrants are not conducted by the Kirkland Water Division in the Northshore, Redmond, or Woodinville service areas which are inside of

[42] Source: City of Kirkland Water Department.

the City boundary. Kirkland Water Division is scheduled to begin maintenance of City fire hydrants in 2013.

A maintenance agreement with Northshore Utility specifies that all fire hydrants will be thoroughly checked bi-annually. Hydrant checks involve:

- Operation of the hydrant, checking for ease of operation, leaks, drain down
- Exercising the hydrant supply/auxiliary valve
- Logging water pressure at the hydrant
- Lubricating the upper stem section
- Checking accessibility of the hydrant trim shrubbery as needed
- Clean and paint fire hydrants, apply ID tag if needed
- Note all other deficiencies

Northshore Utility maintenance and out-of-service policies include dispatch center notification. Policies and procedures make no mention to fire flow testing for fire hydrants.

Woodinville Water's agreement for hydrant maintenance is with WFR (Woodinville Fire & Rescue). WFR hires seasonal personnel to conduct maintenance at $3 per hydrant. Woodinville Water pays WFR $2 and WFR contributes $1 per hydrant check.

No reference in the Northshore Utility agreement is made for fire flow testing or how maintenance is handled for fire hydrants located in the City of Kirkland.

Fire Inspection

KF&BD has established a scheduled occupancy inspection program, which calls for inspectable occupancies to be inspected annually. Reduced staffing in the FMO does not allow regular completion of this goal. The current completion rate for scheduled annual inspections has fallen to an estimated 20 percent. The KF&BD has just begun an Engine Company Inspection (ECI) program which will apply to Type B,[43] M,[44] and R2[45] occupancies. The FMO has considered a "self-inspection program" but has no plans to pursue or implement such a program.

[43] Type B: Business where services are provided.
[44] Type M: Mercantile where goods are displayed and sold.
[45] Type R2: Providing accommodations for overnight stay such as apartments and dormitories (except institutions).

Inspection reports are recorded on paper forms, filed, and stored in hard-copy format. The FMO is awaiting implementation of a New World records management system in order to maintain these files electronically. The fire marshal notes that current staffing lacks resources to transcribe hard copy data into an RMS.

The FMO currently does not perform separate special risk inspections as a routine function; in most circumstances, special risk inspections are handled by the fire marshal in conjunction with related permits. FMO staff performs only limited inspections, attendant to storage tank installation permitting. Associated cost(s) for these activities are incorporated in the current permit fee schedule.

The KF&BD has authority to issue citations but rarely uses this enforcement tool. The fire marshal notes that compliance is typically obtained prior to the need for court action. If needed, however, the FMO citation would be sent to the City of Kirkland Municipal Court.

Code inspection service and compliance action result in different perspectives and experiences for recipients. Successful code enforcement programs usually include mechanisms for obtaining feedback on the process and human interaction. The fire marshal currently does not operate a formal community feedback system for evaluating staff activities, interactions, and performance. The FMO reacts solely to complaints registered with the City and/or its office.

Emergency Building Access System

When responding to automatic fire alarms in secured, unoccupied buildings, emergency response personnel need rapid access, especially when there is no external indication of an emergent situation. The KF&BD currently uses the Knox-Box® key-box entry system to facilitate emergency response and access to designated properties. The developer or the building owner purchases the security box, installs it per fire department specification, and inserts essential keys that allow emergency access to the facility. Using a fire department master key, response personnel can immediately enter the building to address the incident and minimize property damage. Rapid entry both reduces on-scene wait times and allows emergency response resources to return to service more quickly.

Code Enforcement

Effective code enforcement requires local adoption and use of the current state-adopted fire code. The State of Washington adopted the International Fire Code (2009), which the City of

Kirkland adopted and uses. The City also has adopted some minimal amendments, which serve local interests.

Within the parameters of the fire code, automatic fire sprinkler protection systems are a cost effective means to manage fire risk in multiple occupancy, large area, and certain high-risk occupancies. The City adopted a sprinkler ordinance that applies to structures greater than 5,000 square feet. This ordinance also incorporates both fire flow and fire department access (less than or equal to 150 feet) requirements. The sprinkler ordinance does not apply to residential structures smaller than 5,000 square feet.

Fire Cause Determination (Investigation)

The FMO of the KF&BD maintains an active fire investigation program, which includes fire origin and cause determination, and arson investigation. The fire marshal is responsible for the program and the team includes FMO staff, operations personnel, and two police officers. The program does not provide for the handling of juvenile suspects.

The KF&BD maintains scene control after a fire incident unless and until the crime of arson is suspected or determined. At that point, scene control is transferred to the Kirkland Police Department. The FMO completes, maintains, and securely stores reports and records for all fire incidents.

An informal working relationship (mutual aid) with neighboring jurisdictions for origin and fire cause determination is maintained. The program has regularly participated in external training.

An acceptable inventory of equipment and supplies, and secure process for collecting, recording, and filing/storing evidence has an established by the FMO. Evidence is maintained in a secured area, for which a formal release is required for entry.

Public Education

The fire and life-safety public education efforts of the KF&BD are significantly limited with the elimination of the single KF&BD community education specialist at the end of 2010. ESCI found that that virtually all public education efforts outside of some limited special requests have been discontinued since then.

While KF&BD is exploring alternative strategies to maintain its public education efforts, there is no clear plan in place to delineate the department's strategy, goals, and methodologies. The idea was to involve volunteers and on-duty personnel as the conduit for delivering fire

prevention information and conduct public education. ESCI recommends that a plan be developed for conveying fire prevention and community education.

Neither KF&BD nor the local school system conduct structured fire and life-safety education. The juvenile firesetter counseling program was eliminated in 2010; a result of funding priorities. KF&BD has no bi-lingual education resources; if needed, a work-around is possible using City resources. The FMO does not attempt to address wildland interface risks primarily because the risk in Kirkland is minimal.

Basic life safety services should include education and training to avoid and/or mitigate certain medical emergencies. Citizen training in the skill of cardiopulmonary resuscitation (CPR) is a common and very effective means to prepare citizens to capably respond to many cardiac arrest incidents. CPR instruction is offered to the public through the Medical Assistance Training (MAT) program and overseen by the deputy chief of operations. Funding of the program and compensation for off-duty firefighters to instruct the courses is from the King County Medic II Program. The City of Kirkland Parks Department handles the registration and the KF&BD administrative staff coordinates facilities for the classes. KF&BD also offers free blood pressure screening at each of its fire stations, which is an important and effective means to alert citizens to potential cardiovascular risks.

The FMO maintains a limited supply of fire and life safety literature, which is obtained either at no cost or through grant funding. Literature currently on hand is limited in quantity and scope; documents appear dated.

Every effort should be explored to provide for public education in the community. Employment of opportunities with other community groups and other City departments, engine company public education delivery, and leveraging passive methods of education should be explored. Other ideas involve the re-invigorated volunteer Emergency Medical Technician (EMT) program or expansion of the Fire Corps program to deliver public education.

Conclusion – Fire Prevention Bureau

The City of Kirkland's process for construction permitting delivers a higher level of service than is commonly seen by involvement of the fire and building department from pre-application conference for commercial developments and continuing throughout the construction process.

KF&BD's need for pre-fire (quick access) plans of public, commercial, industrial, and assembly structures can be met by integration of software used by the building division. The RMS used by the building division would meet the needs of KF&BD for quick access plans.

KF&BD current completion rate for scheduled annual inspections of an estimated 20 percent may expose emergency services personnel and public to unacceptable risk during a fire event. The KF&BD has just begun an Engine Company Inspection (ECI) program for Type B, M, and R2 occupancies.

Fire and life-safety public education efforts of the KF&BD were limited to outside special requests that have since been discontinued. It was determined during the budget development process that a plan for delivering public education would be developed. This has yet to occur.

Recommendation Summary – Fire Prevention Bureau

- Recommendation 32: Integrate KF&BD fire prevention records management with the EnerGov RMS software used by the Building Division. (Implementation Order 3)
- Recommendation 33: Conduct a fire and life-safety inspection of all inspectable occupancies in the next 12 months. If necessary use emergency services personnel to complete inspections. (Implementation Order 1)
- Recommendation 34: Develop and adopt a plan for the maintenance, repair, and flow testing of all fire hydrants in the City of Kirkland. (Implementation Order 2)
- Recommendation 35: Develop and implement a self-inspection program for light risk occupancies where the occupants have demonstrated regular code compliance. (Implementation Order 13)
- Recommendation 36: Acquire and deploy electronic tablet devices for field data entry and rapid downloading to the records management system. (Implementation Order 4)
- Recommendation 37: Develop and adopt a plan to actively solicit feedback from a representative sample of recipients of KF&BD inspection and enforcement services. (Implementation Order 10)
- Recommendation 38: Adopt a local residential sprinkler ordinance for new residential construction. (Implementation Order 5)
- Recommendation 39: Form a regional partnership to develop and deliver juvenile firesetter intervention and counseling. (Implementation Order 12)
- Recommendation 40: Develop, adopt, publish, and implement a KF&BD Public Education Plan. (Implementation Order 6)
- Recommendation 41: Form regional partnerships for the development and deployment of public fire and life safety education initiatives; also rotate operations personnel to deliver a structured curriculum. (Implementation Order 7)

- Recommendation 42: Rotate emergency operations personnel to a temporary duty assignment as a public educator to deliver the public education curriculum. (Implementation Order 11)
- Recommendation 43: Employ electronic information media from the United States Fire Administration and NFPA for linking or posting and making available on the Kirkland website. (Implementation Order 9)
- Recommendation 44: Create partnerships with other public agencies and private sector companies to provide public education and information to the citizens of Kirkland. (Implementation Order 8)

Fire and Emergency Medical Services (Emergency Response)

Overview of Fire and EMS Services Provided

KF&BD provides a variety of emergency response services, including:

- Fire suppression
- Emergency Medical Services (EMS) response
- Basic Life Support (BLS) transport
- Hazardous materials emergency response
- Entrapment and other technical rescue
- Emergency management
- Specialized rescue services
    - Confined space
    - Rope (high and low angle rescue)
    - Trench collapse
    - Structural collapse
    - Vehicle/machinery
    - Surface Water

Technical rescues require specialized equipment and a group of skilled practitioners. The cost for every individual fire department to equip, train, and maintain sufficient numbers of technical rescue personnel is not cost effective. Collaboration for specialized services is an attractive alternative. KF&BD participates with other fire departments as one part of the Zone 1 regional TRT (technical rescue team) and hazardous materials consortium.

Staffing and Reporting Relationships

Based on the Kirkland Fire & Building Department organizational chart, there are three direct reports to the fire and building department director/fire chief (Figure 4, page 21): the building services manager, the administrative deputy fire chief, and the operations deputy fire chief. ESCI observed and through interviews determined that the hierarchal structure operates as

intended with the building services manager. In contrast, ESCI found that in practice the fire chief is the direct report for any number of other fire department personnel and activities.

The certified classification position of deputy fire chief has two assignment descriptions—administrative services and emergency services bureau. Assignment descriptions of the position duties are:

- Administrative Services: Oversees operations in the area of fire prevention, city emergency management, communication center (NORCOM), EMS transport program, and administrative support. Works under the direct supervision of the fire chief, creates and recommends policies and procedures, bureau budgets and manages personnel assigned to the administrative services bureau. Directly supervises fire marshal, emergency preparedness coordinator, emergency medical services officer (EMSO), and administrative support.
- Emergency Services: Oversees operations in the areas of fire suppression, emergency medical, training, hazardous materials, rescue, support team, apparatus, equipment, and facilities. Works under the direct supervision of the fire chief, creates and recommends policies and procedures, bureau budgets and manages personnel assigned to the emergency services bureau. Directly supervises battalion chiefs assigned to training and emergency services.

Deputy fire chief is the second highest position in the KF&BD. It was reported to ESCI that deputy fire chiefs routinely perform administrative, technician, and clerical tasks. Time devoted to activities outside of essential functions and principal accountabilities have reduced the deputy chiefs' availability to perform job critical administrative and supervisory duties. Three areas of particular concern are:

- Coordination of activities with other fire department work units, other City department/divisions, and other fire service agencies
- Resolving personnel issues, citizen complaints, employee accountability, and corrective action as required
- Monitoring the efficiency and effectiveness of assigned bureaus to ensure departmental performance and operating standards are being successfully achieved

Recommendations on alignment to the administrative level of the KF&BD are found in Strategic Plan Recommendations and Priorities beginning on page 229.

Analysis of Overtime

Four particularly sensitive budget items are often the source of discussion among elected officials, management, and employee groups: compensation (pay), pensions, health and welfare, and overtime. As a task of this project, ESCI reviewed overtime usage in the Kirkland

FD for any compelling reason to alter current practice or maintain the status quo. For this portion of the project, ESCI was provided with and reviewed the following documents:

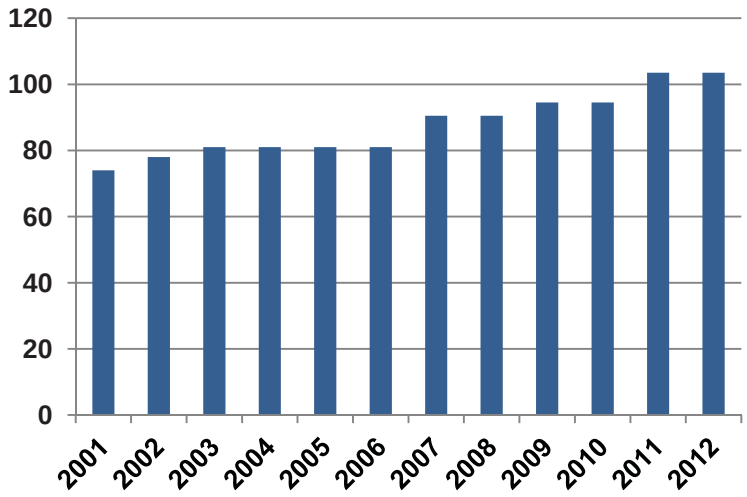
- City of KF&BD, overtime data 2001 through 2012.
- KF&BD line-item budget documents for fiscal years 2008 through 2012.
- KF&BD leave time summary data 2009 through 2011.
- The IAFF agreement with the City of Kirkland, Washington, and Local 2545 of the International Association of Fire Fighters, January 1, 2008 through December 31, 2010. A one-year extension was added the agreement. That too has expired (December 31, 2011). Negotiations are ongoing at the time of this study.
- KF&BD staffing levels 2001 through 2012.

Historical and current personnel costs and financial records of the Kirkland Fire & Building Department were made available for the purpose of the project. Fire department FTEs and overtime were used for the generation of this analysis. Building division costs and FTEs were excluded from the analysis.

Staffing Levels and Personnel Deployment

Before determining if overtime use is properly managed, a number of variables were identified. To begin, the number of FTEs for KF&BD in any given year was determined. The number of employees in the fire department has increased over the last 12 years in an effort to keep up with the growth of the City; these changes can impact the outcome of comparisons. Figure 40 is a historical presentation of the total FTEs in the fire department from 2001 through 2012.

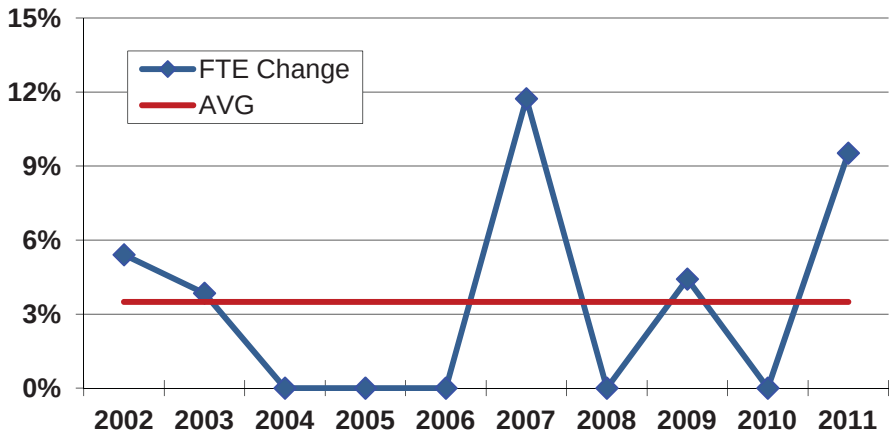
Figure 40: Historical FTEs, Fiscal Years 2001 – 2012



Between 2001 and 2012 KF&BD had a high of 103.5 total fire department FTEs in fiscal year 2012 and a low of 74 FTEs in fiscal year ending in 2001.

Figure 41 illustrates the year-to-year percent of change in FTEs and the average percent of change from 2001 to 2011.

Figure 41: Historical Percent and Average Change in FTEs, 2001 – 2011

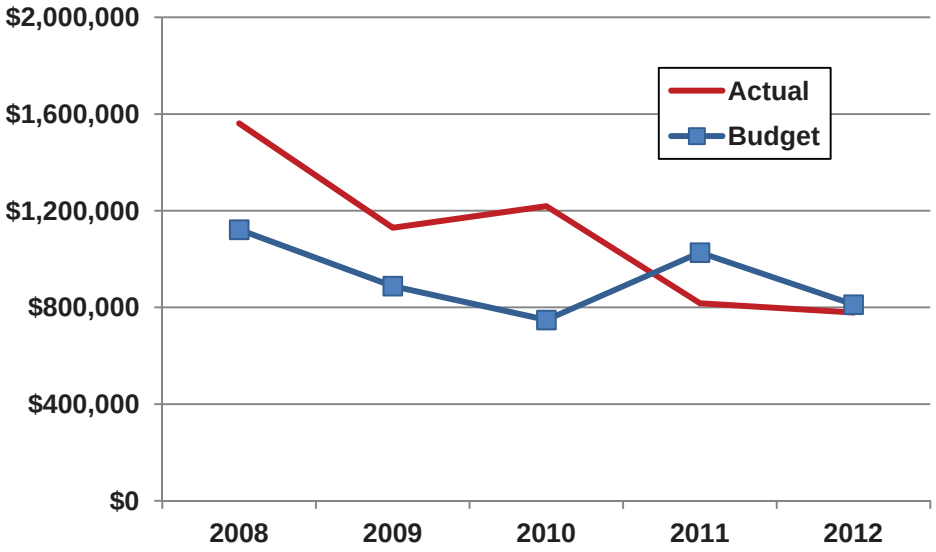


Over the ten-year period, the Kirkland FD has increased FTEs an average of 3.49 percent annually with the largest annual increase occurring between 2006 and 2007 (11.73 percent).

ESCI reviewed the amount budgeted for overtime and the actual expenditures for a five-year period. Figure 42 shows the budgeted versus actual overtime costs for the fiscal years 2008 through 2012.[46]

[46] Kirkland budget document for 2012 includes $200,000 in overtime outside the fire department budget.

Figure 42: Budget to Actual Overtime Cost, Fiscal Years 2008 – 2012

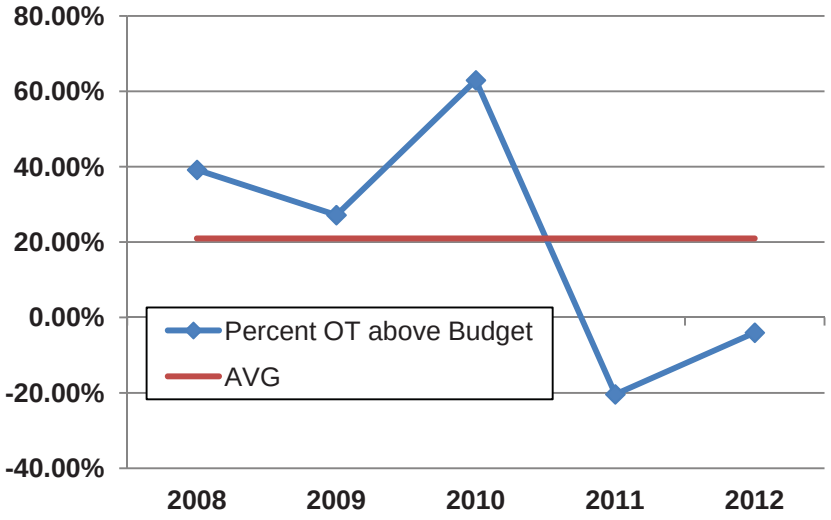


Overtime costs have decreased over the five-year period. In 2009, the elimination of overtime staffing for the Finn Hill Fire Station caused a significant reduction. During the past two fiscal years, KF&BD has stayed within the budgeted overtime amount.

Overtime use is often unpredictable in the fire service by the very nature of working with emergency activities. However, statistical data can be used as the predictor of future use.

The following figure (Figure 43) illustrates the actual percentage that expenditures for overtime exceeded budgeted overtime and the average percent for the last five fiscal years except in 2011 and 2012.

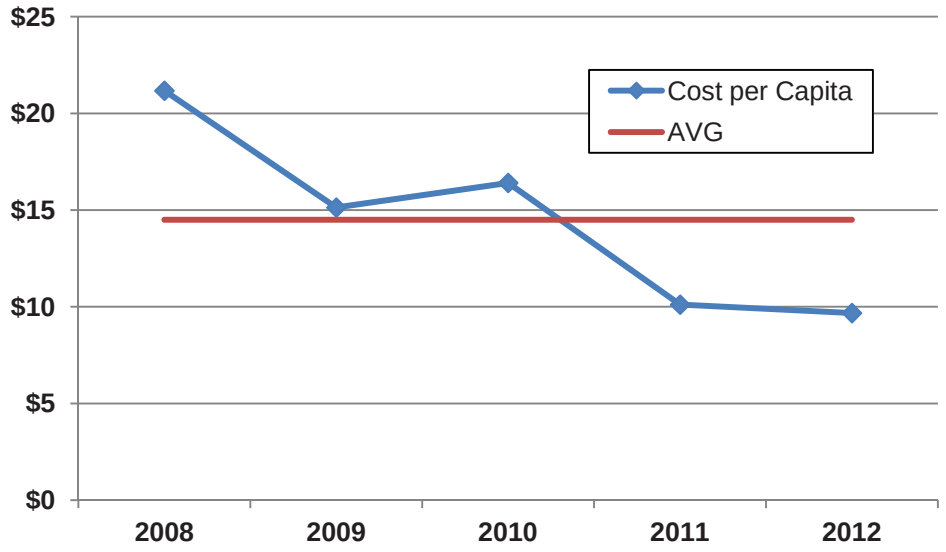
Figure 43: Budget to Actual Overtime by Percentage, Fiscal Years 2008 – 2012



Overtime in the fiscal year ending in 2008 exceeded the budgeted amount by 39.17 percent. The highest level of overtime cost over budget was recorded in 2010 with a 62.94 percent overage. In 2011, overtime costs were below budget by 20.4 percent and in 2012 the KF&BD is on budget.

The population for the City of Kirkland and the service area has steadily increased by 8.4 percent from 2001 to 2010. In 2011, the population grew 64.24 percent over 2010 due to annexations. To gauge the impact of overtime on the community, actual overtime costs were calculated on a per capita basis for each of the last five years. Figure 44 shows the cost per capita and average for fiscal years 2008 through 2012.

Figure 44: Annual and Average per Capita Cost of Overtime, Fiscal Years 2008 – 2012



The cost per capita for fire department overtime has steadily declined since 2008. In 2008 overtime was $21.17 per capita and declined to $9.67 in the 2012 budget. The reduction in 2009 was due to the elimination of overtime staffing of the Finn Hill station and, in 2011, the reduction was due to annexation (based on the larger population base). The annual average CPI-W for the Seattle-Tacoma-Bellevue, WA metro area was 2.458 percent for the ten-year period 2002 to 2011. When the CPI-W is applied to the cost of overtime, the downward trend of overtime is greater.

Personnel services costs for the KF&BD over the most recent five-year period were examined. Between fiscal years 2008 and 2012, the personnel services expenditures for the fire department have increased approximately 28.95 percent.[47]

Figure 45 compares overtime expenditure as a percentage of wages for fiscal years 2008 through 2012.

Figure 45: Overtime as a Percentage of Wages, Fiscal Years 2008 – 2012[48]

Description	2008 Actual	2009 Actual	2010 Actual	2011 Actual	2012 Budget
Wages	7,491,763	8,373,559	8,443,331	9,012,488	9,660,589
Overtime Dollars	1,554,425	1,128,720	1,212,232	810,879	773,858
Percent of Overtime	20.75%	13.48%	14.36%	9.00%	8.01%

The above table shows a significant decrease in the percent of overtime spent compared to wages in 2011 and budgeted for 2012. This is primarily from a reduction of minimum staffing to 19 and source re-allocation of personnel.

Deployment

KF&BD operates six fire stations (five with career staffing) with 12 frontline units and has established a minimum daily staffing level of 19 personnel.[49] KF&BD *Department Manual Directive Number 3.001* dated February 1, 2000, states that the minimum staffing shall be 15 with 1 being an officer and 14 firefighters. This directive needs to be updated to current minimum staffing levels. Figure 38 lists minimum staffing by unit and position in January 2012.

[47] Revenue offsets were not included in the calculation.
[48] Does not include Inspection cost center.
[49] Source: Minimum staffing design as compared to total staff assigned per shift, 02/15/2012.

Figure 46: Minimum Staffing by Unit and Position, January 2012

Unit	Battalion Chief	Officer (Captain or Lieutenant)	Driver Operator	Firefighter
Engine 21		1	1	1
Engine 22		1	1	1
Engine 25		1	1	1
Engine 26		1	1	1
Engine 27		1	1	1
Aid 21		Cross-staffed with Engine 21		
Aid 22		Cross-staffed with Engine 22		
Aid 25		Cross-staffed with Engine 25		
Aid 26		Cross-staffed with Engine 26		
Aid 27		Cross-staffed with Engine 27		
Aid 29		Cross-staffed with Ladder 27		
Air Unit 21		Cross-staffed with Engine 22		
Ladder 27		1	1	1
Battalion Chief	1			
Shift Captain (Swing Position)		1		
Total	**1**	**6**	**6**	**6**

A total of 30 personnel are assigned to each shift with minimum staffing set at 19. In the minimum staffing matrix, the swing staff position is not identified.

Based on the rank and number of positions required to meet minimum staffing there are a given number of shifts to fill per year. The table below summarizes the number of shifts to be filled based on minimum staffing.[50]

Figure 47: Number of Shifts per Year, Minimum Staffing

	Battalion Chief	Officer	Driver–Operator	Firefighter EMT	Total
Minimum Staffing	1	6	6	6	19
Days per Shift	122	122	122	122	122
No. of Shifts times Minimum Staffing	122	732	732	732	2,318
Total Requirement	**366**	**2,196**	**2,196**	**2,196**	**6,954**

There are a total of 6,954 shifts to be filled to meet minimum staffing.

[50] Calculations on shifts per year are all based on a 366 day year.

KF&BD is authorized for 90 FTE emergency operations personnel. The personnel roster lists a total of 88 FTEs with one position vacant on A shift and one position vacant on B shift.[51] Figure 48 shows a breakdown of the number of authorized positions by rank (30 per shift).[52]

Figure 48: Number of Authorized Positions by Shift

	A Shift	B Shift	C Shift	Total
Battalion Chief	1	1	1	3
Captain	4	3	3	10
Lieutenant	3	4	4	11
Firefighter Firefighter/EMT	22	22	22	66
Total Authorized	**30**	**30**	**30**	**90**

During the course of this work KF&BD hired three personnel that were scheduled to complete recruit training and be sworn in to the department on Friday, June 22, 2012. Two of the positions are for the current vacancies and the third for a recent retirement. The new hires bring the department up to full staffing.

Figure 49 shows the annual number of scheduled shifts for the 90 authorized emergency services positions for the KF&BD.

Figure 49: Number of Scheduled Shifts by Position per Year

	Battalion Chief	Captain	Lieutenant	Firefighter EMT	Total
Positions	3	10	11	66	
Shifts per Position	122	122	122	122	
Total Shifts	**366**	**1,220**	**1,342**	**8,052**	**10,980**

A gross total of 10,980 scheduled shifts are available compared to 6,954 required to be filled at minimum staffing; a net difference of 4,026 shifts. However, Kelly, vacation, sick and injury, holiday, and other leaves obviously reduce the number of available shifts for personnel to work (net shifts available).

[51] During the course of this work three personnel were hired and completed recruit training Friday, June 22, 2012 to fill two vacancies and one retirement.
[52] Leave calculations based 90 FTEs.

Scheduled and Unscheduled Leave

The number of hours an employee has for vacation is based on the years of completed service with the City of Kirkland.[53] The following accrual rates were effective through December 31, 2010:

- 1st – 2nd year, 10 hours monthly, annual 120 hours
- 3rd – 5th year, 12 hours monthly, annual 144 hours
- 6th – 9th year, 15 hours monthly, annual 180 hours
- 10th – 13th year, 19 hours monthly, annual 228 hours
- 14th – 17th year, 20.5 hours monthly, annual 246 hours
- 18th – 21st year, 22.5 hours monthly, annual 270 hours
- 22nd – 24th year, 23.5 hours monthly, annual 282 hours
- 25th year or more, 24 hours monthly, annual 288 hours

The 14 to 17 years of service range was used as a median point, the number of accrued vacation hours is 246 per employee per year. The result is 10.25 shifts of vacation per employee and a total of 922.5 shifts. Actual vacation leave used by employees varies with employees having the ability to bank and carryover up to 300 hours.

The amount of sick, injury, and leave categorized as other used by fire department personnel varies by employee. Typically, sick leave use (excludes injury and other leave) in fire departments of similar size and character averages between 2.5 to 4.0 shifts per year. For this exercise, ESCI used the three-year KF&BD average of 9.65 shifts per year per employee to arrive at a total of 868 annual shifts of sick leave.[54] Sick leave accrual at KF&BD is currently not on a "use-it-or-lose-it" plan. The balance carries over from year to year and is cumulative to a maximum of 1,440 hours.

Figure 50 uses the total annual available shifts and deducts those required for minimum staffing, vacation leave, holiday, sick and injury, training, and other leaves (court and jury and bereavement) to arrive at the number of unallocated shifts. In addition to vacation, sick, and injury hours, 48 hours for training and other leave per year per employee were included.

- Vacation includes: emergency leave, family medical leave-vacation, vacation annual, and vacation routine.

[53] The IAFF agreement with the City of Kirkland, Washington, and Local 2545 of the International Association of Fire Fighters, January 1, 2008, through December 31, 2010.
[54] ESCI's experience is that the number of sick leave shifts will generally be less than 4.0 shifts per employee per year. Average sick leave use is 2.5 shifts.

- Sick and injury includes: dependent leave, family medical leave-sick, on-duty injury, disability off-duty, sick family member LEOFF 2, sick leave LEOFF 1, and sick leave LEOFF 2.
- Training and other leave includes: bereavement leave, community service leave, family medical leave, furlough annual, furlough routine, jury duty, military leave, on-duty department business, physical fitness leave annual and routine, union leave, and wellness/fitness leave.
- Holiday includes: family medical leave-holiday, holiday annual, and holiday routine.

Figure 50: Number of Shifts Available Less Minimum Staffing and Leaves per Year

Gross Number of Shifts	10,980
Less Leave Time	
Minimum Staffing	6,954
Vacation	923
Sick and Injury	869
Training and Other Leaves	360
Kelly Day	1,530
Holiday	450
Unallocated Balance	**(106)**

Assuming an average of 10.25 shifts of vacation, 9.65 shifts of sick and injury leave, 4.0 shifts for training and other leave, 17.0 Kelly, and 5.0 holidays per employee, a total of 106 shifts need to be filled to meet minimum staffing. Because there are more vacancies than available shifts above minimum staffing, KF&BD will frequently need to hire back firefighters on overtime. A complication of filling vacancies is the need to match available personnel with like rank and certification.

Step-Up (Acting Officer)

KF&BD promoted a lieutenant to captain in 2011 and assigned one captain per shift to fill vacancies in an effort to reduce the number and cost of overtime shifts replacing officers. It was reported to ESCI that the promotions and the availability of three officers have made a reduction in the number of overtime shifts for lieutenants, captains, and battalion chiefs. This was accomplished without increasing the number of FTEs in emergency services.

There are reasons why the given number of unallocated shifts would be inadequate to fill all instances a vacancy occurs. They include:

- Imbalance between the personnel of a given rank, on a given shift (A, B, and C) on leave and total qualified individuals available to fill the vacancy.
- Imbalance in vacation scheduling with more personnel than available to fill vacancies in a given rank or qualification.

- Abnormally large number or uneven distribution of sick and injury or other unplanned leaves.
- Insufficient number of qualified personnel to step-up.

Providing personnel with the requisite knowledge, skills, and abilities to accept responsibilities provides an experience that is a valuable tool in preparing for promotion. It is also acceptable to have individuals at the captain and lieutenant ranks work down to fill firefighter vacancies. Utilizing this approach could create pay issues with the workforce i.e. does an officer working down keep their same pay level or that of the lower paid position.

Alternative Scheduling Methodologies and Overtime Usage

Firefighters' work schedules depend on individual fire department need or agreement (memo of understanding, meet and confer, or collective bargaining agreement) between the agency and labor. Firefighter schedules vary from 72 hours on duty and 96 hours off (e.g., CAL FIRE), to 48 hours on duty and 96 hours off, to the more traditional 24 hours on duty and 48 hours off. Other departments have firefighters that work two 10-hour day shifts and two 14-hour overnight shifts in a seven-day schedule. With the exception of some very large fire agencies, the majority have either a 24 or 48-hour work shift with alternating day(s) off-duty. Larger departments may have a number of their firefighters on alternative schedules to align staffing to workload; an example is the staffing of PAUs (peak activity unit).

It has been argued that the 10-hour day and 14-hour overnight shift would allow firefighters to be more productive. To the contrary, whenever possible fire department management elects to have 24-hour shifts to cut down on overtime pay by limiting the chance fire personnel will work late due to emergency calls. For every scheduling scheme, there are many variations.

For fire departments, there are work rules that apply specifically to firefighters that allow for special work periods. Provisions in the Fair Labor Standards Act (FLSA) state that:

> *Public-sector (government) fire departments may establish special "7(k) work periods" for sworn firefighters, which can increase the FLSA overtime "thresholds" beyond the normal 40 hour week. Firefighters covered by these special work periods are entitled to FLSA overtime only for hours worked in excess of a threshold set by the Department of Labor on a chart. For example, in a 28 day work period, fire fighters would be entitled to FLSA overtime only for hours actually worked over 212 during that 28 day period (in essence, a 53 hour work week). "7(k)" refers to the section of the FLSA in which these special rules are contained, 29 USC §207(k). Most fire fighters who work "platoon schedules"*

> *will be classified by their employers as "7(k) eligible" and compensated accordingly.*[55]

The City of Kirkland has established a 21-day, 168-hour FLSA period.[56] KF&BD operational firefighters' normal duty period is two 24-hour shifts followed by 96 hours off. In the absence of an FLSA work period, maintaining current staffing can significantly increase overtime costs. The City of Kirkland has through the collective bargaining process agreed that emergency services personnel of the KF&BD be compensated overtime for all time worked above scheduled hours. To mitigate the impact of overtime costs, Kirkland maintains a number of personnel above minimum staffing levels to fill vacancies.

What does this all mean? Under the FLSA, firefighters can work more than 40-hours per week and will only receive overtime for those hours that are either outside of the established work period, or if more restrictive, for those hours beyond scheduled work hours.

To maintain a minimum staffing level of 19 fire and EMS on-duty personnel and fill vacancies for vacation, sick leave, sick-injury, training, military leave, jury duty, Kelly relief, or any number of other ancillary issues, supplementary staff is needed to maintain the minimum staffing level. Given that many of the vacancies are unpredictable, KF&BD has essentially two options to maintain minimum staffing: hire back replacements from off-duty personnel on overtime or have additional personnel assigned to each shift. KF&BD has chosen the latter and has staffed 30 personnel per shift. Ideally this would allow up to 11 employees (approximately 33 percent) being off duty without hiring back at overtime.

What is the cost of the two options? It would seem that having a set number of extra firefighters on each shift would have the least financial impact. A caveat to maintaining personnel above minimum staffing is that they need to be filling vacancies or any potential cost avoidance is lost. This is a consequence of not paying supplementary fringe benefits costs when hiring off-duty personnel to fill vacancies. Fringe benefit costs of personnel have increased, eliminating most cost savings that may be realized by hiring new employees versus using overtime.

The question then becomes is KF&BD properly managing discretionary overtime? KF&BD has reduced the percentage of dollars expended on fire personnel overtime; however, it still

[55] Source: 29 U.S.C. §207(k).
[56] Note: An FLSA work schedule can be made more restrictive with a collective bargaining agreement that requires overtime for any hours worked exceeding that which is regularly scheduled, even though FLSA only requires overtime beyond the maximum hours in the cycle.

represents a significant portion of the personnel services budget. KF&BD emergency services personnel schedule vacation to achieve the maximum benefit from staffing above the minimum of 19 personnel per work day.

Vacation Leave

With an authorized operational staff of 90, there are 923 vacancies for vacation leave (see Figure 50) per year. Distribution of vacation leave over a year results in approximately 2.52 personnel off each day. With 11 personnel per shift above minimum staffing, three personnel on vacation leave gives the department a buffer of 8.5 for covering unanticipated vacancies, Kelly relief, training, sick, and injury leaves.

Kelly Day

The workweek for emergency operations (line personnel) is 48 hours per week on an average annual basis. Until January 1, 2010, the work schedule for bargaining unit line personnel was scheduled in 24-hour shifts. Employees would normally work one 24-hour shift followed by 48 hours off. This was accomplished by providing one Kelly shift (day) off after every six scheduled shifts, prescheduled on an annual basis; Kelly shifts are selected beginning with the employee with the greatest seniority annually.

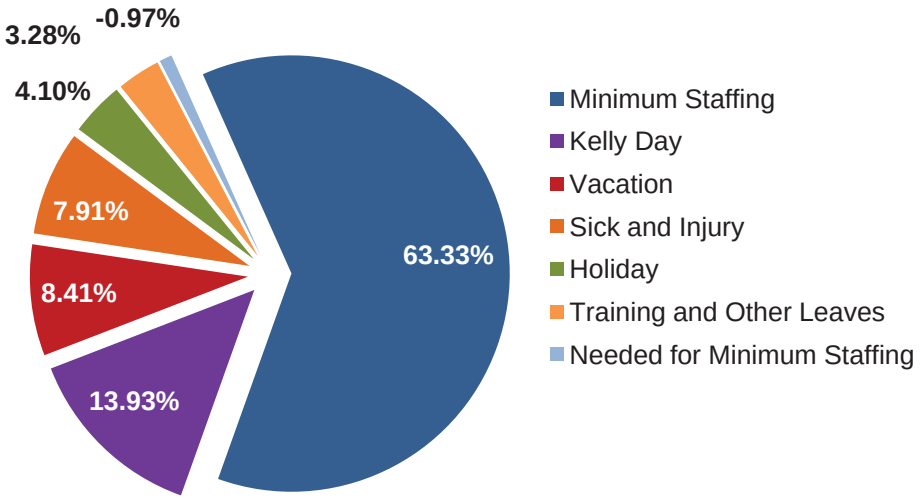
Effective January 1, 2010, the work schedule for bargaining unit emergency operations personnel was modified to two consecutive 24-hour shifts (48-hour "set"). Emergency operational employees work period is now normally two 24-hour shifts followed by 96 hours off. The workweek remains at 48 hours per week on an average annual basis. This is accomplished by providing two Kelly shifts off after every six scheduled sets. There are approximately 17 Kelly Days per year per employee. With 90 emergency operational FTEs there are 1,530 Kelly shift vacancies.

Holiday Leave

KF&BD personnel on the 24-hour shift schedule receive 120 hours off in lieu of holidays; since the fire service is a 365 days per year operation equal to five shifts per employee. Holiday time is credited to employees on January 1 of each calendar year.

The following figure shows a breakdown of the annual gross available operational shifts, leaves and unallocated shifts by percentage.

Figure 51: Percentage of Unallocated Shifts Less Minimum Staffing, and Leaves per Year



Annually there are 10,980 available shifts with 90 operations FTEs, 63.33 percent are needed to meet minimum staffing, 37.63 percent for leaves, leaving (0.97) percent (106 shifts) required to meet minimum staffing. Ideally there would be enough unallocated shifts to eliminate overtime. With unanticipated short and long-term disabilities, sick leave, Kelly leave, and vacation not being distributed evenly, there are instances when it is necessary to hire back personnel to meet minimum staffing levels. Likewise there are shifts with staffing above minimum levels.

Given the number of FTEs dedicated to emergency operations, a minimum staffing of 19 per day, 30 personnel assigned to each shift, scheduled vacation, and a limit to the number of people allowed on vacation, KF&BD's use of overtime is appropriate. The recent change of promoting officers has had an impact on reducing the number of overtime shifts. Company officers generally have more vacation leave and a higher salary. Having more than minimum staffing for officers has had the desired effect of helping to reduce and off-set some of KF&BD's overtime costs.

Another option employed by a limited number of fire departments is the addition of a D shift. D shift is made up of personnel that work by filling vacancies on A, B, or C shifts. Personnel assigned to a D shift select from available vacancies on the shifts they would like to work in a given time period. They would still work a minimum number of shifts and receive overtime opportunities, but they have the latitude to consolidate or spread out their work schedule to meet personal needs. There is a great deal of flexibility with scheduling for the department and the individual.

A portion of overtime costs are variable and unpredictable. Scheduled leaves can often be filled from the capacity above minimum staffing on each shift. Illness, work-related injuries, family emergencies, and other unscheduled leaves often result in overtime. While it was not the intent of this study to review the aspects of leave usage, it is appropriate that this be conducted regularly. For example: Is sick leave usage increasing? Is sick leave related to long-term illnesses? What is the annual sick leave use per employee? Can sick leave use be reduced by modifying the leave accrual policy?[57]

Additional questions can be asked about work-related injuries. ESCI recommends that KF&BD investigate the source(s) of time loss from illness and work-related injuries. An analysis of causes by source and employee group would help to determine what modifications could be made to continue the trend of reducing overtime use at the KF&BD.

KF&BD has made the investment to purchase an employee staffing program (TeleStaff). With full implementation and proper monitoring of the software program benefits include:

- Receive and respond to scheduling notifications and other work communications by telephone, cell, pager, e-mail, Internet, and PC
- Check schedules and find out where they are working through self-service access points such as telephone, cell, Internet, or PC
- Sign-up for overtime
- Sign-up for special duty assignments
- Request time-off and leave
- Conduct shift trades
- Review payroll data and accrual balances
- Personally update profile based on security

Command staff can:

- Automatically align staffing demands with employee availability, qualifications, and regulatory constraints
- Generate and send schedule-driven notifications and communications to a telephone, cell, pager, or e-mail, automatically linking work assignment information for employee response base on your rules and guidelines
- Create and maintain an unlimited number of schedules supporting multiple shifts, rotating positions, future assignments and promotions

[57] The IAFF agreement addresses the use of sick leave by allowing for the accrual of up to 1,440 hours (60 shifts) for shift personnel.

- Manage daily operations with real-time rosters that track regular duty, special duty assignments, training, off-duty detail, and emergency deployments
- Manage time-off requests
- Monitor staffing levels
- Automatically alert management by way of real-time alarms when staffing levels fall below pre-determined requirements
- Find replacement personnel who are off-duty, can be held over, are not fatigued, or have signed-up for overtime work
- Track training and certifications
- Deploy personnel for emergency recall or mutual aid
- Account for, locate, and contact all staff at any given time
- Finalize pay sheets for payroll
- Ensure policy enforcement and Collective Bargaining Agreement compliance
- Run reports for greater insight into operations

KF&BD has not installed all of the functions available with TeleStaff software. Functions that the program is capable of managing automatically are being accomplished manually. ESCI recommends that the KF&BD use all of the functionality available with TeleStaff, including:

- Vacation scheduling
- Managing time off and leave requests
- Overtime replacement notification
- Compiling work hours summary for payroll input
- Employee certification records
- Input tool for response reports (requires an interface with NORCOM CAD)

Options for Staffing

The traditional model of static deployment of fire and EMS resources is changing. Several reasons often mentioned are an increased reliance on the fire department for EMS and improvements in construction methods (building and fire codes and the greater use of automatic fire sprinklers). One fire department has deployed cars driven by one paramedic that responds to medical emergencies in conjunction with an EMS transport unit. In May and June 2010, 400 or so calls were handled that otherwise would have required a four-person engine or truck. Several emergency service agencies are looking to experiment with paramedics on motorcycles in the future. Evaluating alternative staffing methods including the staffing of aid units with two personnel is recommended.

EMS (Emergency Medical Services)

The provision of Emergency Medical Services (EMS) has come to be the predominant service offered by many fire departments to their communities. It is common to find that 70 percent to 80 percent of emergency responses are to medical emergencies, as is the case in the City of Kirkland. Essential to the effective delivery of EMS services is quality system management: support and oversight, including the key components of logistical support, medical control, and quality assurance; and appropriate credentialing of personnel.

EMS is essentially an organized system that provides personnel, facilities, and equipment for the coordinated delivery of emergency medical services within a geographical area. An effective EMS system may involve multiple different agencies and organizations working together to provide rapid response, treatment, and transport to those in need of immediate medical attention. Generally, most EMS systems include at least system access and dispatch components, first response, ambulance transport, and definitive hospital care. Many people view EMS as simply ambulance transport or fire department response to medical events. However, those views are being challenged as insurance companies demand more accountability for ambulance transport and emergency treatment. EMS agencies are challenged to incorporate evidence-based medicine and seek better use of resources to extend services to the communities they serve.

EMS systems should have measures in place to determine the effectiveness and performance of both personnel and procedures. Standardized performance levels allow system regulators to not only evaluate performance but also to take steps to improve performance and quantify those improvements.

KF&BD EMS Response Overview

KF&BD maintains a fleet of six frontline aid units which are BLS (basic life support) transport-capable ambulances. Personnel are trained to the BLS level, able to provide initial treatment to EMS patients and transport them to a hospital if their condition does not require ALS (Advanced Live Support) intervention. In instances that necessitate a higher level of patient care, ALS-capable EMS units are dispatched to provide paramedic level treatment. The City of Kirkland receives ALS from Medic One. The City of Redmond has a contract to operate three Medic One ambulances that serve Redmond, Kirkland, and some surrounding unincorporated areas.

EMS responses in Kirkland constituted 75.27 percent of total incidents to which the department responded in the study period from September 2010 through August 2011. The number of EMS

responses totaled just over 5,000, with 68.08 percent classified as BLS and 31.92 percent classified as ALS.

EMS Authority and Regulation

Statutory authority for the delivery of EMS in Washington is under the Washington State Department of Health (WADOH). WADOH promulgates regulations for EMS with the King County EMS Division having responsibility for local oversight. KF&BD's EMS activities are subject to the rules of the County EMS Division, including the certification and training of EMTs and paramedics.

The KF&BD program maintains the appropriate certifications and state authorization to provide EMS services. Medical oversight and direction of patient treatment is provided by a local physician experienced in emergency medicine and EMS. The physician advisor and department EMS staff have enacted appropriate training and skills development practices internally, based on their responder's certification levels. EMS program oversight for KF&BD is assigned to an operational battalion chief.

In 2011, KF&BD appointed a captain to the position of EMSO (emergency medical services officer) coordinator. The EMSO coordinator is responsible for running the EMS transport fee program. Funding for the EMSO is being offset with revenue from BLS transports billings. KF&BD began billing for EMS transport services in March 2011. (For a history of transport revenue see Figure 6: KF&BD EMS Transportation Revenue, March 2011 – January 2012.)

EMS Deployment Methodology

The KF&BD aid units are staffed by firefighters who are also certified in providing BLS. KF&BD's deployment methodology has firefighter/EMTs cross-staffing fire suppression and aid units. Personnel respond based on the emergency type, taking a fire engine to a fire event and responding to EMS incidents with an aid unit. Ladder Truck No. 27 firefighters also cross-staff an aid unit (Aid 29).

Staffing for stations consists of three personnel who may respond with either a fire vehicle or aid unit. When a crew is dispatched to an EMS event, all three of the assigned personnel respond. Doing so maximizes the patient treatment capacity. Regionally and nationally it is common for EMS units to be staffed with two medically trained personnel.

Although the staffing methodology is advantageous for some EMS incidents, it has a negative impact on fire response capacity. With all three personnel responding in an aid unit, the engine or ladder truck in the station is no longer staffed and available for dispatch. ESCI reviewed the practice and finds that the importance of retaining a fire unit's ability to respond to a call, even with only one person, outweighs that of having three personnel on an aid unit.

A single-person response with a fire engine is not optimal and is not effective at a fire scene. However, in many instances, the two EMS responders on an aid unit may be able to meet the fire apparatus at an incident scene and fill out a three-person crew. Similar approaches are found in other fire departments and ESCI recommends that KF&BD discontinue the deployment practice of sending three personnel to an EMS incident in consideration of maintaining immediately available resources. Options include keeping the third firefighter/EMT available for secondary incidents, redeployment with dedicated staffing of two-person aid units, or single person quick response unit for low priority EMS incidents.

EMS Performance Measures

To track the quality and effectiveness of emergency medical service systems departments monitor the survival rates of cardiac arrest patients treated. Response times are often misused or misinterpreted as they are only a crude measure of the system. Clinical outcomes such as cardiac arrest survival rates are a more accurate indicator of performance. Response time for first responder BLS units could demonstrate if data correlates response time to cardiac arrest survival. Although total cardiac arrest survival rate is often referred to as a quality indicator, EMS professionals routinely use witnessed ventricular fibrillation (VF) survival rates as a standard.

KF&BD should develop a comprehensive evaluation program to assess all aspects of the EMS system. This program would include evaluation of structural, process, and outcome measures. In addition to survival rates, outcomes such as disease, disability, discomfort, dissatisfaction, and impoverishment could be used to evaluate the system.

Medic One Funding

An EMS levy in Washington may be imposed by a county, EMS district, city or town, public hospital district, urban EMS district, regional fire protection service authority, or fire protection district. For a countywide EMS levy to be placed on the ballot, it requires approval of any city in the county with a population exceeding 50,000. An EMS levy may be an amount equal to $0.50 or less per $1,000 assessed value. Any taxes collected as a result of the EMS levy can only be

used to provide emergency medical care or emergency medical services. The EMS levy tax may be imposed for:

- Six consecutive years,
- Ten consecutive years, or
- Permanently

King County EMS is funded by a countywide EMS levy, in partnership with local jurisdictions, to provide pre-hospital medical care. The EMS levy:

- Serves more than 1.9 million people in King County in an area of over 2,100 square miles.
- Has a six-year EMS levy that expires December 31, 2013.
- Provides approximately $66 million in annual funding.
- ALS: Approximately 62 percent ($41 million) of expenditures is dedicated to ALS:
    - Zone 3 (South King County) – ALS is provided directly by King County EMS.
    - Zone 1 – ALS is by contractual arrangement with Bellevue, Redmond, and Shoreline Fire Departments.
    - Zone 5 – City of Seattle, ALS is provided by Seattle Fire Department. Seattle and King County have executed an interlocal agreement for King County to return all EMS property tax revenue collected in Seattle to the City of Seattle in exchange for Seattle Fire Department delivering EMS. EMS property tax revenue in Seattle results in approximately $40 million annually
- BLS: Approximately 24 percent ($16 million) of expenditures is in the form of direct payments to 29 partner service providers to support BLS service throughout the county. Kirkland currently receives approximately $850,000 annually.
- Regional Services: Approximately 14 percent ($9 million) of expenditures is directed to regional services and initiatives, including:
    - Strategic initiatives ($750,000)
    - Training ($1.3 million)
    - Growth management initiatives ($1.0 million)
    - Regional medical direction and quality improvement ($1.5 million)
    - Data management ($1.0 million)
    - Administration ($2.7 million)

EMS Service Levels and Delivery Alternatives

KF&BD provides BLS EMS and transport inside of Kirkland and in some instances to neighboring fire departments and districts. The majority of medical incidents to which the department responds are in the BLS category and KF&BD personnel are certified to treat and transport these patients to a hospital for definite medical care. However, nearly a third of the

medical emergencies (calculated at 31.92 percent for the one-year study period) are of a more emergent nature, requiring ALS paramedic level care. For these emergencies, KF&BD personnel serve in a first response capacity as one component of a tiered response, initiating care and treatment while an ALS unit from the City of Redmond's Medic One service responds to the scene.

The King County Medic One program is nationally renowned for its tiered response approach to EMS incidents: citizen intervention, response by BLS fire department personnel, and paramedic level response for acutely ill or injured patients. The City of Redmond participates in the Medic One program by contracting to provide ALS services.

KF&BD's approach of providing BLS EMS service in a tiered response with Medic One resources is appropriate and effective. However, there are shortcomings that warrant review and consideration. Under the current system, Kirkland is able to exercise little control or influence on the availability of EMS response resources provided to Kirkland by Medic One (Redmond Fire Department). Three Medic One units serve Redmond, Kirkland, and the unincorporated area with one unit assigned to Evergreen Hospital to serve Kirkland. The Medic One unit at Evergreen Hospital is routinely dispatched to calls for service outside of Kirkland. When the other two Medic One units are committed to incidents, one may not be readily available for immediate response in Kirkland.

KF&BD can establish a contractual arrangement with King County Medic One, similar to that which is in place in Redmond. ESCI finds that exploring the alternative has merit and recommends that Kirkland analyze the feasibility of providing ALS response services for Medic One.

Potential benefits of KF&BD delivering ALS response services for Medic One in conjunction with BLS include:

- Continuous care from initial patient contact to delivery at a medical facility
- Earlier ALS intervention
- Kirkland residents are served by KF&BD
- Improved staffing
- Reduction in on-scene time

Community Medical Technician (CMT)

In February 2012, Public Health — Seattle & King County's Emergency Medical Services began a Community Medical Technician (CMT) pilot program. The CMT program utilizes firefighting personnel to serve as a single-person response unit that can be dispatched to patients requesting assistance through the 9-1-1 system, but who may not necessarily need full emergency medical response.

King County Public Health recognized that all medical situations do not necessarily meet the present criteria in sending a typically full medical response by fire departments. Fire department apparatus and personnel are often sent to patients experiencing minor medical conditions, and under present criteria and protocol, a fire engine and/or aid unit must be sent to answer the call. Once fire department units respond, they are unavailable to respond to other more severe and emergent situations.

A CMT unit is staffed with one firefighter/EMT that is dispatched to less-severe patients, and the firefighter/EMT can spend more time discussing the patient's non-emergent medical or other social needs. ESCI recommends that KF&BD participate in the CMT program.

Facilities and Equipment

KF&BD has six fire stations, five staffed with career personnel and a smaller community station with a BLS EMS unit staffed in the evenings by volunteers. The department has established a facility systems replacement plan funded using a "sinking fund", setting aside funds annually toward anticipated component replacement from the operating budget. A CIP (Capital Improvement Program) has a significant effect on the image and operation of a city and its capital assets. Policies should be designed to help ensure that current and future assets/projects are maintained at a high level and that capital projects do not restrict the city's financial ability to provide basic services. A city must preserve its current physical asset inventory and plan in an orderly manner for future capital investments, including the operating costs associated with those projects.

Kirkland's CIP for a six-year (2011 – 2016) planning period is updated annually and includes vehicle replacements over $50,000. The CIP lays out a schedule for the replacement of components and maintenance of facilities: gutters, HVAC (heating, ventilation and air conditioning) systems, carpet, roofing, paint (interior and exterior), lighting, utility components and other parts of structures subject to break-down and wear. A schedule of component maintenance and replacement for all City facilities and apparatus is staggered over the life of the plan.

The fire department actively participates in the development of the City of Kirkland CIP. City departments submitting proposed capital improvement projects initially prioritize them according to need and identify work program goals and availability of funding. Proposed projects are then submitted to the city executive staff for review and prioritization, based on need and funding availability. Projects with specific, identified funding sources (e.g., grants, redevelopment funds, etc.) usually receive high priority. Conversely, those projects without identified funding sources must compete for the limited amount of general fund dollars available.

Development of an internal plan for the maintenance and replacement of facilities, apparatus, and capital equipment for KF&BD that aligns with the City CIP is considered appropriate and fiscally prudent.

Facilities

Fire stations need to be designed to adequately house equipment and apparatus, as well as meet the needs of the organization, its workers, and/or its members. Consideration should be given to a fire station's ability to support the department's mission as it exists today and in the future. The activities that take place within the fire station should be closely examined to ensure the structure be adequate in both size and function. Examples of these functions include:

- The housing and cleaning of apparatus and equipment
- Residential living space for on-duty crew members (male and female)
- Administrative or management office(s)
- Training, classroom, and library areas
- Firefighter fitness area

While this list may seem elementary, the lack of dedicated space compromises the ability of the facility to support all of these functions and can detract from its primary purpose.

KF&BD's administrative offices are located at 123 5th Avenue, in a combined city hall, police and fire headquarters building. The following provides a summary of each KF&BD fire station, its condition, year built, general appearance, square footage, and living and safety amenities.

Fire Station No. 21

Fire Station No. 21 (Forbes Creek) is a wood framed structure built in 1997. The building has been seismically upgraded, has auxiliary power, is well maintained, and is considered to be in very good condition. It has three apparatus bays, a workout room, kitchen, lockers, gender specific showers and restrooms. Features of the building include monitored smoke detection, keyed locks with keypads, and a positive pressure apparatus exhaust extraction system. A small community room with isolated access is available to the public. KF&BD staff at City hall is responsible for scheduling room use. Station has a disaster preparedness container with 10 days of food stuffs for station personnel and an amateur radio HAM radio transmitter and antenna for communication during a disaster.

One engine and aid unit staffed by three personnel per day is assigned to this fire station. Because of the station's location it is the second due station to many emergency incidents. The

station has a radiant heating system in the truck bays but lacks an auto shut-off interconnect. If bay doors are inadvertently left open, the radiant heater operates continuously in an attempt to keep the apparatus bay warm. Additionally, light switches lack timers or motion sensors, increasing energy consumption.

Fire Station No. 22

Fire Station No. 22 (Houghton) is a reinforced brick, masonry building, and has had two tenant improvements since construction in 1980. The building has been seismically upgraded, has auxiliary power, and is considered to be in good condition. There are three back-in truck bays, individual bedrooms (versus dormitory style sleeping quarters), an exercise room, kitchen, and gender-specific lockers and showers. Features of the building include monitored smoke detection, keyed locks with keypads, and a positive pressure apparatus exhaust extraction system. A small community room with isolated access is available to the public. City hall is responsible for scheduling room use. Station has a disaster preparedness container with 10 days of food stuffs for station personnel and an amateur radio HAM radio transmitter and antenna for communication during a disaster.

The station is a mirror image of Fire Station No. 27, minus one large drive-through apparatus bay. Daily staffing of the one engine, one aid unit, and one air/rehabilitation unit is by three assigned personnel per day. Fire Station No. 22 has the largest service area and is KF&BD's second busiest (call volume) of the six fire stations. There are 26 spaces available for the public meeting room parking.

Fire Station No. 24

Fire Station No. 24 (Finn Hill North) is a wood frame structure designed as a deep, two-story facility to fit the property. Constructed in 1993, it has been the subject of a local controversy. Originally a King County Fire District #41 fire station, it became a City property with the annexation of the area into Kirkland. Beginning around March 1, 1999 the station was staffed during the daytime by career personnel on overtime and reservists at night. Daytime career staffing ended December 31, 2008. After that time it was operated as a volunteer only fire station. Station has a disaster preparedness container with 10 days of food stuffs for station personnel and an amateur radio HAM radio transmitter and antenna for communication during a disaster.

The reserve program operating out of the station was eliminated due to budgetary constraints at the end of 2011, leaving the residents in the area concerned about emergency service delivery

to the area. An agreement was reached and volunteer EMTs provide EMS, allowing for re-opening the station earlier this year (2012). Service is limited to BLS EMS in the evening hours.

The building has been seismically upgraded, has auxiliary power and is considered to be in good condition, albeit inadequate to accommodate larger fire apparatus. There are offices but no community facilities. There are two back-in truck bays, small bunk room, locker (upstairs), exercise room, and kitchen. Features of the building include monitored smoke detection and keyed locks with keypad. The station aid car is staffed nightly from 7:00 PM to 5:00 AM with volunteer personnel.

The station is being actively considered for replacement and relocation to a location better suited to serve the Finn Hill neighborhood. Additional research and analysis in this report offers guidance to assist policymakers in determining next steps.

Fire Station No. 25

Fire Station No. 25 (Finn Hill South) is a reinforced brick, masonry building, constructed in 1974 with a kitchen remodel in 2006. The building has been seismically upgraded, has auxiliary power, and is considered to be in good condition. The station features two back-in truck bays, individual bedrooms instead of a dormitory style sleeping quarters located upstairs, an exercise room, kitchen, and gender specific lockers and showers. Features of the building include monitored smoke detection, keyed locks with keypads, and a positive pressure apparatus exhaust extraction system. There is limited office space but no community facilities or meeting rooms. Station has a disaster preparedness container with 10 days of food stuffs for station personnel and an amateur radio HAM radio transmitter and antenna for communication during a disaster.

Originally staffed by volunteers, the one engine and one aid unit are staffed by three assigned personnel per day. KF&BD addresses the terrain challenges of the Finn Hill area by using an engine at Fire Station No. 25 designed to handle steep grades and tight turns.

Fire Station No. 26

Fire Station No. 26 (North Rose Hill) is a wood frame and masonry structure that was built in 1995. The building has been seismically upgraded, has auxiliary power and is considered to be in very good condition. There are three apparatus bays, (one drive-through that is also double deep), a workout room, kitchen, lockers, and gender specific lockers and showers. A dormitory sleeps eight personnel. Features of the building include monitored smoke detection, keyed

locks with keypads, and a positive pressure apparatus exhaust extraction system. A large community/training room with an elevator for ADA accessibility and isolated access is available to the public. City hall is responsible for scheduling room use. Station has a disaster preparedness container with 10 days of food stuffs for station personnel and an amateur radio HAM radio transmitter and antenna for communication during a disaster.

The coverage area of the station is on the east side of Interstate 405 and personnel can respond into the City of Redmond. Daily staffing of the one engine and one aid unit is by three assigned personnel per day. A shift battalion chief and a training captain are assigned to the station. There are ten parking spaces available for the public multi-purpose room. Parking is inadequate for the number of people that routinely use the facility.

Fire Station No. 27

Fire Station No. 27 (Totem Lake) is a reinforced brick masonry building was built in 1976 and had limited tenant improvements in 2006. The building has been seismically upgraded, has auxiliary power, and is considered to be in fair condition. There are three apparatus bays (one double deep drive-through), workout room, kitchen, lockers, gender specific showers and restrooms, and individual bedrooms. Features of the building include monitored smoke detection, keyed locks with keypads, and a positive pressure apparatus exhaust extraction system. The station lacks adequate insulation. Station has a disaster preparedness container with 10 days of food stuffs for station personnel and an amateur radio HAM radio transmitter and antenna for communication during a disaster.

The station structure is a mirror image of Fire Station No. 22. Daily staffing of the one engine, one ladder truck, two aid units requires a minimum of six assigned personnel per day. The station is KF&BD's busiest and is ideally located near east and west arterials and has easy access to Interstate 405.

Planning for major remodeling and the replacement of fire stations is a major capital expense and requires long-range planning. Fire stations have a limited life expectancy from 35 up to approximately 50 years. Fire Station No. 25 (Finn Hill South), constructed in 1974 and Fire Station No. 27 (Totem Lake) built in 1976 have passed the 35 year life. ESCI recommends that a capital plan for the rebuild or replacement of fire stations be developed.

Apparatus

KF&BD has established an apparatus replacement plan funded through the general fund of the City. The plan is currently written for the period 2011 through 2016 and is updated every two years. This fund schedules replacement of apparatus on a cycle, with engines and ladder trucks replaced every 18 years, aid vehicles replaced every eight years, and command staff vehicles replaced every eight years.

Support and Small Equipment

Small equipment can be a significant part of a fire department's annual budget. It can be expensive to acquire and maintain and may have a limited technological life. ESCI surveyed a sampling of KF&BD's small equipment and found it to be in good condition. Fire department small equipment includes:

- SCBA (self-contained breathing apparatus)
- Small tools
- PPV (positive pressure ventilation fans)
- Computers
- Radios
- Breathing air compressors
- Hydraulic rescue tools
- Rescue tools
- Power saws

Maintenance and repair of small equipment and tools are handled both in house by fire department personnel, City mechanics, and by private sector vendors. SCBA servicing is handled by fire department personnel. Personnel assigned to SCBA duty receive incentive pay of 2 percent.

Pump, Hose, and Ladder Testing

Pump and hose testing are two important processes that need to be performed and documented annually. The purpose of testing fire hose is to have a reasonable assurance of firefighter safety and that the hose and couplings will work as designed. The life expectancy of a section of fire hose is often 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 pressure. Inspection, care, and maintenance should extend to all appliances and nozzles as well.

An inventory of all fire hose should be maintained, along with a history of each section. KF&BD's recordkeeping and hose-testing program meets the requirements of *NFPA 1961: Standard on Fire Hose, 2007 Edition*.

Fire pumps are one of the most important and expensive parts of any fire apparatus. The care and routine check of a fire pump is a necessity and should be completed by personnel on a regular schedule. Fire pumps are tested annually by a third party vendor. Records are maintained in hard copy paper and electronic format.

Annual aerial ladder testing is conducted by a third party.

Personal Protective Equipment (PPE) Maintenance

Statistical data has shown that buildup of contaminants on turnout gear (PPE or Personal Protective Equipment) has a direct impact on the health and safety of firefighting personnel. Firefighters who are exposed to contaminated PPE have a much higher risk of contracting an illness. The health and safety risks associated with contaminated turnout gear are addressed in *NFPA 1500, 1581,* and *1971*. Standards require that protective clothing be cleaned at least once every six months. While this standard may seem excessive, ESCI has found that regular cleaning and maintenance will extend the life expectancy of turnout gear. Proper care enables fire departments to lengthen the replacement cycle of PPE.

KF&BD has made provisions for routine cleaning of firefighting PPE. While all fire stations have residential washer and dryers only two have commercial extractors. KF&BD personnel have access to commercial extractors at Fire Station Nos. 21 and 26—the only units approved for cleaning PPE when used in conjunction with approved cleaning solutions.[58] Turnout drying and storage areas should be provided in each fire station. A common problem observed by ESCI in KF&BD fire stations is the storage of turnout gear in apparatus bays or in an adjacent room with no doors and/or ventilation. ESCI recommends that PPE be stored in a separate, well ventilated room.

Mutual and Automatic Aid Systems

There are numerous mutual aid agreements, both formal and informal, in place between fire, police, and emergency medical agencies in the Puget Sound area. Mutual aid is characteristically employed on an as-needed basis where fire units are called for and specified

[58] Fire Station No. 26 had a commercial extractor delivered that was being installed during this course of this study.

by an IC (Incident Commander). There are three basic types of mutual aid that are available to most fire departments.

1. *Basic Mutual Aid upon Request*
   This form of mutual aid is the most basic and is typically permitted under broad public laws that allow communities to share resources upon request during times of disaster or during local and regional emergencies. Often, these broad laws permit communities to make decisions quickly regarding mutual aid under specified limitations of liability, allowing a community to tap into resources from their immediate neighbors, as well as very distant resources in communities with which they have very little day-to-day contact. Under this level of mutual aid, specific resources are typically requested by a fire department, through the chain of command or sometimes coordinated by local or regional emergency management personnel. Depending on the level of the request, the response can sometimes be slow and the authorization process may be cumbersome due to the exchange of official information or even elected officials' approval that may be required.

2. *Written Mutual Aid Agreement*
   This form of mutual aid goes one step further by formalizing in writing an agreement between communities (typically immediate neighbors in a region) in an effort to simplify the procedures and reduce response times in an emergency. Frequently, these agreements are developed by fire department officials, but executed by the policy-makers of the participating jurisdictions. By signing such agreements, communities are "pre-authorizing" the deployment of their resources under specified circumstances. In Washington State, mutual aid agreements are generally reciprocal in nature without compensation for services or a subsidy. In other words, mutual aid must truly be "mutual." In King County, all fire agencies are guarantor to a master mutual aid agreement.

3. *Automatic Aid Agreement*
   Automatic aid takes the process an additional step by spelling out circumstances under which one or more specific resources will respond automatically upon notification of a reported incident in the neighboring community. In essence, an automatic aid agreement expands a community's initial first alarm response to certain types of incidents by adding resources from a neighboring agency to that response protocol. Typically, such agreements are for specific geographic areas where the neighbor's resource can be expected to have a reasonable response time and are limited to specific incidents. An example of such an agreement is having a neighboring community's engine respond to all reported structure fires in an area where a neighboring agency's apparatus would be closer than the second or third-due engine from the home community. In other instances, an agreement might cover a specialized resource, such as an aerial apparatus that the home community does not possess.

Automatic aid agreements may be purely reciprocal or may involve the exchange of money for services provided. Reciprocal agreements are common when used where each community have mutually beneficial resources or services that can be provided. Services or resources need not be identical. For instance, one community may send an engine to a second community on automatic response to structure fires, while the second community agrees in

exchange to send a water tender to the first community's structure fire calls. These reciprocal agreements are usually made where some reasonable level of use balance is expected between the parties of the agreement.

A primary purpose of an automatic aid agreement is to improve the regional application of resources and staffing. Since fire protection resources are most frequently established because of the occupancy risks in a community and not necessarily a heavy workload, apparatus may be idle for long periods of time. While fire departments make productive use of this time through training, drills, pre-incident planning, and other functions, the fact is that expensive apparatus resources and personnel are not heavily tied up on emergency incidents. Communities that share certain resources back and forth are essentially providing a higher quality of service than would be otherwise available by the host agency, and reducing expensive redundancy and overlapping services.

KF&BD has entered into and relies upon, automatic aid agreements with Northshore, Bothell, Woodinville, Redmond, and Bellevue fire departments. Most of KF&BD's emergency response resources are committed when a single structure fire event occurs in the City. KF&BD depends on automatic aid partners that are proximate to Kirkland to augment responses or backfill empty fire stations.

There will never be an even balance between the amount of mutual and automatic aid given and received. Therefore, tracking of aid events is information that can be analyzed to determine if an inequity exists. Analysis involves several variables; the number of incidents; apparatus; personnel; and the length of time committed to mutual and automatic aid calls. If an imbalance is found in aid services, it is appropriate to negotiate a change in dispatch and response protocols to achieve a balance between fire departments.

Current Service Demand

In this section, the current condition of KF&BD's emergency response deployment and performance is analyzed. It covers the topics of service demand and distribution, reliability, incident control and management, water supply, and mutual and automatic aid.

Fire and EMS agencies traditionally have planned, trained, and deployed resources independent of each other although there is interdependence on emergency incidents. This paradox at emergency incidents occurs because emergency service agencies at times will require assistance from other jurisdictions. This can happen for any number of reasons. The

more common occurrences are for assistance at larger fire incidents, closest unit response by a neighboring apparatus, and when travel time from a fire station is nearer the scene of an emergency. Because of this interdependence, ESCI's GIS (geographic information system) analysis often incorporates fire and EMS service areas adjacent to Kirkland.

Incident Control and Management

KF&BD uses the Northeast King County Regional Public Safety Communication Agency (NORCOM) as its Public Safety Answering Point (PSAP) to receive, process, dispatch and track emergency response resources. NORCOM standardizes response assignments for each agency it serves based on the type of call dispatched. KF&BD establishes its "response assignments" for each call type. These assignments are intended to provide the quantity and type of apparatus needed for each incident type, as well as the correct number of staff to accomplish the critical tasks necessary to mitigate the emergency.

Technology has been deployed to manage dispatches and resources in real time. MDCs (mobile data computers) and AVL (automatic vehicle location) are available in all department apparatus. AVL provides satellite information in real time for a vehicle's specific location, typically within ten feet of its actual position. Thus, NORCOM can dispatch apparatus based on actual, not assumed location, such as the unit's assigned fire station. This technology improves response time by sending units that are physically closer to an incident versus an assumption of being in quarters. MDC technology allows real time information transmittal to response crews responding to an incident. Dispatch data pertinent to the emergency response should include target hazards or specific building records, water supply, and any other information that would help the officer prepare for an incident.

The fire department has one FTE deputy chief of operations working an administrative schedule and three operational battalion chiefs, one per 48-hour shift. KF&BD uses captains and lieutenants at each station as first line-supervisors for each response unit. In addition to the resources dispatched on a response assignment, a safety officer–the training chief–also responds. The agency uses the ICS (Incident Command System) on emergency responses and the Passport Accountability System for all fire ground incidents and other major or long-term incidents.

Response Activity

ESCI was provided with five years of summary response activity (2005 to 2009) and approximately two years of detailed incident response activity (2010 through 2011). A gap in

detailed incident data occurred in the first three weeks of September 2011 due to a software malfunction during an aborted startup of the New World RMS. For this reason ESCI used historical responses from September 2010 through August 2011 for analysis. A total of 7,380 incidents were included in the data set. Incidents defined as outliers (invalid, incomplete reports or data that was outside expected values) were eliminated prior to analysis. Another small percentage of incident reports were unusable because of data integrity issues. In ESCI's experience RMS software generally has validated user input and rejects those entries outside of the expected (normal) range.

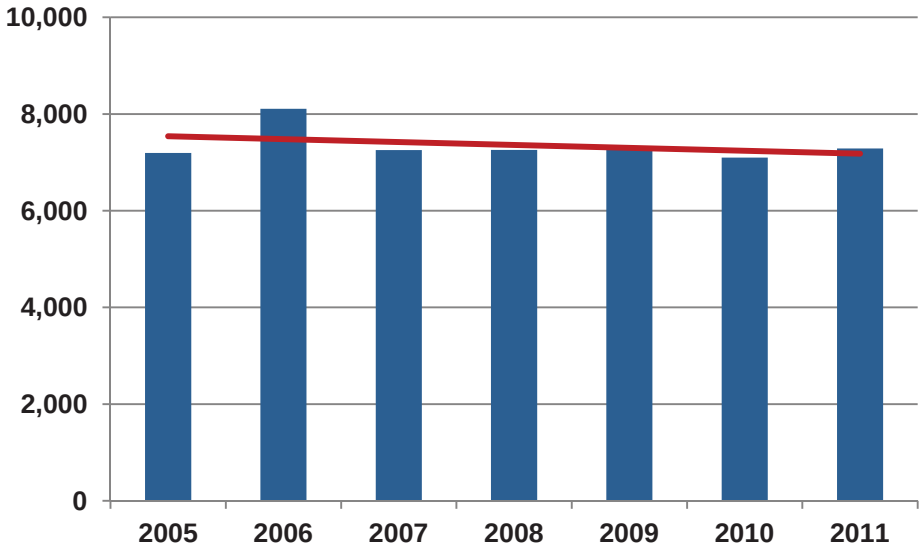
Frequent review of response data is necessary to understand how deployment changes impact coverage of service demand coverage. This is especially true when large changes occur. With only several months of post annexation data available the effect is not yet known. Prior to the annexation of a portion of Woodinville and the closure of Woodinville Fire Station No. 34, Fire Station No. 27 was busy. Going forward, fire station and unit work load needs to be monitored.

KF&BD's response data was categorized into the following three major categories:

- Fire: Structure fires, vehicle fires, wildland fires, and equipment fires
- EMS: Medical emergencies, traumatic injuries, MVAs (motor vehicle accident), and rescues
- Other: Hazardous materials, explosions or ruptures without fire, smoke investigations, and false alarms

Analysis of service demand began with a review of total response activity for KF&BD from 2005 to 2011 (Figure 52).

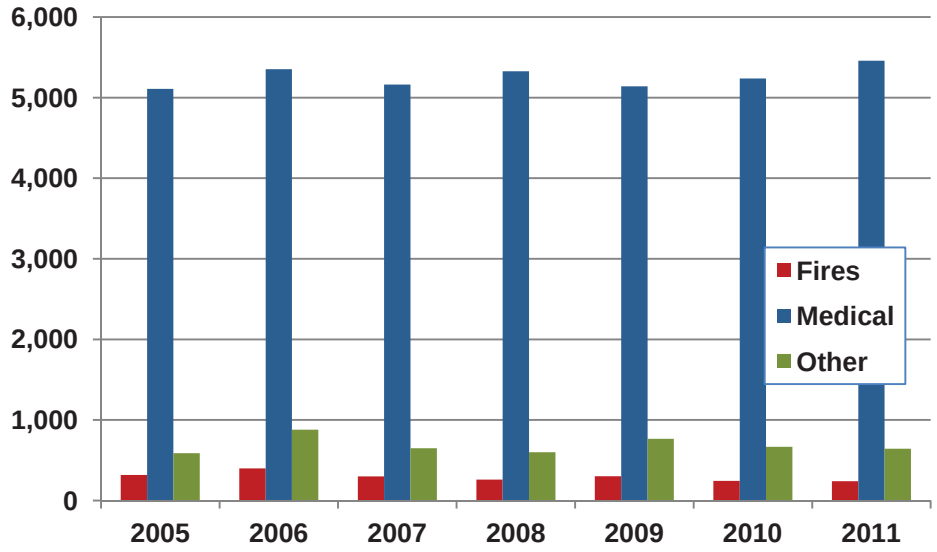
Figure 52: Total Service Demand, 2005 – 2011



With one exception, total annual responses varied less than 4 percent (225 responses). In 2006, calls for service were approximately 9 percent above the seven-year average (2005 to 2011). Total responses for the one-year analysis period (September 2010 through August 2011) were consistent with the seven-year average of 7,360.

Figure 53 examines service demand by major incident category from 2005 through 2011.

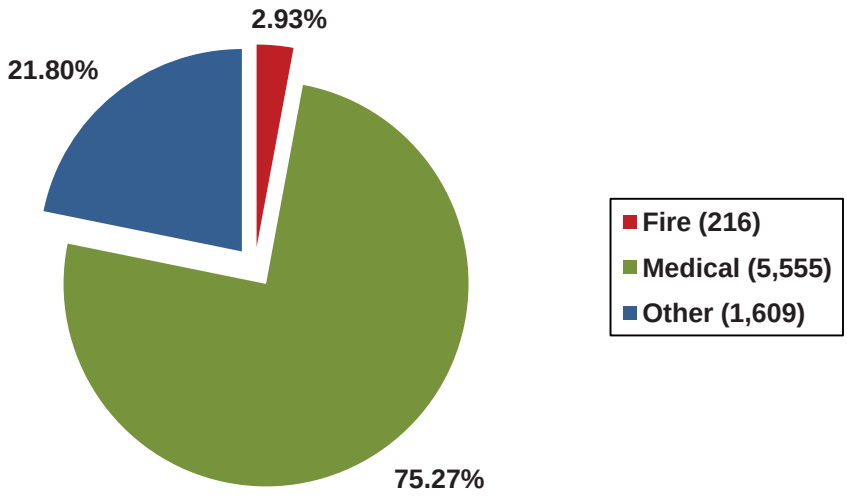
Figure 53: Service Demand by Incident Type, 2005 – 2011



There were only minor differences for incidents by category during the seven years that ESCI reviewed.

The following figure shows percentage of service demand by incident type for the one-year period September 2010 through August 2011.

Figure 54: Percentage of Service Demand by Incident Type, September 2010 – August 2011



While total service demand was consistent with the five-year average (2005 to 2009), the percentage of calls related to EMS increased by nearly 5 percent. Reasons for the increase are unknown but may be related to staffing and deployment changes of neighboring fire and EMS providers.

Figure 55 is a breakdown of the incident responses using the NFIRS (National Fire Incident Reporting System) three-digit code and the written description that best describes the type of incident. This description is generally the type of incident found when emergency personnel arrived; if a more serious condition developed after the fire department's arrival on the scene, that incident type is reported.

Figure 55: NFIRS Incident Type, September 2010 – August 2011

Series Description	Total	Percentage
100 – Fire	216	2.93%
200 – Overpressure Rupture, Explosion, Overheat (No Ensuing Fire)	3	0.04%
300 – Rescue and Emergency Medical Service (EMS) Incidents	5,555	75.27%
400 – Hazardous Condition (No Fire)	119	1.61%
500 – Service Call	240	3.25%
600 – Good Intent Call	610	8.27%
700 – False Alarm and False Call	594	8.05%
800 – Severe Weather and Natural Disaster	10	0.14%
900 – Special Incident Type	33	0.45%
Total	**7,380**	100.00%

The number of fire incidents declined in the September 2010 to August 2011 period when compared to the five-year period. Fires of all types decreased as a percentage of incidents from 4.23 percent to 2.93 percent. The decrease is statistically insignificant but is consistent with the trend being experienced in many fire agencies throughout the country.

Service Demand by Temporal Variation

ESCI continued the analysis by examining service demand by temporal variation. Incident data for the one-year period September 2010 through August 2011 was used to show how demand changes based on various measures of time. Figure 56 illustrates service demand for fire incidents by month of the year, Figure 57 for EMS incidents, and Figure 58 for other incident types.

Figure 56: Fire Incident Service Demand by Month of Year, September 2010 – August 2011

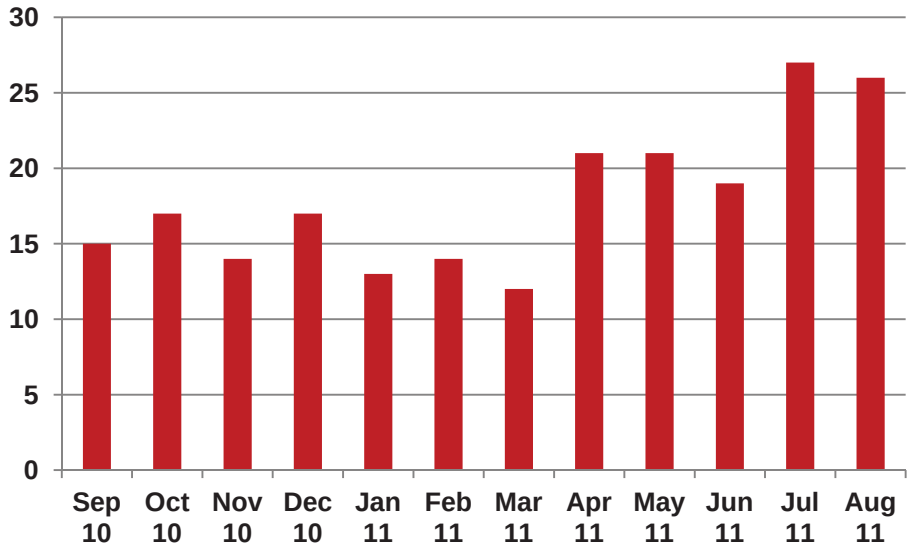


Figure 57: EMS Incident Service Demand by Month of Year, September 2010 – August 2011

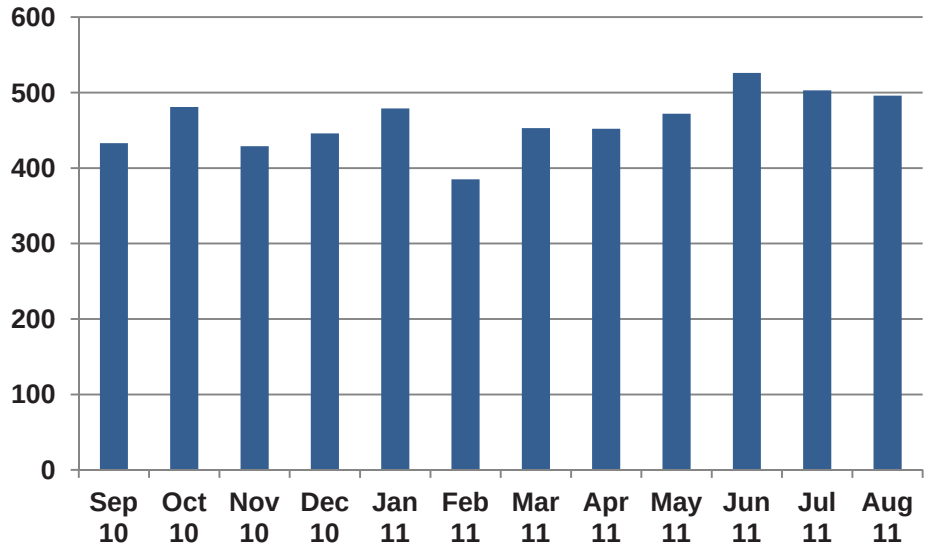
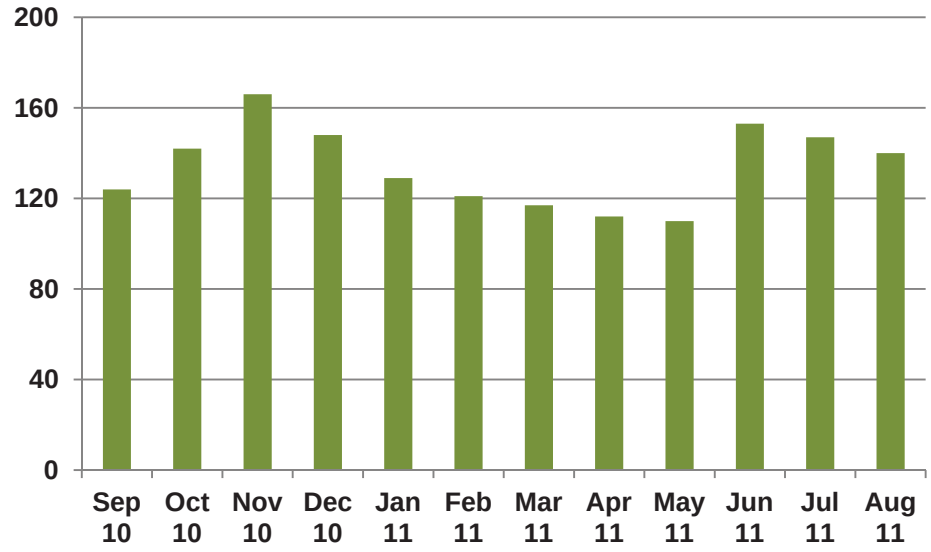


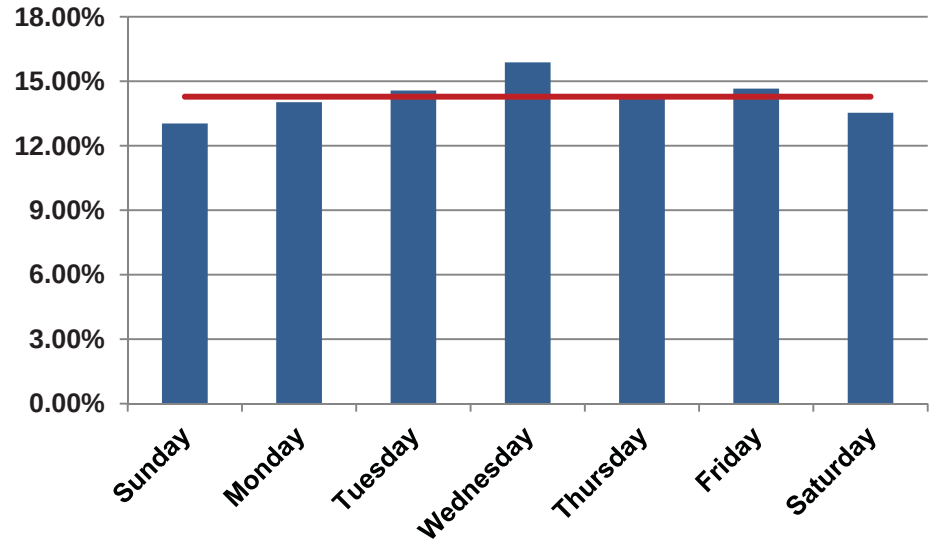
Figure 58: Other Incident Service Demand by Month of Year, September 2010 – August 2011



During the 12-month period service demand for KF&BD varied from a low of 7.05 percent in February to a high of 9.46 percent in June. The service demand average was 8.33 percent. The variation in service demand for fire incidents was highest in July and August. Fire incidents require the largest number of personnel and as a consequence should be monitored for periods of time when a potential exists to exceed available resources.

Figure 59 displays service demand by day of the week for the same time period for all incidents.

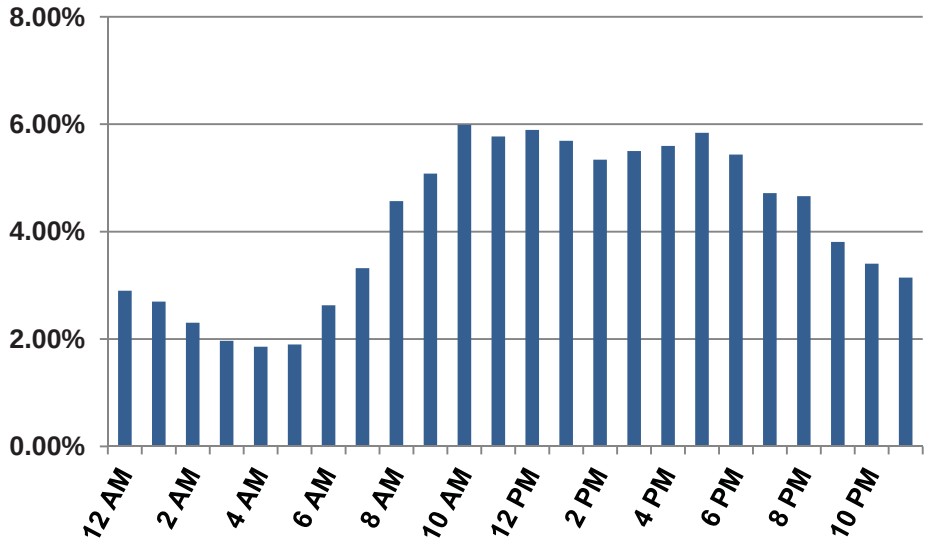
Figure 59: Service Demand by Day of Week, September 2010 – August 2011



Sundays had the lowest total call volume by day for KF&BD and Wednesdays had the highest number of calls for service. Average call volume by day of week ranges from a low of 13.04 percent to a high of 15.88 percent.

Another measure involves determining service demand by hour of day. Figure 60 displays service demand by the hour of the day from September 2010 through August 2011 for all incidents.

Figure 60: Service Demand by Hour of the Day, September 2010 – August 2011



Call data and response activity post annexation was not available for this study. Second, the data set was smaller than typically used by ESCI for analysis. Problems were identified with the CAD system included three full weeks of response information that was not available from the month of September 2011.

Service Demand by Geographic Distribution

In addition to the temporal analysis of service demand, it is useful to examine the geographic distribution of service demand. Using Geographic Information System (GIS) software, ESCI was able to geocode KF&BD incidents for September 2010 through August 2011. The first map (Figure 61) displays the service area of KF&BD, fire stations, major arterials, railroads, schools, and parks. The second map (Figure 62) shows an expanded view of the City and fire department service and perimeter area and incorporates the fire stations of neighboring fire agencies. Note: Fire Station No. 24 station aid car is staffed nightly from 7:00 PM to 5:00 AM with volunteer personnel and Woodinville Fire & Rescue Fire Station No. 34 is unstaffed.

Figure 61: KF&BD Service Area

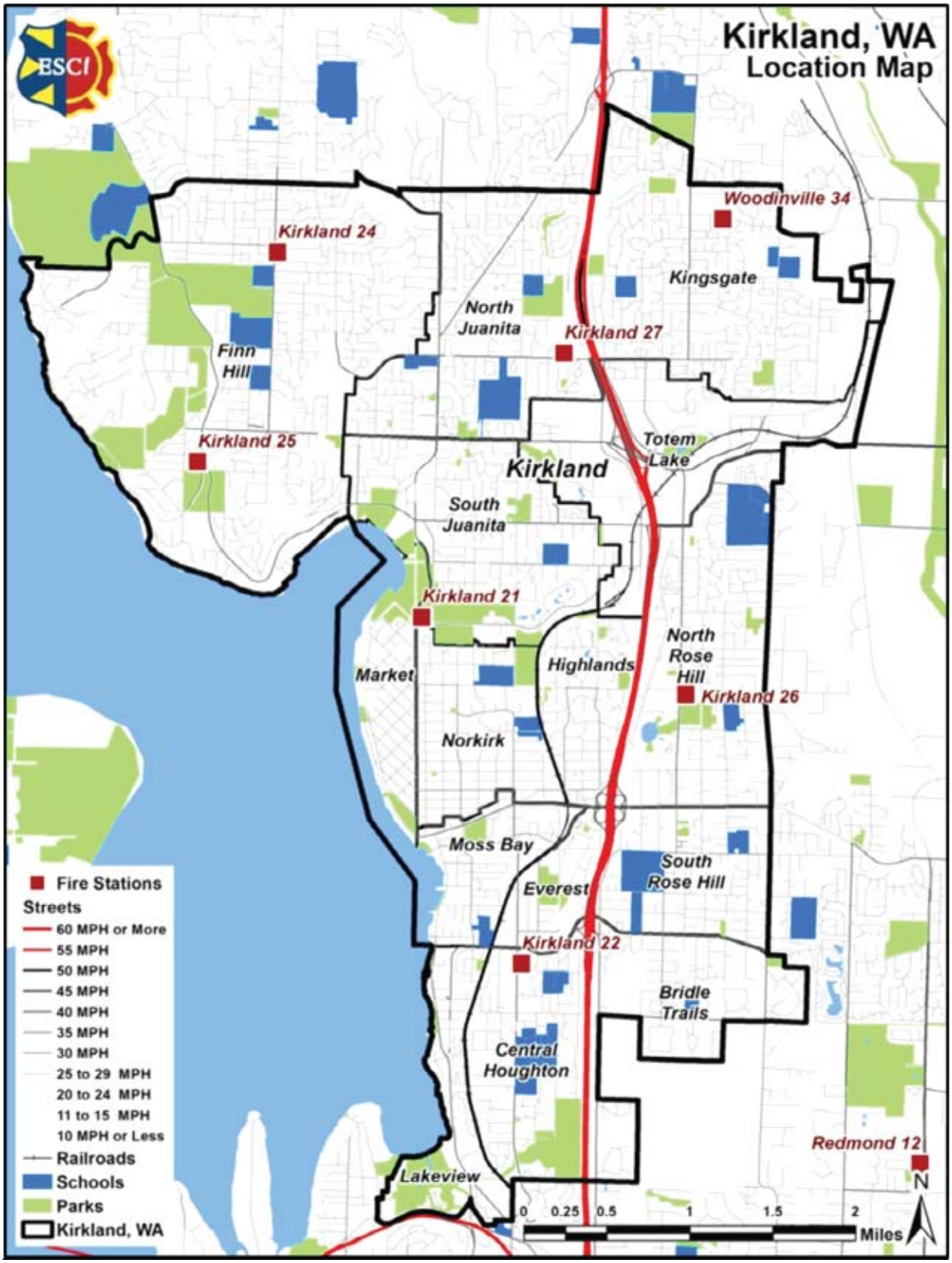


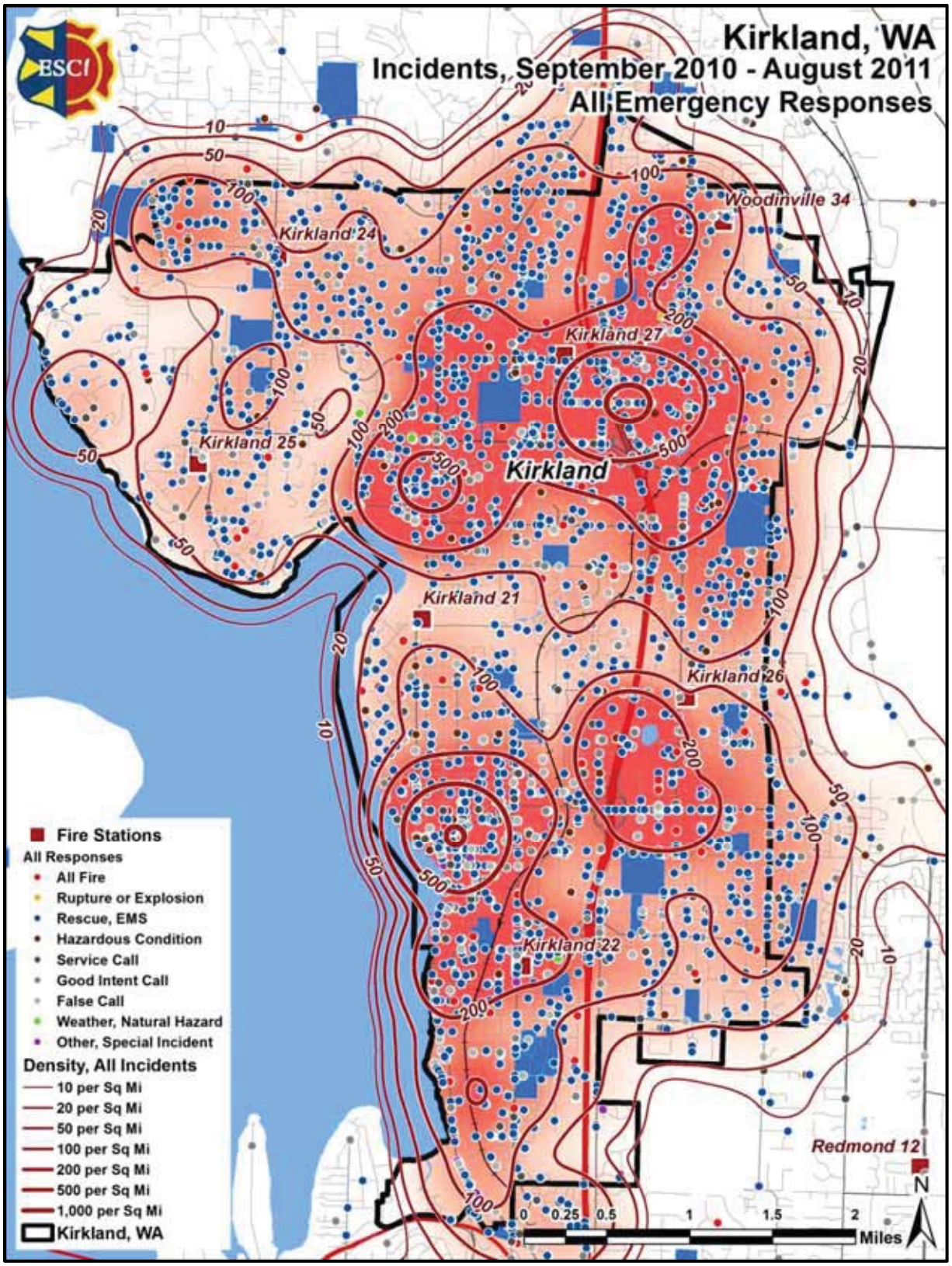
Figure 62: KF&BD Service Area Expanded

To one level or another, KF&BD functions with all of the fire agencies on the north and eastside of Lake Washington. More frequent operations are conducted with the Bellevue, Redmond, and Bothell fire departments and the Woodinville and Northshore fire protection districts.

Demand Analysis

ESCI examined service demand by incident type and temporal variation. Figure 63 illustrates the location of all incidents responded to by KF&BD that occurred between September 2010 and August 2011.

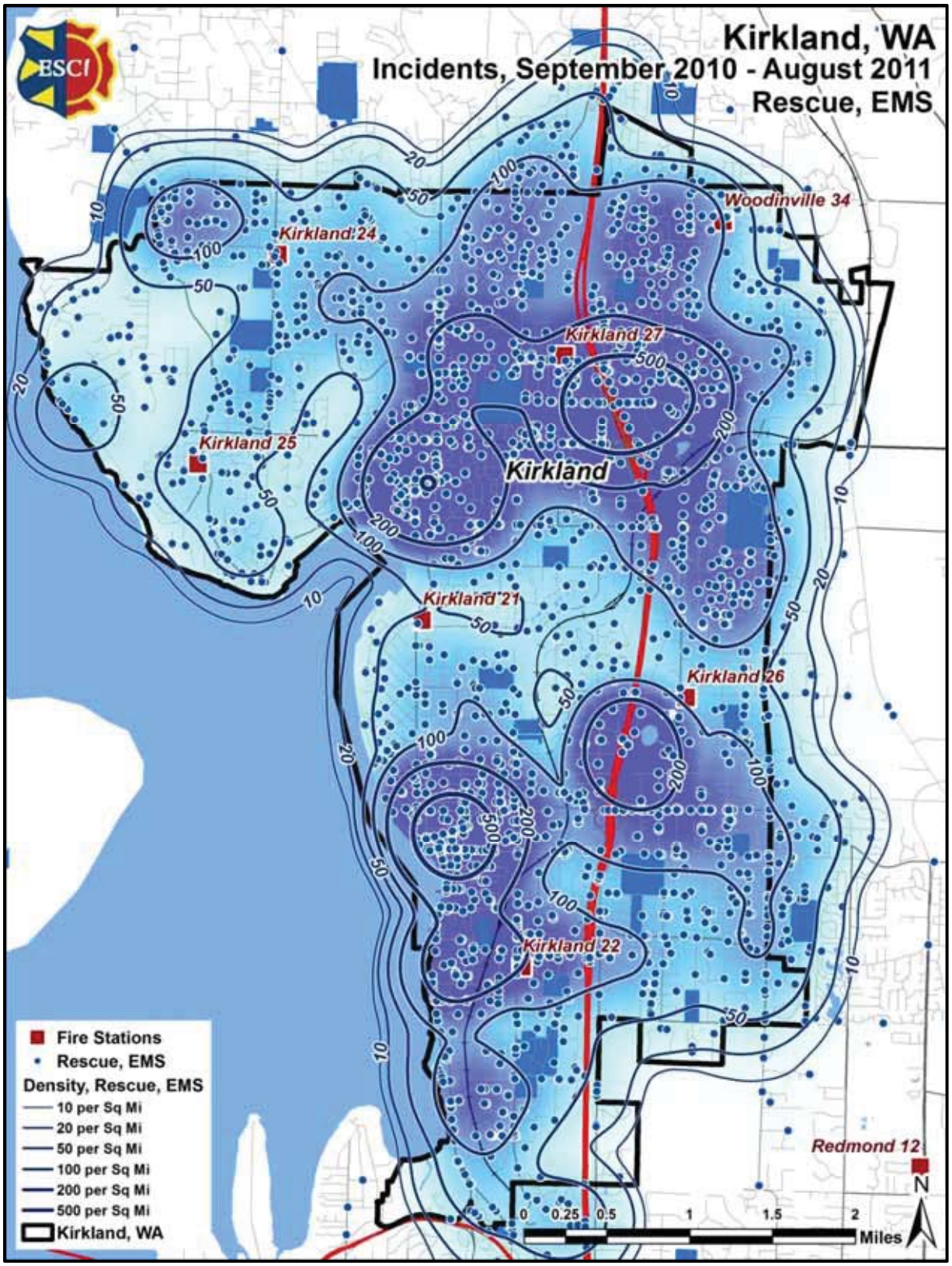
Figure 63: All Incidents, September 2010 – August 2011



With over 7,300 calls for service responded to by KF&BD, Figure 63 shows that while there are parts of the City that had higher service demand, none was immune to emergencies. From September 2010 through August 2011, the three areas of Kirkland with service demand that exceeded 500 calls per square mile occurred between Fire Station Nos. 21 and 27 and northwest of Fire Station No. 22.

In the next figure ESCI displays only the location of those incidents geocoded in the reports as rescue and EMS incidents for the same one-year period. As with fire incidents, rescue and EMS incidents are in similar clusters, but with a greater distribution throughout the City. Over 75 percent of the occurrences (5,555) were EMS related.

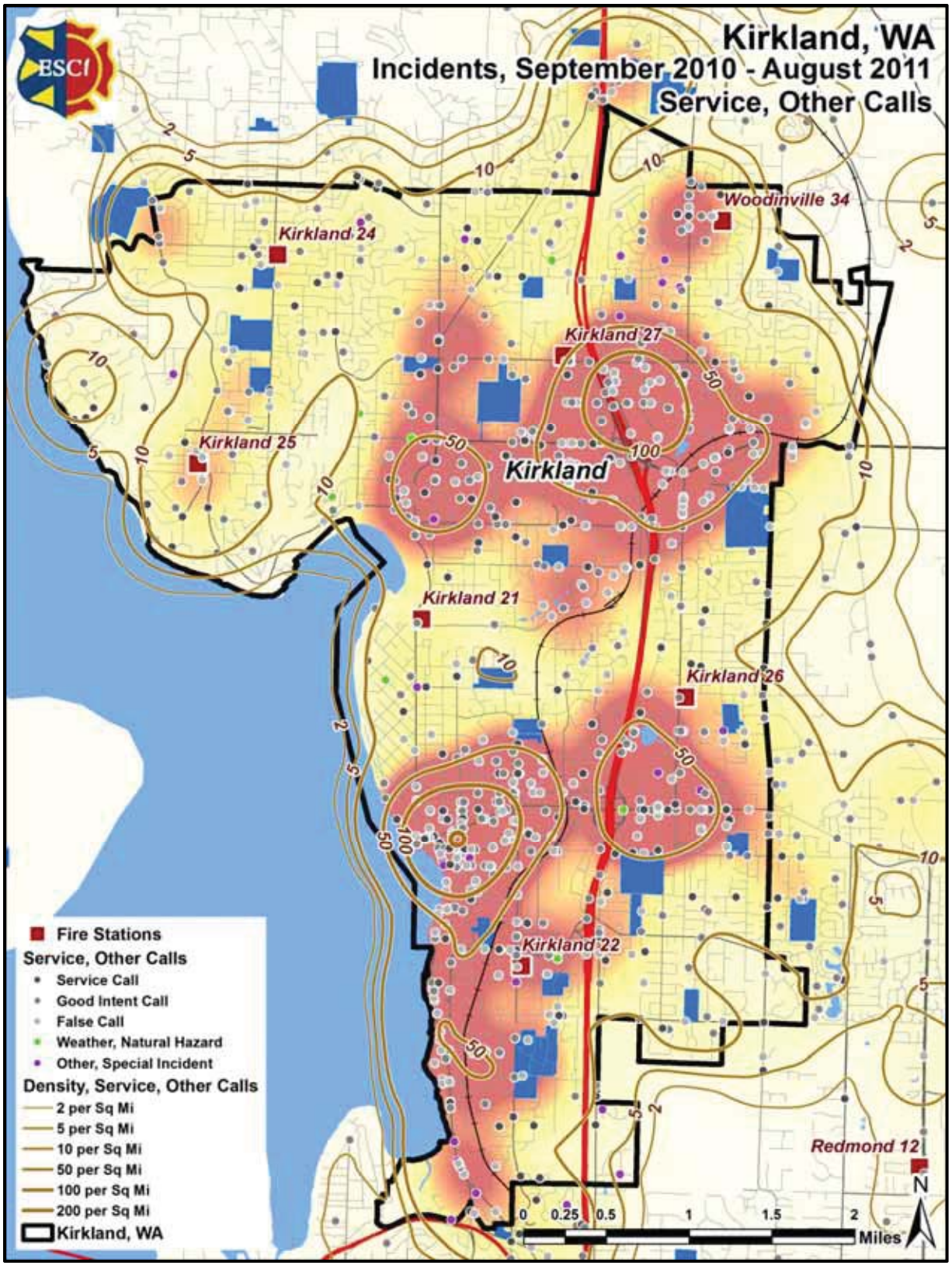
Figure 64: Rescue and EMS Incidents, September 2010 – August 2011



A cluster of EMS incidents to the west of Fire Station No. 24 is significant in that the closest response is from either Fire Station Nos. 25 or 27 during the time of day when the majority of calls for service occur.

Figure 65 shows the distribution of all incidents classified as other and service calls that occurred from September 2010 and August 2011. Fewer incidents classified in the other category occurred outside of the three highest density areas for fires and medical calls.

Figure 65: Service and Other Calls for Service, September 2010 – August 2011



There is a pocket of other incidents west of Fire Station No. 24 that is similar to the clustering of EMS incidents.

In the next map (Figure 66), incidents for the same one-year period categorized as fire, explosion, and hazardous materials events are shown. In Figure 67, only those incidents classified as structure fires are shown.

Figure 66: Fire, Explosion, and Hazardous Materials Incidents, September 2010 – August 2011

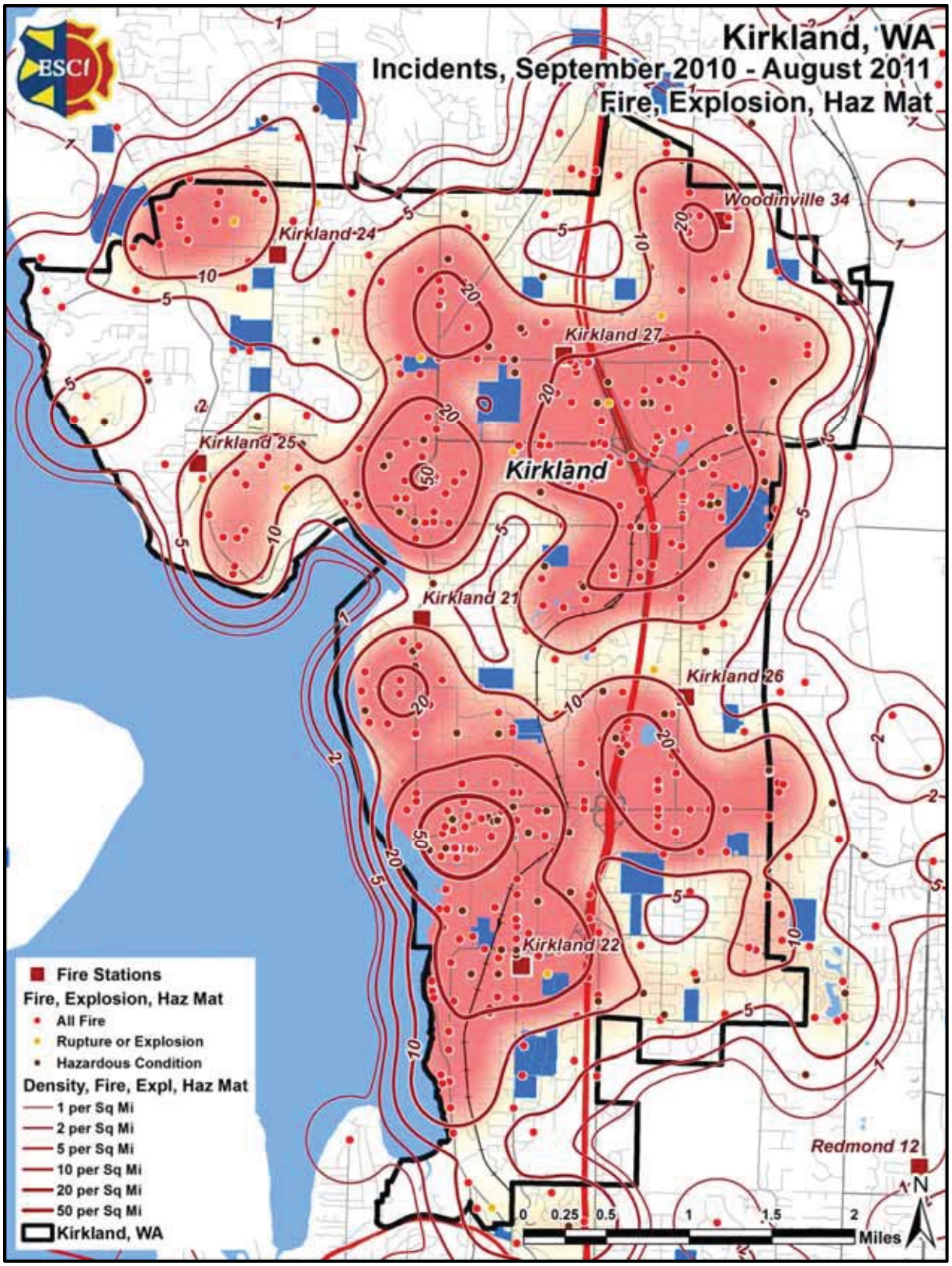
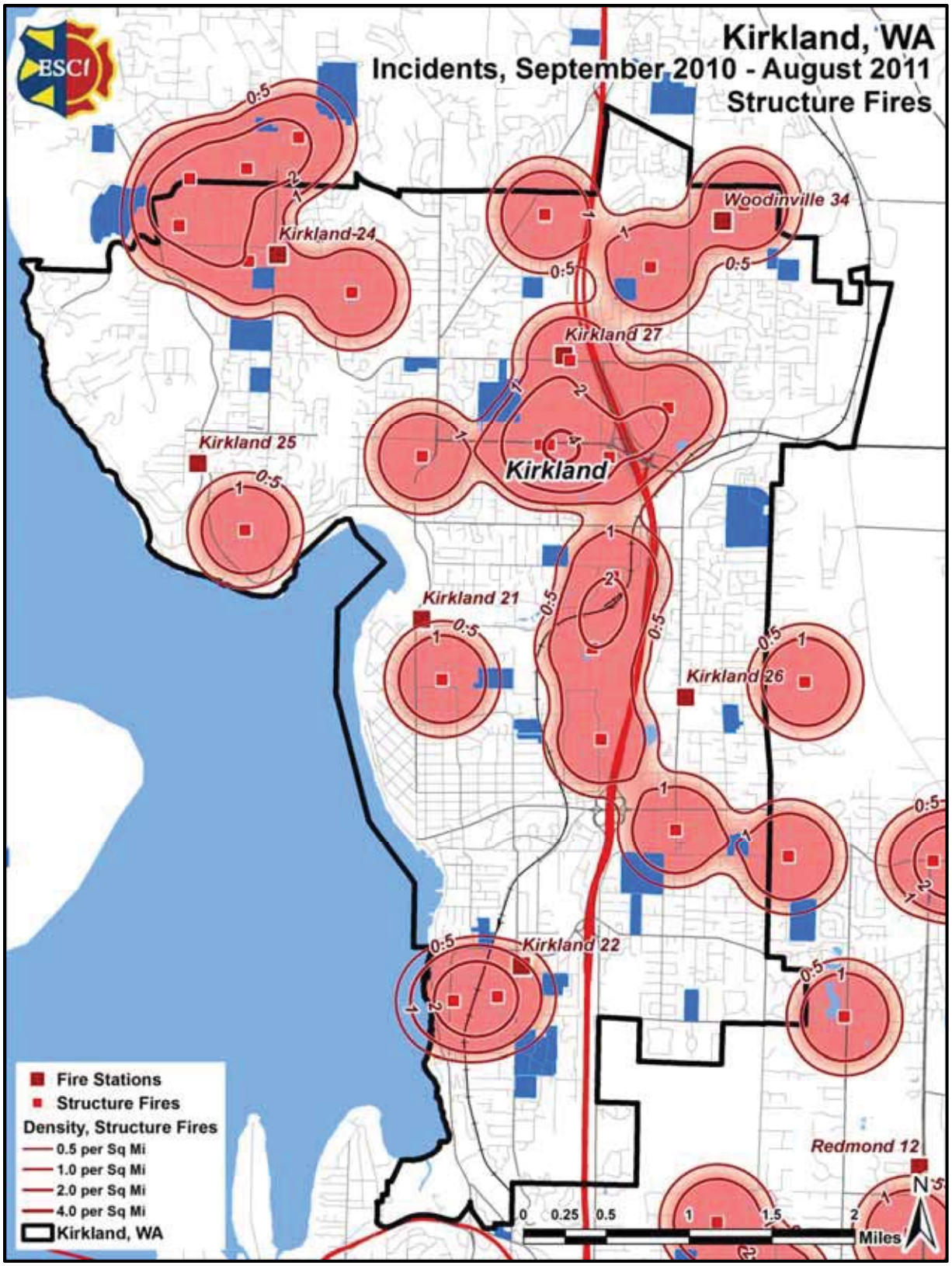


Figure 67: Structure Fires, September 2010 – August 2011



Structure fires were widely dispersed throughout the city. With fewer numbers of structural fire events it is difficult to draw any conclusion related to location of fire incidents.

A collection of EMS, fire, and other incidents occurred to the west of Fire Station No. 24 during the one-year study period. Multiple instances of calls for service also occurred just over the border in Northshore's service area.

Response Time

The fire service defines response time as the total time measured from the moment notification is received by the emergency communications center until arrival of the first apparatus on the scene of the incident. Components of response include discovery of the emergency, 9-1-1 activation, call processing and dispatch of emergency response, turnout time, travel time, arrival on the scene of the emergency, setup time (fire incidents), and when mitigation of the emergency begins.

Distribution Study

ESCI began the distribution analysis by examining travel time over the current road network. Travel is only one component of response time. National standards and KF&BD's adopted response standard is based on four minutes of travel time.

The following maps model the travel distance capability of emergency apparatus within 4 (4:00), 5 (5:00), 5.5 (5:30), and 8 (8:00) minutes travel time from each KF&BD fire station. Adjustments to speed capability of the streets were made to account for negotiating turns, grades, intersections, traffic calming devices, and other impediments. Travel time assumes that the fire of aid unit is responding from quarters.

Figure 68: Fire Station No. 21 – 4:00, 5:00, 5:30, and 8:00-Minute Travel Time

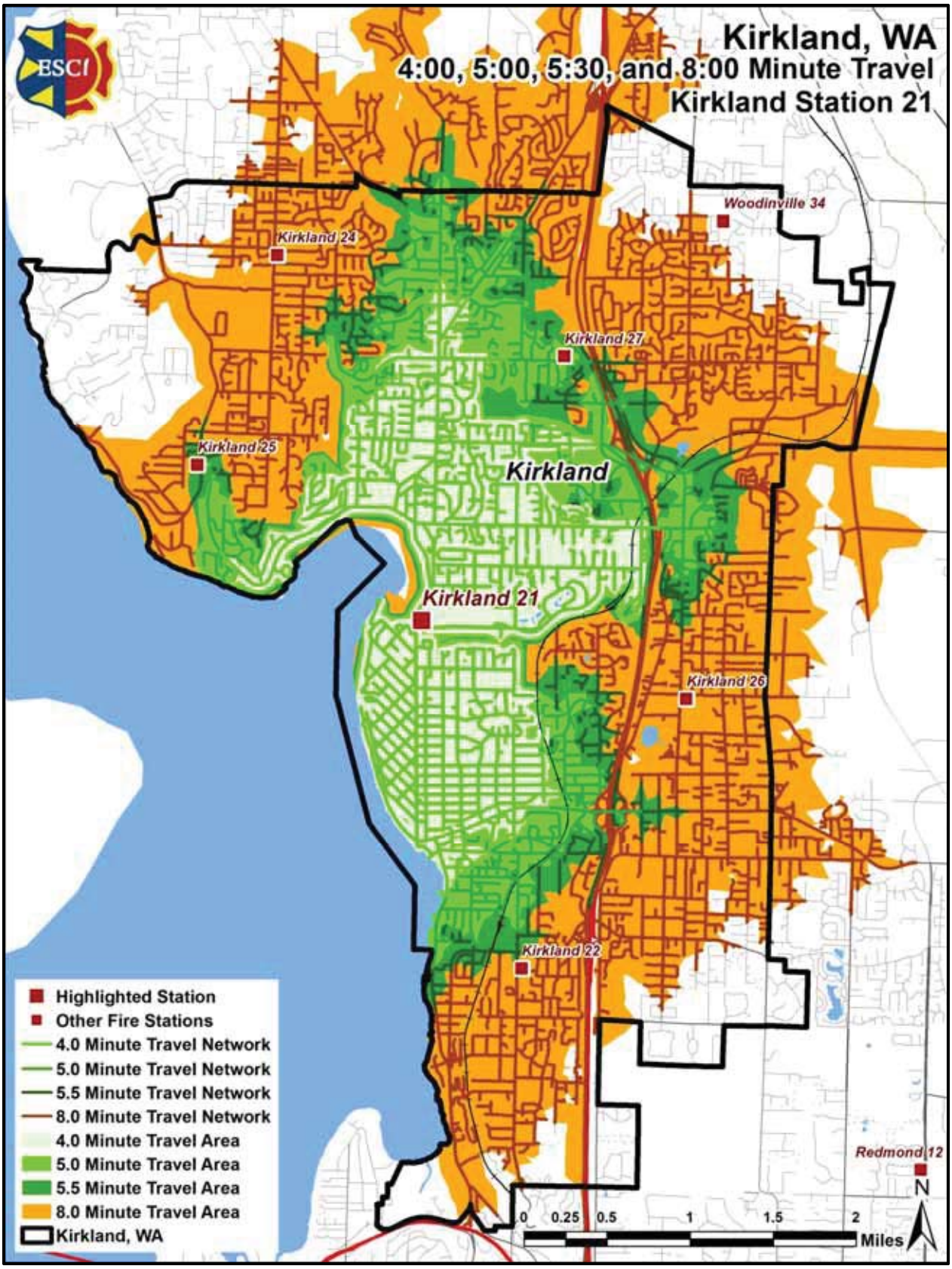


Figure 69: Fire Station No. 22 – 4:00, 5:00, 5:30, and 8:00-Minute Travel Time

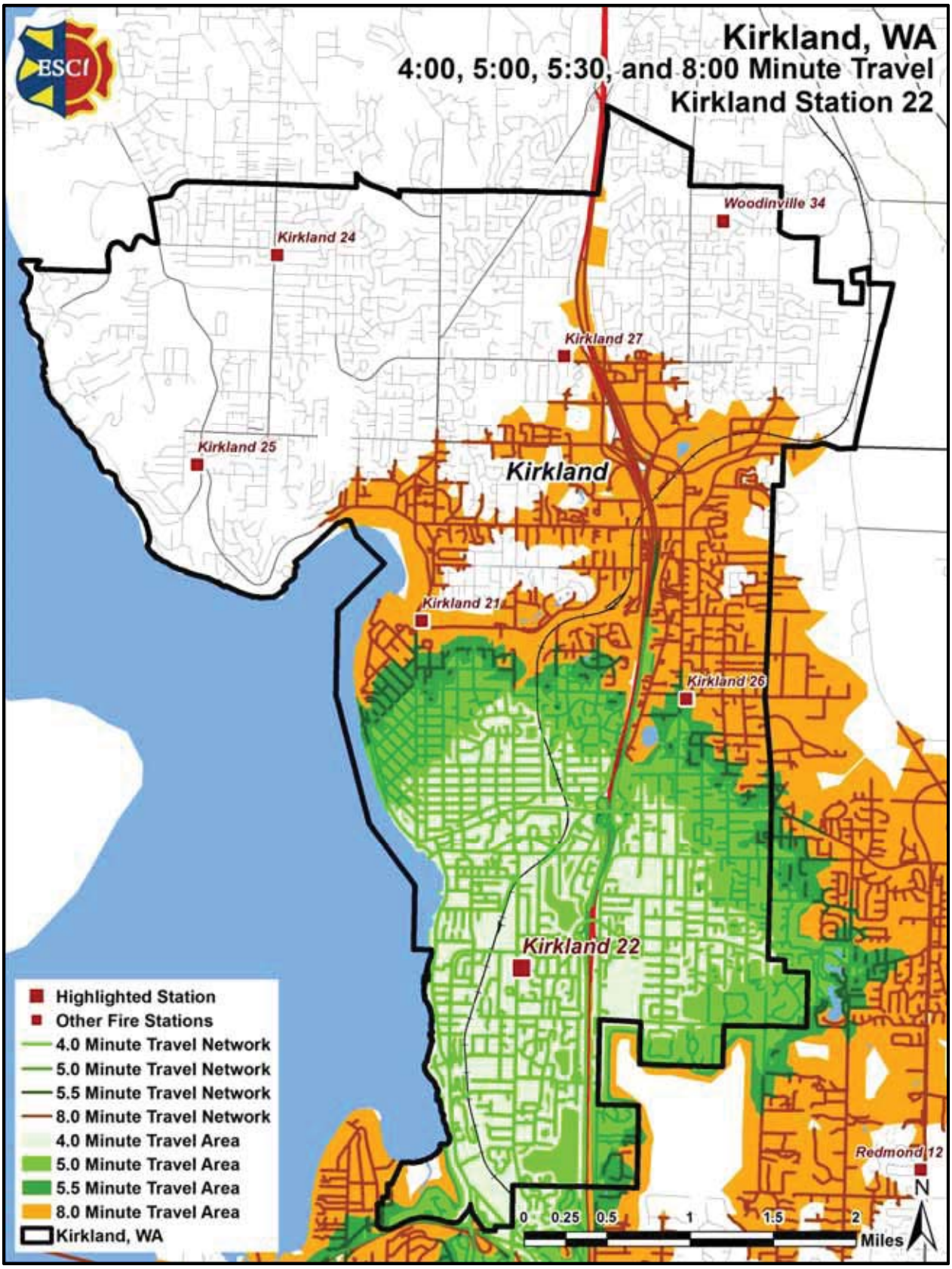
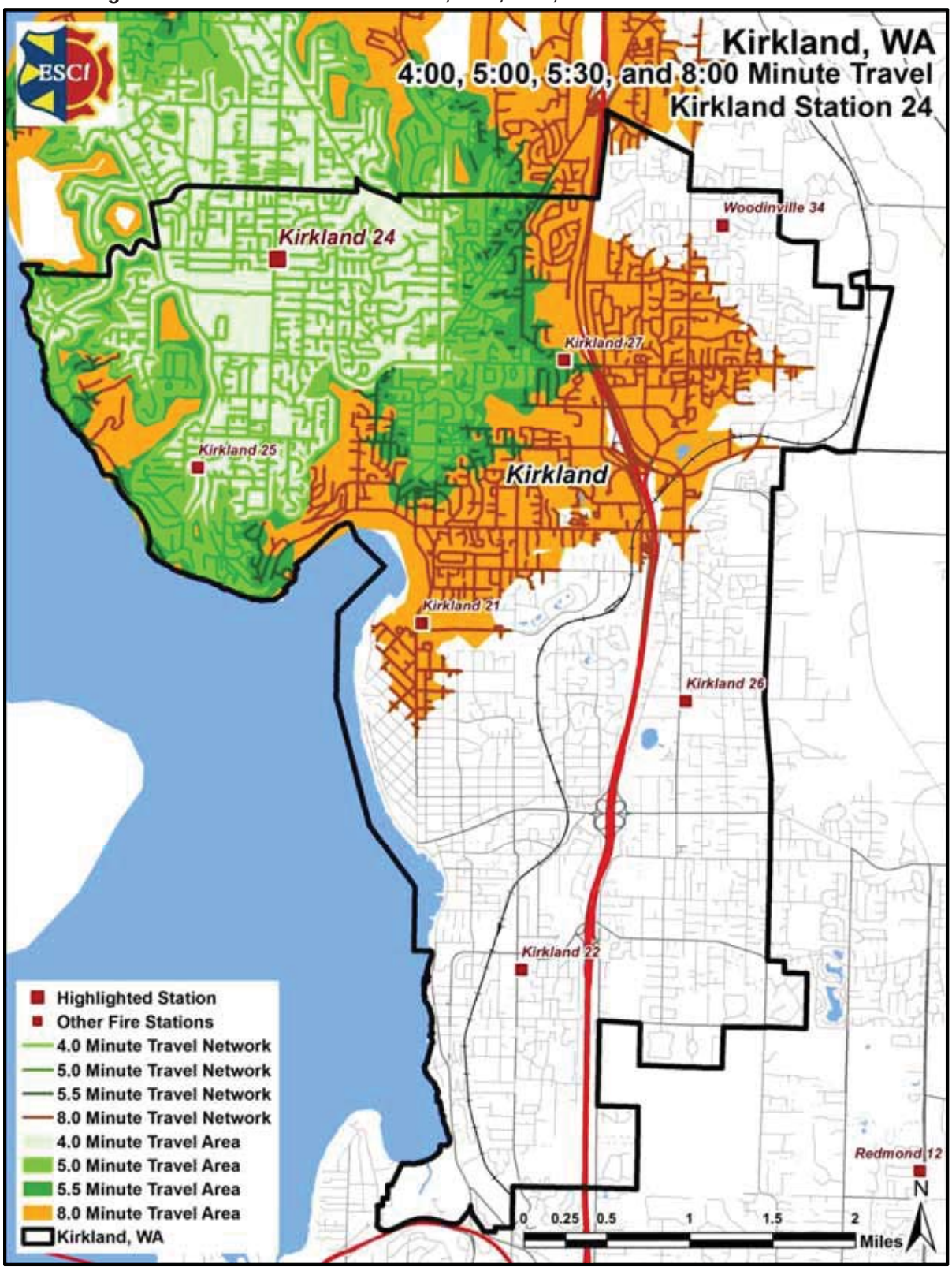


Figure 70: Fire Station No. 24 – 4:00, 5:00, 5:30, and 8:00-Minute Travel Time[59]



[59] Fire Station No. 24 station aid car is staffed nightly from 7:00 PM to 5:00 AM with volunteer personnel.

Figure 71: Fire Station No. 25 – 4:00, 5:00, 5:30, and 8:00-Minute Travel Time

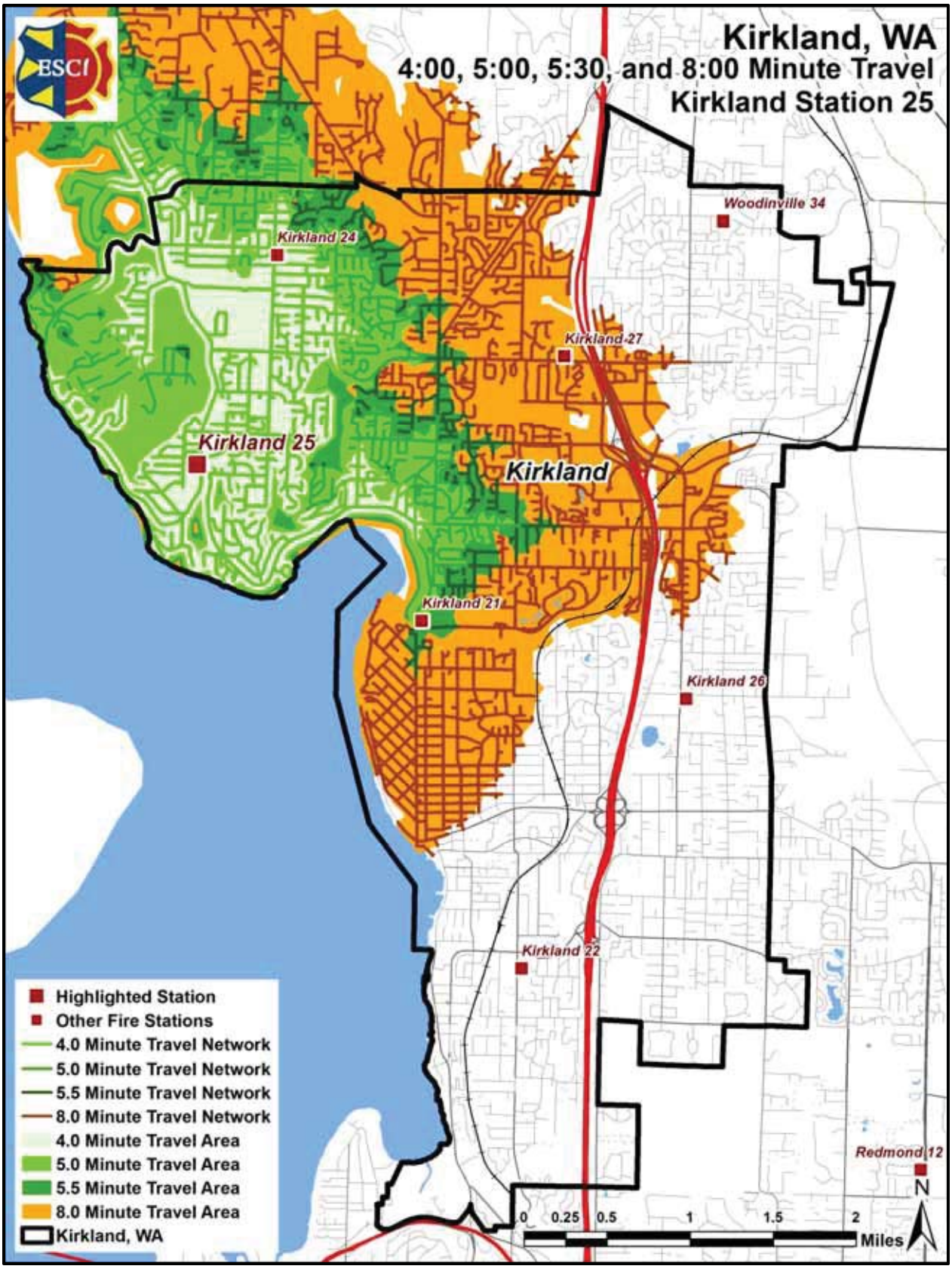


Figure 72: Fire Station No. 26 – 4:00, 5:00, 5:30, and 8:00-Minute Travel Time

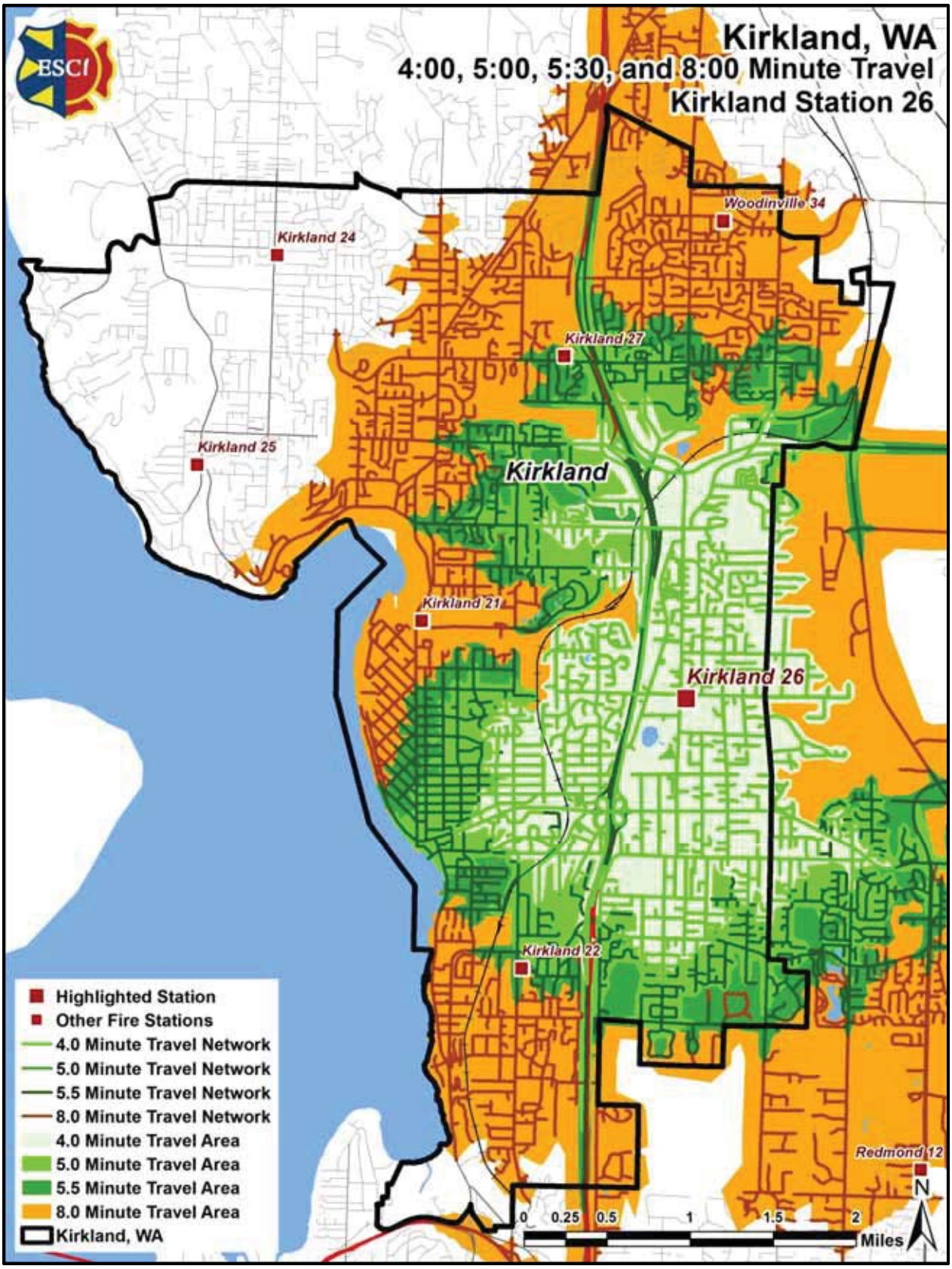
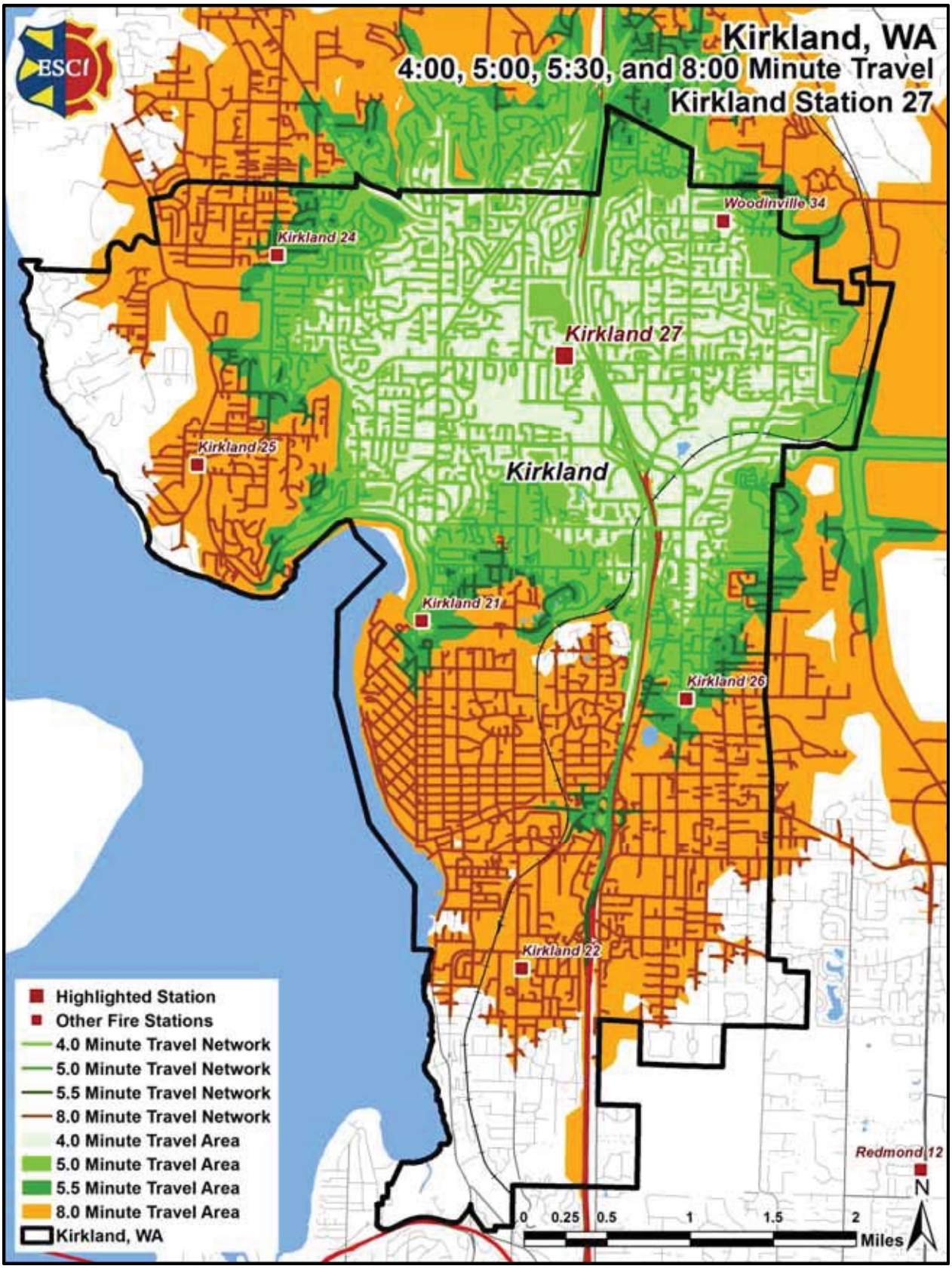


Figure 73: Fire Station No. 27 – 4:00, 5:00, 5:30, and 8:00-Minute Travel Time



Concentration Study

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.

Analysis of Response Time to Achieve Full-Effective Response Force

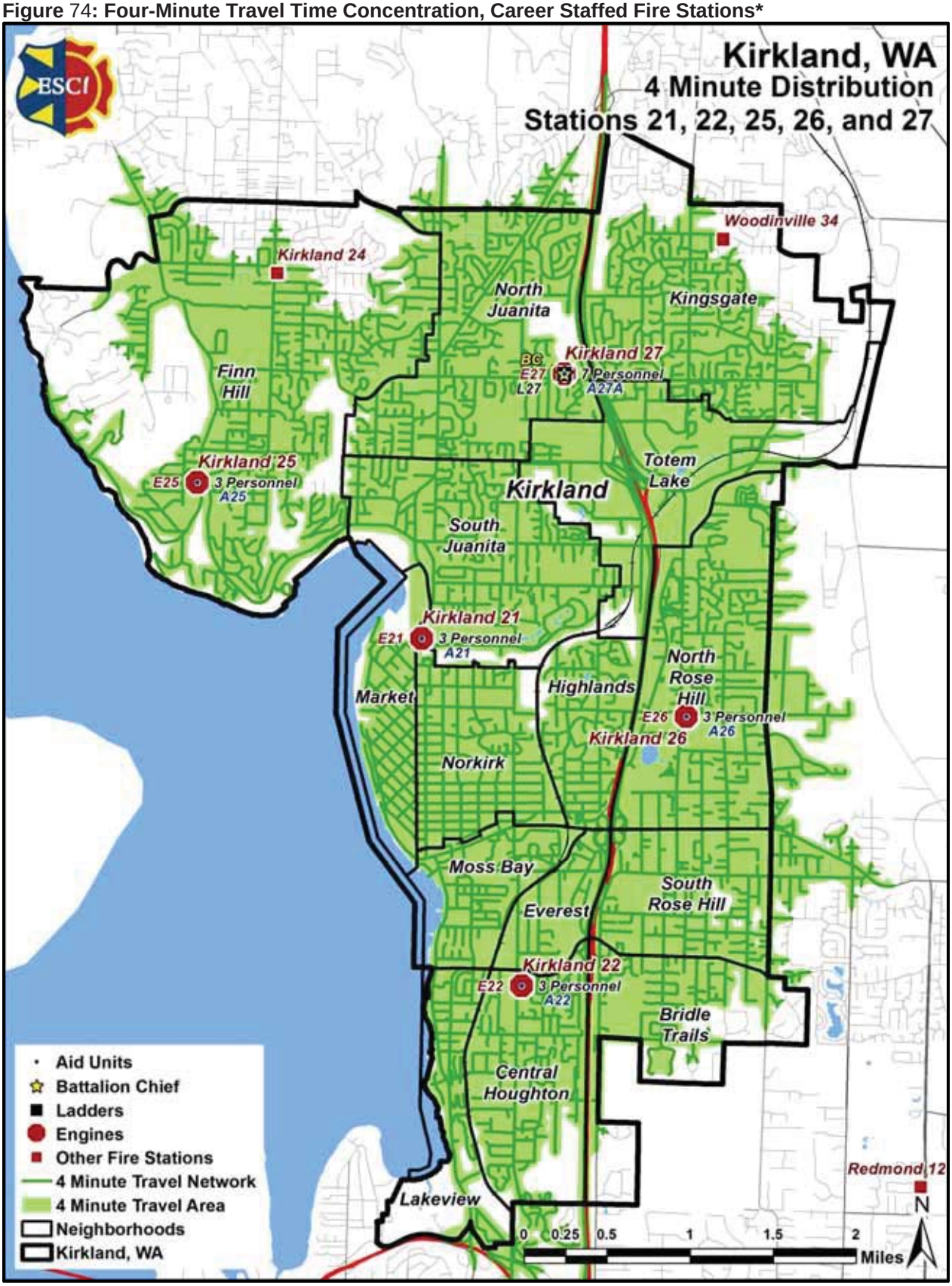
While it is important for KF&BD to reach all portions of the City with a single unit for EMS and many other calls for service as rapidly as possible, fire incidents require more than a single resource. An ERF (effective response force or initial full alarm assignment) involves the concentration and spacing of multiple resources arranged (close enough together) so that an initial group of resources can be assembled on the emergency scene within adopted time frames. An initial ERF is the apparatus, equipment, and personnel which will most likely stop the escalation of the emergency for a given risk.

The National Fire Protection Association (NFPA) has published a national fire service peer standard for all or mostly career staffed fire departments.[60] Among other things, *NFPA 1710* contains time performance standards for structure fire response as well as emergency medical response. Each will be discussed individually. Though not a legal mandate, *NFPA 1710* does provide a useful benchmark against which to measure a fire department's performance.

Figure 74 demonstrates the areas in the City of Kirkland that can be reached in four minutes of travel time from KF&BD's five career-staffed fire stations.

[60] *NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, National Fire Protection Association 2010.

Figure 74**: Four-Minute Travel Time Concentration, Career Staffed Fire Stations***

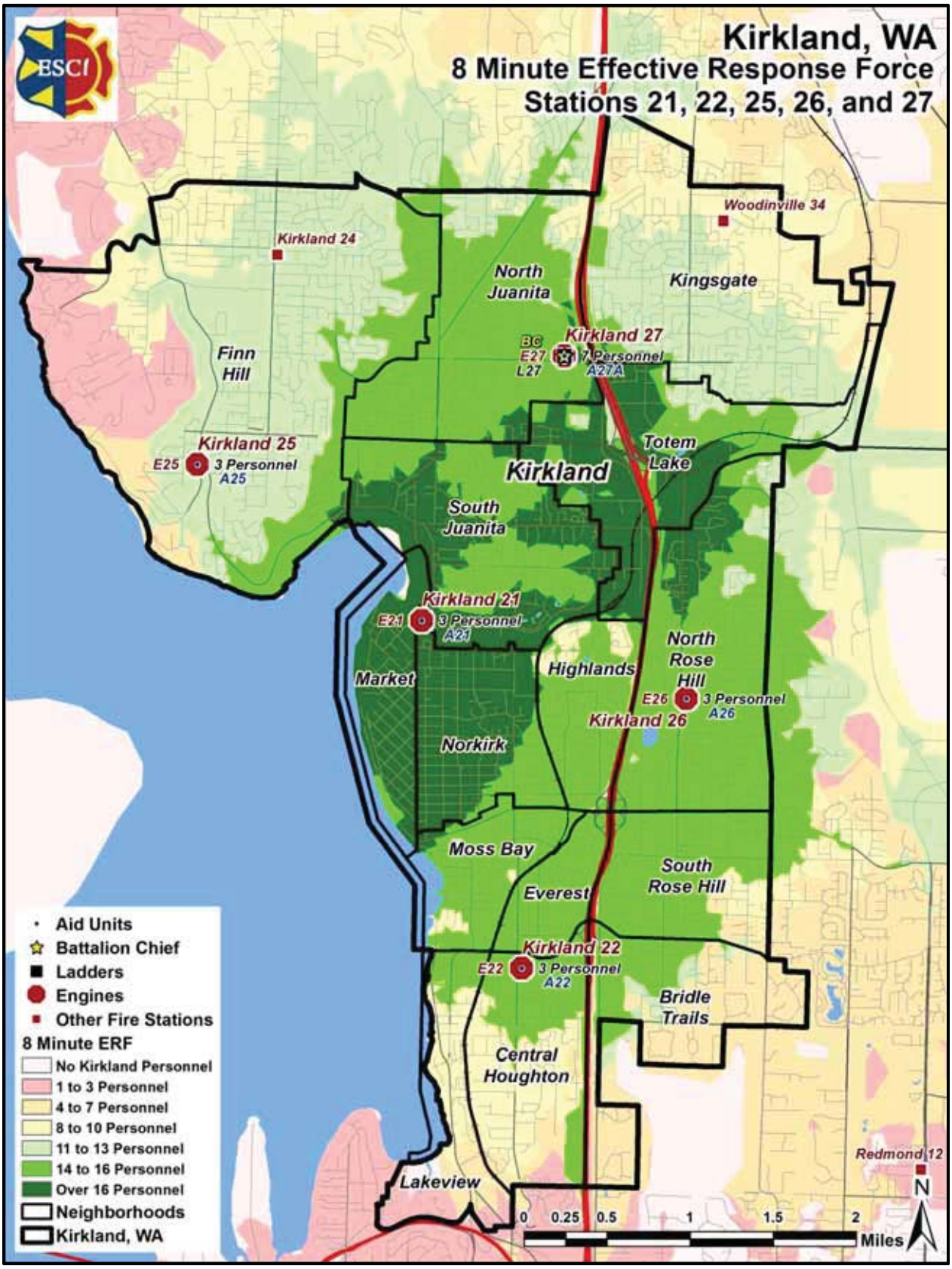


***New map requested.**

There are small pockets of area in the City that require longer than four minutes of travel time to reach. The largest area is in the northwest section of Kirkland in the Finn Hill neighborhood, generally in the area surrounding Fire Station No. 24.

Where Figure **74** showed the areas of the City that could be reached from fire stations with a single fire engine in four minutes, structure fires require more than one fire engine and three personnel. A moderate risk incident involves multiple fire apparatus and firefighters. Figure 75 demonstrates the portions of the City of Kirkland and the number of personnel that can reach each given area in eight minutes of travel time or less.

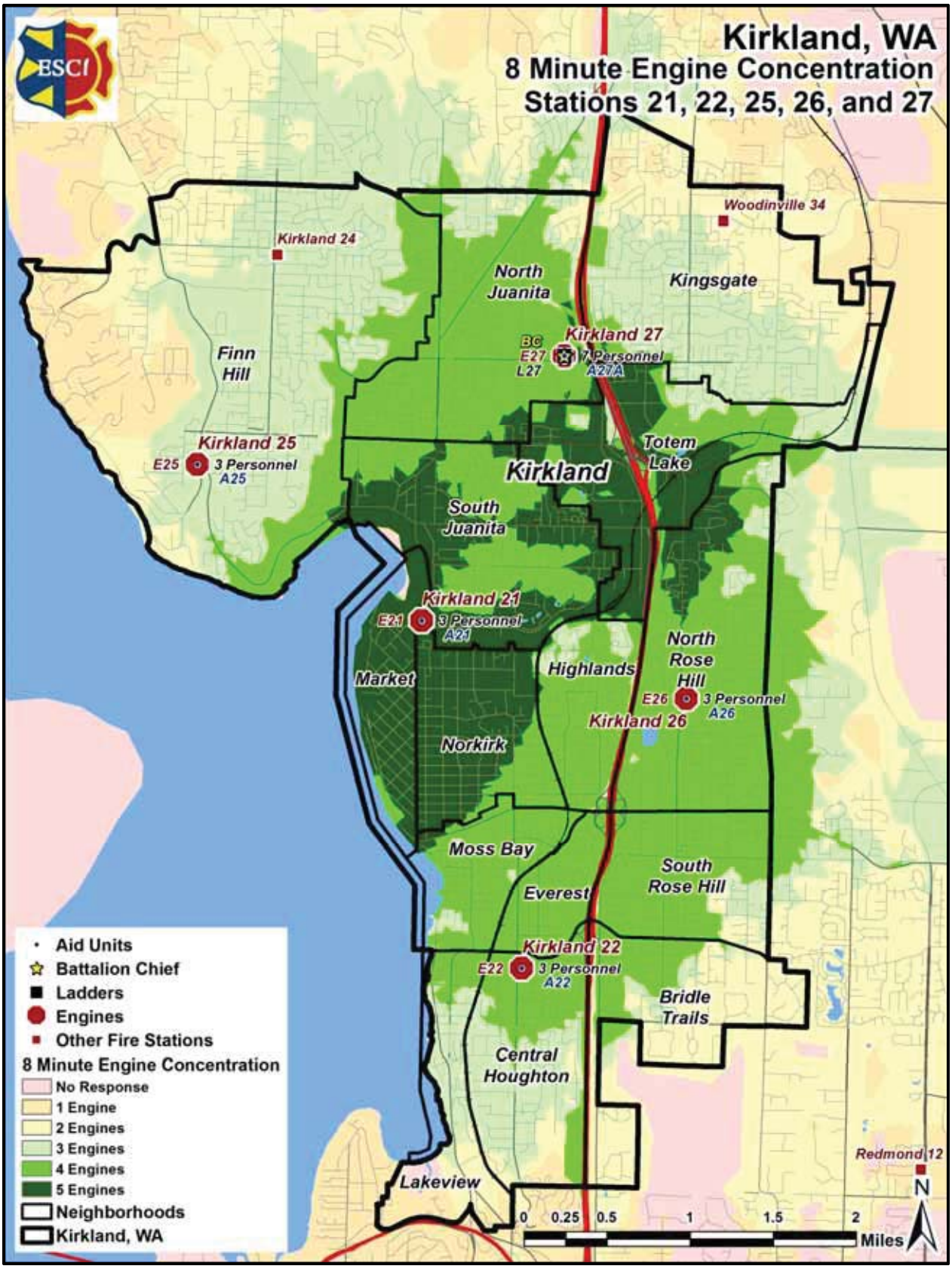
Figure 75: Eight-Minute Travel Time Concentration, Personnel



A minimum of three KF&BD personnel can reach all areas of the City in eight minutes or less travel time. Greater numbers are able to arrive in less travel time in the core area of Kirkland where fire stations are more closely spaced and in the area surrounding Fire Station No. 27 because of a higher minimum on-duty staffing for two companies. The analysis shows that in the Finn Hill and the Kingsgate neighborhoods, KF&BD can assemble ten or fewer personnel in eight minutes or less. This is true for the Central Houghton community as well. The difference being that KF&BD has automatic aid units in closer proximity to respond to Houghton. In the north of the City the travel distance for Northshore, unstaffed Kirkland Fire Station No. 24, and the closing by Woodinville of Fire Station No. 34 limit the options for outside resources to arrive in eight minutes of less.

Figure 76 illustrates the areas of the City where fire engines can reach in eight minutes of travel time.

Figure 76: Eight-Minute Travel Time Concentration, Fire Engines



All areas of the City can be reached by a fire engine within eight minutes of travel time over the existing roadway system. Those areas earlier identified as having a greater concentration of incidents in the core areas of Kirkland can be reached in eight minutes of travel time or less by up to five engines. The amount of overlapping coverage is considered to be appropriate given the number of concurrent calls for service and density of higher risk facilities.

Fire engines and aids unit respond to the majority of incidents in the City. KF&BD has two units that are more specialized and that respond to fire and larger, more complex incidents with a battalion chief and ladder truck. The battalion chief responds as the incident commander and a ladder truck for search, rescue, salvage, and overhaul tasks. Figure 77 illustrates the areas of the City where the KF&BD battalion chief and ladder truck can reach in eight minutes or less of travel time. With the ladder truck located at Fire Station No. 27, its eight-minute travel time coverage reaches to the north outside of the Kirkland city limits.

Figure 77: Eight-Minute Travel Time Concentration, Battalion Chief and Ladder Truck

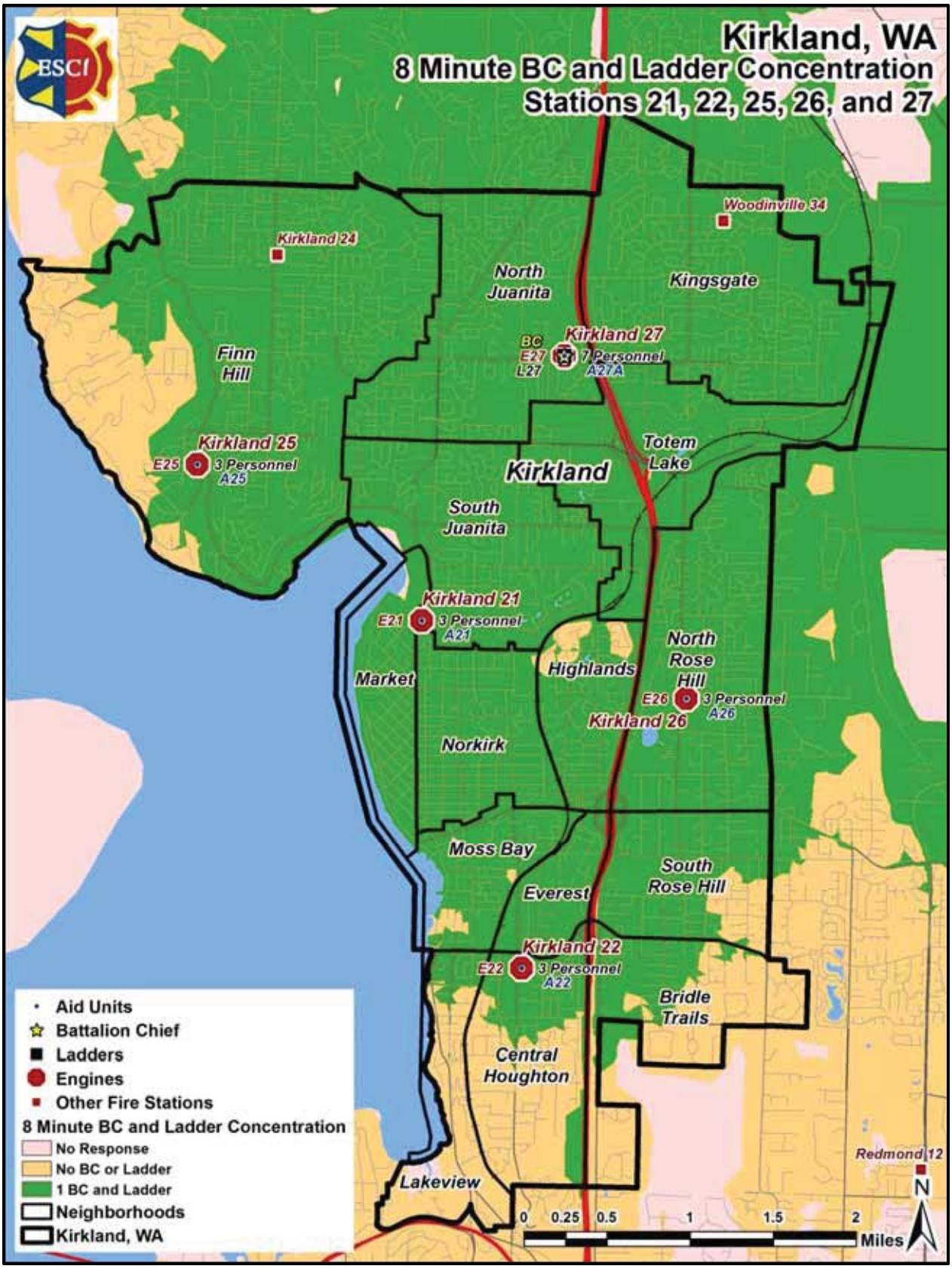
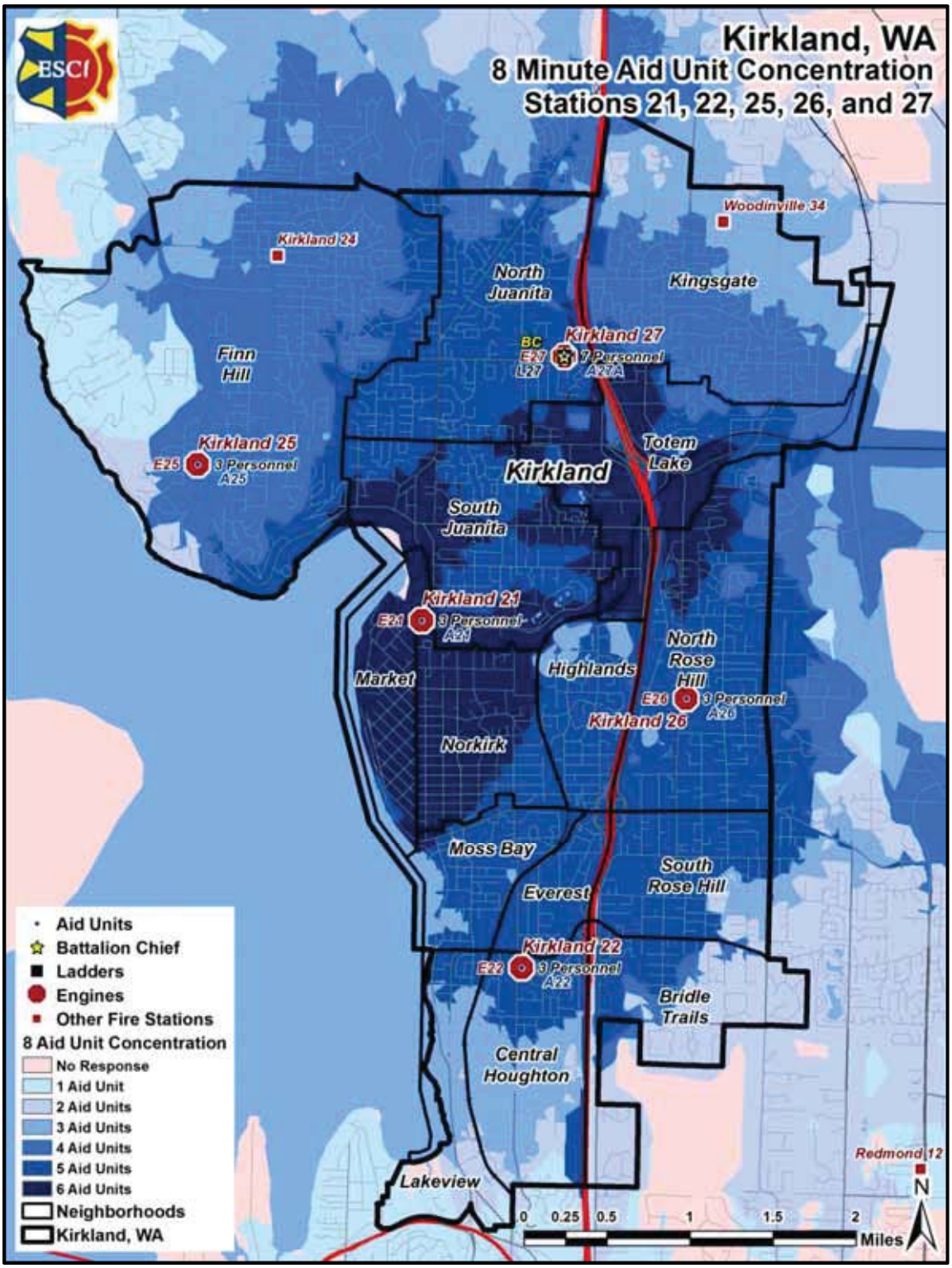


Figure 78 illustrates the areas of the City where a KF&BD aid unit can reach in eight minutes or less of travel time.

Figure 78: Eight Minute Travel Time Concentration, Aid Unit

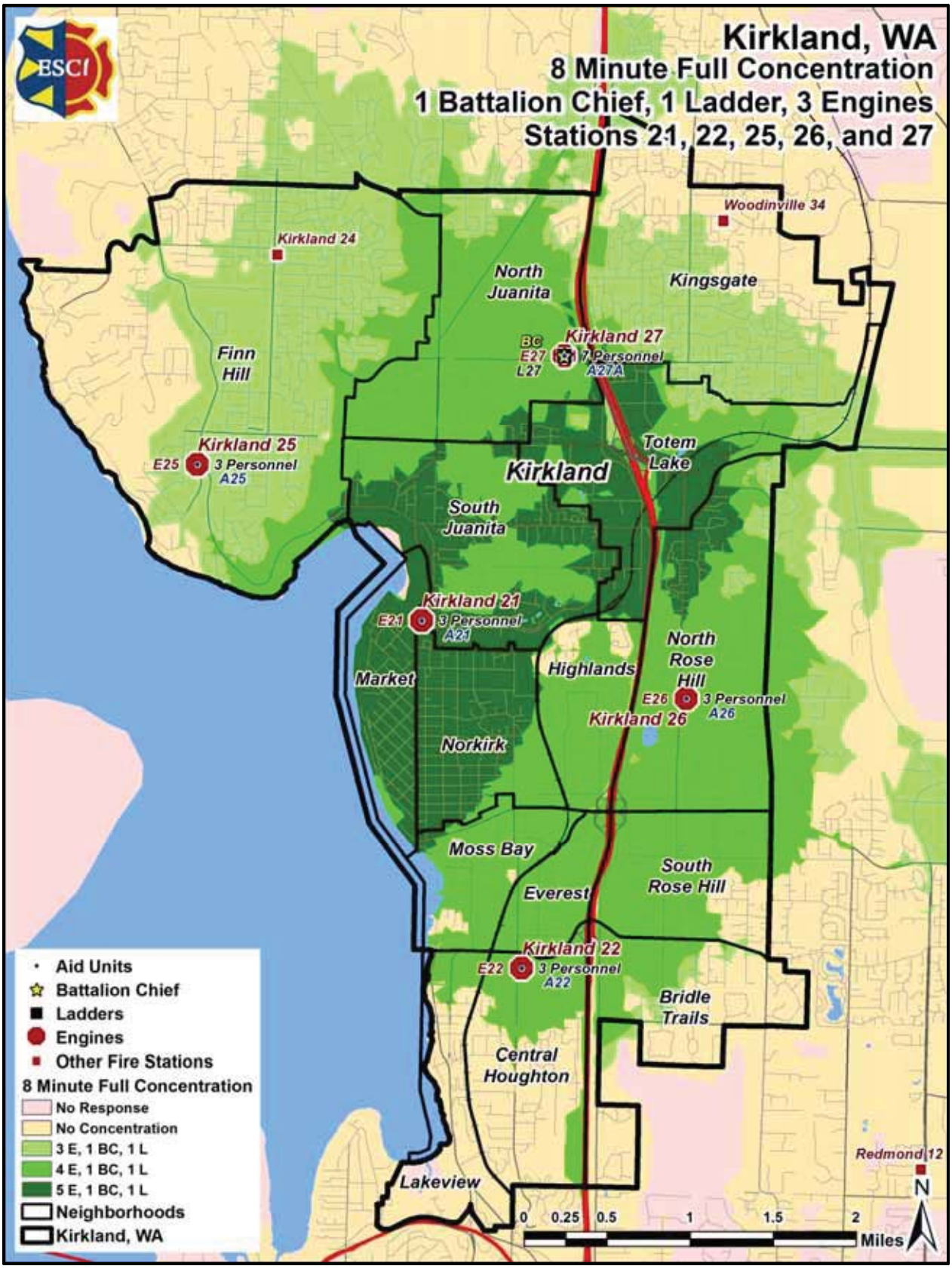


Virtually all of the City can be reached by an aid unit in eight minutes of travel time or less.[61] An eight minute travel time is used to illustrate overlapping coverage. Those areas of the City identified earlier with the greatest concentration of EMS incidents have the largest overlapping aid unit coverage. Coverage overlap is less of a concern than coverage gaps and provides the needed response units for back to back calls.

The following map displays the eight-minute travel time concentration for an ERF (effective response force). An ERF for KF&BD involves one battalion chief, one ladder truck, and three engines in eight minutes or less travel time.

[61] Response to all of the Yarrow Bay Wetlands in Lakeview is accessible in eight minutes of travel time.

Figure 79: Eight-Minute Travel Time Concentration, Effective Response Force



Fire Station (Siting) Relocation

KF&BD has adopted total response time objectives of:

- Five (5) minutes and thirty (30) seconds for the first fire engine to arrive when responding to a fire suppression incident (90) percent of the time
- Five (5) minutes for the first emergency medical unit with at least two (2) Emergency Medical Technicians to an emergency medical incident (90) percent of the time

Included in the total response time is the call processing time interval for the communications center of sixty (60) seconds and a turnout time of sixty (60) seconds. ESCI used four minutes of travel time to gauge which geographic areas of the City can be reached. Figure **74** shows the areas of the City that could be reached from fire stations with a single fire engine in four minutes, structure fires require more than one fire engine and three personnel. Most of Kirkland can be reached by an engine or aid unit in four minutes of travel time or less. The only area with longer travel times than four minutes are located in the area served by Fire Station Nos. 24 and 25.

KF&BD's fire stations are generally in the best physical locations to serve the entire City. All of the geographic areas of the City can be reached from one or more of the fire stations by an aid unit or engine in eight minutes travel time or less with a minimum of three KF&BD personnel. Fire engines and aids unit respond to the majority of incidents in the City with more complex incidents including a battalion chief and ladder truck. Some sections in the south and northwest of Kirkland are outside of eight minutes travel time for the battalion chief and ladder truck. A moderate risk incident involves multiple fire apparatus and firefighters. Figure 75 demonstrates the portions of the City of Kirkland and the number of personnel that can reach each given area in eight minutes of travel time or less.

There are options that the KF&BD can use to improve coverage to the northwest (Finn Hill) area of the City:

- Combine Fire Station Nos. 24 and 25 in a new location
- An additional (new) fire station
- Staff Fire Station No. 24 with career personnel
- Establish and maintain a shared facility with Northshore FD

Combining Fire Station Nos. 24 and 25 at a better location could result in, shorter travel time in Finn Hill and greater geographic coverage in the Finn Hill neighborhood. This would not resolve the need for a fire or EMS unit and additional personnel resources in this area of the City. There is no increase in the number of personnel available for incidents that require more than a

single unit. Either adding a new fire station or staffing Fire Station No. 24 with full time personnel is considered to be cost prohibitive. Annual personnel services cost of one full-time staffed fire engine with three firefighter/EMTs is approximately $2.5 million. Above the expenditures for personnel services are capital apparatus, administrative and support, training, and supply costs.

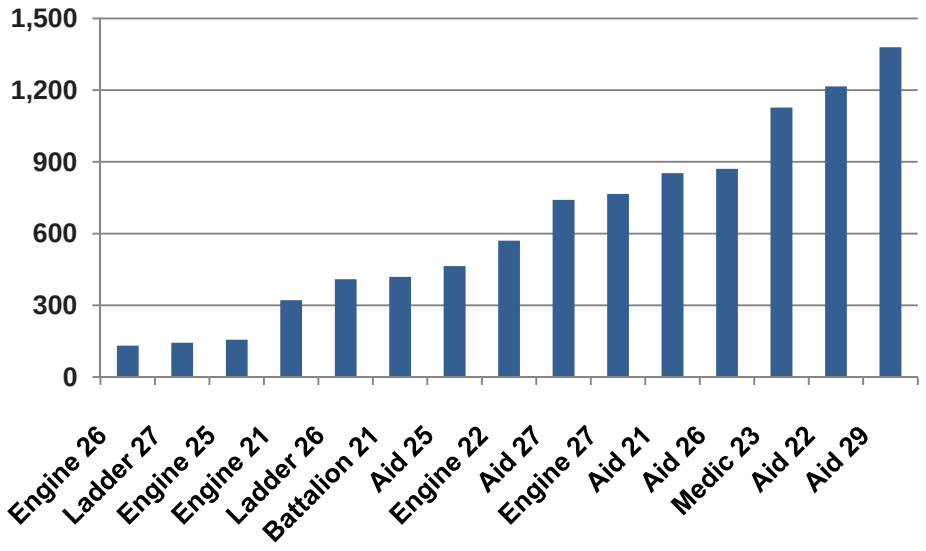
A shared or jointly staffed new facility in a location that would serve Northshore and Kirkland has benefits and cost avoidance for both fire departments. It would:

- Reduce travel time to an underserved area of Kirkland and Northshore
- Add an apparatus to an underserved areas of the City
- Add an apparatus for response to incidents requiring multiple units
- Make the total number of personnel equal to KF&BD's full alarm assignment staffing
- Cost much less than constructing a fire station independently
- Improve service demand coverage

Reliability Study

The workload of emergency apparatus can be a factor that affects overall service delivery. In the following figures ESCI examines various aspects of emergency workload for KF&BD.

Figure 80: Number of Responses by Apparatus, September 2010 – August 2011



Aid 29 had the highest number of incidents for the year studied with 1,380 responses for an average daily calls for service of 3.78. The average daily number of responses for KF&BD apparatus was 1.56, with a median of 1.27.

While the number of responses expresses apparatus numerically, it is one dimensional. Utilization is used to measure unit productivity, comparing the available hours of a resource (engine, aid unit, or ladder) with the amount of time a unit is actively involved with response activity. Measuring unit hour utilization (UHU) determines the percentage of unit hours actually consumed in productivity compared with the total available hours. Figure 81 displays the total hours and unit hour utilization (UHU) rate for KF&BD apparatus.

Figure 81: UHU (Unit Hour Utilization), September 2010 – August 2011

Apparatus	Hours	Count	UHU
Air Unit 21	36:49:36	18	0.42%
Aid 24	53:53:06	97	0.62%
Engine 26	56:58:44	131	0.65%
Ladder 27	47:29:26	143	0.54%
Engine 25	74:17:30	156	0.85%
Engine 21	148:28:57	321	1.70%
Ladder 26	158:08:42	409	1.81%
Battalion 21	158:25:58	419	1.81%
Aid 25	337:43:08	464	3.86%
Engine 22	231:16:18	570	2.64%
Aid 27	437:27:44	741	4.99%
Engine 27	293:39:34	766	3.35%
Aid 21	608:16:23	853	6.94%
Aid 26	507:19:28	871	5.79%
Medic 23	712:27:46	1,127	8.13%
Aid 22	753:23:25	1,216	8.60%
Aid 29	817:44:48	1,380	9.34%
Total	**5,992:47:47**	**10,678**	**68.41%**

Although Aid 21's call count is approximately 62 percent of Aid 29's, Aid 21's UHU is 74 percent of Aid 29's. The larger UHU indicates that on an average incident Aid 21 is committed longer per call. Aid 21's longer commitment per call appears to be related to a longer transport distance. The more extended the time on an incident the less time that Aid 21 is available for another call for service and the greater the likelihood of another apparatus having to respond.

In the next figure, ESCI summarized workload by the number of apparatus per incident.

Figure 82: Apparatus Commitment per Incident, September 2010 – August 2011

Number of Apparatus	Percentage of Calls
1	69.81%
2	22.40%
3	4.71%
4	1.12%
5	1.09%
6	0.38%
7	0.18%
8	0.03%
9	0.05%
10	0.11%
11	0.05%
12	0.01%
14	0.01%
15	0.01%
18	0.01%
19	0.01%

While the majority of incidents during the one-year study period required only one apparatus (69.81 percent), 30.19 percent of responses required two or more. Approximately 3.08 percent of the time, four or more units were engaged on a single incident. There were 17 times between September 2010 and August 2011 where ten or more emergency response units were committed to a single incident. Incidents where more than one unit is required reduce available apparatus and personnel for other calls for service. Additional apparatus often travel a greater distance and leave more of the City under protected.

Call Concurrency

Another way to look at resource workload is to examine the periods that multiple calls happen within the same period of time.

Figure 83: Concurrent Calls, September 2010 – August 2011

Call Count	Percentage of Calls
1	34.86%
2	31.34%
3	19.42%
4	8.69%
5	3.48%
6	1.50%
7	0.46%
8	0.11%
9	0.01%
10	0.04%
11	0.03%
12	0.01%
14	0.03%
23	0.01%

Incidents occurred singularly 34.86 percent of the time between September 2010 and August 2011. Nearly two-thirds (65.14 percent) of the time two or more incidents were happening simultaneously; 33.81 percent of the time, three or more. When two calls for service occur simultaneously resources are a minimum of six personnel below the number to meet KF&BD's identified 19 for an initial full alarm assignment.

Failure rate is the percentage of calls for which a unit/station is unavailable due to handling an existing call where it otherwise would have been dispatched as the primary unit. When a fire or EMS unit is unavailable to respond in its first due area there is a domino effect, in that outside resources are pulled in for coverage, thus leaving their own areas vulnerable to higher failure rates. ESCI attempted to determine the number of actual or estimated failure rates for KF&BD fire stations and individual companies from the data provided. Data was inadequate to conduct an analysis. A failure rate over ten percent will cause performance objectives at the 90th percentile to be missed, even if resource distribution keeps travel time low. ESCI recommends that failure rate by fire station and apparatus be tracked.

Response Performance

The ultimate goal of any emergency service delivery system is to provide sufficient resources (personnel, apparatus, and equipment) to the scene of an emergency in time to take effective action to minimize the impacts of the emergency. This need applies to fires, medical emergencies, and any other emergency situation to which the fire department responds.

System Reflex Time Performance

Throughout this document, certain descriptive statistical measures are used which may not be familiar to all readers. In an effort to reduce confusion or the drawing of inaccurate conclusions, ESCI provides a brief explanation of these terms below. The measures most often used which require clarification are average and percentile.

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 (mean). The average is the sum of all the data points 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.

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

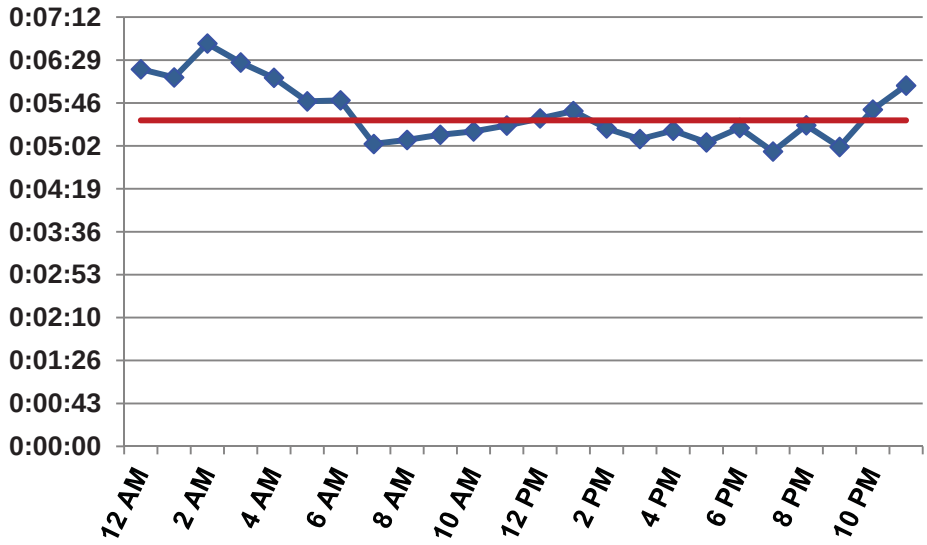
particular level of performance. This can be compared to the desired performance objective to determine the degree of success in achieving the goal.

ESCI recommends that KF&BD use fractile for benchmarking and measuring response components.

Current Response Time Performance

The following series of charts displays emergency response time performance for KF&BD from September 2010 through August 2011. Figure 84 illustrates the average response time frequency for KF&BD for the one-year period.

Figure 84: Average Response Time Frequency, September 2010 – August 2011



The most frequently recorded response time was within the 5-minute range, while the average response time was 5 minutes 28 seconds (05:28).

In the next figure, response time is summarized by incident type. Average and percentile response times are displayed (Figure 85).

Figure 85: Response Time Frequency by Incident Type, September 2010 – August 2011

Incident Type	Average	90th Percentile
Fire	0:07:40	0:11:46
Medical	0:05:18	0:08:29
Other	0:05:42	0:08:32
All	**0:05:28**	**0:08:42**

Average and 90th percentile response times in Figure 85 are for the arrival of the first unit. For fire and some EMS calls for service there is a need to have more than one unit.

Non-Emergency and Automatic Alarm Response

Included in the more than 7,000 incidents to which KF&BD annually responds are a large number of events of a non-emergency nature. Many are medical related responses while others involve automatic alarm systems that falsely report an emergency. Still others fall into a general category of incidents that, while requiring fire department assistance, are not emergent situations or are simply mistaken alarms.

In many cases it is difficult to determine whether an incident is an actual emergency event until responders arrive at the scene. In others, call screening and prioritization by dispatchers can often determine the severity of a situation, from which pre-defined response protocols dictate the number and type of response resources that will respond. The challenge becomes one of balancing the need to send sufficient resources against the importance of limiting unnecessary responses.

Fire departments have historically adopted a practice of dispatching multiple units to a call in case the event should prove to be of a serious nature. The approach is appropriate in many situations, especially those of a high-risk nature. However, appropriately limiting the number of responding units, as well as the speed with which they respond, should also be considered. Fewer responding vehicles limits costs, reduces safety risks to firefighters and the public associated with emergency vehicle response, and keeps valuable response resources available for other incidents. An alternative is to have the first fire unit respond with lights and siren and all other fire apparatus travel with the traffic flow. Upon arrival of the first unit, it is then determined if additional units are needed or if they can be released back to quarters.

KF&BD adopted response protocols are based on risk and includes a policy of a single response unit for automatic alarms that is facility specific by business type.

Emergency Medical Response Deployment

Some medical emergencies necessitate the response of a full complement of equipment and personnel. The most visible example is a cardiac arrest situation, which requires three or more responders, at a minimum, to effectively manage.

However, many other medical calls can be handled adequately by only one or two responders. The highest percentage of calls in this category is those that occur at adult foster care and nursing facilities, which are often non-emergent assistance requests. Rather than sending a fire engine and full complement of firefighters to these calls, a limited response may be in order. A number of fire departments have adopted a deployment strategy for EMS incidents that consists of a single paramedic, driving a sport utility vehicle, dispatched to lower priority calls.

The key to the success of this methodology is effective call screening and prioritization by 9-1-1 operators that are trained in MPD (Medical Priority Dispatch) protocols. Properly applied, these procedures have proven to identify those calls that warrant a higher level of EMS response as contrasted to those that may be adequately managed by fewer responders.

Automatic Fire Alarm Response Deployment

Automatic fire alarms are commonly found not only in high risk commercial buildings, but in private homes, small commercial occupancies and construction sites. The alarms are activated by smoke or heat detection devices and offer the important advantage of early notification of a fire's occurrence. Fire alarms are also prone to malfunction and false activation. The problem is particularly common at construction sites where conditions are changing continuously.

Most fire departments experience a high percentage of false automatic alarm activations and the need to respond to them. Deployment decisions are made based on various factors including the type of building use and level of risk exposure, particularly to loss of life. While historic practices have been to dispatch a complete fire response assignment to alarms in preparation for a worst-case scenario, current trends are toward moderation of the deployment practices.

Criteria can be established that identifies risk levels and related factors with which response decisions are made. The approach may be to send a full complement of units but limit which, if any, travel with lights and sirens (code 3). Alternatively, only a single unit may be assigned to assess a situation. In some instances, it may be appropriate to simply have a single responder go to the address to evaluate the conditions. Recently, a fire department in Nevada made the decision to withhold response to automatic fire alarms entirely absent "visual verification" of a fire by someone at the location. The practice has been expectedly controversial and is offered only as an example of one approach. Another fire department has recently implemented a telephone verification procedure. The practice requires that fire alarm monitoring personnel attempt verification of an emergency by telephone within 90 seconds of receipt of the alarm and

prior to relaying the call to the 9-1-1 operator. If verification cannot be obtained, a normal response is dispatched.

Other Incident Types

In addition to the above examples, a host of other non-emergency situations are presented to fire departments on a daily basis. Although these are minor in nature, they often warrant some kind of action, and may include odor complaints, pet related problems, smoke detector issues, or back yard burning complaints, to name but a few. Like automatic alarm and EMS responses, practical decision-making needs to be applied regarding how and if the fire department is going to respond to these events. Appropriate protocols can be developed regarding many of the call types, and the responders themselves should be empowered to make deployment decisions when warranted.

In conjunction with call screening and prioritization by dispatchers and modified response for automatic alarms is development and adoption of an alarm ordinance. In an effort to reduce false alarms, the City of Kirkland Police Department developed the *False Alarm Reduction Program*. To operate an alarm system on any premise within the City of Kirkland individuals must register the system. This applies to both monitored and non-monitored security systems. Application information indicates that permit information includes fire alarms while the municipal ordinance and deterrents are applicable only to police response to security alarms. An option for the City is to expand the ordinance to include response to false, malicious, or repeat fire alarms. ESCI recommends that Chapter 21.35A of the Kirkland Municipal Code be expanded to include response by KF&BD to repeat false of malicious fire alarms.

Future Service Demand

ESCI completed a needs assessment of the KF&BD based on future system demand projections as developed through an analysis of population growth projections, service demand projections, and a summary community risk analysis. The process of forecasting growth within the KF&BD service area begins with an overview of current demographics. Data from the U.S. Census Bureau, City and County comprehensive plans, County and the Puget Sound Regional Council growth allocations were used in this section of the study.

KF&BD emergency services while not meeting its stated response time objectives is doing a good job of serving the fire and EMS needs of the City. The information that follows is beneficial in understanding where changes can be made to bring the fire department closer to their response goals.

People and Households

At the time of incorporation in 1905, the City of Kirkland's population was approximately 530.[62] A chronological history of the City's population for 100 years is shown in Figure 86.

Figure 86: City of Kirkland Population History, 1900 – 2000

Census Year	Population	Percent of Change
1900	264	—
1910	532	101.52%
1920	1,354	154.51%
1930	1,714	26.59%
1940	2,084	21.59%
1950	5,718	174.38%
1960	8,541	49.37%
1970	15,249	78.54%
1980	18,779	23.15%
1990	40,052	113.28%
2000	45,054	12.49%

The City of Kirkland consolidated with the neighboring town of Houghton on July 31, 1968, to form one city. Kirkland annexed the neighborhood of Totem Lake in 1974 and the neighborhoods of South Juanita, North Rose Hill, and South Rose Hill in 1988. The annexation in 2011 caused a dramatic population increase to an estimated 80,505, up from 49,620 in 2010. The most recent ten-year history of Kirkland's population from 2001 and 2011 is shown in Figure 87.[63]

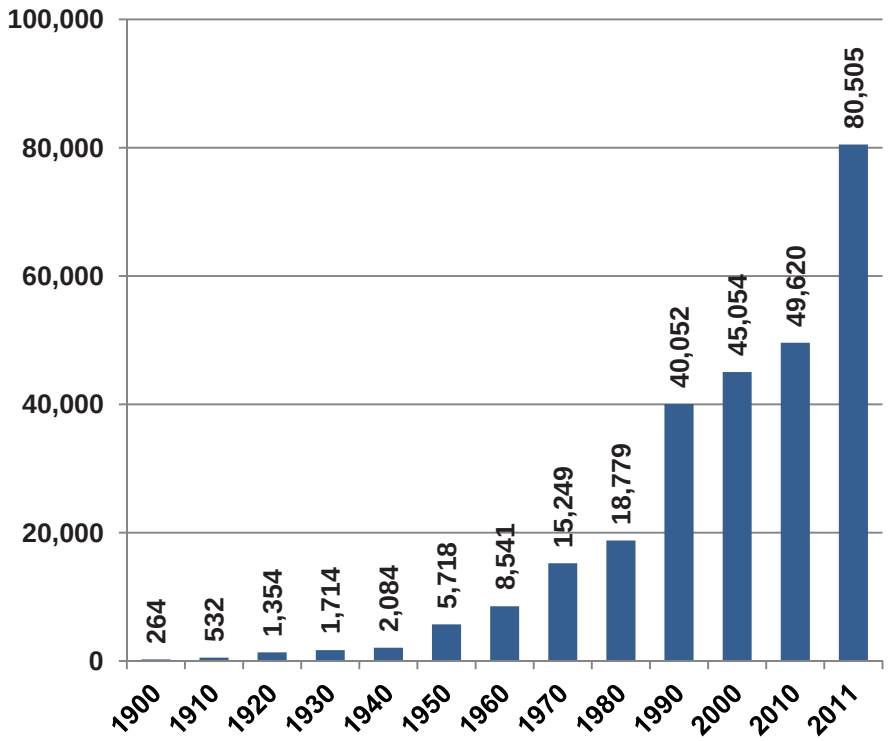
Figure 87: City of Kirkland Population History (Table), 2001 – 2011

Year	Population	Percent of Change
2001	45,770	—
2002	45,790	0.04%
2003	45,630	-0.35%
2004	45,800	0.37%
2005	45,740	-0.13%
2006	47,180	3.15%
2007	47,890	1.50%
2008	48,410	1.09%
2009	49,010	1.24%
2010	49,620	1.24%
2011	80,505	62.24%

[62] Ibid.
[63] Ibid.

Figure 88 is the entire population history for the City of Kirkland from incorporation in 1900 to 2011.

Figure 88: City of Kirkland Population History (Graphic), 2001 – 2011



Dramatic increases in population coincide with consolidations and annexations. Consolidations and annexations include:

- In 1968 Kirkland consolidated with the town of Houghton (July 31, 1968)
- Annexation of the neighborhood of Totem Lake in 1974
- Annexation of the neighborhoods of South Juanita, North Rose Hill, and South Rose Hill in 1988
- Annexation of the Juanita, Finn Hill, and Kingsgate neighborhoods in 2011

Prior to the annexation of 2011, KF&BD was already providing fire and EMS to King County FD #41. While the annexation added three areas to the City of Kirkland, only the properties from Woodinville (Fire District #36) and Redmond (Fire District #34) involved an increase in service area. Figure 89 gives a historical perspective of the population of the City and three areas that were annexed in 2011.

Figure 89: KF&BD Service Area Population, 2008 – 2011[64]

Year	2008	2009	2010	2011
Kirkland	48,410	49,010	48,787	49,020
Fire District #41	25,309	25,622	25,506	25,585
Fire District #36 (Woodinville)	0	0	0	5,835
Fire District #34 (Redmond)	0	0	0	397
Population Served	**73,719**	**74,632**	**74,293**	**80,837**

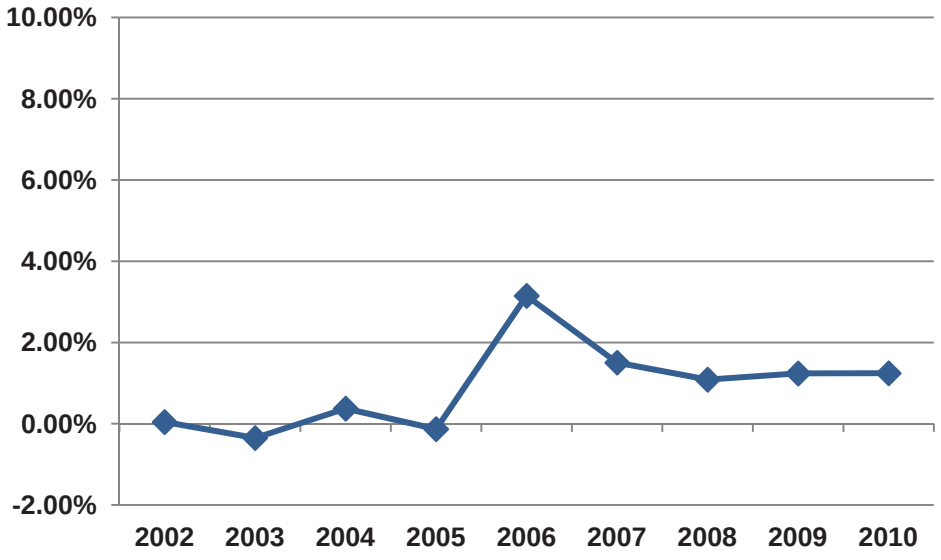
The next table shows the total population in 2010 and 2011 of the areas annexed to Kirkland in 2011.

Figure 90: Annexation Area Population, 2010 – 2011

Date	Population
As of April 1, 2010	31,718
As of April 1, 2011	31,816

Between 2001 and 2011 Kirkland's population has increased over 75 percent; 62 percent of the population increase occurred in 2011. A visual presentation of the annual percent of population change from 2001 to 2010 is shown in Figure 91.

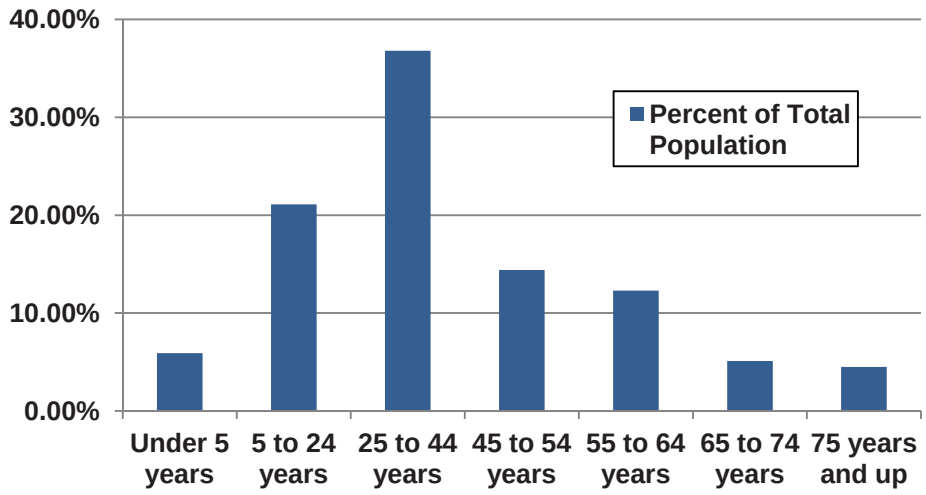
Figure 91: Annual Percent of Population Change, 2002 – 2010



[64] 2010 data as of April 1, 2010, Washington State Office of Financial Management. Population data in 2008 and 2009 is an estimate based on Kirkland population trends for the same years and 2010 and King County FD #41 population estimate of 25,506.

The following chart (Figure 92) distributes the population into age groups based on the census information for 2010.

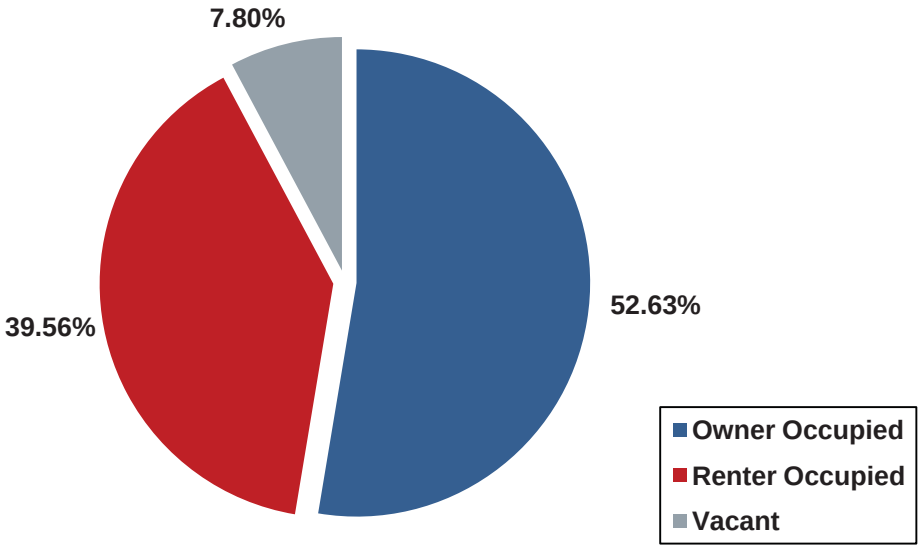
Figure 92: Population Distribution by Age, 2010



Approximately 9.6 percent of the population is 65 years of age or older and 5.9 percent of the population is under 5 years of age, placing a total of 15.5 percent of Kirkland's population in the target age groups that pose the highest risk for fatalities in residential fire incidents.

The composition of housing is one indicator of levels of service demand. Areas with higher housing vacancies and rental property (outside of seasonal resort and higher educational institutional areas) correlate with higher demands upon the fire department and emergency services in general. The following chart details housing by occupancy for Kirkland.

Figure 93: Housing Occupancy Status, 2010



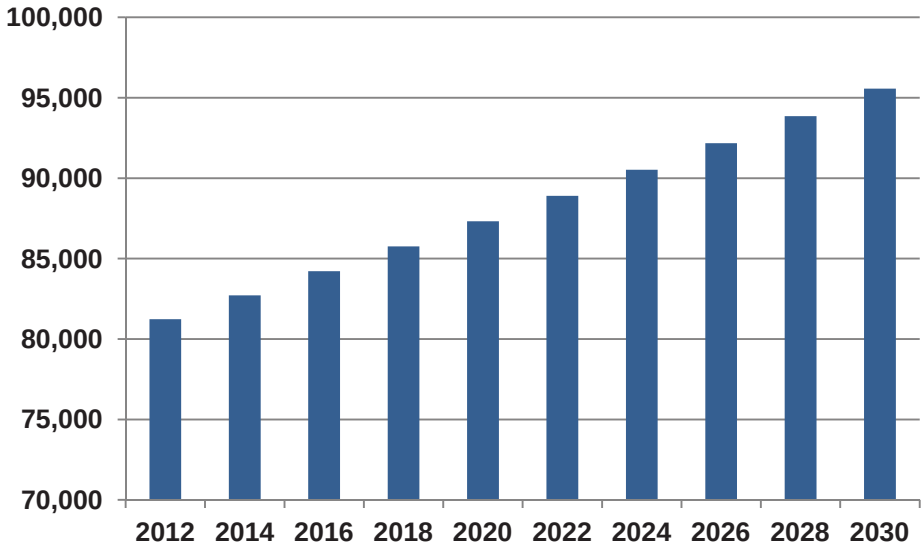
Approximately 53 percent of the housing units in Kirkland are owner occupied. By comparison, 55 percent of King County and 58 percent of Washington homes are owner occupied.

Population Growth Projections

An interpretation of census and community development data was used to develop a population forecast for the City of Kirkland. As indicated earlier, the population of Kirkland increased significantly in 2011. Information received from local planning officials indicates that they anticipate additional growth, albeit at a much slower rate than previously experienced.

ESCI typically develops a forecast based on several years of census experience. In the following figure, ESCI uses historical Census data for 2000 through 2010 for Kirkland to create a mathematical forecast from 2010 through the year 2030. The historical growth was applied to Kirkland's total population following the annexation that occurred in 2011.

Figure 94: Kirkland Forecast Population, 2012 – 2030



The mathematical projection shows Kirkland and KF&BD's service area population growing to 95,563 people in 2030. This is a nearly 19 percent increase in the population of Kirkland, which represents an annual increase of 0.91 percent. While census-based population projections provide a mathematically based estimate of future population based on historical data, 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.

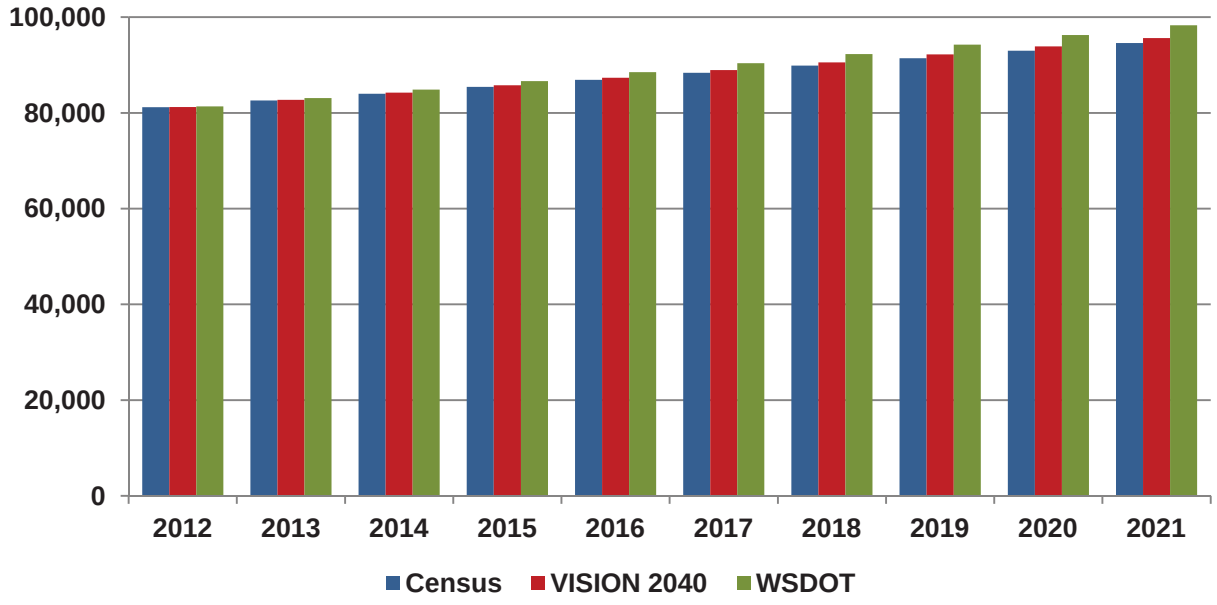
The 2003 Kirkland Community Profile Projected Target Population in 2030 at 62,086[65] and the City of Kirkland 2011 – 2012 Final Budget Document lists a population of 86,000 in 2020.[66] Kirkland has surpassed the target population and is nearly at the forecast population in the City's current year budget document. These forecasts of population were based on assumptions that have changed since the annexation of June 2011.

The Washington Department of Transportation (WSDOT) forecasts population growth for King County of 25.56 percent between 2000 and 2030, an average annual population growth of 0.85 percent. King County's annual population forecast by WSDOT of 0.85 nearly mirrors Kirkland's ten-year (2000 – 2010) annual population growth of 0.91. Estimates of population growth for King County based on VISION 2040 for the 40-year planning period is 42.3 percent; an annual rate of 1.06 percent.

[65] Population forecast is based on the 2022 Growth Management Planning Council housing targets.
[66] Ibid.

Figure 95 compares the Washington Department of Transportation population projection for King County, the ten-year historical Kirkland population growth, and the annual average growth from VISION 2040 from 2012 to 2030.[67]

Figure 95: Population Forecast Comparison, 2012 – 2030



It is not the intent of this study to be a definitive authority for the projection of future population in Kirkland but rather to base our recommendations for future fire protection needs on a reasonable association with projected service demand. Since we know that the service demand for emergency agencies is based almost entirely on human activity, it is important to have a population-based projection of the future size of the community. While we can see some variation in the population projections discussed here, one thing is certain—KF&BD will continue to be an emergency service provider to a growing population, likely reaching 95,000 by 2030. Planning should begin now to maintain the resources needed to meet the continuing demand for services.

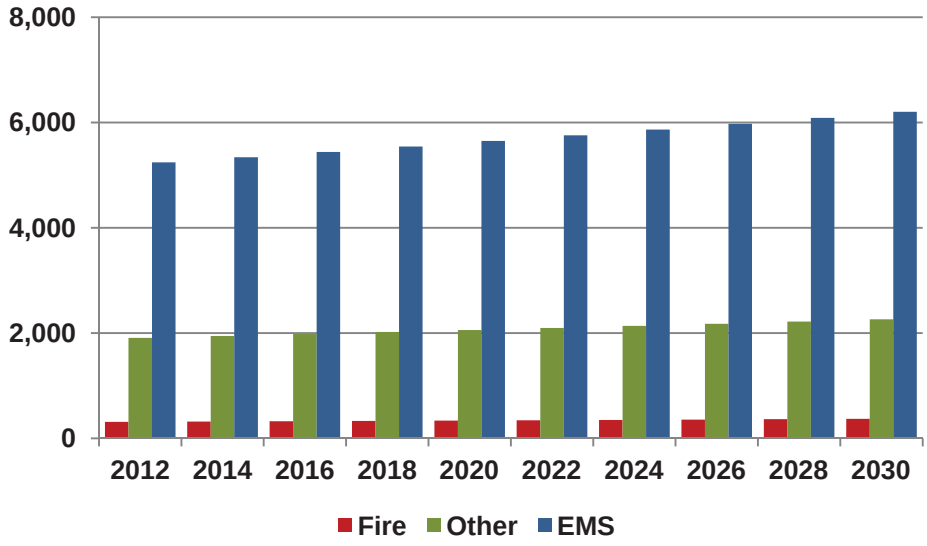
Service Demand Projections

In evaluating the deployment of facilities, resources, and staffing, it is imperative that consideration be given to potential changes in workload that could directly affect such deployment. Any changes in service demand can require changes and adjustments in the deployment of staff and resources in order to maintain acceptable levels of performance. For

[67] Note: Population forecast data did not include the annexation to Kirkland in 2011.

purposes of this study, ESCI used the average projected growth rate from three sources (U.S. Census, VISION 2040, and WSDOT) of 0.94 percent and multiplied this by a the incident rate derived from a five-year history (2005 – 2009) of incident per capita to identify potential workload through the year 2030. The results of the analysis are shown in the following chart and table.

Figure 96: Projected Workload by Incident Type, 2012 – 2030



The increase in actual fire incidents is forecast to be relatively flat during the study period, but this is a reflection of trends for fire incident rates per capita. It is believed that the trend is a result of improvements made in building codes and public fire education over the last several decades. EMS is expected to continue to be the predominate factor affecting service demand. Other emergency service calls not involving actual fires are forecast to increase in part due to the use of automatic fire alarm and water flow systems.

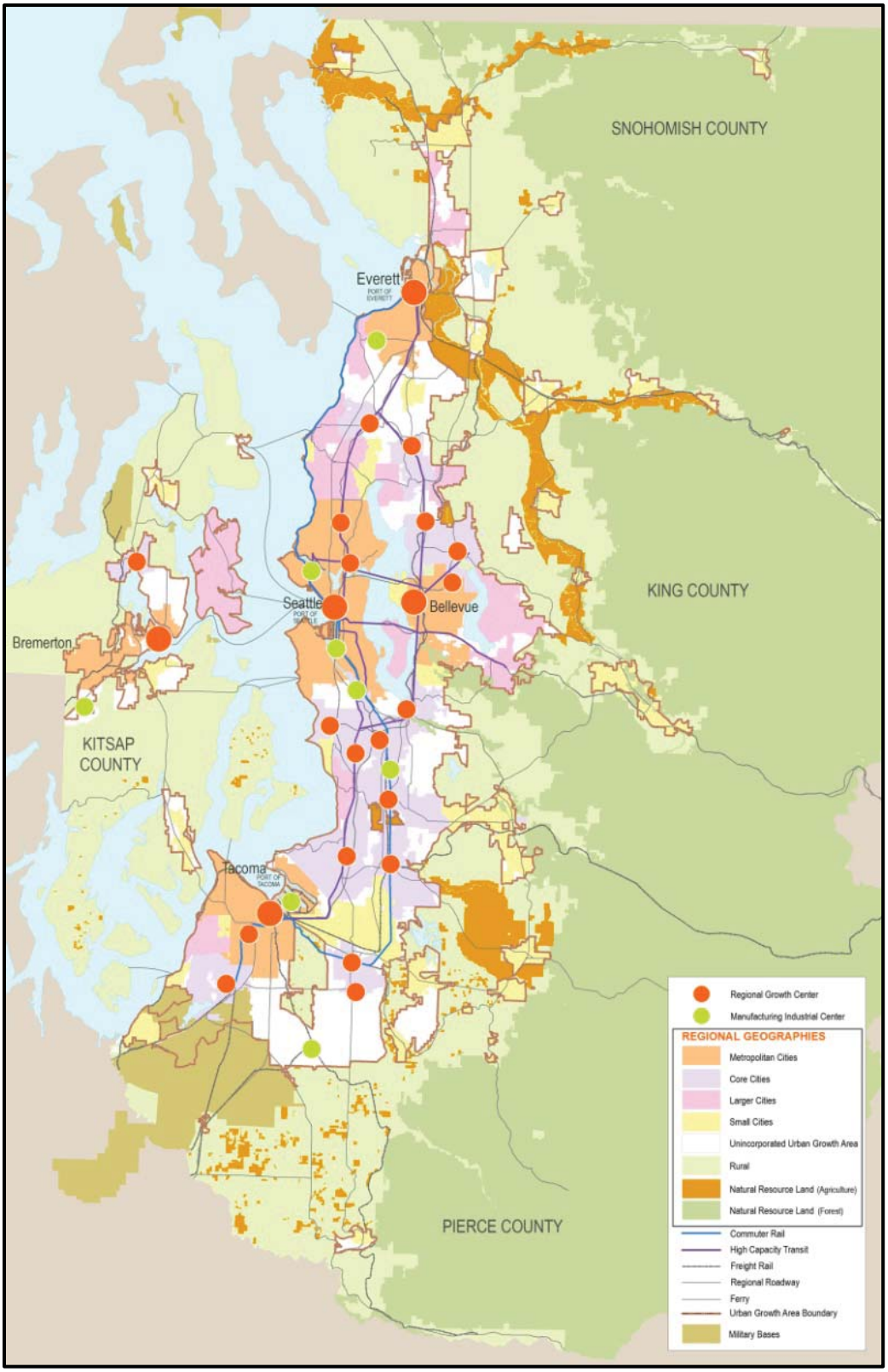
ESCI used GIS data from Kirkland and Puget Sound Regional Government and the City Comprehensive plan to examine how future land use planning and development might impact service demand for KF&BD. According to the 2009 VISION 2040 document, "King County's Core Cities are expected to accommodate a much larger share of King County's growth than Core City shares of Kitsap, Pierce and Snohomish counties."[68] A strategy in the study focuses the region's employment and housing growth into both metropolitan and core cities. Kirkland is identified as one of the regional growth centers. Core centers are intended to attract a greater

[68] VISION 2040, PSRC (Puget Sound Regional Council), December, 2009, page 14.

percentage of residents and businesses with a proximity to services and jobs, a variety of housing types, access to regional amenities, high quality transit service, and other advantages.[69] The following map shows the various growth centers in Central Puget Sound.

[69] Ibid.

Figure 97: Regional Growth Strategy for Central Puget Sound[70]



[70] Ibid.

Kirkland planning documents list:

- 7,000 gross acres of land in Kirkland
- The developable land use base excludes all existing public rights-of-way
    - There are 5,200 net acres of land in Kirkland
- Total developable land use base in Kirkland:
    - 72 percent is zoned for residential use and 28 percent is zoned for non-residential uses
    - Approximately 64 percent of the developable land use base is actually developed with residential uses
    - Since 1991, residential land uses have increased 13 percent
    - Approximately 30 percent of the developable land use base is actually developed with non-residential uses
    - Parks and open space uses account for 8 percent
    - Vacant land accounts for 5 percent of the Kirkland land use base
- Kirkland has approximately 15,266,000 square feet of existing floor area dedicated to non-residential uses. Of that developed total:
    - 4,906,000 (42 percent) are office uses
    - 3,464,000 (30 percent) are commercial uses
    - 3,349,000 (29 percent) are industrial uses

The largest percentage of commercial and industrial uses is located in the Totem Lake neighborhood and the largest percentage of office uses is located in the Lakeview neighborhood.

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.

A community's risk assessment is developed based on potential land use within its anticipated future boundaries. These potential uses are generally found in city and county development plans and zoning designations. Risk is then translated into land use maps (potential scale and type of development within geographic sub-areas) that show 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.

The following map (Figure 98) provides a view of the City of Kirkland zoning and the City's most recent adopted zoning designations.[71] This map is the officially adopted zoning record. The following map (Figure 99) is the comprehensive land use map for Kirkland with land use designations.[72]

[71] Source: City of Kirkland Department of Planning and Community Development.
[72] Ibid.

Figure 98: Kirkland Zoning Map

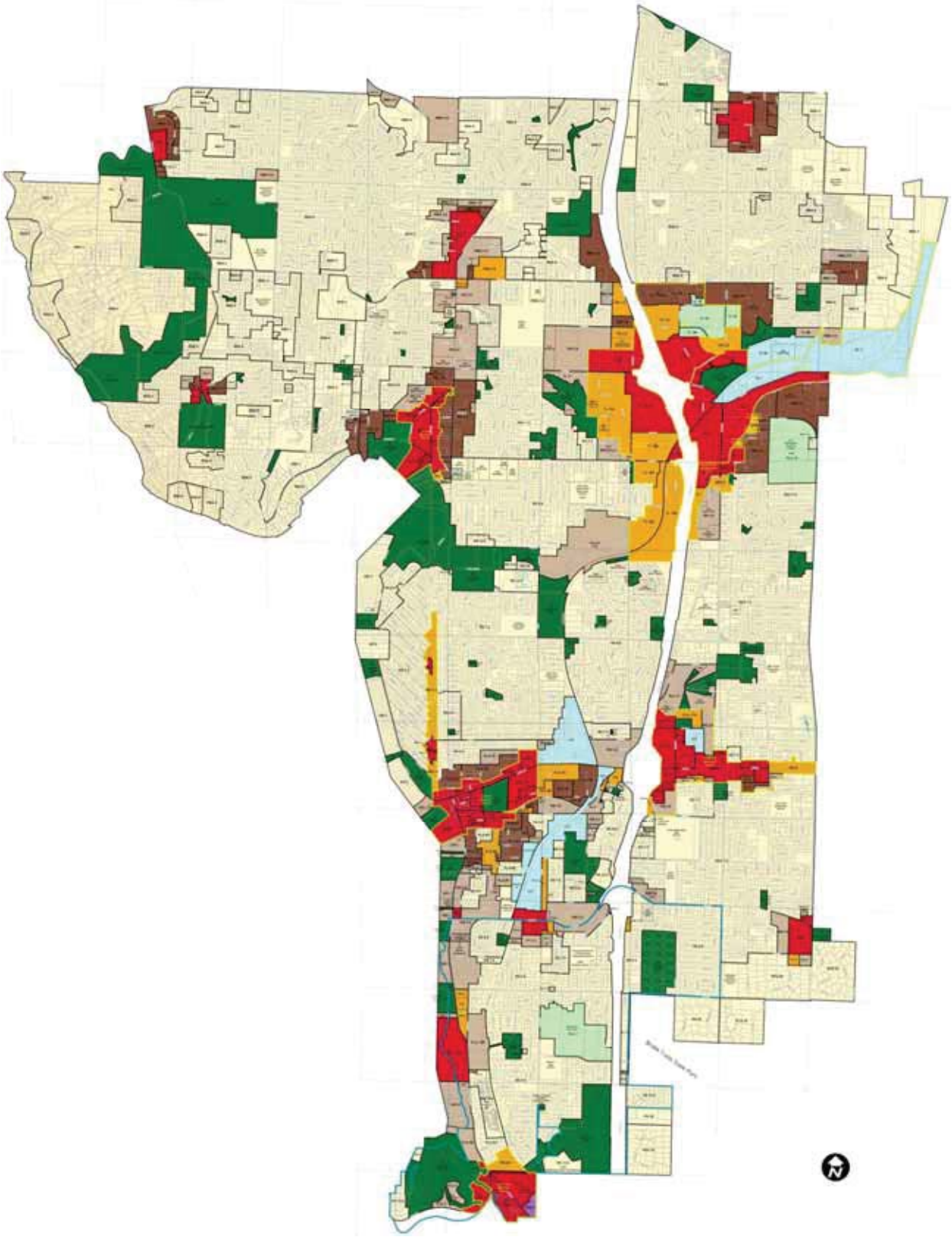
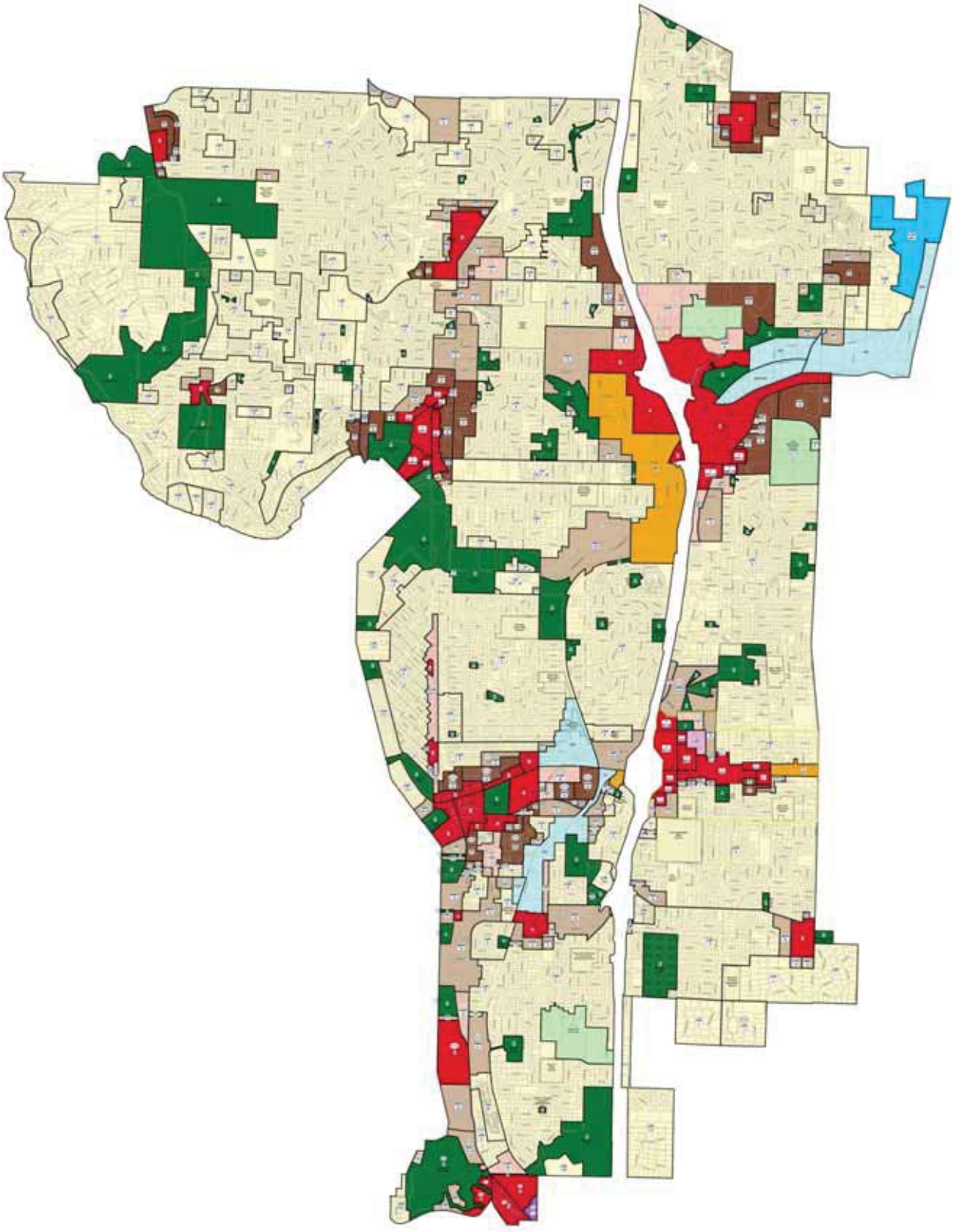


Figure 99: Kirkland Comprehensive Land Use Map



Much of the KF&BD service area (City of Kirkland) is zoned for residential use (62 percent).[73]

Figure 100: City of Kirkland Zoning Classification in Acres

Zoning Classification	Acres	Percent of Total
Commercial	1,387	12.28%
Multi-Family Residential	794	7.03%
Industrial	83	0.73%
Single Family Residential	6,185	54.77%
Park/Open Space	1,007	8.92%
Right-of-Way	1,837	16.27%
Total	**11,293**	**100.00%**

A large presence of single family residents in the area annexed to the City in June 2011 increased Kirkland's single family residential zoning from 47 percent to 55 percent.[74]

Based on information from the VISION 2040 report and City of Kirkland planning documents, development will be of higher density in the core center. Following this pattern of development ESCI believes that KF&BD will need to continue to place a heavy emphasis of resources, facilities, apparatus, and personnel in the current locations. If forecasts prove accurate, service demand will increase in the core area of the City and KF&BD will need to add response units. Additionally, KF&BD will need a new fire station to have adequate response units and personnel resources to effectively serve Finn Hill, North Juanita, and Kingsgate.

Ancillary and Supportive Services

Specialized Rescue

Like many other fire agencies, KF&BD has added a variety of specialized rescue to the main purpose of fire suppression and EMS. Specialized services include confined space, rope (high angle), trench collapse, structural collapse, vehicle/machinery, and surface water rescue. These specialized services are provided at the technician level consistent with *NFPA Standard 1670*.[75] The NFPA standard identifies and establishes the levels of functional capability for conducting operations at technical search and rescue incidents while minimizing threats to rescuers.

[73] Ibid.
[74] Ibid.
[75] *NFPA 1670, Standard on Operations and Training for Technical Search and Rescue Incidents*, 2009 Edition, National Fire Protection Association.

Rescue services are under the responsibility of the deputy chief of operations; with routine management at an incident handled by the ladder company captain assigned Rescue Team Leader. KF&BD has personnel that are trained and have the expertise to handle routine technical incidents. Larger incidents require the regional team. Most of the fire agencies in the region, including Kirkland, do not have sufficient numbers of personnel to perform all of the specialized rescue services. Specialized rescue services for larger incidents are organized and delivered regionally under terms of a regional agreement whereby rescue personnel and equipment respond cooperatively.

A zone system was established to address standard operating procedures, training, personnel and equipment standards and emergency operations issues regionally with Kirkland as the lead agency. KF&BD and their neighboring agencies belong to Zone 1. Activities in Zone 1 are managed by a technical rescue committee that reports to the Zone 1 operations chiefs. KF&BD maintains a staffing level of three on duty "ladder technicians" per shift trained to specialized rescue standards.

Training

Training Administration

One component in support of emergency response, KF&BD has a comprehensive training program for its members. KF&BD participates in the East Metro Training Group (EMTG) in cooperation with other eastside fire agencies. In stakeholder interviews conducted during the course of this project, training was viewed as one of KF&BD's most positive strengths.

While the EMTG exists as both a resource and a constraint (training initiatives must be evaluated in consideration of consistent application by the other member agencies), the training chief and training captain are responsible for administering and coordinating fire training for the KF&BD. Both training positions have administrative roles (daytime, 40 hours per week). As of the writing of this report, the incumbent training chief is set to retire and his replacement has yet to be selected. The current training chief has over 30 years of experience in the fire service and

has an Associate Degree in Fire Command/Administration and is a certified Incident Safety Officer. He has completed additional coursework from the National Fire Academy, Health & Safety Officer, Advanced Safety Operations and Management; Designated Infection Control Officer – Basic & Advanced, and Train the Trainer endorsement as an OSHA bloodborne pathogens and TB (tuberculosis) instructor.

The training division lacks administrative support staff. The EMTG has support staff since Kirkland is a participating agency. However, if Kirkland was to withdraw or the EMTG folded, support staff will be necessary to support a stand-alone training division.

Figure 101: Training Division Staffing

Position	Number of Personnel
Battalion Chief	1.00
Captain-Fire Suppression	1.00
Total	**2.00**

Training Facilities

KF&BD does not have a complete training center but has towers with standpipes, confined space and vent props (located at Fire Station No. 26), and a medium-sized classroom for didactic training. The classroom has computer projection capability and a training library. As part of the EMTG, Kirkland has use of the Bellevue Training Center facilities, which does provide the full array of training props, tower, and burn facilities. Additionally, Northshore Fire District, a recent addition to the EMTG, has a state-of-the-art training facility that is a resource for Kirkland's north end crews.

General Training Competencies

Like any other activity, training should be conducted using a comprehensive plan. The plan should include a clear definition of the goals and objectives of the training program and a schedule of training activities to achieve them. The training chief should ensure that lesson plans are developed, approved, and easily accessible; training objectives and measurements are clearly defined; and record keeping and documentation are seamless throughout the department. Frequent monitoring and mentoring of all members during training sessions by the training officers is important for continuity among companies and personnel.

KF&BD meets federal standards for National Incident Management System (NIMS) Incident Command System (ICS) certification. Homeland Security Presidential Directive 5 requires all

federal emergency management agencies to meet the federal NIMS training and certification standards and encourages compliance with these same standards for state and local governments. That encouragement comes in the form of the same training standards being the prerequisite for federal preparedness grant funding eligibility and other federal support. The standards include ICS-100 (Introduction to Incident Command System) and IS-700 (NIMS – An Introduction) for all personnel who are involved in emergency management, regardless of discipline or government structure. The OEM coordinates NIMS training activities.

Those with operational field responsibilities are required to obtain certifications consistent with their expected field responsibilities. Such responsibilities include ICS-200 (Basic Incident Command System) for supervisory personnel, ICS-300 for battalion chiefs and ICS-400 for staff chiefs expected to fill command and general staff positions. While not required, IS-800 is a key certification for fire department command staff and city management staff expected to make critical policy decisions on behalf of the city during a declared emergency or disaster. It is also valuable for field personnel, who must understand how local plans relate to the National Response Framework during incidents of national significance. Further guidance can be found in the NIMS Training Program, located on-line through FEMA's National Integration Center.

Department fire operations should follow industry best practices in conjunction with the training division. However, training is a support function for operations and should therefore take its cues from the Operations Division. Training should establish goals and objectives and a master calendar laying out a multi-year plan in order to meet the needs of the Operations Division.

Training personnel have the responsibility of managing the EMS training schedule, including the OTEP (Ongoing Training Evaluation Program). A BLS (Basic Life Support) instructor is assigned to each KF&BD crew to handle the responsibility of managing the training schedule. The Redmond Fire Department provides cardiac arrest training to KF&BD. Redmond instructors use the "Sim-Man" (training simulator mannequin) two to three times per year and perform medical incident chart review and develop EMS training based on identified educational gaps.

To better assure quality emergency scene performance, training should be based on established standards of practice. KF&BD recently decided to use Fire Engineering as its primary resource for standards and training materials. Fire Engineering's Firefighter I and II curricula meet industry standards and are consistent with best practices. Minimum performance

thresholds (competencies) must be identified in writing and disseminated to all personnel with regular testing and evaluating performance and as reinforcement.

Recruit Training

Training for KF&BD's new hires is outsourced to either the Washington State Training Center in North Bend or Bates Technical College in Tacoma. Previously there have been joint academies conducted with the Northshore and Bellevue fire departments. If the EMTG becomes a formalized consortium, recruit academies could be run concurrently with the participating agencies in a more cost efficient manner. If the EMTC does not happen, sending recruits to another agency, as is currently the practice, is the second most efficient method of providing Washington State minimum standards skills training. Additional KF&BD organization-specific training is required to augment initial recruit training received at Bates or North Bend.

Training Procedures, Manuals, and Protocols

KF&BD has not developed an agency-specific training manual. ESCI recommends that KF&BD defer addressing this gap in favor of a combined EMTG training manual. A training manual is an important "deliverable" for a training consortium, but only in the context of a formalized agreement. In the absence of a collaborative training manual, KF&BD should develop its own training manual.

Training Methodology

KF&BD currently provides manipulative skills training, task performance based training, and multi-company and multi-agency drills. There is no established minimum number of training hours an individual or company is required to receive. Night drills occur infrequently. Lesson plans are developed as the need occurs, and there are no company or individual training evaluations performed. Battalion chiefs may perform evaluations at their sole discretion. KF&BD uses training objectives for activities, but goals and purpose statements for objectives need to be developed further and refined.

Department physical standards are established on an individual basis, using general calisthenics as a measurement. Individuals are rewarded with time off for their ability to complete tasks related to department physical standards.[76] Physical tasks involve an individual

[76] The Employer and the Union agree to abide by the Physical Fitness Policy outlined in Kirkland Fire Department Directive 3.016 dated December 6, 2007, or as modified and agreed upon by the Employer and the Union.

running 1.5 miles, performing 75 push-ups, 150 sit-ups, and 20 pull-ups. Fire suppression personnel are provided time for fitness and exercise activities during the on-duty work day.

Training Record Keeping

Most of the KF&BD's training records are recorded and maintained on a web-based records management system (RMS) called *FireTime*™. Reports can be produced from *FireTime*™ by individual, category (or type of training), and number of hours. Recordkeeping for company level training activities is not currently maintained. Company level training activities integrate fire incident pre-fire planning of community target hazards (locations with the potential for large loss of life or property).

Opportunities for Regional Partnerships

Most fire departments today are recognizing the need to look for ways in which they can work together more effectively. The motivation to do so is generally driven by a combination of factors, including deteriorating financial conditions and a recognition of the importance of increasing effectiveness and efficiency simply in the interest of quality service delivery.

The following section provides an overview of the various concepts that are applied to identifying and analyzing partnership opportunities. Prospective strategies are listed and explained in context as they may apply to the KF&BD.

Most public agencies are experiencing a period of transformation which has been accelerated by recent financial declines. Rapid economic change in virtually every sector of the nation is driving increasing demand for more collaborative and sophisticated fire and EMS protection. Many fire departments that have existed virtually unchanged for decades today find themselves challenged to anticipate and provide acceptable emergency service delivery with progressively constricting revenue.

As communities that are in close proximity to each other grow, their economies and emergency service demands become progressively more interdependent. The notion of cooperative service delivery is not a new one and has been undertaken in private industry for many years. Public providers of emergency services have sought ways to work more closely together only in relatively recent years and to a lesser extent. Those that have been reluctant to work together and have instead held to independent and territorial practices are being forced by new economic challenges to reconsider their outlook.

Compounding the impact of the economic downturn experienced in 2008, numerous states like Washington have experienced a public service funding crisis brought on by tax limitation laws or other policy shifts that squeeze the ability of communities to unilaterally finance and manage needed change. Even those rare communities not directly experiencing a funding crisis are pressured by residents and others to lower cost, increase service, and operate more efficiently.

Beyond financial considerations, it has become clear that rather than autonomous service delivery by stand-alone entities, emergency response needs are often more effectively met by a larger, regionally based, fire protection agency. This is because the successful outcome of an emergency is highly dependent on the rapid mobilization of significant numbers of personnel and equipment. Regionalized fire protection strategies inherently have the ability to field greater numbers of emergency workers and equipment while capitalizing on economies of scale in management and oversight.

Today, fire departments are sophisticated and indispensable channels for all forms of emergency service, including natural and man-caused disaster management, fire and accident prevention, and pre-hospital care. In the process, the role of many fire agencies has transformed to regional emergency service providers.

Combining fire and EMS service delivery providers by way of merger, consolidation or any of the many other available approaches is frequently viewed as a cost saving initiative. While financial advantages are often realized, ESCI's experience had been that savings are usually modest when smaller agencies pool their resources because the economies of scale found when large organizations are merged do not exist. However, what is gained when small agencies cooperate is significant in terms of increased efficiency, long-term cost avoidance, and depth of resources.

Processes for Collaboration

The potential efficiencies to be gained by pursuing cooperation between agencies can be described on a continuum. Identified partnering strategies fall in a range, from remaining autonomous to the creation of a new organization encompassing multiple or all of the agencies.

To comprehend the opportunities for cooperative efforts, a basic understanding of the available methods for collaboration available is necessary. The information we provide here should be considered for what it is—a primer regarding the legal aspects of collaborating public agencies. At the point where City policymakers have decided to pursue any of the cooperative efforts, the

advice of legal counsel should be sought in order to ensure that the appropriate procedures are followed.

A method used frequently in Washington is for government units to legally partner through the use of an ILA (Interlocal Agreement). Other methods of collaboration include consolidation, merger, contracting, or the formation of a Regional Fire Authority. The movement toward more intergovernmental cooperation in the delivery of emergency service goes by many names, including unification, regionalization, consolidation, alliance, and merger.

General Partnering Strategies

The various partnering strategies are described, beginning with a do-nothing approach and ending with complete consolidation into a new emergency service provider. The following alternatives will be evaluated and discussed:

- Complete Autonomy
- Administrative Consolidation
- Functional Consolidation
- Operational Consolidation
- Legal Unification or Merger
- Regional Fire Authority Creation

Complete Autonomy

This is a status quo approach in which nothing changes. While often viewed negatively, in some cases the best action is no action. In this case, KF&BD and its neighboring agencies simply continue to do business as usual, cooperating with and supporting each other as they do today, but with no change to governance, staffing or deployment of resources. Current collaborative practices are not altered.

This approach carries with it the advantage of being the easiest to accomplish as well as maintaining the independence of the organizations and local control. The currently elected city councils or boards continue to oversee their individual agencies as their electorates' desire, without the complication of considering the views of a different constituency. It creates the least stress on the organizations and does not necessitate reorganization. What it lacks is long-term commitment and the virtues that can be gained in terms of increased efficiency that is realized in a cooperative service delivery environment.

In today's environment, taxpayers typically hold their elected officials accountable for delivering a quality level of service at an affordable rate and expect creative thinking to solve problems or achieve those ends. While "maintaining the status quo" is easy and involves the least amount of impact, it may well be one of the riskier decisions to make politically.

Administrative Consolidation

Under an administrative consolidation, agencies remain independent of each other from a governance standpoint, but they blend some or all of their administrative functions. The result is often one of increased efficiency in the use of administrative and support personnel. Overhead costs are typically reduced and duplication of efforts is eliminated.

The advantages of such a model include cost savings by eliminating administrative duplication; a gradual alignment of otherwise separate operations under a single administrative head; less resistance to change by the rank and file in the operational elements than other consolidation options; and singularity of purpose, focus, and direction at the top of the participating organizations. This strategy lends itself well to a gradual move toward a single, consolidated agency where differences in attitude, culture and/or operation are otherwise too great to overcome in a single move to combine.

The disadvantages include potential conflicts in policy direction from the governing bodies; potentially untenable working conditions for the fire chief ("one man, two bosses"); and increased potential for personnel conflict as separate employee groups vie for dominance/supremacy.

An administrative consolidation is most effective in larger organizations where duplication exists and workload assignments can be re-aligned to gain efficiencies.

Functional Consolidation

A functional consolidation maintains separate agencies with their governing bodies and administrations left unchanged. The approach is focused primarily on the response agency's programs as opposed to its operations or administrative composition. It may be applied to nearly any program or practice and is commonly applied to training, fire prevention, and similar programs that are of a common interest and need for the participating agencies.

The initiative is often found to increase efficiency and make better use of limited resources. Advantages of elimination of duplication and more effective use of resources are often realized. Direct cost savings may be limited; however, long-term gains can be anticipated.

Functional consolidations require a greater collaboration between agencies than other partnering strategies and independence and autonomy are reduced in the areas of consolidation to some extent.

Operational Consolidation

An operational consolidation strategy takes the next step in the continuum of closer collaboration development. In this case, all operations are consolidated under a single organization that serves all partnering agencies. The organizations remain independent agencies from a legal standpoint; but from a service delivery perspective, they operate as one.

An operational consolidation, accomplished through a written agreement between the agencies, requires a significant commitment toward a full consolidation and is usually undertaken as a segue toward integration. The level of trust required to implement operational consolidation is very high, since independence and autonomy have been willingly relinquished in favor of the preferred future state of a complete integration.

The advantages of this form of consolidation are that the greatest opportunity for efficiency is typically in the operational element where the expense is greatest and the level of trust and cooperation required to make this strategy successful implies a near-readiness to take the next step to full consolidation.

The disadvantage is that administrators and policy-makers must share power and gain consensus where they once had unilateral authority to control and implement.

Legal Merger

While this partnership is not directly applicable to Kirkland, it is offered as information as to the other possibilities that exist for some of KF&BD's neighbors. A merger is a complete integration of two or more fire districts into one and requires a vote of people in each affected area. Each is absorbed into and becomes part of the other agency(s). For multiple fire districts to merge, some cease to exist (merging agency or agencies) and one becomes the surviving entity (merger agency). The employees and volunteers of the merging agencies are transferred to the merger agency, and the elected positions are either eliminated from the merging district or

brought into the merger district through an agreement to re-configure the composition of the board of directors.

Tax rates become a key factor in a merger. In this case, the taxing authority of the surviving agency may be applied to the entirety of the newly merged district. However, while the taxing authority is expanded, the board of commissioners of the new district chooses whether it will levy the full taxing authority to the constituents of the district or some lesser amount based on identified needs and the willingness of the voters to agree.

Regional Fire Authority Creation

To establish a new, singular agency, an alternative to a merger is the formation of a Regional Fire Authority (RFA). An RFA is a new entity whereby all participating agencies fall under the new structure with a new tax base, a new operational plan, and a new legal framework. An RFA requires an affirmative vote from the citizens in each jurisdiction.

An RFA is established by the formation of a Planning Committee charged with establishing the RFA Plan, which specifies how the Authority will be funded, operated and governed. The Planning Committee is comprised of three elected officials from each participating agency, assuring equal representation. Most successful RFAs have established formal steering committees composed of a wide variety of stakeholders to determine the feasibility of creating an RFA far in advance of forming the actual Planning Committee.

Legislation passed in Washington State in 2004 provided the ability to establish Regional Fire Authorities.[77] Since that time, numerous RFAs have been created in the state with a high degree of operational success. Benefits that fire departments have experienced with an RFA are in line with the needs of the KF&BD.

Cooperative Effort Strategies

Moving forward from the discussion of overarching cooperative concepts, specific strategies are identified by which KF&BD might develop cooperative practices and programs with neighboring emergency service providers. The listing below is representative of potential cooperative opportunities, while not all-inclusive; it lists many that have been used successfully by other fire and EMS agencies.

[77] A summary of recent Washington legislation is found in Appendix D: Summary of Recent RFA (Regional Fire Authority) Legislation.

It is important to point out that KF&BD already has or is working towards implementing some collaborative efforts. Regardless of the existing level of implementation, we list the strategies to provide the reader with a complete picture of cooperative efforts potential.

The strategies may be accomplished with willing partners on an individual basis or they may be incorporated into various approaches to the concepts of administrative, functional, or operational consolidation detailed in the previous discussion. Each cooperative efforts strategy identified is followed by the objective(s) that may be achieved (Figure 102).

Figure 102: Cooperative Effort Strategies

Strategy	Objectives
Administration	
Conduct Joint Strategic Planning	• Enable agencies to develop a Mission, Vision, Values, and Guiding Principles that are common to the organizations. • Empower the fire departments to identify needs and establish plans to meet them, including shared organization goals and objectives.
Create a Unified Occupational Medicine Program	• Provide a fire-service related occupational medicine and health program.
Create a Unified Wellness and Fitness Program	• Provide a wellness and fitness program that promotes the improved health and well-being of personnel at all ranks. • Increase fitness levels and decrease injuries. • Reduce frequency and number of sick/sick injury incidents. • Reduce the number of days used for sick/sick injury leave.
Develop Uniform Fees for Service	• Provide participating fire departments with a uniform schedule of fees for service.
Operations	
Develop Uniform Pre-Incident Plans	• Provide a system of shared operational plans for use during emergencies and non-emergent incidents.
Implement Enhanced Use of Mutual and Automatic Aid	• Refine, enhance, and increase the application of mutual aid and automatic aid practices to improve response effectiveness.
Provide for Regional Deployment of Fire Stations and Apparatus	• Provide for distribution of facilities and deployment of personnel consistent with a regional standard of cover. • Provide consistent fire and emergency services within areas efficiently before, during, and after development.
Implement Regional Incident Command and Operations Supervision	• Provide for IC (Incident Command) supervision of emergency operations. • Provide for supervision of on-duty personnel during routine operations.
Develop Standard Operating Guidelines	• Provide guidelines for operation during emergencies and non-emergency incidents and activities.
Establish Shared Specialty Teams	• Provide specialty teams or specialty functions by allocating and distributing resources to achieve minimum cost and maximum operational benefit.

Strategy	Objectives
Provide Joint Standards for Service Delivery	• Comply with RCW 35A.92.040 Fire Departments – Performance Measures. • Establish a joint Standards for Service Delivery Policy, defining services, service levels, and response times to the 90th percentile so that adequate system planning can take place. • Develop a system-wide reporting structure to standardize the collection and reporting of relative compliance with the Standards for Service Delivery Policy.
Implement the Use of Peak Activity Units (PAUs)	• Provide special response units in areas of high incident activity and for replacement of units attending training sessions or called to cover special events.
Develop Common Deployment Standards	• Develop deployment standards that establish the distribution and concentration of emergency resources, both fixed and mobile.
Adopt/Enhance Dropped Border Response	• Improve service delivery to partnering agencies by sending the closest unit to an emergency call for service without regard to jurisdiction.
Joint Staffing of Fire Stations	• Improve initial response times in adjoining areas. • Reduce response times for additional apparatus and personnel to respond to incidents requiring multiple units. • Improve overall service demand coverage.
Expand partnership with King County Sheriff's Marine Unit	• Provide a coordinated response to marine firefighting and rescue incidents.
EMS	
Adopt Criteria-Based Dispatch	• Send the most appropriate unit to an emergency based on medical criteria established by experts in the field.
Provide for Shared EMS Supervision	• Provide a single point for training and recertification of all EMS personnel in participating organizations.
Establish System-Wide Guidelines for EMS Response	• Standardize EMS response and deployment protocols in the participating agencies.
Training	
Consolidate Training into a Single Training Program	• Eliminate duplication in training emergency responders to increase effectiveness. • Create a single unified training division.
Implement a Shared Computerized Training Records Management System	• Provide a shared and integrated training records management system (RMS).
Develop Mutual Training Strategies	• Provide purpose and direction for training program management and delivery. • Combine strengths and resources to: o Overcome current training obstacles and deficiencies o Provide a comprehensive and integrated training structure o Develop a mutually beneficial training program o Train and certify a cadre of knowledgeable and skilled emergency responders
Develop an Annual Shared Training Plan	• Provide standardized and consistent training. • Provide a well-trained emergency workforce. • Provide long-term vision and direction for training delivery.

Strategy	Objectives
Develop and Adopt Training Standards	• Adopt uniform training guidelines. • Adopt uniform certification standards.
Create a Shared Training Manual	• Provide consistent, standardized training procedures.
Develop a Shared Fire and EMS Training Facility	• Provide training facilities readily available to all partnering agencies. • Enhance the fire department's ability to develop and maintain the knowledge and skills of emergency services personnel.
Implement and Cooperatively Use a Video Conferencing System	• Provide standardized, consistent, and high-quality classroom training. • Reduce training staff hours required for curriculum delivery. • Increase in-service time of emergency response apparatus.
Fire Prevention	
Develop Joint Fire Prevention and Code Enforcement Practices	• To provide uniform fire prevention services to the region. • Reduce the threat to life or property from fire via coordinated and standardized practices.
Conduct Joint Public Education/Public Information Activities	• Provide Public Education and Public Information services regionally. • Implement the use of a shared RMS (Records Management System). • Establish a shared or common electronic Records Management System, including NFIRS (National Fire Incident Reporting System), NEMSIS (National EMS Information System), and WEMSIS (Washington Emergency Medical Service (EMS) Information System) compliant software.
Develop a Regional Fire Safety Education Coalition	• Provide for the cost effective, regional dissemination of public fire safety education.
Develop a Regional Juvenile Fire Setter Intervention Network	• Provide an effective means for intervening in juvenile-set/caused fires.
Support Services	
Develop a Joint Support and Logistics Services Division	• Develop a joint Support Services Division that promotes improved operational readiness and achieves procurement efficiencies by eliminating duplication in the acquisition and distribution of supplies. • Create a uniform set of standards for apparatus, small equipment, PPE (personal protective equipment), emergency supplies, and IS/IT services. • Develop a joint preventative maintenance and repair service program for physical assets, apparatus, small equipment, and IS/IT systems.
Develop a Single Apparatus Refurbishment/Replacement Plan	• Create a single set of emergency apparatus specifications. • Accommodate joint purchasing of emergency apparatus. • Provide for shared use of reserve apparatus. • Establish a jointly planned and managed apparatus replacement schedule.
Provide Joint EMS Supply Purchasing and Logistics Services	• Standardize supply purchases through group purchasing. • Standardize supply distribution.

Recommended Regional Regional Partnership

Of the available options for legal unification, consolidation, or partnership between KF&BD and neighboring fire and EMS service providers, ESCI considers Northshore and Bellevue fire departments to be feasible partners. Consolidation of fire and EMS into a single operational unit, either through Interlocal Agreement (ILA) or the formation of an RFA would provide increased fire and emergency service efficiency in the areas served by the current fire departments.

Functional Cooperation Recommendations

The following recommended strategies are judged as being feasible and most likely to result in significant improvement to systems and/or programs. These initiatives should be acted on regardless of action on a regional partnership.

Short-Term Cooperative Recommendations

- Develop Uniform Fees for Service
- Develop Uniform Pre-Incident Plans
- Implement Enhanced Use of Mutual and Automatic Aid
- Adopt/Enhance Dropped Border Response
- Adopt Criteria-Based Dispatch
- Develop Mutual Training Strategies
- Develop an Annual Shared Training Plan
- Develop and Adopt Training Standards
- Create a Shared Training Manual

Mid-Term Cooperative Recommendations

- Conduct Joint Strategic Planning
- Create a Unified Occupational Medicine Program
- Create a Unified Wellness and Fitness Program
- Develop Standard Operating Guidelines
- Establish Shared Specialty Teams
- Provide Joint Standards for Service Delivery
- Develop Common Deployment Standards
- Expand partnership with King County Sheriff's Marine Unit
- Provide for Shared EMS Supervision
- Establish System-Wide Guidelines for EMS Response

- Consolidate Training into a Single Training Program
- Implement and Cooperatively Use a Video Conferencing System
- Develop Joint Fire Prevention and Code Enforcement Practices
- Conduct Joint Public Education/Public Information Activities
- Develop a Regional Fire Safety Education Coalition
- Develop a Regional Juvenile Fire Setter Intervention Network
- Provide Joint EMS Supply Purchasing and Logistics Services

Long-Term Cooperative Recommendations

- Provide for Regional Deployment of Fire Stations and Apparatus
- Implement Regional Incident Command and Operations Supervision
- Implement the Use of Peak Activity Units (PAUs)
- Joint Staffing of Fire Stations
- Implement a Shared Computerized Training Records Management System
- Develop a Shared Fire and EMS Training Facility
- Develop a Joint Support and Logistics Services Division
- Develop a Single Apparatus Refurbishment/Replacement Plan

Conclusion – Fire and Emergency Medical Services

ESCI observed and through interviews determined that the hierarchal structure the KF&BD operates as intended with the building services manager. In contrast, ESCI found that in practice the fire chief is the direct report for any number of other fire department personnel and activities. Deputy fire chiefs routinely perform administrative, technician, and clerical tasks. Time devoted to activities outside of essential functions and principal accountabilities have reduced the deputy chiefs' availability to perform job critical administrative and supervisory duties. The addition of support staff allowing the two deputy chiefs to focus on administrative duties is fitting.

Given the number of FTEs dedicated to emergency operations, a minimum staffing of 19 per day, 30 personnel assigned to each shift, KF&BD's use of overtime is appropriate. Leave time use categorized as sick leave and injury is considered to be high. Some fire departments are using staffing options including the addition of a D shift. D shift is made up of personnel that work by filling vacancies on A, B, or C shifts. There is a great deal of flexibility with scheduling for the department and the individual.

The provision of Emergency Medical Services (EMS) has come to be the predominant service offered by many fire departments to their communities. EMS is expected to continue as the predominate factor affecting service demand. KF&BD is heavily invested in the BLS system. ESCI recommends that the KF&BD move forward and analyze the feasibility of providing ALS response services for Medic One. There are multiple benefits of KF&BD delivering ALS response services for Medic One in conjunction with BLS.

Capital facilities, apparatus, and capital equipment for the KF&BD constitute a large investment. Planning for remodels and the replacement of fire stations is a major capital expense and requires long-range planning. With Fire Station No. 25 (Finn Hill South) and Fire Station No. 27 (Totem Lake) nearing their life expectancy, ESCI recommends that a capital plan for the rebuild or replacement be developed. It is further recommended that KF&BD develop an internal long-term plan for funding the maintenance and replacement of capital equipment that aligns with the City CIP.

KF&BD relies on automatic aid to have adequate personnel for most fire incidents. Over the past two years, each of the neighboring fire and EMS agencies has gone through some reduction of fire stations, staffed apparatus, or personnel. To mitigate the reduction and improve coverage to the northwest (Finn Hill) area of the City, ESCI recommends that the KF&BD construct and staff a joint fire station with the Northshore Fire Department. Joint staffing of a shared new facility in a location that would serve Northshore and Kirkland would improve service in areas currently underserved by both agencies.

There are two alternative methods for KF&BD to meet the current adopted response time objectives. First, change the response time objectives to the match the response that the fire department is able to meet. Second, add facilities, emergency response units, and personnel to the department to the level that will meet the response objectives. For Kirkland to increase resources requires a large capital investment and ongoing expenditures. Capital requirements involve the addition of two fire stations, one in the Finn Hill neighborhood and a second in the southern section of the City. Each fire station would need an engine and aid unit and a minimum of six personnel per day to cross-staff the units.

Of the potential partnerships with neighboring fire and EMS service providers, ESCI considers Northshore and Bellevue fire departments to be feasible partners. Consolidation of fire and EMS into a single operational unit, either through Interlocal Agreement (ILA) or the formation of an RFA would provide increased fire and emergency service efficiency in the areas served by

the three fire departments. An ILA between Kirkland and Northshore is viewed as an interim step to an RFA. The ILA can be more quickly accomplished and allows for the two agencies to move forward on capturing the benefits of operating as a single fire and EMS provider.

ESCI developed 34 recommended cooperative efforts strategies that the KF&BD could pursue. These strategies are judged as being feasible and most likely to result in significant improvement to systems and/or programs. These strategies should be acted on regardless of action on a regional partnership.

Recommendation Summary – Fire and Emergency Medical Services

- Recommendation 45: Update KF&BD Department Manual Directive Number 3.001 to accurately reflect current daily minimum staffing level. (Implementation Order 22)
- Recommendation 46: Maintain a minimum per shift of two personnel (swing personnel) at firefighter EMT, two at lieutenant, and two at the captain rank with the qualifications and appropriate certifications to fill vacancies or step-up. (Implementation Order 24)
- Recommendation 47: Within the limits of the collective bargaining agreement use personnel at the captain and lieutenant rank to work down to fill vacancies. (Implementation Order 30)
- Recommendation 48: Periodically (annually or more frequently) review minimum staffing levels and options for filling vacancies. (Implementation Order 25)
- Recommendation 49: Periodically review sick leave and work-related injuries for patterns and opportunities to reduce occurrences. (Implementation Order 26)
- Recommendation 50: Develop an internal CIP for the maintenance and replacement of KF&BD capital equipment. (Implementation Order 27)
- Recommendation 51: Perform an energy audit on all fire stations and follow recommended energy efficiency measures.[78] (Implementation Order 35)
- Recommendation 52: Replace apparatus using a combination of age, mileage (for gas powered units), engine hours (for diesel apparatus) and condition. (Implementation Order 34)
    - If an apparatus meets age and mileage or engine hour thresholds, use the condition as the determining factor when considering replacement.
    - Condition factors such as maintenance records and cumulative maintenance costs should help determine if a unit is actually ready to be replaced.
    - If a unit has not met the age and mileage or engine hour thresholds but the condition factors are alarmingly high, consider early replacement.
- Recommendation 53: Store PPE in a separate, well ventilated room. (Implementation Order 6)

[78] Energy audits are generally provided free of charge by electric and natural gas utility companies.

- Recommendation 54: Monitor mutual and automatic aid for equity. (Implementation Order 28)
- Recommendation 55: Make upgrades to incident reporting RMS software to eliminate erroneous data entries. (Implementation Order 9)
- Recommendation 56: Track failure rate of units to respond to incidents in their first due area by fire station and apparatus.
- Recommendation 57: Expand Chapter 21.35A of the Kirkland Municipal Code to include response by KF&BD to repeat false of malicious fire alarms. (Implementation Order 21)
- Recommendation 58: ICS training is currently at the federal minimum. Department minimum should be IS-100, IS-200, & IS-700 and IS-800b for all response personnel, and IS-300 & IS-400 for all chief officers. (Implementation Order 23)
- Recommendation 59: Create a formal mentoring program to develop for officers to use with subordinates. (Implementation Order 31)
- Recommendation 60: Formalize the East Metro Training Group via an interlocal agreement between participating agencies, with Kirkland Fire & Building Department as a permanent member. (Implementation Order 7)
- Recommendation 61: Identify training competencies in writing, teach, train, test, and evaluate personnel regularly by the training division in concert with shift battalion chiefs. (Implementation Order 8)
- Recommendation 62: Develop a consistent program for training hazardous materials technicians. (Implementation Order 32)
- Recommendation 63: Dedicate a reserve engine to the training division, preferably a unit that can be shared by agencies. (Implementation Order 22)
- Recommendation 64: Develop a joint recruit academy with other members of the EMTC. (Implementation Order 29)
- Recommendation 65: Maintain the practice EMTC recruit training or use the practice of sending recruits to either Bates or North Bend, augmented with agency specific training. (Implementation Order 10)
- Recommendation 66: In the absence of a combined EMTG training manual, KF&BD should develop its own training manual, preferably in concert with the other members of the EMTG. (Implementation Order 20)
- Recommendation 67: Refine and expand goals and purpose statements of training objectives. (Implementation Order 11)
- Recommendation 68: Establish a minimum number of annual training hours an individual or company is required to complete. (Implementation Order 19)
- Recommendation 69: Conduct at a minimum two night drills per shift per year that involve all fire suppression personnel. (Implementation Order 18)
- Recommendation 70: Develop lesson plans for core competencies requiring instructors to follow plans when instructing. (Implementation Order 14)
- Recommendation 71: Establish a minimum requirement for annual company and individual training evaluations. Include shift battalion chief involvement in annual evaluations. (Implementation Order 5)

- Recommendation 72: Include company level training activities by subject in the RMS. (Implementation Order 16)
- Recommendation 73: Integrate pre-fire incident planning of community target hazards in training activities. (Implementation Order 17)
- Recommendation 74: Refine and expand goals and purpose of training objectives. (Implementation Order 13)
- Recommendation 75: Jointly construct and staff a new fire station with Northshore FD. The fire station should be located in an area to serve the Finn Hill neighborhood and Northshore FD. (Implementation Order 3)
- Recommendation 76: Develop a comprehensive evaluation program to assess all aspects of the EMS system. (Implementation Order 12)
- Recommendation 77: Provide Advanced Life Support services within the City of Kirkland via the King County Medic One program. (Implementation Order 1)
- Recommendation 78: Participate in the King County Medic One Community Medical Technician (CMT) pilot. (Implementation Order 2)
- Recommendation 79: Modify the EMS response protocol of sending three responders to medical incidents. Redeploy with dedicated staffing of two-person aid units, or single person quick response unit for low priority EMS incidents. (Implementation Order 3)
- Recommendation 80: Expand the current partnership with the King County Sheriff's Marine Unit and the Seattle Fire Department to provide a joint, coordinated response to marine firefighting and rescue incidents. (Implementation Order 4)
- Recommendation 81: Develop a capital plan for the rebuild or replacement of Fire Station No. 25 (Finn Hill South) and Fire Station No. 27 (Totem Lake). (Implementation Order 33)

Accountability and Reporting

Emergency Services Standards

Institutions have long used professional member associations and accreditation to establish a level of professionalism. Groups like the JCAHO (Joint Commission on Accreditation of Healthcare Organizations) for hospitals, WASC (Western Association of Schools & Colleges) for higher education, and CALEA (Commission for Accreditation of Law Enforcement Agencies) for police agencies are but a few. Accreditation is also seen as a way for member groups to provide a standard of excellence and a forum for collaborative industry efforts.

Likewise, the IAFC (International Association of Fire Chiefs) functions as the key professional organization of the fire service. The IAFC was founded in 1873 on the recognized need to provide standards across the fire protection industry for equipment and practices (such as standard hose and hydrant threads). That pursuit continues today, represented by the IAFC's active partnership with other organizations to form the CFAI (Commission on Fire Accreditation International).[79] The CFAI accreditation program grants accreditation to fire and emergency service agencies upon the successful completion of a comprehensive self-assessment and on-site evaluation. The Commission on Fire Accreditation International is:

> *…[D]edicated to assisting the fire and emergency service agencies throughout the world in achieving excellence through self assessment and accreditation in order to provide continuous quality improvement and the enhancement of service delivery to their communities. The CFAI process is voluntary, and provides an agency with an improvement model to assess their service delivery and performance internally and then work with a team of peers from other agencies to evaluate the self-assessment completed.*[80]

[79] The umbrella organization of the CFAI (Commission on Fire Accreditation International) was changed to the Center for Public Safety Excellence, Inc., in March 2006.

[80] http://www.cfainet.org/home/aboutus.asp, *Who are We?* – Commission on Fire Accreditation International website, December 2009.

Fire departments have used accreditation as a tool for continuous improvement. Accreditation is also a way to demonstrate professionalism to the community served by a fire department.

Response Time Reporting

The state of Washington adopted legislation (Substitute House Bill 1756; 2005) requiring fire departments to establish service delivery and response time standards for the major emergency response services provided by the agency.[81] The legislation, as presented below, requires a local policy declaration concerning service delivery objectives:

RCW 35A.92.040; Policy Statement — Service Delivery Objectives

(1) Every city and town shall maintain a written statement or policy that establishes the following:
- *(a) The existence of a fire department;*
- *(b) Services that the fire department is required to provide;*
- *(c) The basic organizational structure of the fire department;*
- *(d) The expected number of fire department employees; and*
- *(e) Functions that fire department employees are expected to perform.*

(2) Every city and town shall include service delivery objectives in the written statement or policy required under subsection (1) of this section. These objectives shall include specific response time objectives for the following major service components, if appropriate:
- *(a) Fire suppression;*
- *(b) Emergency medical services;*
- *(c) Special operations;*
- *(d) Aircraft rescue and firefighting;*
- *(e) Marine rescue and firefighting; and*
- *(f) Wild land firefighting.*

(3) Every city and town, in order to measure the ability to arrive and begin mitigation operations before the critical events of brain death or flash-over, shall establish time objectives for the following measurements:
- *(a) Turnout time;*
- *(b) Response time for the arrival of the first arriving engine company at a fire suppression incident and response time for the deployment of a full first alarm assignment at a fire suppression incident;*
- *(c) Response time for the arrival of a unit with first responder or higher level capability at an emergency medical incident; and*
- *(d) Response time for the arrival of an advanced life support unit at an emergency medical incident, where this service is provided by the fire department.*

[81] Chapter 35A.92 RCW (Revised Code of Washington) Fire Departments — Performance Measures.

(4) Every city and town shall also establish a performance objective of not less than ninety percent for the achievement of each response time objective established under subsection (3) of this section.

In accordance with RCW 35A.92[82] and by means of Resolution R-4673 (October 2007), the City of Kirkland formally established required service delivery objectives for fire and emergency medical response services. This action is subsequent to previously adopted response time performance standards contained in KF&BD's 2000 Strategic Plan. KF&BD does not deliver special operations, aircraft rescue and firefighting, marine rescue and firefighting, or wild land firefighting response services. As required by state law, the City established the following response time objectives for fire response and emergency medical response services.

Turnout Time Objective

KF&BD adopted turnout time objective is sixty (60) seconds, ninety percent (90%) of the time.

Response Time Objective from Dispatch Time; Arrival of 1st Arriving Engine Company at Fire Suppression Incident

KF&BD adopted response time objective is four (4) minutes and forty-five (45) seconds for the first fire engine to arrive when responding to a fire suppression incident ninety percent (90%) of the time.

Total Response Time Objective from Time of 9-1-1 Call; Arrival of 1st Arriving Engine Company at Fire Suppression Incident

KF&BD has historically measured response time from the time of the 9-1-1 call to the time the first arriving unit was on the scene. Therefore, dispatch time, plus turnout time, plus travel interval equals total response time. The total response time standard is five (5) minutes and thirty (30) seconds for the first fire engine to arrive when responding to a fire suppression incident ninety percent (90%) of the time.

Response Time Objective for Full First (1st) Alarm Response

KF&BD adopted response time objective is ten (10) minutes for the first full alarm assignment when responding to a fire suppression incident ninety percent (90%) of the time. KF&BD's first full alarm assignment to a fire suppression response is four (4) engine companies, one (1)

[82] Ibid.

ladder company, one (1) aid car, one (1) medical services officer, and two (2) battalion chiefs; a total of twenty (20) firefighting personnel.

KF&BD determined in 2000 that it would use total response time beginning from receipt of call at 9-1-1. In 2008 the State of Washington defined that total response time begins at the time of dispatch for the fire department.

Response Time Objective From Dispatch Time; Arrival of First Unit at an Emergency Medical Incident

KF&BD adopted response/travel time objective is four (4) minutes and thirty (30) seconds for the arrival of the first emergency medical (Aid) unit with at least two (2) emergency medical technicians ninety percent (90%) of the time.[83]

Total Response Time Objective From Time of 9-1-1 Call; Arrival of First Unit at an Emergency Medical Incident

KF&BD has historically measured response time from the time of the 9-1-1 call to the time the first arriving unit was on the scene. Therefore, dispatch time, plus turnout time, plus travel Interval equals total response time. The total time objective is five (5) minutes for the first unit to arrive when responding to an emergency medical incident ninety percent (90%) of the time.

Response Standards Reporting

The state of Washington legislation also requires an annual reporting process regarding service delivery and response time standards. The reporting requirements of that regulation are:

RCW 35A.92.040; Annual Evaluations — Annual Report.

(1) Every city and town shall evaluate its level of service and deployment delivery and response time objectives on an annual basis. The evaluations shall be based on data relating to level of service, deployment, and the achievement of each response time objective in each geographic area within the jurisdiction of the city or town.

(2) Beginning in 2007, every city and town shall issue an annual written report which shall be based on the annual evaluations required by subsection (1) of this section.
   (e) The annual report shall define the geographic areas and circumstances in which the requirements of this standard are not being met.
   (f) The annual report shall explain the predictable consequences of any deficiencies and address the steps that are necessary to achieve compliance.

[83] KF&BD includes thirty (30) seconds for NORCOM to receive and transmit an alarm to KF&BD.

KF&BD has routinely submitted a Response Time Objectives Report since first required by RCW in 2007. However, its most current report (2010) does not define the geographic areas in which the requirements are not being met [RCW 35A.92.040(2)(a)]. Additionally, while the report contains information entitled, "Predictable Results," this information does not explain predictable consequences and steps necessary to achieve compliance [RCW 35A.92.040(2)(b)]. The *2010 Kirkland Fire Department Response Time Objectives Report* does, however, enumerate five initiatives in response to the report's information, all of which are clearly intended to address deficiencies and improve response times.

Reporting on Response Time Objectives; 2010

A summary of KF&BD's documented emergency response time performance data and percent of the goal that was achieved by year is shown in the following figure (Figure 103).[84]

Figure 103: Response Performance by Percentage, 2007 – 2010

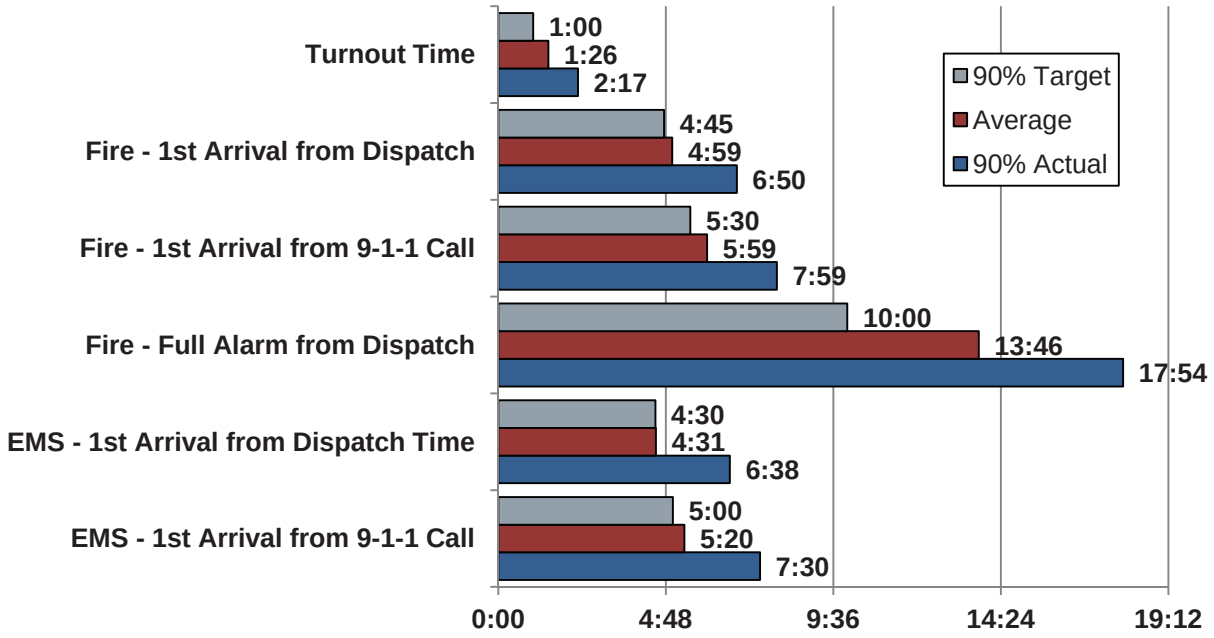
Incident Type	2007	2008	2009	2010	Target
Percent of EMS Responses under 05:00	49%	50%	48%	53%	90%
Percent of Fire Responses under 05:30	47%	53%	51%	52%	90%
Percent of Building Fires Contained to Room of Origin	41%	80%	70%	82%	60%
Percent of Full First Alarm Assignment Deployment	62%	53%	36%	17%	90%

As a general conclusion, KF&BD is meeting its stated response performance goals (including turn out time) approximately 50 percent of the time. This performance is measured against the response time objectives of five minutes (05:00) or less for EMS and 5 minutes 30 seconds (05:30) or less for fires 90 percent of the time. The percent of full alarm assignment deployments has decreased markedly from a high of 62 percent in 2007 to a reported 17 percent in 2010. One possible reason is the change in KF&BD's definition of a full response from 18 to 19 personnel in 2011. While the change in the number of personnel may be an explanation for some of the decrease it is unlikely to be the entire reason. ESCI recommends that KF&BD determine the reason for the large decrease in the percent of full alarm assignment deployments.

The following data from the *2010 Response Time Objectives Report* compares actual response time performance (90th percentile) with the target time; and also includes the average time.

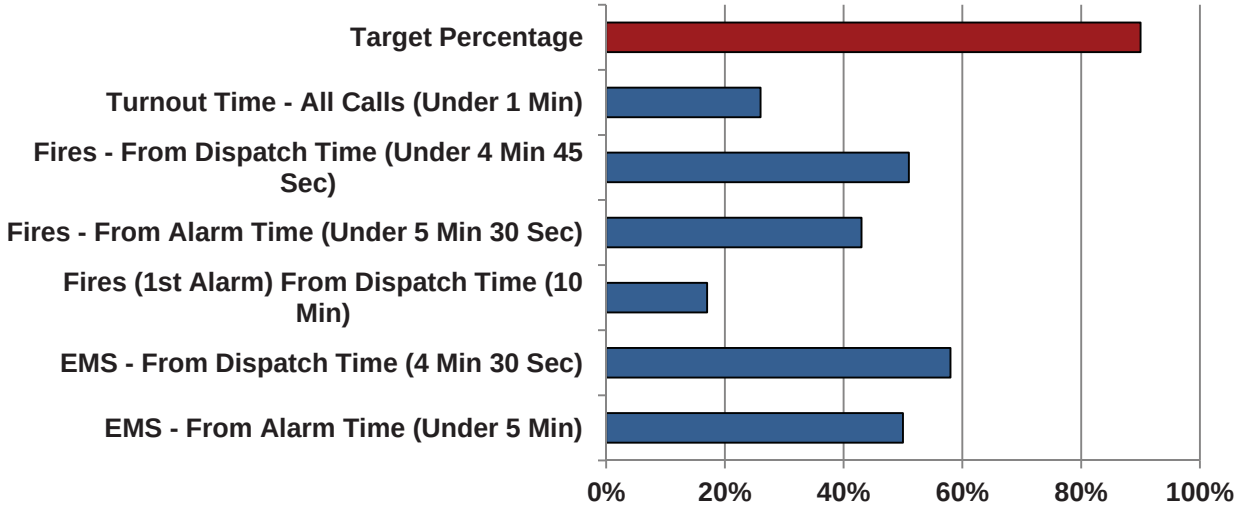
[84] Performance Measures 2010, City of Kirkland.

Figure 104: 90 Percent Targets – Actual versus Target, 2010



The following chart depicts the percentage of KF&BD responses that achieve the established response time objectives.

Figure 105: Response Time – Percent of Calls Meeting Target



KF&BD is commended for developing and maintaining significant compliance with the state's legal policy and reporting requirements. However, in the context of four years of data, KF&BD consistently has achieved its response time objectives less than 60 percent of the time. ESCI concludes that, given KF&BD's current staffing, deployment model, and service demand, the

established response time targets are not realistic. We recommend that the City of Kirkland and the KF&BD revisit the response time targets and identify values that will better reflect current ability and yet retain an incentive to continue to improve performance (Additional discussion on response objectives and performance expectations is found beginning on page 212).

Emergency Response Tiered by Geographic Composition

While service demand is forecast to remain high in areas of dense population, those areas with anticipated population and infrastructure growth will see service demand increases. Moderate call volume will continue in the more suburban areas of Kirkland. KF&BD's service area contains two basic types of communities: a densely populated area and a suburban area.

The two community types present different risks of fire incident impact as well as a varied level of service demand. Thus, each area has unique fire protection and emergency service requirements. These areas are delineated "service delivery planning zones," and are suitable for considering tiered response levels and system capacity.

It is a simple truth that the cost of fire protection and emergency services increases as the number of facilities, resources, and personnel increase. Resources are typically increased to achieve a reduced response time, faster assembly of an effective firefighting force, increased system capacity, and the ability to protect higher levels of risk. However, in Kirkland where there exists a variation in the levels of service demand and risk, it is also recognized that a single level of service delivery performance may not be appropriate.

In other words, a fire department that provides protection for a jurisdiction that is primarily dense urban residential, commercial, and industrial development may find a single service delivery performance plan to be perfectly appropriate. A department serving a community mix of dense urban areas as well as suburban areas will find this much more difficult. Were such a fire department to attempt to achieve the same level of response performance and resources for its suburban area as in the urban area, costs would be prohibitive. A smaller number of taxpayers and lower assessed valuation of the suburban portions of the City would not generate sufficient revenue to support the service. This is why many communities choose to deliver levels of service; levels that more closely match the risk and demand, as well as the expectations of the citizens.

KF&BD has not made use of service delivery zones; instead, single response standards for fire and EMS have been developed for the entire City.

Urban Response Zones

Urban Response Zones are areas with high population density and greater community risk properties, corresponding with current higher service demand levels. Projected to remain an area of high service demand, urban areas should adhere to response time objectives that consist of a large number of apparatus and personnel resources and should include some overlapping coverage for fire stations that primarily serve this area. Response time performance relies on road network and speed limit levels. While the amount of road ways in the urban zones accounts for only a portion of the total roadway miles in the City, there are hindrances to fire response capability typical in urban environments. In the urban environ more turns are necessary to arrive at a destination, reducing the ability of a multi-ton fire apparatus to maintain speed. This, along with daytime traffic, signaled intersections, and narrow streets, impede response performance potential. The urban response zones where annual service demand exceeds 500 calls per square mile are located between Fire Station Nos. 21 and 27 and northwest of Fire Station No. 22. Redevelopment and new development may cause population densities to increase to the urban level in areas of the City.

Suburban Response Zones

Suburban Response Zones extend from urban zones (usually along major arterials) and generally established neighborhoods of single family homes, recently developed, or have high growth potential. Suburban areas extend out from the Kirkland's core, along Interstate 405, and to all corners of the City. There are other pockets of residential/commercial development. The response time objective within the suburban zone can reasonably be slightly longer than the urban zone because of moderate call volume and a reduced level of community risk.

Classification of Incident Risk Types for Deployment Planning

The Community Risk Assessment identifies both fire and non-fire risks in the City and places the risk in a risk category. Risk categories include:

- Maximum Fire Risk – Hazards that require the maximum amount of fire protection resources or which could result in the greatest loss of life or property.
    - Examples: Malls, multi-story apartments, large department stores, hotels, high-rises, theaters, entertainment centers, large industrial or commercial properties and hazardous materials production facilities.
- Special Hazard Fire Risk – Hazards which if destroyed would be a critical or essential economic loss to the community. This could also include cultural, environmental, governmental, or historical loss.
    - Examples: Strip centers, hospitals or medical facilities, apartment buildings of three or more stories, governmental infrastructure facilities, and schools.

- Typical Hazard Fire Risk – Those risks most common to Kirkland.
    - Examples: Single family housing, easily accessible one and two story apartments, low risk industrial properties, and commercial properties under 10,000 square feet.
- Remote Hazard Fire Risk – Those risks most distant from other risks as to be almost unique to the City.
    - Examples: Rural land, unoccupied structures, and recreational areas, parks, etcetera.
- Non Fire-Maximum Hazard Risk – Hazards not involved with fire which require the maximum amount of fire department manpower to control or hazards which could result in the greatest loss of life or property.
    - Examples: Water plants, health care centers, large employer business facilities, power plants, chemical storage facilities and oil refineries.
- Non Fire-Special Hazard Risk – Hazards not involved with fire that could pose a special fire department manpower requirement.
    - Examples: Stadiums, auditoriums, and large recreational facilities.
- Non Fire-Typical Hazard Risk – Hazards not involved with fire which generally are typical in nature in the City.
    - Examples: Single family residences, freeways, apartments, and motor vehicle accidents.
- Non Fire-Remote Hazard Risk – Hazards not involved with fire which present a unique problem with efforts towards rescue, hazardous materials, and EMS services.
    - Examples: Railroads, canals, block parties, stadiums (soccer), malls, and lakes.

ESCI recommends that the completed risk assessment be managed by the KF&BD Fire Prevention Division. The risk assessment should be provided to all fire companies, administration and staff through an RMS, and should be updated on a predetermined schedule.

Critical Tasking by Incident Risk Type

Risk-based critical tasking and resources for structure fires is one type of incident that KF&BD responds. It should be understood, however, that today's fire departments respond to many other incidents besides structure fires, including hazardous materials incidents, motor vehicle collisions, basic and advanced life support incidents, and non-structural fires.

Critical tasks are those activities that must be conducted in a timely manner by firefighters and EMS personnel at emergency incidents in order to control the situation, stop loss, and perform necessary tasks required for a medical emergency. KF&BD is responsible for assuring that responding companies are capable of performing all of the described tasks in a prompt,

efficient, and safe manner. Figure 106 is an example of critical tasking for non-structure fire events and Figure 107 is for a motor vehicle collision with entrapment.

Figure 106: Non-Structure Fire Critical Tasking

Task	Personnel
Command	1
Pump Operator	1
Primary Attack Line	2
Total	**4**

Figure 107: Motor Vehicle Collision with Entrapment Critical Tasking

Task	Personnel
Command	1
Pump Operator	1
Primary Attack Line	2
Extrication	3
Patient Care	2
Total	**9**

ESCI recommends that field validation exercises be conducted to verify minimum staffing criteria of critical tasking. Following field validation, KF&BD may find that critical task staffing can be adjusted either upward or downward for each incident type. Additionally, some incidents may require automatic/mutual aid response to supply the personnel necessary to meet all critical tasking needs.

KF&BD will need to rely on mutual aid (preference for automatic aid) to achieve the number of apparatus and personnel needed for a high or maximum risk structure fire, hazardous materials, or technical rescue incident and incidents in outlying sections of the City. The reason for a large number of apparatus is related to equipment needs, such as air packs, hand tools, and hose lines, rather than pumping capacity. Actual apparatus and equipment needs may vary, based on incident type and magnitude.

Performance Expectations

There are time points and time intervals (continuum) that when recorded and analyzed against benchmarks become the basis for making modifications, additions, and deletions of resources. A set of time definitions includes:

- Event Initiation – The point in time when events occur that may ultimately result in an activation of the emergency response system. Precipitating factors can occur seconds, minutes, hours or even days before there is a perception that an event is occurring. For example, a person may ignore chest discomfort for days prior to making a decision to

seek assistance. Rarely is it possible to quantify the point at which event initiation occurs.

- Emergency Event – The point in time when conditions exist that cause an activation of the emergency response system. Considered the "point of awareness," it may be the recognition by an individual that assistance is needed or it may consist of a mechanical or electronic recognition of an event such as smoke or heat detector activation.
- Alarm – The point in time when the emergency response system is activated. The transmittal of a local or central alarm to public safety answering point is an example of this time point. Again it is difficult to determine with any degree of reliability the time interval during which this process occurs.
- Notification – The point in time when an alarm is received by the agency, generally at a 9-1-1 communications center.
- Alarm Processing – The time interval from the notification to the time when the dispatcher notifies the appropriate emergency responder. NFPA 1221 (2007) states that 95 percent of emergency call processing shall be completed within 60 seconds and 99% of emergency call processing shall be completed within 90 seconds (see Figure 108).
- En Route – The point in time when the responding company informs the communications center via MDT/MDC or radio they are responding (traveling out the door).
- Travel Time – The time interval from when the responding company reports en route to the arrival time on-scene at the emergency.
- On-scene – The point in time when the responding company physically arrives at the emergency site. This is applicable to fire and EMS incidents. For EMS incidents it is the point in time when patient contact is made. "On-scene" time is confirmed by the company officer notifying NORCOM via MDT/MDC or verbal confirmation via mobile radio.
- Working Period – The time interval from when the responding company arrives on scene to when the company goes back in service. This is the period when fire department personnel physically take steps to mitigate an event. This stage is dynamic due to various types of incidents, incident locations, time of day and year and emergency actions performed at the scene.
- Back In Service – The point in time when a company has mitigated the incident and is available to respond again. Units use the MDT/MDC or verbal confirmation to indicate that the company is "back in service."

Dispatch Call Processing Time Objectives

Performance standards drive the staffing requirements for dispatch agencies. Operational performance requirements are the measurement of call answering and call duration/processing, up to and including, the point of initial dispatch. To underscore the importance of performance standards, *NFPA 1221*[85] notes compliance with performance standards *"…shall be evaluated*

[85] *NFPA 1221: Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems.*

monthly using data from the previous month." NFPA 1710[86] further defines this portion of call alarm time as call ring time, call processing time, and dispatch processing time. The following chart illustrates the benchmarks for performance measurements.

Figure 108: Communication Center Performance Measurement Benchmarks

Call Ring + Call Processing + Dispatch Time		
Call Ring Time	**Call Processing Time**[87]	**Dispatch Processing Time**
The time elapsed from time call enters the dispatch center telephone switch and the time elapsed until the call is answered. (Ring Time)	The time elapsed between call answer and entry into CAD with enough information for dispatch.	Dispatch processing time is the time elapsed between the call being time stamped for dispatch and the notification to the first unit for dispatch.
NFPA STANDARD 15 seconds, 95% of the time	**NFPA STANDARD** 60 seconds, 95% of the time	
Call Answer + Processing + Dispatch ***Best Practice = 75 seconds***		

North East King County Regional Public Safety Communication Agency (NORCOM) serves as the community's public safety answering point (PSAP) for 9-1-1 calls and dispatching emergency resources including KF&BD. Data for analyzing recommended standards for call answering, call processing, and dispatching was outside of the scope of work for this project.

Company Turnout Time Objectives

Turnout time is defined as the period of time from receipt of dispatch to departure of the apparatus from its parked location. Total response time consists of three elements: alarm processing time, turnout time and travel time. Total response time can be critical to the outcome of an emergency incident. Safety considerations, traffic conditions, travel distance, and weather are examples of factors that influence travel time. KF&BD has little or no control over those factors but can control turnout time. Proper preparation and attitude are the primary elements that affect turnout time.

Different turnout time objectives are often implemented in recognition of the difference in preparation time to respond to incidents that require greater protective equipment. One

[86] *NFPA 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments.*
[87] NFPA definition for call alarm time, call processing time, and dispatch time duration, *NFPA 1710* Chapter 3, Section 3.3.37.1-3. ESCI utilizes the total call processing time, i.e. time on the phone for calculation of staffing data, and refers to this time as call duration.

standard is for the donning of PPE (personal protective equipment) for primarily EMS or non-emergent incidents. A turnout time for calls not requiring full PPE (turnout clothing), is often 60 seconds or less. For incidents with an IDLH (imminent danger to life and health) or the potential of an IDLH environment and atmosphere, the turnout time is 80 seconds or less.

Time of day has a bearing on turnout time. Turnout time when firefighters are asleep is generally longer.

Unusual circumstances may occasionally prevent an engine, aid unit, or other response company from meeting this standard. It is expected that turnout standards will be met without compromising safety during response.

ESCI recommends the following turnout standards be adopted by KF&BD:

- Turnout time for fire incidents between 0700 and 2200 hours of 80 seconds or less, 90 percent of the time
- Turnout time for fire incidents between 2200 and 0700 hours of 90 seconds or less, 90 percent of the time
- Turnout time for EMS incidents between 0700 and 2200 hours of 60 seconds or less, 90 percent of the time
- Turnout time for EMS incidents between 2200 and 0700 hours of 60 seconds or less, 90 percent of the time

Recording and benchmarking turnout time should be a regular measure of response time and service delivery.

ESCI recommends that KF&BD adopt the following total response time objectives. The following table (Figure 109 and Figure 110) details response by zone performance objectives for a two-tier response strategy for fire and EMS incidents.

Figure 109: Response Zone Performance Objectives, 0700 and 2200 hours

Modified Tiered					
Zone	**Dispatch**	**Turnout**	**Travel**	**Total Response Time**	**Percentile**
			Urban		
Fire	60 seconds	80 seconds	4 minutes	6 minutes 20 seconds	90%
EMS	60 seconds	60 seconds	4 minutes	6 minutes	90%
			Suburban		
Fire	60 seconds	80 seconds	5 minutes	7 minutes 20 seconds	90%
EMS	60 seconds	60 seconds	4 minutes 30 seconds	6 minutes 30 seconds	90%

Figure 110: Response Zone Performance Objectives, 2200 and 0700

Modified Tiered					
Zone	**Dispatch**	**Turnout**	**Travel**	**Total Response Time**	**Percentile**
			Urban		
Fire	60 seconds	90 seconds	4 minutes	6 minutes 30 seconds	90%
EMS	60 seconds	60 seconds	4 minutes	6 minutes	90%
			Suburban		
Fire	60 seconds	90 seconds	5 minutes	7 minutes 30 seconds	90%
EMS	60 seconds	60 seconds	4 minutes 30 seconds	6 minutes 30 seconds	90%

These response time objectives apply to the first due unit (engine company or aid unit). Specialty vehicles such as truck companies and hazardous materials units generally have longer response time objectives. Specialized response units are fewer in number, and typically cover a larger response area.

Reporting Frequency and Format

KF&BD has a tremendous amount of data to record, manage, and retrieve when they need it. Compiling data and information into a digestible report can be time-consuming to draft and costly to produce. What data to include in a report and the format to present information is as important as the material contained in the document. KF&BD creates reports and documentation of a large variety for internal and external use, and to meet compliance with federal and state law. Required reports and records maintained by KF&BD include:

- Incident reports
- Patient care reports
- Exposure records for blood and airborne pathogens
- Fire prevention documents
- Compliance testing
    - SCBA
    - Hose
    - Ladder
    - Pump
    - Breathing air
    - Vehicles
    - PPE (personal protective equipment)
    - Gas monitors, radiological detectors

Other reports produced by the fire department are related to specific programs or for KF&BD as a whole. These reports include:

- Emergency management quarterly
- Staff
- Performance objectives
- Annual EMS training
- Fire cause determination

Some KF&BD reports and records are produced and retained in electronic format for easier production, storage, retrieval, replication, and cost. However, other records including fire prevention inspections remain in hard copy only. The Fire Prevention Bureau is waiting for New World system to become operational. Even with an available computer system, the bureau reports that it does not have resources to enter the data.

Internal to Department

Internal reports for KF&BD should at a minimum include:

- Fire Investigation
- Fire department annual report including performance and activities
- Risk and Hazard analysis
- Standard of Cover
- EMS QA (Quality Assurance)
- Response activity

A newer tool being employed to report and display information is referred to by the coined name "Dashboard." With a dashboard a visual summary of data is displayed, generally at a high level. Dashboards are popular as they enable a manager to view several performance indicators at once.

According to an article in Businessweek "The dashboard is the CEO's killer app. A must have, making the gritty details of a business that are often buried deep within a large organization accessible at a glance to senior executives." Dashboards allow for managers to instantly view developments and trends, empowering them to make changes rapidly.

External to City Council and Community

Information needs of the City Council and community require different report formatting, data elements and distribution methods. Information that might be important internally to KF&BD

may not be relevant to other audiences. Customizing a dashboard application for City Council members to match their requests is a way to keep current data in front of policymakers. Dynamic linking to incident activity data, response times, fire inspections, financial information, and other material is possible. Some of ESCI's clients have gone to tablet devices for delivering agendas, meeting minutes, documents, and have installed a dashboard for elected officials.

ESCI recommends that KF&BD disseminate reports (information) in a dashboard display customized for the end user. With a dashboard a visual summary of data is displayed, generally at a high level and with a view of multiple performance indicators. Two sample customized dashboards for internal and external customers are shown in the appendices (Appendix H: Dashboard View Examples).

For many communities, social media websites have become common avenues for public agencies to disseminate timely topical information quickly, efficiently, and economically. The City of Kirkland has a Twitter account that is available to the fire department. Current use of Twitter by KF&BD was reported as little and often used after the fact. Other popular media websites employed by fire departments includes MySpace and Facebook.

Conclusion – Accountability and Reporting

While the KF&BD is mostly meeting accountability and reporting requirements, there is a need for improvement. The accreditation process is one way for a fire department to make certain it is covering all of the accountability and reporting bases. The process of becoming an accredited agency is a time consuming, labor intensive, costly process. Therefore ESCI has recommended that the KF&BD make accreditation a long-term item and focus on other issues first.

In the last *Response Time Objectives Report* submitted (2010), KF&BD did not define the geographic areas where requirements are not being, explain predictable consequences, or the steps necessary to achieve compliance. The report does, include five initiatives in response to the report's information to address deficiencies and improve response times. KF&BD is meeting its stated response performance goals (including turn out time) approximately 50 percent of the time. KF&BD has not developed options to improve response performance. Without action to improve response time performance, subsequent reports will include similar results.

Tools for the reporting and archiving data and information of KF&BD activities are labor intensive. This is exemplified by the number of staff hours required to capture background

information for this study. Most of the improvements to reporting hinge on deployment of the New World CAD. Efforts should be directed at the implementation of the CAD system.

ESCI recommends that KF&BD disseminate reports (information) in a dashboard display customized for the end user. With a dashboard a visual summary of data is displayed, generally at a high level and with a view of multiple performance indicators.

Recommendation Summary – Accountability and Reporting

- Recommendation 82: Develop a long-term plan to become a CFAI accredited fire agency. (Implementation Order 9)
- Recommendation 83: Define and report (Response Time Objectives Report) geographic areas where response time objectives are not being met. Include information on predictable consequences and steps to achieve compliance. (Implementation Order 7)
- Recommendation 84: Determine the cause of the dramatic decrease in the percent of full alarm assignment deployments. Develop a plan to reach the stated deployment goal of 90 percent. (Implementation Order 6)
- Recommendation 85: Adopt a two tiered response time objectives for fire, EMS, hazardous materials, technical rescue, and specialized rescue incidents. (Implementation Order 3)
- Recommendation 86: Risk assessment RMS should be managed by the KF&BD Fire Prevention Division. (Implementation Order 8)
- Recommendation 87: Develop and adopt response time intervals, benchmark, and review at a minimum annually. Response time benchmarks should be monitored and analyzed to determine factors causing trends including increased service demand, concurrent alarms, and staffing levels. (Implementation Order 2)
- Recommendation 88: NORCOM – Establish communication center performance measurement benchmarks that meet national standards. (Implementation Order 5)
- Recommendation 89: Adopt turnout time standards based on incident type and time of day. (Implementation Order 1)
- Recommendation 90: Integrate the New World RMS (records management system) with emergency management plans, records, and reports. (Implementation Order 4)

Strategic Plan Recommendations and Priorities

Today's fire service providers face ever-increasing challenges to provide more diverse services in their community while competing with other departments for funding, as cities strives to meet the expectations of citizens for facilities, amenities, and services. The type and number of calls for service are in flux as demographics change. These trends place increased pressure on the modern fire service manager, policy makers, and staff to come up with ways to be more efficient and effective.

To ensure that community, policymaker, administration and internal customer needs were incorporated, a process was used to develop recommendations and priorities for the KF&BD strategic plan.

Goals and objectives are management tools that should be updated on an ongoing basis to identify what has been accomplished and to note changes in the organization and the community. The attainment of a performance target should be recognized and celebrated to provide a sense of organizational accomplishment. Overall these goals and objectives provide very specific timelines for the next several years and more general timelines beyond that.

City and leadership of the KF&BD should meet periodically to review progress towards these goals and objectives and adjust timelines and specific targets as needs and the environment change.

Implementation Methodology

The key to the success of a strategic plan is its implementation. A successful implementation methodology (strategies) includes assigned responsibilities for the overall management of the plan; ensuring that there is accountability at all levels; the incorporation of the accomplishment of goals, objectives, and critical tasks into individual performance appraisals; routine reporting of the status of the plan; organizational and community reporting; and the regular updating of the plan and its content.

The following are ESCI's recommended top priority goals based on the input of the community, elected officials, the City of Kirkland administration, city staff, and KF&BD personnel.

Recommended Top Priority Goals

Goal No. 1: Administrative Infrastructure

(Administrative and support staff realignment, administrative rules, and guidelines)

Goal Statement:

Build an administrative infrastructure that efficiently provides administration and support functions for KF&BD.

Problem Statement:

The administrative effectiveness of KF&BD is hindered by four key deficiencies:

1. Policies & Procedures, Rules & Regulations, and Administrative Guidelines, collectively referred to as Guidance & Regulatory (G&R) documents, which govern the day-to-day activities of the workforce, are out of date, ineffective, and confusing. Numerous attempts at revising these critical documents have not been successful. Variations exist

between the city and KF&BD policies and procedures including safety, purchasing, public access to records, and document retention.

2. Job descriptions for key administrative staff positions (deputy chief) do not properly reflect the actual work performed or that should be performed. Assignments cross from one Division (Bureau) to another and do not adequately reflect the executive level of the organization.

3. An inefficient administrative structure hampers both strategic and day-to-day effectiveness. The work focus of the administrative deputy chief is unnecessarily narrow. Emergency management activities take up at least half of the administrative deputy chief's time, reducing availability to perform other duties—management of HR, financial, and IT functions and planning activities of the fire department.

   A misalignment occurs with the EMS officer under the administrative section of the department, these duties align with the emergency operations. A more focused management of the EMS program is recommended with a Medical Service Administrator (MSA) at the rank of division chief to have oversight of the medical division.

   The operations deputy chief is underutilized in supervising the three emergency operations battalion chiefs (one per day) and the training chief (part of the East Metro Training Group).

4. A limited number of mid-level specialists and support staff reduce the effectiveness of the administrative function by shifting that workload to higher level personnel, personnel that should be focused on providing high level oversight and direction to the organization. The more task oriented the top administration members are, the less likely they are to provide strategic and organizational guidance and to maintain a future orientation. Current staff support and administration comprises 13 percent of the total KF&BD employees. A more typical percentage for agencies of similar size and character as KF&BD falls within a range of 15 to 20 percent range.

Recommended Actions:

- Recommendation 1: Amend job descriptions to accurately reflect roles and expectations for administration and support staff. Page 51
- Recommendation 6: Add a Medical Service Administrator (MSA) at the rank of division chief to manage the medical division. Page 51
- Recommendation 8: Add one FTE administrative assistant for EMS and one FTE financial analyst to administrative support functions. Page 51
- Recommendation 11: Outsource development and maintenance of Administrative Rules and Standard Operating Guidelines to a third party. Development and maintenance of Administrative Rules and Standard Operating Guidelines should include involvement of the City human resource department. Page 78
- Recommendation 12: Develop a succession plan to ensure employees are recruited and developed to fill each key role within the organization. Page 79
- Recommendation 31: Hire a full-time City emergency manager, shifting daily responsibilities from the Deputy Chief of Administration to the emergency manager. Page 88

Implementation Metrics:

- Guidance & Regulatory documents are revised, reviewed by HR and IAFF leadership, approved and implemented by October 1, 2013.
- Percentage of administrative and staff support positions to total employees fall within 15 to 20 percent range by January 1, 2014.
- Eighty percent or greater (≥80%) of the annual work performed by the administrative staff is reflected in their job descriptions as measured on January 1, 2014.
- A succession plan has been outlined and delivered to the members of KF&BD by January 1, 2014.

Resources Required:

- Administrative deputy chief to make management of the administrative infrastructure a priority.
- HR to collaborate with KF&BD on job description evaluation and adjustment.
- HR to collaborate with KF&BD on recruitment and hiring to fill recommended positions.
- HR to collaborate with KF&BD and IAFF leadership to identify key positions, develop and adopt a succession plan.

Goal No. 2: Staffing and Deployment

(Swing staffing of aid units and engine/ladder companies and staffing levels)

Goal Statement:

Increase the ready availability of fire apparatus and personnel.

Problem Statement:

KF&BD is dependent on neighboring agencies for the provision of apparatus and personnel on routine structure fire incidents and many emergency medical responses. Resources are deployed in a manner which routinely reduces the number of fire and EMS units and personnel that are available in the City. A crew "swings" from a fire engine to an aid unit to respond with the appropriate apparatus, leaving a key piece of equipment unstaffed and unavailable until the first incident is concluded and the personnel return to quarters. This occurs in every KF&BD fire station. The City is routinely exposed to insufficient resources to handle a structure fire, as many of the firefighting resources are deployed on EMS incidents. This substantially increases the reliance upon neighboring agencies and delays response to in-city emergencies.

Recommended Actions:

- Recommendation 3: Increase emergency operations by adding a BLS aid unit staffed between 8:00 AM and 8:00 PM to maintain adequate personnel for a moderate risk fire event. Page 51
- Recommendation 45: Update KF&BD Department Manual Directive Number 3.001 to accurately reflect current daily minimum staffing level. Page 208

- Recommendation 46: Maintain a minimum per shift of two personnel (swing personnel) at firefighter EMT, two at lieutenant, and two at the captain rank with the qualifications and appropriate certifications to fill vacancies or step-up. Page 208

Implementation Metrics:

- Bargain mandatory subjects related to alternative work schedules to accommodate half-shift BLS unit addition by January 1, 2014.
- Increase staffing to implement half-shift BLS unit by January 1, 2014.
- Bargain mandatory subjects related to modification of employee wellness program to reflect job-relatedness by January 1, 2014.
- Engage the services of an Occupational Medicine professional to guide the development and implementation of a job-related wellness program, including establishment of baseline medical standards, entry level and incumbent testing, by January 1, 2014.
- Implement holistic employee wellness program as above by July 1, 2014.

Resources Required:

- Emergency operations deputy fire chief to manage the staffing and deployment priority.
- Bargain with IAFF Local on hours and working conditions modifications related to implementation of an 8:00 a.m. to 8:00 p.m. BLS unit, the implementation of medical testing standards, and a work-related wellness program.
- HR to work with KF&BD in reviewing sick leave and work-related injury occurrences (compliant with the Washington Privacy Act and federal HIPAA regulations) to identify work practices or exposures which lead to time loss and staffing reductions and remediate those work practices.
- KF&BD to work with an Occupational Medicine organization to establish a medical baseline, develop a medical stress test for entry and incumbent firefighting personnel, and design a validated physical evaluation process.

Goal No. 3: Outreach and Education

(PIO, PEO, and community preparedness)

Goal Statement:

Provide contemporary, practical fire prevention, EMS, and emergency management education and informational services to the community.

Problem Statement:

The public information function for KF&BD is handled by the City Communications Program Manager (CPM). A barrier identified to the success is the availability of KF&BD administrative staff to respond promptly to CPM requests for information or when a time sensitive story must be approved prior to release. The delay reduces the value of the release to the media, who are unlikely to use “dated” information. At a point when important information must be shared by KF&BD with the media, members of the media are more likely to disregard it since that has become their conditioned response.

Public education is performed on an as-available basis. The fire and life-safety public education efforts of the KF&BD are significantly limited with the elimination of the single fire department community education specialist at the end of 2010. ESCI found that that virtually all public education efforts outside of some limited special requests have been discontinued since then.

While KF&BD is exploring alternative strategies to maintain its public education efforts, there is no clear plan in place to delineate the department's strategy, goals, and methodologies. KF&BD needs a community outreach plan to help citizens understand what firefighters do, the challenges they face, and things the community can do to help reduce demand and invest in protecting themselves.

Recommended Actions:

- Recommendation 13: Prioritize media messaging. Use "Currently Kirkland" and other media outlets as a tool to leverage the reach and impact of fire department public information and education messages. Page 79
- Recommendation 14: Anticipate controversies or events which may generate media or community interest and develop a media or messaging plan in advance. Page 79
- Recommendation 15: Develop a proactive message file where the subject is not time-sensitive, but timely release may position the message to its greatest advantage. Page 79
- Recommendation 16: Develop interactive content for the fire department website: citizen training videos and downloadable documents (fire escape plans, preparedness, and self-help checklists). Page 79
- Recommendation 17: Update existing content on the fire department website and schedule regular maintenance. Page 79
- Recommendation 40: Develop, adopt, publish, and implement a KF&BD Public Education Plan. Page 96
- Recommendation 41: Form regional partnerships for the development and deployment of public fire and life safety education initiatives; also rotate operations personnel to deliver a structured curriculum. Page 96
- Recommendation 42: Rotate emergency operations personnel to a temporary duty assignment as a public educator to deliver the public education curriculum. Page 97
- Recommendation 43: Employ electronic information media from the United States Fire Administration and NFPA for linking or posting and making available on the Kirkland website. Page 97
- Recommendation 44: Create partnerships with other public agencies and private sector companies to provide public education and information to the citizens of Kirkland. Page 97

Implementation Metrics:

- Develop a community outreach plan and schedule, utilizing *Currently Kirkland*, to provide contemporary information, education and awareness to the community related to risk reduction and self-preparedness by January 1, 2013.
- Implement the above-referenced plan by January 1, 2013.

- Add interactive games, self-help tools, instructional videos and contact request forms to the KF&BD website by July 1, 2013.
- Provide public education training to line personnel and facilitate outreach at the company level by July 1, 2013.
- Approach neighboring agencies to form partnerships and consortia related to public education by January 1, 2014.

Resources Required:

- Administrative deputy fire chief to manage community outreach and education priority.
- Communication Program Manager to work with KF&BD to assist in developing *Currently Kirkland* programming schedule which provides outreach, education and information to the community.
- KF&BD work with the City's Communications Program Manager (CPM) to develop web content which aids in educating and equipping the community to be more disaster resistant/resilient.
- Prevention bureau and emergency management staff to provide public education training to line personnel.

Goal No. 4: Performance

(Response time)

Goal Statement:

Develop, measure, and meet response and measurable performance benchmarks.

Problem Statement:

KF&BD is meeting its stated response performance goals (including turn out time) approximately 50 percent of the time. Difficulty in acquiring complete response data is inhibiting the KF&BD from analyzing and compiling accurate response activity.

Multiple false and nuisance responses reduce availability of fire and EMS units for emergency response.

Recommended Actions:

- Recommendation 54: Monitor mutual and automatic aid for equity. Page 209
- Recommendation 57: Expand Chapter 21.35A of the Kirkland Municipal Code to include response by KF&BD to repeat false of malicious fire alarms. Page 209
- Recommendation 83: Define and report (Response Time Objectives Report) geographic areas where response time objectives are not being met. Include information on predictable consequences and steps to achieve compliance. Page 227
- Recommendation 84: Determine the cause of the dramatic decrease in the percent of full alarm assignment deployments. Develop a plan to reach the stated deployment goal of 90 percent. Page 227

- Recommendation 85: Adopt a two tiered response time objectives for fire, EMS, hazardous materials, technical rescue, and specialized rescue incidents. Page 227
- Recommendation 87: Develop and adopt response time intervals, benchmark, and review at a minimum annually. Page 227
- Recommendation 88: NORCOM – Establish communication center performance measurement benchmarks that meet national standards. Page 227
- Recommendation 89: Adopt turnout time standards based on incident type and time of day. Page 227

Implementation Metrics:

- Expand Chapter 21.35A of the Kirkland Municipal Code to include response by KF&BD to repeat false of malicious fire alarms by January 1, 2013.
- Complete a review and modification of KF&BD staffing, deployment, and service demand and establish realistic response time targets, January 1, 2013.
- Execute an interlocal agreement between Kirkland and Northshore Fire Department is executed to provide for joint staffing of the Finn Hill/South Kenmore Station, January 1, 2014.

Resources Required:

- Emergency operations deputy fire chief with Kirkland City Attorney develop proposed amendment to Chapter 21.35A of the Kirkland Municipal Code.
- Emergency operations deputy fire chief develop a modified staffing, deployment, and service strategy for review and approval of the Kirkland City Council.
- Fire chief to work with Northshore Fire Department fire chief to develop interlocal agreement for funding, siting, constructing and staffing a fire station serving the Finn Hill/South Kenmore area.

Goal No. 5: Partnerships

(Training, maritime response, joint staffing of fire stations, RFA)

Goal Statement:

Develop partnerships with neighboring fire and EMS agencies to improve services and the level of service in a cost efficient manner.

Problem Statement:

The Kirkland community expects service delivery for a set of high-risk and low-frequency incidents, which result in significant expense to the City. This creates challenges in three key areas:

- The training function is unsettled in that the East Metro Training Group is an informal but sanctioned confederation of agencies, yet total reliance is placed in this effort for ongoing training of KF&BD personnel.
- KF&BD is not adequately equipped to deliver services for marine fire and rescue incidents despite being home to a significant waterfront community.

- Service delivery in the area commonly referred to as Finn Hill (Fire Station 24) is outside acceptable response time parameters for effective fire and EMS response. Response volume is low in this area.

Recommended Actions:

- Recommendation 75: Jointly construct and staff a new fire station with Northshore FD. The fire station should be located in an area to serve the Finn Hill neighborhood and Northshore FD. Page 210
- Recommendation 80: Expand the current partnership with the King County Sheriff's Marine Unit and the Seattle Fire Department to provide a joint, coordinated response to marine firefighting and rescue incidents. Page 210

Implementation Metrics:

- An interlocal agreement is executed establishing the formal scope of work provided by the East Metro Training Group by July 1, 2013.
- An interlocal agreement is established to provide a coordinated response to marine firefighting and rescue incidents in the Kirkland waterfront in partnership with the King County Sheriff's Marine Unit by July 1, 2013.
- A suitable site for construction of a fire station serving the Finn Hill/South Kenmore area is identified and acquired in partnership with Northshore Fire Department by January 1, 2014.
- Design and construction of a fire station serving the Finn Hill/South Kenmore area is conducted in partnership with Northshore Fire Department by January 1, 2015.
- An interlocal agreement between Kirkland and Northshore Fire Department is executed to provide for joint staffing of the Finn Hill/South Kenmore Station January 1, 2014.

Resources Required:

- Fire chief or designee to manage the cooperative partnerships priority.
- Fire chief or designee to meet with counterparts from member agencies of EMTG to develop scope, funding, structure, and resource sharing language.
- Fire chief or designee to work with Kirkland City Attorney to develop interlocal language establishing the East Metro Training Division.
- Fire chief or designee to work with King County Sheriff and Kirkland City Attorney to develop interlocal agreement for marine firefighting and rescue response partnership.
- Fire chief to work with Northshore Fire Department fire chief to develop interlocal agreement for funding, siting, constructing and staffing a fire station serving the Finn Hill/South Kenmore area.

Strategic Goals

The following are ESCI's recommended strategic goals internal to the KF&BD. Community members, policymakers, administration, and KF&BD personnel participated in a two day process to assist in developing priorities for the Kirkland Fire and Building Department strategic plan. Five of the seven are incorporated as top priority goals. The remaining two are internal strategic organizational goals that meld with the validated mission, vision, and values of the KF&BD.

Strategic Organizational Goal No. 1: KF&BD Branding

Goal Statement:

Create an attractive brand for KF&BD to inform and market our services

> *Be known for consistently meeting our citizens' needs. Epitomize a winning "major league" team; with efforts that build community ownership and pride in our brand.*

"Brand" is used here to focus on the Kirkland Fire and Building Department as a singular entity. While it is true that the KF&BD is part of the City of Kirkland, which has a global brand and identity that is inclusive of all departments and services the city provides including the fire service, it is also important to define what each component of the city is and does. KF&BD is a subset of the City of Kirkland, and it is important to clearly define and describe what it stands for as a discrete department and service. "Market" is used here to describe an effort to inform and educate the citizens of Kirkland about the services the KF&BD provides.

This will be accomplished by seeking first to understand the community perceptions of the KF&BD. To the extent there are gaps between reality and perception, the members of the KF&BD must assess whether improvement must be made internally, or misperceptions must be addressed by communicating the actual facts to the community. Mechanisms or vehicles must

be identified and/or developed to deliver a clear and consistent message to the community by the KF&BD, supported by the City of Kirkland.

Objective 1-A:

Acquire an experienced public information officer (PIO) to develop, manage, and be the voice of the KF&BD to the community

Priority: High

Timeline: Short Term (0 – 12 months)

Responsibility: TBD

Critical Tasks:

- Establish the requisite knowledge and skills for a public information officer (PIO).
- Address wages, hours, and working conditions with local union (if required).
- Recruit, screen, and select a capable candidate(s) for the role of PIO.
- Determine critical knowledge and skill gaps for the PIO.
- Identify and provide training to address gaps.
- Determine equipment and resource needs.
- Secure funding for training and equipment.
- Establish reporting and accountability relationships for the PIO.
- Authorize PIO work program to begin.

Performance Indicators:

- Formal job description developed and approved.
- Job announcement published throughout KF&BD.
- Suitable candidate(s) identified and selected.
- PIO is introduced throughout KF&BD.

Outcome:

Capable Kirkland personnel, equipped with critical resources, develop, implement, train, and lead the KF&BD's public information initiative.

Objective 1-B:

Develop and implement a Marketing Plan (Internal & External)

Priority: Medium

Timeline: Mid Term (12 – 24 months)

Responsibility: TBD

Critical Tasks:

- Establish baseline of what the general public of Kirkland knows and understands regarding the services and capabilities of KF&BD.
- Establish baseline of what City of Kirkland employees and department directors know and understand regarding the services and capabilities of KF&BD.
- Conduct gap analysis (what we do that we want them to know).
- Determine key messages and activities.
- Determine which avenues, media, and venues will best achieve public awareness.
- Determine KF&BD's mechanisms for message delivery.
- Develop a KF&BD Marketing Plan and implement.
- Develop strategies to fully meet general public and City team member awareness needs.
- Implement outreach programs to address gaps.

Performance Indicators:

- Public awareness and opinion assessment tool is developed, deployed, and results tabulated.
- Key awareness gaps and opinion deficits are identified.
- Marketing plan is drafted, reviewed, approved, and implemented.
- Supervisors throughout KF&BD are fully aware of the plan and committed to fulfill identified roles.
- Key messages are transmitted and activities occur.
- Public awareness and opinion assessment tool is re-deployed; results are tabulated and compared with initial results to measure effectiveness.

Outcome:

The general public and City of Kirkland employees are acutely aware of the KF&BD's services, capabilities and limitations. They are armed with needed information to protect themselves, appropriately access emergency fire and rescue services, and support KF&BD in a partnership role.

Objective 1-C:

Develop Positive Partnerships with Community

Priority: High

Timeline: Short Term (0 – 12 months)

Responsibility: TBD

Critical Tasks:

- Identify key partnership groups; e.g., employee groups, labor groups, media, City Council, business community (chamber of commerce), and neighborhood groups.
- Identify KF&BD contacts for each group or groups within a category.
- Develop a consistent group contact methodology and message.
- Develop objectives, draft schedule, and plan for outreach.
- Obtain management approval from KF&BD and Kirkland City Manager.
- Launch the contact initiatives.

Performance Indicators:

- Target groups respond and express interest in working together.
- Target group leaders acknowledge the KF&BD has been helpful to them and supported their mission.
- Target group leaders and members support KF&BD initiatives and programs.

Outcomes:

- KF&BD members are actively involved with and support the efforts and programs of their partners.
- Partner groups can articulate the role and importance of the functions of KF&BD.
- Partner group leaders speak out to support the mission and programs of KF&BD.

Strategic Organizational Goal No. 2: KF&BD Internal (City) Relationships

Goal Statement:

Enhance a positive culture with internal customers; KF&BD and other City Departments

> *We believe there are misconceptions about our department and the services we provide by our colleagues in other departments of the City. We also believe that we have misconceptions about our colleagues in other departments of the City. We believe that greater understanding by all City employees of the duties and challenges each department is confronted with will lead to greater unity within the City, a positive enhancement to the culture within the workplace, and enhanced services to our citizens.*

There is ample anecdotal evidence that employees of the City Kirkland have wide misconceptions of the work KF&BD personnel perform. Some employees have openly discussed that the root cause of one department not receiving necessary equipment or support to perform their tasks is the overtime expenditures incurred within the KF&BD, for example. There are also perceptions within the KF&BD that some departments within the City of Kirkland create barriers and roadblocks to expenditures requested by the KF&BD, delaying or defeating efforts to acquire necessary resources. Neither perception is accurate, but the perceptions highlight the need for greater understanding by and between departments.

This understanding will likely improve if each department having such perception issues were to gain a clearer perspective of the challenges and requirements each department faces by first hand observation. Thus, a condensed "job aware" program should be implemented, allowing select employees from one department to gain insights into the challenges and requirements of the others in a scheduled job shadowing experience or job demonstration event.

Further, improved interpersonal relationships create pathways to friendly discussions that lead to greater understanding between employees and, ultimately, departments. This can be done by creating social opportunities to mix employee groups in a non-threatening environment, breaking down perceived barriers.

Objective 2-A:

Describe importance of a positive culture among and between internal customers – our colleagues – to KF&BD employees

Priority: High

Timeline: Short Term (0 – 12 months)

Responsibility: TBD

Critical Tasks:

- Assign internal task force to coordinate KF&BD education effort.

- "Own" our contribution to the misperceptions.
- Identify the scope/magnitude of the problem (city-wide surveys).
- Educate KF&BD membership about current relationship and the need to improve it.
- Describe business need to improve understanding by and between departments.
- "Seek first to understand, then to be understood."

Performance Indicators:

- KF&BD Task Force has been created and members identified.
- Survey results have been compiled, categorized, and interpreted.
- Results of survey have been shared with KF&BD employees in interactive sessions with Q&A opportunities.
- Critical linkages between KF&BD and other City departments have been identified and described.
- Ideas for improvement have been generated by rank and file members.

Outcomes:

- KF&BD employees recognize the importance of a positive culture between departments of the City of Kirkland.
- KF&BD employees are committed to improving the culture through a greater understanding and an openness to accept differences between departments and missions.

Objective 2-B:

Implement "Job Awareness" events aimed at service-level providers which is relevant and contemporary

Priority: High

Timeline: Mid Term (12 -- 24 months)

Responsibility: TBD

Critical Tasks:

- Task Force approaches City of Kirkland department heads, with City Manager approval, and presents concept to management team to gain support.
- Encourage other departments to establish mirror task forces within their own departments.
- Task Force develops KF&BD Job Awareness curriculum for internal consumption.
- Task Force provides train-the-trainer education to those who will deliver Job Awareness curriculum within KF&BD.
- Implement training curriculum with interested parties within the City of Kirkland.

- Seek members from within KF&BD to participate in other departments' job awareness events with a commitment to share their perspective with internal colleagues upon completion.

Performance Indicators:

- Task force at KF&BD is robust and active.
- Task forces at other City departments are formed and active.
- KF&BD members seeking to receive train-the-trainer education is high.
- Cross-departmental participation in job awareness events is high.
- Post event surveys reveal a marked improvement in understanding by employees of other departments.

Outcomes:

- Employees throughout the KF&BD and the City of Kirkland can articulate the role and importance of the functions of various City Departments.
- Employees from participating departments demonstrate a deeper understanding of the challenges and requirements of the other lines of business within the City of Kirkland.
- Employees are motivated to continue and expand the job awareness program throughout the city.
- An improved internal customer culture exists.

Objective 2-C:

Implement activities to enhance cross-departmental relationships

Priority: Medium

Timeline: Ongoing

Responsibility: TBD

Critical Tasks:

- Representatives from each participating departmental task force form an all-city activities team.
- Team identifies activities which enhance cross-departmental participation in social settings.
- Hosts are identified for each activity, rotating the host responsibilities.
- Where costs are incurred, activities team seeks outside sponsors of these events.
- Annual recognition program is created where employees nominate their colleagues from other departments in recognition of the embodiment of the positive culture goal.

Performance Indicators:

- Attendance at these activities is high and grows each year.

- Feedback from participants is positive and encouraging, including suggestions for other types of activities which enhance the positive culture goal.
- Attendees don't cluster within homogenous workgroups, but mixes well with colleagues from other departments.

Outcomes:

- KF&BD personnel actively interact, support, assist, and promote a collegial relationship with all City of Kirkland employees.
- City of Kirkland department personnel actively interact, support, assist, and promote a collegial relationship with KF&BD personnel.
- Employees see themselves not just as a member of a department, but also as part of a larger organization, committed to the larger organization's success.
- Employees look forward to activities which provide opportunity to "cross-pollinate"[88] with their colleagues from other departments.
- An improved internal customer culture exists.

[88] To influence or inspire (another), especially in a reciprocal manner http://www.answers.com/topic/cross-pollinate#ixzz1xoorGQwp.

Prioritization of Short and Mid-Term Recommendations

The following list summarizes all of the recommendations provided throughout this report that are achievable in the short or mid-term, typically within a maximum of five years. These recommendations have been compiled into a prioritized list for easy reference and include the page number where they are located within the body of the report. The prioritization system is as follows.

Priority 1 – Immediate Internal Safety

These recommendations deal with an improvement or initiative that solves an issue affecting the safety of firefighters and/or other personnel. These are not matters that simply make it easier to do a particular function but in fact make a currently unsafe situation, safe.

- No recommendations were identified that fit this priority

Priority 2 – Legal or Financial Exposure

These recommendations resolve a situation that is creating, or is likely to create, the opportunity for legal action against the entity or its officials. It also may be a situation that could subject the entity to a significant expense.

- Recommendation 11: Outsource development and maintenance of Administrative Rules and Standard Operating Guidelines to a third party. Development and maintenance of Administrative Rules and Standard Operating Guidelines should include involvement of the City human resource department.
- Recommendation 14: Anticipate controversies or events which may generate media or community interest and develop a media or messaging plan in advance.
- Recommendation 18: Administer a stress test at the time of hire and periodically on incumbent employees/members based on age and risk factors.
- Recommendation 22: Establish a medical baseline for new firefighters at the time of hire/appointment.
- Recommendation 53: Store PPE in a separate, well ventilated room.

Priority 3 – Corrects a Service Delivery Issue

These recommendations address service delivery situations that, while they do not create an immediate safety risk to personnel or the public does affect the Department's ability to deliver service in accordance with its standards of performance. For example, adding a response unit to compensate for a growing response workload or delivering training needed to allow personnel to deal effectively with emergency responses already being encountered.

- Recommendation 1: Amend job descriptions to accurately reflect roles and expectations for administration and support staff.

- Recommendation 4: Request WSRB to conduct an evaluation of the fire and suppression capabilities of KF&BD.
- Recommendation 7: Bill for EMS transport when responding and transporting patients outside of the City of Kirkland.
- Recommendation 9: KF&BD review and validate the mission, vision, and values following completion of the 2012 strategic plan.
- Recommendation 10: Display the adopted mission, vision, and organizational values in City Hall and fire department facilities.
- Recommendation 12: Develop a succession plan to ensure employees are recruited and developed to fill each key role within the organization.
- Recommendation 25: Develop and implement a plan outlining how volunteers will be used and managed during emergency events.
- Recommendation 26: Identify a location and develop a dedicated EOC; apply for a matching grant from the Washington EMD Emergency Operations Center Grant Program (requires a 25 percent local match).
- Recommendation 32: Integrate KF&BD fire prevention records management with the EnerGov RMS software used by the Building Division.
- Recommendation 34: Develop and adopt a plan for the maintenance, repair, and flow testing of all fire hydrants in the City of Kirkland.
- Recommendation 45: Update KF&BD Department Manual Directive Number 3.001 to accurately reflect current daily minimum staffing level.
- Recommendation 54: Monitor mutual and automatic aid for equity.
- Recommendation 57: Expand Chapter 21.35A of the Kirkland Municipal Code to include response by KF&BD to repeat false of malicious fire alarms.
- Recommendation 56: Track failure rate of units to respond to incidents in their first due area by fire station and apparatus.
- Recommendation 61: Identify training competencies in writing, teach, train, test, and evaluate personnel regularly by the training division in concert with shift battalion chiefs.
- Recommendation 62: Develop a consistent program for training hazardous materials technicians.
- Recommendation 67: Refine and expand goals and purpose statements of training objectives.
- Recommendation 68: Establish a minimum number of annual training hours an individual or company is required to complete.
- Recommendation 69: Conduct at a minimum two night drills per shift per year that involve all fire suppression personnel.
- Recommendation 70: Develop lesson plans for core competencies requiring instructors to follow plans when instructing.
- Recommendation 71: Establish a minimum requirement for annual company and individual training evaluations. Include shift battalion chief involvement in annual evaluations.

- Recommendation 77: Provide Advanced Life Support services within the City of Kirkland via the King County Medic One program.
- Recommendation 78: Participate in the King County Medic One Community Medical Technician (CMT) pilot.
- Recommendation 79: Modify the EMS response protocol of sending three responders to medical incidents. Redeploy with dedicated staffing of two-person aid units, or single person quick response unit for low priority EMS incidents.
- Recommendation 90: Integrate the New World RMS (records management system) with emergency management plans, records, and reports.

Priority 4 – Enhances the Delivery of a Service

These recommendations improve the delivery of a particular service. For example, relocating a fire station to improve response times to a particular part of town or adding a piece of equipment that will improve the delivery of a service.

- Recommendation 3: Increase emergency operations by adding a BLS aid unit staffed between 8:00 AM and 8:00 PM to maintain adequate personnel for a moderate risk fire event.
- Recommendation 6: Add a Medical Service Administrator (MSA) at the rank of division chief to manage the medical division.
- Recommendation 8: Add one FTE administrative assistant for EMS and one FTE financial analyst to administrative support functions.
- Recommendation 19: Develop a procedure and policy for reporting and retaining all employee exposure records.
- Recommendation 21: Develop, validate, and employ a physical evaluation process that is job related.
- Recommendation 23: Produce a live monthly informational broadcast meeting between the fire chief and department personnel.
- Recommendation 24: Provide a fire service-related occupational and health program.
- Recommendation 27: Seek potential partner agencies to provide contracted emergency management services from KF&BD.
- Recommendation 28: Complete and publish the COOP and COG plans.
- Recommendation 29: Develop a Hazard Identification and Vulnerability Assessment and a Hazard Mitigation Plan. Submit to King County for inclusion as an annex to the County plan.
- Recommendation 30: Involve KF&BD and other City of Kirkland employees in community-based emergency exercises at least annually.
- Recommendation 31: Hire a full-time City emergency manager, shifting daily responsibilities from the Deputy Chief of Administration to the emergency manager.
- Recommendation 33: Conduct a fire and life-safety inspection of all inspectable occupancies in the next 12 months. If necessary use emergency services personnel to complete inspections.

- Recommendation 35: Develop and implement a self-inspection program for light risk occupancies where the occupants have demonstrated regular code compliance.
- Recommendation 36: Acquire and deploy electronic tablet devices for field data entry and rapid downloading to the records management system.
- Recommendation 38: Adopt a local residential sprinkler ordinance for new residential construction.
- Recommendation 39: Form a regional partnership to develop and deliver juvenile firesetter intervention and counseling.
- Recommendation 40: Develop, adopt, publish, and implement a KF&BD Public Education Plan.
- Recommendation 41: Form regional partnerships for the development and deployment of public fire and life safety education initiatives; also rotate operations personnel to deliver a structured curriculum.
- Recommendation 42: Rotate emergency operations personnel to a temporary duty assignment as a public educator to deliver the public education curriculum.
- Recommendation 43: Employ electronic information media from the United States Fire Administration and NFPA for linking or posting and making available on the Kirkland website.
- Recommendation 44: Create partnerships with other public agencies and private sector companies to provide public education and information to the citizens of Kirkland.
- Recommendation 46: Maintain a minimum per shift of two personnel (swing personnel) at firefighter EMT, two at lieutenant, and two at the captain rank with the qualifications and appropriate certifications to fill vacancies or step-up.
- Recommendation 47: Within the limits of the collective bargaining agreement use personnel at the captain and lieutenant rank to work down to fill vacancies.
- Recommendation 56: Track failure rate of units to respond to incidents in their first due area by fire station and apparatus.
- Recommendation 59: Create a formal mentoring program to develop for officers to use with subordinates.
- Recommendation 63: Dedicate a reserve engine to the training division, preferably a unit that can be shared by agencies.
- Recommendation 64: Develop a joint recruit academy with other members of the EMTC.
- Recommendation 65: Maintain the practice EMTC recruit training or use the practice of sending recruits to either Bates or North Bend, augmented with agency specific training.
- Recommendation 66: In the absence of a combined EMTG training manual, KF&BD should develop its own training manual, preferably in concert with the other members of the EMTG.
- Recommendation 72: Include company level training activities by subject in the RMS.
- Recommendation 73: Integrate pre-fire incident planning of community target hazards in training activities.

- Recommendation 75: Jointly construct and staff a new fire station with Northshore FD. The fire station should be located in an area to serve the Finn Hill neighborhood and Northshore FD.
- Recommendation 76: Develop a comprehensive evaluation program to assess all aspects of the EMS system.
- Recommendation 80: Expand the current partnership with the King County Sheriff's Marine Unit and the Seattle Fire Department to provide a joint, coordinated response to marine firefighting and rescue incidents.
- Recommendation 81: Develop a capital plan for the rebuild or replacement of Fire Station No. 25 (Finn Hill South) and Fire Station No. 27 (Totem Lake).
- Recommendation 83: Define and report (Response Time Objectives Report) geographic areas where response time objectives are not being met. Include information on predictable consequences and steps to achieve compliance.
- Recommendation 84: Determine the cause of the dramatic decrease in the percent of full alarm assignment deployments. Develop a plan to reach the stated deployment goal of 90 percent.
- Recommendation 85: Adopt a two tiered response time objectives for fire, EMS, hazardous materials, technical rescue, and specialized rescue incidents.
- Recommendation 86: Risk assessment RMS should be managed by the KF&BD Fire Prevention Division.
- Recommendation 87: Develop and adopt response time intervals, benchmark, and review at a minimum annually.
- Recommendation 88: NORCOM – Establish communication center performance measurement benchmarks that meet national standards.
- Recommendation 89: Adopt turnout time standards based on incident type and time of day.

Priority 5 – A Good Thing To Do

These recommendations don't fit within any of the above priorities, but is still worth doing and can enhance the Department's morale or efficiency.

- Recommendation 2: Create a budget category for administrative services for the fire and for building departments.
- Recommendation 5: Annually conduct a detailed analysis of revenue versus expenditure to validate that EMS transportation activity is meeting stated goals established by the City.
- Recommendation 13: Prioritize media messaging. Use "Currently Kirkland" and other media outlets as a tool to leverage the reach and impact of fire department public information and education messages.
- Recommendation 15: Develop a proactive message file where the subject is not time-sensitive, but timely release may position the message to its greatest advantage.
- Recommendation 16: Develop interactive content for the fire department website: citizen training videos and downloadable documents (fire escape plans, preparedness, and self-help checklists).

- Recommendation 17: Update existing content on the fire department website and schedule regular maintenance.
- Recommendation 20: Aggregate like item equipment purchases with a total value of $5,000 or more and include in the City's annual budget.
- Recommendation 37: Develop and adopt a plan to actively solicit feedback from a representative sample of recipients of KF&BD inspection and enforcement services.
- Recommendation 48: Periodically (annually or more frequently) review minimum staffing levels and options for filling vacancies.
- Recommendation 49: Periodically review sick leave and work-related injuries for patterns and opportunities to reduce occurrences.
- Recommendation 50: Develop an internal CIP for the maintenance and replacement of KF&BD capital equipment.
- Recommendation 51: Perform an energy audit on all fire stations and follow recommended energy efficiency measures.
- Recommendation 52: Replace apparatus using a combination of age, mileage (for gas powered units), engine hours (for diesel apparatus) and condition.
- Recommendation *54*: Monitor mutual and automatic aid for equity.
- Recommendation 74: Refine and expand goals and purpose of training objectives.
- Recommendation 82: Develop a long-term plan to become a CFAI accredited fire agency.

Appendices

Appendix A: Table of Figures

Appendix B: Management Advisory Group, Recommendations and Findings

The City of Kirkland and King County Fire District #41 conducted a Fire and Rescue Efficiency and Effectiveness Study in 2008. Prepared by MAG (Management Advisory Group, INC.), the study has 13 major findings and 12 major recommendations. ESCI reviewed and compared the findings and recommendations from 2008 with 2012 as an element of this study.[89] For findings and recommendations that were found to still be outstanding, ESCI has called those out for discussion by City administration and KF&BD.

(1.4 Major Findings)

1. The high level of EMS responses has the unintended consequence of lowering the level of fire protection.
2. Hazardous Materials response language is vague as to the types of responses KF&BD will handle versus a regional response.
3. Rescue and extrication language is vague as to the type and level of service provided by KF&BD and subject overlaps the Marine Rescue/Firefighting standard.
4. KF&BD is totally dependent upon mutual and automatic aid response for marine rescue/firefighting.
5. Measurement of Response Time Standard is flawed and overly ambitious.
6. Standard on Effective Response significantly overlaps standard measurement of response time.

(1.5 Major Recommendations)

1. Hazardous Materials risk assessment needs to be conducted.
2. Marine rescue/firefighting risk assessment needs to be conducted.
3. Standard on Effective Response needs to be rewritten to reflect efficient use of staffing levels.
4. Measurement of Response Time Standard needs to follow RCW 35.103 definitions.
5. City Attorney should review KF&BD "standards" for added liability for the city. Recommend objectives be used instead of standards.

(Body of Work, Findings and Recommendations)

1. Reduce EMS response crew size from three to two (page 5-3).
2. Modify structure fire effective response criteria to reflect efficient use of staffing levels (page 5-5, 6, & 7).
3. Firefighter safety not compromised by staffing levels, but can be a reflection of a lack of safety-awareness by personnel (page 5-7, & 8).

[89] Findings and recommendations are paraphrased.

4. Improve existing call-back system for greater efficiency (page 5-11).
5. Conduct commodity flow study for Kirkland or region[90] (page 5-12).
6. Measurement of response time "from time of 9-1-1 call" is flawed (page 5-21).
    a. Five minute response for ALS not appropriate for Kirkland (page 5-21).
    b. Code Yellow responses should be reconsidered as a component of emergency medical services (page 5-21).
7. Five minute response time for four firefighters is beyond KF&BD capabilities (page 5-21).
8. "Initial arriving manpower" confusing term and conflicts with target response time objectives report. Six minutes and ten minutes are used respectively (page 5-21).
9. Recommends that response time is measured at the receipt of alarm at the fire station (page 5-22).
10. Recommends that one unit, staffed with two BLS personnel responds to medical emergencies (page 5-23).
11. KF&BD failed to meet response time standard 50 percent of the time from 2004-2007 (page 5-27).

[90] Has King County conducted a commodity flow study?

Appendix C: Summary Table of Short and Mid-Term Recommendations

Appendix D: Summary of Recent RFA (Regional Fire Authority) Legislation

SB 6470 allows cities to assess a benefit charge if it annexed part or all of a fire district from 2006 forward. Until this bill was passed, a city could not assess a benefit charge unless it was as part of an RFA. A benefit charge can be levied up to 60 percent of the *operating budget* of a fire agency. That is not 60 percent of its taxing authority, but 60 percent of its operating budget (excluding capital).

SB 6470-S.E – Digest (Digest as Enacted)

Authorizes certain cities and towns to fix and impose a benefit charge, for enhancement of fire protection services, on personal property and improvements to real property.

HB 1854 allows an RFA to annex another fire jurisdiction. I didn't know much about this one, but reading the bill through, it appears to allow an RFA to annex other agencies without going through another RFA formation process (establish a plan, public hearings, etc.).

HB 1854-S – Digest (Digest as Enacted)

Establishes a process through which a fire protection jurisdiction may be annexed by a fire service protection authority. Authorizes the transfer of certain fire protection and emergency services from annexed fire protection jurisdictions to annexing regional authorities. Reduces the property tax levy authority of a fire protection district, city, town, Indian tribe, or port district that is annexed into a RFA (regional fire protection service authority).

HB 1731 allows an RFA to establish RFA commissioners (as opposed to using the commissioners and council members from the previously separate agencies) or a combination of the two. It has to be addressed in the RFA Plan. Also authorizes the RFA to establish RFA commissioner districts, roughly equal in population.

HB 1731-S.E – Digest (Digest as Enacted)

Addresses the formation, operation, and governance of regional fire protection service authorities.

Appendix E: History and Formation of the Kirkland Fire Department

(The formation and chronological history of the Kirkland Fire Department was drafted from information graciously provided to ESCI by KF&BD Captain Bill Hoover. ESCI thanks Captain Hoover for his valuable assistance.)

Humble Beginnings

On June 6, 1889 at approximately 2:30 p.m., a worker in a cabinet shop in Seattle was heating glue over a gasoline fire when the glue boiled over and ignited. The fire spread to the wood chips and turpentine covering the floor. The resulting fire was visible from Kirkland. Alarmed at the sudden realization they were at risk, business owners in Kirkland purchased fire buckets and organized a fire brigade. This confederation of businesses established an agreed upon method of fighting fires in 1890, and the first organized firefighting effort in Kirkland was born.

In 1909, the City of Kirkland spent $95 to purchase a hand pulled firefighting hose cart. A siren was also purchased and installed on the bank building, which was set off by the telephone operator to notify fire brigade members of a fire. A "fire shed" was located next to a livery stable and the first brigade member to arrive would attach a horse to the hose cart.

In 1916, the Kirkland Hotel caught fire. Armed with only the hose cart, the brigade members fought valiantly, but the large wooden structure was quickly consumed. They did manage to prevent the fire from spreading to adjacent buildings.

Kirkland Fire Department's Official Formation

On June 21, 1923, Kirkland's first official volunteer fire department was formed. Dr. R.R. Ruffin was named Kirkland's first fire chief. At the urging of the insurance officials at the Washington Surveying and Rating Bureau, Chief Ruffin had fire hydrants installed to improve the insurance rates for the community. That same year, a garage fire occurred at McIntyre Buick. A previously damaged vehicle parked in the garage caught fire. Kirkland firefighters responded and had the fire out in 15 minutes, limiting the damage to $3,000.

Sometime thereafter, Seattle sold a converted 1924 Packard truck to the Kirkland Fire Department, which became Kirkland's first motorized "fire engine." It held two 60-gallon chemical tanks, 100 feet of attack hose, 500 feet of hydrant hose, and ladders. It was not until 1929, however, that Kirkland obtained its first commercially designed and built fire engine, a 1929 GMC pumper. The unit is still owned by Kirkland as an antique pumper and is housed at Fire Station No. 22 in Houghton.

Kirkland Neighbors Form, then Join

On September 2, 1949, residents north of the city voted 235 in favor and 54 against the formation of King County Fire District #41. Kirkland Fire Chief Leonard Paulson supported the formation since Kirkland Fire Department was routinely responding out of the City, but there was no funding to support such activities. Bob Gollofon was selected to be the new districts' first fire chief. The districts' first fire engine was acquired shortly thereafter from an eastern Washington fire department and housed in a garage loaned to the district. Located at 13000 84 Ave NE, the building still stands at that location today.

South of the City of Kirkland, the town of Houghton appointed Harold Mehrer fire chief in 1962. In 1968, Houghton tried but failed to annex Kirkland. The following year, Kirkland annexed Houghton and Chief Mehrer stepped down. Also in 1969, Chief Paulson was replaced by Bob Ely, the first paid employee and first paid fire chief of the Kirkland Fire Department. A year later, King County Fire District #41 contracted for fire protection from the City of Kirkland. In 1970, all three fire agencies were operating as one department, referred to as the "Greater Kirkland Fire Department".

Kirkland Fire Department Today

On May 1, 2009, Kevin Nalder was appointed Director of the Kirkland Fire and Building Department. On June 1, 2011, the remainder of King County Fire District #41 and portions of King County Fire District #34 (Redmond) and King County Fire District #36 (Woodinville) were annexed into the city. These annexations were collectively referred to as the Finn Hill – Juanita – Kingsgate annexation. Over 30,000 new residents were added to the city population in that annexation, bringing the population of the service area to approximately 80,505 citizens spread over almost 18 square miles. The department employs 101.5 firefighters, administrators and support staff.

The department serves its residents from five active fire stations and one station staffed at night with volunteers for medical responses only. The stations have a total of 19 firefighters on duty minimum, operating and cross-staffing five fire engines, six medical aid units and one ladder truck. The department handled 7,380 responses in the last full year of data collection ending August, 2011.

Appendix F: Comparable Providers

In order to illustrate a relative comparison of deployment assets, ESCI surveyed five other Washington emergency service providers: Bellingham, Everett, Redmond, and Yakima fire departments, and Kent Fire Department RFA (Regional Fire Authority). Each of the surveyed agencies provides services to communities of similar size and demographics as those served by KF&BD. The following figures provide a comparison of the number of fire stations, engines, and ladder (aerial) trucks (per 1,000 population) provided by each fire agency (In this and other similar benchmarks, Kirkland is compared with other cities serving between 50,000 and 99,999 residents).

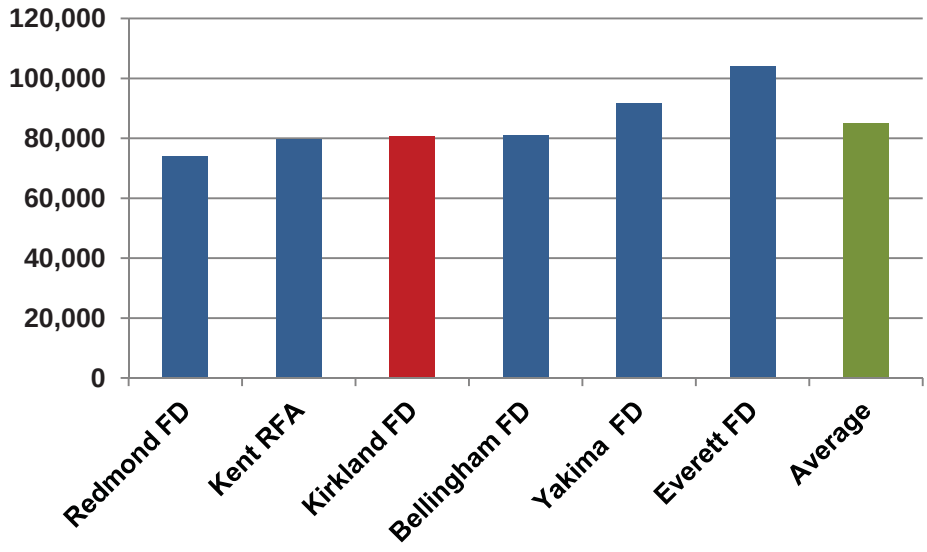
A word of caution is appropriate: each comparable by itself is only informative and should be viewed individually as an interesting fact. The collected data begins to tell the story of how KF&BD compares with other fire and EMS providers in the area.

We begin the comparison with basic statistical information about each fire agency.

Population Served

The following figure is a side-by-side comparison of the population served by each fire department in the survey. The population served by KF&BD is approximately 80,505. The average population served by the six comparable fire departments is 85,146.

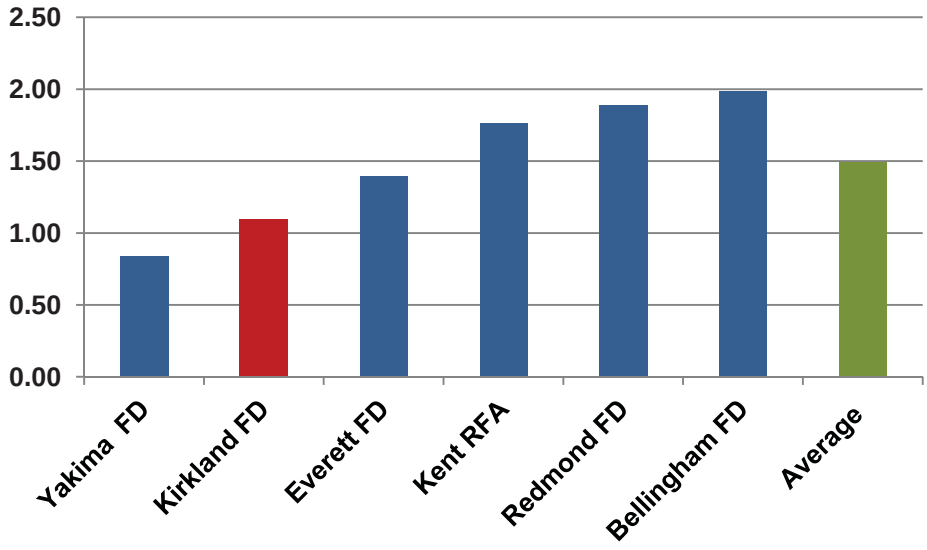
Figure 111: Population Served by Agency



Staffing

Figure 112 compares the number of emergency operation (firefighters and EMS) personnel serving each of the communities per 1,000 population. This comparison is considered to be an interesting statistic but it is important to remember that the services provided by each fire department are variable.

Figure 112: Firefighters per 1,000 Population



There are 1.09 suppression and EMS personnel per 1,000 for the population served by KF&BD, 73.2 percent of the average comparable communities for fire departments serving similar populations.

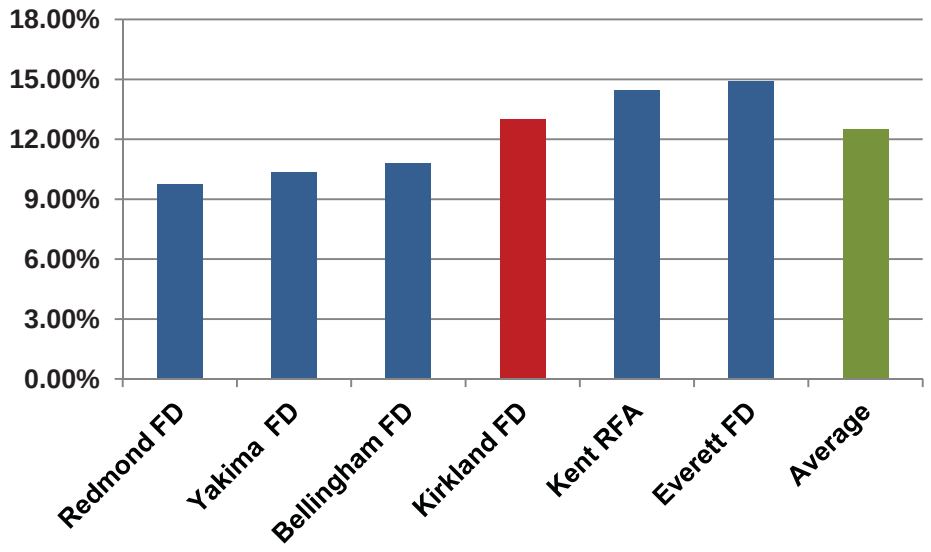
The following figure compares the total number of personnel, administrative, support, and prevention staff, operational personnel, and minimum on-duty staffing by six fire departments.

Figure 113: Breakdown of Personnel and Minimum Staffing Levels

Division	Everett FD	Bellingham FD	Kent RFA	Yakima FD	Redmond FD	Kirkland FD
Career Personnel	188.0	148.0	206.0	87.0	159.0	**103.5**
Administrative, Support, and Prevention	28.0	16.0	29.7	9.0	15.5	**13.5**
Career Suppression	160.0	132.0	140.0	78.0	144.0	**90.0**
Minimum On-duty	33.0	28.0	30.0	19.0	24.0	**19.0**

The following figure compares the percent of administrative and support personnel to the total number of personnel on each department.

Figure 114: Percentage of Administrative and Support Personnel to Department Total



KF&BD has 13.5 FTE administrative and support positions, equaling 13.04 percent, as compared to the total number of employees in the Department. The ratio is slightly higher than found in Kent and Everett, and 2.25 percent above the average for all agencies.

Services Provided

The table below lists the type and level of service provided by each of the departments.

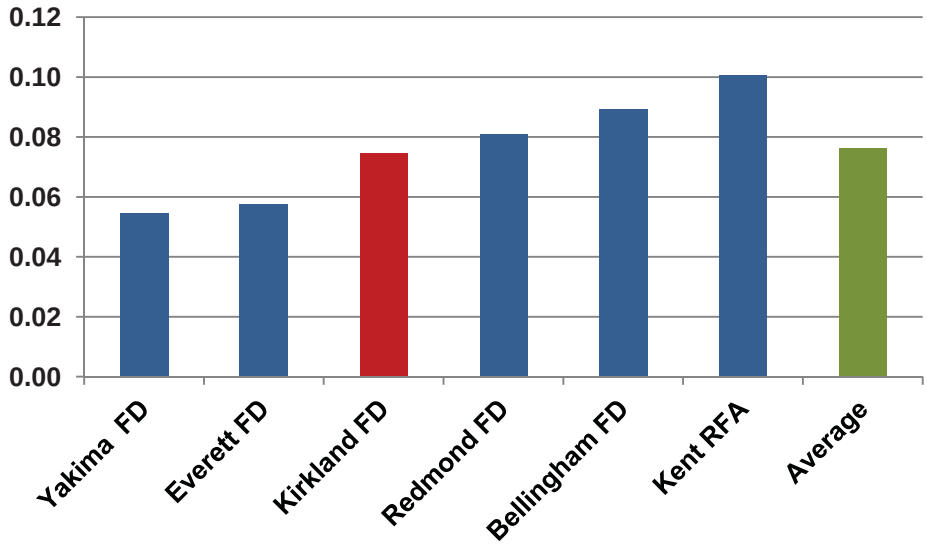
Figure 115: Services and Level Provided by Agency

Service	Redmond FD	Yakima FD	Kent RFA	Bellingham FD	Everett FD	Kirkland FD
Fire Suppression	Yes	Yes	Yes	Yes	Yes	**Yes**
Hazardous Material	Yes	Yes	Yes	Yes	Yes	**Yes**
EMS	Yes	Yes	Yes	Yes	Yes	**Yes**
EMS BLS	Yes	Yes	Yes	Yes	Yes	**Yes**
EMS ALS	Yes	No	No	Yes	Yes	**No**
EMS Transport	Yes	No	No	Yes	Yes	**Yes**
Fire Prevention	Yes	Yes	Yes	Yes	Yes	**Yes**
Public Education	Yes	Yes	Yes	Yes	Yes	**Yes**
Emergency Management	No	Yes	No	No	Yes	**Yes**
Technical Rescue	No	Yes	Yes	Yes	Yes	**Yes**
USAR Team Membership	Yes	Yes	Yes	No	No	**No**

Resource Comparison

The following figures compare the number of fire stations, engines, and ladder (aerial) trucks (per 1,000 population) provided by each fire agency.

Figure 116: Fire Stations per 1,000 Population

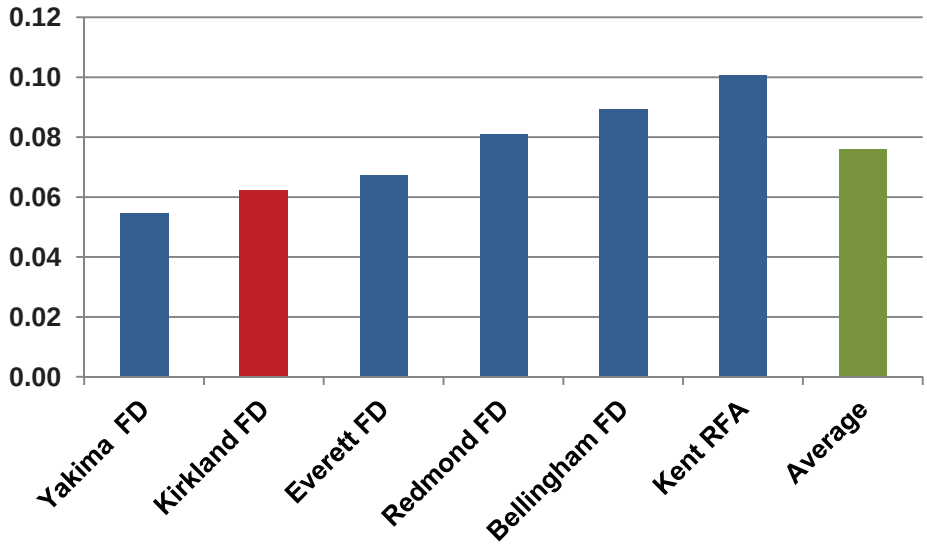


Kirkland FD maintains slightly fewer fire stations per 1,000 residents (97.7 percent) than the average of comparable regional communities and 85.7 percent of the national median[91] for fire departments serving similar populations.

Figure 117 compares the number and average fire engines (pumpers) per 1,000 population for the six fire departments.

[91] NFPA U.S Fire Department Profile, Fire Analysis and Research Division, 2010.

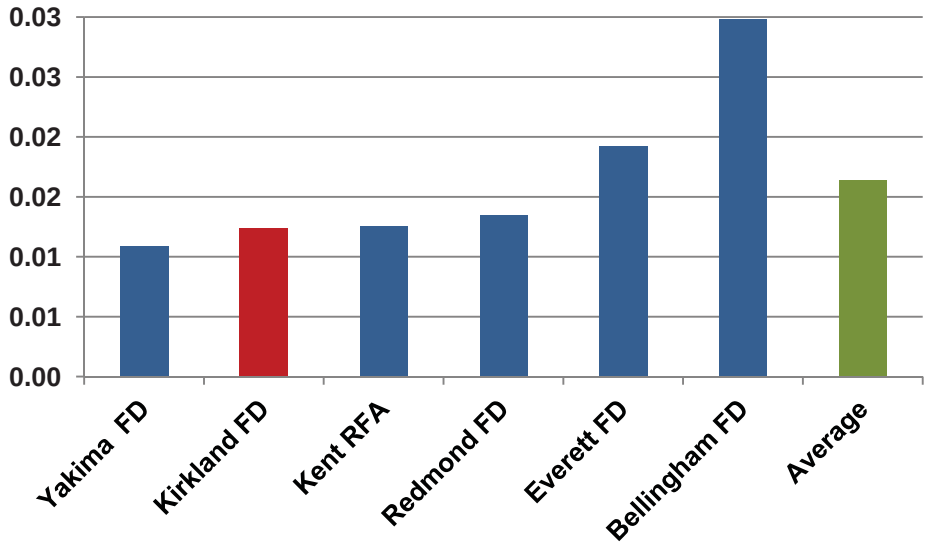
Figure 117: Fire Engines per 1,000 Population



There are 0.62 pumpers per 1,000 for the population served by KF&BD, 81.9 percent of the average regional comparison communities and 71.4 percent of the national median of 0.87 per 1,000 for fire departments serving similar populations.

ESCI next compared the number and average ladder trucks (aerials) per 1,000 population for the six fire departments.

Figure 118: Ladder Trucks per 1,000 Population



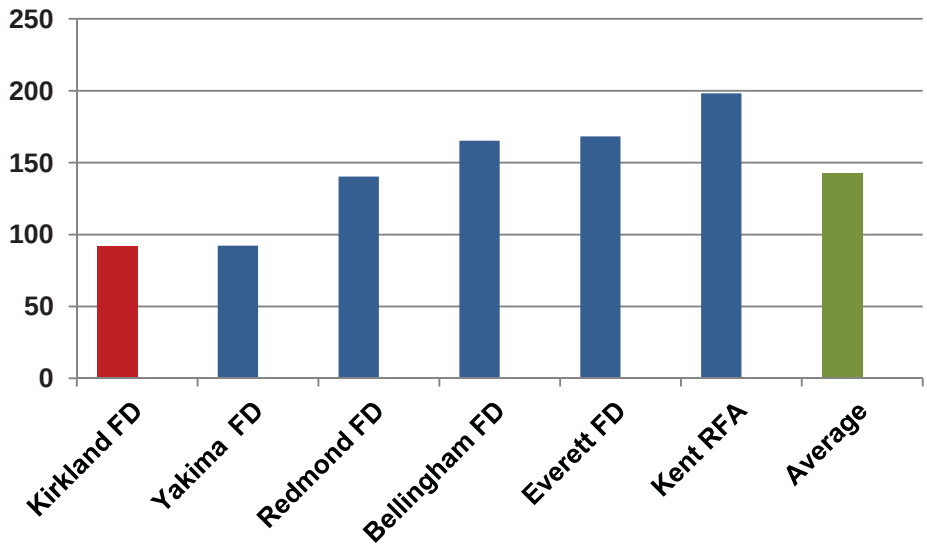
There are 0.012 ladder trucks per 1,000 for the population served by KF&BD, 75.7 percent of the average regional comparison communities, and 50.0 percent of the national median for fire

departments serving similar populations. The national median for fire departments serving between 50,000 and 99,999 populations is 0.030 per 1,000 (two ladder trucks).

Emergency Response Activity

The following chart compares the total emergency responses per 1,000 population in 2011. This illustration gives the reader a sense of the relative number of responses between the area emergency response agencies.

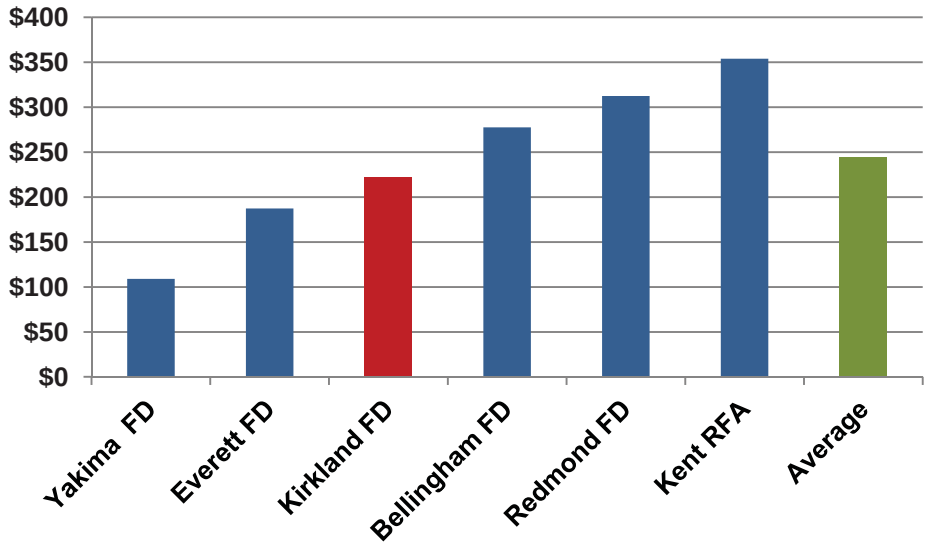
Figure 119: Total Emergency Responses per 1,000 Population



As Figure 119 shows, requests for service occur at a lesser rate per 1,000 population in Kirkland than in the comparable communities. Factors that will affect the incident rate include the fact that the fire departments provide differing levels of service and differences in the service area demographics for each community. Record keeping practices may also affect the comparison.

In Figure 120, costs of fire protection based on the 2012 operating budget and are compared on a per-capita basis:

Figure 120: Cost per Capita



The cost per capita of fire and emergency services in Kirkland was $222 in 2011, slightly less than the average of $244 for the six fire departments.

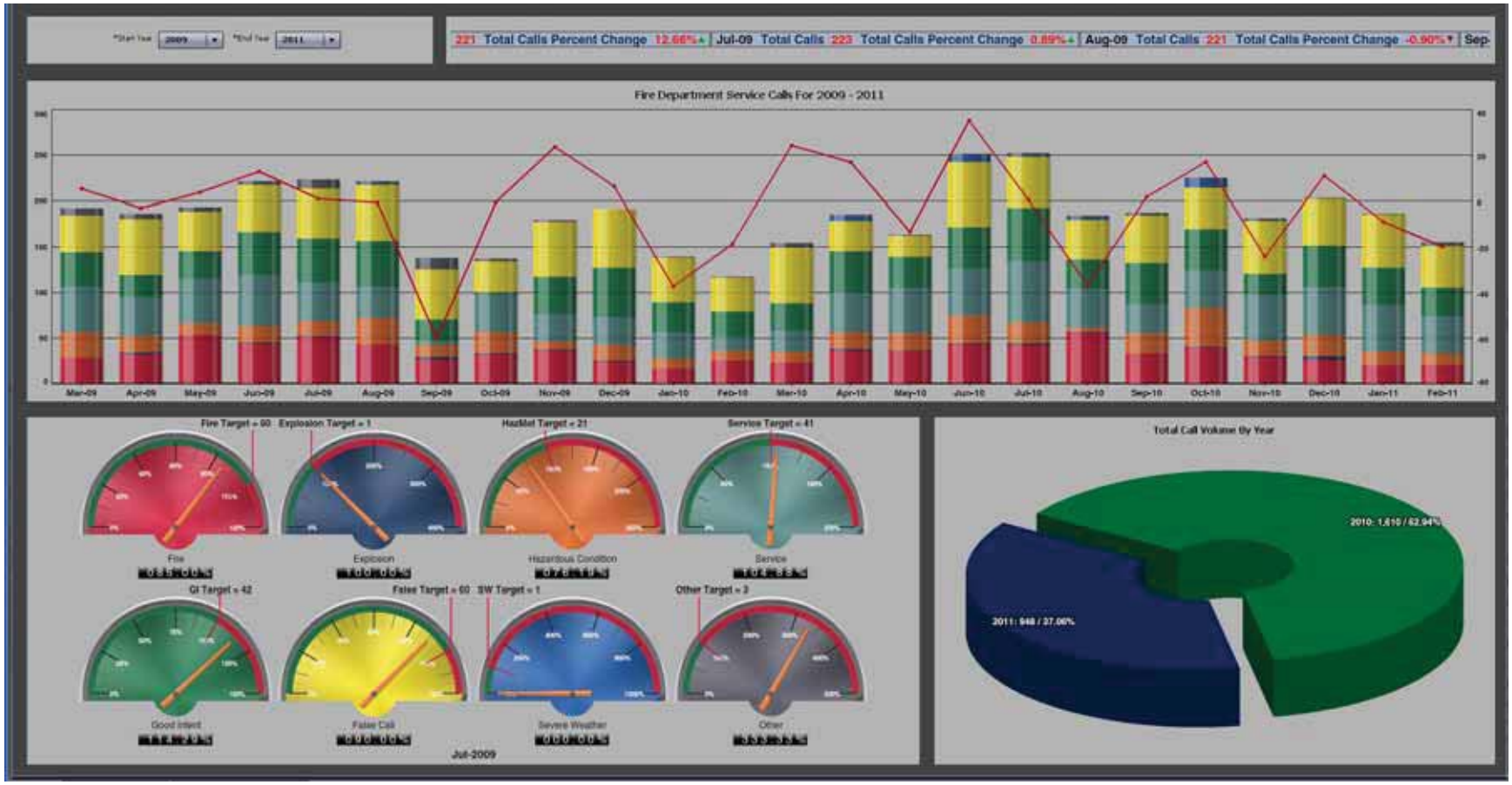
Appendix G: Summary Table of Stakeholder Interviews

Person	Date	Affiliation or Group
1. Internal		
1. Bob Sternoff	January 3, 2012	City of Kirkland City Councilor
2. Penny Sweet	January 3, 2012	City of Kirkland Deputy Mayor
3. Toby Nixon	January 3, 2012	City of Kirkland City Councilor
4. Kurt Triplett	January 3, 2012	City of Kirkland City Manager
5. Amy Walen	January 3, 2012	City of Kirkland City Councilor
6. E-Board	January 4, 2012	IAFF Executive Board
7. Joan McBride	January 4, 2012	City of Kirkland City Councilor
8. Doreen Marchione	January 4, 2012	City of Kirkland City Councilor
9. Dave Asher	January 4, 2012	City of Kirkland City Councilor
10. Tom Phillips	January 4, 2012	Kirkland Fire & Building Department Building and Construction Official
11. Tom Jensen	January 4, 2012	Kirkland Fire & Building Department Building and Construction Official
12. Mark Jung	January 5, 2012	Kirkland Fire & Building Department EMS Officer
13. C-Shift crew members	January 5, 2012	Kirkland Fire & Building Department C-Shift
14. Tracey Dunlap	January 19, 2012	City of Kirkland, Director of Finance and Administration
15. James Lopez	January 19, 2012	City of Kirkland, Director of Human Resources & Performance Management
16. Bill Hoover	January 20, 2012	Kirkland Fire & Building Department Captain
17. A-Shift crew members	January 3, 2012	Kirkland Fire & Building Department A-Shift, Station 26
18. Dave Walker	January 3, 2012	Kirkland Fire & Building Department Assistant Fire Marshal
19. Jim Crowe	January 3, 2012	Kirkland Fire & Building Department Deputy Fire Marshal
20. Paul Stewart	January 3, 2012	Kirkland Fire & Building Department Deputy Planning Director
21. Desirre Goble	January 3, 2012	Kirkland Fire & Building Department Planner
22. Teri Wallace	January 4, 2012	Kirkland Fire & Building Department Administrative Staff
23. Audrey Martin	January 4, 2012	Kirkland Fire & Building Department Administrative Staff
24. Katharine Durish	January 4, 2012	Kirkland Fire & Building Department Administrative Staff
25. Helen Ahrens-Byington	January 4, 2012	Kirkland Fire & Building Department Deputy Fire Chief
26. Battalion Chiefs	January 5, 2012	Kirkland Fire & Building Department

Person	Date	Affiliation or Group
27. B-Shift crew members	January 4, 2012	Kirkland Fire & Building Department B-Shift
28. Marie Stake	January 5, 2012	Kirkland Fire & Building Department Communications Specialist
2. External		
1. Kevin Donnelly	January 5, 2012	Redmond Fire Department Fire Chief
2. Michael Eisner	January 5, 2012	Bellevue Fire Department Fire Chief
3. Mark Risen	January 5, 2012	Bellevue Fire Department Deputy Chief
4. Chris Tubbs	January 4, 2012	Mercer Island Fire Department Fire Chief
5. Jim Torpin	January 5, 2012	Northshore Fire Department Fire Chief
6. Metro Fire Training Group	January 5, 2012	East Metro Training Group
7. Kim Bullen	January 3, 2012	King County County Administrator
8. Bob Van Horne	January 5, 2012	Bothell Fire Department Fire Chief

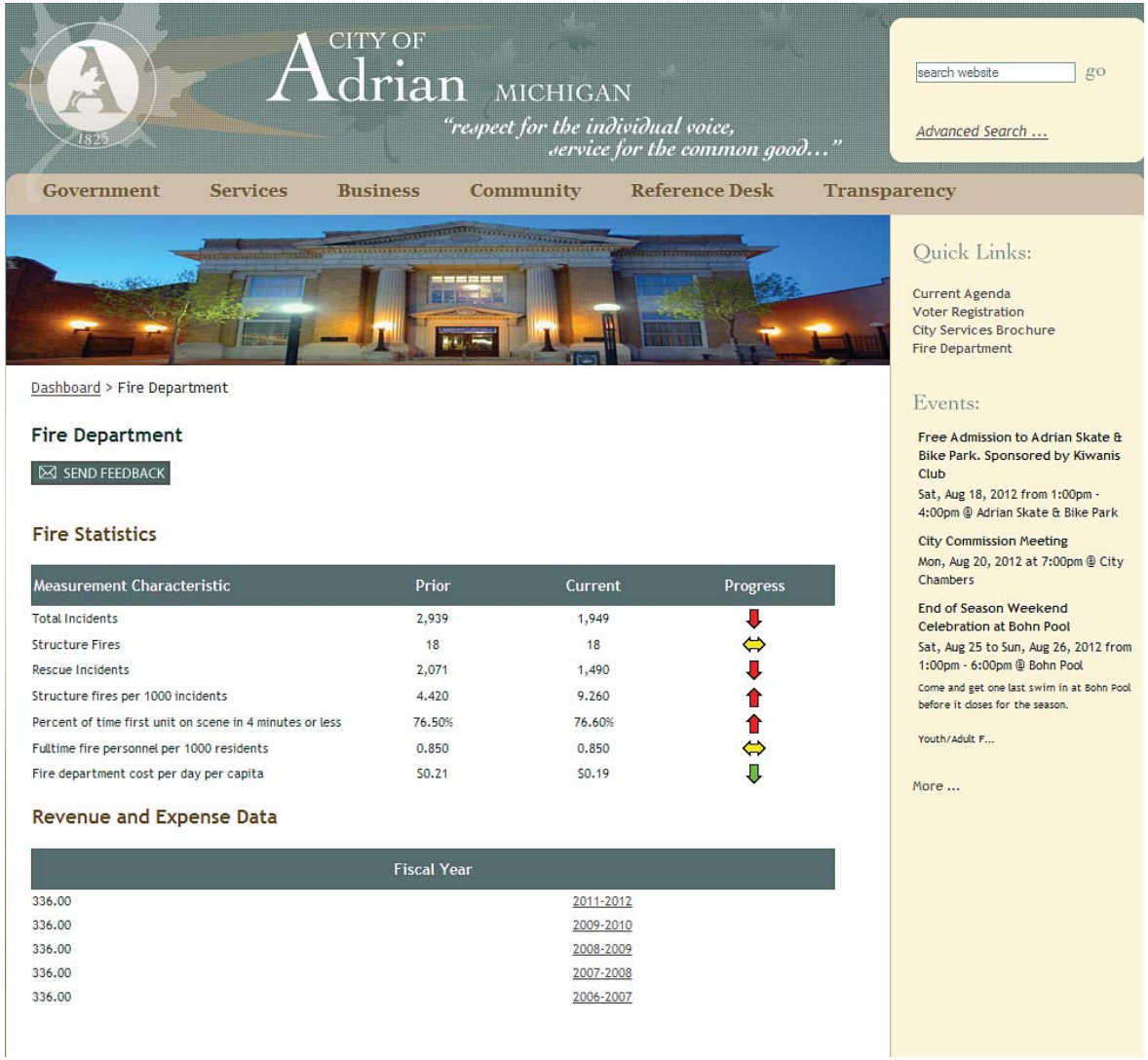
Appendix H: Dashboard View Examples

Figure 121: Internal Customer Dashboard View[92]



[92] Detroit, Michigan, Fire Department EOC Dashboard Angel's Night Operation, view of fire incidents, FireView™ retrieved August 17, 2012 http://info.theomegagroup.com/blog/bid/134307/FireView-Dashboard-s-Sudden-Impact-on-Detroit-Fire-Department.

Figure 122: External Customer Dashboard View[93]



[93] City website, City of Adrian, Michigan, retrieved August 17, 2012.