R266 : Fire Services Review

Corporate Report NO: R266 COUNCIL DATE: December 11, 2000_

REGULAR COUNCIL			
TO:	**Mayor & Council**	DATE:	**December 7, 2000**
FROM:	**Chair, Fire Services Review Task Force**	FILE:	**0042-018**
SUBJECT:	**Fire Services Review**		

1.0 Recommendations

Fire Services Task Force recommends that Council:

.1 Receive this report.

.2 Support the guidelines for recruitment of Volunteer Firefighters, guidelines for staffing of career positions, and guidelines for retention of Volunteer Firefighters as described in Section 3 of this report.

.3 Direct the Fire Department to achieve and maintain the goal of “four person staffing on pumper trucks” by the year 2002.

.4 Direct the Fire Department to pursue “within budget” recommendations of both the Optimization Report and the Fire Suppression Capability Analysis Report to improve dispatch and turn-out times and to improve total response times.

.5 Approve in-principle pursuing:

- An appropriate cost recovery approach related to First Responder Program Services provided by the City's Fire Department.

- An appropriate revenue sharing arrangement related to “Insurance Industry Premiums Contributions” currently received by Victoria.

.6 Direct the Fire Services Task Force to continue to meet to pursue and monitor the progress of the above

actions.

2.0 Background

Further to discussions at the Public Safety Committee, Mayor and Council in January 2000, appointed Councillor Watts to lead a Fire Services Review Task Force to address the following two issues:

- Issue of "four person staffing" on a pumper truck
- Key issues of Volunteer Firefighters

Membership of the Fire Services Review Task Force is as follows:

Councillor D.L. Watts (Chair)
Councillor G. Tymoschuk
Councillor B. Steele
Captain Lorne West, President, Surrey Firefighters Association, Local 1271
L. Thomas, Career Firefighter, Treasurer, Surrey Firefighters Assoc.Local 1271
R. Butchart, Volunteer Firefighter Hall #8
M. Ward, Volunteer Firefighter, Hall #1
K. Wimmer, Volunteer Firefighter Hall #8
K. Reader, Volunteer Firefighter Hall #5
Fire Chief, Jim Bale
City Manager, Umendra Mital

The meetings of the Task Force were officially conducted as "in-camera" meetings. The first meeting of the Task Force took place on March 2, 2000, at which time "key issues" were identified. These key issues formed the scope of the Task Force and are included in Appendix "A".

The Fire Services Review Task Force held a total of 14 meetings to discuss various issues. A staff person from the City Clerk's office recorded the summary of all meetings. In addition, the following studies were undertaken:

.1 A report on "improved deployment of Volunteer Firefighters" by a volunteer sub-committee.

.2 An Optimization Study by the Surrey Fire Department. This report also includes the analysis of the working group of B.C. Ambulance Service and the Fire Department related to changes in the First Responder Program.

.3 A Fire Suppression Capability Analysis by the City's Fire Department's Firefighters Association.

3.0 Discussion Related to Improved Deployment of Volunteer Firefighters

A Sub-committee of the Volunteer Firefighters presented findings of their report on "Improved Deployment of Volunteer Firefighters". This report summarizes their recommendations on:

- Hiring and recruitment of Volunteer Firefighters
- Hiring of Volunteer Firefighters into career positions
- Expanded and meaningful roles for Volunteer Firefighters
- Strategies for recognition of Volunteer Firefighters

Detailed discussions of the above report and its recommendations took place over several meetings of the Task Force. **The Task Force approved the following actions for implementation by the Fire Department to achieve the goal of improved deployment of Volunteer Firefighters**.

.1 The following guideline be included for recruitment of Volunteer Firefighters:

- Hold annual Volunteer recruitment workshops outlining minimum standards, selection process, training requirements, expectations and career potential.

- Seek existing Volunteers input into the recruitment process.

.2 The following guideline be included for staffing of Career Positions with Volunteer Firefighters:

- Establish a Mentorship Program to assist with training and qualifications necessary for career positions.

- Give consideration to Volunteer's “proven experience” in Surrey, in conjunction with certification from other institutions such as Vermilion and Arkansas, etc.

- Hold recruitment workshops to help identify a road map for “career oriented” volunteers.

- Consider a target of up to 100% staffing of career positions with volunteer firefighters, where appropriate.

.3 The following guidelines be included to improve retention and effectiveness of Volunteer Firefighters:

- Consider additional suitable roles which can effectively be undertaken by the Volunteer Firefighters such as ride-alongs; appropriate training roles; Community Patrol and Disaster Assistance roles.

- Implement appropriate uniform options.

- Establish an elected structure within the Volunteer Firefighter ranks to improve communications amongst volunteers.

- Invite participation of Volunteers on operational committees as well as regular meetings.

- Consider an appropriate recognition and appreciation program.

4.0 Discussions related to “Optimization Study” Undertaken by the City's Fire Department

City's Fire Department has completed an Optimization Study in November 2000. This report examines the following issues:

- Deployment of Volunteer Firefighters
- Four Person Staffing on Pumper Trucks
- Property loss in Surrey
- Analysis of deployment of resources
- Analysis of First Responder Program

The following summarizes the key conclusions of this report:

4.1 Deployment of Volunteer Firefighters

"Key Issues" as identified by the Volunteer Firefighter's sub-committee are supportable. The guidelines in Section 3.0 above have been jointly developed and is already at the various stages of implementation. It should be noted that the Fire Department has recently installed Volunteer Firefighters in Station (11), Boundary Park. and will be evaluating the feasibility of installing volunteer firefighters in station (17) Rosemary Heights and station (18) Fleetwood. Upon completion of the program all fire stations will be supplemented by volunteer firefighters if we are able to attract candidates for stations (17) and (18).

The volunteer deployment anticipates one of every four volunteer firefighters will be available at any one time (295 / 4 = 74) or an additional 74 firefighters are an available resource on call when required. This resource provides the depth in the Fire Service's ability to meet demands for service. The value of this asset is $3,700,000 per year, compared to annual volunteer firefighter budget of about $1,000,000.

4.2 Four Person Staffing on Pumper Trucks

The delivery of Fire Service to the community consists of three major components: selecting the types of services to be provided; building the infrastructure (buildings and equipment); and, staffing. Of the three major components, staffing has the most impact on the delivery of services and financially, places the greatest demands on the City.

The Surrey Fire Service recently purchased a computerized deployment analysis program. The new program is a powerful tool that allows modelling of fire station locations, types of vehicles and their deployment, and the impact various staffing levels would have on the delivery of emergency services based on actual response history. An additional factor, which has been included in the deployment analysis program, is the recent implementation of Workers Compensation Board requirements governing the entry into buildings for firefighting purposes.

In 1999, Workers' Compensation Board regulations were changed to require a specific number of personnel on the fire scene prior to conducting an entry into a building that is on fire or where breathing apparatus is required. The WCB regulation does not mandate minimum staffing levels on each responding apparatus. The regulations do, however, mandate the number of staff to arrive on scene before entry can be made into a building.

As an illustration, if the first arriving apparatus has three firefighters, no one may enter the structure until a second unit has arrived. A second unit provides the additional personnel needed in the event that firefighters need to be rescued. The WCB regulation precludes that apparatus operator from leaving the apparatus, as this firefighter is responsible for controlling the flow of water from the apparatus to the hose lines. If the first arriving unit has four firefighters, according to WCB regulations, two firefighters may enter the building because at least one firefighter will remain outside and be available for communication and conduct rescue if required. Two additional firefighters must be established as a sustained rescue if required. Two additional firefighters must be established as a sustained rescue team (Rapid Intervention Team) within ten minutes after the team of two firefighters has entered into the building.

The percentage of times that a pumper has been staffed with four firefighters has, prior to 1998, occurred 50% of the time. In 1999, the hiring of additional firefighters increased the number of occurrences of four person pump crews to 65% of the time. In 2000, the hiring of additional firefighters, the removal of a two-person Fire Rescue unit from service and reassigning its staff to pumper trucks achieved further staffing improvements. This has had **a further positive impact in meeting the four person goals resulting in an average +/- 87% of four persons pumpers.** Changes were made in staffing protocols regarding the usage of (contractual) Staffing Pools. Staffing Pools are off duty firefighters who are called and agree to work extra shifts at straight time (As per collective Agreement) Although this has been effective in increasing the percentage of four person pump crews, it is a short-term fix.

The recommended approach to resolving staffing shortages is a combination of hiring 12 new staff, 8 in the year 2001 and 4 in the year 2002 and the continuation of current programs. In addition, a further refinement of the vacation & holiday schedules and attendance management could even out the fluctuations of staffing demands. Further it is recommended that in 2005, additional 8 firefighters be hired (2 per shift) and placed in station 13 (Sunnyside). The Aerial Ladder be redeployed to a volunteer station yet to be determined and a Quint to be placed at Station (13). The pump and crew of station 13 moved to station 12 (Crescent Beach).

Note: Different scenarios are currently being worked on in a sub-committee.

4.3 Property Loss in Surrey

It has long been thought that an increase in population has an increased effect on the value of fire loss and number of occurrences and that additional resources are needed to reverse this trend.: Surrey fire Loss Trends provides a historical view of fire loss and the number of fire loss buildings from 1990 to 1999 with population growth. The fire losses have been calculated using the interest rate of the year in order to account for inflation and bringing figures to present day values.

Surrey's fire loss trends illustrates a clear rise in the population growth and a reversing trend for building fire loss's and number of occurrences in relation to population. This challenges the notion that an increased population results in increased fire loss and occurrences. The City of Surrey's trend toward lower fire loss in relation to population growth is compatible with overall Provincial trends.

In summary, the City of Surrey's fire loss and number of fires are declining, a trend which is also reflected across the Province of British Columbia.

4.4 Analysis of Deployment of Resources

Surrey Fire Service undertook a comprehensive study utilizing state-of-the-art computer mapping tools to measure resource deployment to determine levels of service. Dr. Raj Nagaraj, Ph.D., an expert in industrial engineering and modelling, developed the software tools utilized the Surrey Fire Service. Our historical response computer aided dispatch data was used exclusively for this study.

The Fire Service was specifically interested in measures of fire service workloads, average performance and percentage of times that apparatus are able to meet arrival time targets. Approximately 15,500 incidents were examined to determine their impact on current deployment and resources.

An interesting feature of the system, is its ability to create actual scenarios, of moving equipment from one fire station to another. Through these scenarios, equipment was intentionally “moved” so that the effect of these changes can be measured.

It is important to note that currently there is no standard in place that can be used as a measure of response time and deployment. The National Fire Protection Association is in the process of developing such a standard, but it is not expected to be voted on by the association until May 2001. The proposed standard has been met with a great deal of general debate and may not achieve a consensus. In the absence of an NFPA standard, a total response time of 7 minutes, 9 minutes, 11 minutes and 12 minutes was used in the modelling process that represents the specific targets for our modelling purposes.

The Surrey Fire Service human resources is its most valuable resource. There are three distinct components. These are; exclusive volunteer staffed stations, volunteer / career staffed stations (composite) and career exclusive staffed stations. The successful delivery of services within the City relies on these three components to provide a strong initial and sustained force. The combination of resources insures competing calls for service are consistently met within each station response area.

The first aspect of the study, 1999 Incident Distribution, evaluated each station's incident demand to determine the distribution of calls per station by area and type. It is apparent by the 1999 Incident Distribution that structure fires, rescue and medical responses make up the largest demand for service.

In consideration of deployment, fire stations generally are evenly placed throughout the City of provide even geographic distribution so resources can arrive within a given time. Two methods of measure are typically used, percent and average measure. Percent measure is the number of total incidents divided by 100 that meets to goal or target, while average measure is the number of total incidents and response time divided by the number of incidents

measured. The performance or response times are a function of a number of benchmark criteria. The overall total response time is a combination of several specific benchmarks:

- Dispatch Time**:** the time for the dispatcher to determine from the caller the location and nature of the emergency and alert the appropriate station. In 1999, with a target time of 50 seconds, 83% of all calls dispatched were equal to or less than 50 seconds with an average dispatch time of 38 seconds.

- Turn Out Time**:** the time for crews to assemble on the apparatus after receiving the alert from dispatch. In 1999, with a career firefighter "model" target time of 2 minutes, 83% of calls were equal to or less than 2 minutes with an average turnout time of 1 minute and 31 seconds. For volunteers, at a target time of 4 minutes, 76% of calls were equal to or less than 4 minutes with the average turnout time being 2 minutes and 44 seconds.

- Travel Time: The en route time the apparatus takes to arrive on scene. In 1999, with a target tine of 4 minutes, 79% of calls were equal to or less than 4 minutes with the average travel time being 3 minutes and 4 seconds.

- Response Time**:** The total time (Dispatch, Turnout, and Travel). In 1999, with a target time of 7 minutes, 83% of all calls were equal to or less than 7 minutes with the average response time being 5 minutes and 27 seconds.

1999 Incident Performance

1999 Incident Performance provides a review of the demand and performance of total response times in 1999 for all incidents.

The following resources are required for each incident type:

- Structure Fires: 2 Pumps, 1 ladder, 1 Rescue (assumes 12 firefighters);
- Rescue: 1 Pump, 1 Rescue, or 1 Rescue Equipped Pump (assumes 4 firefighters-pump, 2 firefighters rescue); and
- Medical: 1 Pump or 1 Rescue (assumes 4 firefighters-pump, 1 firefighter rescue).

Target times were selected in order for the modelling tool to provide a view of high and low performance. It is apparent that percentage performance and average response times per station are significantly varied. The primary first unit performances and average times in stations 7, 12 and 14 are low, probably due to the time it takes volunteers to respond or turnout to the station, typically between 3 to 4 minutes. The volunteer performance at station 3 and 8 is better. Ladder and rescue responses are lower due to the additional distance required to travel beyond its primary response areas to arrive at their destination.

A number of strategies become apparent from the study that can be utilized to improve response times, specifically dispatch times and turn out times, which would decrease total response time. They include:

1. Implementation of call taker interrogation system and training program;
2. Implementation of training and policy to improve turn out times for both career and volunteer firefighters; and
3. Realignment of some fire stations boundary areas thereby decreasing response distances.

4. The Surrey Fire Service is recommending the purchase of 3 Quints, approved in the 2000 budget. Quints are a combination pump/rescue/ladder. With the placement of the Quints at existing stations, utilizing existing staffing levels, performance capabilities significantly improve.

4.5 Analysis of First Responder Program

The aspect of the City's Fire Service participation in the pre-hospital care system was a subject of the task force. The Fire Services participation is tasked in a first responder role to provide medical intervention until a more advanced service arrives, BC Ambulance Service who render advanced care and transportation. Performance comparisons of the two services in terms of response times extracted from our computer Aided Dispatch Records indicates a significantly better service is provided by the City Fire Service. If the Fire Service were to withdraw from the provision of the service, a significant reduction of service would result.

The First Responder Program is based on the idea of the continuum care where First Responders will be able to provide a “value added” service prior to the arrival of BCAS Paramedics. Due to complexities often associated with traumatic and environmental emergencies, Police and Fire First Responders can provide value added services. These services involve the recognition of hazards, prevention of further harm, containment of hazards, rescue, apprehension and arrest, and/or identification and preservation of evidence.

Consequently, it is the “medical emergency” that should be given consideration and a determination made as to the “value added” by First Responders. Should a First Responder unit arrive at the same time or after the arrival of paramedics, it is likely that no value can be added for the conscious medical patient. One must also consider whether or not a “value added” service can be provided when a patient is already under medical care such as in a community care facility, a doctor's office, recreational facility or place of business with Occupational First Aid Attendant. For some medical patients, however, (e.g. Cardiac arrest patient), treatment is labour intensive and First Responders are frequently asked to provide assistance on route to the hospital. Therefore, a deliberate review of each type of “medical call” is required to determine if value can be added.

The Medical Priority Dispatch System Resource Allocation (MPDS) is a list of medical, traumatic and environmental emergencies with accompanying signs and symptoms such as whether or not the patient has an altered level of consciousness, respiratory difficulty, haemorrhaging or if dangers are still present. This list is used by BCAS Dispatchers to assign response priorities (Routine or emergency), to assign the appropriate qualified level of paramedic staff and to determine if it is appropriate to notify a First Responder agency.

The MPDS identifies a total of 32 call types such as abdominal pain, allergies, animal attacks, assault, back pain, breathing problems, etc. The call types are accompanied by 228 signs, symptoms and environmental conditions that help to further define the emergency event. Terms like “abnormal breathing”, “condition worsening”, “multiple victims” and “unknown status” are used. For BCAS statistical purposes, each call type is assigned an alphanumeric identification and description. For example, a choking patient who is not alert is assigned the code 11-D-1 and a choking patient with abnormal breathing is assigned the code 11-D-2.

Based on BCAS call taker assessments, the call type and other information are gathered and an emergency code is assigned (e.g. Code 2 routine or code 3 emergency) based on BCAS response policy. The MPDS identifies the appropriate ambulance resource (Highest level Available being Advanced Life Support or Emergency Medical Assistant 2 Paramedics) and whether or not it is appropriate to notify the First Responder service.

A review was undertaken to determine if Surrey's first Responders would be able to provide a value added service for each of the listed call types. This review examined each of the 32 call types and accompanying 228 signs, symptoms and environmental conditions. In each case, a determination was made as to whether to not First Responders had the skills and training necessary to intervene successfully and whether or not the call type was severe enough to warrant notification of First Responders. For example, First Responders are notified in the event of “Pregnancy/Childbirth/Miscarriage – breach or cord – 3rd Trimester haemorrhage” but the skills and interventions to deal with these emergencies are not taught in the First Responder curriculum. Additionally, a “value added” service could not be justified where medical attention is already being provided by a Physician, Registered Nurse or a First Aid Attendant. This may be the case in Community Care Facilities and Physicians Offices.

This issue is still under review and a full report will be brought forward in January 2001.

5 Discussion of the Report by Firefighters Association on Fire Suppression

Capability Analysis

The above report examines the following issues:

- Analyse the Volunteer (Paid call) Firefighters effect on the initial response capabilities
- Analyse optimized deployment of both Paid call and Career Firefighters
- Determine the resources required to meet 4 and 5 minute initial response and 8 and 10 minute full response
- Determine Fire Station locations and numbers to optimize deployment
- Develop an optimized deployment model with existing resources and with modest increases

5.1 The report recommends the following role of Volunteer Firefighters

- The role of the Volunteer (Paid Call) Firefighter for emergency response, should be one of back up and support in urban and suburban areas.
- Relying on Volunteer (Paid Call) Firefighters for initial response, may be acceptable in rural areas.
- Volunteer (Paid Call) resources provide a necessary backup when initial response crews are unavailable.
- When emergency situations expand beyond the capabilities of initial response crews, they provide necessary resources in support of those crews.

5.2 The report recommends the following resource requirements:

- **On a temporary basis,** use existing resources to add a staffed response to Halls 3 & 12 i.e. Place Fire Rescue back in service at Hall 13; and move 2 on duty staff from Hall 13 to Hall 12.
- Add a staffed rescue response to Hall 8 requiring 10 additional resources
- A new hall 19 in North Surrey
- Suggest an addition of 80 staff over the next 5 years.

5.3 The report makes the following recommendations:

Establish Policy for responding trucks with a minimum of 4 persons.

Add a Staffed response to Halls 3, 8 and 12

Add 2 additional Rescue Trucks

Establish a Fire Department Committee to regularly conduct deployment analysis.

Establish a Strategic long term Medical Fire Protection Plan for the City of Surrey

Open Dialogue to establish automatic aide with neighbouring Municipalities

The above Fire Suppression Capability Analysis Report and its recommendations were discussed by the Task Force. It is noted that some of its recommendations offer different solutions than those contained in the Volunteer Firefighter Report and the Optimization Report, but there is concurrence on the "general direction" of the resolution of issues.

To this end, the Task Force recommends that the Fire Department pursue and explore the recommendations of the Fire Suppression Capability Analysis Report for further consideration, but within the Council approved budget and budgetary direction. It is further suggested that, in part, this may be achieved through the development of a Strategic Plan including consultation and input from affected stakeholders, community groups and the public.

6.0 Cost Recovery Issues and Opportunity

The task force identified two services for pursuing cost recovery options. These are:

- A cost recovery approach related to First Responder Program Services provided by the Fire Department.
- A revenue sharing arrangement related to Insurance Industry premiums paid to Victoria.

As has been previously stated in the report, a sub-group consisting of B.C. Ambulance Service and the City's Fire Department undertook to review the role and services provided by the Fire Department. This review recommends continuation of certain services by the First Responders prior to the arrival of BCAS paramedics. This reaffirms that certain medical services are critical and best provided by the First Responders. **The task force, therefore, recommends that a modest cost recovery approach be pursued.** A cost recovery approach would also serve to assume future availability of this needed service, both to the recipients as well as to the Province.

With respect to the Insurance Industry contributions for Fire Service, the Fire Services Act (of the 1920's), made a direct connection between the taxes collected under the Act and the cost to deliver the services of the Office of the Fire Commissioner. Although there have been editorial changes to these sections over the years, it would appear that the intent of those changes have not changed (until recently) since the Act came into force in the early 1920's.

The original tax was 1% of the fire premium portion of property tax and automobile insurance, with the proviso that a further levy could be collected if the tax was not sufficient to cover the salaries and expenses of the Office of the Fire Commissioner. The Fire Commissioner stated there has never been an occasion where there was a need to increase the 1% provision due to the revenue not meeting the expenses.

On January 1, 1983, as part of the governments updating of its financial controls, the Fire Services Act was amended to remove the connection between the operating expenses of the Office of the Fire Commissioner and the tax collected. The Act also changed the tax levy to apply to the entire property insurance premium rather than to only the fire premium portion and removed the application of the Act to automobile insurance. The amendment made the calculation of the Fire Services Act Insurance Premium Tax consistent with the Insurance Premium Tax Act, which imposes a tax of 3% on property and liability insurance premiums.

The most recent developments occurred on January 1, 2000, which deleted all reference to the 1% tax from the Fire Services Act and shifted the 1% tax to the Insurance Premium Tax Act for a total of 4%.

The insurance industry makes substantial contributions to BC Government through the Insurance Premium Tax based on the value of premiums collected. In discussion with the Fire Commissioner, he has confirmed that in 1999 a total of $1.46 billion was collected by the insurance industry, this translated into $58.4 million in contributions to the BC Government. **The task force recommends that these revenues should be shared by the municipalities.**

7.0 Conclusion

The task force has undertaken a comprehensive review of the two issues (i.e. four person staffing on a pumper truck and issues of Volunteer firefighters) as directed by Council. In addition, the scope of the review was broadened to include optimization of deployment of resources and First Responder program. Open and thorough discussions were undertaken involving all key stakeholders. This report and its recommendations have also been reviewed by all members of the task force.

Task Force members feel that the recommendations of this report will greatly contribute to the goals of improving deployment of Volunteer Firefighters, resolving the issue of four persons on a pumper truck, as well as establishing a road map for improved deployment of resources and some cost recovery opportunities. It can also be stated that the free and open discussions between its key stakeholders (Fire Department Management; Fire Fighters Association and Volunteer representatives) contributed to building improved understandings and even acceptance of differing points of view.

There still remains some unresolved matters, such as some of the recommendations contained in the Fire Fighter Association Report, as well as key issue #4: Principle of Shared Resources and Common Services, for which no definitive action plan has yet been developed. Further work is required to undertake these tasks. The task force would like to continue to meet to pursue these and monitor the progress of the recommendations of this report.

Please note that full copies of the three reports, as referenced on Page 2 and the minutes of the meetings, are available for Council's consideration and can be provided upon request.

Councillor D. Watts
Chair, Fire Services Review Task Force

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