3.

Service Delivery Standards

for

Halifax Regional

Fire and Emergency Service

October 25, 2005

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Introduction and Background

In 2001, an internal committee of fire service managers was requested by the Chief Director to look at the current service levels within HRM and to compare them to other similar municipalities in an attempt to benchmark and establish service levels for Halifax Regional Fire and Emergency Service. HRM does not currently have service delivery standards established for determining acceptable levels of emergency services provided by Halifax Regional Fire and Emergency Service.

Prior to the 1996 amalgamation of the current HRM each area controlled their own Fire Service. This service was (as it is today), made up of a mixture of Career and Volunteer Firefighters. In some cases the two groups worked side by side, and in others, the two rarely interacted. Generally the community Fire Department was controlled by each respective community, resulting in 38 individual Fire Departments in the current HRM area. These Departments developed and followed their own rules on how they would operate, but their goals were usually the same: arrive at the emergency with as many firefighters as possible. Without minium standards in place, there was no evaluation of the effectiveness or efficiency of the provision of the Emergency Service, which resulted in a lack of ability to measure anything other than losses related to fire.

The key to successful mitigation of emergencies is based on a combination of factors including Dispatch, Turnout, and Response times (defined later). Several factors need to be considered when establishing service levels, including risk to life and property, hazards, and population demographics.

Several municipalities were contacted and information was obtained electronically where available on the Internet. The service levels provided by these municipalities were compared with the current level of service provided within HRM in order to establish benchmarks for analysis.

The research by the committee coincided with the international debate over two proposed NFPA (National Fire Protection Association) Standards, **NFPA 1710 'Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments'**, and **NFPA 1720 'Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments'**. These standards have since been adopted by the NFPA.

The Chief Director allowed the committee the leeway to develop a workable standard which did not necessarily have to be based on the NFPA 1700 series standards. The working group has looked at several adopted municipal models, the NFPA 1700 series standards, insurance standards and military standards for providing protection to non-military structures on military bases. The decision was made to develop recommendations for service levels based on the NFPA 1700 series standards with logical deviations taking into account the diversity of fire protection districts serviced by Halifax Regional Fire and Emergency Service.

Definitions

Due to some confusion around terminology commonly used in the fire service of the following terms are defined to clarify time intervals and station coverage areas:

Dispatch Time:	The point of receipt of the emergency alarm at the public safety answering point to the point where sufficient information is known to the dispatcher and applicable units are notified of the emergency.
Turnout Time:	The time interval from the receipt of the call notification by the station(s) or apparatus until the time the apparatus notifies the dispatch centre that they are en route to the call.
Response Time:	The time interval from when the apparatus notifies dispatch that they are en route to a call until the time the apparatus notifies dispatch that they are on scene at the call location when vehicles are operated at a safe operating speed as defined by policy.
Station Coverage Area:	The geographic area that can be covered from an identified Station location in a specific time interval.
Fire Response Districts:	The geographic boundary of a defined area which is primarily serviced by a specific Fire Station.

Additional definitions are included in Appendix "A" of this document.

SERVICE DELIVERY OBJECTIVES FOR ALL EMERGENCIES

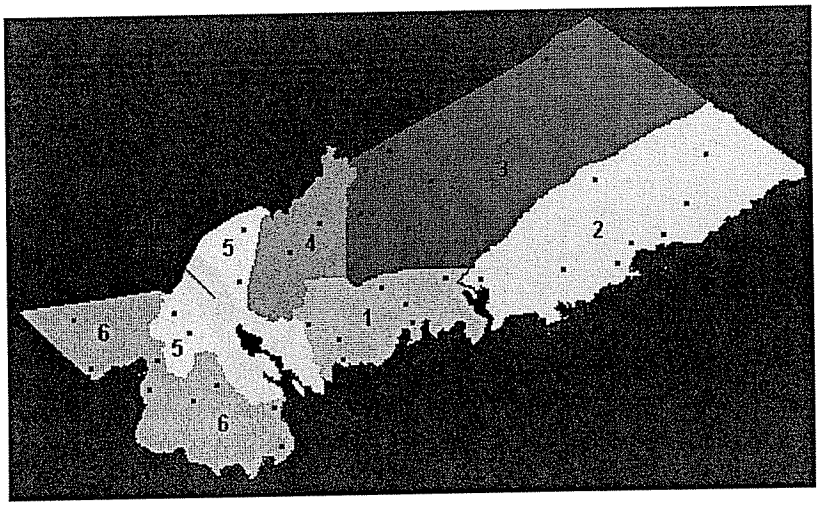
Service level delivery standards are proposed to encompass the services as outlined in Halifax Regional Municipality Administrative Order 24, Respecting Fire and Emergency Service in Halifax Regional Municipality. For a list of services, see Appendix "B" of this document.

Acceptable Exemption: The times for response as indicated in this standard will not apply to island properties which are not accessible by public roadway, private roads, or properties accessed though travel over privately owned bridges. In those situations, the actual response times will used and will be deemed to be acceptable under the requirements of the Service Delivery Standard, and will be excluded from the annual calculations.

Extraordinary Exemption: Not withstanding any other provisions of this Service Delivery Standard, in order to deal with any natural disasters or other similar conditions, or in the event a State of Emergency has been invoked, the Service Delivery Standard does not apply. Responses under these conditions will be excluded from the annual calculations.

Data Gathering and Analysis:

Benchmark data comparison for response times was done with London, Ontario; Edmonton, Alberta; Indianapolis, Indiana; Vancouver, Washington.; and Kitchener, Ontario. The committee noted with interest that some of the municipalities listed above are currently working on 5 year project to implement NFPA 1710. The issue in HRM is somewhat more complex given that the NFPA 1700 series standards are based on either a fire service that is primarily volunteer (NFPA 1720), or a fire service that is primarily career (NFPA 1710). The proposed standard for HRM is essentially a hybrid of the two NFPA 1700 series Standards, accounting for the diversity of the communities that are served by Halifax Regional Fire and Emergency Service throughout the municipality.



*Red dots indicate Rural Fire Department locations.

Dispatch Time (All Fire Protection Districts)

To accurately verify Dispatch Time, will require the implementation of the new CAD/RMS project. A manual verification of calls was the only process that could currently determine accurate dispatch time intervals.

Halifax Regional Fire and Emergency Service will establish a standard which will see a Dispatch Time of 60 seconds or less, 90% of the time, for all fire protection districts.

A one minute (60 second) dispatch time would be in accordance with the NFPA 1710 recommendation, for fire protection districts with a population density of over 100 persons per square kilometer.

A one minute (60 second) dispatch time would be in accordance with the NFPA 1720 recommendation, for fire protection districts with a population density under 100 persons per square kilometer. For structural incidents this will include a minimum dual station response (Automatic-Aid).

Single unit or single station responses would occur for non-structural incidents through protocols developed by Halifax Regional Fire and Emergency Service through consultation within the fire protection districts and with other neighboring contract and Mutual Aid Fire Departments.

This dispatch time will be audited annually by Halifax Regional Fire and Emergency Service in cooperation with the 911 Fire Dispatch, and an outside source if required, at the discretion of the Chief Director of Halifax Regional Fire and Emergency Service. This audit will conform with the intent of the Corporate Scorecard theme of Safe Communities.

Turnout Time (Fire Protection Districts with population exceeding 100 persons per sq.km)

Turnout Time is available for Stations 2 to 18 (Core) which was analyzed and compared to existing standards and other municipalities. It was felt that this data was significant to the areas protected by these stations.

Halifax Regional Fire and Emergency will establish a Turnout Time standard of one (1) minute or less, 90% of the time for Fire Protection Districts 2 to10 and 12 to 18 (Core). This time will be audited annually by Halifax Regional Fire and Emergency Service and an outside auditor if deemed necessary by the Chief Director. This audit will conform with the intent of the Corporate Scorecard theme of Safe Communities.

Response Time (Fire Protection Districts with population exceeding 100 persons per sq.km)

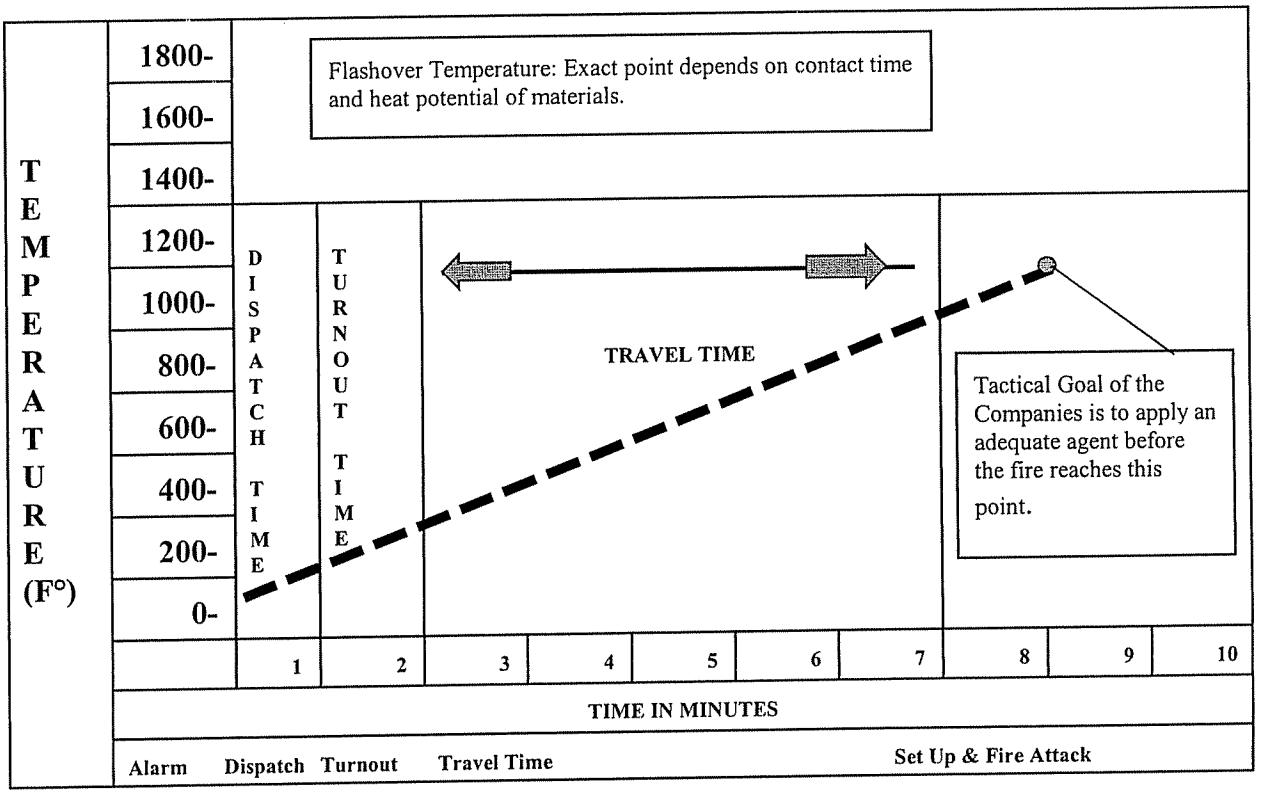
Sample data of response times was obtained for Stations 2-18 (Core) from the database currently available to Halifax Regional Fire and Emergency Service. The data was then analyzed for reporting and recording errors and 15% of the data which was suspect was eliminated from the final analysis. The calls were then broken down by category and whether or not the call was a single unit response (involving only one piece of fire apparatus) or a multiple unit response (involving more than one piece of fire apparatus). The details of this analysis were then plotted against the definition provided by the NFPA 1710 Standard and varying times of response above the time recommended in the standard were plotted to give an analysis that would allow an imperial value, in this case time, which would show the gaps in service delivery dependent upon the standard selected. This material is supplied in a mapping format for ease of interpretation. This response data was based on a response time being the time from which the fire apparatus departed the station, as recorded by dispatch, to the time the unit actually arrived on scene.

"The International City Manager's Association (ICMA) endorses the concept that in cities, fire station should be sited to enable the first-arriving pumper to reach a facility fire in time to apply water on that fire before flashover. Flashover is typically considered to occur when the room temperature reaches 1100 °F. It is considered relevant because that is the point at which an unprotected person in that room would not be expected to survive.

The ICMA uses the fire growth characteristics of a residential fire. It is recognized that physical conditions in a residential occupancy (low ceiling heights, relatively small compartments, extensive combustible fuel loadings, etc.,) all contribute to an extremely fast-developing fire with a rapid flashover condition. The ICMA's recommended travel time is derived from the time-to-flashover being approximately 8-10 minutes for residential occupancies.

Note: Recent data indicates that flashover in residential occupancies may even be quicker due to peoples' tendency to incorporate more and more highly combustible materials into their homes. For cities, this is a logical decision because residential occupancies (homes, hotels, motels, hospitals, schools, etc.) are typically distributed throughout all cities."

Time Versus Products of Combustion



It is recommended that the Response Time standard criteria of five (5) minutes or less, 90% of the time, for the arrival of the first arriving apparatus be adopted by Halifax Regional Fire and Emergency Service, regardless of the nature of the emergency service to be provided. It is recommended that the Response Time standard criteria of eight (8) minutes or less, 90% of the time, apply to the arrival of additional apparatus dispatched with the first arriving apparatus. For an upgraded alarm, it is recommended that the Response Time standard criteria of eight (8) minutes or less be adopted by Halifax Regional Fire and Emergency Service, to have a full first alarm assignment on scene 90% of the time. A full alarm assignment will be requested by the first arriving apparatus for structural incidents or as deemed necessary.

Full Alarm Assignment in the Fire Protection Districts with population exceeding 100 persons per sq. km. will consist of two (2) Engines (1 Officer and 3 crew members each), one (1) Aerial Unit (2 crew members), one (1) Tactical Unit (2 crew members): Total 12 personnel. In addition to the operational personnel an Incident Safety Officer, and Chief Officer to act as a dedicated Incident Commander will also be dispatched.

This standard would be applicable to areas of the HRM with a population density of over 100 persons per square kilometer and where there are career staff employed in that protection district. Currently this would encompass the majority of the Core with the exception of Station #11 Fire Response Area. (Based on estimated population density per square kilometer from calculated civic address population. To be reviewed with the next Stats Canada Population

Survey in conjunction with the Civic Address Population numbers from HRM GIS).

This time will be audited annually by Halifax Regional Fire and Emergency Service and an outside auditor if deemed necessary by the Chief Director. This audit will conform with the intent of the Corporate Scorecard theme of Safe Communities.

Turnout Time - Fire Protection Districts with population under 100 persons per sq.km)

Long term data is unavailable for Stations 19 to 63 (Rural: Composite / Volunteer) due to the lack of reliable data prior to the implementation of changes in dispatch and the radio system. The future capability of verification of data for Stations 19 to 63 (Rural: Composite / Volunteer) has improved with the implementation of the CAD/RMS project.

Halifax Regional Fire and Emergency will establish a Turnout Time standard of six (6) minutes or less, 90% of the time for Stations 19 to 63 (Rural), when the response is by volunteer members.

Stations with career staff (Composite Stations) will meet the turnout time criteria of one minute or less, 90% of the time, when career staff are present.

This time will be audited annually by Halifax Regional Fire and Emergency Service and an outside auditor if deemed necessary by the Chief Director. This audit will conform with the intent of the Corporate Scorecard theme of Safe Communities.

Response Time - Fire Protection Districts with population under 100 persons per sq.km)

Until the implementation of the proposed CAD/RMS project there is limited reliable statistical reporting from Stations 19 - 63 (Rural/Composite).

It is recommended that the response standard criteria of ten (10) minutes or less for the arrival of the first arriving apparatus be adopted for fire protection districts that have a population density of under 100 persons per square kilometer. This would include all Rural/Composite Stations and Station 11.

This time will be audited annually by Halifax Regional Fire and Emergency Service and an outside auditor if deemed necessary by the Chief Director. This audit will conform with the intent of the Corporate Scorecard theme of Safe Communities.

It is further recommended that fire protection districts with a population density of over 25 persons per square kilometer have daytime coverage with a minimum of 4 personnel on duty from 0700 to 1800, (these are the peak hours when the majority of responses are likely to occur - Monday to Friday where response by volunteers may be significantly delayed), unless the fire

protection district can substantiate through call records and verifiable data that the community has adequate daytime coverage through Volunteers to comply with the service standard for Fire Protection Districts with population under 100 persons per sq/ km.

It is further recommended that fire protection districts with a low availability of volunteers during weekday daytime hours, (0700 to 1800) and with specific high occupancy risks (industry, schools, nursing homes, hospitals and senior complexes), or with a lack of operational membership consider staffing to a minimum of the above level.

In an effort to support recruitment and retention of volunteers Halifax Regional Fire have received an additional HR support staff to deal with this North American trend of declining numbers of volunteers.

It is also recommended that when the population density in a fire protection district increases to 50 persons per square kilometer that a mandatory review of the service level in the fire protection district occur. This review must consider the industrial and commercial base of the community as well as facilities such as schools, hospitals, homes for special care, seniors complexes, etc. The review must demonstrate that the staffing level is adequate or that the volunteer turnout provides a satisfactory level of fire protection for the fire protection district. It may be appropriate in some communities to consider implementation of 24 hour coverage with a minimum of four personnel due to coverage and turnout issues.

Once a fire protection district has a population density that exceeds 90 persons per square kilometer consideration should be given to future growth and development in order to plan for the station to be able to provide response in accordance with the service standard for fire protection districts with population density exceeding 100 persons per square kilometer.

Alternative staffing proposals for stations in close proximity to each other may result in a higher level of staffing responding from a single station in order to provide a more efficient and effective level of service delivery. This should be considered if the service level delivery for the combined fire protection districts can be verified against the criteria addressed in above.

Fleet:

Core (Stations 2 - 18) based on current numbers of apparatus and maintenance of the current fleet reserve there will be no change. This is based on a 20 year replacement schedule. Construction of additional stations will require additional apparatus and this would be based on future growth to meet the proposed delivery standard.
Rural (Station 19-63) a fleet replacement schedule is currently being developed as part of an Overall Fleet Plan and will be followed based on adequate funding being provided through the Rural Tax Structure to create a sufficient reserve to allow for fleet maintenance and replacement. Fleet consolidations will be considered if supporting consolidation of facilities occurs.

Facilities:

As part of this Service Standard, Fire & Emergency proposes to undertake a Station Location Study for the entire area serviced by HRM and will develop a station location plan based on the Service Delivery Standard. We presently have a Station Location Study for the urban area dated 1997 which needs to be revisited based upon this Standard because of population growth, proposed development (Regional Plan) and traffic issues. Implications of the interface between the rural and core areas have not been fully studied and may have impact on proposed new stations. This emphasizes the need for an overall study encompassing the entire area serviced by Halifax Regional Fire and Emergency, including those areas currently under contract to other municipalities.

Core (Stations 2 - 18):

The construction of a new fire station (Penhorn) will allow for the consolidation of 2 existing stations (King St. & Woodside). Projected growth between Clayton Park and Bedford will strain the ability to respond from the existing stations and may create the need to construct an additional station in this area. Development in the Morris/Russell Lake areas may have an impact on delivery in those areas which will be considered in the updating of the Station Location Study. We are also studying the need and feasibility of a marine side terminal and firefighting/rescue capability for Halifax Harbour.

Rural (Stations 19 - 63):

Station consolidation will be considered based on future fire station location studies. Station locations will be based on the service standard. Consolidation and future growth will be based on meeting these service level standards. Adequate financial resources will need to be included in future capital budget proposals.

Initially several facilities may require upgrades to allow for the placement of staff during weekday hours in stations identified as the hub of each response district, in accordance with the Regional Plan. This plan will be phased in over a period of time, as funding allows, in order to fill the identified gap of personnel resources for day-time responses.

Training Facilities:

The current training facilities utilized by Halifax Regional Fire and Emergency were constructed by the former City of Halifax in the mid 1980's to support 6 fire stations and approximately 220 members. No provisions were made for expansion and the use of live fire training structures. This facility has a use as a primary training facility for pump operations, engineer driver training and aerial operational training due to the exceptional water supply provided to the site. However, there is a significant need for a fire training facility which will allow for year round live fire, flashover and natural gas training, as well as, confined space, trench rescue, collapse rescue and technical rescue training. If properly designed and funded, the facility could be utilized for vehicle extrication training, hazardous materials response training and could be used by other municipal departments for trench training, confined space training, natural gas and driver training. A Capital Reserve is proposed at $1,000,000 per Year for 3 years for in order to have a facility that will allow Halifax Regional Fire and Emergency members to maintain required levels of training. Federal Funding of 1 million dollars is available on a cost-sharing basis from

the Federal Urban Search and Rescue Program for a Training Facility.

Personnel
Based on the implementation of this service standard the current situation requires the following increases in complement. This does not include provisions for increase in complement based on the construction of additional stations due to population growth, urban growth, or integration of any Federal Firefighting forces.

Summary of Recommendations

A. For Fire Protection Districts with population density exceeding 100 persons per square kilometer.

1) A dispatch time of 60 seconds be established as a standard by HRM.

2) A turnout time of 60 seconds be established as a standard by HRM.

3) A response time of 5 minutes, or less - 90% of the time be established for single unit responses or for the first arriving unit of a multiple unit response.

4) A response time of 8 minutes, or less - 90% of the time be established for subsequent arriving units of a multiple unit response or alarm assignment.

5) A full alarm assignment consist of 2 Engines, 1 Aerial, 1 Tactical Unit, for a total of 12 personnel.

6) An Incident Safety Officer and a dedicated Incident Commander will be dispatched on full alarm assignments, with no response time criteria.

7) A subsequent alarm assignment consists of a minimum of 2 units (configuration acceptable to the Incident Commander) for a total of 8 additional personnel.

B. For Fire Protection Districts with population density under 100 persons per square kilometer.

1) A dispatch time of 60 seconds be established as a standard by HRM.

2) Staff Turnout: A turnout time of 60 seconds be established as a standard by HRM.

   Volunteer Turnout: A turnout time of 6 minutes or less - 90% of the time be established as a standard by HRM.

3) A response time of 10 minutes or less - 90% of the time be established as a standard by HRM.

C. Annual Auditing

Annual auditing is recommended for all service delivery standards. This will allow for confirmation of service levels as well as serve as a planning tool for future growth.

1) A population density of more than 25 persons per square kilometer will require a review to determine the need for daytime coverage by career staff. Verifiable data of volunteer turnout to the standard during daytime hours to meet the turnout and response criteria established as a standard by HRM.

2) A population density of more than 50 persons per square kilometer will require a review to determine the need for daytime coverage by career staff. This review must also consider infrastructure, industry and high occupancy risks. Verifiable data of volunteer turnout of sufficient numbers to provide protection services on a consistent basis must be provided or consideration given to providing either daytime or 24 hour staff.

3) A population density of more than 90 person per square kilometer will require a review to determine the need to plan for future growth and provision of services once the population density exceeds 100 persons per square kilometer.

4) Alternative staffing proposals for stations in close proximity can be proposed/considered and implemented to provide more effective and efficient service delivery, provided the turnout and response criteria for each protection district can be met.

Appendix "A"

Definitions:

Alarm Time: The point of receipt of the emergency alarm at the public safety answering point to the point where sufficient information is known to the dispatcher to deploy applicable units to the emergency.

Apparatus: A motor-driven vehicle or group of vehicles designed and constructed for the purpose of fighting fires.

Company Officer: A supervisor of a crew/company of personnel.

Dispatch Time: The point of receipt of the emergency alarm at the public safety answering point to the point where sufficient information is known to the dispatcher and applicable units are notified of the emergency.

Emergency Operations: Activities of the fire department relating to rescue, fire suppression, emergency medical care, and special operations, including response to the scene of the incident and all functions performed at the scene.

Fire Apparatus: A fire department emergency vehicle used for rescue, fire suppression, or other specialized functions.

Initial Full Alarm Assignment: Those personnel, equipment, and resources ordinarily dispatched upon notification of a structural fire.

Initial Attack: Firefighting efforts and activities that occur in the time increment between the arrival of the fire department on the scene of a fire and the tactical decision by the incident commander that the resources dispatched on the original response will be insufficient to control and extinguished the fire, or that the fire is extinguished.

Initial Rapid Intervention Crew (IRIC): Two members of the initial attack crew who are assigned for rapid deployment to rescue lost or trapped members.

Public Service Answering Points (PSAP): Any facility where 911 calls are answered, either directly or through re-routing.

Rapid Intervention Crew (RIC): A dedicated crew of fire fighters who are assigned for rapid deployment to rescue lost or trapped members.

Rescue: Those activities directed at locating endangered persons at an emergency incident, removing those persons from danger, treating the injured, and providing for transport to an appropriate health care facility.

Response Time: The time that begins when units are en route to the emergency incident and ends when units arrive at the scene.

Structural Fire Fighting: The activities of rescue, fire suppression, and property conservation in buildings, enclosed structure, aircraft interiors, vehicles, vessels, aircraft, or like properties that are involved in a fire or emergency situation.

Supervisory Chief Officer: A member whose responsibility is to assume command through a formalized transfer of command process and to allow company officer to directly supervise personnel assigned to them.

Sustained Attack: The activities of fire confinement, control, and extinguishment that are beyond those assigned to the initial responding companies.

Turnout Time: The time interval from the receipt of the call notification by the station(s) or apparatus until the time the apparatus notifies the dispatch centre that they are en route to the call.

Appendix "B"

The Halifax Regional Fire and Emergency Service has committed to provide an emergency service to the following (In Accordance With: HALIFAX REGIONAL MUNICIPALITY ADMINISTRATIVE ORDER NUMBER 24 RESPECTING FIRE AND EMERGENCY SERVICE IN HALIFAX REGIONAL MUNICIPALITY)

Fire and Fire Related Emergencies:

Structural and Wildland:	Offensive and Defensive
Medical Response:	Medical First Responder
Vehicle Rescue:	Operational
Water Rescue:	Operational
Ice Rescue:	Operational
Structure Rescue:	Operational
Confined Space:	Operational
High Angle Rescue:	Operational
Hazardous Materials:	Operational
Search and Rescue:	Assistance (Ground Search & Rescue)
Fire Prevention/Education:	Inspections, Investigations, Public Education