

TACOMA FIRE DEPARTMENT STANDARDS OF COVER

EXECUTIVE SUMMARY

The Tacoma Fire Department (TFD) has a long history and proud tradition of service to the greater Tacoma community. From volunteer bucket brigades and horse-drawn wagons to modern apparatus and service delivery methods, TFD continues to evolve as a progressive and responsive organization. The decision to seek accreditation and the development of this Standards of Cover document are the two most recent examples of TFD's commitment to performance excellence in service to the community.

SERVICE DELIVERY MODEL

The TFD two battalion service delivery model strategically positions the department's 16 engine companies, four ladder companies and five medic companies throughout its nearly 72 square mile service area in a way that ensures TFD is always prepared and ready to provide the following services:

- Fire suppression
- Basic and Advanced Life Support treatment and transport of critically ill or injured patients
- Hazardous materials containment (HazMat)
- Technical rescue (Tech Rescue)
- Marine firefighting and rescue (Marine)

TFD's "full service" operations together with the geographical challenges of the service area have resulted in the implementation of a dual response system whereby every TFD firefighter also is a certified Emergency Medical Technician (EMT) or a Paramedic. In addition, every engine and ladder company and the fireboat carry not only firefighting equipment, but also medical supplies and equipment, including oxygen and automatic external defibrillators (AED) for Basic Life Support (BLS) response.

In addition to emergency response, the TFD engine and ladder companies are assigned to fire code enforcement and public education as well as station and equipment maintenance responsibilities. Assignment of these prevention activities, together with the dual response service delivery system, is the method by which TFD is able to most cost effectively save both lives and property.

PLANNING ZONES

Traditionally, TFD has used engine zones as the basis for planning. Engine zone boundaries are determined by travel time; the distance an engine or ladder can cover in 4 minutes or less. From this point forward, the planning model for TFD

has changed to align with Commission Fire Accreditation International (CFAI) guidelines; dividing the TFD service area into two urban, nine suburban and one rural planning zone according to CFAI criteria.

COMMUNITY RISK ASSESSMENT

The community risk assessment is divided into three categories: Fire, Emergency Medical Services (EMS) and Non-Fire which includes HazMat, Tech Rescue and Marine. Risk definitions were developed for each category and where appropriate segmented into High, Moderate and Low. Each planning zone was assessed for the presence of risk according to those definitions.

Fire risk is defined as the characteristics of the community that generate fire risk persistently over time. Those characteristics are geography, threats to life safety and structures, including those with historic value and those whose loss would have great economic impact. The goal for fire risk mitigation is to keep emergencies from escalating by preventing flashover.

Overall analysis of Fire risk was conducted according to the following criteria:

- Population
- Number of moderate and high risk structures
- Number of low, moderate and high risk fires
- Presence of--
 - Geographical and/or access issues
 - Wildland/urban interface
 - Critical infrastructure -- utilities, transportation, health, education, government
 - Heavy industry
 - Potential for significant economic impact
 - Historical/cultural value

EMS risk is defined as the correlation between the frequency of high acuity medical conditions and community characteristics to determine the need for shorter times to treatment. The goal for EMS risk mitigation is to intervene before damage from the medical condition or traumatic injury becomes irreversible and to decrease the risk of mortality.

Analysis of EMS risk was conducted according to the following criteria:

- Population
- Percentage of population over age 50
- High frequency -- all EMS, high acuity conditions
- Frequency per 1,000 population -- all EMS, high acuity conditions
- Consistent and emerging trends

Non-Fire risk is defined as the structural and geographical characteristics of the community that over time persistently generate risk to life safety and/or the

environment. The goal for Non-Fire risk mitigation is to keep emergencies from escalating to prevent life and property loss and/or adverse impact to the environment. TFD provides Non-Fire risk mitigation via its HazMat, Tech Rescue and Marine services.

Overall analysis of Non-Fire risk was conducted according to the following criteria:

- Population
- Number of Non-Fire incidents
- Presence of--
 - Geographical and/or access issues
 - Wildland/urban interface
 - Critical infrastructure -- utilities, transportation, health, education, government
 - Heavy industry
 - Potential for significant economic impact
 - Historical/cultural value

The overall risk assessment for the TFD service area is as follows:

- Highest risk zones overall
 - Downtown
 - Eastside
 - South West
 - Tideflats
- Lowest risk zones consistently
 - Fircrest
 - Northeast Tacoma
- Zones to watch for emerging risk
 - Fife/Fire District 10 (Fire)
 - South Central (Fire, EMS)
 - South End (EMS, Non-Fire)
 - Upper Tacoma (EMS)
 - West End (Fire)

EMERGENCY RESPONSE ANALYSIS

Analysis of TFD's emergency response capability is a combination of the following factors:

- Cascade of Events to establish time stamps
- Comprehensive Task Analysis to determine the number of personnel and apparatus needed to accomplish certain tasks at an incident
- Comparability to ensure that performance standards are based on industry standards
- Predictability to determine trends which may be used for future planning projections

- Reliability to assess TFD's ability to maintain daily function under routine as well as unexpected situations
- Distribution referring to the geographic location of first due resources for initial emergency response intervention
- Concentration referring to the spacing of multiple resources to ensure there is adequate staff and equipment arriving on scene soon enough to prevent the escalation of the emergency

Overall response analysis was conducted according to the following criteria:

- Overall incident reliability for Fire and EMS
- Specialized apparatus reliability - Medic and Ladder companies
- 2008 Distribution response - all emergency responses, excluding Marine
- 2008 Concentration response - Fire (low, moderate and high risk fires)
- 2008 Concentration response - EMS (ALS and ALS with extrication)

The following conclusions regarding TFD response were drawn based on all of the data cited above:

- Substandard reliability overall in these planning zones--
 - South West
 - Tideflats
 - Eastside
 - South Central
 - South End
- Potential for reliability issues to emerge in these planning zones--
 - Upper Tacoma
 - Downtown
- Reliability above standard in these planning zones--
 - Fircrest
 - Fife/Fire District 10
 - Northeast Tacoma
 - North End
 - West End
- TFD clearly meets the minimum CFAI distribution response standard in all planning zones, except the Tideflats
- TFD consistently exceeds the minimum CFAI concentration response standard for all types of Fire in all planning zones
- TFD urgent support force response is below travel time standards both overall and for the majority of planning zones for both high and moderate risk fires, underscoring the impact of both geography and reliability on response capability
- Both ALS and ALS with extrication concentration response are substandard and declining in most planning zones

PERFORMANCE STANDARDS

The preceding response analysis culminated in the development of the following performance standards.

Distribution - All emergency responses

For 90% of all requests for emergency service, excluding Marine, the first arriving TFD engine or ladder staffed with a minimum of three personnel shall arrive within:

- 7 minutes, 42 seconds total response time for **urban** zones
- 9 minutes total response time for **suburban** zones
- 15 minutes, 30 seconds total response time for **rural** zones

Concentration - Fire

TFD shall arrive in a timely manner with sufficient resources to stop the escalation of the fire by preventing flashover. Initial response resources shall be capable of initiating fire suppression and addressing life safety issues as needed, while providing for the safety of responders and the general public.

Low Risk

For 90% of all low risk fires the effective response force, consisting of one engine or ladder staffed with a minimum of three personnel, shall arrive within:

- 7 minutes, 42 seconds total response time in **urban** zones
- 9 minutes total response time in **suburban** zones
- 15 minutes, 30 seconds total response time in **rural** zones

Moderate Risk

For 90% of all moderate risk fires:

- The effective response force, consisting of one engine and one apparatus and a minimum of 4 personnel, shall arrive within:
 - 12 minutes, 54 seconds total response time in **urban** zones
 - 15 minutes, 30 seconds total response time in **suburban** zones
 - 20 minutes, 42 seconds total response time in **rural** zones
- The urgent support force, consisting of four engines, one ladder, one medic company and one Battalion Chief vehicle for a total of 19 personnel, shall arrive within:
 - 14 minutes, 54 seconds total response time in **urban** zones
 - 17 minutes, 30 seconds total response time in **suburban** zones
 - 22 minutes, 42 seconds total response time in **rural** zones

High Risk

For 90% of all high risk fires:

- The effective response force, consisting of two engines or one engine and one ladder and a minimum of 6 personnel, shall arrive within:
 - 12 minutes, 54 seconds total response time in **urban** zones
 - 15 minutes, 30 seconds total response time in **suburban** zones
 - 20 minutes, 42 seconds total response time in **rural** zones
- The urgent support force, consisting of five engines, two ladders, one medic company and one Battalion Chief vehicle for a total of 25 personnel, shall arrive within:
 - 15 minutes, 54 seconds total response time in **urban** zones
 - 18 minutes, 30 seconds total response time in **suburban** zones
 - 23 minutes, 42 seconds total response time in **rural** zones

Concentration - EMS

TFD shall arrive in a timely manner with personnel sufficiently trained and equipped to initiate medical intervention to decrease the patient's risk of mortality and/or irreversible damage, while providing for the safety of responders. Timely transport of patients to the nearest, most appropriate hospital receiving center will be accomplished in an effective and efficient manner.

Advanced Life Support (ALS)

For 90% of all ALS calls the effective response force consisting of one engine and one medic company and a minimum of 5 personnel shall arrive within 10 minutes, 30 seconds total response time.

ALS with Extrication

For 90% of all ALS calls requiring extrication, the effective response force consisting of one engine, one ladder and one medic company and a minimum of 5 personnel, shall arrive within 11 minutes total response time.

Concentration - Marine Firefighting and Rescue

TFD shall arrive in a timely manner with personnel sufficiently trained and equipped to initiate rescue efforts to prevent life and property loss and/or mitigation efforts to prevent environmental damage while providing for the safety of responders.

For 70% of all Marine firefighting and rescue calls, the TFD fireboat, staffed with a minimum of 3 personnel, shall arrive within 22 minutes, 30 seconds total response time.

Concentration - Technical Rescue

TFD shall arrive in a timely manner with personnel sufficiently trained and equipped to stabilize the incident scene and extricate casualties while protecting the safety of responders and/or additional adverse impact to the environment.

For 70% of all Technical Rescue calls, the effective response force consisting of one engine, one ladder and one medic company plus Engine 8 and Ladder 2 and a minimum of 14 personnel, shall arrive within 22 minutes, 30 seconds total response time.

Concentration - Hazardous Materials (HazMat)

TFD shall arrive in a timely manner with personnel sufficiently trained and equipped to stabilize and control access to the incident scene, identify and evaluate hazards and isolate or evacuate casualties, while protecting the safety of responders and/or additional adverse impact to the environment.

For 70% of all HazMat calls requiring operations/technician level response, the effective response force consisting of one engine and one ladder plus Engine 12 and Ladder 4 and a minimum of 12 personnel, shall arrive within 22 minutes, 30 seconds total response time.

RESOURCE ANALYSIS AND RECOMMENDATIONS

The following guidelines provided the framework for the analysis of resources that will be needed to achieve and sustain TFD's performance standards:

- Determination of risk is a function of population, type and number of structures, incident frequency and the presence of or potential for the following additional significant risk factors
 - Geography/access issues
 - Wildland/urban interface
 - Critical infrastructure
 - Heavy industry
 - Economic impact
 - Historical/cultural value
- Evaluation of response is a function of reliability, distribution and concentration
- Increased risk requires increased resource concentration
- Risk + Reliability + Response = Resources
- Resources = Personnel, Apparatus, Facilities and/or Prevention

Recommendations for mitigation based on resource analysis are as follows:

Resource Recommendations - High/Emerging Risk Zones			
People	Apparatus	Facilities	Prevention
<ul style="list-style-type: none"> • Eastside and South West: Add ALS capability to existing engine company (+1 FF/PM) AND/OR new medic company (+2 FF/PM) • South End: Make existing ALS engine full-time (+1 FF/PM) AND/OR new medic company (+2 FF/PM) • Tideflats: New 4 person engine with ALS capability (+3 FF/EMT, +1 FF/PM) 	<ul style="list-style-type: none"> • 2 engines OR • 1 engine and 1 ladder AND • 1-2 medic companies 	<p>New station with associated staffing and apparatus - engine or ladder and medic companies - to mitigate combined proximate risk in Eastside, South End and South West planning zones</p> <p>AND/OR</p> <p>Modifications to existing stations to accommodate additional personnel</p>	<ul style="list-style-type: none"> • AED placement in Downtown and Tideflats planning zones to mitigate EMS risk associated with higher daytime population • Study correlation between cardiac/stroke and diabetes and possible prevention strategies to mitigate EMS risk • Trauma prevention in Downtown, Eastside and South West planning zones
TOTALS			
<p>3-7 FF/PM (15-35 FTE)</p> <p>3 FF/EMT (15 FTE)</p>	<p>2 engines and 1-2 medic companies</p> <p>OR</p> <p>1 engine, 1 ladder and 1-2 medic companies</p>	<p>1 new station</p> <p>AND/OR</p> <p>Modifications to existing stations to accommodate additional personnel</p>	

It is also important to note here that TFD's current staffing model of two Battalion Chiefs overseeing 25 companies (16 engine, 4 ladder, 5 medic) exceeds the generally accepted business practice that calls for a span of control of 5-7 direct reports (or companies in the fire service) per supervisor. The additional staffing recommended here adds up to 4 additional companies, creating the need for at least 2 additional Battalion Chief positions (10 FTE). In addition, TFD would have to modify facilities and acquire additional vehicles to accommodate this additional staffing.

Additional recommendations for low risk zones include:

- **North End:** Consider staffing the existing ALS capable engine with a full-time paramedic to improve EMS response (+1 FF/PM = 5 FTE)
- **Northeast Tacoma:** Consider 4 person engine staffing to improve moderate fire concentration response (+1 FF/EMT = 5 FTE) and/or consider modifications to the ambulance contract to improve ALS response for this planning zone

Additional recommendations specific to Marine response:

- Renovate Station 5 and re-locate fireboat to that site to improve Marine response
- Consider full-time fireboat staffing for existing crew and the addition of a full-time 4th person with ALS capability
 - 4th person increases firefighter safety and operational efficiency
 - Creating ALS capability is supported by data regarding the demand for EMS and search/rescue
- Create back-up Marine response capability
 - Reserve fireboat and/or
 - Rapid response vessel (RRV) for improved Marine response where significant pumping capability is not required

IMPLEMENTATION PLAN

TFD will implement this Standards of Cover plan as follows:

- Recommendations for additional staffing and apparatus will be presented for consideration in the City's 2009 mid-biennium budget adjustment and subsequent biennial budgeting processes; the next of which begins in 2010
- New facility recommendations will be integrated into the facilities master planning process slated for completion in 2009
- Prevention recommendations will be forwarded to TFD's public education staff for further research and subsequent program development and implementation

MONITORING AND EVALUATION

The performance standards outlined in this document provide the foundation for TFD's ongoing organizational performance management efforts. They will be incorporated, along with performance measures related to other aspects of department operations, into a "report card" that is reviewed at least quarterly by TFD's senior administrative team.

Along with this quarterly review, all of the performance measures and results will be reviewed as part of the annual TFD strategic plan update, with adjustments to

strategies and/or benchmark targets made accordingly and then reflected in an updated strategic plan document. In addition, the intent is to replace the TFD performance measures currently found in the City's strategic plan with the performance measures outlined in this document.

Standards of Cover performance results will be shared quarterly and the strategic plan update annually with key stakeholders including, but not limited to, the City Council, City Manager, Neighborhood Councils and TFD personnel.