

FIRE AND RESCUE

Intent

The Fire and Rescue Plan is designed to maintain Prince William County as a safe community, reducing loss of life, injury, and property from fire and/or accident. The mission of the Department of Fire and Rescue is to protect lives, property, and the environment through timely, professional, humanitarian services essential to the health, safety, and well-being of the community. The ultimate goal is to most efficiently provide fire and rescue services in a manner that will ensure timely responses in a countywide manner. Responses include, but are not limited to, hazardous materials, swift water rescue, technical rescues, and natural disasters. Timely responses by emergency personnel and equipment enable resuscitation efforts to begin in the critical minutes immediately following a cardiac incident. Timely responses also minimize residential fire deaths. In order to supplement response time and reduce risk of injury or death to County residents, the establishment of educational programs, such as Cardio-Pulmonary Resuscitation (CPR) training, automatic external defibrillators (AED), and installation of additional fire protection systems – such as sprinklers, smoke detectors, and other architectural modifications is encouraged.

Residents and businesses expect a high level of fire and rescue service from their community. This service increases their sense of safety and protects their investment. The intent of this Plan is to establish fire and rescue level of service (LOS) standards for the County, and to encourage new development to achieve those standards. LOS standards are defined as travel time as well as work load capacity, that has been quantified as building square footage, acreage, and equipment needed to provide fire and rescue service that meets local service standards for urban populations, expressed as cost/capita (residential) and cost/incident (non-residential).

The intent of the Fire and Rescue Plan is to design a system with Fire and Rescue response units that are able to respond to the first call for each unit in a timely fashion, and that meet established LOS standards. It is also intended to provide additional units when the work load increases to the extent that multiple incidents consistently create delays. Where these response units are judged – through application of the LOS standards – to be too far from any proposed development, these standards provide for additional fire and rescue mitigation measures – such as adding fire suppression equipment or making transportation improvements that will reduce travel time for emergency units. This includes reducing travel time within commercial, high-rise residential, and institutional structures.

The LOS standards for fire and rescue facilities are contained in this Plan, in its policies and in Appendix A. The LOS standards are based upon recognized and accepted professional and County standards. They also reflect resident demand for such service, as reflected in fire and rescue service calls. These LOS standards ultimately quantify per capita monetary costs for providing Countywide fire and rescue service to new residential and non-residential development. These LOS standards are the basis for the maintenance of existing service and expansion of fire and rescue services in light of new development.

The LOS standards for fire and rescue services address the location of new development relative to a travel time standard emanating from an existing station. LOS mitigation measures have been established for proposed new development that falls within or outside travel time.

The LOS standards also address work load capacities, expressed as calls for fire and rescue service (or incidents). These standards incorporate costs, such as facilities and equipment, for needs which are generated by new development.

New development beyond the travel time standard for an existing station may require greater mitigation measures than new development located within the travel time standard for an existing station. Developments located outside the standard travel times may require mitigation such as the installation of residential fire suppression sprinklers and other measures as recommended with a rezoning or special use permit application.

The components of the Fire and Rescue Plan are:

- Intent, Goal, Policies, and Action Strategies
- Level of Service Standards for Fire and Rescue Stations Travel Times (in minutes) (Table 1)
- Level of Service Standards for Fire and Rescue Station Work Load (Table 2)
- Level of Service Standards for Fire and Rescue Facilities (Table 3)
- Existing and Projected Fire and Rescue Facilities Map (Figure 1)
- Projected Fire and Rescue Station Needs (Table 4)
- Level of Service Standards for Fire and Rescue Facilities (Appendix A)

GOAL: To achieve and ensure an adequate and timely response to emergencies – including, but not limited to, fire, medical, hazardous materials, and natural disaster emergencies – in accordance with established LOS standards.

FIRE-POLICY 1: Maintain an Information Management System, to evaluate the achievement of the LOS standards and to monitor service capabilities and needs. Include this information as part of the Fire and Rescue service status reports.

ACTION STRATEGIES:

1. Maintain the development of the Altaris Records Management System and integrated system tools, such as Safety PAD and MDC.
2. Maintain the installation of the computerized reporting and office automation network at each Fire and Rescue Association member station and work site.
3. Integrate all of the fire and rescue data collection, storage, and retrieval systems, to allow for efficient access to information necessary for the monitoring and evaluation of LOS standards.

4. Develop LOS management evaluation reports that describe service delivery and capabilities to all areas of the County.

FIRE-POLICY 2: Ensure the acquisition of an appropriate number of Fire and EMS facilities and response units to meet the LOS standards provided herein for the County.

ACTION STRATEGIES:

1. Prioritize the sequence of site acquisition and funding for new station construction, in order to fill existing gaps in fire and EMS service delivery.
2. Identify additional station sites and seek commitments from applicants for rezoning and from member departments of the Fire and Rescue Association for the construction of facilities and the provision of additional equipment, where the projected increase in demand, because of past development and future planned development consistent with the development density guidelines within the Comprehensive Plan, warrants the additional capacity (see Tables 1 and 2).
3. Maintain a funding mechanism, such as earmarking funds, to ensure the construction of currently needed stations, as indicated in the County's Capital Improvements Program and Fire and Rescue Levy Capital Fund.
4. Encourage the collocation of other community uses with fire and rescue facilities. Following are examples of incompatible uses:
 - **Facility Incompatible Uses:**
 - ◆ Schools
 - ◆ Health care facility¹
 - ◆ Library
 - **Site Incompatible Uses:**
 - ◆ Health care facility
 - ◆ Day care center

¹ Health Care Facilities include Hospitals and Health Clinics

FIRE-POLICY 3: Ensure that new development does not result in the erosion of LOS standards in terms of work load capacity and facility size, acreage, and equipment. Encourage the installation and maintenance of fire and safety features in all buildings, beyond the minimum requirements as set forth in the Virginia Uniform Statewide Building Code.

ACTION STRATEGIES:

1. Require rezoning and special use permit applicants to provide information regarding fire and rescue LOS impacts with their applications. Apply the LOS standards developed under the action strategies in this Plan and contained in Appendix A, to mitigate the effect of proposed new development on the LOS of fire, rescue, and related emergency medical services (EMS). This mitigation should be a monetary contribution for fire and rescue services, provided with each rezoning and/or special use permit application. Mitigation may also be expanded to include installing sprinkler systems, improving the building construction type, using fire barriers, and other means.
2. Encourage infill development inside the Development Area – within the constraints of the designated land use classifications – in areas with above-standard LOS capacity.
3. Discourage rezoning and special use permit approvals in areas having significantly substandard LOS, unless significant mitigation measures are a part of the development proposal.
4. Identify and seek service delivery improvements as mitigation measures at existing station service areas through the development review process. Mitigation measures may include – but shall not be limited to – funding and installation of fire and rescue approved traffic signal preemption technology at signalized intersections near fire and rescue stations.
5. Identify additional station sites and seek commitments for the construction of facilities and the provision of additional equipment, where the projected increase in demand – because of past development and future planned development consistent with the development density guidelines within the Comprehensive Plan – warrants the additional capacity (see Tables 1 and 2).
6. Encourage the installation of fire suppression systems, medical alert systems, or other mitigation measures that exceed minimum building code requirements in large structures over 50,000 square feet in area or over 40 feet in height. Such mitigation measures may include – but shall not be limited to:
 - commitment to provide CPR and Automated External Defibrillators (AED)
 - trained staff available and on duty, along with AED equipment, within high density housing and at employment locations during business hours.
 - sizing of elevators to accommodate stretchers

7. Include transportation solutions as mitigation measures – such as interparcel connectors (public access roads connecting one or more parcels), installation of traffic signal pre-emption equipment, intersection improvements, and accessibility within a site. Any proposals to connect roads through residential areas for the purpose of providing emergency vehicle access should be reviewed on a case-by-case basis. Also encourage the provision of additional new development mitigation measures such as fire suppression systems (sprinklers), and emergency medical training for on-site staff. Such measures, where provided, shall be described in each rezoning or special use permit application.
8. Ensure that road networks, water systems, and related parts of the service delivery system are built in the early phases of project development.
9. Utilize temporary station locations and transportable facilities in the early phase of project development, when such development requires new fire and rescue facilities, and when an optimum station location(s) is(are) not immediately available.
10. Develop a list of policies to be used in evaluation of rezoning and special use permit applications to improve response times for fire and rescue services.
11. Encourage the Fire and Rescue Association to review and comment on rezoning and special use permit applications.

TABLE 1
LEVEL OF SERVICE STANDARDS FOR FIRE AND RESCUE FACILITIES
TRAVEL TIMES

Area	First Unit (Fire and Rescue) Travel Time in Minutes
Fire Suppression Emergency Standard – (Countywide)	4.0
Basic Life Support (BLS) Emergency Standard – (Countywide)	4.0
Advanced Life Support (ALS) Emergency Standard (Countywide)	8.0

Note: First Unit (Fire and Rescue) Travel Time to be achieved for 90% of all incidents.

Source: NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments, 2000.

TABLE 2
LEVEL OF SERVICE STANDARDS FOR FIRE AND RESCUE STATION
WORK LOAD

Factor	Standard
Responses per Tactical Unit	2,000

Source: Prince William County Department of Fire and Rescue Planning Office.

Work load capacity standards are established by the Fire and Rescue Department and can be obtained from that department. Work load capacity is measured by the number of fire and rescue incidents a tactical unit is able to serve.

Travel time may be adversely impacted when tactical units serve more than 2,000 incidents per year. If the station designated to provide the first unit response is unavailable, another station will be dispatched. The additional distance traveled also adversely affects travel time.

TABLE 3

LE LEVEL OF SERVICE STANDARDS FOR FIRE AND RESCUE FACILITIES

RESIDENTIAL

Factor	Standard
Building Area	0.77 SF/capita
Acres	0.0002/capita
Equipment Cost	\$ ¹ /capita

NONRESIDENTIAL

Capital Cost/ Incident	Incident Generation Factor	Cost/Square Foot
\$ ²	0.00022 ³	Capital cost per incident x Incident Generation Factor

Source: Prince William County Department of Fire and Rescue.

Notes:

¹ Equipment Cost Per Capita will be updated periodically by determining the average cost of equipment necessary to outfit an average fire station.

² Capital Cost per non-residential incident is determined by total capital cost per facility (cost for acreage, building, and equipment) divided by the maximum desirable incidents served per station (2,000 incidents).

³ Non-residential incident generation factor is based on 2006 data.

The Department of Fire and Rescue has developed the LOS standards for fire and rescue facilities based on the standards for station work load and national standards of urban jurisdictions, such as Prince William County.

FIRE-POLICY 4: Pursue enabling legislation and develop programs that will improve public safety.**ACTION STRATEGIES:**

1. Continue to monitor technology that will facilitate the installation of medical alert systems in all new commercial, industrial, and residential buildings. Pursue state enabling legislation that will allow the County to require installation of such systems in all new commercial, industrial, and residential buildings.
2. Pursue state enabling legislation, including participation in code and standards development, that will allow the County to impose additional fire protection requirements for single-family detached housing on lots with reduced side setbacks, in order to reduce the chance of fire spreading throughout the subdivision.
3. Pursue state enabling legislation, including participation in code and standards development, to allow the County to require the installation of supervised fire suppression systems in all new commercial, industrial, and residential buildings.
4. Pursue state enabling legislation, including participation in code and standards development, to allow the County to require the installation of elevators that meet size requirements for EMS in all new commercial, industrial, and residential buildings.
5. Pursue state enabling legislation, including participation in code and standards development, to require installation of smoke detectors in existing buildings.
6. Develop information on the value of fire, medical, and safety features, and present this information to consumers and developers.
7. Encourage the installation of residential fire suppression sprinklers.
8. Encourage infection control training, hazardous material identification, and CPR and AED training and certification for all County and school system employees.
9. Encourage CPR and AED training and certification among the general County population.
10. Evaluate and recommend programs and standards to increase the number of CPR- and AED-trained staff available and on duty – along with AED equipment – at commercial and industrial locations and in high-density residential buildings during business hours.
11. Develop a method to evaluate services provided by those jurisdictions that may be involved in regional services and cooperative efforts.

12. Pursue and/or maintain mutual response agreements with the cities, military bases, and surrounding counties, in the interest of regional planning and the cooperative provision of fire, rescue, and hazardous materials response services.

FIRE-POLICY 5: Consider site location, site suitability, building design and timing of construction as standards for new facilities while also recognizing that each site is unique and may involve variable application of the standards.

Figure 1 presents general locations of new fire and rescue facilities to meet the future fire and rescue service needs of the County, based upon the Long-Range Land Use Plan Map, other portions of the Comprehensive Plan, and Fire and Rescue LOS standards. Changes to the Long-Range Land Use Plan and Map – and other Plan chapters (such as the Transportation Plan), as well as LOS changes at existing stations – will affect the information presented on Figure 1.

ACTION STRATEGIES:

1. Strategically locate new stations with the following general considerations:
 - to obtain and maintain response travel time standards in accordance with Table 1;
 - to be near, but not at, intersections of arterial and/or collector highways where alternative response routes are available to all parts of the station's first, second, and third due response areas;
 - to be away from the base of long or steep roadway grades;
 - to be where there is at least 350 feet of sight distance for approaching traffic at the point of discharge;
 - existence of transportation barriers, such as impediments to access, ie., narrow shoulders or availability of cross-overs or cut-throughs;
 - proximity to adjacent locality which has agreed to furnish mutual aid; and
 - existing or planned non-residential uses which may need different levels of protection, such as schools or industry.
2. Determine the suitability of a site with the following specific considerations:
 - minimum of five buildable acres;
 - soils suitable for building construction and able to support high-weight (30 ton) vehicles;
 - space for landscaping and buffering on-site and/or where there is adequate off site buffering; direct public street access from both the front and from a side or rear location;
 - access to utilities in close proximity to the site;
 - outcome of an environmental constraints analysis to determine extent of wetlands, 100-year floodplain, endangered species, and/or Resource Protection Area;
 - square or rectangular-shaped property;
 - appropriate grade and rough grading if supplied by a developer; and
 - location and description of easements

3. Design and construct fire and rescue facilities and sites according to the relevant guidelines of the Community Design Plan.
4. Plan the timing of construction and operation of new stations to meet level of service standards and concurrent with the first phases of major development projects.
5. Allow use of temporary sites and transportable structures, provided that these facilities will only be used until suitable sites for building permanent stations become available.

Figure 1 – Existing Facilities

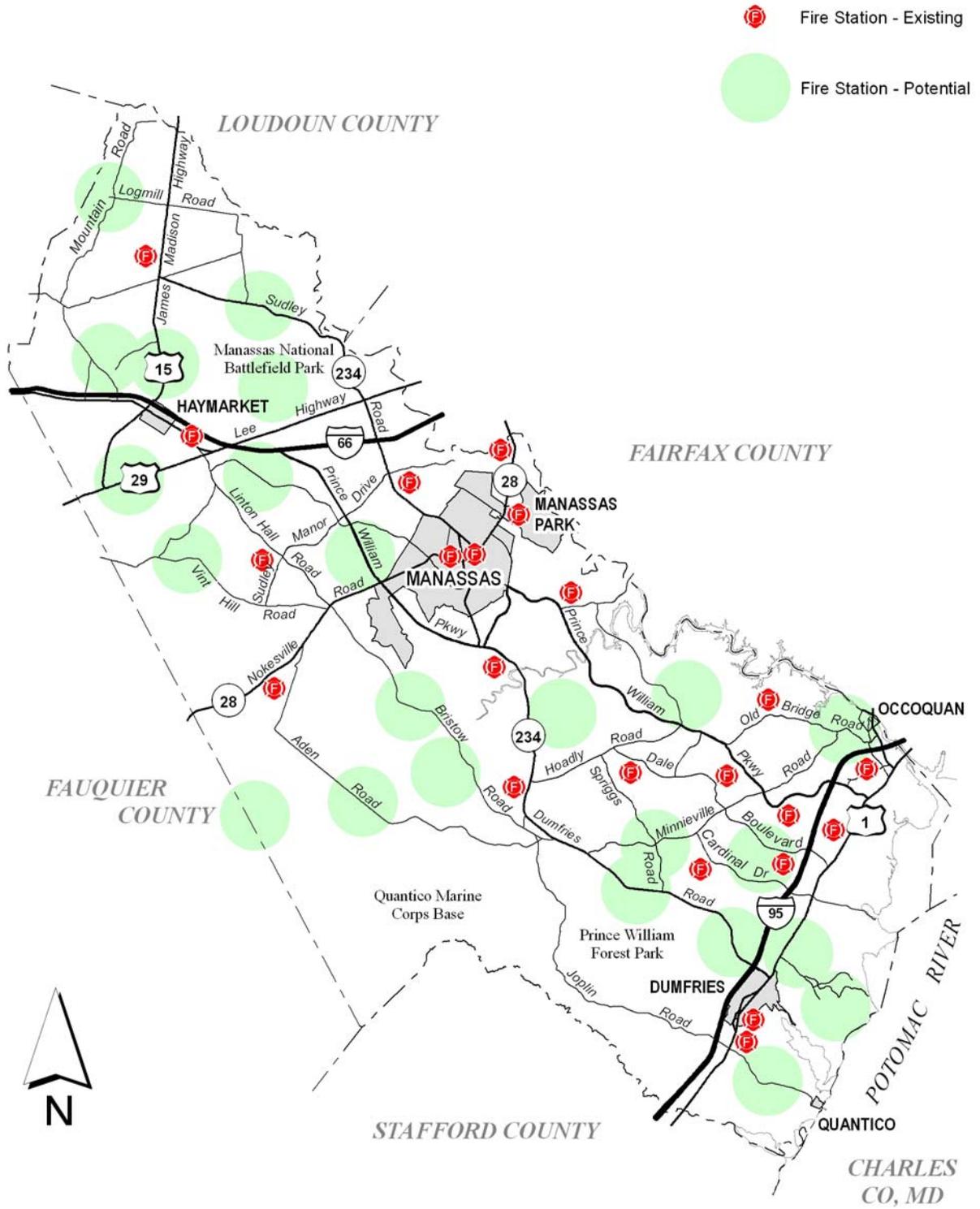


TABLE 4

**PROJECTED FIRE AND RESCUE STATION NEEDS BY
EXISTING AND PROJECTED POPULATION**

Fire and Rescue Stations	Existing (2006) 378,455	Projected 2015 463,343	Projected 2030 555,012
TOTAL	18	23	30

Note:

Projections of need within the text of the Fire and Rescue Plan are based upon the information contained in the COG 7.1 Staff population and employment projections prepared by Prince William County, and the Prince William County Capital Improvements Program Fiscal Years 2008-2013. Additional stations may be needed.

APPENDIX A

LEVEL OF SERVICE STANDARDS FOR FIRE AND RESCUE FACILITIES

New development presents demands for Countywide fire and rescue service that affect the ability of facilities to meet established LOS standards. It is important, therefore, that Prince William County provide fire and rescue services Countywide that address these demands. The demand for Countywide fire and rescue service and facilities must be measured, and means must be identified for maintaining the established Countywide LOS standards for fire and rescue facilities after new development occurs.

LOS standards are to be used to evaluate new proposals and to evaluate Fire and Rescue Service system capabilities. These are not to be considered as actual requirements to be met by all proposals – or by the County – on all occasions. There are many factors – characteristic of each coverage area and for each individual incident – that affect actual system performance. These standards represent desired level of service and should not be interpreted as being one hundred percent attainable with every particular incident.

Any application for a rezoning or special use permit shall contain the following information:

- Number of dwelling units proposed.
- Name(s) and location(s) of fire and rescue station(s) serving the project area.

Rezoning or special use permits for new development shall meet the established LOS standards for fire and rescue facilities, set forth more fully below. Applications that fail to meet the LOS standards shall be considered inconsistent with the Fire and Rescue Plan.

The following represent the LOS measurements for fire and rescue services:

- Travel time.
- Work load capacity.

“**Travel time**” is defined as the estimated amount of time it takes from departure of an emergency response unit from the fire and rescue station to arrival on the scene of an emergency. It does not include the estimated time between receipt of the call and departure from the fire station. Factors included in estimating travel time are speed limits and distance; this time frame does not include roadway LOS, road conditions, prevailing traffic volumes, traffic calming devices, or weather.

“**Work load capacity**” is defined as the number of fire and rescue incidents that a facility is able to serve based on Prince William County Fire and Rescue standards, using national guidelines for urban jurisdictions. Work load capacity standards are established by the Fire and Rescue Department and can be obtained from that department. Work load capacity is measured by the number of fire and rescue incidents a facility is able to serve.

Using Prince William County standards for station work load and applying national standards for suburban jurisdictions such as Prince William County, Fire and Rescue has developed LOS standards for fire and rescue facilities.

Projections of need within the text of the Fire and Rescue Plan are based upon the information contained in the Metropolitan Washington Council of Governments (COG) Round 7.1 population and employment projections prepared by Prince William County, and the Prince William County Capital Improvements Program Fiscal Years 2004-2009. Alternative locations and/or additional stations may be needed.

LOS standards will be determined to have been met by an applicant for a rezoning or special use permit based on the following:

1. The proposed new development is within the travel time standard for an existing fire and rescue station and a monetary contribution in an equitable amount is offered to mitigate erosion of work load capacity, at the LOS standards contained in the Fire and Rescue Plan.
2. The proposed new development is outside the travel time standard for an existing fire and rescue station and a monetary contribution in an equitable amount is offered to mitigate erosion of work load capacity, at the LOS standards contained in the Fire and Rescue Plan and the applicant has committed to at least one of the following:
 - A fully automatic fire suppression system (sprinklers) in each proposed residential unit; or
 - Installation of fire suppression systems and a fire barrier equivalent to one hour rating on the exterior wall that is subject to the fire exposure in new single-family, detached residential developments that feature reduced side setbacks and designed in a manner acceptable to the Prince William County Fire and Rescue Association.
 - Provision of a fire and rescue station site, acceptable to the Prince William County Fire and Rescue Association; or
 - Transportation improvements acceptable to the Prince William County Fire and Rescue Association, such as an interparcel connector, installation of traffic signal pre-emption equipment, and/or intersection improvements to decrease the travel time.

The methodology for determining equitable monetary contributions for new development is outlined in the *Policy Guide for Monetary Contributions, Prince William County Planning Office*.