

**NORTHSHORE FIRE PROTECTION
DISTRICT**

6257 7th Avenue Lucerne California
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CAPITAL FIRE FACILITY AND EQUIPMENT PLAN
2017- 2027

FIRE PROTECTION SYSTEM STUDY

2017

INTRODUCTION

The Northshore Fire Protection District Board is the governing body for the Northshore Fire Protection District, hereafter referred to as the Northshore F.P.D.

This study brings together a number of earlier studies and adopted standards into one document in order to provide a 10-year Operation Plan for the Northshore F.P.D. This study will be updated.

The 10-year Operation Plan for the Northshore F.P.D. will be reviewed annually and updated-usually during the preliminary budget process.

MISSION STATEMENT

The primary mission of the Northshore F.P.D. is to provide a range of programs designed to protect the LIVES and PROPERTY of the inhabitants of the Northshore F.P.D. from the adverse affects of FIRES, SUDDEN MEDICAL EMERGENCIES, or exposure to DANGEROUS CONDITIONS created by either MAN or NATURE.

DUTIES AND SERVICES

The Board of Directors has continuously tried to provide Fire Protection Services, First Responder Emergency Medical Material Emergency Response Services, and Other services relating to the Protection of Life and Property, to the best of their ability given the budgetary restraints, under Health & Safety Code Section 13861 and 13862 of the Fire Protection District Law of 1987.

STANDARDS

The basis for the Northshore F.P.D. fire services standards rely on studies of the Fire Department, the standards and policies of the Board of Directors, the standards and practices of the fire officers, LAFCO Sphere of influence studies, the Lake County General and Community Plans, the Insurance Services Office standards and testing of the Fire Protection System, and the National Fire Protection Association standards.

Response Standards

The Board of Directors declares that the Fire Department seeks to achieve, but not guarantee, the following standards response within the Northshore F.P.D.

The arrival of the first fire apparatus at the point of need within 5 minutes "run time", 70% of the time and within 10 minutes 100% of the time.

The arrival of the first First-Responder Emergency Medical Aid at the point of need within 8 minutes "run time" 80% of the time.

Run Time + the elapsed time from the first responding engine leaving its station until it arrives at the emergency scene.

Station Location Standards

In evaluating proposed station locations and their respective priorities, such factors as call incidence and type, population, fire flow requirements, development density and valuation, land use and planned circulation in the service area should be considered. Also the influx of tourists and summer residents during the season, nearly doubles in District population.

Commercial centers, populations, (residences and day use) community identify, call incidences, run time, and station influence areas have been the principle factors in location the existing station within the Northshore F.P.D.

Structural Fire suppression Standards

The Structural Fire Suppression Standards used in support of the Goals, & Recommendation in the Northshore Fire Protection Study-2017, are those standards contained in California Fire Code, California Building Code & Nation Fire Protection Association Standards (NFPA).

BACKGROUND

The Northshore F.P. D., a political subdivision of the State of California, was originally organized November 8, 2006.

History

The consolidation (reorganization) consists of the Clearlake Oaks Fire Protection District, Lucerne Recreation and Park District, Nice Community Services District and the Upper Lake Fire Protection District, effective November 8, 2006. All existing districts and all newly combined districts lie within the unincorporated area of the County of Lake.

Geographic profile

The Northshore takes in 42 miles along the Highway 20 corridor within Lake County. The north shore communities that we protect are from east to west Spring Valley, Clearlake Oaks, Glenhaven, Paradise Cove, Kono Tayee, Lucerne, Nice, Upper Lake, Witter Springs/Bachelor Valley and Blue Lakes. Most of these communities are right on Clear Lake or Blue Lakes. Lake Pillsbury and Indian Valley reservoir could also be included. Lake Pillsbury has a recently established fire department but has no means to transport patients and relies on Northshore Fire for medical response frequently.

The Climate is classified as usually having mild winters and long, hot summers. The natural vegetation types in the area are mixed conifer, chaparral and oak woodland. These wild land fuels do not readily decompose in this type of ecosystem creating a high fuel buildup that is unusually prone to fire. The natural vegetation surrounding the rural residences in the area is deceptively flammable because of its dryness, its structure and dense growth.

Wildland/Rural Interface

The California Department of Forestry and Fire Protection is responsible for the wildland fire protection under the authority of Public Resources Code 4125-4127 in privately owned forest, brush, and grass covered rural areas of the State, including the Northshore F.P.D., known as State Responsibility Areas (SRA). There is little or no break in the wildland/structural interface and intermix, fires can spread rapidly through the timber, brush, and grass and can ignite tens to hundreds of homes in a short period of time. This was recently seen in Lake County with the Rocky Fire, Jerusalem Fire and Valley Fires of 2015 and Clayton Fire of 2016.

Although there are differences between the wildland and structural firefighting systems, there are basic similarities and the two systems complement each other. In fact there exists a deep interdependence during large fire activity or during the summer when the danger of fire is high or extreme. Wildland fires threaten structures and structure fires threaten the wildlands.

EXISTING CONDITIONS

Call Volume

<u>Year</u>	<u>Total Calls</u>
2007	No data available
2008	1596
2009	2172
2010	2126
2011	2231
2012	2531
2013	2661
2014	2607
2015	2885
2016	2912

Personnel

The Northshore F.P.D. relies on twenty four (24) full time paid personnel, plus a Chief, Deputy Chief, Admin Captain, Sec/Account and Mechanic.

Current Facilities and Equipment

The District operates four (4) manned stations and three (sub-stations) utilizing volunteer and paid personnel:

Station 75 Clearlake Oaks Area

8,082 Sq. Ft., concrete and block construction with a wood frame addition built in 1981, 5 apparatus bays, 2 offices, meeting room, barracks and kitchen.

Engine 7511: 2010 HME, 1,000 gallons, 1,250 GPM pump

Engine 7521: 1995 3D/Freightliner, 500 gallons, 500 GPM pump

Engine 7561: 2007 Fouts/ Ford, 300 gallons, 90 GPM

Water Tender 7511: 2010 Fouts/Kenworth, 2000 gallons, 500 GPM pump

Rescue 7511: 2006 Kenworth heavy rescue

Medic 7511: 2012 Braun NW/Ford ambulance

Utility-7521: 1995 Ford pickup

Boat 7511:1989 Aluma-weld with a 500 GPM pump

Station 76 Glenhaven Area

1,432 Sq. Ft., wood and stucco building constructed in the 1950's, 2 apparatus bays, small meeting room and rest room.

Engine 7661: 1992 Chevy utility, 200 gallons, 50 GPM pump

Station 77 Spring Valley Area

2,136 Sq. Ft. wood structure built in 1984, 2 apparatus bays, 1 bedroom, restroom. This station is currently with regard to the living quarters.

Engine 7711, 1989 FMC/Ford, 800 gallons, 1,250 GPM

Medic 7711: 2008 Dodge Sprinter ambulance

Station 80 Lucerne Area-District Headquarters

3,900 Sq.Ft., built in 1973, two story metal building with apparatus bays and barracks, 8 apparatus bays, 3 bedroom, 2 rest rooms, kitchen and meeting room.

1,950 Sq. Ft. Office built 2000, 3 offices, meeting room, restroom.

1,200 Sq.Ft. shop building built in 2003.

Engine 8011: 2008 Ferrara/ Freightliner, 500 gallons, 1,250 GPM pump

Engine 8012: 1991 KME/International, 1000 gallons, 1.250 GPM pump

Engine 8061: 2007 Fouts/ Ford, 300 gallons, 90 GPM

Medic 8011: 2017 Braun NW/ Ford ambulance

Medic 8012: 2003 Wheeled Coach/Ford ambulance

Utility 800: 2014 Chevy command pickup

Utility 802: 2014 Chevy command pickup

Utility 801: 2008 Ford Expedition command SUV

Utility 8011: 1981 Dodge flatbed truck

Utility -8021: 1999 Ford Pickup

Repair 8021: 1996 Ford utility bed shop truck

Station 85 Nice Area

11,360 Sq. Ft., wood frame structure built in 1987, 6 apparatus bays, barracks, three rest rooms, meeting room and office.

Engine-8511: 2005 Ferrara/ International, 500 gallons, 1,250 GPM

Engine-8561: 2007 Fouts/ Ford, 300 gallons, 90 GPM

Engine 8532: 1985 KME/ Chevrolet, 500 gallons, 500 GPM

Medic-8511: 2017 Braun NW/Ford ambulance

Support-8511: 1989 Ford utility bed

Station 90 Upper Lake Area

1,875 Sq. Ft., wood frame and stucco construction built in 1946, two offices and meeting room

3,31 Sq. Ft., built in 1993, 6 apparatus bays.

Engine-9011: 1998 Weststates, 500 gallons, 1,250 GPM

Engine-9061: 2007 Fouts / Ford, 300 Gallons, 90 GPM

Engine 9131: 1980 International, 500 gallons, 300 GPM

Medic 9011: 2011 Braun NW/ Ford ambulance

Water Tender-9011: 2016 Pierce/ Freightliner, 3, 000 gallons, 500 GPM

Support 9011: 1998 Ford ambulance

Utility 9022: 2002 Dodge SUV

Station 91 Blue Lakes Area

1,378 Sq Ft., concrete and block construction built in 1969. 2 apparatus bays and a meeting room and restroom.

Currently no apparatus

Population Figures

Presently there are approximately 6,460 residential dwellings. The breakdown is as follows:

Upper Lake	939
Nice	1226
Lucerne	1385
Clearlake Oaks / Spring Valley	2910

Commercial building within the Northshore F.P.D. as of July 2016 breaks down as follows:

Upper Lake	82
Nice	74
Lucerne	71

Clearlake Oaks 150

Lake County uses a 2.5 residency factor for estimating the population within the census tracts that cover the fire district.

6460 dwellings x 2.5= 16,150 population

Growth Data

Projects on record include:

Paradise Valley	70 homes +- plus some light commercial
Knolls Health Resort commercial	45+- residential units plus 5 or more light commercial
King Grove Apartments	48 units senior living apartments

Long term projects and projected build out within the next 10 years include:

Blue Lakes and Scotts Valley Road area	40 homes
Witter Springs and Bachelor Valley	30 homes
Upper Lake and Elk Mountain Rd Area	50 homes
Nice	40 homes
Lucerne	100 homes
Clearlake Oaks	100 homes
Spring Valley	50 homes
Double Eagle Ranch	40 homes

Figures from the Lake County Community Development Department, Building and Safety Division were not available, Northshore Fire records show that the County issued approximately 24 new construction permits for family dwelling during 2016. With the economy down turn beginning in 2008 we saw a sharp decline in construction. Now the economy is looking better we expect growth to pick back up.

With the proposed subdivision and construction projects coupled with build out of existing projects, Northshore Fire projects roughly 570 new residential structures and a 48-unit senior living complex to be constructed.

FUTURE GROWTH

Although once considered a rural county, Lake County is rapidly losing that characterization. As the population increases and the surge in people and structures moves into the fire district, what was once adequate rural fire protection based on fire flow and fire protection capability will no longer be adequate. In addition to the traditional structural fire protection problems posed by growth, the issue is intensified by the mixture of more and larger dwelling structures requiring greater fire flow considerations in designing the fire protection systems, and also being located in a wildland fire intermix area. A rapid and effective response to every call in this environment with adequate equipment and water is essential to prevent a fire catastrophe as with the Rocky, Jerusalem and Valley Fires of 2015 and the Clayton Fire in 2016.

Fire Facilities Fees

In 1989 the Fire District became aware of government code section 66000 (AB166 passed and was signed by the governor in 1987 and took effect January 1, 1989) whereby new construction could be assessed for Development Mitigation Fees

In 1990 the County of Lake was approached and asked about collection such fees for fire districts within the county. As we made studies and justification to meet the requirements of government code section 66000 we found that the impact from new construction and growth was very much greater than we expected on our Fire Protection Systems. The Board of Directors now finds that the Northshore F.P.D. is at a critical point in dealing with this impact of new construction and emergency action by the Lake County Board of Supervisors is needed.

The tax support for public safety fire protection has been drastically reduced, state mandated costs are not being reimbursed, state cut backs and newly levied County service fees have all combined to make a very critical situation for rural fire districts.

EXHIBIT A

ADDITIONAL FIRE FACILITY NEEDS-10 YEAR MASTER PLAN

This is a projected schedule of priority expenditures and under Government Code Section 66002, this plan must be updated on an annual basis.

The below facilities/equipment costs are estimated on current rates and general specification and these estimates are subject to change with inflation and final bidding process.

Equipment and Capitol improvements would be funded when justified by new development and revenue from the Mitigation Fee Fund are available.

Station 75 – This is the Clearlake Oaks staffed fire station. Located at 12655 East Highway 20 in Clearlake Oaks. This station has met its capacity and any future growth with require expanded living quarters and office space. Many years ago Cal Trans put a turn lane in front of the station which eliminated several parking spots. This necessitates the purchase of land adjacent to the station for parking and office space. Also within the next 10 years an additional engine will needed.

Engine	\$400,000
Station upgrades	\$100,000
Adjacent property	\$100,000

Station 76 – This is a sub-station located at 9460 E. State Highway 20 in Glenhaven. This station's bay doors are too small to house NFPA compliant apparatus. A new station will need to be constructed in the area of Paradise Valley when building this subdivision begins. An engine will be needed to respond from this station.

Station	\$400,000
Engine	\$400,000

Station 77 – This is a sub station located at 3178 Tamarack Way in the Spring Valley area. With much area still available to build we expect to see more growth, with growth comes call volume. The station will require sleeping and cooking facilities. This station would also be a first due to any areas on Old Long Valley Rd, another area of potential growth and the area east of New Long Valley Rd. to the county line. Another area of potential growth is the Double Eagle Ranch subdivision. The engine currently assigned to this station is 1989 vintage, it will need to be replaced as call volume increases.

Station upgrades	\$20,000
Engine	\$400,000

Station 80 – This is the headquarters station of the Northshore F.P.D. located at 6257 7th Ave in Lucerne. Business Office, equipment and living quarters and equipment maintenance shop. The living quarters at this station were not designed for full time staffing and has been added as the need required. Heating and cooling are marginal at best, the insulation is inadequate. The meeting room and living quarters are upstairs and are not ADA compliant. Due to the close proximity of Station 85, this station should be re purposed and a new station constructed in the area of Ciago Vineyards near Bartlett Springs Rd. and Highway 20. This station could be used as the Districts apparatus and equipment maintenance shop.

Station 85 – This is the Nice fire station located at 3708 Manzanita Ave in Nice. As mentioned with regard to proximity of Stations, this station should also be closed and all personnel and equipment moved to the new station in the area of the Ciago Vineyard or Bartlett Springs Rd. area. This station has drainage issues, to a point that the flooring continues to come up as a result of water seeping through concrete.

Future Station plans

Both Station 80 and Station 85 are inadequate to fill the need for future growth. A new Station will need to be constructed in the area of the Ciago Vineyards or Bartlett Springs Rd. This station will combine the staff and equipment from both Station 85 and 80 as well as District administrative offices, meeting room and training facilities.

Station	\$5,000,000
Property	\$400,000

Station 90 – This the Upper Lake fire station located at 9420 Main Street Upper Lake. The call volume in Upper Lake has not changed much in the last 10 years. Upper Lake has been a volunteer station since the beginning. The nation-wide reduction in volunteerism has impacted us very hard requiring the need for full time staffing. This station was constructed in 1948 and is inadequate for 24 hour staffing. The property north of apparatus bays will need to be purchased to keep up with additional growth. This area would become parking and the current parking area would be used for building expansion of the apparatus bays for living quarters.

Property	\$150,000
Capitol Improvements	\$100,000

Station 91 – This is a sub station located at Blue Lakes West Hwy 20 Upper Lake. This station too small to house NFPA compliant engines. This station has always been a volunteer station. Currently we have no volunteers in the Blue Lakes area, so this station is being used for storage. The area around Blue Lakes has limited areas for growth so in the next 10 years we don't expect to see much change in call volume here.

TOTAL ADDITION FIRE FACILITY NEEDS 10 YEAR PLAN

\$7,470,000

Structural Fire Suppression Standards NFPA

A fire suppression organization brings together 4 key elements for fire extinguishment:

1. An adequate water supply
2. A pump to move water
3. Sufficient firefighters to handle hose, nozzles, & other equipment
4. Adequate equipment and tools so the firefighters can move hose and apply water to extinguish the fire.

Leadership, trained firefighters, early notification of a fire and reasonable travel distances (time factor) from fire station to a fire are each a must for the effective fire fighting systems.

The National Fire Protection Association (NFPA), organized in 1896 to promote the science and improve the methods of fire protection and prevention has studies both laboratory and actual fire ground performance of fire apparatus and equipment. As a result of these capability studies and finding, numerous pamphlets are used in training firefighters and the designing and grading of fire protection systems.

Water Supply

An “adequate” and reliable water supply can be defined as the amount of water (volume in gallons) a fire protection system requires in order to extinguish the volume of fire (in cubic feet) that the system is designed to protect. The water supply systems are either “on-site” near the fire scene or the water supply must be brought to the fire by a water tender. On-site systems consist of fire hydrants, static storage or built into the structure in the form of automatic sprinkler systems. Most often more than one system comes into play.

Water Delivery

Water delivery in the fire service is most commonly delivered by means of a centrifugal pump, built-in as an integral part of the fire apparatus. Each pump has a rated capacity in gallons per minute (GPM). NFPA notes that from two to four GPM are needed to extinguish a fire for each 100 cubic feet of residential structures and up to four GPM in higher fuel loading found in commercial and industrial structures. By using the following NFPA formula, the fire suppression capability of a given rated pump can be determined in terms of water flow in order to meet water requirements of ‘fire flow’.

$$\text{FIRE FLOW} = \frac{\text{square foot of building} \times \text{ceiling height in feet} \times 2-4 \text{ GPM}}{100 \text{ cubic feet}}$$

Commercial and industrial structures that exceed the capabilities of the fire department need build-in protection, such as automatic sprinklers or firewalls in order to mitigate the fire protection problems present by very large building for the fire system.

NORTHSHORE FIRE PROTECTION DISTRICT STUDY 2017

Although it is clearly established that AB1600 funding cannot be used for personnel it needs to be noted that this is a substantial cost that is associated with growth. Currently 80% of the district budget accounts for wages and benefits.

Personnel Requirements

NFPA has established standards for staffing needs based upon pump delivery capabilities. NFPA recommends three firefighters per each 250 GPM plus one officer. In departments with volunteer firefighters, NFPA recommends that four volunteers are needed on the roster to insure the response of the volunteer to the scene of a fire.

Equipment for Personnel

Each firefighter needs safety clothing as regulated by OSHA for personal safety. This includes self-contained Breathing Apparatus and personal alarms. This safety clothing is both a legal requirement and a necessity to protect firefighters from costly injury when working in extremely dangerous and hostile environments. In addition to clothing there are various types of equipment that need to be carried on the fire apparatus so the firefighters can apply water to the fire, gain entry to the structure and multitude of tasks necessary for proper fire extinguishment and overhaul. NFPA pamphlet #19 is a minimum guide used by many fire departments when selecting the support equipment to be carried on fire apparatus.

Analysis of Limitations

Each of the four key elements discussed above may become the limiting factor during extinguishment of a fire. The firefighting system in each fire district or department is finite, and each has its own "limiter". Through analysis the limiter can be identified for any given fire district. In one district water supply may be the limiter, while another district may be short of firefighters. Formal Mutual Aid Agreements with adjacent fire districts exist to cover those instances when the system fails because one or more limiters had been exceeded.

Structural Fire Protection Evaluation

Describing, measuring and rating of the fire organization and its fire protection system is most difficult. There is no simple formula or standard by which to measure a given fire protection system. Common measures that have been used with the fire service includes:

- Damage figures in relation to values protected.
- The ratio of expenditure to values protected.
- The Insurance Services Officer (ISO)

The most common rating system is one used by ISO and measure several elements of a fire protection system to develop fire insurance rates for both residential and commercial structures including contents within the exclusive area protected by a given fire protection district or department . ISO grading is heavily dependent on the science of hydraulics-water supply and water delivery.

Every municipality in the United States is graded by the insurance industry to determine its physical defenses against fire and given a basic rate or class. A class one (1) rating means a lower insurance premium cost relative to various occupancies and a class ten (10) a higher cost.

EXHIBIT B

CALCULATIONS OF FIRE FACILITIES FEES

10 YEAR PLANNING – Fiscal Years 2017 through 2027

The Board of Directors of the Northshore Fire Protection District, at their regular public meeting held, March 8th 2017, discussed these Fire Facility Fees and development of a 10 Year Fire Protection Plan with adoption of these Fire Facilities Fees and 10 Year Fire Protection Plan during their regular public meeting held March 8, 2017.

The formula for the following method for preparing calculations and determining mitigation fees for new construction flows that which was used by the Upper Lake Fire Protection District, Nice Community Services District, Lucerne park and Recreation District and the Clearlake Oaks Fire Protection District.

Square footage/ Costs Calculations

1. New dwellings averaging 1,600 sq.ft = 666 (by year 2027) $1,600 \times 666 = 1,065,600$ sq. ft
2. New Fire Facilities costs for next 10 years = \$7,470,000
3. Exhibit B New Fire Facilities Costs = $\$7,470,000 / 1,065,600 = \7.00

Development Mitigation Fee Schedule

At the March 8, 2017 Board meeting the directors by a unanimous vote, accepted an established fee for new construction for both residential and commercial/ industrial buildings.

It has been determined by the District Board that the fees will be collected as follows:

Any building, residential, commercial/ industrial \$1.00 per sq. ft.