Standard of Coverage

North Lincoln Fire & Rescue District #1
PO Box 200
Lincoln City, OR 97367

2014

Introduction:

This document represents a nontraditional approach to the standard of cover recommended in is National Fire Protection Association (NFPA) 1720. A traditional Standard of Cover document is statistically driven with data that is either unavailable, inconveniently available, or unmanageable with the current resources available to North Lincoln Fire & Rescue. The approach to this document is to identify the baseline requirements contained in a Standard of Cover and through dispatching software and hardware upgrades, develop the data retrieval systems required to manage and analyze accurate response data.

Once the District is comfortable with the accuracy and reliability of the reporting data, it then can adopt response standards commensurate with NFPA 1720.

Bill Anderson
Special Districts Association of Oregon
Consulting Services

September 4, 2014

I concur with the comments of Retired Fire Chief Bill Anderson. I recommend that the Board not adopt this document at this time, but "*accept*" the document so we don't have to adopt a document that is in working format, allowing the District to make improvements in data tracking systems to better measure performance. After the improvements are made, the document could be adopted.

Don Baker, Fire Chief
North Lincoln Fire & Rescue District #1

Presented to the Board of Directors
For "acceptance" of the document
On October 14, 2014.

North Lincoln Fire & Rescue District #1

North Lincoln Fire & Rescue (NLF&R) was formed in 1997 with the merger of Taft Nelscott DeLake RFPD and Devils Lake RFPD. The parent Districts were established in 1937 and 1938; each provided emergency services to the community for more than sixty years. In 1964, The City of Lincoln City was incorporated, merging several small communities and three cities. The formation of Lincoln City resulted in TND and Devils Lake RFPD each providing fire and rescue services to half of the City.

Today North Lincoln Fire & Rescue is a volunteer fire agency served by a paid administration comprised of eight full-time employees. North Lincoln Fire & Rescue is governed by a five-member district board, which hires the fire chief to administrate the district. NLF&R responds to approximately 2000 emergency calls each year, relying upon eighty volunteers to provide emergency services.

Services being provided are firefighting, water rescue, emergency medical service (EMS), vehicle extrication, hazardous materials response, first response, and fire prevention programs in the schools. The fire district maintains six fire stations and 28 emergency vehicles to provide services to an 80 square-mile district, which includes the City of Lincoln City, a coastal resort community.

Lincoln City is located on the 45th parallel, situated on the coast of Oregon. According to City-data.com (2008), the City covers 5.33 square miles and fronts approximately 8 miles of Pacific Ocean. The resident population was 7,969 as of July 2007; the population is 54% female, 46% male, with the median resident age being 41.8 years. Devils Lake is a 680-acre fresh water lake, bordering three miles of the east side of Lincoln City. Devils Lake outflows to the Pacific through the D-River, once known as the shortest river in the world (Preservation Association of Devils Lake 2008). Surrounded by State and Federal timberland, historically the region was dominated by the timber industry providing most of the jobs in the community. Over the last couple of decades, the community transitioned into a resort and retirement community. Tourism now provides the majority of employment (Central Coast Economic Development Alliance 2008).

Recent Federal and State building regulations pertaining to siting public facilities in flood and tsunami zones have the potential to impact the District's ability to upgrade two of the existing facilities. Both the Kernville and Otis fire stations are located in either a flood or tsunami inundation zone. Future decisions affecting these facilities should be made with the Standard of Cover and updated geotechnical zoning in mind.

As the District's population grows, its facilities age, and the demand for service increases, the District will be challenged to meet the anticipated strain placed on its emergency response resources. Analysis of the District's response statistics including staffing, apparatus type and response times in addition to incident locations will be a vital management tool in managing the Fire District to meet future demands.

Community Risk:

In 2009, Lincoln County published a comprehensive report titled “Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan” that was developed in partnership with Oregon Department of Emergency Management and local agencies. Rather than duplicate the contents of this report, I have provided a link to the document at http://www.lincolncountysheriff.net/nhmp.pdf.

The document describes in detail the degree of risk and associated mitigation plans to the following natural hazards:

Table # 1. North Lincoln Fire & Rescue Community Hazardous Risk

Coastal Erosion	Drought	Earthquake
Flood	Landslide	Tsunami
Volcanic Event	Wildfire	Windstorm

The document further identifies the expected frequency with which each risk can be expected to occur, and the anticipated economic and property damage associated with each risk. This document should be considered an addendum to this report.

Not mentioned in said document are community risks associated with Multi-Alarm Urban Fire, Mass Casualty Incidents and Hazardous Materials Releases.

Multi-Alarm Urban Fire

In the past 5 years, the District has responded to a significant number of fires that required resources beyond the capacity of the District. North Lincoln Fire & Rescue has mutual aid agreements with neighboring fire agencies in the event a fire taxes the District resources. In addition to local mutual aid, the Lincoln County fire agencies also have Intra-County mutual aid agreements with agencies in neighboring counties. If the fire taxes inter/intra-county resources, the District has access to State-wide fire resources through the State of Oregon Fire Mobilization Plan.

The District has the potential for significant life hazard and property loss within its inventory of hotel/motels that accommodate a large influx of tourists who visit the area to enjoy the scenic Oregon Coastline and the Chinook Winds Casino and Convention Center. Other buildings/businesses at risk of significant life hazard would include Good Samaritan North Lincoln Hospital, schools, and care facilities within the District.

Mass Casualty Incident

Two major State transportation corridors dissect the Fire District. Highway 101 serves as a major North/South route and Highway 18 serves as a major East/West route, both providing inter/intra state transportation and commerce. Transportation accidents, incidents involving large multi residential, retail and recreational facilities all present a potential for a mass casualty incident.

PacWest Ambulance would be the lead agency in the event of a Mass Casualty Incident (MCI). North Lincoln Fire & Rescue would be an assisting agency providing manpower, extrication, traffic and fire extinguishment to the incident. In addition, NLF&R maintains a transport-capable ambulance to assist PacWest Ambulance in transporting patients should the need arise.

Hazardous Materials

North Lincoln Fire & Rescue responds to Hazardous Materials incidents at the operations level. Operations-trained personnel respond to prevent the spread, exposure and further release of hazardous materials. They do not mitigate a hazardous materials incident. The Oregon State Fire Marshal's Office is responsible for providing Hazardous Materials Response to release of hazardous materials that would require personnel trained at the Hazardous Materials Technician or Specialist level. They have the State geographically divided into 13 response teams strategically located to provide a maximum of a 2 hour response throughout the State. The area protected by NLF&R is served by a regional team located in Salem, Oregon.

(The following community risk information was taken from the Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan)

Coastal Erosion

Coastal erosion is a natural process that continually affects the entire coast. Coastal erosion is caused by various combinations of large waves, storm surges, high winds, rain, runoff, flooding, or increased water levels and ocean conditions caused by El Nino events. Coastal erosion hazard poses a threat to structures and other development through the retreat of the shoreline. Coastal erosion is considered a chronic hazard, meaning it is usually local in nature, and the threats to human life and property that arise from it are generally less severe than those associated with catastrophic hazards. However, the wide distribution and frequent occurrence to chronic hazards such as coastal erosion makes them more of an immediate concern. The damage caused by coastal erosion is usually gradual and cumulative. Chronic coastal erosion has impacted development along the Lincoln County coast for decades.

Drought

Drought can be defined in several ways. The American Heritage Dictionary defines drought as a “long period with no rain, especially during a planting season”. Another definition of drought is a deficiency in surface and subsurface water supplies. In socioeconomic terms, drought is present when a physical water shortage begins to affect people, individually and collectively, and the area’s economy.

There are no records of a severe drought in Lincoln County. Drought is generally averted as a result of the County’s high rainfall from moist air masses that move onto land from the Pacific Ocean, especially during winter months.

Earthquake

Recent earthquakes and scientific evidence indicate that the risk to people and property is much greater than previously thought. Oregon and the Pacific Northwest in general are susceptible to earthquakes from three sources: 1) the offshore Cascadia Subduction Zone, 2) deep intra-plate events within the subducting Juan de Fuca Plate, and 3) shallow crustal events within the North American Plate.

While all three types of quakes possess the potential to cause major damage, subduction zone earthquakes pose the greatest danger. The specific hazards associated with an earthquake include the following: ground shaking, ground shaking amplification, surface faulting, earthquake induced landslides, liquefaction, and tsunamis. The area of Oregon west of the Cascade Mountain Range is at high risk from earthquakes and their collateral damage.

Tsunami

According to the Oregon Department of Geology and Mineral Industries ([DOGAMI], 2001), a tsunami is a series of waves generated by a sudden displacement of water and can be caused by one of the following: vertical movement of the ocean floor caused by an earthquake, underwater volcanic eruption, meteor impact or a coastal land slide (on land or underwater). These tsunami waves travel outward in all directions from the source, traveling across the ocean at approximately 480 miles per hour. In deep water, these waves may go unnoticed, being only one or two feet in height. However, depending on the topography of the ocean floor and the amount of water displaced, the wave’s height will rise as it approaches and moves ashore. Tsunamis are categorized by two general types—distant and local. A distant tsunami will take hours to reach the point of inundation due to the distance traveled. In a local tsunami, the source is close to the inundation point and travel time is measured in minutes. Local tsunamis may also be regional, caused by a smaller event such as a landslide, and may only affect a small region in contrast to a subduction zone earthquake which will be a Pacific-wide event—local to some and distant to others (DOGAMI 2001). The distance tsunami triggered by

the March 2011 Japan earthquake hit the Oregon Coast over 7 hours after the initial quake. The damage from this tsunami was felt as close as Depoe Bay where it caused over a half of million dollars damage.

Tsunami at-risk populations in Lincoln City include 1,321 residences, 1,611 employees, and an average of 6,052 visitors daily to State park facilities. In addition, 28 hotels occupy the inundation zone. Economies at risk include 38% of the tax-parcels valued in 2005 at $436,790,330, 101 or 13% of businesses responsible for over $137,000,000 in sales volume (Wood, Nathan, 2007).

Flood

The principal types of flooding that occur in Lincoln County include:

1) River floods, caused mostly by prolonged, high intensity rainfall events.

2) Ocean flooding from high tides and large, wind-driven waves. The greatest period of risk for river and ocean flooding ranges from late fall to early spring. River flood events with significant damage potential are relatively frequent in Lincoln County; historically, floods with an estimated recurrence interval of 10 to 15 years have caused substantial property damage. Records for ocean flooding are mostly anecdotal, but the recurrence of damaging ocean floods has been less frequent than river floods.

3) Other types of floods include flash floods, shallow area floods, urban floods, and coastal floods.

Landslide

In Oregon, a significant number of locations are at risk from dangerous landslides and debris flows. While not all landslides result in property damage, many landslides pose a serious risk to people and property. A landslide is any detached mass of soil, rock, or debris that falls, slides or flows down a slope or a stream channel. Landslides are classified according to the type and rate of movement and the type of materials that are transported.

Landslides accompany almost every major storm system that impacts western Oregon. Although most landslides occur in the undeveloped forested areas of the county, landslides have occurred in more developed areas.

Volcano

The Cascade Range of the Pacific Northwest has more than a dozen active volcanoes. The familiar snow-clad peaks are part of the 1,000 mile–long chain of volcanically active

mountains which extend from southern British Columbia to northern California. Cascades volcanoes tend to erupt explosively, and eruptions have occurred at an average rate of 1-2 per century during the last 4000 years. Future eruptions are certain. The effects of a major volcanic event can be widespread and devastating. Although there are no active volcanoes in Lincoln County, it is important for counties to know the potential impacts of nearby volcanoes.

While the immediate danger area around a volcano is approximately 20 miles, ash fall problems may occur as far away as 100 miles or more from a volcano's location. This occurred with the Mt. St. Helen's eruption in 1980. The closest volcanoes to Lincoln City are in the Three Sisters area approximately 125 miles to the east.

Wildfire

Fire is an essential part of Oregon's ecosystem, but can also pose a serious threat to life and property, particularly in the state's growing rural communities. Wildfires occur in areas with large amounts of flammable vegetation that require a suppression response.

Wildfire can be divided into three categories:

1. Interface
2. Wildland
3. Firestorms

Interface fires are the most likely to happen within North Lincoln Fire & Rescue's district. The development of a wildfire risk assessment will help prioritize areas for applications of available financial and staffing resources.

Lincoln County is currently beginning the development of a Community Protection Plan.

Windstorms

High winds are a regular occurrence in Lincoln County, particularly in exposed coastal areas. Wind storms with destructive force are less frequent, although their pattern is fairly well known. These storms form over the North Pacific during the cool months (October through March), move along the coast and swing inland in a northeasterly direction.

Wind speeds vary with the intensity of the storms. Gusts exceeding 100 miles per hour have been recorded at several coastal locations, but generally lessen as the storms move inland.

These storms can be very destructive as documented by the now infamous Columbus Day Storm of October 1962. A windstorm is generally a short duration event involving straight-line winds and/or gusts in excess of 50 mph. Although windstorms can affect the entirety of Lincoln County, they are especially dangerous in developed areas with significant tree stands and major infrastructure, especially above-ground utility lines.

In 2007, the region experienced a severe windstorm that downed trees which blocked major transportation routes into the area for several days. The "Great Coastal Gale of 2007" was a series of powerful Pacific storms that hit the Oregon coast in early December. 130 mph hurricane-force winds hit the Oregon Coast and at least 5 deaths were attributed to the storm.

The region was isolated for several days from severed landline and cellular phone service. In addition, all major transportation routes between the Coast and Willamette Valley were closed due to flooding, landslides, and downed trees.

North Lincoln Fire & Rescue ISO Classification:

Insurance Service Office (ISO) rates the fire protection capability of the local fire department's ability to respond to structure fires within their jurisdiction. It collects information on a community's risk and assigns a Public Protection Classification from 1 to 10. Class 1 represents the best public protection, and Class 10 indicates no recognized protection. Some, but not all, insurance companies use the Public Protection Classification (PPC) to determine insurance premiums for the property they insure.

A community's PPC depends on:

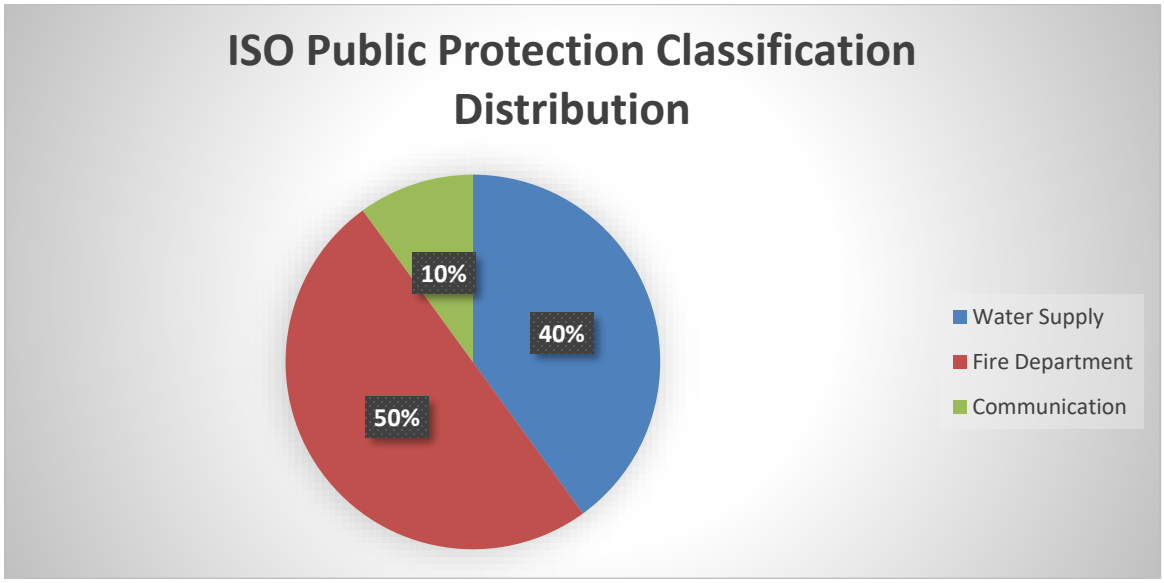
- Fire alarm and communications systems, including telephone systems, telephone lines, staffing, and dispatching systems.

- The fire department, including equipment, staffing, training, and geographic distribution of fire companies.

- The water supply system, including condition and maintenance of hydrants, and a careful evaluation of the amount of available water compared with the amount needed to suppress fires.

Historically, the ISO classification was the primary instrument used to evaluate the effectiveness of fire services provided by local fire agencies. In North Lincoln Fire & Rescue's case, two of the three primary evaluation categories (water supply & fire alarm/communication systems) are outside the direct influence of the fire district. With the exception of mobile water supply provided by District tenders, water supply and distribution to fire hydrants are provided by 3 water districts in the unincorporated areas and Lincoln City within their municipal boundaries. Fire communications are provided

by Lincoln County Public Safety Answering Point (PSAP) located at 1503 SE Devils Lake Rd. in Lincoln City and Willamette Valley Communications located in Salem, Oregon.



Standard of Response Coverage:

The purpose of a "Standards of Cover for Emergency Response" document is to provide the Fire District Board and Fire District's executive staff the following:

- A baseline tool for defining emergency response performance standards and goals.
- Summary of Community Risk.
- Analysis of critical emergency scene tasking measured against historical and current apparatus and personnel response.
- Basis for continually measuring performance.
- Guideline for short-term and long-term policy decisions dealing with resource procurement and allocation (station locations, staffing, apparatus placement).
- Deployment options measured against the community risk.
- Dynamic instrument in evaluating the Fire District's demands for service due to the changing demographics (evaluating current and future fire station locations, measuring District's volunteer recruitment and retention needs, apparatus placement and design).

In determining a Standard of Cover, a common industry reference document is the National Fire Protection Association Standard 1720. NFPA 1720 outlines the minimum requirements relating to the organization and deployment of fire suppression operations, emergency medical operations and special operations by volunteer and combination fire departments. The NFPA standards are voluntary consensus standards and serve only as a guide to the District in establishing a starting point in determining the levels of services the District chooses to provide.

NFPA 1720 provides the following criteria in determining sufficient apparatus and personnel fire response:

> **Urban Zones** with populations greater than 1000 people/sq. mi. call for 15 Firefighters to assemble an attack in 9 minutes, 90% of the time.
>
> **Suburban Zones** with populations between 500-1000 people/sq. mi. call for 10 Firefighters to assemble an attack in 10 minutes, 80% of the time.
>
> **Rural Zones** with populations less than 500 people/sq. mi. call for 6 Firefighters to assemble an attack in 14 minutes, 80% of the time.
>
> **Remote Zones** with a travel distance = 8 mi. call for 4 Firefighters, once on scene, to assemble an attack in 2 minutes, 90% of the time.

The 2010 census has information for Lincoln County and Lincoln City; it does not provide information for just the area served by North Lincoln Fire & Rescue. Within the city limits of Lincoln City, the census showed approximately 1400 residents per square mile. Staff believes that a legitimate service breakdown for the Fire District would be as follows:

- Urban Zone. Within Lincoln City boundaries, areas where the population density is greater than 1000 people/sq mile. Examples would be the Oceanlake area west of Devils Lake Road, DeLake area west of SE Neptune and the Taft area west of SE High School Drive & SE 51st St.

- Suburban Zone. Areas inside the Fire District where the population density is between 500-100 people/sq mile. Examples would be areas inside the Lincoln City boundaries including east of West Devils Lake Road and east of Hwy 101 in the Nelscott area. Would also include areas outside of Lincoln City including parts of East Devils Lake Road and Neotsu.

- Rural Zone. The remaining areas of the Fire District where the population density is less than 500 people/sq mile. Examples would be Rose Lodge, Otis, Three Rocks Road & Hwy 229.

Table #2. Breakdown of North Lincoln Fire & Rescue station first due response area.

Station	Urban	Suburban	Rural
1200 Rose Lodge			X
1300 Otis			X
1400 Bob Everest	X	X	
1500 DeLake	X	X	
1600 Taft	X	X	
1700 Kernville			X

Table #3. Breakdown of North Lincoln Fire & Rescue station second due response area.

Station	Urban	Suburban	Rural
1200 Rose Lodge	X	X	X
1300 Otis	X	X	X
1400 Bob Everest	X	X	X
1500 DeLake	X	X	X
1600 Taft	X	X	X
1700 Kernville	X	X	X

The Fire District has not tracked responses based on the above criteria. Changes in how incidents are tracked based on demand zone criteria will require dispatch protocol changes at the Fire Defense Board level, the Fire District PSAP (Public Safety Answering Point) located at Lincoln City Police Department, as well as the Willamette Valley Communication Center.

It is the District's desire not to do a retrospective study of the Fire District responses, but moving forward, to manually track fire and EMS responses to determine a legitimate baseline for response resources which will allow the District and Board to adopt a Standard of Cover. The District should pursue means through future budgets and service contracts to collect response data electronically to more efficiently and accurately track District response performance.

Table #4. NLF&R Current and Desired Volunteer Station Staffing Goals

		July 2014 Staffing			Desired Staffing Goal		
		Entry	Non Entry		Entry	Non Entry	
				Total			Total
Battalion 1	Chief			*1			*1
Rose Lodge	Officers	0	2	2	1	1	2
	Drivers	4		4		8	8
	Firefighters	3	2	5	8		8
	Total Staff	7	4	11	9	9	18
Otis	Officers	0	1	1	1	1	2
	Drivers	6		6		6	6
	Firefighters				8		8
	Total Staff	6	1	7	9	7	16
Battalion 2	Chief			*1			*1
Bob Everest	Officers	1	0	1	2	1	3
	Drivers	11		11		6	6
	Firefighters				12		12
	Total Staff	12	0	12	14	7	21
DeLake	Officers	5	0	5	1	1	2
	Drivers	7		7		4	4
	Firefighters				8		8
	Total Staff	12	0	12	9	5	14
Battalion 3	Chief			*1			*1
Taft	Officers	0	2	2	2	1	3
	Drivers	9		9		6	6
	Firefighters				12		12
	Total	9	2	11	14	7	21
Kernville	Officers	1	0	1	1	1	2
	Drivers	1		1		4	4
	Firefighters				6		6
	Total	2		2	7	5	12

Desired Staffing Goals are based on a 50% response of drivers and firefighters (officers not included) 80% of the time * Battalion chiefs are not included in the totals

The ability to track responses between the three recognized zones is critical when determining how to manage the District's response resources. The majority of the District's calls for service logically will occur within their urban and suburban response zones.

The District is heavily reliant on volunteer firefighters. The U.S. Fire Administration has recognized the inability to maintain adequate volunteer staffing in the Nation's Fire Service as one of the most critical issues facing the fire service today. The problem is even more severe in rural areas. The same issue today is facing North Lincoln Fire & Rescue. The greatest challenge the District will face is the ability to maintain the station volunteer staffing levels identified in Table #4. However, maintaining the station staffing levels identified should go a long way towards improving the response reliability of the District's emergency response resources and reduce overall response times.
In the interim, any response standards such as those recommended in NFPA 1720 should be consider as desired goals rather than a standard.

Critical to establishing legitimate response criteria is determining the staffing required to "assemble an attack**". The District volunteers can be broken into three primary groups:**

- **Entry Firefighters -** those firefighters who are trained and equipped to perform entry into I.D.L.H. (**I**mmediately **D**angerous to **L**ife and **H**ealth) environments.
- **Non-Entry Firefighters -** those firefighters who perform essential fire ground tasks; however, are not trained at the level to make an entry into an I.D.L.H. environment.
- **EMS Responders -** those responders who do not participate in fire ground activity but are vital resources in helping to cover 74% of the District's calls for service (EMS).

Certain fire ground tasks associated with "assemble an attack" can be performed by either group; however, to complete an interior attack, Oregon Occupational and Health Administration (OR-OSHA) requires a minimum of 4 entry firefighters to be on scene before an interior attack can be made. OR-OSHA is also currently considering revising its Firefighting Standards to include fire personnel who work outside the I.D.L.H. zone but within an identified "Hazard Zone". This may have a limiting effect on what activity non-entry firefighters can participate in on the fire ground.

Interestingly, NFPA 1720 is mute on whether their intent is to assemble an interior attack, or defensive attack which could be achieved by less than 4 entry firefighters. The District, upon establishing their response baseline, will be able to define what constitutes "assemble an attack" to best fit their needs.

In determining the appropriate staffing levels for each station, it is important to recognize the contribution both groups provide to the District. Command functions, apparatus operations, emergency medical services and fire ground logistical services are all critical tasks that can be performed by non-entry level firefighters. Moreover, considering the low frequency of fire in the rural areas of the District, consideration should be given as to whether or not the two outlying stations would be better suited toward defensive fire operations, water tender operations, wildland firefighting, and providing emergency medical response.

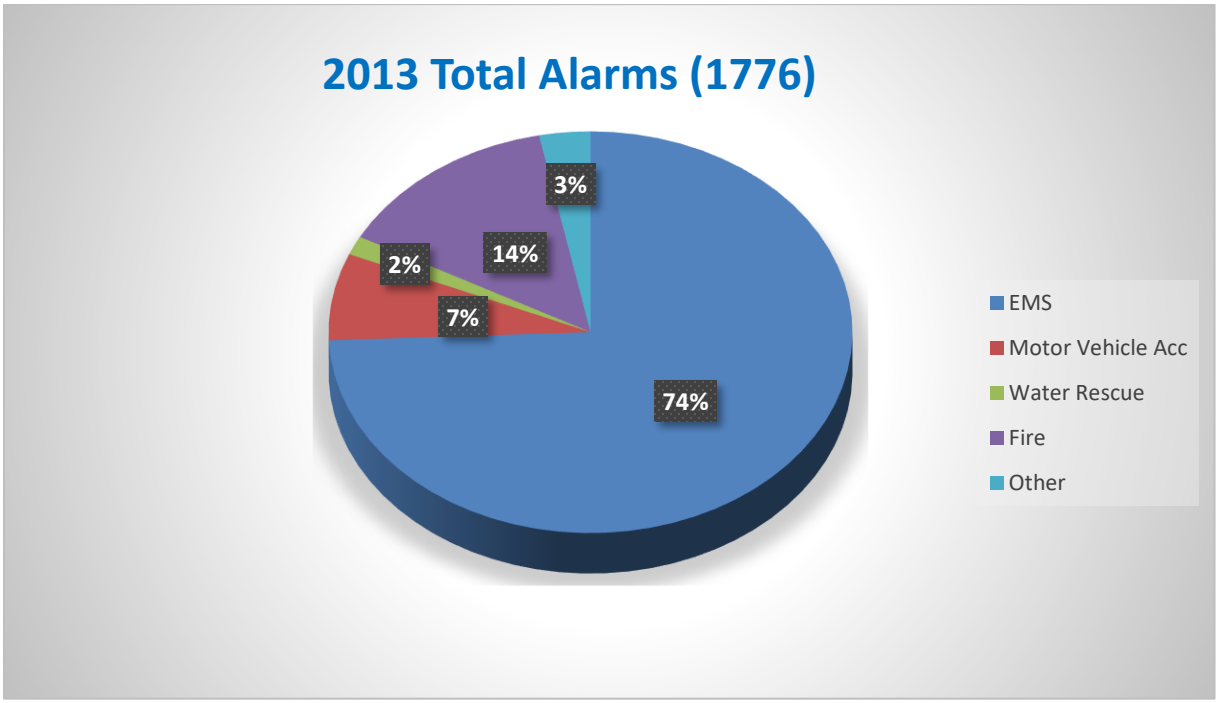
To achieve whatever response standards are adopted by the Fire District will require a shift in volunteer recruitment and retention strategies on the part of the District. Table # 4 shows the current status and desired staffing levels for each station.

The desired staffing table reflects the volunteer staffing required today; it will require evaluation annually and recruitment goals set with a look towards the staffing needs of the future.

North Lincoln Fire & Rescue 2013 Response Statistics:

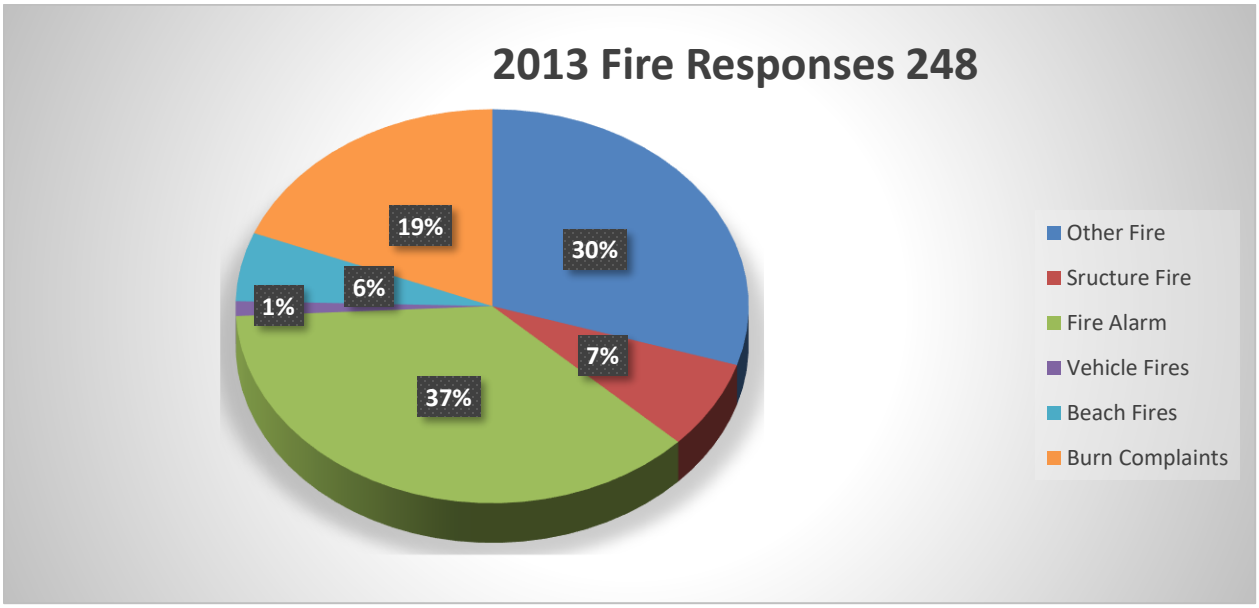
In determining how to best manage the District's emergency response resources, it is critical to examine the District's actual response experience to determine when and how to maximize limited emergency apparatus and staffing resources. The following chart reflects NLF&R's response performance for 2013.

Fire and rescue incidents (MVAs, water rescue, fire, and other) represent 26% or 461 incidents the district responded to in 2013. During the same sampling, the District responded to 1314 calls for service for emergency medical incidents. PacWest Ambulance is the Advanced Life Support (ALS) and transport service provider for the area served by North Lincoln Fire & Rescue. NLF&R provides First Response EMS within the District's response area. It does have some ALS trained responders and at times will respond either as an ALS or Basic Life Support (BLS) unit when appropriately staffed.



The District responded to 248 (14%) fire related incidents in 2013. Although a small percentage of the District's total responses, it represents the greatest threat potential in terms of life safety and property loss to the District. While there is another EMS provider within the District, NLF&R represents the single fire response provider.

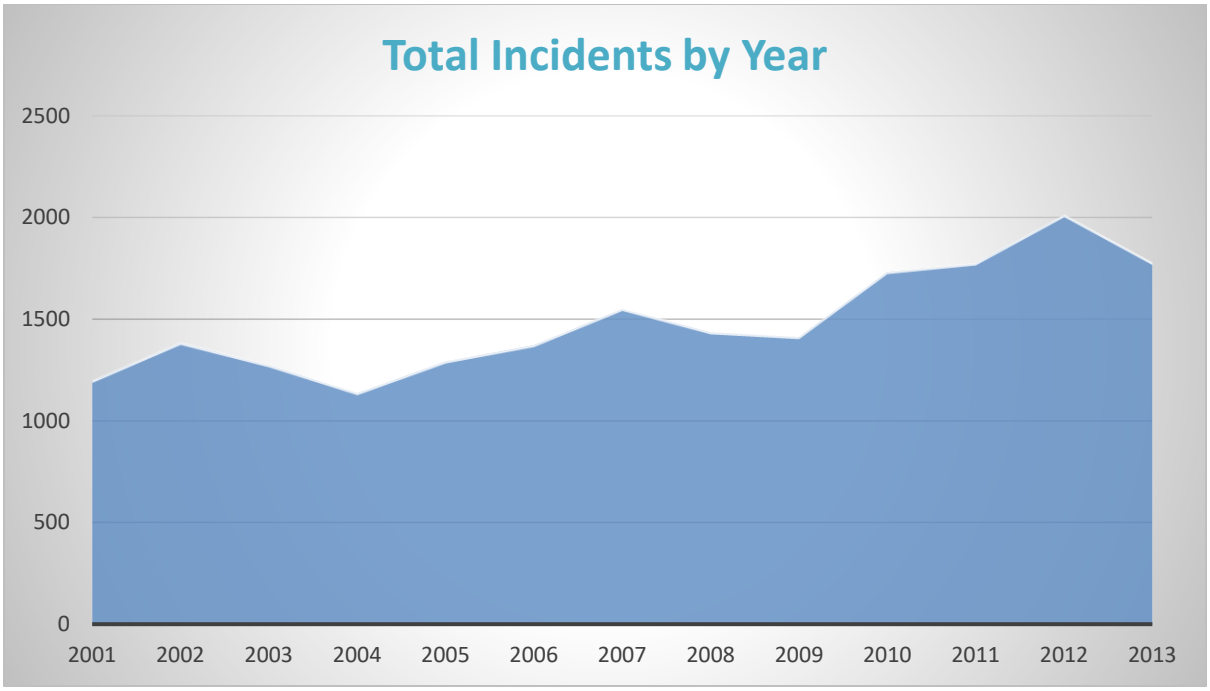
North Lincoln Fire & Rescue 2013 Fire Responses:



Analyzing the District's actual fire responses is helpful in determining the types of resources responding to calls for service. It is important to recognize the difference between Incident Reported and Situation Found. Often times an incident initially reported as a "smell of smoke" is found to be a fully involved structure fire and an incident reported as a structure fire is found to be a trash fire in the back yard. The ability to have skillfully trained fire dispatchers who can artfully and instinctively triage 9-1-1 calls to determine the appropriate fire resource response is a crucial tool in emergency response resource management.

Total Incidents by Year:

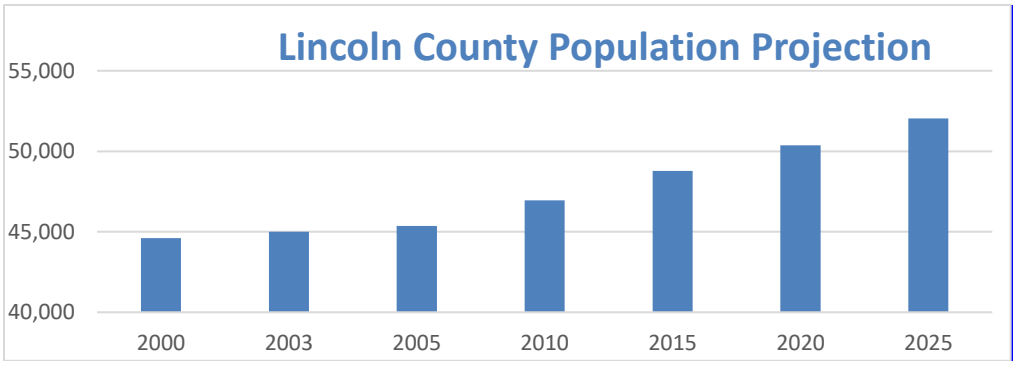
Total incidents by year is a helpful tool in predicting the District's trends towards future resource needs, and then determining the funding mechanisms required to meet those anticipated demands. The District's responses grew by 50% from 2001 to 2013 or slightly over a 4% increase per year. In forecasting future growth, the District should expect to see similar growth. Using these predictions, by 2023 (10 years) the District could expect to see an annual response to 2,486 incidents. To meet these demands, the District should begin to plan now how to incrementally place and staff resources based on these assumed predictions. The District has fire stations well placed to meet future growth; the trending towards increased responses will place increased pressure on the type of apparatus responses and how those apparatus are staffed.



Population Growth Projection:

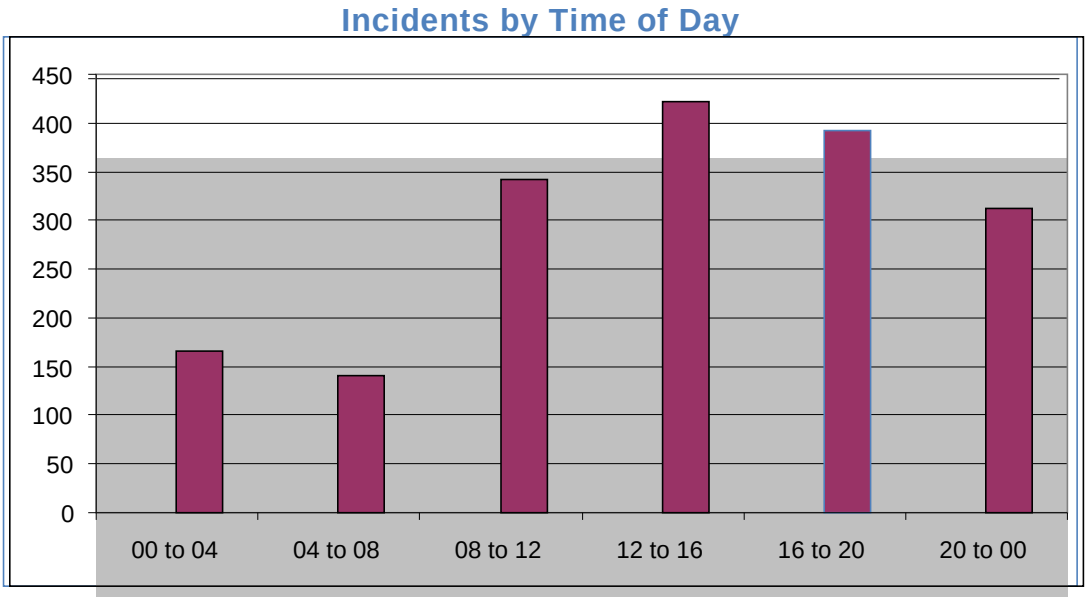
Interestingly, although the District's responses are predicted to rise approximately 4% per year for the next ten years, the population growth in Lincoln County is expected to grow only by 0.7% per year. The infusion of volunteer firefighters needed to meet the anticipated increase in responses is unlikely to be met by the influx of population into the area. The target market for new volunteer firefighters is those already in the area.

The District should begin to prepare an aggressive volunteer recruitment program directed at meeting its staffing needs for the future. Alternatively, if unable to meet targeted volunteer recruitment, then it should begin to plan for costs associated with increased career staffing.



Incidents by Time of Day:

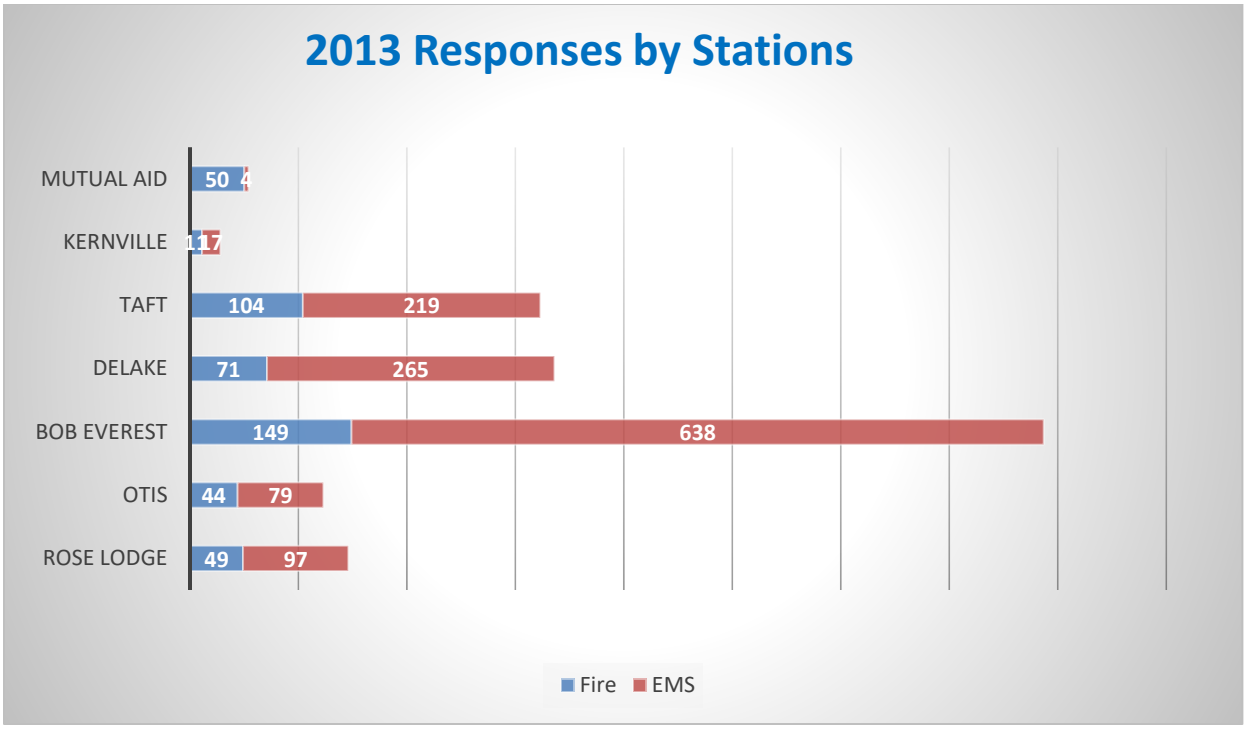
Incidents by time of day demonstrates what time of the day could best be predicted when a demand for service will be received. The greatest number of alarms occurs within the District between 08:00 am and 10:00 pm. The calls for service drop dramatically between 10:00 pm and 08:00 am. Future staffing consideration should be mindful of this trend and staggering the time frames when units are staffed would be beneficial towards improving response times.



Responses by Station:

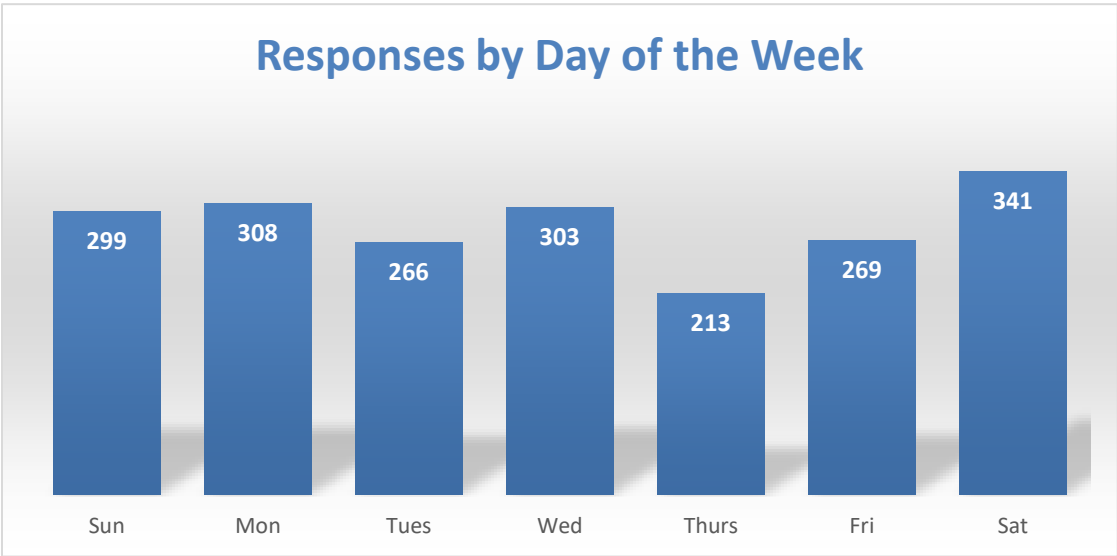
Responses by station can be misleading. The District does not track station or individual apparatus responses by individual response times, only whether or not the station responded to the incident. For example, engines from the Bob Everest and DeLake fire stations may arrive to a fire in the Otis area before an Otis engine responds. This makes it difficult to measure the response performance of individual stations and apparatus.

For future performance planning purposes, the District should consider assigning Fire Management Zones (FMZs) based on appropriate first response areas for each station and track response performance of each fire station and apparatus. When analyzing response data, oftentimes the second and third arriving apparatus is as crucial as the first arriving unit, especially when analyzing the response performance of the District's aerial and rescue apparatus.



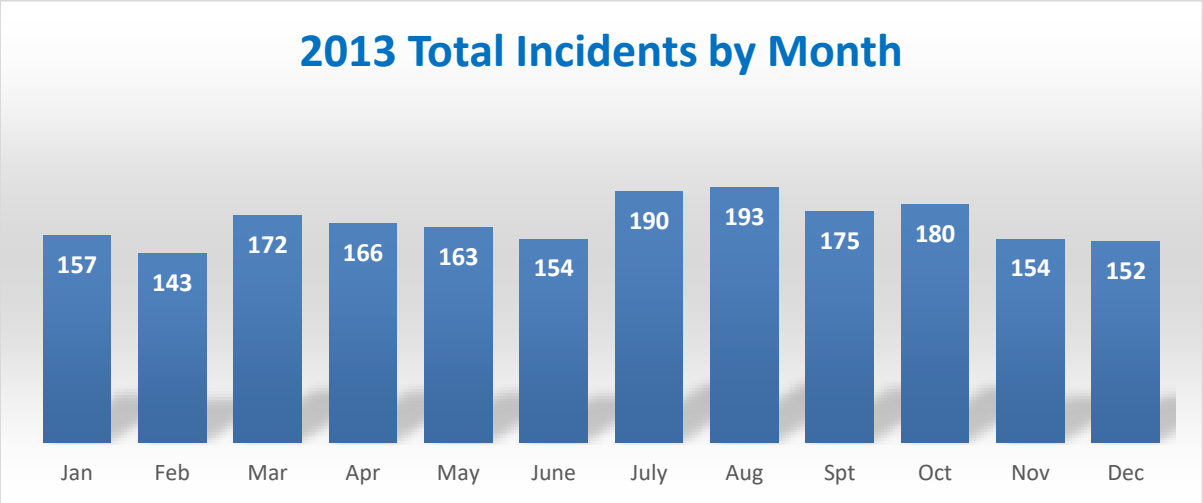
Responses by Day of the Week:

As one would expect with a region heavily associated with the tourist industry, the busiest days of the week are Friday, Saturday, Sunday and Monday with 60% of the District incidents occurring during the four days usually associated with an extended weekend. However, the only statistically relevant data is that Thursdays are appreciably slower than the other weekdays.



Incidents by Month:

Interestingly, considering the popularity of the region's tourist destinations, the breakdown of responses by month is actually fairly consistent throughout the entire year. One would expect March, July, August, September, and October to have a greater number of alarms due to the population surge that occurs with the tourist industry. However, the remaining month's responses are not that statistically different from what would be considered the District's busy months.



Incident Benchmarking:

A point of reference that establishes completion of a tactical objective or phase of an incident is called a 'benchmark'. Utilizing that concept within the incident command system keeps a focus on the priorities that can be translated to accomplishments when such a priority has been addressed. It also provides trigger points that can be digitally tracked through dispatching software to provide accurate data back to the District in order to measure their performance.

Incident Phases that NLF&R intends on tracking and establishing performance objectives are as follows (for the purpose of this report we will focus on a fire related incidents. In the future, benchmarking for medical and non-fire related calls will also be established.):

1. **Fire Detection** - from the point of ignition to when the fire is discovered. The single most influential tool in reducing fire detection time is the promotion and installation of home smoke detectors. Early detection alarm systems in commercial, high hazard, and high occupancy facilities are instrumental in reducing fire detection time. The District's primary tools in reducing the fire detection time are strong fire prevention ordinances and inspection programs.

2. **Incident Reporting -** the time from the point of discovery to when authorities are notified of the incident. Automatic sprinklers and monitored alarm systems greatly reduce incident reporting. Most recently, the wide use of cell phones have significantly impacted the reduction of incident reporting time. The universal use of 9-1-1 for all emergencies has also greatly reduced the incident reporting time.

3. **Call Processing -** the time period from the point when a 9-1-1 call is received at a 9-1-1 center, processed as to emergency type, to the point it is received at the appropriate dispatching location.

4. **Dispatching Time -** the time period from the point an emergency call is received at the dispatching location to the point the notification is delivered, (alerting NLF&R) in an approved manner.

Currently, 9-1-1 call processing and dispatching is a complicated procedure for NLF&R, based on where the call is made and the call type. 9-1-1 calls made inside Lincoln City are received at the Lincoln City Police Department (Dispatch); if it meets criteria for NLF&R response, LCPD (Dispatch) dispatches our fire resources accordingly. 9-1-1 calls inside the Fire District but outside the Lincoln City boundaries are received in Salem at Willamette Valley Communication Center; then they are routed to LCPD (Dispatch) who in turn dispatches our fire resources accordingly.

Computer-Aided Dispatching (CAD) programs have greatly reduced dispatching time; North Lincoln Fire & Rescue's goal is to be dispatched (point in time 9-1-1 call is received to point in time North Lincoln Fire & Rescue is dispatched to the call) is 90 seconds or less, 90% of the time. Some method must be identified/developed to accurately ensure this goal is being met by our existing dispatch center.

5. **Turnout Time -** the time period from when pagers are activated and when emergency units respond. This timeframe will be greatly influenced by whether or not fire personnel are actually at a fire station at the time of the call or respond from their home or work location to the fire station and then respond from there. Turnout time for medical incidents are less than turnout time for fire incidents due to the overall number of firefighters needed and the additional time needed to don Personal Protective Equipment (PPE).

    - NLF&R turnout goal for when Firefighters are available at the station is 90 seconds or less, 90% of the time.
    - NLF&R turnout goal for when Firefighters are not at the station and respond from home/work is 5 minutes or less 90&% of the time.

6. **Travel Time -** the time period from the point an emergency unit begins to respond to when the emergency unit arrives on scene. Obviously, the greatest influencing factor is the distance the nearest fire station is to the incident. Travel time is usually less at night when traffic does not impede emergency responders and greatest on the weekends as the area experiences an increase of traffic from visitors taking advantage of the scenic Oregon coastline. NLF&R has 6 fire stations located strategically throughout the District. The furthest any station would have to travel is 5 miles to the outer fringe of their response area.

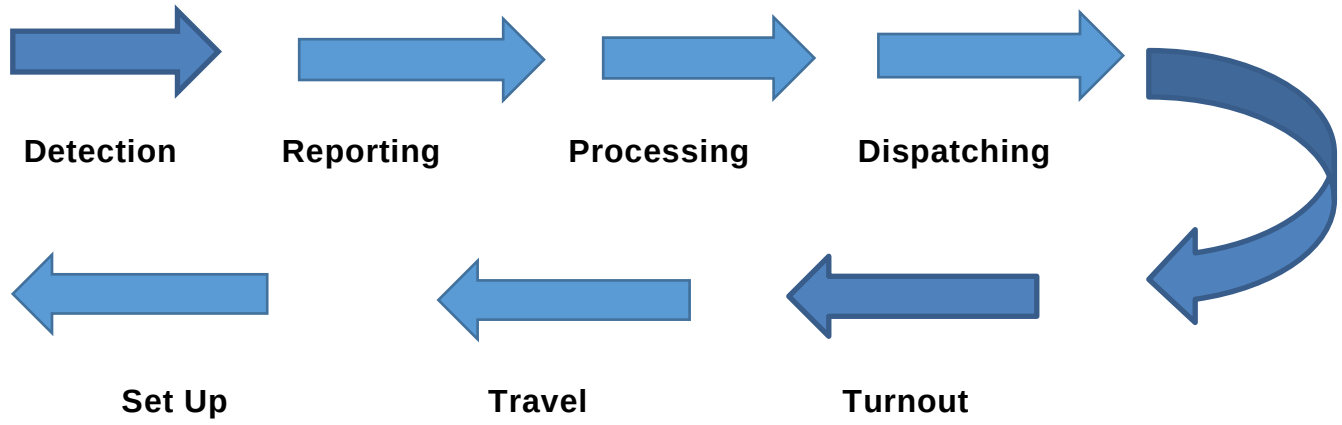
7. **Set-up time -** the time period from once a unit has arrived on the fire scene to when a fire attack is initiated. On the fire incident, Command would announce "initiating offensive, defensive, or transitional attack", the announcement would be acknowledged by Dispatch and time stamped into CAD software. Set-up time is greatly influenced by the available manpower. OR-OSHA requires at least 4 firefighters be on scene prior to initiating an interior or offensive attack. Less than 4 firefighters on scene can initiate an exterior or defensive attack.

NLF&R recognizes the importance in monitoring 9-1-1 call processing performance times, but due to the multi-agency dispatching services currently in place, that information is not easily attained. In future, decisions relating to dispatching services, i.e. the ability to accurately measure, monitor, and retrieve call processing data, will remain a high priority for the Fire District.

Training and experience are other factors that influence the District's ability to efficiently deploy the necessary tactics to efficiently mitigate an incident. Tenured firefighters are the District's greatest assets. The District trains firefighters in the recruit academy to "do things right", experience and training allows firefighters to "do the right things, right, at the right time". Rapid turnover rate of personnel affects fire ground efficiency and extends set-up time. The average volunteer tenure in the District is 5-8 years. The greatest loss of volunteers occurs within the first 3 years, requiring considerable District resources directed at replacing less tenured firefighters. Table #3 outlines the District's volunteer staffing goals for each station. In addition, the District goal is to improve its average volunteer tenure time to 8 to 10 years by 2018.

The Incident Time Table on the next page represents the major incident components the District intends to benchmark to improve overall service to the community.

Incident Time Table



The District is currently tracking individual unit response times, but at this time is unable to retrieve this information in report form. They are working with their contacts at Oregon Fire Bridge to be able to tailor reports to their specific needs, so this information can be made readily available.

In addition, the District should develop time standards for how 9-1-1 calls are received, processed, and dispatched both within and outside Lincoln City limits. This will provide objective data to assist the District in evaluating the quality of dispatching services they are receiving from the two communication centers contracted to provide 9-1-1 and dispatching services to the District.

Critical Tasking:

Critical Tasks are tasks that must be conducted in a timely manner by firefighters at emergency incidents in order to protect lives and preserve property. The fire department is responsible for ensuring that responding companies are capable of performing all of the described tasks in a prompt, efficient and safe manner.

Critical Tasking for Fire Operations - is to provide the necessary number of personnel and equipment, so that the appropriate strategy goals for the situation can be met. On all incidents, the Incident Commander will act as the Safety Officer until sufficient personnel are on scene to delegate the task to another trained individual. On a typical structure fire, the minimum staffing required to safely conduct offensive operations (interior attack) would be as follows:

Residential Structure Fire - Initial Attack Critical Tasking

	Initial Attack	Extended Attack
Task	**# of Personnel**	**# of Personnel**
Incident Commander	1	1
Safety Officer		1
Pump Operator/Supply	2	2
Attack Line	2	4
Search & Rescue	2	2
Ventilation	2	2
Extension/Exposure	2	2
Back-up Line	2	2
Rapid Intervention Team	2	2
Totals	15	18

Motor Vehicle Accident Critical Tasking

	Low Impact	High Impact
Task	**# of Personnel**	**# of Personnel**
Incident Commander	1	1
Safety Officer		1
Triage/Treatment	2	3
Scene Stabilization	1	
Patient Care Form	1	1
Extrication		3
Suppression		4
Totals	5	13

Water Rescue Critical Tasking

Task	**Rescue**	**Extended Ops**
Incident Command	1	1
Operations/Safety		1
Ski Operator/Rescuer	2	4
Beach Crew	1	3
Triage/Treatment	2 (PacWest)	2 (PacWest)
	w/USCG	w/USCG
Totals	6	11