

Northern Arizona Healthcare Health Village Fire Service Impact Assessment



Northern Arizona Healthcare



Executive Summary

The purpose of this report is to provide a comprehensive fire service impact assessment for the proposed Northern Arizona Healthcare Health Village in Flagstaff, Arizona.

The best way to reduce the impact of this development on the Flagstaff Fire Department will be to design and construct the project according to the adopted building and fire codes in place for the City of Flagstaff. This report recommends that the Flagstaff Fire Marshal secure the needed expertise to review plans and manage the construction of these facilities.

The development of a commercial and institutional project at the far Southern end of the City may have longer-term impacts on the delivery of fire and emergency medical services that cannot be ascribed to this development effort. This report recommends a longer-term assessment of the City's fire station network in view of this project and other development efforts in other parts of the City of Flagstaff.

The Northern Arizona Healthcare Health Village

Northern Arizona Healthcare proposes a mixed-use development anchored by a medical center and including office, retail, residential, and commercial space totaling approximately 7 million square feet of enclosed space. The development will commence in 2022 with buildout projected over the next 30 years.

The site is at the very South end of the City of Flagstaff, bounded by Highway 89A and Interstate 17 on the East and Fort Tuthill County Park on the South. The total land area of the project is approximately 185 acres.

The medical center is intended to replace the Flagstaff Medical Center, also operated by Northern Arizona Healthcare, located at 1200 North Beaver Street in downtown Flagstaff.

Fire and Emergency Services Overview

The Flagstaff Fire Department is a career (full-time) fire department that provides fire protection, emergency medical, special operations, and hazardous materials response services to the City of Flagstaff. The department operates six fire stations with a fleet of response vehicles.

Flagstaff has automatic aid agreements with surrounding fire departments including the Summit Fire and Medical District to the North and the Highlands Fire District to the South. Automatic aid agreements provide that the firefighters closest to the emergency respond, regardless of jurisdictional lines. Assistance with a major emergency beyond the capability of the Flagstaff automatic aid system is remote and gathering and deploying a significant fire fighting force from outside of Flagstaff would take hours.

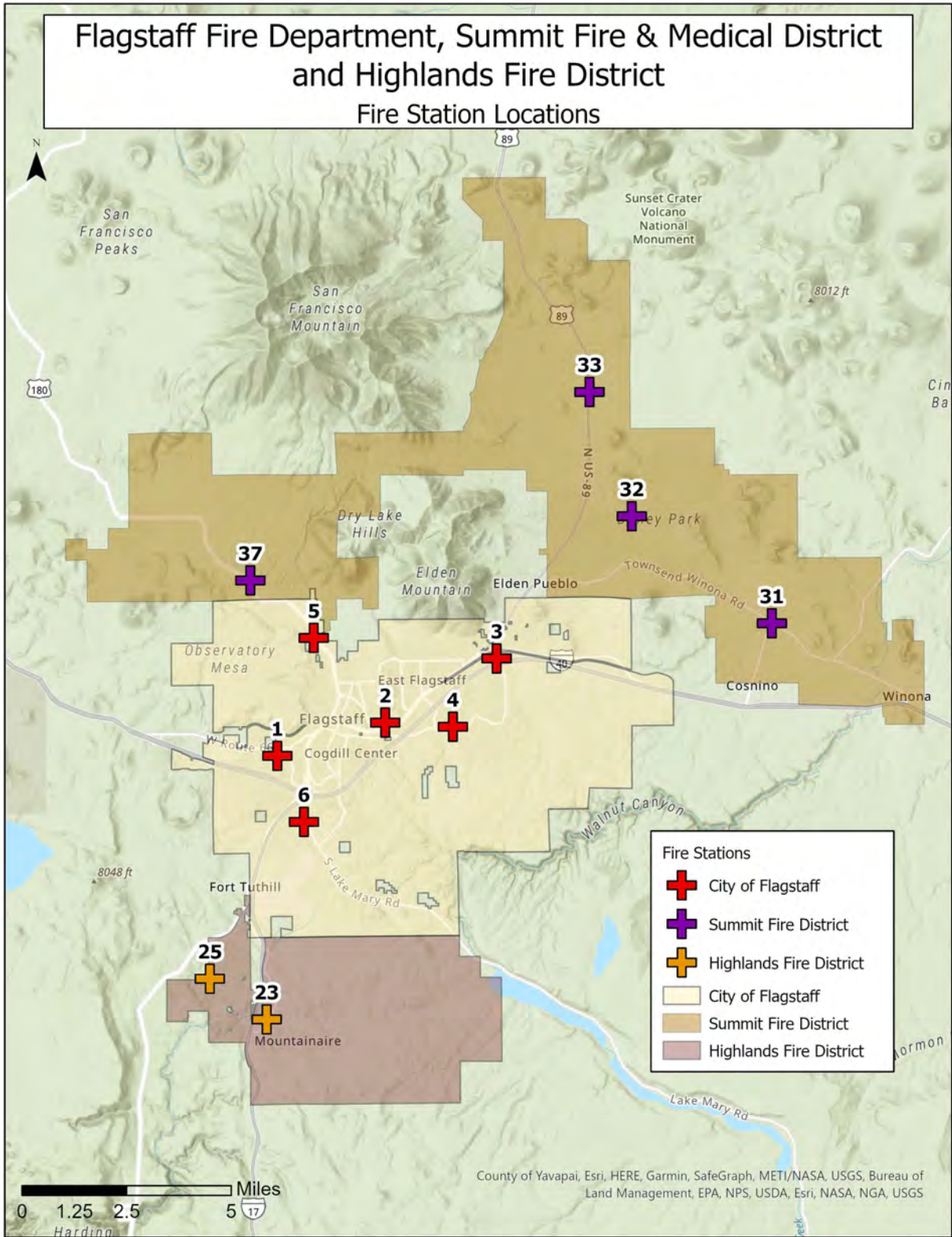


Figure 1 – Fire Station Locations

Emergency Medical Services

The Flagstaff Fire Department provides Advanced Life Support (ALS) service from each fire station. At least one paramedic staffs each Flagstaff response unit. The members of the Flagstaff Fire Department provide ALS service on-scene and may help provide these services during transport by ambulance when needed.

Medical transport service is provided by Guardian Ambulance Transport, a hospital-based provider owned and operated by Northern Arizona Healthcare. Guardian provides service in a 400-square mile area that includes Flagstaff and the surrounding area. A paramedic and an Emergency Medical Technician (EMT) staff each Guardian ambulance.

The working relationship between Guardian and the Flagstaff Fire Department is positive and contributes to the provision of good service for customers. In situations where a critically ill customer is being transported, a Flagstaff Fire Department member may ride in the ambulance and assist with care during the transport.

Flagstaff currently staffs one rescue vehicle from Fire Station 2, with plans to expand to a second vehicle to be staffed in the Fall of 2022 at Fire Station 3. Rescue vehicles are staffed with a Captain and an Engineer, at least one of which is a paramedic. These vehicles respond primarily to emergency medical incidents, but they also respond to fire and other emergency incidents.

When a customer is extremely ill and being transported by ambulance, one or more Flagstaff Fire Department paramedics will ride in the ambulance to the hospital to administer care. The FFD paramedic's assigned unit, usually a rescue or engine, follows the ambulance to the hospital to retrieve their firefighter and then returns to service. During this transport, the engine or rescue is unavailable for response to other emergencies.

Wildland Urban Interface

Flagstaff is surrounded by forest lands and the city contains significant Wildland Urban Interface (WUI). The Flagstaff Fire Department undertakes significant wildland fire management programs in cooperation with the Summit Fire and Medical District. These efforts include education, prevention, response, and recovery activities. These efforts are cited in the Wildland Fire Risk Assessment & Mitigation Report prepared for the Northern Arizona Healthcare Health Village in November of 2021.

Flagstaff Pullium Airport

Fire and emergency medical services at the Flagstaff Pullium Airport are provided by firefighters assigned to a fire station on the airport site. These firefighters do not routinely respond off of the airport unless the off-airport emergency involved aircraft.

On-Duty Staffing and Response Units

At this time, Flagstaff has a total of 27 firefighters assigned to each shift and a minimum on-duty staffing of 21 firefighters each day. Each Flagstaff fire station is provided with a structural fire engine (pumper) and a wildland fire engine. Each station also houses other emergency vehicles that are utilized as needed. The on-duty Captain in the station determines which vehicle is utilized based on the type of emergency and fire department procedures.

Station Number	Street Address	On-Duty Staffing	Apparatus Assigned
1	1972 South Thompson Street	1 Captain 1 Engineer 1 Firefighter	Type1 Engine Quint 1 Type III Engine
2	1701 East Ponderosa Parkway	1 Battalion Chief 2 Captains 1 Engineer 2 Firefighters	Type 1 Engine Rescue Special OPS Squad Reserve Type 1 Type VI Engine Mini Squad (TRT) BC1 Reserve BC
3	4500 East Nestlé Purina Avenue	1 Captain 1 Engineer 1 Firefighter	Type I Engine Quint 3 Rescue Reserve Type I Type III Engine Support Rig P/U Crew Cab P/U with ATV and trailer
4	4040 East Butler Avenue	1 Captain 1 Engineer 1 Firefighter	Type I Engine Type 1 Tender Type VI Engine
5	2525 North Fort Valley Road	1 Captain 1 Engineer 1 Firefighter	Type I Engine Type III Engine Haz-Mat Truck
6	3877 Lake Mary Road	1 Captain 1 Engineer 1 Firefighter	Type I Engine Type I Tender Type Vi Engine Support Truck

Table 1 – Flagstaff Fire Department Fire Stations and Staffing

On-duty unit staffing for the Flagstaff Fire Department does not comply with the staffing requirements of NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments. The standard requires four on-duty firefighters for each engine and ladder company.

Flagstaff does not operate a full-time staffed ladder truck. Fire Station 1 and Fire Station 3 house ladder trucks that are cross-staffed when needed. When a ladder truck is needed for an incident response, the on-duty crew of three firefighters responds in the ladder truck.

The lack of a staffed ladder company is unusual for a city of Flagstaff's size. According to data from the most recent United States Fire Department Profile – 2018, published by the National Fire Protection Association, a typical city in Flagstaff's population range operates two staffed ladder companies and six engine companies. In fact, 63 percent of cities in Flagstaff's population range operate one or more staffed ladder companies.

National Standards

The national standard that dictates requirements for fire department deployment is NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments. The most recent version of NFPA 1710 is the 2020 edition.

The most significant requirements of the standard include requirements for fire department engine and ladder on-duty unit staffing, emergency response times, and times for the assembly of an effective fire fighting force by occupancy type.

As previously stated, the Flagstaff Fire Department does not comply with the unit staffing requirements of the standard.

NFPA 1710 also requires that ALS (paramedic) units be staffed by two paramedics with the balance of the crew certified as EMT's. Currently, Flagstaff staffs ALS units with one paramedic.

NFPA 1710 requires the arrival of the first engine company with a travel time of 240 seconds or less. Fire Station 6, located at 3877 Lake Mary Road, is within a 240 second travel time capability to the Northern Arizona Healthcare Health Village.

For highrise occupancies such as the proposed Medical Center at the Northern Arizona Healthcare Health Village, NFPA 1710 requires the assembly of 42 firefighters and fire officers at the scene of the incident within 610 seconds travel time. The Flagstaff Fire Department, even with all of the resources of the automatic aid system, cannot comply with this requirement.

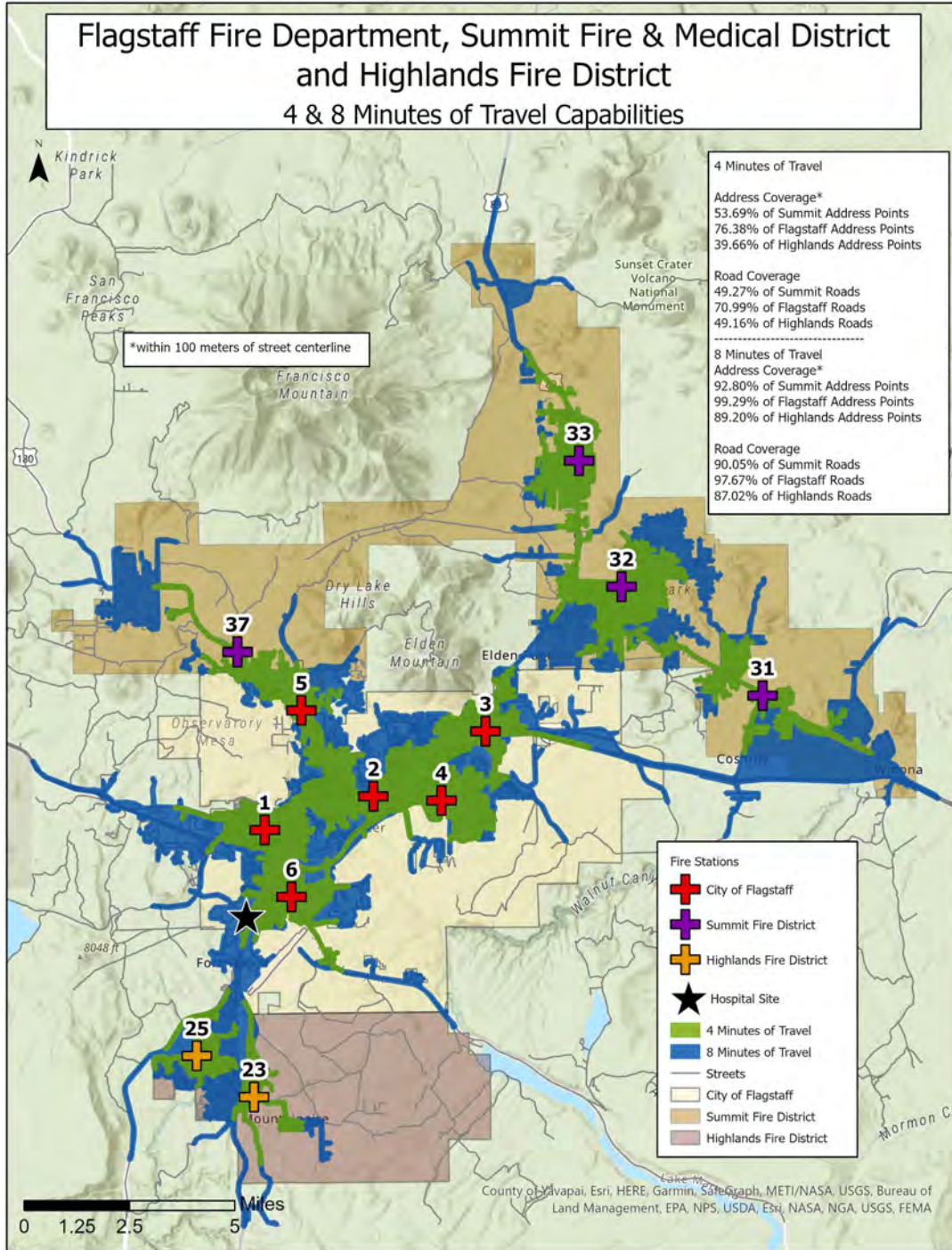


Figure 3 – Four- and Eight-Minute Travel Times from Flagstaff and Automatic Aid Stations

Fire Service Impact of the Northern Arizona Healthcare Health Village

Changes to the use of any area of a community have impacts on the delivery of fire, emergency medical, and other emergency services to that community. Fire stations in Flagstaff are strategically located to minimize the time that it takes for firefighters to reach the scene of the emergency.

When an emergency occurs in a community, the closest available firefighters respond. If the firefighters assigned to the closest fire station are unavailable or already on another incident, the next closest crew of firefighters is immediately sent. If the emergency requires more than one crew of firefighters to control, such as a building fire, additional crews of firefighters are sent. An emergency in any part of the community has cascading effects in the rest of the community. These processes are controlled in most fire departments, including the Flagstaff Fire Department, by procedure and through the City's computer aided dispatch system.

The Northern Arizona Healthcare Health Village is at the Southern corporate limit of the City of Flagstaff and extends an intense institutional and commercial use to an area of Flagstaff. This development essentially extends the commercial area of Flagstaff South of Interstate 40. The existing Flagstaff Medical Center is in the urban core of Flagstaff and more readily served from multiple directions by existing Flagstaff Fire Department resources.

Impacts During Planning and Construction

The development of a project such as the Northern Arizona Healthcare Health Village would demand a significant effort on the part of the Authority Having Jurisdiction (AHJ). In this case, the Flagstaff Fire Marshal recognizes that the Flagstaff Fire Department does not possess the necessary in-house expertise to adequately review plans for this project for compliance with the applicable fire and WUI codes.

The Fire Marshal is confident that the International Fire Code (IFC) and the International Wildland Urban Interface Code (IWUI) will provide the necessary safety requirements to assure the safe development of this project, including the special hazards and requirements of the Medical Center. The Fire Marshal also feels that the requirements of the IFC will assure the safety of the highrise portion of the project.

The Fire Marshal may choose to require site safety planning and provisions during construction, as provided in the IFC, to reduce risk during construction.

It is likely that every square foot of this development will be protected by automatic fire sprinklers. While not a panacea, when paired with proper building construction, sprinklers are the most effective protection from the loss of life and property from fire.

The Medical Center and some of its supporting operations may include the use and storage of hazardous materials such as liquified oxygen and other flammable medical gasses. The installation of these systems will be required to comply with IFC and NFPA requirements to minimize risk.

Impacts During Operation

The development of a commercial and institutional occupancy on the periphery of the City of Flagstaff places additional demands on the Flagstaff Fire Department however, it is difficult to ascribe the need for any additional resources to a single development or effort.

The relocation of the primary emergency room facility for Flagstaff to the Southern end of the City, outside of the urban core may create impacts on response times and availability for Guardian ambulances and Flagstaff Fire Department units.

For Flagstaff Fire, if a rescue or engine company accompanies an ambulance to the hospital to help care for a critically ill customer, the unit will be outside of the urban core when it goes back in service, likely further from their first-due area and further from the next call. While the impact of this change is difficult to quantify, it may drive the eventual demand for additional emergency medical response resources such as a third rescue unit or additional transport resources for Guardian.

The addition of a highrise and commercial development at the South end of the City also accentuates the need for a staffed ladder company for the City of Flagstaff. Again, it is impossible to ascribe the need for this resource to the development of the Health Village alone.

In the longer term, development at the South end of the City may encourage other development in the area. Commercial areas East of I-17 at the Pullium Airport and the area of John Wesley Powell Boulevard and South Pullium Drive may well see follow on development as a result of this project.

Recommendations

Based on a review of the resources of the Flagstaff Fire Department and the demands created by the development of the Northern Arizona Healthcare Health Village, the following actions and studies are recommended:

- The Flagstaff Fire Marshal should utilize special experts as provided for in the International Fire Code when reviewing plans and monitoring the construction of the Northern Arizona Healthcare Health Village, especially for the design and construction of the Medical Center.
- Assess the eventual impact of the relocation of the emergency room function on the fire and ambulance systems.
- Given the expansion of the urban core to the South and possible follow-on development in the area, perform an analysis of Flagstaff Fire Department fire station locations, station capacity, and service delivery depth to determine if the existing station locations, apparatus housing capabilities, and emergency service capabilities are appropriate for the longer term. This work may be in conjunction with the development of the JWP corridor.
- Follow the wildfire mitigation recommendations of the Wildland Fire Risk Assessment & Mitigation Report prepared by the Fire Management Group, LLC to reduce wildfire risks.